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EXHIBIT A

Secretary of State
Corporations Division
315 West Tower
#2 Martin Luther King, Jr. Dr.
Atlanta, Georgia 30334-1530

CONTROL NUMBER: 0556515
EFFECTIVE DATE: 08/22/2005
JURISDICTION : DELAWARE
REFERENCE : 0091
PRINT DATE : 08/22/2005
FORM NUMBER : 350

PATTIE HARDY
C T CORPORATION SYSTEM
1201 PEACHTREE STREET, NE
ATLANTA, GA 30361

CERTIFICATE OF AUTHORITY TO TRANSACT BUSINESS

I, Cathy Cox, the Secretary of State of the State of Georgia, do hereby certify under the seal of my office that

STERIGENICS U.S., LLC
A FOREIGN LIMITED LIABILITY COMPANY

has been organized under the laws of the jurisdiction stated above and has filed an application meeting the requirements of Georgia law to transact business as a foreign limited liability company in this state.

WHEREFORE, by the authority vested in me as Secretary of State, the above named limited liability company is hereby granted, on the effective date stated above, this certificate of authority to transact business in the State of Georgia as provided by Title 14 of the Official Code of Georgia Annotated.

WITNESS my hand and official seal in the City of Atlanta and the State of Georgia on the date set forth above.

Cathy Cox
Secretary of State

CATHY COX
Secretary of State

OFFICE OF SECRETARY OF STATE
CORPORATIONS DIVISION
315 West Tower, #2 Martin Luther King, Jr. Drive
Atlanta, Georgia 30334-1530
(404) 656-2817
Registered agent, officer, entity status information via the Internet
http://www.georgiacorporations.org

WARREN RARY
Director

ENRICO M. ROBINSON
Assistant Director

APPLICATION FOR CERTIFICATE OF AUTHORITY FOR FOREIGN LIMITED LIABILITY COMPANY #500—

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DOCKET # _____ **PENDING #** _____ **CONTROL #** 0556515

DOCKET CODE _____ **DATE FILED** _____ **AMOUNT RECEIVED** _____ **CHECK/ RECEIPT #** _____

TYPE CODE _____ **EXAMINER** _____ **JURISDICTION CODE** _____

NOTICE TO APPLICANT: PRINT PLAINLY OR TYPE REMAINDER OF THIS FORM

1. Sterigenics U.S., LLC
Limited Liability Company Name — Name Reservation Number (Optional)
January 1, 2005
Date Business Commenced (Or Proposed) in Georgia (NOTE: If the date provided here is more than 30 days prior to the date the application is received by the Secretary of State, a $500 penalty must be paid; penalty is statutory and cannot be waived by Secretary of State.)

2. Corey H. Grauer — 630-928-1747
Name of filing person (certificate will be mailed to this person, at address below) — Telephone Number
Sterigenics / 2015 Spring Rd., Ste #650 — Oak Brook — IL — 60523
Address — City — State — Zip Code

3. Delaware — May 29, 1997 — Perpetual
Jurisdiction (Home state/country) — Date of Organization in home state — Period of Duration

4. 2015 Spring Rd., Ste #650 — Oak Brook — IL — 60523
Address of Principal Place of Business — City — State — Zip Code

5. C T Corporation System
Name of Registered Agent in Georgia
1201 Peachtree Street, N.E.
Registered Office Street Address in Georgia (Post office box or mail drop not acceptable for registered office address)
Atlanta — Fulton — GA — 30361
City — County — State — Zip Code

6. David E. Meyer - 2015 Spring Rd., Ste #650 — Oak Brook — IL — 60523
Manager's Name & Address (Person w/responsibility for maintaining records) — City — State — Zip Code

7. 2015 Spring Road, Suite 650 — Oak Brook — IL — 60523
Address Where Limited Liability Company Records Are Maintained — City — State — Zip Code

SECRETARY OF STATE
2005 AUG 22 PM 4:11
CORPORATIONS DIVISION

8. **NOTICE: Mail or deliver an original and one copy of this form and the filing fee of $225.00 to the Secretary of State at the above address. Filing fees are NON-refundable.**
This application is signed by a person duly authorized to sign such instruments by the laws of the jurisdiction under which the foreign limited liability company is organized. The foreign limited liability company undertakes to keep its records at the address shown in #7 above until its registration in Georgia is canceled or withdrawn. The foreign limited liability company, in accordance with Title 14 of the Official Code of Georgia Annotated, appoints the Secretary of State as agent for service of process if no agent has been appointed in Georgia or, if appointed, the agent's authority has been revoked or the agent cannot be found or served by the exercise of reasonable diligence.

G.H.M. — 8/18/05
Authorized Signature — Date

Request certificates and obtain entity information via the Internet: http://www.georgiacorporations.org

FORM 241

GA036 - 12/23/04 C T System Online

Additional Managers:

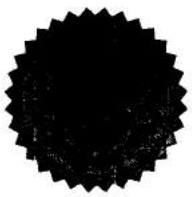
William R. Nelson	2015 Spring Rd., Ste #650	Oak Brook, IL	60523
Frederick Ruegsegger	2015 Spring Rd., Ste #650	Oak Brook, IL	60523
Corey H. Grauer	2015 Spring Rd., Ste #650	Oak Brook, IL	60523
Kathy Hoffman	2015 Spring Rd., Ste #650	Oak Brook, IL	60523

Delaware

The First State

I, HARRIET SMITH WINDSOR, SECRETARY OF STATE OF THE STATE OF DELAWARE, DO HEREBY CERTIFY "STERIGENICS U.S., LLC" IS DULY FORMED UNDER THE LAWS OF THE STATE OF DELAWARE AND IS IN GOOD STANDING AND HAS A LEGAL EXISTENCE SO FAR AS THE RECORDS OF THIS OFFICE SHOW, AS OF THE NINETEENTH DAY OF AUGUST, A.D. 2005.

AND I DO HEREBY FURTHER CERTIFY THAT THE ANNUAL TAXES HAVE BEEN PAID TO DATE.



Harriet Smith Windsor

Harriet Smith Windsor, Secretary of State

2754117 8300

050685886

AUTHENTICATION: 4103325

DATE: 08-19-05

EXHIBIT B

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The following is an excerpt from a 8-K SEC Filing, filed by STERIGENICS INTERNATIONAL INC on 6/15/1999.
Next Section | Previous Section -- Use Sections To Navigate Through The Document --

EXHIBIT NUMBER 2.1

MERGER AGREEMENT

DATED AS OF JUNE 10, 1999

AMONG

ION BEAM APPLICATIONS S.A.

ION BEAM APPLICATIONS G.P.

IBA ACQUISITION CORP.

AND

STERIGENICS INTERNATIONAL, INC.

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MERGER AGREEMENT

THIS MERGER AGREEMENT (this "Agreement") dated as of June 10, 1999, is among STERIGENICS INTERNATIONAL, INC., a Delaware corporation ("Company"), ION BEAM APPLICATIONS S.A., a Belgian corporation ("Parent"), ION BEAM APPLICATIONS G.P. a general partnership organized under the laws of Delaware which is controlled by Parent ("GP") and IBA ACQUISITION CORP., a Delaware corporation which is wholly-owned by GP ("Acquisition"). WHEREAS, the Board of Directors of the Company (the "Board") has, in light of and subject to the terms and conditions set forth herein, (i) determined that each of the Offer and the Merger (each as defined below) is advisable on substantially the terms and conditions set forth herein and is fair to the stockholders of the Company and in the best interests of such stockholders and (ii) approved and adopted this Agreement and the transactions contemplated hereby and resolved, subject to the terms hereof, to recommend acceptance of the Offer and approval and adoption by the stockholders of the Company, if necessary, of this Agreement; and

WHEREAS, in furtherance thereof, it is proposed that Acquisition shall, within five (5) business days after the public announcement hereof, commence a tender offer (the "Offer") to acquire all of the issued and outstanding Shares (defined herein) together with the associated Rights (defined herein) which are not owned by Parent, GP, or Acquisition or any affiliate thereof, at a price of $27.00 per Share (subject to adjustment for stock splits, stock dividends, combinations, recapitalizations or the like) (such amount, being hereinafter referred to as the "Per Share Amount"), net to the seller in cash, less any required withholding of taxes, in accordance with the terms and subject to the conditions provided herein;

NOW THEREFORE, in consideration of the premises and the representations, warranties, covenants and agreements herein contained and intending to be legally bound hereby, the Company, Parent, GP, and Acquisition hereby agree as follows:

ARTICLE 1

THE OFFER

SECTION 1.1. The Offer. (a) Provided that this Agreement shall not have been terminated in accordance with Section 9.1, as promptly as possible but in no event later than five (5) business days after the public announcement of the execution hereof by the parties, Parent and GP shall cause Acquisition to commence (within the meaning of Rule 14d-2 under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), the Offer; and to cause Acquisition to use its best efforts to consummate the Offer, including, without limitation, engaging an information agent in connection therewith. Acquisition shall accept for payment issued and outstanding shares of common stock, $0.001 par value of the Company (individually a "Share" and collectively, the "Shares") together with the associated Rights which have been validly tendered and not withdrawn pursuant to the Offer at the earliest time following expiration of the Offer that all conditions to the Offer shall have been satisfied or waived by Acquisition. The obligation of Acquisition to accept for payment, purchase and pay for Shares tendered pursuant to the Offer shall be subject to the condition that the number of Shares validly tendered and not withdrawn prior to the expiration of the Offer, combined with the Shares already owned by Parent, GP, Acquisition or any of their affiliates, constitutes at least a majority of the then

outstanding Shares on a fully-diluted basis (including for purposes of such calculation all Shares issuable upon exercise of all vested and unvested stock options, and conversion of convertible securities or other rights to purchase or acquire Shares) at the expiration of the Offer (the "Minimum Stock Condition") and the other conditions set forth in Article 7. Acquisition expressly reserves the right to waive any such condition, to increase the Per Share Amount, and to make any other changes in the terms and conditions of the Offer; provided, however, that Parent, GP and Acquisition agree that no change may be made without the written consent of the Company which decreases the Per Share Amount, which changes the form of consideration to be paid in the Offer, which reduces the maximum number of shares to be purchased in the Offer, which reduces the Minimum Stock Condition to below a majority of the then outstanding shares (on a fully-diluted basis), which otherwise modifies or amends the conditions to the Offer or any other term of the Offer in a manner that is materially adverse to the holders of the Shares, which imposes conditions to the Offer in addition to those set forth in Article 7 or which extends the expiration date of the Offer beyond September 30, 1999 (except that Acquisition may extend the expiration date of the Offer beyond September 30, 1999 as required to comply with any rule, regulation or interpretation of the Securities and Exchange Commission or to provide the time necessary to satisfy the conditions set forth in Article 7). It is agreed that the conditions set forth in Article 7 are for the sole benefit of Acquisition and may be asserted by Acquisition regardless of the circumstances giving rise to any such condition (including any action or inaction by Acquisition) or may be waived by Acquisition, in whole or in part at any time and from time to time, in its sole discretion. The failure by Acquisition at any time to exercise any of the foregoing rights shall not be deemed a waiver of any such right and each such right shall be deemed an ongoing right which may be asserted at any time and from time to time. The Per Share Amount shall be paid net to the seller in cash, less any required withholding of taxes, upon the terms and subject to such conditions of the Offer. The Company agrees that no Shares held by the Company or any of its subsidiaries will be tendered in the Offer.

(b) As soon as practicable after the date hereof, Parent, GP and Acquisition agree that Parent, GP and Acquisition shall file with the Securities and Exchange Commission (the "SEC") a Tender Offer Statement on Schedule 14D-1 with respect to the Offer, which shall include an offer to purchase and form of transmittal letter (together with any amendments thereof or supplements thereto, collectively the "Offer Documents"). The Company and its counsel shall be given a reasonable opportunity to review and comment on the Offer Documents prior to their filing with the SEC or dissemination to the stockholders of the Company. Parent and Acquisition agree to provide the Company and its counsel with any comments which Parent, Acquisition or their counsel may receive from the SEC or the staff of the SEC with respect to such documents promptly after receipt thereof. The Offer Documents will comply in all material respects with the provisions of applicable federal securities laws. The information provided and to be provided by Parent, GP and Acquisition for use in the Offer Documents shall not, on the date filed with the SEC and on the date first published or sent or given to the Company's stockholders, as the case may be, contain any untrue statement of a material fact nor omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading, provided, however, that no representation or warranty is made by Parent, GP or Acquisition with respect to

information supplied by the Company or any of its stockholders for inclusion in the Offer Documents. The Company agrees that information provided by the Company or any of its subsidiaries for inclusion or incorporation in the Offer Documents shall not, on the date filed with the SEC and on the date first published or sent or given to the Company's stockholders, as the case may be, contain any untrue statement of a material fact nor omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. Parent, GP, Acquisition and the Company each agree promptly to correct any information provided by it for use in the Offer Documents if and to the extent that such information shall have become false or misleading in any material respect and Parent, GP and Acquisition further agree to take all steps necessary to cause the Offer Documents as so corrected to be filed with the SEC and to be disseminated to holders of Shares, in each case as and to the extent required by applicable federal securities laws. SECTION 1.2. Company Action. (a) The Company hereby approves of and consents to the Offer and the Merger and represents and warrants that (i) the Board has, subject to the terms and conditions set forth herein, adopted final and binding resolutions, which have not been amended or repealed, pursuant to which the Board (A) determined that this Agreement, and the transactions contemplated hereby and thereby, including the Offer and the Merger, are fair to, and in the best interests of, the stockholders of the Company, (B) approved and adopted this Agreement, and the Stockholders Agreement (defined herein) and the transactions contemplated hereby and thereby, including without limitation, the Merger and the acquisition of Shares by Parent or Acquisition pursuant to the options granted by the Stockholders under the Stockholders Agreement, and such approval (the "Section 203 Approval") constitutes the approval of the foregoing for the purposes of Section 203 of the Delaware General Corporation Law ("DGCL"), (C) taken all necessary action to avoid the occurrence of a "Distribution Date" (as defined in the Rights Agreement referred to in Section 2.8) with respect to the Rights, and (D) recommended that the stockholders of the Company accept the Offer, tender their Shares thereunder to Acquisition and, if required by law, approve and adopt this Agreement and the Merger (provided, however, that subject to the provisions of
Section 5.3 such recommendation may be withdrawn, modified or amended in connection with a Superior Proposal (as defined in Section 5.3)) and (ii) PaineWebber Incorporated and TM Capital Corp. have each delivered to the Board a written opinion to the effect that, as of the date of such opinion, the consideration to be received by the holders of the Shares (other than the Parent, GP, Acquisition and their affiliates) pursuant to the Offer and Merger is fair to such holders from a financial point of view. Subject only to the provisions of Section 5.3, the Company hereby consents to the inclusion in the Offer Documents of the recommendation of the Board described in the immediately preceding sentence.

(b) The Company hereby agrees to file with the SEC as soon as practicable after the date hereof a Solicitation/Recommendation Statement on Schedule 14D-9 pertaining to the Offer (together with any amendments thereof or supplements thereto, the "Schedule 14D-9") containing the recommendation described in
Section 1.2(a) and to promptly mail the Schedule 14D-9 to the stockholders of the Company. The Company represents and warrants that the Schedule 14D-9 will comply in all material respects with the provisions of applicable federal securities laws and, on the date filed with the SEC and on the date first published or sent or given to the Company's stockholders, as the case may be, shall not contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order

to make the statements therein, in light of the circumstances under which they were made, not misleading, except that no representation is made by the Company with respect to information supplied by Parent, GP or Acquisition in writing for inclusion in the Schedule 14D-9. The Company, Parent, GP and Acquisition each agrees promptly to correct any information provided by it for use in the Schedule 14D-9 if and to the extent that such information shall have become false or misleading in any material respect and the Company further agrees to take all steps necessary to cause the Schedule 14D-9 as so corrected to be filed with the SEC and disseminated to the holders of Shares, in each case as and to the extent required by applicable federal securities laws.

(c) In connection with the Offer, the Company will promptly furnish Parent and Acquisition with mailing labels, security position listings and any available listing or computer files containing the names and addresses of the record holders of the Shares as of a recent date and shall furnish Acquisition with such additional information and assistance (including, without limitation, updated lists of stockholders, mailing labels and lists of securities positions) as Acquisition or its agents may reasonably request in communicating the Offer to the record and beneficial holders of Shares. Subject to the requirements of applicable law, and except for such steps as are necessary to disseminate the Offer Documents and any other documents necessary to consummate the Merger, Parent, GP, Acquisition and their affiliates, associates, agents and advisors shall hold in confidence the information contained in any of such labels and lists, and use the information contained in any such labels, listings and files only in connection with the Offer and the Merger, and, if this Agreement shall be terminated, will deliver to the Company all copies of such information then in their possession.

SECTION 1.3. Boards of Directors and Committees; Section 14(f). (a) Promptly upon the purchase by Acquisition of Shares following the expiration date (as such date may be extended) of, and pursuant to, the Offer (the "Tender Offer Purchase Time") and from time to time thereafter, and subject to the last sentence of this Section 1.3(a), Acquisition shall be entitled to designate directors of the Company constituting a majority of the Board, and the Company shall use its best efforts to, upon request by Acquisition, promptly, at the Company's election, either increase the size of the Board to the extent permitted by its Certificate of Incorporation or secure the resignation of such number of directors as is necessary to enable Acquisition's designees to be elected to the Board and to cause Acquisition's designees to be so elected and to constitute at all times after the Tender Offer Purchase Time a majority of the Board. At such times, and subject to the last sentence of this Section 1.3(a), the Company will use its best efforts to cause persons designated by Acquisition to constitute the same percentage as is on the Board of (i) each committee of the Board (other than any committee of the Board established to take action under this Agreement), (ii) each board of directors of each subsidiary of the Company and (iii) each committee of each such board. Notwithstanding the foregoing, the Company shall use reasonable efforts to encourage James F. Clouser and Fred Ruegsegger to remain members of the Board until the Effective Time (as determined herein).

(b) The Company's obligation to appoint designees to the Board shall be subject to Section 14(f) of the Exchange Act and Rule 14f-1 promulgated thereunder. The Company shall promptly take all action required pursuant to such
Section and Rule in order to fulfill its obligations under this Section 1.3 and shall include in the Schedule 14D-9 such information with respect to the Company and its officers and directors as is required under such Section and Rule in order to fulfill its obligations under this Section 1.3. Acquisition will supply to the Company in writing

and be solely responsible for any information with respect to itself and its nominees, officers, directors and affiliates required by such Section and Rule.

(c) Following the election or appointment of Acquisition's designees pursuant to this Section 1.3 and prior to the Effective Time, any amendment or termination of this Agreement, extension of the performance or waiver of the obligations or other acts of Parent, GP or Acquisition or waiver of the Company's rights hereunder, shall require the concurrence of a majority of the Company's directors (or the concurrence of the director, if there is only one remaining) then in office who are directors on the date hereof, or are directors (other than directors designated by Acquisition in accordance with this Section 1.3) designated by such persons to fill any vacancy (the "Continuing Directors"). SECTION 1.4. Stockholders Agreement. In order to induce Parent, GP and Acquisition to enter into this Agreement and to perform their obligations hereunder and as a condition thereof, Parent, GP and Acquisition shall enter into the stockholders agreement (the "Stockholders Agreement") on even date hereof in the form attached hereto as Exhibit A stockholders of the Company listed in Schedule A to the Stockholders Agreement.

ARTICLE 2

THE MERGER

SECTION 2.1. The Merger. At the Effective Time (as defined below) and upon the terms and subject to the conditions of this Agreement and in accordance with the DGCL, Acquisition shall be merged with and into the Company (the "Merger"). Following the Merger, the Company shall continue as the surviving corporation (the "Surviving Corporation") and the separate corporate existence of Acquisition shall cease. GP, as the sole stockholder of Acquisition, hereby approves this Agreement, the Merger and the other transactions contemplated hereby.

SECTION 2.2. Closing of the Merger. The closing of the Merger will take place at a time (the "Closing Time") and on a date to be specified by the parties, which shall be no later than the second business day after satisfaction of the latest to occur of the conditions set forth in Article 8 at the offices of Dorsey & Whitney LLP, 250 Park Avenue, New York, New York 10177, unless another time, date or place is agreed to in writing by the parties hereto.

SECTION 2.3. Effective Time. Subject to the terms and conditions set forth in this Agreement, a certificate of merger (the "Merger Certificate") shall be duly executed and acknowledged by Acquisition and the Company and thereafter delivered at the Closing Time to the Secretary of State of the State of Delaware for filing pursuant to the DGCL. The Merger shall become effective at such time as a properly executed and certified copy of the Merger Certificate is duly accepted for record by the Secretary of State of the State of Delaware for filing pursuant to the DGCL, or such later time as Acquisition and the Company may agree upon and set forth in the Merger Certificate (not exceeding 30 days after the Merger Certificate is accepted for record; the time the Merger becomes effective being referred to herein as the "Effective Time").

SECTION 2.4.Effects of the Merger. The Merger shall have the effects set forth in the DGCL. Without limiting the generality of the foregoing and subject thereto at the Effective Time, all the properties, rights, privileges, powers and franchises of the Company and Acquisition shall vest in

the Surviving Corporation and all debts, liabilities and duties of the Company and Acquisition shall become the debts, liabilities and duties of the Surviving Corporation.

SECTION 2.5. Charter and Bylaws. The Certificate of Incorporation of the Company in effect at the Effective Time shall be the Certificate of Incorporation of the Surviving Corporation until amended in accordance with applicable law. The Bylaws of the Company in effect at the Effective Time shall be the Bylaws of the Surviving Corporation until amended in accordance with applicable law.

SECTION 2.6. Directors. The directors of Acquisition at the Effective Time shall be the initial directors of the Surviving Corporation, each to hold office in accordance with the charter and Bylaws of the Surviving Corporation until the next annual meeting of stockholders and until each such director's successor is duly elected or appointed and qualified.

SECTION 2.7. Officers. The officers of Acquisition at the Effective Time shall be the initial officers of the Surviving Corporation, each to hold office in accordance with the charter and Bylaws of the Surviving Corporation until such officer's successor is duly elected or appointed and qualified.

SECTION 2.8. Conversion of Shares.

(a) At the Effective Time, each Share issued and outstanding immediately prior to the Effective Time, together with the associated right to purchase shares of Series A Junior Participating Preferred Stock, par value $0.001 per share (individually, the "Right" and collectively, the "Rights"), issued pursuant to the Rights Agreement dated as of March 31, 1999 between the Company and US Stock Transfer Corporation, as Rights Agent (the "Rights Agreement" (other than (i) Shares together with any associated Rights held by any of the Company's subsidiaries, (ii) Shares together with any associated Rights held by Parent, GP, Acquisition or any other subsidiary of Parent and (iii) Dissenting Shares (defined herein)) shall, by virtue of the Merger and without any action on the part of Acquisition, the Company or the holder thereof, be converted into and shall become the right to receive the Per Share Amount in cash, without interest (the "Cash Merger Consideration"). Notwithstanding the foregoing, if between the date of this Agreement and the Effective Time, the Shares shall have been changed into a different number of shares or a different class by reason of any stock dividend, subdivision, reclassification, recapitalization, split, combination or exchange of shares, then the Cash Merger Consideration contemplated by the Merger shall be correspondingly adjusted to reflect such stock dividend, subdivision, reclassification, recapitalization, split, combination or exchange of shares.

(b) At the Effective Time, each Share, together with any associated Right, then owned by Parent, GP, Acquisition, the Company or any direct or indirect wholly-owned subsidiary of Parent, GP or Acquisition or of the Company shall, by virtue of the Merger and without any action on the part of Parent, GP, Acquisition, the Company or the holder thereof, be canceled and retired and will cease to exist and no payment shall be made with respect thereto.

(c) At the Effective Time, each share of common stock of Acquisition issued and outstanding immediately prior to the Effective Time shall be converted into and exchanged for one fully-paid and non-assessable share of common stock, par value $0.001 per share of the Surviving Corporation.

SECTION 2.9. Payment of Cash Merger Consideration.

(a) As of the Effective Time, Acquisition shall deposit with such agent or agents as may be appointed by Parent and Acquisition (the "Payment Agent") for the benefit of the holders of Shares in cash the aggregate amount necessary to pay the Cash Merger Consideration (such cash is hereinafter referred to as the "Merger Fund") payable pursuant to Section 2.8 in exchange for outstanding Shares.

(b) As soon as reasonably practicable after the Effective Time, the Payment Agent shall mail to each holder of record of a certificate or certificates which immediately prior to the Effective Time represented outstanding Shares (the "Certificates") whose shares were converted into the right to receive the Cash Merger Consideration pursuant to Section 2.8: (i) a letter of transmittal (which shall specify that delivery shall be effected and risk of loss and title to the Certificates shall pass only upon delivery of the Certificates to the Payment Agent and shall be in such form and have such other provisions as Parent and the Company may reasonably specify) and (ii) instructions on how to surrender the Certificates in exchange for the Cash Merger Consideration. Upon surrender to the Payment Agent of a Certificate for cancellation, together with such letter of transmittal duly executed, the holder of such Certificate shall be entitled to receive in exchange therefor a check representing the Cash Merger Consideration which such holder has the right to receive pursuant to the provisions of this Article 2 and the Certificate so surrendered shall forthwith be canceled. In the event of a transfer of ownership of Shares which is not registered in the transfer records of the Company, payment of the Cash Merger Consideration may be made to a transferee if the Certificate representing such Shares is presented to the Payment Agent accompanied by all documents required to evidence and effect such transfer and by evidence that any applicable stock transfer taxes have been paid. Until surrendered as contemplated by this Section 2.9, each Certificate shall be deemed at any time after the Effective Time to represent only the right to receive upon such surrender the Cash Merger Consideration as contemplated by this Section 2.9.

(c) In the event that any Certificate shall have been lost, stolen or destroyed, the Payment Agent shall issue in exchange therefor, upon the making of an affidavit of that fact by the holder thereof, such Cash Merger Consideration as may be required pursuant to this Agreement; provided, however, that Acquisition or its Payment Agent may, in its discretion, require the delivery of a suitable bond or indemnity.

(d) All Cash Merger Consideration paid upon the surrender for exchange of Shares in accordance with the terms hereof shall be deemed to have been paid in full satisfaction of all rights pertaining to such Shares; subject, however, to the Surviving Corporation's obligation to pay any dividends or make any other distributions with a record date prior to the Effective Time which may have been declared or made by the Company on such Shares in accordance with the terms of this Agreement, or prior to the date hereof and which remain unpaid at the Effective Time, and there shall be no further registration of transfers on the stock transfer books of the Surviving Corporation of the Shares which were outstanding immediately prior to the Effective Time. If after the Effective Time Certificates are presented to the Surviving Corporation for any reason they shall be canceled and exchanged as provided in this Article 2.

(e) Any portion of the Merger Fund which remains undistributed to the stockholders of the Company for six months after the Effective Time shall be delivered to Parent upon demand and

any stockholders of the Company who have not theretofore complied with this Article 2 shall thereafter look only to Parent for payment of their claim for the Cash Merger Consideration.

(f) Neither Acquisition nor the Company shall be liable to any holder of Shares for cash from the Merger Fund delivered to a public official pursuant to any applicable abandoned property, escheat or similar law.

SECTION 2.10. Stock Options; Purchase Plan.

(a) At the Effective Time, each outstanding option to purchase Shares (a "Company Stock Option" or collectively "Company Stock Options") issued pursuant to the Company's 1997 Equity Incentive Plan and its Second Amended and Restated 1986 Stock Option Plan (a "Company Option Plan" or collectively "Company Option Plans") shall vest in full and the Surviving Corporation shall pay to the holder of each outstanding Company Stock Option an amount equal to the excess, if any, of the Per Share Amount over the exercise price per Share of such Company Stock Option, less the amount of Taxes (defined below) required to be withheld under Federal, state or local laws and regulations multiplied by the number of Shares subject to such Company Stock Option. To the extent required the Company will take all reasonable steps to effectuate the foregoing provisions of this Section 2.10.

(b) Except as provided herein or as otherwise agreed to by the parties and to the extent permitted by the Company Option Plan, the Company Option Plans shall terminate as of the Effective Time and any rights under any provisions under the Company Option Plans and any awards issued thereunder shall be canceled as of the Effective Time.

(c) The Company shall amend the 1997 Employee Stock Purchase Plan to provide for (A) the suspension of participation during the offering periods commencing subsequent to the date of the Agreement for the pendency of the Merger and subject to the successful consummation of the Merger and (B) the termination of such Plan as of the Effective Time.

ARTICLE 3
REPRESENTATIONS AND WARRANTIES OF THE COMPANY

Except as set forth on the Disclosure Schedule previously delivered by the Company to Parent (the "Company Disclosure Schedule"), the Company hereby represents and warrants to each of Parent, GP and Acquisition as follows:

SECTION 3.1. Organization and Qualification; Subsidiaries.

(a) Section 3.1 of the Company Disclosure Schedule identifies each subsidiary of the Company as of the date hereof and its respective jurisdiction of incorporation or organization, as the case may be. The Company and each of its subsidiaries is duly organized, validly existing and in good standing under the laws of the jurisdiction of its incorporation or organization as set forth in Section 3.1 of the Company Disclosure Schedule and has all requisite power and authority to own lease and operate its properties and to carry on its businesses as now being conducted, except where such failure to so qualify would not have a Material Adverse Effect (defined herein) on the Company. The Company has heretofore provided Parent with access to accurate and complete copies of the charter and Bylaws (or similar governing documents), as currently in effect, of the Company and its subsidiaries.

(b) Except as disclosed in Section 3.1(b) of the Company Disclosure Schedule, each of the Company and its subsidiaries is duly qualified or licensed and in good standing to do business in each jurisdiction in which the property owned, leased or operated by it or the nature of the business conducted by it makes such qualification or licensing necessary, except in such jurisdictions where the failure to be so duly qualified or licensed and in good standing would not have a Material Adverse Effect on the Company. When used in connection with the Company or its subsidiaries, the term "Material Adverse Effect" means any change or effect (i) that is materially adverse to the business, properties, financial condition or results of operations of the Company and its subsidiaries, taken as whole, or (ii) that would materially impair the ability of the Company to consummate the transactions contemplated hereby.

SECTION 3.2. Capitalization of the Company and its Subsidiaries.

(a) As of the date hereof, the authorized stock of the Company consists of 15,000,000 Shares, of which, as of May 31, 1999, 8,005,802 Shares were issued and outstanding, and 1,000,000 shares of preferred stock, par value $0.001 per share, no shares of which are outstanding. All of the outstanding Shares have been validly issued and are fully paid, nonassessable and free of preemptive rights. As of May 31, 1999, approximately 1,182,210 Shares were reserved for issuance and issuable upon or otherwise deliverable in connection with the exercise of outstanding Company Stock Options issued pursuant to the Company Option Plans referred to in Section 2.10. Between May 31, 1999 and the date hereof, no shares of the Company's stock have been issued other than pursuant to Company Stock Options, and between May 31, 1999 and the date hereof no stock options have been granted. Except as set forth above and in Section 3.2(a) of the Company Disclosure Schedule, as of the date hereof, there are issued, reserved for issuance, or outstanding (i) no shares of stock or other voting securities of the Company, (ii) no securities of the Company or its subsidiaries convertible into or exchangeable for shares of stock or voting securities of the Company, (iii) no options or other rights to acquire from the Company or its subsidiaries and, except as described in the Company SEC Reports (defined herein), no obligations of the Company or its subsidiaries to issue any stock, voting securities or securities convertible into or exchangeable for stock or voting securities of the Company, (iv) no bonds, debentures, notes or other indebtedness or obligations of the Company or any of its subsidiaries entitling the holders thereof to have the right to vote (or which are convertible into, or exercisable or exchangeable for, securities entitling the holders thereof to have the right to vote) with the stockholders of the Company or any of its subsidiaries on any matter, (v) no equity equivalent interests in the ownership or earnings of the Company or its subsidiaries or other similar rights, and (vi) the Rights (collectively "Company Securities"). As of the date hereof, there are no outstanding obligations of the Company or its subsidiaries (absolute, contingent or otherwise) to repurchase, redeem or otherwise acquire any Company Securities. There are no Shares outstanding subject to rights of first refusal of the Company, nor are there any pre-emptive rights with respect to any Shares. Other than this Agreement, there are no stockholder agreements, voting trusts or other agreements or understandings to which the Company is a party or by which it is bound relating to the voting or registration of any shares of stock of the Company.

(b) Except as disclosed in Section 3.2(b) of the Company Disclosure Schedule, all of the outstanding stock of the Company's subsidiaries is owned by the Company, directly or indirectly,

free and clear of any Lien (defined herein) or any other limitation or restriction (including any restriction on the right to vote or sell the same except as may be provided as a matter of law). There are no securities of the Company or its subsidiaries convertible into or exchangeable for, no options or other rights to acquire from the Company or its subsidiaries and no other contract, understanding, arrangement or obligation (whether or not contingent) providing for, the issuance or sale, directly or indirectly, of any stock or other ownership interests in, or any other securities of any subsidiary of, the Company. There are no outstanding contractual obligations of the Company or its subsidiaries to repurchase, redeem or otherwise acquire any outstanding shares of capital stock or other ownership interests in any subsidiary of the Company. For purposes of this Agreement, "Lien" means, with respect to any asset (including without limitation any security), any mortgage, lien, pledge, charge, security interest or encumbrance of any kind in respect of such asset.

(c) The Shares and the Rights constitute the only classes of equity securities of the Company or its subsidiaries registered or required to be registered under the Exchange Act.

SECTION 3.3. Authority Relative to this Agreement; Recommendation.

The Company has all necessary corporate power and authority to execute and deliver this Agreement and, if required by law, subject to stockholder approval of the Merger, to consummate the transactions contemplated hereby. The execution and delivery of this Agreement and the consummation of the transactions contemplated hereby have been duly and validly authorized by the Board and no other corporate proceedings on the part of the Company are necessary to authorize this Agreement or to consummate the transactions contemplated hereby except, if required by law, the approval and adoption of this Agreement and the Merger by the holders of the outstanding Shares. This Agreement has been duly and validly executed and delivered by the Company and assuming the due authorization, execution and delivery by Parent, GP and Acquisition, constitutes a valid, legal and binding agreement of the Company enforceable against the Company in accordance with its terms, except as such enforceability may be limited by any applicable bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the enforcement of creditors' rights generally, and except as the availability of equitable remedies may be limited by the application of general principles of equity (regardless of whether such equitable principle is applied in a proceeding at law or in equity).

The Board has duly and validly approved, and taken all corporate actions required to be taken by the Board for the consummation of, the transactions contemplated hereby, including the Offer and the acquisition of the Shares pursuant thereto and the Merger. The Board has taken all appropriate action so that none of Parent, GP or Acquisition will be an "interested stockholder" within the meaning of Section 203 of the DGCL by virtue of Parent, GP, Acquisition and the Company entering into this Agreement, or the Stockholders Agreement or any other agreement contemplated hereby or thereby and consummating the transactions contemplated hereby and thereby.

SECTION 3.4. SEC Reports; Financial Statements.

(a) The Company has filed all required forms, reports and documents ("Company SEC Reports") with the SEC since its initial public offering on August 13, 1997, each of which has complied in all material respects with all applicable requirements of the Securities Act of 1933, as amended (the "Securities Act"), and the Exchange Act, each as in effect on the dates such

forms, reports and documents were filed. None of such Company SEC Reports, including, without limitation, any financial statements or schedules included or incorporated by reference therein, contained when filed any untrue statement of a material fact or omitted to state a material fact required to be stated or incorporated by reference therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading. The audited consolidated financial statements of the Company included in the Company SEC Reports fairly present in conformity with GAAP (except as may be indicated in the notes thereto or, in the case of unaudited consolidated quarterly statements, as permitted by Form 10-Q of the SEC) the consolidated financial position of the Company and its consolidated subsidiaries as of the dates thereof and their consolidated results of operations and changes in financial position for the periods then ended.

(b) The Company has heretofore made available or promptly will make available to Acquisition or Parent a complete and correct copy of any amendments or modifications which are required to be filed with the SEC but have not yet been filed with the SEC to agreements, documents or other instruments which previously had been filed by the Company with the SEC pursuant to the Exchange Act.

SECTION 3.5. Information Supplied. Neither the Schedule 14D-9 nor any of the information supplied or to be supplied by the Company for inclusion or incorporation by reference in the Offer Documents, Schedule 14D-9, any other tender offer materials, Schedule 14A or 14C, or the proxy statement or information statement ("Proxy Statement") relating to any meeting of the Company's stockholders to be held in connection with the Merger (all of the foregoing documents, collectively, the "Disclosure Statements") will, at the date each and any of the Disclosure Statements is filed with the SEC or are first published, mailed to stockholders of the Company, and at the time of the meeting of stockholders of the Company to be held, if necessary, in connection with the Merger (the "Stockholders' Meeting" (defined herein)) contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they are made, not misleading; provided, however, that no representation or warranty is made by the Company with respect to information supplied by Parent, Acquisition or GP, for inclusion in the Disclosure Statements. The Disclosure Statements will comply as to form in all material respects with all provisions of applicable law.

SECTION 3.6. Consents and Approvals; No Violations. Except for filings, permits, authorizations, consents and approvals as may be required under, and other applicable requirements of, the Exchange Act, state securities laws ("Blue Sky Laws"), the Hart-Scott-Rodino Antitrust Improvements Act of 1976, as amended (the "HSR Act"), and the securities or antitrust laws of any foreign country, and the filing and recordation and acceptance for record of the Merger Certificate as required by the DGCL, respectively, no filing with or notice to and no permit, authorization, consent or approval of any court or tribunal, or administrative governmental or regulatory body, agency or authority (a "Governmental Entity") is necessary for the execution and delivery by the Company of this Agreement or the consummation by the Company of the transactions contemplated hereby, except where the failure to obtain such permits, authorizations, consents or approvals or to make such filings or give such notice would not have a Material Adverse Effect. Neither the execution, delivery and performance of this

Agreement by the Company nor the consummation by the Company of the transactions contemplated hereby will (i) conflict with or result in any breach of any provision of the respective charter or Bylaws (or similar governing documents) of the Company or any of its subsidiaries, (ii) result in a violation or breach of or constitute (with or without due notice or lapse of time or both) a default (or give rise to any right of termination, amendment, cancellation or acceleration or Lien) under any of the terms, conditions or provisions of any note, bond, mortgage, indenture, lease, license, contract, agreement or other instrument or obligation to which the Company or any of its subsidiaries is a party or by which any of them or any of their respective properties or assets may be bound or (iii) conflict with or violate any order, writ, injunction, decree, law, statute, rule or regulation applicable to the Company or any of its subsidiaries or any of their respective properties or assets except, in the case of (ii) or (iii), for violations, breaches or defaults which would not have a Material Adverse Effect.

SECTION 3.7. Compliance with Applicable Law. Neither the Company nor any of its subsidiaries is in conflict with, or in default or violation of (a) its respective charter or certificate of incorporation, bylaws, or other charter or organization documents, (b) to the Company's Knowledge (defined herein), any law, statute, rule, regulation, order, judgment, writ, injunction or decree applicable to the Company or any of its subsidiaries or any of their respective properties or assets, or (c) any note, bond, mortgage, indenture, contract, agreement, lease, license, permit, franchise or other instrument or obligation to which the Company or any of its subsidiaries is a party or by which the Company or any of its subsidiaries or any property or asset of the Company or any of its subsidiaries may be bound or affected, in the case of (b) or (c), the effect of which conflict, default or violation, either individually or in the aggregate, would be reasonably likely to be a Material Adverse Effect. To the Company's Knowledge, the Company and its subsidiaries hold all material licenses, permits, approvals and other authorizations of Governmental Entities, and are in substantial compliance with all applicable laws and governmental regulations in connection with their businesses as now being conducted (except where such non-compliance would not have a Material Adverse Effect on the Company). For the purposes hereof, the term "Knowledge" with respect to the Company means the actual knowledge of the officers and directors of the Company including knowledge obtained in the ordinary course of the operation of the business of the Company from the managers of the facilities of the Company.

SECTION 3.8. No Undisclosed Liabilities; Absence of Changes. Except to the extent publicly disclosed in the Company's SEC Reports or in the Company Disclosure Schedule, as of December 31, 1998, none of the Company or any of its subsidiaries had any material liabilities or obligations of any nature, whether or not accrued, contingent or otherwise, that would be required by GAAP to be reflected on a consolidated balance sheet of the Company and its subsidiaries (including the notes thereto) or which would have a Material Adverse Effect on the Company and since such date, the Company has incurred no such liability or obligation. Since December 31, 1998, except as disclosed in the Company SEC Reports, (a) the Company and its subsidiaries have conducted their respective businesses only in the ordinary course and in a manner consistent with past practice and (b) there has not been (i) any change, event, occurrence or circumstance in the business, operations, properties, financial condition or results of operations of the Company or any of its subsidiaries which, individually or in the aggregate, has

a Material Adverse Effect on the Company (except for changes, events, occurrences or circumstances (A) with respect to general economic conditions or (B) arising as a result of the transactions contemplated hereby), (ii) any material change by the Company in its accounting methods, principles or practices, (iii) any authorization, declaration, setting aside or payment of any dividend or distribution or capital return in respect of any stock of, or other equity interest in, the Company or any of its subsidiaries, (iv) any material revaluation for financial statement purposes by the Company or any of its subsidiaries of any asset (including, without limitation, any writing down of the value of any property, investment or asset or writing off of notes or accounts receivable), (v) other than payment of compensation for services rendered to the Company or any of its subsidiaries in the ordinary course of business consistent with past practice or the grant of Company Stock Options as described in (and in amounts consistent with) Section 3.2, any material transactions between the Company or any of its subsidiaries, on the one hand, and any (A) officer or director of the Company or any of its subsidiaries, (B) record or beneficial owner of five percent (5%) or more of the voting securities of the Company, or (C) affiliate of any such officer, director or beneficial owner, on the other hand, or (vi) other than pursuant to the terms of the plans, programs or arrangements specifically referred to in Section 3.11 or Section 3.11 of the Company Disclosure Schedule or in the ordinary course of business consistent with past practice, any increase in or establishment of any bonus, insurance, welfare, severance, deferred compensation, pension, retirement, profit sharing, stock option (including, without limitation, the granting of stock options, stock appreciation rights, performance awards or restricted stock awards), stock purchase or other employee benefit plan, or any other increase in the compensation payable or to become payable to any employees, officers, directors or consultants of the Company or any of its subsidiaries, which increase or establishment, individually or in the aggregate, will result in a material liability.

SECTION 3.9. Litigation. Except as publicly disclosed in the Company SEC Reports, there is no suit, claim, action, proceeding or investigation pending or, to the Company's Knowledge, threatened against the Company or any of its subsidiaries or any of their respective properties or assets before any Governmental Entity which individually or in the aggregate could reasonably be expected to have a Material Adverse Effect on the Company or could reasonably be expected to prevent or delay the consummation of the transactions contemplated by this Agreement. Except as publicly disclosed by the Company in the Company SEC Reports, none of the Company or its subsidiaries nor any property or asset of the Company or any of its subsidiaries is subject to any outstanding order, writ, injunction or decree which insofar as can be reasonably foreseen in the future could reasonably be expected to have a Material Adverse Effect on the Company or could reasonably be expected to prevent or delay the consummation of the transactions contemplated hereby.

SECTION 3.10. Year 2000 Compliance. To the Company's Knowledge, the disclosure contained in the Company's quarterly report on Form 10-Q for the quarter ended December 31, 1998 does not contain any material misstatement or omission regarding the status of the Company's Year 2000 readiness.

SECTION 3.11. Employee Benefit Plans; Labor Matters

(a) Section 3.11(a) of the Company Disclosure Schedule sets forth each plan which is subject to the Employee Retirement Income Security Act of 1974, as amended ("ERISA"), and each

other material agreement, arrangement or commitment which is an employment or consulting agreement, executive or incentive compensation plan, bonus plan, deferred compensation agreement, employee pension, profit sharing, savings or retirement plan, employee stock option or stock purchase plan, group life, health, or accident insurance or other employee benefit plan, agreement, arrangement or commitment, including, without limitation, severance, vacation, holiday or other bonus plans, currently maintained by the Company or any of its subsidiaries for the benefit of any present or former employees, officers or directors of the Company or any of its subsidiaries ("Company Personnel") or with respect to which the Company or any of its subsidiaries has liability or makes or has an obligation to make contributions (each such plan, agreement, arrangement or commitment set forth in Section 3.11(a) of the Company Disclosure Schedule being hereinafter referred to as a "Company Employee Plan").

(b) With respect to each Company Employee Plan maintained or contributed to by the Company or any trade or business which is under common control with the Company within the meaning of Section 414 of the Code (the "Company Employee Plans"), the Company has made available to Parent a true and complete copy of, to the extent applicable, (i) such Company Employee Plan, (ii) the most recent annual report (Form 5500), (iii) each trust agreement related to such Company Employee Plan, (iv) the most recent summary plan description for each Company Employee Plan for which such a description is required, (v) the most recent actuarial report relating to any Company Employee Plan subject to Title IV of ERISA and (vi) the most recent IRS determination letter issued with respect to any Company Employee Plan that is intended to qualify under Section 401(a) of the Code.

(c) Each Company Employee Plan which is intended to be qualified under Section 401(a) of the Code has received a favorable determination from the IRS covering the provisions of the Tax Reform Act of 1986 stating that such Company Employee Plan is so qualified and nothing has occurred since the date of such letter that could reasonably be expected to affect the qualified status of such plan. Each Company Employee Plan has been operated in all material respects in accordance with its terms and the requirements of applicable law (except as would not have a Material Adverse Effect on the Company). Neither the Company nor any ERISA Affiliate of the Company has incurred or is reasonably expected to incur any liability under Title IV of ERISA in connection with any Company Employee Plan (except as would not have a material effect on the Company).

(d) To the Company's Knowledge, no employee of the Company or any of its subsidiaries (i) is in violation of any term of any employment contract, patent disclosure agreement, noncompetition agreement, or any restrictive covenant with a former employer relating to the right of any such employee to be employed by the Company or any of its subsidiaries because of the nature of the business conducted or presently proposed to be conducted by the Company or any of its subsidiaries or to the use of trade secrets or proprietary information of others and (ii) has given notice to the Company or any of its subsidiaries, that any employee intends to terminate his or her employment with the Company except for terminations of a nature and number that are consistent with the Company's prior experience. Neither the Company nor any of its subsidiaries is a party to any collective bargaining agreement or other labor union contract applicable to Company Personnel. To the Company's Knowledge, there are no activities or proceedings of any labor union to organize any employees of the Company or any of its subsidiaries and there are no strikes, or material slowdowns, work stoppages or lockouts, or threats thereof by or with respect to any employees of the Company or any of its subsidiaries. The Company and its subsidiaries are and have been in compliance with all applicable laws

regarding employment practices, terms and conditions of employment, and wages and hours (including, without limitation, OSHA, ERISA, WARN or any similar state or local law) (except as would not have a Material Adverse Effect on the Company).

(e) Except as disclosed in Section 3.11(e) of the Company Disclosure Schedule, the transactions contemplated by this Agreement (either alone or together with any other transaction(s) or event(s)) will not (i) entitle any Company Personnel to severance pay or other similar payments under any Company Employee Plan, (ii) accelerate the time of payment or vesting or increase the amount of benefits due under any Company Employee Plan or compensation to any Company Personnel, (iii) result in any payments (including parachute payments) under any Company Employee Plan becoming due to any Company Personnel, or (iv) terminate or modify or give a third party a right to terminate or modify the provisions or terms of any Company Employee Plan.

SECTION 3.12. Environmental Laws and Regulations.

(a) Except as publicly disclosed in the Company SEC Reports, to the Company's Knowledge, (i) the properties, assets and operations of the Company and its subsidiaries are in material compliance with all applicable federal, state, local and foreign laws and regulations, orders, decrees, judgments, permits and licenses relating to public and worker health and safety and to the protection and clean-up of the natural environment (including, without limitation, ambient air, surface water, ground water, land surface or subsurface strata) and activities or conditions relating thereto, including, without limitation, those relating to the generation, handling, disposal, transportation or release of hazardous materials (collectively "Environmental Laws"), except for non-compliance that would not have a Material Adverse Effect, which compliance includes but is not limited to, the possession by the Company and its subsidiaries of all material permits and other governmental authorizations required under applicable Environmental Laws and compliance with the terms and conditions thereof; (ii) none of the Company or its subsidiaries has received written notice of or, to the Company's Knowledge, is the subject of any Environmental Claim (defined below) that could reasonably be expected to have a Material Adverse Effect on the Company; and (iii) to the Company's Knowledge, there are no circumstances that are reasonably likely to prevent or interfere with such material compliance in the future.

(b) Except as disclosed in the Company SEC Reports, there is no action, cause of action, claim, investigation, demand or notice by any person or entity alleging liability under or non-compliance with any Environmental Law (an "Environmental Claim") which could reasonably be expected to have a Material Adverse Effect that is pending or, to the Company's Knowledge, threatened against the Company or its subsidiaries or, to the Company's Knowledge, against any person or entity whose liability for any Environmental Claim the Company or any of its subsidiaries has or may have retained or assumed either contractually or by operation of law.

SECTION 3.13. Taxes

(a) For purposes of this Agreement: (i) "Tax" or "Taxes" means any taxes, charges, fees, levies, or other assessments imposed by any U.S. or foreign governmental entity, whether national, state, county, local or other political subdivision, including, without limitation, all net income, gross income, sales and use, rent and occupancy, value added, ad valorem, transfer, gains, profits, excise, franchise, real and personal property, gross receipt, capital stock, business and occupation, disability, employment, payroll, license, estimated, or withholding

taxes or charges imposed by any governmental entity, and includes any interest and penalties on or additions to any such taxes (and includes taxes for which the Company and/or any of its subsidiaries, as the case may be, may be liable in its own right, or as the transferee of the assets of, or as successor to, any other corporation, association, partnership, joint venture, or other entity, or under Treasury Regulation Section 1.1502-6 or any similar provision of foreign, state or local law); and (ii) "Tax Return" means a report, return or other information required to be supplied to a governmental entity with respect to Taxes including, where permitted or required, group, combined or consolidated returns for any group of entities that includes the Company or any of its subsidiaries.

(b) Except as set forth in Section 3.13(b) of the Company Disclosure Schedule, the Company and each of its subsidiaries, and any affiliated or combined group of which the Company or any of its subsidiaries is or was a member for applicable Tax purposes, have (i) filed all federal income and all other Tax Returns required to be filed by applicable law and all such federal income and other Tax Returns (A) reflect the liability for Taxes of the Company and each of its subsidiaries except to the extent that a reserve for Taxes is reflected on the balance sheet or the notes thereto including in the most recent consolidated financial statements of the Company and its subsidiaries contained in the Company SEC Reports, and (B) were filed on a timely basis and (ii) within the time and in the manner prescribed by law, paid (and until the Closing Time will pay within the time and in the manner prescribed by law) all Taxes that were or are due and payable as set forth in such Tax Returns.

(c) Each of the Company and, where applicable, the Company's subsidiaries has established (and until the Closing Time will maintain on at least a quarterly basis) on its books and records reserves adequate to pay all Taxes of the Company or such respective subsidiary, as the case may be, in accordance with GAAP, which are reflected in the most recent consolidated financial statements of the Company and its subsidiaries contained in the Company SEC Reports, as applicable, to the extent required by GAAP.

(d) Except as disclosed in Section 3.13(d) of the Company Disclosure Schedule, neither the Company nor any subsidiary thereof has requested any extension of time within which to file any income, franchise or other Tax Return, which Tax Return has not been filed as of the date hereof.

(e) Except as disclosed in Section 3.13(e) of the Company Disclosure Schedule, neither the Company nor any subsidiary thereof has executed any outstanding waivers or comparable consents regarding the application of the statute of limitations with respect to any income, franchise or other Taxes or Tax Returns.

(f) Except as disclosed in Section 3.13(f) of the Company Disclosure Schedule, no deficiency for any Tax which, alone or in the aggregate with any other deficiency or deficiencies, would exceed $250,000, has been proposed in writing, asserted in writing, or assessed against the Company and/or any subsidiary thereof that has not been resolved and paid in full or otherwise settled, no audits or other administrative proceedings are presently in progress or, to the Company's Knowledge, pending, or threatened in writing with regard to any Taxes or Tax Returns of the Company and/or any subsidiary thereof, and no written claim is currently being made by any authority in a jurisdiction where any of the Company or any subsidiary thereof, as the case may be, does not file Tax Returns that it is or may be subject to Tax in that jurisdiction.

(g) Except as disclosed on Section 3.13(g) of the Company Disclosure Schedule, neither the Company nor any of its subsidiaries is a party to any agreement relating to allocating or sharing of the payment of, or liability for, Taxes except an agreement between or among solely the Company and one or more of such subsidiaries or between such subsidiaries.

(h) The Company does not constitute and for the past five years has not constituted a "United States real property holding corporation" within the meaning of Section 897(c)(2) of the Code.

SECTION 3.14. Properties. Section 3.14 of the Company Disclosure Schedule contains a true and complete list (identifying the relevant owners, lessors and lessees) of all real properties owned by the Company or any of its subsidiaries. Each of the Company and its subsidiaries has good and marketable title to all properties, assets and rights of any kind whatsoever (whether real, personal or mixed, and whether tangible or intangible) owned by it (collectively, the "Company Real Assets"), in each case free and clear of any material mortgage, security interest, deed of trust, claim, charge, title defect or other lien or encumbrance, except (a) as shown on the consolidated balance sheet of the Company and its subsidiaries dated December 31, 1998 and the notes thereto, (b) for any mortgage, security interest, deed of trust, claim, charge, title defect or other lien or encumbrance arising by reason of (i) taxes, assessments or governmental charges not yet delinquent or which are being contested in good faith, (ii) deposits to secure public or statutory obligations in lieu of surety or appeal bonds entered into in the ordinary course of business, (iii) operation of law in favor of carriers, warehousemen, landlords, mechanics, materialmen, laborers, employees or suppliers, incurred in the ordinary course of business for sums which are not yet delinquent or are being contested in good faith by negotiations or by appropriate proceedings which suspend the collection thereof and (iv) matters of public record not having a material adverse effect in the use or marketability of the Company Real Assets ("Permitted Liens"), or (c) as set forth on Section 3.14 of the Company Disclosure Schedule. There are no pending or, to the Company's Knowledge, threatened condemnation proceedings against or affecting any material Company Real Assets, and none of the material Company Real Assets is subject to any commitment or other arrangement for its sale to a third party outside the ordinary course of business.

SECTION 3.15. Material Contracts and Commitments.

(a) Section 3.15 of the Company Disclosure Schedule contains a true and complete list of all of the following contracts, agreements and commitments, whether oral or written ("Contracts"), to which the Company or any of its subsidiaries is a party or by which any of them or any of their material Company Real Assets is bound, as each such contract or commitment may have been amended, modified or supplemented:

(i) all Contracts pursuant to which the Company or its subsidiaries holds a leasehold interest in or otherwise has an economic interest in any real property, other than property described in Section 3.14 of the Company Disclosure Schedule;

(ii) all Contracts granting or obtaining a franchise or license to utilize a brand name or other rights of a system providing sterilization services, or granting or obtaining a license or sublicense of any material trademark, trade name, copyright, patent, service mark, or trade secret, or any rights therein or application

therefor other than for contracts related to packaged software for the Company's internal use;

(iii) all partnership or joint venture Contracts;

(iv) all loan agreements, notes, bonds, debentures, debt instruments, evidences of indebtedness, debt securities, or other Contracts relating to any indebtedness of the Company or any of its subsidiaries in an amount in excess of $250,000, or involving the direct or indirect guaranty or suretyship by the Company or any of its subsidiaries of any indebtedness in an amount in excess of $250,000;

(v) all Contracts that, after the date hereof, obligate the Company or any of its subsidiaries to pay, pledge, or encumber or restrict assets in an aggregate amount in excess of $250,000, except with respect to such Contracts entered into in connection with facilities currently under construction in which case such excess amount shall be $1,000,000;

(vi) all Contracts by which the Company has committed to extend credit to third parties other than Contracts entered into with customers in the ordinary course of business;

(vii) all Contracts with the 25 largest (based on revenue paid to the Company) customers of the Company during the fiscal year ended March 31, 1999; and

(viii) all Contracts that limit or restrict the ability of the Company or any of its subsidiaries to compete or otherwise to conduct business in any material manner or place.

(b) The Company has heretofore made available to the Parent true and complete copies of all of the Contracts required to be set forth in Section 3.15 of the Company Disclosure Schedule except those required by Section 3.15(vii) which will be provided to Parent as soon as is practicable after the date hereof. Each such Contract is valid and binding in accordance with its terms, and is in full force and effect (except as set forth in Section 3.15 of the Company Disclosure Schedule), provided that foregoing representation is to the Company's Knowledge with respect to the other parties to such Contracts. Neither the Company nor any of its subsidiaries is in default in any material respect with respect to any such Contract, nor does any condition exist that with notice or lapse of time or both would constitute such a material default thereunder or permit any other party thereto to terminate such Contract. To the Company's Knowledge, no other party to any such Contract is in default in any material respect with respect to any such Contract. No party has given any written notice (i) of termination or cancellation of any such Contract or (ii) that it intends to assert a breach of any such Contract, whether as a result of the transactions contemplated hereby or otherwise. Each Contract identified in Section 3.15 of the Company Disclosure Schedule in response to any item under this Section 3.15 shall be deemed incorporated by reference to all other items in this Section 3.15.

SECTION 3.16. Intangible Property.

(a) The Company has made available to the Parent a list of the Intangible Property (as defined below) which is material to the Company and its subsidiaries in which the Company or any of its subsidiaries has an interest.

(b) Except as set forth on Section 3.16 of the Company Disclosure Schedule:

(i) the Company and its subsidiaries own or have the right to use, all material Intangible Property used in the conduct of their business as presently conducted;

(ii) the Company and its subsidiaries have performed all material obligations required to be performed by them, and are not in default under any material contract or arrangement relating to any material Intangible Property;

(iii) the execution, delivery and performance of this Agreement and the consummation of the transactions contemplated hereby will not breach, violate or conflict with any agreement related to any material Intangible Property, will not cause the forfeiture or termination or give rise to a right of forfeiture or termination of, or in any material way impair the right of the Company or any of its subsidiaries to use, sell, license or dispose of or to bring any action for the infringement of, any material Intangible Property or material portion thereof;

(iv) there are no royalties, honoraria, fees or other payments payable by the Company or any of its subsidiaries to any person by reason of the ownership, use, license, sale or disposition of any material Intangible Property;

(v) the conduct of the business by the Company and its subsidiaries does not violate any material license or agreement with any third party; and

(vi) neither the Company nor any of its subsidiaries has received any notice to the effect (or is otherwise aware) that any material Intangible Property or the use thereof by the Company or any of its subsidiaries conflicts with any rights of any person.

(c) As used herein "Intangible Property" means all patents, patent applications (pending or otherwise), material internally developed (including by third parties) computer software, registered copyrights, and currently used brand names, service marks, trademarks, tradenames, and all registrations or applications for registration of any of the foregoing.

SECTION 3.17. Brokers. No broker, finder or investment banker (other than PaineWebber Incorporated, TM Capital Corp. and SG Cowen Securities Corporation, the Company's financial advisers, a true and correct copy of whose entire engagement agreements have been provided to Parent) is entitled to any brokerage, finder's or other fee or commission in connection with the transactions contemplated by this Agreement based upon arrangements made by or on behalf of the Company.

SECTION 3.18. Certain Business Practices. None of the Company, any of its subsidiaries or any directors or officers of the Company or any of its subsidiaries (provided that as to the directors and officers of the Company's Thailand subsidiary such representation is made to the Company's Knowledge), nor to the Company's Knowledge, agents or employees of the Company or any of its subsidiaries, has (a) used any funds for unlawful contributions, gifts, entertainment or other unlawful expenses related to political activity, (b) made any unlawful payment to foreign or domestic government officials or employees or to foreign or domestic political parties or campaigns or violated any provision of the Foreign Corrupt Practices Act of 1977, as amended, or (c) made any other unlawful payment.

SECTION 3.19 Applicability of State Takeover Statutes. The Section 203 Approval is valid and in full force and effect. Section 203 of the DGCL will not apply to this Agreement, the Stockholders Agreement, the Offer or the acquisition of shares pursuant to the Offer or the

Stockholders Agreement or the Merger. No other state takeover statute or similar statute or regulation applies or purports to apply to this Agreement, the Stockholders Agreement, the Offer, Merger or the other transactions contemplated hereby or thereby.

SECTION 3.20 Amendment to the Rights Agreement. The Company's Board of Directors has taken all necessary action (including any amendment thereof) under the Rights Agreement so that (x) none of the execution or delivery of this Agreement, or the Stockholders Agreement, consummation of the Offer, or any of the other transactions contemplated hereby or thereby will cause (i) the Rights to become exercisable under the Rights Agreement, (ii) Parent, GP or Acquisition to be deemed an "Acquiring Person" (as defined in the Rights Agreement), or
(iii) the "Distribution Date" (as defined in the Rights Agreement) to occur upon any such event and (y) the "Expiration Date" (as defined in the Rights Agreement) of the Rights shall occur immediately prior to the Effective Time.

SECTION 3.21 Opinion of Financial Advisor. The Company has received the opinion of PaineWebber Incorporated and TM Capital Corp. to the effect that, as of the date of this Agreement, the consideration to be received in the Offer and the Merger by the Company's stockholders is fair to the Company's stockholders from a financial point of view, and a complete and correct signed copy of such opinion has been, or promptly upon receipt thereof will be, delivered to Parent. The Company has been authorized by PaineWebber Incorporated and TM Capital Corp. to permit the inclusion of such opinion in its entirety in the Offer Documents and the Schedule 14D-9 and the Proxy Statement, so long as such inclusion is in form and substance reasonably satisfactory to PaineWebber Incorporated and TM Capital Corp. and its counsel.

SECTION 3.22 Employees. Section 3.22 of the Company Disclosure Schedule sets forth the following information concerning each employee of the Company whose base annual salary is in excess of $50,000: (a) name; (b) position; (c) current base salary; and (d) whether such employee has an employment agreement and, if so, its expiration date.

ARTICLE 4

REPRESENTATIONS AND WARRANTIES
OF PARENT AND ACQUISITION

Parent and Acquisition hereby represent and warrant to the Company as follows:

SECTION 4.1. Organization.

(a) Parent is a corporation duly organized, validly existing and in good standing under the laws of the Kingdom of Belgium, GP is a general partnership duly organized, validly existing and in good standing under the laws of the State of Delaware and Acquisition is a corporation duly organized, validly existing and in good standing under the laws of the State of Delaware, and each has all requisite power and authority to own, lease and operate its properties and to carry on its businesses as now being conducted. Each of Parent and Acquisition has heretofore delivered to the Company accurate and complete copies of its Certificates of Incorporation and Bylaws as currently in effect.

(b) Each of Parent, GP and Acquisition is duly qualified or licensed and in good standing to do business in each jurisdiction in which the property owned, leased or operated by it or the nature of the business conducted by it makes such qualification or licensing necessary, except in such jurisdictions where the failure to be so duly qualified or licensed and in good standing

would not have a Parent Material Adverse Effect. The term "Parent Material Adverse Effect" means any change or effect that is (i) materially adverse to the business, results of operations, condition (financial or otherwise) or prospects of Parent and its subsidiaries, taken as a whole, other than any change or effect arising out of general economic conditions or (ii) that may impair the ability of Parent, GP and/or Acquisition to consummate the transactions contemplated hereby.

SECTION 4.2. Authority Relative to this Agreement. Each of Parent, GP and Acquisition has all necessary corporate power and authority to execute and deliver this Agreement and to consummate the transactions contemplated hereby. The execution and delivery of this Agreement and the consummation of the transactions contemplated hereby have been duly and validly authorized by the boards of directors of Parent and Acquisition and the partners of GP and by GP as the sole stockholder of Acquisition and no other corporate proceedings on the part of Parent, GP or Acquisition are necessary to authorize this Agreement or to consummate the transactions contemplated hereby. This Agreement has been duly and validly executed and delivered by each of Parent, GP and Acquisition and constitutes a valid, legal and binding agreement of each of Parent, GP and Acquisition enforceable against each of Parent, GP and Acquisition in accordance with its terms, except as such enforceability may be limited by any applicable bankruptcy, insolvency, reorganization, moratorium or other similar laws affecting the enforcement of creditors' rights generally, and except as the availability of equitable remedies may be limited by the application of general principles of equity (regardless of whether such equitable principles are applied in a proceeding at law or in equity).

SECTION 4.3. Information Supplied. Neither the Schedule 14D-1, nor any of the information supplied or to be supplied by Parent, GP or Acquisition for inclusion or incorporation by reference in any of the other Disclosure Statements will, at the respective times that the Proxy Statement (if necessary) and the Schedule 14D-9 and any amendments thereof or supplements thereto are filed with the SEC and are first published or sent or given to holders of Shares, and in the case of any required Proxy Statement, at the time that it or any amendment thereof or supplement thereto is mailed to the Company's stockholders or, at the time of the Stockholders' Meeting, if such is required, contain any untrue statement of a material fact or omit to state any material fact required to be stated therein or necessary in order to make the statements therein, in light of the circumstances under which they were made, not misleading.

SECTION 4.4. Financing. Parent has or has available to it, and will make available to Acquisition, all funds necessary to satisfy all of Parent's and Acquisition's obligations under this Agreement and in connection with the transactions contemplated hereby including without limitation, sufficient funds available to purchase all of the Shares that Parent agrees, subject to the terms and conditions hereof, to purchase hereunder and to pay all related fees and expenses.

SECTION 4.5. Consents and Approvals; No Violations. Except for filings, permits, authorizations, consents and approvals as may be required under, and other applicable requirements of, the Securities Act, the Exchange Act, Blue Sky Laws, the HSR Act and the securities or antitrust laws of any country other than the United States, and the filing and acceptance for record of the Merger Certificate as required by the DGCL, respectively, no filing with or notice to, and no permit, authorization, consent or approval of, any Governmental Entity is necessary for the execution and delivery by Parent, GP or Acquisition of this Agreement or the

consummation by Parent, GP or Acquisition of the transactions contemplated hereby, except where the failure to obtain such permits, authorizations, consents or approvals or to make such filings or give such notice would not have a Parent Material Adverse Effect. Neither the execution, delivery and performance of this Agreement by Parent, GP or Acquisition nor the consummation by Parent, GP or Acquisition of the transactions contemplated hereby will (i) conflict with or result in any breach of any provision of the respective Certificates of Incorporation or Bylaws (or similar governing documents) of Parent or Acquisition or the partnership agreement of GP, (ii) result in a violation or breach of or constitute (with or without due notice or lapse of time or both) a default (or give rise to any right of termination, amendment, cancellation or acceleration or Lien) under any of the terms, conditions or provisions of any note, bond, mortgage, indenture, lease, license, contract, agreement or other instrument or obligation to which Parent, GP or Acquisition or any of Parent's other subsidiaries is a party or by which any of them or any of their respective properties or assets may be bound or (iii) violate any order, writ, injunction, decree, law, statute, rule or regulation applicable to Parent, GP or Acquisition or any of Parent's other subsidiaries or any of their respective properties or assets except, in the case of (ii) or (iii), for violations, breaches or defaults which would not have a Parent Material Adverse Effect.

ARTICLE 5

COVENANTS

SECTION 5.1. Interim Operations. From the date of this Agreement until the Closing Time, except as set forth in Section 5.1 of the Company Disclosure Schedule or as expressly contemplated by any other provision of this Agreement, unless the Parent has consented in writing thereto, the Company shall, and shall cause each of its subsidiaries to:

(a) conduct its business and operations only in the ordinary course of business consistent with past practice;

(b) use reasonable efforts to preserve intact the business, organization, goodwill, rights, licenses, permits and franchises of the Company and its subsidiaries and maintain their existing relationships with customers, suppliers and other persons having business dealings with them, the loss of any of which would be reasonably likely to result in a Material Adverse Effect on the Company;

(c) use reasonable efforts to keep in full force and effect adequate insurance coverage and maintain and keep its properties and assets in good repair, working order and condition, normal wear and tear excepted;

(d) not amend or modify its respective charter or certificate of incorporation, by-laws, or other charter or organization documents;

(e) not authorize for issuance, issue, sell, grant, deliver, pledge or encumber or agree or commit to issue, sell, grant, deliver, pledge or encumber any shares of any class or series of capital stock of the Company or

any of its subsidiaries or any other equity or voting security or equity or voting interest in the Company or any of its subsidiaries, any securities convertible into or exercisable or exchangeable for any such shares, securities or interests, or any options, warrants, calls, commitments, subscriptions or rights to purchase or acquire any such shares, securities or interests (other than issuances of Shares upon exercise of Company Stock Options granted prior to the date of this Agreement and disclosed pursuant to Section 3.2 to directors, officers, employees and consultants of the Company in accordance with the Company Option Plans as currently in effect);

(f) not (i) split, combine or reclassify any shares of its stock or issue or authorize or propose the issuance of any other securities in respect of, in lieu of, or in substitution for, shares of its stock, (ii) in solely the case of the Company, declare, set aside or pay any dividends on, or make other distributions in respect of, any of the Company's stock, or (iii) repurchase, redeem or otherwise acquire, or agree or commit to repurchase, redeem or otherwise acquire, any shares of stock or other equity or debt securities or equity interests of the Company or any of its subsidiaries;

(g) not amend or otherwise modify the terms of any Company Stock Options or the Company Option Plans, the effect of which shall be to make such terms more favorable to the holders thereof or persons eligible for participation therein;

(h) other than regularly scheduled seniority increases in the ordinary course of business consistent with past practice, not increase the compensation payable or to become payable to any directors, officers or employees of the Company or any of its subsidiaries, or grant any severance or termination pay to, or enter into any employment or severance agreement with any director or officer of the Company or any of its subsidiaries, or establish, adopt, enter into or amend in any material respect or take action to accelerate any material rights or benefits under any collective bargaining, bonus, profit sharing, thrift, compensation, stock option, restricted stock, pension, retirement, deferred compensation, employment, termination, severance or other plan, agreement, trust, fund, policy or arrangement for the benefit of any director, officer or employee of the Company of any of its subsidiaries;

(i) not acquire or agree to acquire (including, without limitation, by merger, consolidation, or acquisition of stock, equity securities or interests, or assets) any corporation, partnership, joint venture, association or other business organization or division thereof or otherwise acquire or agree to acquire any assets of any other person outside the ordinary course of business consistent with past practice or any interest in any real properties (whether or not in the ordinary course of business);

(j) not incur, assume or guarantee any indebtedness for borrowed money (including draw-downs on letters or lines of credit) or issue or sell any notes, bonds, debentures, debt instruments, evidences of indebtedness or other debt securities of the Company or any of its subsidiaries or any options, warrants or rights to purchase or acquire any of the same, except for (i) renewals of existing bonds and letters of credit in the ordinary course of business not to exceed $1,000,000 in the aggregate; and (ii) advances, loans or other indebtedness in the ordinary course of business consistent with past practice in an aggregate amount not to exceed $1,000,000;

(k) not sell, lease, license, encumber or otherwise dispose of, or agree to sell, lease, license, encumber or otherwise dispose of, any material properties or assets of the Company and its subsidiaries taken as a whole;

(l) not authorize or make any capital expenditures (including by lease) in excess of $1,000,000 in the aggregate for the Company and all of its subsidiaries;

(m) not make any material change in any of its accounting or financial reporting (including tax accounting and reporting) methods, principles or practices, except as may be required by GAAP or applicable tax laws;

(n) not make any material tax election or settle or compromise any material United States or foreign tax liability;

(o) except in the ordinary course of business consistent with past practice, not amend, modify or terminate any Contract required to be listed in Section 3.15 of the Company Disclosure Schedule or waive, release or assign any material rights or claims thereunder;

(p) not adopt a plan of complete or partial liquidation, dissolution, merger, consolidation, restructuring, recapitalization or other reorganization of the Company or any of its subsidiaries; and

(q) except as to subsections (a), (b) and (c) of this Section 5.1, not agree or commit in writing or otherwise to do any of the foregoing.

SECTION 5.2. Stockholders' Meeting.

(a) The Company, acting through the Board, shall, if required for the Merger under the DGCL:

(i) duly call, give notice of, convene and hold a meeting of its stockholders (the "Stockholders' Meeting"), to be held as soon as practicable after the Tender Offer Purchase Time for the purpose of considering and taking action upon this Agreement;

(ii) except as otherwise permitted under Section 5.3, include in the Proxy Statement (A) the recommendation of the Board that stockholders of the Company vote in favor of the approval and adoption of this Agreement, the Merger and the other transactions contemplated hereby, and (B) a statement that the Board believes that the consideration to be received by the stockholders of the Company pursuant to the Merger is fair to such stockholders;

(iii) except as otherwise permitted under Section 5.3, use reasonable efforts (A) to obtain and furnish the information required to be included by it in the Disclosure Statements and, after consultation with Parent and providing Parent with a reasonable opportunity to review and comment upon the Proxy Statement, cause the Proxy Statement and the Disclosure Statements to be mailed to its stockholders at the earliest practicable time, following the Tender Offer Purchase Time, and (B) to obtain the necessary approvals by its stockholders of this Agreement and the transactions contemplated hereby. At such meeting, Parent, GP and Acquisition will, and will cause their affiliates to, vote all Shares owned by them in favor of approval and adoption of this Agreement, the Merger and the transactions contemplated hereby.

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SECTION 5.3. Other Potential Acquirers.

(a) From and after the date of this Agreement until the earlier of the Effective Time or termination of this Agreement pursuant to its terms, the Company and its subsidiaries shall not, and will instruct their respective directors, officers, employees, representatives, investment bankers, agents and affiliates not to, directly or indirectly, (i) solicit or encourage submission of, any inquiries, proposals or offers by any person, entity or group (other than Parent and its affiliates, agents and representatives), or (ii) participate in any discussions or negotiations, or disclose any non-public information concerning the Company or any of its subsidiaries to, or afford any access to the properties, books or records of the Company or any of its subsidiaries to, or otherwise assist or facilitate, or enter into or resolve to enter into any agreement or understanding with, any person, entity or group (other than Parent and its affiliates, agents and representatives), in connection with any Acquisition Proposal with respect to the Company. For the purposes of this Agreement, "Acquisition Proposal" means any proposal or offer (whether or not in writing) for, or any indication of interest in, (A) any merger, consolidation, share exchange, recapitalization, liquidation, dissolution, joint venture, business combination or similar transaction (or series of transactions) involving the Company or any subsidiary of the Company pursuant to which any person (or the stockholders of any person) would own, directly or indirectly, 15% or more of the then outstanding shares of capital stock of the entity (except for acquisitions for passive investment purposes only in circumstances where the person or group qualifies for and files a Schedule 13G with respect thereto); (ii) the adoption by the entity of a plan of liquidation or the declaration or payment of an extraordinary dividend; (iii) the repurchase by the entity of more than 20% of its outstanding shares of voting stock; (iv) the acquisition by the entity of direct or indirect ownership of a business where annual revenue, net income or assets is greater than 20% of the entity; or (v) any public announcement of a proposal, plan or intention to do any of the foregoing or any agreement to engage in any of the foregoing. The Company will, and will cause its subsidiaries and their respective directors, officers, employees, representatives and agents, to immediately cease any and all existing activities, discussions or negotiations with any parties conducted heretofore with respect to any of the foregoing. The Company will (i) notify Parent as promptly as practicable (but in no event later than 24 hours after receipt) of any Acquisition Proposal or any request for information relating to the Company or any of its subsidiaries by any person, entity or group that has made or indicates that it is considering making an Acquisition Proposal, (ii) provide such notice to Parent orally and in writing and identify the person making, and all material terms of, any such Acquisition Proposal or request for information, and (iii) provide to Parent as promptly as practicable (but in no event later than 24 hours after Parent's receipt of a copy of such Superior Proposal (or a description of the terms and conditions thereof, if not in writing).

(c) Notwithstanding anything to the contrary herein, the Company will not provide any nonpublic information to a third party unless: (x) the Company provides such nonpublic information pursuant to a nondisclosure agreement with terms regarding the protection of confidential information at least as restrictive as such terms in the Confidentiality Agreement (as defined below), and (y) such nonpublic information has been previously delivered to Parent.

SECTION 5.4 [INTENTIONALLY OMITTED.]

SECTION 5.5 Actions. From the date of this Agreement until the Closing Time, upon reasonable prior notice, the Company shall (and shall cause each of its subsidiaries to) give the Parent and its representatives (including lenders to and financing sources for such party) full access to the officers, employees, agents, books, records, contracts, commitments, properties, offices and other facilities of it and its subsidiaries, and shall furnish promptly to the Parent and its representatives such financial and operating data and other information concerning the business, operations, properties, contracts, records and personnel of the Company and its subsidiaries as the Parent may from time to time reasonably request. Parent and Acquisition shall use reasonable efforts to minimize any disruption to the business of the Company and its subsidiaries which may result from the access to properties and employees and for data and information hereunder. All information obtained by the Parent pursuant to this

Section 5.5 shall be held confidential in accordance with the provisions of the Non-Disclosure Agreement between Parent and the Company dated May 17, 1999 (the "Confidentiality Agreement"). No representations and warranties or conditions to the consummation of the Merger contained herein or in any certificate or instrument delivered in connection herewith shall be deemed waived or otherwise affected by any investigation made by the parties or their representatives.

SECTION 5.6. Further Actions.

(a) Each of the parties hereto shall use its best efforts to take, or cause to be taken, all actions, and to do, or cause to be done, all things necessary, proper or advisable under

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applicable laws and regulations, and consult and fully cooperate with and provide reasonable assistance to each other party hereto and their respective representatives in order, to consummate and make effective the transactions contemplated by this Agreement as promptly as practicable hereafter, including, without limitation, (i) using their reasonable efforts to obtain all authorizations, consents, orders and approvals of all governmental authorities and all other third parties, or permits of Governmental Entities or other persons or entities as are necessary for the consummation of the Merger and the other transactions contemplated hereby (including, without limitation, pursuant to the HSR Act, the Securities Act, the Exchange Act, Blue Sky Laws, Delaware law and other applicable laws and regulations in effect in the United States, Belgium or any other jurisdiction), and (ii) taking such actions reasonably requested by the other party hereto to effectuate the purposes of this Agreement and to consummate the Merger. Parent and Acquisition shall not commence any litigation against the Company or its subsidiaries other than as specified in Article 8 of this Agreement for the purpose of objecting to or failing to act in order to avoid the entry of, or to have vacated or reversed, any decree, order, judgment or decision (whether temporary, preliminary or permanent) that would restrain, prevent or delay the Closing or which would impose any material limitation on the ability of the Company or Parent, or any of their respective subsidiaries, effectively to exercise full rights of ownership of the Shares, including, without limitation, the ability of Acquisition to acquire or hold or to exercise any rights of ownership of the Shares, or effectively to manage or control the Company or any of its subsidiaries, in each case following the Effective Time, or to dispose of or hold separate all or any portion of the business or assets or any of the capital stock of the Company or any of its subsidiaries, provided, however, that in no event shall any party hereto take, or be required to take, any action that could reasonably be expected to have a Material Adverse Effect on the Company or that individually or in the aggregate could reasonably be expected to have a Parent Material Effect.

SECTION 5.7. HSR Matters. Each party hereto shall make an appropriate filing of a Notification and Report Form pursuant to the HSR Act with respect to the transactions contemplated hereby as promptly as practicable after the date hereof. Each such filing shall request early termination of the waiting periods imposed by the HSR Act with respect to the transactions contemplated hereby. Each party hereto shall make any further filings pursuant to the HSR Act without the entry by a court of competent jurisdiction of an order enjoining the consummation of the transactions contemplated hereby at as early as practicable. Each party shall furnish all information required to be furnished by such party in connection with such filings. In addition, each party shall promptly inform the other party upon receipt of any material communication from the Federal Trade Commission or any other governmental agency or authority or members of their respective staffs with respect to this Agreement or the transactions contemplated hereby.

SECTION 5.8. Public Announcements. Parent, Acquisition and the Company, as the case may be, will consult with one another before issuing any press release or otherwise making any public statements with respect to the transactions contemplated by this Agreement, including, without limitation, the Merger, and shall not issue any such press release or make any such public statement prior to such consultation except to the extent that such consultation may be prohibited

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by applicable law or such a disclosure or release is required by obligations pursuant to any listing agreement with the Brussels Stock Exchange or Nasdaq as determined by Parent or the Company, as the case may be.

SECTION 5.9. Employee Benefit Matters; Company Stock Options. The Company shall, or shall cause one of its subsidiaries to, take such action effective as of the Effective Time with respect to any Company Employee Plan as Parent shall reasonably request, including termination of any such plan. The Company shall

(a) cooperate with Parent and Acquisition in obtaining waivers, in form and substance reasonably satisfactory to Parent and Acquisition, of all terms of the Company Option Plans and all terms of outstanding Company Stock Options, which terms could prevent, restrict or impair the ability of Parent, Acquisition and the Company to effectuate fully the provisions of Section 2.10, and (b) use reasonable efforts to cause its Compensation Committee to interpret the Company Option Plan, to the extent possible, so as to enable the Company, Parent and Acquisition to effectuate fully the provisions of Section 2.10.

SECTION 5.10. Notification of Certain Matters. The Company shall give prompt notice to Parent and Parent shall give prompt notice to the Company of (a) any occurrence or noncurrence of any event the occurrence or noncurrence of which would be likely to cause (A) any representation or warranty contained in this Agreement to be untrue or inaccurate in any material respect at or prior to the Effective Time or (B) any covenant, condition or agreement contained in this Agreement not to be complied with or satisfied in all material respects and (ii) any material failure of the Company, Parent, GP or Acquisition, as the case may be, to comply with or satisfy any covenant, condition or agreement to be complied with or satisfied by it hereunder; provided, however, that the delivery of any notice pursuant to this Section 5.10 shall not cure such breach or non-compliance or limit or otherwise affect the remedies available hereunder to the party receiving such notice.

SECTION 5.11. Guarantee of Performance. Parent hereby guarantees the performance by Acquisition and GP of their obligations under this Agreement.

SECTION 5.12 Indemnification; Directors' and Officers' Insurance.

(a) Parent and Acquisition agree that all rights to indemnification for acts or omissions occurring prior to the Effective Time now existing in favor of the current or former directors or officers (the "Indemnified Parties") of the Company and its subsidiaries as provided in their respective certificates of incorporation or bylaws (or similar organizational documents) or existing indemnification contracts shall survive the Merger and shall continue in full force and effect in accordance with their terms.

(b) For six years from the Effective Time, Parent shall cause to be maintained in effect the Company's current directors' and officers' liability insurance or insurance policies with substantially equivalent coverage covering those persons who are currently covered by the Company's directors' and officers' liability insurance policy (a copy of which has been heretofore delivered to Parent).

(c) This Section 5.12 shall survive the consummation of the Merger at the Effective Time, is intended to benefit the Company, Parent, the Acquisition and the Indemnified Parties, and shall be binding on all successors and assigns of Parent and the Acquisition.

SECTION 5.13 State Takeover Laws. Notwithstanding any other provision of this Agreement, in no event shall the Section 203 Approval be withdrawn, revoked or modified by the Board. If

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any state takeover statute other than Section 203 of the DGCL becomes or is deemed to become applicable to the Offer, the acquisition of the Shares pursuant to the Offer or the Stockholders Agreement or the Merger, the Company shall take all action necessary to render such statute inapplicable to all of the foregoing.

SECTION 5.14 Employee Benefits. Following the Effective Time, the Surviving Corporation will provide the persons employed by the Company immediately prior to the Effective Time, for so long as such persons remain employed by the Surviving Corporation with benefits (other than stock options) in the aggregate which are substantially comparable to those provided to such persons by the Company immediately prior to the Effective Time.

ARTICLE 6

DISSENTING SHARES; EXCHANGE OF SHARES

SECTION 6.1 Dissenting Shares. Notwithstanding anything in this Agreement to the contrary, in the event that dissenters' rights are available in connection with the Merger pursuant to Section 262 of the DGCL, Shares that are issued and outstanding immediately prior to the Effective Time and that are held by stockholders who did not vote in favor of the Merger and who comply with all of the relevant provisions of Section 262 of the DGCL (the "Dissenting Shares") shall not be converted into or be exchangeable for the right to receive the Cash Merger Consideration, but instead shall be converted into the right to receive such consideration as may be determined to be due to such holders pursuant to Section 262 of the DGCL, unless and until such holders fail to perfect or withdraw or otherwise lose their right to appraisal and payment under the DGCL. If any such holder shall have failed to perfect or shall have effectively withdrawn or lost such right, such holder's Shares shall thereupon be deemed to have been converted into and to have become exchangeable for the right to receive, as of the Effective Time, the Cash Merger Consideration without any interest thereon. The Company shall give Parent (i) prompt notice of any written demands for appraisal of Shares received by the Company and (ii) the opportunity to participate in all negotiations and proceedings with respect to any such demands. The Company will not, without the prior written consent of Parent, voluntarily make any payment with respect to, or settle or offer to settle, any such demands.

ARTICLE 7

CONDITIONS TO THE OFFER

SECTION 7.1. Conditions to the Offer. (a) Notwithstanding any other provisions of the Offer, Acquisition shall not be required to accept for payment or, subject to any applicable rules and regulations of the SEC, including Rule 14e-1(c) under the Exchange Act (relating to Acquisition's obligation to pay for or return tendered Shares promptly after termination of the Offer), pay for, and may delay the acceptance for payment of or, subject to the restrictions referred to above, the payment for, any tendered Shares, and may amend the Offer consistent with the terms of this Agreement, including extending the deadline for tendering Shares, or terminate the Offer, if any of the following events shall occur:

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(i) from the date of this Agreement until the Tender Offer Purchase Time, there shall have occurred any change, event, occurrence or circumstance which, individually or in the aggregate, has a Material Change (as defined below) on the Company (except for changes, events, occurrences or circumstances relating to the economy in general or the industry in which the Company operates which do not have a disproportionate effect on the Company), provided, however, that (x) the commencement of any litigation against the Company or its subsidiaries after the date of this Agreement which is related to this Agreement or the transactions contemplated hereby or any adverse change, event or effect that is proximately caused by such litigation that is initiated or threatened after the date of this Agreement against the Company or any of its subsidiaries and (y) any adverse change resulting from any action taken by the Company that was approved by Parent shall not

Section 7.1(a)(i) of this Agreement shall not be a Material Change; and provided further, however, that if the Offer is consummated after July 31, 1999 the following shall not be taken into account in determining whether there has been or would be a Material Change with respect to the Company to the extent such events occur subsequent to July 31, 1999:

(a) a reduction of up to 25% of the (i) average monthly consolidated revenue and net profit of the Company compared to the average monthly consolidated revenue and net profit of the Company during the 12 months immediately preceding the date of this Agreement or (ii) the net worth of the Company compared to the December 31, 1998 net worth;

(b) any change in the assets of the Company in connection with obtaining required regulatory approvals; or

(c) any voluntary termination after the date of this Agreement of officers or other key employees of the Company;

(ii) from the date of this Agreement until the Tender Offer Purchase Time, any Governmental Entity or court of competent jurisdiction shall have enacted, issued, promulgated, enforced or entered any statute, rule, regulation, executive order, decree, injunction or other order (and if temporary or preliminary, not vacated within five (5) business days of its entry), which with respect to HSR Act approval which shall be governed by Section 7.1(a)(xiii), which is in effect at the Tender Offer Purchase Time and which (1) makes the acceptance for payment of, or the payment for, some or all of the Shares illegal or otherwise prohibits or restricts consummation of the Offer, the Merger or any of the other transactions contemplated hereby, (2) imposes material limitations on the ability of Parent, GP or Acquisition to acquire or hold or to exercise any rights of ownership of the Shares, or effectively to manage or control the Company and its business, assets and properties or (3) would result in a Material Change to the Company; provided, however, that the parties shall use reasonable efforts (subject to the proviso in Section 5.6(b)) to cause any such decree, judgment or other order to be vacated or lifted as soon as is practicable;

(iii) the representations and warranties of the Company set forth in this Agreement shall not (A) have been true and correct in one or more material respects on the date hereof or (B) (except with respect to the representations and

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warranties set forth in Sections 3.8, 3.9, 3.14, 3.15, 3.22, 3.13(c), (d), (e), (f), (g) and (h) and 3.16(a), (b)(i), (ii), (iv), (v) and (vi)) be true and correct in one or more material respects as of the scheduled expiration date (as such date may be extended) of the Offer as though made on and as of such date or the Company shall have breached or failed in any respect to perform or comply with any material obligation, agreement or covenant required by this Agreement to be performed or complied with by it (including without limitation the provisions of Section 5.3) except, in each case with respect to clause B, (1) for changes specifically permitted by the Agreement and (2)(x) for those representations and warranties that address matters only as of a particular date which are true and correct as of such date or (y) where the failure of representations and warranties (without regard to materiality qualifications therein contained) to be true and correct, or the performance or compliance with such obligations, agreements, or covenants, would not, individually or in the aggregate, result in a Material Change to the Company;

(iv) from the date of this Agreement until the Tender Offer Purchase Time, this Agreement shall have been terminated in accordance with its terms;

(v) from the date of this Agreement until the Tender Offer Purchase Time the Board of Directors of the Company or any committee thereof shall have (1) withdrawn or modified (including without limitation, by amendment of the Company's Schedule 14D-9) in a manner adverse to Parent or Acquisition its approval or recommendation of the Offer, this Agreement or the transactions contemplated hereby or (2) approved or recommended any Acquisition Proposal or any agreement with respect to any Acquisition Proposal;

(vi) from the date of this Agreement until the Tender Offer Purchase Time, any of the consents, approvals, authorizations, orders or permits required to be obtained by the Company, Parent, GP or Acquisition, or their respective subsidiaries in connection with the Offer or the Merger from, or filings or registrations required to be made by any of the same prior to the Tender Offer Purchase Time with, any Governmental Entity in connection with the execution, delivery and performance of this Agreement (including without limitation the termination or expiration of any applicable waiting period or the receipt of any required clearance under the HSR Act) shall not have been obtained or made (other than those made or obtained prior to the date hereof), which (A) make the acceptance for payment of, or the payment for the Shares illegal or otherwise prohibits or restricts the consummation of the Offer or the Merger or (B) have a Parent Material Adverse Effect or result in a Material Change to the Company or (C) impose material limitations on the ability of Parent, GP or Acquisition effectively to manage or control the Company;

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(vii) from the date of this Agreement until the Tender Offer Purchase Time, in the case of HSR Act approval, any Governmental Entity or court of competent jurisdiction shall have entered a final, non-appealable order enjoining the consummation of the Merger;

(viii) from the date of this Agreement until the Tender Offer Purchase Time, there shall have occurred (A) the declaration of a banking moratorium or any suspension of payments in respect of banks in the United States or in Belgium or (B) the commencement of a war or armed hostilities involving the United States or Belgium and resulting in a Material Change to the Company or having a Parent Material Adverse Effect or materially adversely affecting (or materially delaying) the consummation of the Offer;

(ix) the conditions set forth in Section 7.1(a) are for the sole benefit of Parent, GP and Acquisition and may be asserted by Parent regardless of any circumstances giving rise to any condition and may be waived by Parent, in whole or in part, at any time and from time to time, in the sole discretion of Parent. The failure by Parent or any affiliate of Parent, Purchaser or the Company, except that the confidentiality provisions of Section 5.5, the first sentence of Section 5.13, and Sections 9.2 and 9.3 shall survive the termination of this Agreement. The foregoing

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shall not relieve any party for liability for damages actually incurred as a result of any breach of this Agreement.

SECTION 9.3. Fees and Expenses.

(a) Except as otherwise provided in this Agreement and whether or not the transactions contemplated by the Offer and this Agreement are consummated, all costs and expenses incurred in connection with the transactions contemplated by the Offer and this Agreement shall be paid by the party incurring such expenses.

(b) The Company shall pay to Parent, an amount equal to $7,500,000 (the "Break-Up Fee"), if any of the following shall occur:

(i) if the Board of Directors of the Company or any committee thereof shall have approved, or recommended that stockholders of the Company accept or approve, an Acquisition Proposal by a third party, or shall have resolved to do any of the foregoing;

(ii) if the Board of Directors of the Company or any committee thereof shall have withdrawn or modified its approval of, or recommendation that the stockholders of the Company accept or approve (as the case may be), the Offer, this Agreement and the Merger, or shall have resolved to do any of the foregoing; or

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(iii) if the Company shall have failed to include in the Schedule 14D-9 the recommendation of the Board of Directors of the Company that the stockholders of the Company accept the Offer;

(iv) prior to the purchase of the Shares pursuant to the Offer, if the Company is in material breach of any of its covenants or obligations under this Agreement, or any representation or warranty of the Company contained in this Agreement shall have been incorrect, in any material respect, when made;

(v) prior to the purchase of Shares pursuant to the Offer, in the event that the conditions to the Offer set forth in Section 7.1 shall not be satisfied, provided, that Parent may not terminate this Agreement due to a breach under this clause (v) after

(vi) after purchase of the Shares pursuant to the Offer, if the Company is in violation or breach of Section 1.3.

(c) by the Company:

(i) if the Offer shall not have been commenced in accordance with Section 1.1, or Parent or Acquisition shall have failed to purchase validly tendered Shares in violation of the terms of the Offer within ten business days after the expiration of the Offer; provided, however, that the Company shall not be entitled to terminate this Agreement pursuant to this Section 9.1(d)(i) if it is in material breach of its representations and warranties, covenants or other obligations under this Agreement;

(ii) if the Board of Directors of the Company has resolved to, and in fact does, recommend to the Company's Stockholders that they accept a Superior Proposal, provided that all the provisions of Section 5.3 have been fully complied with and the Break-up Fee has been paid to Parent in accordance with Section 9.3(b);

(iii) prior to the purchase of Shares pursuant to the Offer, if Parent or Acquisition is in material breach of any of its covenants or obligations under this Agreement, or any representation or warranty of Parent or Purchaser contained in this Agreement shall have been incorrect, in any material respect, when made; or

(iv) at any time after March 31, 2000 if the Offer has not been consummated due to a failure to obtain clearance under the HSR Act; provided, however, that the Company shall not be entitled to terminate this Agreement pursuant to this Section 9.1(d)(iv) if it is in material breach of its representations and warranties, covenants or other obligations under this Agreement.

SECTION 9.2. Procedure and Effect of Termination. In the event of the termination of this Agreement by the Company or Parent or both of them pursuant to Section 9.1, the terminating party shall provide written notice of such termination to the other party and this Agreement shall forthwith become void and there shall be no liability on the part of Parent, Purchaser or the Company, except that the confidentiality provisions of Section 5.5, the first sentence of Section 5.13, and Sections 9.2 and 9.3 shall survive the termination of this Agreement. The foregoing

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shall not relieve any party for liability for damages actually incurred as a result of any breach of this Agreement.

SECTION 9.3. Fees and Expenses.

(a) Except as otherwise provided in this Agreement and whether or not the transactions contemplated by the Offer and this Agreement are consummated, all costs and expenses incurred in connection with the transactions contemplated by the Offer and this Agreement shall be paid by the party incurring such expenses.

(b) The Company shall pay to Parent, an amount equal to $7,500,000 (the "Break-Up Fee"), if any of the following shall occur:

(i) if the Board of Directors of the Company or any committee thereof shall have approved, or recommended that stockholders of the Company accept or approve, an Acquisition Proposal by a third party, or shall have resolved to do any of the foregoing;

(ii) if the Board of Directors of the Company or any committee thereof shall have withdrawn or modified its approval of, or recommendation that the stockholders of the Company accept or approve (as the case may be), the Offer, this Agreement and the Merger, or shall have resolved to do any of the foregoing; or

(iii) if the Company shall have failed to include in the Schedule 14D-9 the recommendation of the Board of Directors of the Company that the stockholders of the Company accept the Offer.

Such Break-up Fee shall be payable within 30 days of such event.

(b) Parent shall pay to the Company the sum of $8,000,000 if the Offer has not been consummated, and (i) Parent terminates this Agreement during the period from December 31, 1999 through February 15, 2000 due to a failure to obtain clearance under the HSR Act and (ii) Parent shall have refused to consent to any divestiture by the Company required for clearance under the HSR Act.

(c) Parent shall pay to the Company the sum of $15,000,000 if the Company terminates the Agreement pursuant to Section 9.1(d)(iv) and Parent shall have refused to consent to any divestiture by the Company required for clearance under the HSR Act.

SECTION 9.4. Amendment. This Agreement may be amended by each of the parties by action taken by or on behalf of their respective Boards of Directors at any time prior to the Effective Time; provided, however, that (i) such amendment shall be in writing signed by all of the parties, (ii) any such waiver, amendment or supplement by the Company shall be effective as against the Company only if approved by a majority of the Continuing Directors and (iii) after adoption of this Agreement and the Merger by the stockholders of the Company, no amendment

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may be made without the further approval of the stockholders of the Company which reduces the Merger Consideration or changes the form thereof or changes any other terms and conditions of this Agreement if the changes, alone or in the aggregate, would materially adversely affect the stockholders of the Company.

SECTION 9.5. Waiver. At any time prior to the Effective Time, whether before or after the Company's Stockholders Meeting, any party hereto, by action taken by its Board of Directors, may (i) extend the time for the performance of any of the obligations or other acts of any other party hereto or (ii) subject to the provisions of Section 9.4, waive compliance with any of the agreements of any other party or with any conditions to its own obligations. Any agreement on the part of a party hereto to any such extension or waiver shall be valid only if set forth in an instrument in writing signed on behalf of such party by a duly authorized officer of such party. Notwithstanding the above, any waiver given shall not apply to any subsequent failure of compliance with agreements of the other party or conditions to its own obligations.

SECTION 10.3. Validity. If any provision of this Agreement or the application thereof to any person or circumstance is held invalid or unenforceable the remainder of this Agreement and the application of such provision to other persons or circumstances shall not be affected thereby and to such end the provisions of this Agreement are agreed to be severable.

SECTION 10.4. Notices. All notices, requests, claims, demands and other communications hereunder shall be in writing and shall be given (and shall be deemed to have been duly given upon receipt) by delivery in person, by facsimile or by registered or certified mail (postage prepaid, return receipt requested) to each other party as follows:

If to Parent, GP or Acquisition: ION BEAM APPLICATIONS S.A. Chemin du Cyclotron, 3 B-1348 Louvain-la-Neuve Belgium Telecopier: 011-32-10-47-5810 Attention: Pierre Mottet

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with a copy to: Dorsey & Whitney LLP
250 Park Avenue
New York, New York 10177
Telecopier: ( )
Attention: Ramon P. Marks, Esq.
Kevin T. Collins, Esq.

If to the Company: STERIGENICS INTERNATIONAL, INC.

4020 Clipper Court
Fremont, California 94538
Telecopier:
Attention: James F. Clouser, President
and Chief Executive Officer

with a copy to: Gunderson Dettmer Stough Villeneuve Franklin & Hachigian, LLP
155 Constitution Drive
Menlo Park, California 94025
Telecopier: (650) 321-2800
Attention: Carla S. Newell, Esq.
Jay K. Hachigian, Esq.

or to such other address as the person to whom notice is given may have previously furnished to the others in writing in the manner set forth above.

SECTION 10.5. Governing Law. This Agreement shall be governed by and construed in accordance with the laws of the State of Delaware without regard to the principles of conflicts of law thereof. Each of the parties hereto irrevocably consents to the exclusive jurisdiction of any state or federal court within Delaware, in connection with any matter based upon or arising out of this Agreement or the matters contemplated herein, other than issues involving the corporate governance of any of the parties hereto, agrees that process may be served upon them in any manner authorized by the laws of the State of Delaware for such persons and waives and covenants not to assert or plead any objection which they might otherwise have to such jurisdiction and such process.

SECTION 10.6. Descriptive Headings. The descriptive headings herein are inserted for convenience of reference only and are not intended to be part of or to affect the meaning or interpretation of this Agreement.

SECTION 10.7. Parties in Interest. This Agreement shall be binding upon and inure solely to the benefit of each party hereto and its successors and assigns and nothing in this Agreement express or implied is intended to or shall confer upon any other person any rights, benefits or remedies of any nature whatsoever under or by reason of this Agreement.

SECTION 10.8. Certain Definitions. For the purposes of this Agreement the term:

(a) "affiliate" means a person that, directly or indirectly, through one or more intermediaries controls, is controlled by or is under common control with the first-mentioned person;

(b) "business day" means any day other than a day on which there is no trading on Nasdaq;

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(c) "stock" means common stock, preferred stock, partnership interests, limited liability company interests or other ownership interests entitling the holder thereof to vote with respect to matters involving the issuer thereof;

(d) "person" means an individual, corporation, partnership, limited liability company, association, trust, unincorporated organization or other legal entity; and

(e) "subsidiary" or "subsidiaries" of the Company, Parent, the Surviving Corporation or any other person means any corporation, partnership, limited liability company, association, trust, unincorporated association or other legal entity of which the Company, Parent, the Surviving Corporation or any such other person, as the case may be, (either alone or through or together with any other subsidiary) owns, directly or indirectly, 50% or more of the capital stock the holders of which are generally entitled to vote for the election of the board of directors or other governing body of such corporation or other legal entity.

SECTION 10.9. Personal Liability. This Agreement shall not create or be deemed to create or permit any personal liability or obligation on the part of any direct or indirect stockholder of the Company or Parent or any officer, director, employee, agent, representative or investor of any party hereto.

SECTION 10.10. Specific Performance. The parties hereby acknowledge and agree that the failure of any party to perform its agreement and covenants hereunder, including its failure to take all actions as are necessary on its part to the consummation of the Merger, will cause irreparable injury to the other parties, for which damages, even if available, will not be an adequate remedy. Accordingly, each party hereby consents to the issuance of injunctive relief by any court of competent jurisdiction to compel performance of such party's obligations and to the granting by any court of the remedy of specific performance of its obligations hereunder; provided, however, that if a party hereto is entitled to receive the Termination Fee pursuant to Section 9.3 it shall not also be entitled to specific performance to compel the consummation of the Merger.

SECTION 10.11. Counterparts. This Agreement may be executed in one or more counterparts, each of which shall be deemed to be an original but all of which shall constitute one and the same agreement.

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IN WITNESS WHEREOF, each of the parties has caused this Agreement to be duly executed on its behalf as of the day and year first above written.

ION BEAM APPLICATIONS S.A.

By: /s/ PIERRE MOTTET
Name: Pierre Mottet
Title: Chief Executive Officer

ION BEAM APPLICATIONS G.P.
ION BEAM APPLICATIONS S.A.
Its General Partner

By: /s/ PIERRE MOTTET
Name: Pierre Mottet
Title:

IBA ACQUISITION CORP.

By: /s/ PIERRE MOTTET
Name: Pierre Mottet
Title:

STERIGENICS INTERNATIONAL, INC.

By: /s/ JAMES F. CLOUSER
Name: James F. Clouser
Title: Chief Executive Officer

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EXHIBIT C

NEWS Case 1:22-cv-00334-JMC Document 83-2 Filed 07/22/22 Page 1 of 3 PageID #: 1

Recent News

November 7, 2017

Sterigenics International LLC Changes Name to Sotera Health LLC

Leverages the strength of Nelson Labs, Nordion and Sterigenics to deliver on its mission of Safeguarding Global Health™

CLEVELAND, OH, Nov. 7, 2017 – Sterigenics International LLC (the "Company") announced today that it has changed its parent company name to Sotera Health LLC. Its three operating companies – Nelson Labs™, Nordion® and Sterigenics® – will continue to maintain their current names. The new parent company name signals a more integrated and holistic customer value proposition as it combines the offerings of three best-in-class companies to better serve customers with a more comprehensive offering of mission-critical services.

The name Sotera was inspired by the Greek goddess of safety, Soteria, and reflects the Company's unwavering commitment to global health. As the global leader in mission-critical services to ensure the safety of healthcare, Sotera Health has 62 facilities in 13 countries and provides rigorous lab services, comprehensive sterilization solutions and a reliable global supply of radioisotopes to the medical device, pharmaceutical, tissue, and food industries. The company touches the lives of more than 180 million people around the world each year and serves over 6,000 global customers, including 75% of the top 100 medical device manufacturers.

"Safeguarding Global Health™ is the cornerstone of our new brand and guides us in what we do each and every day," said Michael B. Petras Jr., CEO of Sotera Health. "It speaks to the breadth of our business and our ability to partner with our customers across their entire product-development lifecycle."

The new brand was developed after an extensive process of in-depth engagement with customers, suppliers, employees and Company leadership. The companies and services under the Sotera Health umbrella are:

- Nelson Labs is the industry-leading provider of global lab testing and expert consulting services. Nelson Labs performs over 400 rigorous microbiological and analytical laboratory tests across the medical device, pharmaceutical and tissue industries. The company is regarded as a best-in-class partner with a strong track record of collaborating with customers to solve complex issues. Most recently, the company announced the acquisition of Toxikon Europe, which, in combination with Nelson Labs, will create the leading global extractables and leachables lab testing platform.
- Nordion is the leading global provider of mission-critical radioisotopes used for the prevention, diagnosis, and treatment of disease. Nordion ensures the reliable supply of Cobalt-60, the primary input to the gamma sterilization process, to the leaders in healthcare, including sister company Sterigenics.
- Sterigenics is the leading global provider of comprehensive sterilization solutions that eliminate potential health threats, using the most advanced and reliable medical sterilization techniques available. Sterigenics has deep expertise across Gamma, Ethylene Oxide (EO), Electron Beam (E-beam) and X-ray sterilization.

"Our new brand underscores the customers' recognition of our more expansive partnership as they innovate in an ever-changing and increasingly regulated healthcare world," added Petras. "We look forward to providing them with the same best-in-class service, quality, and expertise in a more integrated service offering."

About Sotera Health:

Sotera Health LLC, along with its business entities, is the world's leading, fully integrated protector of global health. With over 500 years of combined scientific expertise, the company ensures the safety of healthcare by providing mission-critical services to the medical device, pharmaceutical, tissue, and food industries. Sotera Health operates more than 62 facilities in 13 countries. The company has over 2,800 employees globally and touches the lives of more than 180 million people around the world each year. Sotera Health serves more than 6,000 customers worldwide including 75 of the top 100 medical device manufacturers.

Sotera Health goes to market through its three best-in-class companies – Nelson Labs™, Nordion® and Sterigenics® – with the mission of ensuring the safety of healthcare each and every day. Nelson Labs, along with recently acquired Toxikon Europe, offers microbiological and analytical testing and consultancy to assist customers in developing and maintaining sterilization solutions in medical devices, tissue/implantable products, and the pharmaceutical and biologics fields. Nordion is the world's largest provider of Cobalt-60 used in the gamma sterilization process as well as medical isotopes used in the diagnosis and treatment of various diseases and cancers. Sterigenics provides comprehensive contract sterilization and ionization solutions for the medical device, pharmaceutical, food safety and high-performance materials industries.

Sotera Health LLC is owned by private equity firms Warburg Pincus and GTCR. Learn more about **Sotera Health** at soterahealth.com, about **Nelson Labs** at nelsonlabs.com, about **Nordion** at nordion.com and about **Sterigenics** at sterigenics.com.

CONTACT:
Amy McGahan
Dix & Eaton
216-241-3027
amcgahan@dix-eaton.com

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Sotera Health's Sterigenics Announces Acquisition of Iotron Industries

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Nelson Labs Earthquake & COVID-19 Continuity Plan — Update

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March 4, 2020
COVID-19 Continuity Plan

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VIEW ALL PRESS RELEASES

EXHIBIT D1

DATE	DOCUMENT ID	DESCRIPTION	FILING	EXPED	PENALTY	CERT	COPY
12/05/2016	201633502232	REGISTRATION OF FOREIGN FOR PROFIT LLC (LFP)	99.00	0.00	0.00	0.00	0.00

Receipt

This is not a bill. Please do not remit payment.

STERIGENICS INTERNATIONAL LLC
2015 SPRING ROAD
SUITE 650
OAK BROOK, IL 60523

STATE OF OHIO
CERTIFICATE

Ohio Secretary of State, Jon Husted

3964415

It is hereby certified that the Secretary of State of Ohio has custody of the business records for

STERIGENICS INTERNATIONAL LLC

and, that said business records show the filing and recording of:

Document(s)	Document No(s):
REGISTRATION OF FOREIGN FOR PROFIT LLC	**201633502232**

Effective Date: 11/30/2016

United States of America
State of Ohio
Office of the Secretary of State

Witness my hand and the seal of the Secretary of State at Columbus, Ohio this 5th day of December, A.D. 2016.

Jon Husted

Ohio Secretary of State

Form 533B Prescribed by:

JON HUSTED
OHIO SECRETARY OF STATE

Toll Free: (877) SOS-FILE (877-767-3453)
Central Ohio: (614) 466-3910

www.OhioSecretaryofState.gov
busserv@OhioSecretaryofState.gov

File online or for more information: *www.OHBusinessCentral.com*

Mail this form to one of the following:

Regular Filing (non expedite)
P.O. Box 670
Columbus, OH 43216

Expedite Filing **(Two business day processing time. Requires an additional $100.00)**
P.O. Box 1390
Columbus, OH 43216

Registration of a Foreign Limited Liability Company

Filing Fee: $99

Form Must Be Typed

CHECK ONLY ONE (1) BOX

(1) ☒ Registration of a Foreign For-Profit Limited Liability Company
(106-LFA)
ORC 1705

Jurisdiction of Formation: DE (State) USA (Country)

Date of Formation: 3/18/2004

(2) ☐ Registration of a Foreign Nonprofit Limited Liability Company
(106-LFA)
ORC 1705

Jurisdiction of Formation: (State) (Country)

Date of Formation:

Name of Limited Liability Company in its jurisdiction of formation

STERIGENICS INTERNATIONAL LLC

Name under which the foreign limited liability company desires to transact business in Ohio (if different from its name in its jurisdiction of formation) is:

Name must include one of the following words or abbreviations: "limited liability company," "limited," "LLC," "L.L.C.," "ltd.," or "ltd"

The address to which interested persons may direct requests for copies of the limited liability company's operating agreement, bylaws, or other charter documents of the company is:

STERIGENICS INTERNATIONAL LLC
Name

2015 SPRING ROAD, SUITE 650
Mailing Address

City	State	Country	ZIP Code
OAK BROOK	IL	USA	60523

The limited liability company hereby appoints the following as its agent upon whom process against the limited liability company may be served in the state of Ohio. The name and complete address of the agent is

CORPORATION SERVICE COMPANY

Name

50 WEST BROAD STREET, SUITE 1330

Mailing Address

COLUMBUS	OH	43215
City	State	ZIP Code

The limited liability company irrevocably consents to service of process on the agent listed above as long as the authority of the agent continues, and to service of process upon the Ohio Secretary of State if:

a. an agent is not appointed, or
b. an agent is appointed but the authority of that agent has been revoked, or
c. the agent cannot be found or served after the exercise of reasonable diligence.

By signing and submitting this form to the Ohio Secretary of State, the undersigned hereby certifies that he or she has the requisite authority to execute this document.

Required
Must be signed by an authorized representative.

If authorized representative is an individual, then they must sign in the "signature" box and print their name in the "Print Name" box.

If authorized representative is a business entity, not an individual, then please print the business name in the "signature" box, an authorized representative of the business entity must sign in the "By" box and print their name in the "Print Name" box.

MATTHEW KLABEN

Signature

By (if applicable)

Print Name

Signature

By (if applicable)

Print Name

Signature

By (if applicable)

Print Name

EXHIBIT D2

DATE	DOCUMENT ID	DESCRIPTION	FILING	EXPED	CERT	COPY
11/08/2017	201731201374	FOREIGN LLC - REGISTRATION CORRECTION (LFC)	50.00	300.00	0.00	0.00

Receipt

This is not a bill. Please do not remit payment.

CORPORATION SERVICE COMPANY
MONIQUE WEAVER
50 W. BROAD STREET
COLUMBUS, OH 43215

STATE OF OHIO
CERTIFICATE

Ohio Secretary of State, Jon Husted

3964415

It is hereby certified that the Secretary of State of Ohio has custody of the business records for

SOTERA HEALTH LLC

and, that said business records show the filing and recording of:

Document(s)	Document No(s):
FOREIGN LLC - REGISTRATION CORRECTION	**201731201374**

Effective Date: 11/08/2017

United States of America
State of Ohio
Office of the Secretary of State

Witness my hand and the seal of the Secretary of State at Columbus, Ohio this 8th day of November, A.D. 2017.

Jon Husted

Ohio Secretary of State

Form 543B Prescribed by:

JON HUSTED
Ohio Secretary of State

Toll Free: (877) SOS-FILE (877-767-3453)
Central Ohio: (614) 466-3910
www.OhioSecretaryofState.gov
busserv@OhioSecretaryofState.gov
File online or for more information: www.OHBusinessCentral.com

Mail this form to one of the following:

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P.O. Box 1329
Columbus, OH 43216

Expedite Filing (Two business day processing time. Requires an additional $100.00)
P.O. Box 1390
Columbus, OH 43216

For screen readers, follow instructions located at this path.

Foreign Limited Liability Company
Certificate of Correction
Filing Fee: $50
(135-LFC)
Form Must Be Typed

The undersigned authorized representative of:

Sterigenics International LLC
Name of limited liability company in jurisdiction of formation

Name of limited liability company in Ohio, if different than above

3964415
Ohio Registration Number

Delaware
Jurisdiction of Formation

RECEIVED
2017 NOV -8 PM 12:07
CLIENT SERVICE CENTER

Only complete sections that apply. (sections to be corrected)

Sotera Health LLC
Name of limited liability company in jurisdiction of formation

Name of limited liability company in Ohio

Sotera Health LLC
Name of limited liability company in Ohio must include one of the following words or abbreviations: "limited liability company," "limited," "LLC," "L.L.C.," "ltd." or "ltd"

The address to which interested persons may direct requests for copies of any operating agreement, or any bylaws, or other charter documents of the company is:

Mailing Address

City

State

ZIP Code

Complete the information in this section if the limited liability company wants to correct the statutory agent information.

The limited liability company hereby appoints the following as its agent upon whom process against the limited liability company may be served in the state of Ohio. The name and complete address of the agent is

Name of Statutory Agent

Mailing Address

City | OH State | ZIP Code

The limited liability company irrevocably consents to service of process on the agent listed above as long as the authority of the agent continues, and to service of process upon the Ohio Secretary of State if:

a. an agent is not appointed, or
b. an agent is appointed but the authority of that agent has been revoked, or
c. the agent cannot be found or served after the exercise of reasonable diligence.

By signing and submitting this form to the Ohio Secretary of State, the undersigned hereby certifies that he or she has the requisite authority to execute this document.

Required

Must be signed by an authorized representative.

If authorized representative is an individual, then they must sign in the "signature" box and print their name in the "Print Name" box.

If authorized representative is a business entity, not an individual, then please print the business name in the "signature" box, an authorized representative of the business entity must sign in the "By" box and print their name in the "Print Name" box.

Signature

By (if applicable)

Matthew J. Klaben, Senior Vice President, General Counsel and Secretary

Print Name

Signature

By (if applicable)

Print Name

EXHIBIT D3

Frank LaRose
Ohio Secretary of State

Fri Oct 04 2019

Entity#:	3964415
Filing Type:	FOREIGN LIMITED LIABILITY COMPANY
Original Filing Date:	11/30/2016
Location:	--
Business Name:	SOTERA HEALTH LLC
Status:	Active
Exp. Date:	-

Agent/Registrant Information

CORPORATION SERVICE COMPANY
50 WEST BROAD STREET, SUITE 1330
COLUMBUS OH 43215
11/30/2016
Active

Filings

Filing Type	Date of Filing	Document ID
REG. OF FOR. PROFIT LIM. LIAB. CO.	11/30/2016	201633502232
CORRECT REGISTRATION/FOREIGN LIMITED LIABILITY CO	11/08/2017	201731201374

Prior Business Names

Prior Business Name	Effective Date
STERIGENICS INTERNATIONAL LLC	11/08/2017

Frank LaRose
Ohio Secretary of State

Fri Oct 04 2019

UNITED STATES OF AMERICA
STATE OF OHIO
OFFICE OF SECRETARY OF STATE

I, Frank LaRose, Secretary of State of the State of Ohio, do hereby certify that this is a list of all records approved on this business entity and in the custody of the Secretary of State.

Witness my hand and the seal of the Secretary of State at Columbus, Ohio this 4th of October, A.D. 2019

Ohio Secretary of State

EXHIBIT D4

IN THE UNITED STATES DISTRICT COURT
FOR THE NORTHERN DISTRICT OF GEORGIA
ATLANTA DIVISION

STERIGENICS U.S., LLC, Plaintiff, v. ROGER PHELPS, Chair of the Cobb County Board of Tax Assessors, in his Individual Capacity; JOHN DEMAREST, Cobb County Board of Tax Assessors, in his Individual Capacity; CAROLYN TURNER, Cobb County Board of Tax Assessors, in her Individual Capacity; DANIEL POST, Cobb County Board of Tax Assessors, in his Individual Capacity; and THEA POWELL, Cobb County Board of Tax Assessors, in her Individual Capacity, Defendants.	)	Civil Action No.

COMPLAINT FOR DECLARATORY JUDGMENT

Plaintiff Sterigenics U.S., LLC ("Sterigenics") files this Complaint for Declaratory Judgment against Defendants Roger Phelps, John Demarest, Carolyn Turner, Daniel Post, and Thea Powell in their individual capacities (collectively, "Defendants") for their unlawful acts under the color of their offices as members of

the Cobb County Board of Tax Assessors that are causing Sterigenics reputational and imminent economic harm. In support of its claims, Sterigenics shows the Court as follows:

INTRODUCTION

1. Under the color of their offices as members of the Cobb County Board of Tax Assessors (the "BTA"), Defendants unlawfully cut the "Fair Market Values" of more than 5,000 residential properties within a two-mile radius of Sterigenics' Cobb County facility by ten percent in the BTA's 2020 annual tax assessments. Defendants publicly blame Sterigenics' facility for this purported devaluation, telling residents the devaluation was because of an "Epd-identified environmental issue" created by Sterigenics' facility. Defendants took this action despite the Georgia Environmental Protection Division's (the "EPD") confirmation that the facility is in full compliance with all air regulations and despite the state-of-the art emissions controls enhancements Sterigenics voluntarily installed at the facility. And Defendants did so just days after this Court, in another action, entered an order enjoining the unlawful efforts of County officials to close the facility in response to political pressure the County has received from an activist group based on unfounded environmental claims the County has no authority to regulate.

2. Defendants, who are political appointees of the Cobb County Board of

Commissioners, targeted Sterigenics with this devaluation of the more than 5,000 properties at issue arbitrarily and *admittedly* without supporting data showing a reduction in properties' values. Such a devaluation is unlawful under Georgia's laws that control property tax valuations. And it violates Georgia law's prohibition against arbitrary and unreasonable property valuations by the BTA.

3. As a result of Defendants' unlawful devaluation of these properties, Sterigenics faces public scorn and an imminent, publicly-announced class action lawsuit on behalf of thousands of residents asserting Defendants' unlawful devaluation of their properties as the basis for their claims. Defendants' unlawful action therefore has caused Sterigenics substantial reputational damage, and will cause Sterigenics to suffer substantial economic harm from the imminent class action in which Sterigenics will have to face substantial unfounded liability and pay substantial sums in attorneys' fees and litigation expenses to defend itself.

4. Sterigenics therefore files this Complaint to declare Defendants' arbitrary devaluation of these properties in the 2020 assessment unlawful and void.

PARTIES, JURISDICTION, AND VENUE

5. Sterigenics, formerly known as Griffith Laboratories and Griffith Micro Science, Inc., is a medical product sterilization company whose facilities are registered with and regulated by the U.S. Food and Drug Administration ("FDA").

6. Sterigenics operates a medical product sterilization facility in Cobb County at a location presently identified by the address 2971 Olympic Industrial Drive, SE, Suite 116, Atlanta, Georgia (the "Facility").

7. Sterigenics is a Delaware limited liability company whose sole member is Sotera Health LLC. Sotera Health LLC is a Delaware limited liability company whose sole member is Sotera Health Holdings, LLC. Sotera Health Holdings, LLC is a Delaware limited liability company whose sole member is Sotera Health Topco, Inc. Sotera Health Topco, Inc. is a Delaware corporation with its headquarters and principal place of business in Broadview Heights, Ohio. Consequently, Sterigenics is a citizen of Delaware and Ohio for the purposes of diversity jurisdiction under 28 U.S.C. § 1332.

8. Defendant Roger Phelps is the Chair and a member of the BTA. He is a resident of Cobb County and a citizen of Georgia for the purposes of diversity jurisdiction under 28 U.S.C. § 1332.

9. Defendant John Demarest is the Vice Chair and a member of the BTA. He is a resident of Cobb County and a citizen of Georgia for the purposes of diversity jurisdiction under 28 U.S.C. § 1332.

10. Defendant Carolyn Turner is a member of the BTA. She is a resident of Cobb County and a citizen of Georgia for the purposes of diversity jurisdiction under 28 U.S.C. § 1332.

11. Defendant Daniel Post is a member of the BTA. He is a resident of Cobb County and a citizen of Georgia for the purposes of diversity jurisdiction under 28 U.S.C. § 1332.

12. Defendant Thea Powell is a member of the BTA. She is a resident of Cobb County and a citizen of Georgia for the purposes of diversity jurisdiction under 28 U.S.C. § 1332.

13. Defendants, in their individual capacities, are proper parties to this case because of their official acts that are unauthorized by law and in violation of Sterigenics' rights, as set forth in this Complaint. *Lathrop v. Deal*, 301 Ga. 408 (2017).

14. This Court has jurisdiction over this matter pursuant to 28 U.S.C. § 1332(a) because the parties are citizens of different states and the amount in controversy exceeds $75,000, exclusive of interest and costs.

15. Defendants' unlawful action will cause Sterigenics more than $75,000 in losses, including but not limited to the potential unfounded liability Sterigenics faces in, and the substantial legal fees and expenses it would have to incur to defend

itself against, the imminent class action lawsuit property owners intend to file on behalf of more than 5,000 residential property owners against Sterigenics to recover alleged property value losses based on Defendants' unlawful action, as well as the substantial reputational harm Defendants' unlawful action is causing Sterigenics.

16. Sterigenics has standing to bring this action because it is suffering substantial reputational and imminent financial harm caused by Defendants' arbitrary and unlawful devaluation of more than 5,000 properties in tax assessment notices that Defendants publicly blame on Sterigenics' facility. That unlawful action has caused Sterigenics to face public scorn, as well as potential unfounded liability and substantial legal fees and expenses in an imminent unfounded class action lawsuit on behalf of thousands of property owners to recover for alleged lost property values based on Defendants' across-the-board devaluation of their properties. Declaring Defendants' arbitrary devaluation of these properties unlawful and void under Georgia law will redress those reputational and financial harms by eliminating the unfounded basis for the reputational harm and the imminent lawsuit the homeowners intend to file.

17. The Court has personal jurisdiction over Defendants because they are citizens of Georgia, and because the events giving rise to the claims in this Complaint occurred in Georgia.

18. Venue is proper in this Court pursuant to 28 U.S.C. § 1391, because Defendants are citizens and residents of Georgia and this Judicial District, and the events giving rise to the claims in this Complaint occurred in Cobb County within this Judicial District.

FACTS

I. Sterigenics Has Sterilized Critical Medical Products at the Facility for Almost 50 Years.

19. Sterigenics' Facility is one of only five FDA-registered medical product sterilization facilities in Georgia.

20. The Facility performs essential sterilizations of medical products that are critical to patient care.

21. Sterigenics has used ethylene oxide ("EO") in gas form to sterilize products at the Facility since the early 1970s.

22. Sterigenics' use of EO to sterilize medical products is mandated by specifically-defined sterilization processes for each product.

23. In late 2019, the FDA recognized, "there are no readily available processes or facilities that can serve as viable alternatives to those that use ethylene oxide to sterilize these devices. In short: this method is critical to our health care system and to the continued availability of safe, effective and high-quality medical devices."

24. Sterigenics has operated the Facility as a medical products sterilization facility using EO with the County's knowing and repeated approvals for decades.

25. The Facility is located in an area that the County's zoning ordinance has designated as a "Heavy Industrial" district, which the County "established to provide locations for heavy industrial uses such as . . . heavy manufacturing, chemical manufacturing and storage . . . ." Sec. 134-231(1), Cobb County Ord.

26. In 1994, the County Planning Commission and the Board of Commissioners unanimously approved and granted Sterigenics a Special Land Use Permit to use the Facility "for the purpose of a Sterilization Facility" and "subject to the Air Quality Permit issued by the State of Georgia, Department of Natural Resources, Environmental Protection Division."

27. The Facility is located in an industrial area that includes other longstanding industrial uses, such as the adjacent 358-acre Plant McDonough-Atkinson natural gas-fired power plant, the Cobb County Sutton Wastewater Treatment Facility, and the Atlanta R.M. Clayton Wastewater Treatment Facility.

II. The Facility Operates in Compliance with Environmental Regulations and Has State-of-the-Art Emissions Controls.

28. Environmental air quality matters related to Sterigenics' use of EO at the Facility are regulated by the EPD. O.C.G.A. §§ 12-9-3(12) and 12-9-4.

29. Sterigenics' Facility operates in compliance with environmental regulatory requirements, and the state-of-the-art EO emissions controls in place at the Facility consistently outperform those requirements.

30. The Facility is subject to an Air Quality Permit for EO issued by the EPD. Its current Air Quality Permit, No. 7389-067-0093-S-05-0, was issued on May 27, 2014 (the "Air Quality Permit").

31. On August 7, 2019, Sterigenics entered into a Consent Order with the EPD (the "EPD Consent Order").

32. The Consent Order stated:

> The [EPD] requested updated information from [Sterigenics] in order to conduct a modeling analysis to better characterize the ethylene oxide concentrations in areas surrounding the facility. In June 2019 the [EPD] completed its modeling analysis of emissions from the Facility, which indicate that risk from ethylene oxide concentrations in residential areas near the Facility does not exceed 100-in-1 million (1 in 10,000), which the US EPA uses in regulations as a general guide for determining the maximum acceptable lifetime cancer risk.

33. The Consent Order further stated, "[T]o the extent that the Division can ascertain, Respondent is operating the Facility in compliance with the Permit and all applicable Federal and State air regulations[.]"

34. Despite its compliance with the Air Quality Permit and all federal and state air regulations, Sterigenics voluntarily made certain enhancements to its

emissions control system at the Facility to further reduce EO emissions pursuant to its voluntary agreement in the Consent Order (the "EPD System Enhancements").

35. The EPD System Enhancements provide the Facility with the best available technology to further reduce EO emissions at the Facility beyond their already safe levels. With the EPD System Enhancements, the Facility's emissions controls system is state-of-the-art among all other sterilization facilities in the United States and captures more than 99.99% of EO emissions, including indoor fugitive emissions.

36. In an April 1, 2020 letter posted on the EPD's public website, the EPD stated that on March 24, 2020, "the EPD staff observed that the new pollution control equipment has been installed and is operational."

37. On May 12, 2020, the EPD terminated the Consent Order, noting Sterigenics' "full and complete performance of each condition" of the Consent Order.

III. The Court Enjoined County Officials' Unlawful Efforts to Close the Facility.

38. Since September of 2019, County officials have been trying to close the Facility for political purposes based on unfounded environmental matters the County has no authority to regulate.

39. In September and October 2019, County officials manufactured a sham

basis to close the Facility on an unfounded "certificate of occupancy" issue. They took that unlawful action as an improper pretext to close the Facility because of unfounded political pressure the County has received from local activists regarding unfounded environmental claims related to the Facility's use of EO.

40. Sterigenics was forced to sue the County officials to reopen the Facility after they refused to allow the Facility to resume its essential medical product sterilization operations for months. Case No. 1:20-cv-01382-WMR, Dkt. 1.

41. After Sterigenics filed that lawsuit, this Court entered an April 8, 2020 order enjoining the County officials' closure of the Facility pending a final judgment in the case, which allowed the Facility to resume its essential operations to sterilize critically-needed medical products. *Id.* at Dkt. 16.

IV. Defendants Arbitrarily Devalue All Residential Properties Within Two Miles of the Facility.

42. After the Court issued its April 8 Order, Defendants (all political appointees of the County Board of Commissioners) targeted Sterigenics in a different way, this time cutting all residential property values within a two-mile radius of its Facility by ten percent, claiming that Sterigenics was the reason for the devaluation. **Exhibit A** at 2.

43. Specifically, on April 15, 2020, Defendants voted to impose this across-the-board devaluation because of a purported "environmental air quality concern surrounding the Sterigenics plant." *Id.*

44. Defendants took this action as members of the BTA arbitrarily, unreasonably, and without supporting data reflecting that the fair market values of the properties had actually decreased, much less because of Sterigenics' Facility. *See, e.g., id.*

45. As stated in the minutes of the BTA's April 15, 2020 meeting:

> The BTA recognizes that there is an environmental air quality concern surrounding the Sterigenics plant. To date, there has been limited sales/listing activity occurring within a 2-mile radius of the plant. *The lack of data makes it difficult to determine the extent of this issue and its impact on property values in this area*. However, the BTA *feels* it is appropriate to reduce residential property values across-the-board by 10% within this study area for tax year 2020 to account for the issue. This entire area will be reviewed again for tax year 2021 to determine if sufficient sales data exists to warrant further adjustments at that time.
>
> Motion made by Assessor Post and seconded by Vice Chair to adjust all EPD designated areas, within a 2-mile radius by 10%, including New Construction properties and excluding all properties with nominal values.
>
> The Board also made a unanimous vote to include reason code "EPD Identified Environmental Issue" on all 2020 notices in the EPD designated areas.

Id. (emphasis added).

46. In late May 2020, more than 5,000 homeowners within a two-mile radius of the Facility began receiving notices from the BTA stating that their properties had been "adjusted to reflect current market value" because of an "Epd-identified environmental issue." A sample of such a notice is attached as **Exhibit B.**

V. Property Owners Intend to File a Class Action Lawsuit Against Sterigenics Based on Defendants' Devaluation of Their Properties.

47. Defendants' arbitrary and unfounded ten percent devaluation of more than 5,000 residential properties within a two-mile radius of Sterigenics' Facility for County tax assessments is causing Sterigenics substantial reputational harm.

48. After sending the tax assessment notices to the landowners within a two-mile radius of Sterigenics' Facility, the BTA told landowners that Defendants' devaluation of their properties was because of their proximity to the Facility.

49. On July 8, 2020, the Marietta Daily Journal ran an article titled, "Property values near Sterigenics plant drop 10%; more than 5,000 homes affected." **Exhibit C**. The article reported, "The decision for an across-the-board devaluation was made in a unanimous vote by the county Board of Tax Assessors, and affects just under 6,000 properties within a 2-mile radius of the Sterigenics plant, said Stephen White, the board's director and chief appraiser. . . ." *Id.*

50. On August 5, 2020, WXIA "11Alive" aired a story titled, "Class action

lawsuit being prepared against Sterigenics."[1] The story reported:

> Andrew Kurt and his wife are among those filing suit against that facility . . . . Kurt told 11Alive they moved into the Park at Vinings subdivision in 2013. Then, two months ago they received a notice from the Cobb County Tax assessor's [sic] office that the tax assessed value of their home had dropped 10% due to a Georgia Environmental Protection Division 'Identified Environmental Issue.'
>
> 'It's jarring because our home value is the biggest value we have in terms of materialiy. [sic] So, that's huge,' Kurt said.
>
> 'If you call them [the BTA], they tell you indeed it's because of the Sterigenics plant,' he added.
>
> 11Alive did call the Cobb County Tax Assessor's Office and they said, in their opinion, yes, having a plant that uses ethylene oxide to sterilize medical equipment did devalue nearby homes. . . .
>
> But the Kurts are not alone. The tax assessor's office told 11Alive more than 5,000 homeowners received a similar letter with the same devaluation notice - sent to everyone living within a two-mile radius of the Sterigenics plant.
>
> . . . .
>
> So, now Kurt and others have joined a class action lawsuit

[1] https://www.11alive.com/video/news/local/class-action-lawsuit-being-prepared-against-sterigenics/85-20493f01-8df7-4411-b201-7eb8c5eb7991; Homeowners near facility emitting toxic gas fight back after home values fall over 'environmental issue,'" WXIA (Aug. 5, 2020), https://www.msn.com/en-us/news/us/homeowners-near-facility-emitting-toxic-gas-fight-back-after-home-values-fall-over-environmental-issue/ar-BB17CigR (**Exhibit D**).

> against Sterigenics, calling it their last hope at health and full value of their home.
>
> The goal, 'absolutely recoup our value that's obvious,' Kurt said. 'But also to have Sterigenics close down permanently.'

51. Defendants' unlawful actions have therefore caused Sterigenics to suffer substantial reputational harm and face imminent economic harm from having to defend itself against an imminent class action lawsuit the property owners intend to file based on Defendants' unlawful ten percent devaluation of more than 5,000 properties in the BTA's 2020 tax assessments.

COUNT I – Declaratory Judgment

52. Sterigenics re-alleges and incorporates paragraphs 1 through 51 of this Complaint.

53. Defendants' ten percent devaluation of more than 5,000 residential properties within a two-mile radius of Sterigenics' Facility for tax assessment purposes was arbitrary, unreasonable, and unlawful under Georgia's tax laws.

54. Georgia law requires the BTA to assess taxes on the individual fair market value of each taxable property. O.C.G.A. §§ 48-5-6, 48-5-7(a).

55. Georgia law requires the BTA to "see that all taxable property within the county is assessed and returned at its fair market value and that fair market values as between the individual taxpayers are fairly and justly equalized so that each

taxpayer shall pay as nearly as possible only such taxpayer's proportionate share of taxes." O.C.G.A. § 48-5-306(a); Ga. Comp. R. & Regs. 560-11-10-.01(3) ("[T]he assessment placed on each parcel of property shall be the assessment established by the county board of tax assessors as provided in Code section 48-5-306.").

56. Fair market value is defined as "the amount a knowledgeable buyer would pay for the property and a willing seller would accept for the property at an arm's length, bona fide sale." O.C.G.A. § 48-5-2.

57. Pursuant to O.C.G.A. § 48-5-269.1, the Georgia Department of Revenue ("DOR") has adopted specific appraisal procedures for determining a property's fair market value in an Appraisal Procedures Manual codified at Ga. Comp. R. & Regs. 560-11-269.09 (the "Appraisal Regulations"). Ga. Comp. R. & Regs. 560-11-269.01(1); *id.* 560-11-269.09.

58. To determine each taxable property's individual fair market value, the BTA's appraisal staff is required by law to abide by the Appraisal Regulations when determining a property's fair market value for tax assessment purposes. Ga. Comp. R. & Regs. 560-11-10-.01(1) and (3); *id.* 560-11-10-.09(1) ("The appraisal staff shall follow the provisions of this Rule when performing their appraisals of real property."); *see also* O.C.G.A. § 48-5-269.1 ("The manual adopted by the commissioner pursuant to this Code section shall be utilized by county property

appraisal staff in the appraisal of tangible real and personal property for ad valorem tax purposes.").

59. The Appraisal Regulations require the BTA's appraisal staff to determine the fair market value of a property's land and improvements (*i.e.*, a house) separately to determine the property's total fair market value. *Id.* at 560-11-10-.09(3)(a).

60. To determine the fair market value of a property's land, the Appraisal Regulations require the use of specific appraisal methodologies: the "sales comparison" methodology or "income methodology," giving preference to the sales comparison approach. *Id.* at 560-11-10-.09(3).

61. To determine the fair market value of a property's improvements, the Appraisal Regulations require the use of specific methodologies: the "direct sales comparison approach," the "cost approach" or the "income approach." *Id.* at 560-11-10-.09 (4).

62. The DOR regulations state, "The county board of tax assessors may not adopt local procedures that are in conflict with Georgia law or the procedures required by this manual." Ga. Comp. R. & Regs. 560-11-10-.01(3).

63. In addition, Georgia law expressly precludes arbitrary and unreasonable valuations of properties for tax purposes by the BTA.

64. Defendants' ten percent devaluation of all residential properties within a two-mile radius of the Sterigenics' Facility violates Georgia law because it does not assess each property at its fair market value and does not fairly and justly equalize fair market values as between the individual taxpayers in the County.

65. Defendants' ten percent devaluation of all residential properties within a two-mile radius of the Sterigenics' Facility also violates Georgia law because it does not represent a determination of each property's fair market value in accordance with any of the required appraisal methodologies set forth in the Appraisal Regulations.

66. Defendants' ten percent devaluation of all residential properties within a two-mile radius of the Sterigenics' Facility also violates Georgia law because it was an arbitrary and unreasonable determination of each property's value.

67. As the minutes of the BTA's April 15, 2020 meeting reflect, Defendants had no data supporting their ten percent devaluation of the properties at issue:

> To date, there has been limited sales/listing activity occurring within a 2-mile radius of the plant. *The lack of data makes it difficult to determine the extent of this issue and its impact on property values in this area.* However, the BTA *feels* it is appropriate to reduce residential property values across-the-board by 10% within this study area for tax year 2020 to account for the issue.

Exhibit A (emphasis added).

68. Georgia law does not allow the BTA to apply a uniform across-the-board reduction of numerous properties' valuations for tax assessment purposes.

69. Defendants' unlawful action to reduce the tax assessment values of properties within a two-mile radius of its Facility is causing Sterigenics substantial reputational harm. Thousands of homeowners now incorrectly believe that Sterigenics' Facility has caused their home value to decrease by ten percent.

70. Defendants' unlawful action to reduce the tax assessment values of properties within a two-mile radius of its Facility is also causing Sterigenics to face imminent and substantial financial harm. Residents within a two-mile radius of Sterigenics' Facility are preparing a class action lawsuit against Sterigenics on behalf of more than 5,000 landowners to recover alleged property value losses based on Defendants' unlawful determination that the Facility has devalued their properties. Sterigenics faces potential unfounded liability and incurring substantial legal fees and expenses in such a class action because of Defendants' unlawful action.

71. An actual and substantial continuing controversy exists between Sterigenics and Defendants who have adverse legal interests concerning the legality of Defendants' determination that Sterigenics' Facility has devalued more than 5,000 residential properties within a two-mile radius of the Facility by ten percent.

72. Because of Defendants' unlawful action, Sterigenics will continue to suffer injuries in the future if Defendants' determination that Sterigenics' Facility has devalued more than 5,000 residential properties within a two-mile radius of the Facility by ten percent is not declared unlawful and void.

73. Pursuant to the Uniform Declaratory Judgment Act, 28 U.S.C. §§ 2201 and 2202 and Federal Rule of Civil Procedure 57, Sterigenics is entitled to a judgment declaring that Defendants' devaluation of all residential properties within a two-mile radius of the Facility by ten percent is unlawful and void.

PRAYER FOR RELIEF

WHEREFORE, Sterigenics respectfully requests the following:

a. That process issue according to law;

b. That the Court declare that Defendants' devaluation of all residential properties within a two-mile radius of the Facility by ten percent is unlawful and void.

c. That the Court award Sterigenics its attorneys' fees and costs incurred in this case; and

d. Any other relief this Court should deem just and appropriate.

[Signature block on following page]

Respectfully submitted this 14th day of August, 2020.

ALSTON & BIRD LLP

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Attorneys for Plaintiff Sterigenics U.S., LLC

EXHIBIT E

Sotera Health Nelson Labs Nordion Sterigenics Sterigenics GPS Login

Sterigenics
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Have a question? C
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Company Overview

We are over 1,600 engineers, scientists, safety specialists, and solution providers focused on eliminating threats to the health of humanity. We have global breadth and more than 90 years o deep expertise across Gamma, Ethylene Oxide (EO), Electron beam (E-Beam), and X-ray sterilization. Our operations span 47 facilities in 13 countries to ensure we are the "point of safe" for our customers.

Safeguarding Global Health™ – with every product we sterilize

We are a business unit of Sotera Health, along with Nordion® and Nelson Labs™. Together, we are the world's leading, fully integrated protector of global health and touch the lives of more than 180 million people around the world each year. Sotera Health is a portfolio company of Warburg Pincus and GTCR.

On November 7, 2017, Sterigenics International LLC changed its parent company name to Sotera Health LLC. Its three companies – Nelson Labs™, Nordion®, and Sterigenics® – maintain their current names and leverage the strength of the business units to deliver on its mission of Safeguarding Global Health™.

Shanghai, Ch

- Read the full press release

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Case 1:22-cv-00128-JJM-PAS Document 84-40 Filed 03/22/22 Page 46 of 539

Why Choose Sterigenics?

Sterigenics is the leading global provider of comprehensive sterilization solutions and expert consulting services. We offer:

Safety and quality
Best-in-class, in-house expertise across engineering, regulatory, and EH&S to ensure consistent quality and reliability to provide you with the confidence you want.

Global integrated network
Our operations span 47 facilities in 13 countries, providing the flexibility and redundancy to meet all of your contract sterilization needs.

Industry-leading experts
We are over 1,600 engineers, scientists, safety specialists, and solution providers with more than 90 years of deep expertise across Gamma, Ethylene Oxide, E-Beam, and X-ray sterilization.

Outstanding service
We are driven to fulfill our customers' needs in a timely fashion and with the highest quality and care.

Investment & Expansion Efforts

Sterigenics is committed to addressing the growing need for sterilization in many parts of the world and partnering with our customers to eliminate threats to human health. We continue to invest in our global network to meet our customers' growing demand for Gamma irradiation capacity as a critical step in their product development processes.

Sterigenics is making significant investments in technology to expand both Gamma and Ethylene Oxide (EO or ETO) sterilization capacity throughout our global network. In 4Q 2108, we opened a new Gamma facility in Chesterfield/Derbyshire, UK and in August 2017, we completed a major expansion of our Forth Worth facility, adding Gamma capacity and increasing total sterilization throughput. In June 2017, we completed a project that

Quick Facts

Founded
Providing mission-critical and government-mandated sterilization services since 1925

Capabilities
Over 90 years of deep expertise across Gamma, EO, E-Beam, and X-ray sterilization

Industry & Customer Base
End markets include medical devices, pharma, and food/commercial with 2,800+ customers in 52 countries

Regulatory Thought Leadership
Over 30 seats in key industry groups (ISO, AAMI, NFPA, ASTM, etc.)

Global Employees
1,500+ employees worldwide

Global Capacity
47 facilities in 13 countries

Headquarters
Oak Brook, Illinois, USA

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significantly increased throughput at our operation in West Memphis, Arkansas, and in 2015, we opened a significant expansion in Gurnee, Illinois. In addition, Sterigenics has recently expanded our EO facilities in Ontario, California; Costa Rica; and Wiesbaden, Germany. Further announcements are expected in the near future.

History

We are proud to have a rich history and a stellar track record. Through the years, our purpose an commitment has remained the same – Safeguarding Global HealthTM. These are the events tha have made that passion a reality.

1925 1978 1999 2004 2011 2017

1925

In the mid 1930s, Dr. Lloyd A. Hall, Technical Manager of Griffith Laboratories in Chicago, Illinois, invented the Ethylene Oxide...

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1978

SteriGenics International, then known as Radiation Sterilizers, Inc., opened its first Gamma facility in Tustin, California, in 1978...

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+1 (800) 472-4508

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EXHIBIT F1

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Have a question? C
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Global integrated network
Our operations span 47 facilities in 13 countries, providing the flexibility and redundancy to meet all of your contract sterilization needs.

Industry-leading experts
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EXHIBIT G

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NEWS: Sotera Health's Sterigenics Announces Acquisition of Iotron Industries Learn More

Sotera Health

About News

About Us

HISTORY AND VALUES LEADERSHIP PRIVACY

About Sotera Health

Sotera Health brings together Sterigenics, Nelson Labs and Nordion, each of which are established, highly reputable players in the global health arena. Working as a team, Sotera Health and its companies have one common goal: Safeguarding Global Health®. With these three companies operating together, Sotera Health, formerly Sterigenics International, leverages more than 500 combined years of scientific expertise to ensure safety across the medical device, pharma, tissue and food industries. With over 2,800 employees globally, including more than 350 scientists, the company operates 63 facilities worldwide across 13 countries. Our purpose is bigger than the products and

Our Values

SAFETY

We are uncompromising in our commitment to health and well-being.

CUSTOMER FOCUS

We are driven to fulfill our customers' needs with the highest

Our purpose is bigger than the products and services we provide. We ensure that health care around the world is consistently and reliably safe every day. Our purpose, our conduct, and our values are at the heart of our commitment to employee safety, environmental responsibility, and sustainability principles. Download Our Sustainability Report

Our History

The Sotera Health name is new, but our track record for reliability and safety in global health is well established. Formed in 2017 as the parent company for Nelson Labs, Nordion and Sterigenics, Sotera Health is the leader in protecting global health thanks to the longstanding reputation for quality across each of its companies. In aggregate, Sotera Health has over 185 years of combined industry leadership. Sterigenics has provided safe sterilization services since the 1930s. Nordion has established expertise in gamma technologies and medical isotopes since 1946. Nelson Labs has provided expert lab testing since 1985. Our most recent addition to the Sotera Health family, Toxikon Europe, has established a leading extractables and leachables testing platform since 1990. An impressive history that points to an even brighter future.

quality and care.

PEOPLE

We value our people who are part of a global team that is diverse, respectful, passionate and collaborative.

INTEGRITY

We are honest, reliable and accountable in everything we do.

EXCELLENCE

We exceed the expectations of our stakeholders and continue to improve and innovate in everything we do.

9100 South Hills Blvd, Suite 300 Broadview Heights, OH 44147

Privacy Policy | info@soterahealth.com 440-262-1410

EXHIBIT H1

Sotera Health

Safeguarding Global Health™

Global Corporate Sustainability and Social Responsibility Report

2017

About **Sotera Health**

Sotera Health LLC, along with its business entities, is the world's leading fully integrated protector of global health. With over 500 years of combined scientific expertise, we ensure the safety of healthcare by providing mission-critical services to the medical device, pharmaceutical, tissue and food industries.

We operate more than 63 facilities in 13 countries. We have over 2,600 employees globally and touch the lives of more than 180 million people around the world each year. We serve more than 5,000 customers worldwide including 75 of the top 100 medical device manufacturers.

Sotera Health goes to market through its three best-in-class companies – Nelson Labs™, Nordion® and Sterigenics® – with the mission of ensuring the safety of healthcare every day.

Nelson Labs offers microbiological and analytical testing and expert advisory services to assist customers in developing and maintaining sterilization solutions in medical devices, tissue/implantable products, and the pharmaceutical and biologics fields.

Nordion is the world's leading provider of Cobalt-60, a radioisotope used in gamma sterilization and specialized medical devices for the treatment of cancer.

Sterigenics provides comprehensive contract sterilization and ionization solutions for the medical device, pharmaceutical, food safety and high-performance materials industries.

A Message from **Michael Petras**

365 days a year, around the planet, we help solve mission-critical healthcare issues. Safeguarding Global Health™ is our mission. It's what guides us in what we do every day.

Sotera Health operates 63 facilities in 13 countries. We provide precise lab services, and reliable supply of radioisotopes to support, comprehensive sterilization solutions to the medical device, pharmaceutical, tissue and food industries. Sustainability is key to powering our customers' innovations, moving our industries forward and keeping people on our planet safe.

We are committed to sustainability. We are committed to approaches that deliver value to our people, our customers, their families and the communities in which they work, play and live.

The choices we make, make a difference. Our sustainability principles improve our social community, protect our environment and improve the safety of every individual who comes to work each day to protect human health.

We invest in our capabilities, our processes, our people and our customers to both sustain our business and reach our goals. In this Global Corporate Sustainability and Social Responsibility Report 2017, you will read about our people on the front lines who work hard to make the world a better and safer place. We are over 2,600 people serving over 5,000 customers in over 50 countries and touching the lives of more than 180 million people around the world each year.

We are Sotera Health. Safeguarding Global Health™.

Michael B. Petras, Jr.
Chief Executive Officer
Sotera Health

"Safeguarding Global Health™
is our mission. It's what guides us
in what we do every day."
— Michael B. Petras, Jr.
Chief Executive Officer, Sotera Health

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EMPLOYEE SAFETY + DEVELOPMENT

Each of us has our reasons for embracing sustainability practices.

Why is **Sustainability** Important to You?

Each of us has our reasons for embracing sustainability practices. At Sotera Health, our reasons are to enable our people, our customers, our families and our neighbors to live every day to the fullest. Safeguarding Global Health™ doesn't happen on a whim. Business health doesn't happen on a whim. That is why, in 2016, we united our three business units on a single path.

Nelson Labs™ A Sotera Health company

Nordion® A Sotera Health company

Sterigenics® A Sotera Health company

United Brand

United, we can achieve business health and global health. United we are committed to sustainability.

United Conduct

United, we share a common Global Code of Conduct – principles our people operate by each day. We are committed to operate with the highest ethical standards and deliver on our promises.

United Values

United, we share common **core values** – values we operate by each and every day.

SAFETY | We are uncompromising in our commitment to health and well-being.

CUSTOMER-FOCUS | We are driven to fulfill our customers' needs with the highest quality and care.

PEOPLE | We value our people who are part of a global team that is diverse, respectful, passionate and collaborative.

INTEGRITY | We are honest, reliable and accountable in everything we do.

EXCELLENCE | We exceed the expectations of our stakeholders and continue to improve and innovate in everything we do.

Our purpose is bigger than the products and services we provide. We ensure that healthcare around the world is consistently and reliably safe every day. Our purpose, our conduct and our values are at the heart of our three Sustainability Principles.

Sustainability Principle #1

SOCIAL + COMMUNITY INVOLVEMENT

Our facilities, people and their families work, play and live in communities across the planet.

Within their communities, they make a **positive impact** across a range of interests and issues.

Focus: **DIVERSITY**

Women in **STEM**

Science
Technology
Engineering
Mathematics

Focus: **CHARITY**

CANCER
Research & Care
YOUTH EDUCATION
Healthcare & Environmental Responsibility

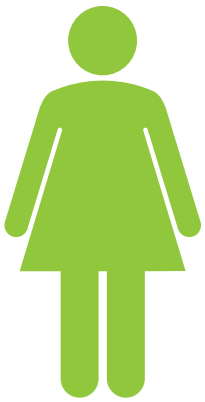
GIVING
Blood & Food

Focus: **DONATIONS**

$85,000
DISASTER RELIEF

People affected by Hurricane Harvey, Hurricane Irma, Hurricane Maria and the Mexico City Earthquake

Diversity



Women hold **less than 25%** of Science, Technology, Engineering and Mathematics (STEM) jobs in the USA. Because STEM is an integral discipline in the Sotera Health companies, **STEM** is a **focus for our people**.

In 2017:

- 49 women participated in a networking session hosted at Nelson Labs, Salt Lake City (USA) to encourage young women to explore science as a career.
- 40 teachers spent a day at Nelson Labs to develop real-world teaching plans that prepare their students to enter the workforce.
- 90 STEM students participated in a half-day workshop that simulates tests Nelson Labs perform.
- 17 Nelson Labs Women in STEM Education (WISE) committee members planned hands-on science activities for the Utah Junior Achievement and Career Initiative Program to increase students' exposure to STEM concepts and careers.
- 4 Nelson Labs WISE committee members traveled to the Native American Reservation in Bluff Utah/Monument Valley along with Utah Junior Achievement to engage 700 students in science.

"Traveling to the Indian Reservation to talk about science with 700 students was such an amazing experience. The students were very engaged and excited about the hands-on activities that our 17-strong WISE committee developed."

— Tina May
Sr. Director of Laboratory Operations, Nelson Labs
Co-Chair Women in STEM Education Committees

Charity

Worthwhile **causes** pull at our heart strings.

In 2017:

- Nordion's support of The Ottawa Hospital spans 20 years raising funds for cancer care and cancer research. Through title sponsorship of events like Hockey Fights Cancer, our people supported fund raising initiatives.
- 150 children, their teachers and our people participated in a day of learning at a local zoo compliments of Sterigenics' facilities in Cotia and Jarinu (Brazil). Through entertaining theatrical performances, the children learned about areas of sustainable concern like conserving energy and water, recycling for the future, health and personal hygiene.
- Worldwide, our people donated to Ronald McDonald House, Toy Mountain, Greater Vancouver Food Bank, Volunteers of America Homeless Youth, local school districts, and local hospitals; as well as, donated blood to blood banks and clothing, school supplies and hygiene kits to the less fortunate.

"The children's eyes sparkled throughout the day. This day of learning activity motivated us to move forward with similar new initiatives with the conviction that we can somehow contribute to a more conscious and better future."

— Fernando Reichmann
Vice President of Operations Latin America, Sterigenics

Donations

In 2017, natural disasters impacted many communities on our planet: Hurricane Harvey in Houston (USA); Hurricane Irma in the Caribbean and Florida (USA); Hurricane Maria in Dominica, Puerto Rico and other parts of the Caribbean; and an earthquake in Mexico City.

To aid in the relief efforts, Sotera Health partnered with *GlobalGiving*, a global crowdfunding community that connects non-profits, donors and companies, that earned Charity Navigator's highest rating of four stars in the latest ratings published by the charity evaluator[1]. **Sotera Health donated $25,000.**

And, when more than **185 employees donated over $30,000** to *GlobalGiving*, Sotera Health matched that in a second donation to *GlobalGiving*.

[1] Source: Wikipedia

WE MAKE A DIFFERENCE

Our people are diverse. Our social + community causes are diverse. We are proud of our people who take **pro-active roles** to make a difference.

Sustainability Principle #2

ENVIRONMENTAL RESPONSIBILITY

We are dedicated to protecting the environment and our communities. Our facilities adhere to Environmental Management Systems (EMS) of established requirements and standards. We focus on **continuous improvement** and eliminating risk to protect people, the environment and property.

Our EMS **meets** or **exceeds** compliance requirements set by our regulators.

3-YEAR WASTE DIVERSION

Nordion's facility in Ottawa Diversion Rate

2017 **73.5%** 2016 **76.0%** 2015 **63.7%**

"All Sterigenics USA facilities that use ethylene oxide (EO) for sterilization generate ethylene glycol as a by-product of the emission control system. Ethylene glycol is a useful industrial compound found in many consumer products[2]. Rather than allowing ethylene glycol to become a waste material, we partner with local vendors who use this material as a raw material. In 2017, our EO facilities generated approximately 425,000 gallons (3,823,000 pounds) of ethylene glycol. 97% of it was recycled."

— **Philip Macnabb**
President, Sterigenics

425,000 gallons
ETHYLENE GLYCOL
97%

[2] Centers for Disease Control and Prevention

Environmental Protection

Our EMS deliver on leading environmental standards including the internationally-recognized **ISO 14001 EMS standard**. Certification to 14001 is voluntary and adherence allows for systematic control and improvement of our environmental performance.

In 2017:

- 2 Nordion facilities – Laval and Ottawa (Canada) – maintained ISO 14001 certification.
- 2 Sterigenics facilities – Bangkok (Thailand) and Minerbio (Italy) – maintained ISO 14001 certification.
- 1 Sterigenics facility – Petit-Rechain (Belgium) – initiated the certification process.

Waste Management

We strive to **reduce**, **reuse** and **recycle** to eliminate unnecessary waste and uphold environmental responsibility.

In 2017:

- Nordion's facility in Ottawa (Canada) diverted 73.5% of its waste normally destined for landfill.
- Sterigenics facilities used 97% of its ethylene glycol byproduct as an ingredient in a consumer product and avoided disposing it as waste.
- Every effort counts. Many Sterigenics' facilities around the planet practice responsible waste diversion; in fact, a facility in Gurnee (USA) diverted the majority of corner board[3] every quarter.

Energy

We **conserve electrical energy** to reduce pollution and reduce greenhouse gas emissions. Conserving energy is important.

In 2017:

- Nelson Labs' Itasca (USA) facility was renovated. We sold equipment for re-use or recycled it. We designed the renovated facility with green energy in mind including energy-saving incubators and refrigerators that contained non-ozone-depleting refrigerant and motion-activated LED lighting.
- Nelson Labs' Salt Lake City (USA) facility installed new roofing that decreased heat loss.
- Nordion's facility in Ottawa (Canada) reduced energy usage by an estimated 80,000 kWh. To put this into perspective, the average annual electricity consumption for a house in the USA is 10,766 kWh[4].
- Sterigenics' Gurnee (USA) facility installed new roofing that decreased heat loss.
- Sterigenics' Hayward (USA), Salem (USA), Rantigny (France) and Shanghai (China) facilities each installed new and improved lighting.

[3] DID YOU KNOW? Using corner board on packaging, cost-effectively replaces wood or metal protectors to strengthen containers and palletized goods. Source: https://www.ipack.com/solutions/corner-board-maximize-packaging/

[4] Source: https://www.eia.gov/tools/faqs/faq.php?id=97&t=3

WE MAKE A DIFFERENCE

Sotera Health increases the amount of **green energy usage** in open energy markets through contracts with local utilities. It's the right thing to do for our environment.

Sustainability Principle #3

EMPLOYEE SAFETY + DEVELOPMENT

We care about our **people**.

Sotera Health:

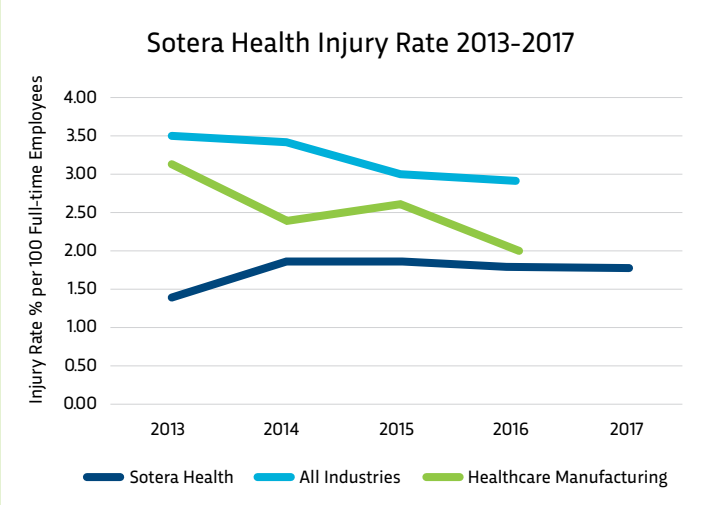
- Provides training and **developmental growth** opportunities throughout employees' careers.
- Ensures **health and safety** resonates in everything we do.
- Emphasizes **continuous improvement** to ensure a safe and healthy work environment.

We promote a safe and healthy work environment for our people, visitors and contractors, and a safe supply chain for customers – all the way to the end user. Our facilities around the world adhere to Safety Management Systems (SMS) of established requirements and standards. Our SMS are consistent with accepted standards including OHSAS 18001.

Safety Metrics

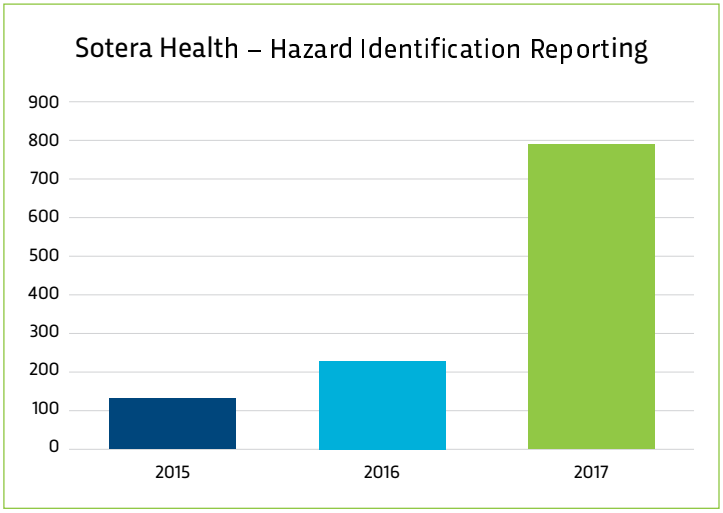
As we strive for excellence, we measure and trend health and safety performance, not only to satisfy regulatory requirements but – more importantly – to identify **continuous improvement opportunities**.

By identifying where, when and how incidents occur in any of our facilities around the world, we strive to improve systems and practices to **prevent** an incident from happening again.



Source: United States Department of Labor Occupational Safety and Health Administration (OSHA)

Injury rates are lower compared to all industries and like companies. In 2017, 25% of our facilities achieved the milestone of zero recordable injuries for 10+ years (or since acquired by Sterigenics).



Starting in 2017, we took a proactive approach to improve safety and prevent incidents. As a result, more safety measures were put in place to better protect our people.

Safety Campaign

Safety is a core value. We challenge our people to support our health and safety practices. We also challenge our people to contribute to the **continuous improvement** of our safety practices.

Sterigenics' *Safety Starts with Me* program promotes a prevention-based culture of safety. We make it top-of-mind to watch out for each other, report unsafe conditions and prevent injury.

In 2017, Sterigenics launched a third-party workplace safety program to promote safety in its lab/manufacturing facilities. Each month, the program educated people on a new safety topic.

A poster launched the safety topic and a toolkit of activities and ideas engaged people in discussion about how the specific topic applied to them in both their work and home environments. The program design continuously kept safety top-of-mind.

Safety Systems

In addition to safety programs, we continue to refine our systems to put safety at the forefront of everything we do. A **safety-first culture** is consistent with our purpose of Safeguarding Global Health™.

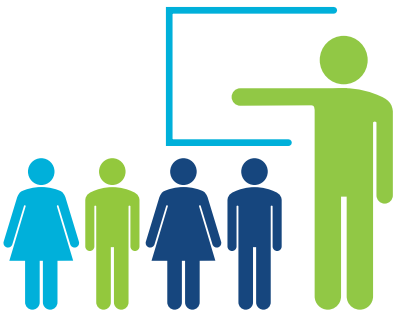
- Nordion's site in Ottawa (Canada) delivered bi-annual Safety Focus Talks to operations managers, who then delivered the Safety Focus Talk to their teams.
- Sterigenics' staff within the operations department gave safety talks at the start of shift changes. Talks ranged from corporately-mandated safety protocol discussions to known safety incidents that occurred at other sites to site-specific safety discussions.
- Sterigenics advanced the safety-first culture by starting all meetings with safety-related information.
- Nelson Labs had zero lost time accidents and regularly publishes safety newsletters to all employees.

Employee Training + Wellness

We are committed to safety. We believe training and awareness are the first steps. Our Safety Management Systems provide an **extensive framework** to train our people.

In 2017:

- We maintained wellness programs. The programs focused on physical fitness, mental wellness, nutrition, healthcare services and include newsletters and activities to promote wellness.
- Nordion continued its comprehensive emergency preparedness program consisting of multiple emergency response plans for staff, facilities, controls, procedures and practices. These plans continued to put safety and security first for its people, neighbors and the environment. Nordion collaborated with public emergency response organizations, and conducted drills involving them and their people as part of emergency preparedness.
- Sterigenics established a global electronic Learning Management System (eLMS) to be used by all people. Both Nordion and Nelson Labs continued to maintain existing eLMSs. eLMSs are our platform to deliver unified training and faster time to compliance, and will provide new learning pathways. On an environmental safety note, our eLMSs reduced and eliminated paper-based training records and increased employee productivity.



WE MAKE A DIFFERENCE

We attract and retain the **best and brightest minds**. We promote dynamic leadership at all levels supported by educational programs. We care about our **people**. Our people make a difference.

Why Sustainability is Important to Us

At Sotera Health we recognize that sustainability of Safeguarding Global Health™ rests on the sustainability of business health. We believe continued focus on our three pillars of sustainability – **Social + Community Involvement, Environmental Responsibility and Employee Safety + Development** – positively contribute to the health and well-being of millions of lives on this planet.

Sotera Health

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Broadview Heights, OH 44147
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EXHIBIT H2

Sotera Health

Global Code of Conduct

Living our values every day

Our Vision

At Sotera Health, our vision is to be the leading provider of mission-critical solutions to improve global health.

In fulfilling our vision, all of our actions are driven by our Company Values each and every day.

Our Values

PEOPLE: We value our people who are part of a global team that is diverse, respectful, passionate and collaborative.

CUSTOMER FOCUS: We are driven to fulfill our customers' needs with the highest quality and care.

INTEGRITY: We are honest, reliable and accountable in everything we do.

SAFETY: We are uncompromising in our commitment to health and well-being.

EXCELLENCE: We exceed the expectations of our stakeholders and continue to improve and innovate in everything we do.

A Message from Michael Petras, CEO:

At Sotera Health, our vision is to be the leading provider of mission-critical solutions to improve global health. We value each of you as members of the Sotera Health team not only because you are highly skilled in what you do for our Company, but also because you have demonstrated values that will contribute to our strong reputation – ensuring that Sotera Health is the most trusted name in the industry.

Maintaining this trust is critical to fulfilling our vision and requires each of us to act consistently with our Company Values of People, Customer Focus, Integrity, Safety and Excellence.

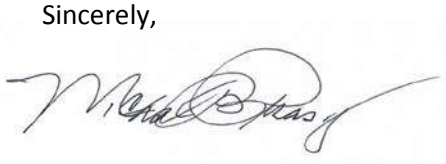
We are proud to share our Global Code of Conduct with you, which outlines the principles under which we conduct business. Our Company is committed to operating with the highest level of ethical standards, delivering on our promises and protecting our assets and reputation in a rapidly changing global environment. This Code is the embodiment of that commitment.

The following pages provide information in many different areas, but the message is always the same: each employee, officer and director is expected to comply with both the spirit and the letter of the Code.

Please take the time to read, understand and refer back to this Code on a regular basis. Consider how it applies to your work and how your actions and decisions affect others. The Code is available on the intranet of your business unit along with resources to guide how to report concerns about suspected violations of the Code, company policy or the law.

Thank you for your commitment to the Sotera Health Global Code of Conduct. Your leadership and vigilance help protect our Company's assets and reputation and contribute to our ongoing success.

Sincerely,



Michael B. Petras, Jr.
CEO

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Personal Commitment Acknowledgement of Sotera Health Global Code of Conduct **Error! Bookmark not defined.**

This Global Code of Conduct is not an employment contract and does not create contractual rights. This Code replaces the Sterigenics International Code of Conduct, the Nordion Global Business Practice Standards, and Nelson Laboratories Code of Conduct Policy. This Code is intended to supplement and not to replace other existing Sterigenics, Nordion or Nelson Labs policies and procedures.

Introduction

Purpose

The Purpose of this Global Code of Conduct ("Code") is to set out the principles that govern the global business activities and conduct of Sotera Health and its subsidiaries (collectively referred to as "Sotera Health" or the "Company"). Sotera Health is committed to the highest standards of business ethics, integrity and compliance with the laws governing its global business operations.

Scope

This Code applies globally to all Company directors, officers and employees. Sotera Health requires that its directors, officers and employees participate in regular training on this Code and certify their understanding of and compliance with the principles of this Code and related Company policies and procedures. This Code is not intended to cover every issue or situation an employee, officer or director may encounter at the Company. Instead, this Code contains the principles upon which sound and ethical business decisions must be made and implemented. This Code is not intended to and does not create any legal rights for any customer, supplier, competitor, stockholder or any other person or entity.

Each of our business units is required to follow industry-specific standards and regulatory obligations. These standards and regulations continue to apply and are complementary to the principles under this Code. For example, the Nelson Labs Technical Consulting Code of Ethics will continue to apply to Nelson Labs in addition to the requirements under this Code.

In addition, Sotera Health business units may enter into agreements either directly with a government- or state-owned agency or with a prime contractor of a government- or state-owned agency of the United States, or have other dealings with U.S. government officials. Sotera Health is implementing a separate U.S. Government Code of Business Ethics and Conduct ("U.S. Government Code of Ethics") which governs business with the United States government at the federal, state and local level, including government-funded entities. To the extent there is any conflict between this Code and the U.S. Government Code of Ethics, the U.S. Government Code of Ethics will govern when it is applicable. The U.S. Government Code of Ethics is posted on the Company's intranet sites. If you interact directly with any U.S. government- or state-owned agency, prime contractor or high-level subcontractor or have involvement with an agreement that contains U.S. Government contracting requirements, you must read and understand the U.S. Government Code of Ethics as well as this Code.

In this Code, "Executive Management" means our Company CEO and members of the Corporate Executive Council. "Senior Management" means Executive Management, corporate heads of functional departments and the Vice Presidents of the Company's business units.

Stay True to Our Values: People, Customer Focus, Integrity, Safety and Excellence

Our Values are critical to all of our actions at Sotera Health. As we do our jobs each and every day, in making decisions and in everything we do, we should take into account our Values, this Code and applicable laws.

An Integral Component of Our Jobs

Conducting Company business with honesty and high ethical standards, in compliance with applicable law and consistent with our Values, is essential to our success. If you fail to meet the standards of business conduct described in this Code, you may be subject to discipline, corrective actions or, in some circumstances, termination. The appropriate members of management will determine the actions to be taken in the event of violations of the Code.

Various Laws May Apply

Sotera Health has its roots in the United States and conducts business around the world. Our employee base includes citizens of many different countries, and our operations are equally subject to the practices and laws of many countries. Certain laws of the United States and some other countries apply across borders, extending to Sotera Health operations throughout the world. In some instances, there may be a conflict between the applicable laws of two or more countries. When you encounter such a conflict or when you have any questions about what requirements apply to you, consult the Legal Department for guidance.

Asking Questions and Voicing Concerns

Responsibility to Understand This Code

It is your responsibility to have an understanding of this Code and the policies and procedures that apply to your job. Questions are encouraged. Ask your manager, the Legal Department or Human Resources for guidance if you have a question or find yourself in a position which may compromise or violate the principles of this Code.

Responsibility to Foster a Culture of Compliance

At Sotera Health, we are all leaders. As leaders, we all have the responsibility to foster a culture of compliance, fairness, honesty and accountability. Leaders in our Company are expected to lead by example, in words and actions, reinforcing the importance of ethical behavior and compliance, and creating an environment in which each of us is comfortable asking questions and raising issues. Leaders must ensure that it is never acceptable to achieve business results at the expense of our Values, ethical conduct or compliance with this Code. Each manager and supervisor should openly support inquiries with respect to the application of this Code. Employees are expected to cooperate fully if asked to take part in any inquiry.

Retaliation or taking adverse action against anyone for raising a genuine concern about compliance with this Code, law or policies, or for helping to resolve an integrity concern, is a violation of this Code. This means you will not be disciplined, lose your job or suffer any other negative consequences for voicing concerns or asking questions about the Company's legal or ethical obligations as long as you are acting in good faith. Acts of retaliation should be reported immediately to your manager, an Ethics Representative or the Company's Global Ethics Line. In addition, unauthorized disclosure of an investigation or an individual identified in an investigation is a violation of this Code.

Responsibility to Report a Concern

One of the most important responsibilities each of us has is the obligation to raise a concern about a suspected or actual violation of this Code or unethical or illegal conduct. Even the appearance of impropriety could be very damaging to the Company. Being silent and not reporting the concern could bring serious harm to Sotera Health, loss of confidence in the Company by customers or other stakeholders, fines and other penalties against the Company and fines or prison sentences for individual employees, officers or directors. The information and diagram below outline the different avenues that are available to you in reporting a concern.

As a first step, you should speak with **your immediate manager or supervisor** for assistance in addressing any concerns. If you prefer not to go to your manager or supervisor, feel free to discuss your concerns with the **Legal Department, Human Resources or any member of the Senior Management team**. Concerns about accounting, internal accounting controls, auditing matters or other financial concerns can also be reported by contacting the Sotera Health **Corporate Controller** or the **Chief Financial Officer**. You may also file a report with the Company-designated **Ethics Representatives** (i.e., the Sotera Health General Counsel and the Chief Human Resources Officer, together the "Ethics Representatives") or through the **Global Ethics Line**. Details on how to submit a report are in Appendix A.

If you have any concern or become aware of a potential violation involving fraud, conflict of interest, bribery, kickbacks or false claims, you must report these to the Legal Department, the Ethics Representatives or, where applicable, through the Global Ethics Line. Please contact the General Counsel if you have any questions.

For Additional Guidance: If you have a question about business practices or a concern about a suspected violation, there are a number of different resources you can go to for advice. The diagram above and the attached Appendix A outline various options. Please feel free to go to the resource with which you are most comfortable.

Global Ethics Line

The Global Ethics Line is one of the ways to report a concern or obtain information or advice anonymously, to the extent permitted by law. The Global Ethics Line is operated by specially trained representatives who work for a third-party service provider (NAVEX Global, Inc.) and are independent of Sotera Health. The Global Ethics Line representatives will listen to your concerns, ask questions and review the information provided. They will share the information with our Company's Ethics Representatives who will review the question or concern. The caller can arrange to communicate directly with an Ethics Representative through the Global Ethics Line service provider. Confidentiality will be maintained to the extent possible in light of applicable legal requirements. The scope and anonymity of reports that can be taken by the Global Ethics Line may be restricted by law in some jurisdictions. These restrictions are described in our FAQs available on the Global Ethics Line website at www.soterahealth.ethicspoint.com. **Please see Appendix A to this Code for the Global Ethics Line contact information specific to your region**. In addition, the Sotera Health Whistleblower Policy (or the Sotera Health EU Global Ethics Line Privacy Policy in Europe), available on the Company's intranet sites, provides further information and procedures regarding concerns related to accounting, internal accounting controls and auditing matters, and where permissible by law, violations of this Code, laws and regulations.

Investigations

Suspected issues and reported possible Code violations will be investigated promptly and with the highest degree of confidentiality and anonymity that is possible under the specific circumstances and as permissible by local law. If the investigation indicates that a violation of this Code may have occurred, the Company will take appropriate action.

Ethics and Policy Information on Company Intranet Sites

The Company's intranet sites contain further information on the policies and principles embodied in this Code. This includes references to more detailed policy documents, references to other sites with related information, and "Questions and Answers" that address situations or concerns that frequently arise. See examples below:

Question: *I am being asked to do something I am uncomfortable with. What should I do?*

Answer: *You do not need to get involved in anything that makes you uncomfortable. Contact one of the resources identified in the diagram above to discuss the issue and come to a resolution.*

Question: *If I do raise a business practice issue, will I get in trouble?*

Answer: *No. You will not be reprimanded for raising a genuine concern. You have an obligation to question situations that you believe could violate the Code, any policy or a legal requirement, and we expect you to do so.*

Waivers

The Company may waive application of the principles set forth in this Code only where circumstances warrant granting a waiver based on the best interests of the Company. Any waiver pertaining to an employee must be approved by the General Counsel. Waivers of the Code for members of the Board of Directors and Executive Management may be made only by those members of the Board of Directors not involved in the proposed waiver. "Board of Directors" means the governance board of managers of Sotera Health Topco Parent, LP.

Personal Integrity

Standard of Conduct

Sotera Health conducts all of its activities in an ethical manner, with integrity, trust, respect and fair dealing. These standards should govern our conduct in every decision we make which affects the Company. Regardless of the pressures involved in conducting business, it is our duty to act responsibly and with integrity, meeting the highest standards of professional conduct. This means that we must avoid even the appearance of impropriety in carrying out Company business.

Commitment to Integrity

Compliance is everyone's responsibility. Sotera Health employees are each personally accountable for achieving their goals with integrity and in compliance with all applicable laws and policies. Unless otherwise prohibited by local law, we require all employees to acknowledge their commitment to comply with this Code and all Company policies.

Conflicts of Interest

Sotera Health respects the right of all employees to engage in personal activities outside of work. As Company employees, each of us has the responsibility to avoid activities that conflict or appear to conflict with our job responsibilities or the interests of Sotera Health. A conflict of interest arises when an employee has a personal interest, such as a financial interest or loyalty, that is or could be inconsistent with the Company's interests or influences decision-making on Company activities. Any employee activity or transaction which may present a conflict of interest (or even the appearance of a conflict) must be avoided. Actual or potential conflicts of interest must be discussed with Senior Management (who must be more senior than the parties involved) and the Legal Department. Any waiver of a possible conflict must be approved by the Legal Department and documented. Any waivers provided by management prior to the implementation of this Code remain valid for the purpose of compliance with this Code.

A few examples of activities that are or may be conflicts of interest include:

- Engaging in employment, managing your own business, or any other activity that interferes with your ability to devote the required time and attention to your job responsibilities at Sotera Health.
- Holding a significant financial interest, direct or indirect, in a current or prospective customer, supplier, distributor or competitor of Sotera Health, or serving as an employee, consultant or director of that business.
- Directing Sotera Health business to a supplier of which a family member is an employee, owner or manager, or at which a family member, directly or indirectly, has a significant financial interest.
- Supervising the job performance or compensation of a family member.
- Competing with Sotera Health in your personal capacity, or any situation where your personal interest takes away from Sotera Health opportunities for sales or purchases of products, services or interests.

- Using Sotera Health property, information or your position in the Company for personal benefit or the benefit of friends or family.

Ownership of Other Businesses: Our personal investments can cause a conflict of interest. As a Company employee, you should not have a "significant financial interest" in any business that does business with Sotera Health, is seeking to do business with Sotera Health or which is a competitor of Sotera Health without prior written approval of your business unit President and the Legal Department. A "significant financial interest" includes: 1) an employee or an employee's family member owns, directly or indirectly, more than 1% of the outstanding shares of such a business; 2) the investment in that business represents more than 5% of your total assets (or the assets of your family member); or 3) you receive a substantial portion of your total compensation from that particular business.

Family Members: A conflict of interest may arise if family members have positions of influence in a customer, supplier, distributor or competitor of Sotera Health or have a "significant financial interest" (see above) in a customer, supplier, distributor, business partner or competitor of Sotera Health. As mentioned above, in such circumstances, and before doing business with that organization, disclose and discuss the situation with Senior Management and the Legal Department. The approval, if granted, should be documented.

Family members include your:

- Spouse
- Parents
- Children
- Siblings
- In-laws
- Life partner

or any of their parents, children, siblings or partners.

Service on Boards: Company employees who serve as a director of another company, a member of a board of a non-profit organization or a standing member of a government agency may create a conflict of interest. Before accepting an appointment to a board or a committee of any organization whose interests may conflict with Sotera Health, you should discuss it with your manager, the President of your business unit and the Legal Department.

In general, outside directorships by employees will be permitted by Sotera Health provided that:

- The directorship does not conflict with Sotera Health or the individual's day-to-day commitments to Sotera Health; and
- The directorship is approved in writing by the President of your business unit and the Legal Department.

Insider Trading

Employees, officers and directors who have material non-public information about stock or other securities of companies (including our suppliers and customers) as a result of their relationship with the Company are prohibited by law and Company policy from trading in securities of the Company or those other companies. This includes debt securities issued by the Company. In addition,

employees, officers and directors are prohibited from recommending, "tipping" or suggesting that anyone else buy or sell stock or other securities of any company on the basis of material non-public information. Violation of insider trading laws can result in severe fines and criminal penalties, as well as disciplinary action by the Company, possibly including termination of employment.

Information is "non-public" if it has not been made generally available to the public by means of a press release or other means of widespread distribution. Information is "material" if a reasonable investor would consider it important in a decision to buy, hold or sell stock or other securities. As a rule of thumb, any information that would affect the value of stock or other securities should be considered material. The laws against insider trading are specific and complex. If you are uncertain about the constraints on your purchase or sale of securities of any other company that you are familiar with by virtue of your relationship with the Company, you should consult with the General Counsel before making any such purchase or sale.

Participation in Political Activities

Employees may participate in political activities of their own choosing, as long as they do so on their own time and use their own resources, and such activities do not create an actual or potential conflict with the employee's responsibilities. Employees will not be treated any differently because of their party or political affiliation or as a result of making or not making any personal political contributions.

Contributions of Company funds, directly or indirectly, or the use of Company assets or facilities for the benefit of officials at any level of government, political parties or political candidates anywhere in the world are prohibited unless approved in advance by the Chief Financial Officer and the General Counsel in accordance with Company procedures. Under no circumstances will the Company reimburse personal political contributions made by employees, representatives or consultants.

Question: *Several of my co-workers and I strongly support a certain political candidate for public office. May we work together to support this candidate?*

Answer: *Of course. Sotera Health encourages participation in the political process, to the extent this is consistent with applicable laws. However, you may not use Company funds, equipment or materials to support the candidate or pressure other employees or subordinates to support the candidate. Do not engage in political activities while you are on the job.*

Government Relations and Lobbying

Sotera Health deals with all government agencies in a direct, open and honest manner. Any contact with government personnel for the purpose of influencing legislation or rule-making, including such activity in connection with any marketing or procurement matter, may be considered lobbying. Some laws define lobbying even more broadly to include our normal marketing activities. Lobbyist

registration laws in the U.S., Canada and in other jurisdictions typically require lobbyists and registrants to disclose their interactions with certain public officials.

Employees are responsible for adhering to all relevant lobbying laws and associated gift laws and policies, and for compliance with all reporting requirements. Prior to engaging in any such activities, employees must consult with the Legal Department and obtain the prior approval of your business unit President to lobby or authorize anyone else (for example, a consultant or agent) to lobby or otherwise engage with government officials on behalf of Sotera Health.

Media Contacts and Public Communications

Employees should not make statements to the media about the Company's business, its prospects or results. All communications, press releases and disclosures concerning Sotera Health with any representative of the media or financial community, including reporters, journalists, authors, commentators, investors, traders and analysts, must be authorized by the Sotera Health Chief Marketing Officer. No media advertisement, Internet home page, electronic bulletin board posting, broadcast email, or any other public representation on behalf of Sotera Health may be issued unless it has first been approved by a member of Senior Management. Only designated social media spokespeople, who are specially trained and authorized, may speak on behalf of Sotera Health in social media forums unless specifically authorized by Executive Management.

Question: *If I receive a call from a reporter who is looking for information about the Company that is within the scope of my job, what should I do?*

Answer: *Calls from the media should be directed to the Chief Marketing Officer.*

Protection of Business Information and Intellectual Property

The Company’s intellectual property, including its patents, trademarks, copyrights, trade secrets, information technology (software and data) and all Company records created or maintained (in both paper and electronic form) are extremely valuable to the Company and its continued success. The loss, theft, unauthorized disclosure or misuse of the Company's intellectual property jeopardizes its business and causes it harm. Sotera Health’s policy is to safeguard the intellectual property and proprietary information of the Company as well as information of third parties in our possession, including information of our customers and suppliers. Unauthorized use or release of non-public Company information or third-party information regarding plans, strategies, costs or prices, pending contracts or unannounced products (among other things) could jeopardize the Company's competitive position, result in violations of securities laws or result in the Company’s violation of confidentiality obligations to third parties.

Employees must take precautions to prevent unauthorized disclosure of confidential information. Accordingly, employees should take steps to ensure that business-related paperwork and documents are produced, copied, transmitted, stored and discarded by means designed to minimize

the risk that unauthorized persons might obtain access to confidential information, consistent with the Company's applicable confidentiality and records retention policies and procedures. Employees should not disclose confidential information in public places (in person, on cellular phones, or in communications or postings on the internet).

Confidential information should only be disseminated to those individuals with a need to know. If you have confidential information about a supplier, customer or other third party, it is important to limit sharing that information to individuals, within and outside the Company, who are authorized and need this information to perform their duties. We have specific policies that may apply. For example, Nordion has adopted a firewall policy requiring that certain sensitive customer information is not shared with Sotera Health's sterilization business, as doing so could violate competition laws and contractual obligations. For more information on Nordion's firewall policy, please refer to the Nordion Protection of Confidential Customer Information (Firewall) Policy, available on Nordion's intranet or on request from the Legal Department.

Anyone who has had access to confidential information must keep it confidential at all times, both while working for Sotera Health and after employment ends for any reason. Of course, nothing in this Code is meant to prohibit employees from engaging in concerted activity where protected by law (including discussing terms and conditions of employment), cooperating in any governmental investigation or reporting a violation of law to any governmental entity.

Question: *I received confidential information of a competitor, through the Sotera Health email system, that was not intended for me and that I believe was sent to me in error. What should I do?*

Answer: *Bring it to the attention of your manager or supervisor and the Legal Department. The Legal Department will advise you based on the nature of the content. In general, it would be appropriate to let the sender of the email know it was sent in error, and then to delete the email.*

Additional Guidance: Refer to specific Sotera Health business unit policies and procedures that provide further information about collection, use and disclosure of confidential information.

You can also contact the Legal Department if you have a question about confidential information and/or documents.

All documents, inventions, writings, records, software codes or applications or other intellectual property and work product created by Company employees in the course of their duties or with Company resources are considered "works for hire" that are Company property (except in those instances where local laws and regulations contain mandatory requirements that differ from the provisions of this Code).

Question: *I have used my work knowledge and acquired understanding of sterilization technologies to develop a software program to improve the efficiency of a sterilization process. I did it on my own time. Do I need to tell the Company about what I have developed?*

Answer: *Yes, regardless of when the software program was developed, you used your acquired work knowledge and understanding of sterilization technologies processes from your job with the Company. Therefore, in accordance with Company policy, you need to tell the Company about the software program and allow the Company to protect its interest or use it if the Company wishes.*

Additional Guidance: If you believe you have created or developed something new and innovative, notify your manager or the Legal Department.

Personal Data

Sotera Health is committed to maintaining the confidentiality of personal information about employees and personal or other information about others, such as customers, suppliers, former customers and product users. We restrict access to this information as appropriate and use it only as necessary for legitimate business purposes and consistent with applicable law. In general, to the extent required by law, any collection of personal information of an individual will not be done without first providing notification of how and why this information will be collected and used further, and when required, obtaining consent from the individual for that use. Any additional uses or disclosures of personal information should not be undertaken without obtaining additional consent or having a legal basis to do so. For more information, please consult the Company's applicable Privacy Policies. Please contact a member of the Legal Department if you have any questions.

Accuracy of Records and Disclosures

Accurate business records are important because they are used for decision-making and strategic planning. Customers, government agencies, regulators, investors and creditors rely upon the integrity of our business records. These records serve as a basis for managing the Company and are important in meeting our obligations. The U.S. Foreign Corrupt Practices Act ("FCPA"), the Canadian Corruption of Foreign Public Officials Act ("CFPOA") and the U.K. Bribery Act 2010, in addition to legislation in other countries, also impose accounting requirements and standards on companies. Sotera Health's business records, including all supporting entries to its books of account, must accurately, honestly and coherently reflect the transactions of the Company in accordance with all applicable requirements. Employees must comply with Sotera Health's system of internal controls and be held accountable for the content thereof.

It is important to use good judgment and common sense when preparing any Sotera Health record. Report facts accurately, honestly and objectively and do not omit facts needed to prevent information from being misleading. Do not make false entries or attempt to hide or fail to record any funds, assets or transactions.

Our Company is committed to maintaining the highest standards of integrity and ethical conduct. Our policy is to provide consistent and effective investigation, reporting and disclosure of any occurrence of fraud or suspected fraud. Sotera Health will not tolerate fraud.

Fraud is defined as the intentional, false representation or concealment of a material fact for the purpose of personal gain or inducing another to act upon it to such person's detriment, including injury or financial loss. Some actions constituting fraud or possible fraud include:

- Forgery or alteration of any document or account belonging to the Company
- Forgery or alteration of a check, bank draft or any other financial document
- Intentionally reporting falsified financial results
- Impropriety in the handling or reporting of money or financial transactions

To help ensure the integrity of its records, Sotera Health requires that you comply with the Company's financial and accounting policies and procedures which, among other things, require that:

- No entry be made in Sotera Health books and records that is intentionally false or misleading;
- All transactions be supported by appropriate documentation;
- Invoices received from our suppliers, contractors and consultants clearly and fairly represent the goods and services received by the Company;
- The terms of sales and other commercial transactions be reflected accurately in the documentation for those transactions and all such documentation be reflected accurately in Company books and records;
- All sales revenue be recorded in accordance with revenue recognition policies;
- No cash, other assets or liabilities be maintained for any purpose in any unrecorded or "off-the-books" fund; and
- Assets and liabilities of the Company be recognized and stated in accordance with Sotera Health's standard practices and generally accepted accounting principles.

Violations of laws associated with accounting and financial practices can result in fines, penalties and imprisonment, and they can lead to a loss of public faith in a company.

If you become aware of any action related to accounting or financial practices or records that you believe may be improper or inaccurate, you must immediately notify the Company, using any of the channels identified in this Code.

Question: *I was reviewing approvals for expense accounts and noticed that an employee has submitted the same receipt for reimbursement multiple times. I know this person is well-respected in the organization and a friend of my manager. What should I do?*

Answer: *This could be a potential case of fraud that should be reviewed. You could discuss this with your manager, or your manager's boss if appropriate, explaining the sensitivity, or contact your Human Resources Representative, Legal Department or the Global Ethics Line.*

Additional Guidance: Please see the Company's anti-corruption and anti-fraud policies on the Company or your business unit's intranet or contact the General Counsel for more information. These policies may also be referred to as policies regarding improper influence of foreign officials.

Records Management

A record should be retained for as long as there is a business need or a legal requirement to preserve the record. We will comply with all applicable statutory, regulatory or contractual requirements, as well as "legal holds" in connection with pending or foreseeable litigation, audits or investigations, and as directed by Company legal counsel. Records will be disposed of in a manner consistent with the degree of confidentiality and sensitivity required by the information within the record. In addition, records relating to U.S. government contracts are subject to stringent record-keeping requirements. Please review the U.S. Government Code of Ethics on the Company's intranet sites for further guidance on these requirements.

For further guidance on records management in general, employees can access your business unit's records retention policy on your intranet site, or contact the Legal Department.

Electronic Media and Communications Systems

All electronic media and communication systems, including email, intranet, Internet access and voice mail, are Company assets and are to be used for appropriate business purposes. Sotera Health and our business units have policies regarding the use of electronic media and communication systems to prevent harm to the Company, such as loss of reputation, reduction of productivity and imposition of monetary penalties. These policies may be accessed on the relevant business unit's intranet.

In accordance with our Company policies and subject to applicable law, Sotera Health may access and control any personal communication or data created or stored on electronic media and communication systems provided by Sotera Health. As the laws regarding access to personal data vary between regions, employees are encouraged to review the Company and business unit data protection and privacy policies applicable to their region for further guidance. Any expectation of privacy is limited when using Company communication systems.

Protection of Company Assets

Each of us is responsible to properly use, protect and safeguard Company property and assets, as well as the property of our customers, suppliers and business partners that is in our possession. This obligation continues even after an individual leaves the employ of Sotera Health.

All employees are expected to ensure the efficient use of Company property for legitimate business purposes. Theft, carelessness and waste have a direct impact on Sotera Health's profitability. Company property, such as computer equipment, cellular devices, office space, furniture, office supplies and products and inventories, should be used only for activities related to employment. Incidental personal use is permitted only to the extent allowed under Company policies.

Integrity Within the Company

Integrity Within the Company

Consistent with our Values, at Sotera Health we value our diverse and passionate people across the globe. We are committed to fostering a productive work environment. We all share in the responsibility for continuing to create a positive work environment, built on teamwork, trust, communication and respect.

Our Company is committed to fair employment practices and fostering a work environment in which all individuals are treated with respect and dignity. We believe that equality of opportunity and fairness of treatment for all individuals are basic human values. Our management practices are based on the principle of recognizing people for their contributions. We seek to provide a work environment where all employees are provided with the opportunity to realize their fullest potential. The most successful Sotera Health employees achieve excellent results by living our Values.

We comply with applicable employment laws wherever we have operations. This includes complying with laws that prohibit employment discrimination and those prohibiting child or forced labor. In addition, employees should refer to the policies applicable to their business unit regarding appropriate workplace conduct, for further guidance.

Equal Opportunity

It is our policy to employ, train, promote and compensate individuals based on merit, job-related qualifications and abilities. Sotera Health is committed to ensure equal employment opportunity without discrimination or harassment on the basis of race, color, national origin, religion, sex, age, sexual orientation, marital status, disability or any other status protected by law.

Diversity

We value the differences among our employees. Individual differences enrich the workplace and improve our ability to attract employees and work with customers and suppliers in today's global marketplace.

No Harassment

Harassment may take many forms, including sexual or psychological forms, and includes both physical actions and verbal exchanges. It may occur by, or be directed to, an employee or non-employee (such as customers, temporary workers, business partners or visitors) and happen regardless of intent. Harassment can take the form of sexual advances, requests for sexual favors, off-handed remarks or jokes, offensive gestures, visual displays, physical or intimidating conduct, bullying, and threats and demands, among other overt or passive conduct.

We all have a right to work in an environment free from harassment of any kind. Sotera Health is firmly committed to a workplace in which all individuals are free from conduct that creates an intimidating, degrading, humiliating, hostile or offensive work environment. Any kind of

harassment by or against our employees is prohibited. We all have a responsibility to ensure harassment is not tolerated in the workplace.

For further information about anti-harassment policies applicable to your business unit, see your business unit's intranet or contact your Human Resources representative.

***Question**: A person in my work group has a calendar displayed on their cubicle wall that contains swimsuit model pictures. The person does not believe that it is a problem because it is in their cubicle and not in a common area. I have to work with this person on a daily basis and I find it offensive. What should I do?*

***Answer:** Clearly tell the co-worker that you find the calendar offensive and ask that it be removed. Sotera Health considers a calendar with this kind of content inappropriate for our professional work environment. If it is not removed, you should discuss the matter with your manager, Human Resources or an Ethics Representative.*

Labor Laws and Wages

Our Company is committed to following all applicable wage and hour laws and regulations, and other laws regulating the employer-employee relationship and the workplace environment. To help ensure that all work performed for Sotera Health is compensated correctly, those compensated on the basis of hours worked must report and record time accurately in accordance with established local procedure. It is against our policy and may be illegal under federal and state law in the United States and most other countries for the Company or any of its employees or agents to pay or receive anything of value from any labor organization in their roles as representatives of the Company. Company employees may not interfere with or retaliate against another employee who seeks to invoke his or her rights under the laws governing labor and employee relations.

Labor Practices

We are committed to upholding fundamental human rights and believe that all human beings around the world should be treated with dignity, fairness and respect. Our Company will only engage suppliers and contractors who demonstrate a serious commitment to the health and safety of their workers and operate in compliance with human rights laws. Sotera Health does not use or condone the use of slave labor or human trafficking, denounces any degrading treatment of individuals or unsafe working condition, and supports our products being made of materials sourced in a legal and ethical manner. Please refer to our Supplier Code of Business Ethics and Conduct located on the Company's intranet sites for further guidance on the principles we expect our suppliers to uphold.

Drug-Free Workplace

Possession, use, sale or distribution of an illegal drug or illegal controlled substance in the workplace or while conducting Company business off-premises is strictly prohibited. Illegal drugs and controlled substances have an adverse effect on employee performance, jeopardize the safety of co-workers and constitute a risk to the business and interests of the Company. Alcohol use may have an adverse effect on an employee's performance and safety and poses a risk to the business and interests of the Company. Sotera Health reserves the right on reasonable grounds to search items on Company property, including but not limited to offices, desks, computers and lockers at any time, and to perform random drug and alcohol tests, to the extent permitted by local laws.

Company-Authorized Events

Some Company-authorized business or social events may include the consumption of alcohol. Employees have an obligation to monitor and limit consumption of alcohol, ensuring that any consumption is taken responsibly and only in moderation. While attending Company-authorized events, as representatives of our Company, we are all expected to continue to demonstrate our Company Values while upholding our strong reputation and principles.

Environment, Health and Safety

We are committed to respecting the environment, providing our employees with a safe and healthy place to work and striving to safeguard global health in all that we do. As embodied in our Values, Sotera Health believes that the continued protection of our employees, responsible action in our communities and implementation of sound environmental practices are crucial to accomplishing our strategic goals.

Accordingly, the Company commits each one of us to:

- Provide and maintain facilities and operations where health and safety is promoted and hazards are identified and controlled;
- Manage facilities and operations such that their potential impacts on the environment are controlled and minimized;
- Meet or exceed applicable environmental, health and safety ("EHS") requirements;
- Provide appropriate EHS training and education for employees;
- Establish measurable EHS objectives and monitor progress towards their achievement;
- Integrate EHS management into every facet of our business;
- Consider EHS performance in the selection of suppliers, contractors and business partners;
- Monitor and continuously improve EHS performance and our EHS management system; and

- Report workplace injuries, any discharge into the environment or any situation that may present a danger of injury or discharge to Company EHS representatives as required by our standards and policies.

Sotera Health is responsible to our employees to create workplaces where EHS risks are managed and hazards are controlled. We commit to the communities in which we operate, to our customers and to those who rely on our products and services, to meet or exceed all applicable EHS standards. Company personnel are responsible for working safely and within the requirements defined by local or Company-wide EHS programs.

Sound EHS management and performance is the responsibility of each and every one of us at Sotera Health. Individually and collectively, we work together to build exemplary programs and to achieve performance in EHS that serves as a positive example for other organizations in countries where our Company operates.

Additional Guidance: *For more details on the Environment, Health and Safety Program and Policies, see your business unit's intranet. Should you have any questions, you can contact your business unit's EHS team.*

Integrity in Dealing with Customers, Suppliers and Others

Integrity in Dealing with Customers, Suppliers and Others

At Sotera Health, we are honest, reliable and accountable in everything we do. In dealing with our customers, suppliers, partners and other third parties, we uphold the highest standards of ethical and professional conduct. While working hard to meet our customers' needs with the highest quality and care, consistent with our Customer Focus value, we honor our responsibilities as good corporate citizens.

In our dealings with others, including governments, government entities, state-owned enterprises, government officials or any other third parties, we will not engage in bribery or corrupt activities of any kind, and we will respect and comply with all applicable anti-corruption laws and regulations. We make decisions based on merit and expect others to do the same.

Improper Payments, Bribery, Anti-Corruption

Sotera Health expressly prohibits taking part, directly or indirectly, in any form of bribery. This prohibition is absolute and applies at all times and in all countries where the Company conducts business whether or not there are any applicable laws that prohibit such a payment.

We are not allowed to give, receive, promise, offer or authorize a third party to give or receive "Anything of Value" or "Facilitating Payments", as defined below, directly or indirectly, to an official, representative or employee of a current or potential customer, supplier, representative, consultant or government / state-owned enterprise ("SOE") to obtain or retain business or to secure any improper advantage.

Payments of "Anything of Value" include:

- Cash or cash equivalents
- Loans
- Gifts and gratuities
- Services
- Employment offers
- Travel and lodging expenses
- Entertainment
- Political contributions
- Charitable donations
- Subsidies
- Sponsorships
- Honoraria

or anything else of value, for the purpose of exercising improper influence or obtaining improper advantage.

"Facilitating Payments" (also known as "greasing payments") are payments made to an individual (including a government or SOE official), to obtain or expedite performance of an action. In most cases, Facilitating Payments are illegal even if customary and of nominal value. Facilitating payments do not include payments made to a government entity and processed by an official in order to expedite official services as provided by local law, such as a payment made for express service to issue a passport, which service is available to all customers. In any event, even in cases where Facilitating Payments may be permitted under an applicable law, they are never permitted under this Code. Likewise, bribes, kickbacks or other unlawful or improper payments while conducting Company business are strictly prohibited. For example, paying a gratuity to a customs

official to expedite clearance of our products through customs in order to assist our customer is a greasing payment and is prohibited.

Requests for unusual payments (including but not limited to higher than usual commission payments) should be reported to the Legal Department prior to payment. Be on the lookout for complicated schemes. Where concerns arise, contact the Legal Department for guidance. In such cases, further due diligence will likely be required to ensure the legitimacy of all payments and those with whom we do business to ensure they are bona fide and legitimate.

Remember that Sotera Health wins business by offering great products and services at good value and that alone is enough to generate business. Any business that needs to be won by providing unusual gifts or hospitality is business that we do not want and that we should not pursue. Sotera Health should turn down business if we must compromise our Values or breach applicable laws to acquire it.

Government Dealings: The laws, regulations and ethics rules regarding the acquisition of goods and services, the payment of honorarium fees and the offering of gifts or other business courtesies to governmental or SOE customers and government or SOE officials and employees are varied and complex and are typically more stringent than those discussed above. Many governments and SOEs have implemented rules, policies and/or laws which govern ethical behavior in dealings with officials and employees. As we interact with these individuals, it is important not only to continue to act honestly and transparently, but also to be familiar with these ethics rules and laws. For example, for further guidance on interactions with U.S. Government representatives, please refer to the U.S. Government Code of Ethics.

In addition, Sotera Health must follow applicable international anti-bribery laws, including the U.S. Foreign Corrupt Practices Act (FCPA), the U.K. Bribery Act 2010, the Canadian Corruption of Foreign Public Officials Act (CFPOA) and other applicable laws of other jurisdictions of the countries in which we operate. In general, these laws prohibit bribery of foreign government officials, political parties and candidates in order to win or retain business, and require that proper record-keeping and internal accounting controls be observed at all times.

The Company expects all of its subsidiaries, including U.S. and non-U.S. entities, to comply with the FCPA as well as other anti-bribery laws that apply. Prior to making any contractual representations regarding compliance with anti-bribery law, please consult first with the Legal Department.

No gifts, payments of any kind or any item of any value can be made or offered to any government or SOE official or employee without prior written approval of the General Counsel (or the Director of Corporate Compliance for the Nordion business unit). The definition of a “Foreign Official” is broad and may include a broad range of employees in state-controlled sectors of some economies.

Additional Guidance: If you have questions as to whether an activity is restricted or prohibited, please review Company and business unit anti-corruption policies on the intranet. Please consult with the Legal Department before engaging with employees of any government-owned or controlled entity or agency in any jurisdiction.

Sanctions for anti-corruption and anti-bribery violations, or even a mere indictment for a potential violation, are severe and potentially devastating to a company and to the individuals involved. The penalties may include significant fines and/or imprisonment for individuals. Individual officers and employees of companies may be prosecuted even if the company for which they work is not prosecuted.

Engagement of Third Parties: As a global business, Sotera Health may engage third parties to act in a representative capacity on its behalf. Sotera Health strives to select third parties that will conduct business on the Company's behalf in a way that respects and honors our Values. By conducting appropriate due diligence activities prior to engaging a third party, Sotera Health is in a better position to make informed choices about the third parties it will engage.

Because anti-corruption laws provide that Sotera Health may be held responsible for the actions of any third party in the event there is a violation of anti-corruption laws or regulations, it is especially important that Sotera Health exercises care in the selection of its third parties. Before proposing that the Company enter into a relationship with a third party (for example, a supplier or service provider), the responsible business sponsor along with their manager are each responsible for ensuring that the appropriate level of inquiries and checks regarding the third party have been conducted, including making the appropriate reputational, performance, financial and compliance due diligence verifications. Once a third-party relationship has been approved, the business sponsor maintains the ongoing obligation to oversee and monitor the third party's activities to ensure it conducts itself appropriately and does not place the Company at risk in any way.

Additional Guidance: Refer to specific Company policies and related materials for further information on anti-corruption compliance and background due diligence. For example, members of the Nordion business unit may consult the Anti-Corruption page on its intranet or the Director of Corporate Compliance for more information on the Nordion Anti-Corruption Program and those matters listed above.

Business Entertainment and Hosting

Appropriate business hosting or entertainment (e.g., reception, meal, sporting or theatrical event) of business partners, current or prospective, is generally acceptable when clearly intended to strengthen business relationships and facilitate business goals. We must avoid the appearance of

impropriety when hosting or entertaining individuals (or when accepting hosting or entertainment with individuals) who do business or are seeking to do business with the Company. The expenses involved must be moderate, reasonable and in good taste and not otherwise prohibited by law or Company policy. Lavish meals or inappropriate entertainment should always be avoided. During these events, topics of a business nature must be discussed and Company employees must be present. Business entertainment or hosting expenses to be offered (or same received) should be appropriately documented with supporting receipts, and expenses should be submitted in accordance with Company policy for proper accounting and recording.

Refer to applicable Company expense and anti-corruption policies with regard to any necessary reporting, approvals and recording requirements of expenditures for entertainment or hosting of both government officials and employees, and private sector employees. In addition, when dealing with government officials and employees, review the Government Dealings section above, consult your local policies and be aware of local regulations and restrictions that apply to those government officials and employees. If you are dealing with a U.S. Government official or employee, consult the Sotera Health U.S. Government Code of Ethics.

Sometimes business partners extend training and educational opportunities that include attending an event or travel and overnight accommodations at no cost to you or the Company. Accepting these types of invitations at the vendor's expense is generally discouraged. However, occasionally your presence at such an event is important to building a business relationship and may benefit the Company. In those instances, prior to accepting, employees should obtain the written approval of their manager and consult the applicable Company expense and anti-corruption policies for conditions of attendance that apply. For example, where the value of the invitation may be more than moderate or there is uncertainty whether accepting the invitation could create a conflict of interest, prior approval from the Legal Department is required.

Question: *I do not have the time to check all of the invoices and expense reports that come across my desk. Surely, it is the responsibility of the individuals who prepared the documentation and submitted it to me to make sure it is correct. Am I right in my assumption?*

Answer: *No. Each of us is responsible for making sure that all reports and invoices are accurate and filled out correctly. If you are approving an invoice or expense reports, you are responsible for its accuracy.*

Gifts

This section applies to interactions with non-governmental officials and other parties generally. Additional policies may apply, such as the Company's separate Sotera Health U.S. Government Code of Ethics or our anti-corruption policies.

It is the Company's policy to discourage the receipt or giving of gifts by employees, directly or indirectly, from or to individuals who do business or are seeking to do business with the Company.

We may give or receive gifts only in exceptional circumstances. In those limited circumstances, gifts of a nominal value and promotional nature may be given or received where not otherwise prohibited by law or Company policy, on condition that: (1) the gift is reasonably connected to a business purpose; (2) it is legal under local law and in accordance with local business customs; (3) it is permissible under the internal policies of the recipient's organization; (4) the gift is of modest value, meaning small, low or insignificant; (5) it is provided without the expectation of receiving a benefit or advantage in return; (6) it is provided in a transparent manner without the potential for reputational damage to either party; (7) it is limited to the individual recipient of the subject organization and not extended to include the spouse or relative of that individual; and (8) it is not intended to influence a business choice of the recipient. In all cases, proper documentation is required to reflect the primary elements of the transaction, including the recipient/offeror of the gift, the recipient's/offeror's organization and position, as well as the nature of the gift and its value.

Common sense should dictate what would be considered extravagant or excessive. If a disinterested third party would likely believe that the gift influenced the recipient's judgment, then it is too much. All of Sotera Health's business dealings must be on arms-length terms and must not give rise to actual or perceived impropriety.

A gift or receipt of cash (or cash equivalent, such as a pre-paid gift or credit card) to or from an employee of a business partner or family member of such an employee, in connection with a Sotera Health business transaction, is strictly prohibited.

Selection and Use of Third-Party Suppliers and Procurement

As further described in our Supplier Code of Business Ethics and Conduct, we believe in doing business with third-party suppliers that embrace and demonstrate high principles of ethical business behavior. We rely on suppliers, contractors and consultants to help us accomplish our goals. Third-party suppliers are considered part of the Sotera Health team and should be treated according to our values. We offer fair opportunities for prospective third parties to compete for our business. The manner in which we select our suppliers and the character of the suppliers we select reflect on the way we conduct business.

Our procurement decisions are based on total value, which includes quality, suitability, reliability, performance, service, technology, price and delivery. Proper procurement conduct includes:

- Using established Company-wide or regional supply (leveraged) agreements, where available.
- Obtaining competitive bids, where appropriate, when leveraged agreements do not exist.
- Confirming the financial and legal status of the supplier.
- Confirming the quality, environmental, health and safety status of the supplier on a regular basis.
- Ensuring the supplier has the appropriate insurance, licenses, certificates, permits and training in place for the respective goods or services being procured.

- Ensuring that the supplier confirms it has appropriate technical and organizational measures to ensure compliance with applicable data protection laws.
- Confirming that a conflict of interest does not exist between the supplier, our Company and our respective employees.
- Assessing the supplier's level of performance on a regular basis.
- Ensuring that purchase orders and agreements clearly state the services or products to be provided, the basis for earning payments and the applicable rates or fees.
- Ensuring the fee or price paid by Sotera Health represents the value of the goods or services provided.
- Avoiding reciprocal agreements or exchange of favors.
- Ensuring payments are only made to the contractor or company that actually provides the goods or services, and payments must be made in the supplier's home country, where it does business, or where the goods were sold or services provided, unless prior approval is obtained from our Finance and Legal Departments.
- Our Company will not knowingly use suppliers who participate in the following activities:
  - Supplying unsafe products or services;
  - Violating laws or regulations;
  - Using child labor or forced labor; or
  - Using physical punishment to discipline employees, even if it is allowed by local law.

Competing with Integrity

Competition and Fair Dealing

The purpose of competition laws, which may also be known as antitrust, monopoly, fair trade or cartel laws, is to create a level playing field in the marketplace and to promote fair competition. Buyers of products and services should be able to select from a variety of products and services at competitive prices. Sotera Health will vigorously compete in the marketplace with integrity and will comply with competition and antitrust laws in all countries where it conducts business. The Sotera Health goal of offering products and services that are competitive in quality, reliability and price is to be achieved without sacrificing business integrity.

Anyone acting on behalf of Sotera Health will not enter into any agreements, formal or informal, that seek to artificially limit or restrict competition, nor will they exchange competitive information with competitors regarding the marketing, distribution and sale of products and services. Unlawful agreements include those which impose artificial restraints such as price fixing, bid rigging, abuse of dominant position, allocation of customers among competitors, and improper refusal to deal. In addition, agreements which seek to establish resale prices of a product or service, or condition the sale of products/services on an agreement to buy other Company products/services, are often illegal and are not permissible without prior approval from the Legal Department.

These principles apply to our Company operations worldwide. Sotera Health competes in the marketplace solely on the merits of its products and services, on the prices that we charge and on the customer loyalty that we earn. Our goal is to deal fairly with all customers, to retain them as customers and to attract new customers because we provide products and services that customers want at prices they find attractive. Customers who are also our competitors must be treated fairly and not be disadvantaged.

Antitrust and competition laws are complex and vary from country to country. We should avoid situations that may violate the principles of fair competition, as well as situations that violate the law. Communications with competitors can be an area presenting significant risk. In general, the following subjects should not be discussed with competitors:

- Pricing or pricing policies
- Lease rates
- Bids
- Contracts
- Promotions
- Costs
- Profits
- Terms or conditions of sale
- Royalties
- Warranties
- Customer information
- Territorial markets
- Inventories
- Production capacities or plans
- Distribution or selling strategies
- Margins

If you have any questions about what you can discuss at a trade show, trade association meeting, industry regulatory meeting, or other similar forum where you may interact with competitors, please consult with the Legal Department. For trade association meetings, always insist that a written meeting agenda is provided in advance and that proper written minutes are prepared. When participating in any forums with competitors present, employees must take special care not to initiate, participate or even be present during improper discussions concerning the sensitive subjects listed above. Keep an accurate record of any interaction you may have with a competitor.

Never engage in any discussion with a competitor which may have the appearance of impropriety.

For further guidance, please review the antitrust or competition law policy that applies to your business.

***Question**: If I do not talk about specific price levels, can I agree with a competitor not to engage in a price war?*

***Answer:** No. Any agreement between competitors that relates to the prices we or they charge, or that otherwise limits competition, is a violation of fair competition laws, regardless of whether specific prices are a part of the agreement.*

We will use only proper and legal means of gathering marketing and business information concerning competitors. Making false or misleading statements about Sotera Health's competitors is prohibited. Sotera Health does not induce or solicit confidential information from a competitor's past or present employees. For example, employees must refrain from sharing, within or outside the Company, a competitor's sensitive information that may be gathered at trade fairs or professional association meetings. Consult with the Legal Department if you have any concerns about discussions you may have had at a trade association meeting or elsewhere.

***Question:** My partner has a job at a local printing company. One of her jobs was to print pricing sheets for a competitor of Sotera Health and she found some discarded copies in the trash and gave them to me. I would like to give this information to my manager to use. Is there a problem with this?*

***Answer:** Yes, there is. You have come into the possession of the competitor's pricing information as a result of your partner's employment with the printing company. There is nothing to indicate that the competitor has made the information public or does not wish to maintain the confidentiality of the information. You should shred or otherwise properly dispose of this information and you should not use or share it internally.*

Question: *When interviewing people who have worked or are working for a competing company, is it right to take this opportunity to ask for non-public information that Sotera Health would find useful?*

Answer: *Asking a candidate or new employee for potentially sensitive, non-public information about our competitor is NOT consistent with our Code of Conduct and could raise a legal risk to the Company. In addition, when there is a reasonable expectation that a third party has a duty of confidentiality to his or her employer/former employer or a third party, you should not inquire or otherwise elicit information that would cause that person to violate their confidentiality obligation.*

National and state governments enforce competition laws. In addition to reputational damage, violations of these laws could result in serious penalties including very large fines for the Company and fines and prison sentences for individuals. As the application of the antitrust and competition laws to actual situations can be challenging, prior consultation and close coordination with Sotera Health's Legal Department is essential to ensure these laws are complied with and problems avoided. In addition, the Legal Department may issue specific guidance from time to time for certain geographic regions or businesses, as required.

For further guidance, please review the antitrust or competition law policy applicable to your business unit.

Additional Guidance: Please consult with your manager or supervisor or a member of the Legal Department with any questions or to evaluate situations not covered by these guidelines.

Truth in Advertising

It is our responsibility to accurately represent Sotera Health and our products in our marketing, advertising and sales materials. Deliberately misleading messages, omissions of important facts or false claims about our products, individuals, competitors or their products, services or employees, are inconsistent with our values. Sometimes it is necessary to make comparisons between our products and our competitors. When we do, we will make factual and accurate statements that can be easily verified or reasonably relied upon.

Money Laundering Prevention

Sotera Health will conduct business only with reputable customers and suppliers who are involved in legitimate business activities and whose funds are derived from legitimate sources. People who are involved in criminal activity (for example, narcotics trafficking, bribery, fraud) may try to "launder" the proceeds of their crimes to hide them or to make those proceeds appear legitimate.

Sotera Health is committed to complying fully with all applicable anti-money laundering laws throughout the world.

Each Sotera Health business unit is required to implement a "Know Your Customer" procedure and to take reasonable steps to ensure that the Company does not accept forms of payment that have been identified as a means of laundering money.

International Trade Controls

Sotera Health is committed to compliance with applicable laws controlling imports, exports, re-exports and diversion of its products, components, goods, services and technical data, including import and customs laws, export controls, sanctions, denied parties lists, anti-boycott laws and diversion of products and technology. Failure to comply with international trade laws could subject Sotera Health and its employees to civil and criminal penalties, including suspension or denial of trade privileges. Consult with the Legal Department in any transaction in which a conflict arises between U.S. law and the law of another country or region, such as the laws blocking certain U.S. restrictions adopted by Canada, Mexico and the members of the European Union.

The following laws regulate transactions and activities both in the U.S. and elsewhere, and therefore govern the conduct of Sotera Health employees and representatives both within and outside the U.S.:

Imports and Customs: Imports and customs laws, which apply to intracompany as well as third-party transactions, require Sotera Health to determine the correct classification, value and country of origin of all of its imports.

Export Controls, Sanctions and Denied Parties: The U.S., Canada, the E.U. and other countries have imposed sanctions and trade limits that restrict activities and transactions within or involving certain specified countries, their nationals and other designated entities and individuals. These restrictions include prohibitions on interactions with individuals and entities on denied parties lists, such as, identified terrorist organizations or narcotics traffickers, and also cover related activities such as installation and service. Complementing the sanctions laws are export control laws that regulate the export and re-export of goods, services and technology to specified destinations and end-users and for specified purposes. A "deemed export" may occur within the U.S. if export-controlled materials are made available to a non-U.S. person, for example anyone other than a U.S. citizen or permanent resident; other countries, like Canada, apply similar interpretations. In addition, governmental authorization or licenses may be required.

Additional Guidance: You should consult with your trade compliance team or the Legal Department before engaging in any international transaction to ensure your transaction complies with all applicable laws. For example, applicable laws limit transactions with North Korea, Syria, Iran, Russia, Sudan and Cuba. These laws can be complex and change frequently. If you are uncertain whether your transaction meets all legal requirements, contact the Legal Department, which will provide additional guidance from time to time as these laws change.

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Boycotts: Sotera Health complies with U.S. law that prohibits participation in international boycotts that are not sanctioned by the U.S. government. The scope of these laws is broad and complex, prohibiting for example: (1) agreeing not to do business with certain parties; (2) providing information about business relations with certain parties; and (3) discriminating against, or providing information about, individuals or companies based on race, religion, gender, national origin or nationality. Other countries may also have laws against certain conduct that may result in unlawful discrimination and support for unsanctioned boycott activity.

Diversion: Sotera Health's trade compliance policy prohibits diversion of our products and technologies. Diversion occurs when a transaction party does not honor its representations concerning the transaction trade channel, country, area, region or use for which the purchased goods or provided services or technology will be used or resold. Diversion hampers regulatory compliance by interfering with our ability to track our products, services and technology and to comply with export and other legal requirements.

Taxes, Tariffs and Duties

We respect and comply with the laws related to taxation of Company activities, tariffs and other duties or fees relating to import and export activities in all countries where we operate. We comply with recordkeeping requirements to support trade activities, including free trade agreements, duty drawback, binding classification, valuation and licensing decisions. We take responsibility for reporting and payment of any legitimate taxes related to Sotera Health employment and income.

Compliance with Laws

Compliance with Laws

Many areas of our businesses are subject to extensive governmental regulation throughout the world. It is the policy of Sotera Health to meet or exceed legal requirements in each of the countries in which we do business.

It is the responsibility of all employees to be familiar with the laws and regulations that relate to their duties and to comply with them. Among other things, these include laws and regulations governing employment, environmental matters, competition and anti-corruption, as referred to in this Code and otherwise in our Company policies. Our Legal, Quality, Regulatory, Environmental Health and Safety, Risk Management and other functional departments conduct periodic reviews to help our businesses assess whether they comply with applicable laws and regulations and to take corrective action as required.

Additional Guidance: The Legal Department or any of the other functional departments are available to you for this purpose.

Appendix A - Reporting a Concern

Reporting a Concern

1. Global Ethics Line – International Contact Information

The Global Ethics Line is available 24 hours a day, 7 days a week to every employee worldwide. The Global Ethics Line may be reached toll-free at the numbers below, or you may access the website at www.soterahealth.ethicspoint.com. To find the AT&T Business Access Code for your location, please go to www.soterahealth.ethicspoint.com or http://www.business.att.com/bt/access. The Global Ethics Line is operated by a third-party service provider, NAVEX Global, Inc. Services are provided in the local language.

Global Ethics Line:

Country	Phone Number
Belgium	AT&T Access Code + 866-831-2542
Brazil	0800-892-0784
Canada	1-888-288-1841
China	4006009322
Costa Rica	AT&T Access Code + 866-831-2542
Denmark	AT&T Access Code + 866-831-2542
France	0800-91-8997
Germany	AT&T Access Code + 866-831-2542
Hong Kong	AT&T Access Code + 866-831-2542
Italy	800-792621
Mexico	001-844-372-9087
Thailand	1800-011-615
United Kingdom	0808-234-2692
United States	1-888-288-1841

2. Sotera Health Ethics Representatives

General Counsel – Direct line: +1.440.262.1409

Chief Human Resources Officer – Direct line: +1 440.262.1411

By email: Ethics@soterahealth.com

3. Sotera Health Legal Department

By email: Legal@soterahealth.com

Personal Commitment Acknowledgement of Sotera Health Global Code of Conduct

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Sotera Health

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Broadview Heights, OH 44147
soterahealth.com

Nelson Labs™ A Sotera Health company

Nordion™ A Sotera Health company

Sterigenics® A Sotera Health company

EXHIBIT H3

Case 1:22-cv-00128-JJM-PAS Document 84-10 Filed 03/21/22 Page 136 of 539

Have a question? C
+1 (800) 472

Codes of Conduct

Global Code of Conduct

We are proud to share with you our Global Code of Conduct, which outlines the principles under which we conduct business. Our Company is committed to operating with the highest level of ethical standards, delivering on our promises, and protecting our assets and reputation in a rapidly changing global environment. This Code is the embodiment of that commitment.

Download Our Global Code of Conduct

Supplier Code of Conduct

Sotera Health, together with its affiliates and business units including Sterigenics, Nordion, and Nelson Labs, committed to meeting the highest of ethical standards. Our suppliers play an important role in helping us to achieve these standards. We have created this Supplier Code of Business Ethics and Conduct to set forth the standards and practices that our suppliers are required to meet, which we will use to evaluate and assess supplier performance on a regular basis.

Download Our Supplier Code of Conduct

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I Agree Cookie policy

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I Agree Cookie policy

EXHIBIT H4

Sotera Health

Supplier Code of Business Ethics and Conduct

Living our values every day

This Supplier Code of Ethics is intended to supplement and not to replace existing Sterigenics, Nordion or Nelson Laboratories Policies and Procedures.

A Message from Michael Petras, CEO

Sotera Health, together with its affiliates and business units including Sterigenics, Nordion and Nelson Labs (collectively, the "Company" or "Sotera Health"), is committed to meeting the highest of ethical standards. These standards are based on our Company Values of People, Customer Focus, Integrity, Safety and Excellence.

Our suppliers play an important role in helping us to achieve these standards. We have created this Supplier Code of Business Ethics and Conduct ("Supplier Code" or "Code") to set forth the standards and practices that our suppliers are required to meet, which we will use to evaluate and assess supplier performance on a regular basis. To learn more about the overarching values and principles we expect our people to adopt while working at Sotera Health, please refer to our Global Code of Conduct available on our Company's internet site.

Our Company has chosen to do business with you as our supplier because of our shared commitment to ethical conduct. While these standards and practices are not an exhaustive list, we expect you, as a supplier to Sotera Health, to uphold these standards. We also expect you, in turn, to apply these standards to your own suppliers and subcontractors who support your work for the Company. Violation of this Code will, at a minimum, result in a review of our business relationship and could lead to termination of that relationship.

The Supplier Code does not replace applicable law. The Company expects its suppliers and third parties to operate in compliance with all applicable laws, rules and regulations in addition to the standards contained in this Supplier Code.

Thank you for your commitment to working with us to achieve these important standards. If you have any questions about this Code, please contact us at Suppliercode@soterahealth.com.

Sincerely,

Michael B. Petras, Jr.
CEO

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1. Our Company Vision, Values and Expectations

At Sotera Health, our vision is to be the leading provider of mission-critical solutions to improve global health. We believe a strong relationship with our suppliers is important to ensure our Company's success. We are committed to operating with the highest level of ethical standards, delivering on our promises and protecting our assets and reputation in a rapidly changing global environment. We expect and trust our suppliers to demonstrate this same commitment in everything they do. Maintaining this trust is critical to fulfilling our Company's vision and requires each of us to act consistent with our Company Values of People, Customer Focus, Integrity, Safety and Excellence.

This Supplier Code of Business Ethics and Conduct (this "Code") was created to communicate our expectations to our suppliers for how they do business with or on behalf of the Company, or to the extent supplier business practices otherwise could impact the Company. This Code applies to any company or individual who supplies goods or services to Sotera Health, in addition to our supplier's suppliers and subcontractors. It is not exhaustive. Suppliers are required to use good judgment, consistent with Company contractual standards and applicable laws, to ensure compliance with unaddressed topics. In certain instances, the Company may also require the supplier and its personnel to acknowledge and abide by the Company's Global Code of Conduct. For additional information regarding our requirements, refer to our Global Code of Conduct available on our Company's internet site.

2. Anti-Bribery, Gifts and Gratuities

2.1 Bribery and Corruption

Suppliers must never directly or indirectly solicit, receive or offer any form of bribe, kickback or other unlawful or improper payment to or from any person or organization, including but not limited to government agencies, government officials, companies or personnel at those companies. No intermediaries used by suppliers, such as agents, representatives, advisors, distributors, freight forwarders or any other business partners, shall be used to commit acts of bribery or corruption. Suppliers must comply with all applicable anti-bribery and anti-corruption laws and regulations that govern operations in the countries in which they do business, including the U.S. Foreign Corrupt Practices Act, the U.K. Bribery Act and Canada's Corruption of Foreign Public Officials Act.

2.2 Facilitating Payments

No facilitating payments shall be made by suppliers either directly or indirectly, regardless of whether or not local law or custom permits them. "Facilitating Payments" (also known as "greasing payments") are payments made to an individual (including a government official), to obtain or expedite performance of an action. This includes payments to an individual intended to expedite or secure performance of routine governmental actions, even in locations where such action may not violate local law. Facilitating Payments do

not include payments made to a government entity directly in order to expedite official services as provided by local law, such as a payment made for express service to issue a passport, which service is available to all customers.

2.3 Gifts, Hosting and Entertainment

Sotera Health competes on the merits of its products and services and discourages the soliciting, offering or receiving of gifts with our suppliers. Suppliers shall not offer to or receive or solicit gifts from a Company employee or third party, in order to obtain or retain business, gain an advantage or to influence a decision with the Company. Gifts may include anything of value, such as cash, loans, prizes, tickets, gift certificates, promotional items, free or reduced-price admission to events, etc.

With the exception of hosting and entertainment with government officials and representatives of state-owned enterprises ("SOE") where specific laws and policies may apply (see below), appropriate business hosting and entertainment (e.g., business reception, meal, sporting or theatrical event) with our suppliers, current or prospective, is generally acceptable when clearly intended to strengthen business relationships and facilitate business goals. Suppliers must not offer or participate in hosting or entertainment activities that may be or may appear to be improper or inappropriate. Any hosting or entertainment must be moderate, reasonable and in good taste and not otherwise prohibited by law or either company's policies. Lavish meals or inappropriate entertainment should always be avoided. During these events, topics of a business nature must be discussed and the supplier representative(s) must be present.

All Sotera Health suppliers are responsible for ensuring that they comply with all applicable laws and regulations relating to any gifts, hosting or entertainment.

Gifting, hosting or entertainment with a supplier that is a government organization, government agency or SOE (or with a supplier that may interact with such government or SOE officials or representatives on behalf of the Company) carries increased compliance risks. These courtesies are usually subject to additional restrictions in accordance with policies and local laws. **It is imperative that our suppliers ensure that any gifts, entertainment or hosting of any value that may be provided in connection with any work performed for our Company is in compliance with applicable policies and local law, and that this compliance is confirmed in advance with our Company management.**

2.4 Political Contributions and Lobbying

If a supplier makes a political contribution or engages in lobbying activities, it must comply with all applicable laws, regulations and industry codes and standards. Suppliers may not make political contributions with the expectation of direct or immediate benefits for the supplier or the Company. Unless otherwise agreed to in writing with the Company, a supplier may not directly or indirectly engage in any lobbying activities on behalf of the Company.

3. Business Integrity and Fair Competition

3.1 Accurate Proposals and Invoices

Suppliers preparing proposals, bids or other materials to support contract negotiations for Sotera Health and its clients must ensure that all statements and representations are accurate and truthful. Suppliers are also required to maintain accurate books and records, including financial records, and submit accurate invoices. Any errors must be promptly corrected. Suppliers must provide the Company with reasonable access to relevant business records and employees to confirm same.

3.2 Company Property

Suppliers shall protect Company assets in its use or possession and shall only use such Company assets for the legitimate business purposes of the Company.

3.3 Procurement Integrity

Suppliers shall comply with all aspects of applicable procurement laws and regulations. For example, suppliers shall comply with the U.S. Procurement Integrity Act[1] when performing work in connection with a procurement by the U.S. federal government. The U.S. Procurement Integrity Act generally prohibits: knowingly obtaining bid, proposal, or source selection information related to a current or future U.S. federal government procurement; disclosing bid, proposal, or source selection information to which one has received access in the course of providing support or advice to a U.S. federal government agency; or engaging in employment discussions with or providing compensation to certain former U.S. government procurement or contract officials.

3.4 Conflicts of Interest

Suppliers shall avoid all conflicts of interest or situations that give the appearance of a potential conflict of interest in their dealings with the Company, such as situations in which the supplier has access to non-public information about a procurement opportunity that would give it an unfair competitive advantage, will be performing work that requires it to review its own work on another project or contract, has a business or family relationship with a Company employee that has not been disclosed to Company management, or where its objectivity will be otherwise impaired.

3.5 Competition and Fair Trading Laws

Suppliers must comply with all antitrust, competition and fair trading laws wherever they do business. This includes avoiding entering into agreements that unlawfully restrain competition, improperly exchanging competitive information, price fixing, bid rigging, or improper market allocation.

---

[1] 41 U.S.C. §§ 2101-2107.

3.6 Export Laws

Suppliers who conduct work on behalf of the Company across national borders must understand and comply with all applicable export laws and regulations. As a U.S.-owned company, Sotera Health expects its suppliers to source materials or services only from countries or persons with whom U.S. persons can do business. Sotera Health operates in many other countries as well, and expects its suppliers also to meet the requirements of the laws where the Company's operations are located, in addition to U.S. laws. If a supplier requires more information regarding these requirements, please connect with your Company contact.

4. Respect for the Individual

Suppliers are required to follow all general workplace standards, including health and safety, environmental and labor standards. This commitment establishes and ensures a safe working environment for all employees.

4.1 Fair Treatment and Harassment

Workers have a right to be treated fairly and to be in a workplace free of harassment. Suppliers must treat people with dignity and protect human rights as described in the United Nations Universal Declaration of Human Rights. Suppliers must not tolerate any form of harassment, including but not limited to physical, verbal, psychological and sexual harassment, physical violence or threats, harsh or inhumane treatment, corporal punishment, mental coercion, verbal abuse or sexual abuse.

4.2 Non-Discrimination

Suppliers must provide a workplace free of unlawful discrimination. Discrimination for reasons such as race, color, religion, creed, age, sex, gender, gender identity or expression, sexual orientation, nationality, social or ethnic origin, family status, marital status, pregnancy, disability, political affiliation or union membership is prohibited to the fullest extent of applicable law.

4.3 Human Trafficking and Involuntary Labor

The Company expects its suppliers to respect human rights. Human trafficking in any form is strictly prohibited by the Company, as well as by the U.S. Government, the Canadian government, the U.K. Government, and the European Union. Workers must be free to terminate their employment with reasonable notice. Suppliers may not use forced, bonded, compulsory, indentured, or involuntary labor; procure commercial sex acts; deny access to identity or immigration documents; charge recruitment fees to employees; charge excessive "deposits" for tools, training, or personal protective equipment necessary for employees to carry out their jobs safely; use misleading or fraudulent recruitment practices; violate the labor laws of the country in which recruiting or the work takes place; provide housing that does not comply with the housing standards of the

country in which the work occurs; or fail to provide required work documents. Action will be taken against suppliers that violate this policy, including, but not limited to, termination of the supplier agreement.

Suppliers and their employees have a duty to report human trafficking violations using any appropriate disclosure channel, including but not limited to Sotera Health's Global Ethics Line (see contact information in Appendix A of this Code), and for supply related to U.S. government procurements, the U.S. Government's Global Human Trafficking Hotline (844-888-FREE, help@befree.org). Suppliers are obligated to become aware of and comply with all applicable laws and directives on this subject in the jurisdictions in which they operate, including U.S. government anti-trafficking regulations[2] (where supply is related to a U.S. Government procurement), the U.K. Modern Slavery Act 2015[3] and the European Union's Directive on Trafficking in Human Beings.[4]

4.4 Child Labor and Young Workers

Suppliers may not use child labor. Suppliers may not employ children below the local legal minimum working age. The employment of young workers who have reached the legal minimum working age, but who are below the age of 18, must only occur in non-hazardous work. Suppliers may participate in legitimate workplace apprenticeship programs that comply with applicable laws and regulations. To ensure compliance, suppliers must keep a record of its employees' ages.

4.5 Wages, Benefits and Working Hours

Suppliers must pay workers in accordance with all applicable wage and hour laws and regulations, including minimum wages, overtime hours and mandated benefits. Suppliers must communicate in a timely manner with workers regarding the basis upon which they will be paid. Suppliers must also communicate with the worker whether overtime is required and the wages to be paid for such overtime.

4.6 Freedom of Association

Suppliers must respect the rights of workers, as set forth in local laws and regulations, to freely join or not join labor unions, seek representation and join workers' councils. Workers must be able to communicate openly with management regarding working conditions without threat of reprisal, intimidation or harassment.

4.7 Health and Safety Standards

Suppliers must comply with all applicable health and safety laws, provide a safe, healthy working environment and take the necessary precautions to protect workers and visitors

[2] Federal Acquisition Regulation 52.222-50.
[3] See http://www.legislation.gov.uk/ukpga/2015/30/contents/enacted for more information about the Modern Slavery Act 2015.
[4] Directive 2011/36/EU.

from workplace injuries, on-site accidents and occupational disease. Suppliers must have systems and processes in place to protect workers from exposure to chemical, biological and physical hazards (including physically demanding tasks) in the workplace and in company-provided living quarters. To help ensure safety, suppliers must provide employees with the necessary training and protective equipment. Suppliers must maintain records documenting workplace injuries and health and safety trainings. Suppliers must continually assess safety in performing work or providing goods to the Company, to support fully the Company's safe operation of its facilities, the integrity of Company services and the safety of Company products.

4.8 Emergency Preparedness

Suppliers must develop and distribute appropriate emergency plans across their facilities, and must develop appropriate business continuity plans.

4.9 Drug-Free Workplace

Suppliers must maintain a workplace free from the illegal use, sale or distribution of controlled substances.

4.10 Use of Social Media

Suppliers must not use social media in a disrespectful or unprofessional manner, such as by posting content that relates to the Company, its business, its clients, its business partners or its employees that is abusive, malicious, obscene, threatening or intimidating, or that contains derogatory statements based on ethnic, religious, gender or other protected status.

5. Quality

Our Company operates in highly regulated sectors and has rigorous quality standards which we require our suppliers to follow. This ensures our services and products not only meet all of the regulatory requirements, but also our own Company standards.

6. Data Privacy; Confidential and Proprietary Information

Suppliers must protect personal privacy and comply with applicable privacy and data protection laws to ensure that Company, worker and any applicable third-party privacy, data and intellectual property rights are protected. Suppliers must implement appropriate data privacy and security measures in processing personal information of individuals. Suppliers must ensure they have adequate procedures and safeguards in regards to cross-border transmissions of data.

Suppliers must secure the Company's confidential and proprietary information and data, including its intellectual property, against unauthorized or unlawful loss, destruction, alteration, disclosure, use or access. Suppliers must not use Company names or

trademarks or state that the Company endorses any activity or product without the prior written consent of the Company.

7. Environment

We expect our suppliers to conserve natural resources, protect the environment, manage environmental risks, improve social responsibility and develop sustainability programs.

At a minimum, the Company expects its suppliers to comply with all applicable environmental laws and regulations, including those pertaining to waste management, recycling and emissions. Suppliers must also obtain and comply with the terms of all required environmental permits, licenses and information registrations.

To promote a sustainable environment, suppliers should also strive to reduce their resource consumption and use, including implementing improvement plans for waste reduction, recycling and energy conservation policies.

8. Animal Welfare

Our Company expects our suppliers to conduct research and testing on animals only where necessary and reasonably justified on the basis of scientific, regulatory or commercial considerations. When such is required, suppliers must ensure that the animals are treated humanely, with efforts to minimize harm to the animals. Suppliers must comply with all business conduct, industry, regulatory, and health and safety guidelines or regulations established by the Company, applicable governmental authorities or industry associations. Suppliers must also obtain and comply with the terms of all required permits and licenses governing animal welfare.

9. Subcontractors

Our Company must be informed of all subcontractors engaged by suppliers to provide goods or services to the Company. Suppliers are required to ensure their subcontractors receive this Code and abide by its standards.

10. Identification of Concerns

All of suppliers' workers should be encouraged to report concerns or illegal activities in the workplace, without threat of reprisal, intimidation or harassment. Suppliers must investigate and take corrective action if needed.

11. Management Systems

11.1 Commitment and Risk Management

Suppliers must demonstrate a commitment to the standards described in this document by allocating appropriate resources to complying with them. Suppliers must have mechanisms to determine and manage risks in all areas addressed in this document and

must maintain records to demonstrate their compliance. Suppliers must ensure their employees take any necessary training to comply with this Code.

11.2 Legal and Customer Requirements

Suppliers must identify and comply with all applicable laws, regulations, standards and contract requirements in connection with their work for the Company.

12. Compliance Monitoring and Breach of Standards

The Company may verify the compliance of its suppliers, as well as suppliers' suppliers and subcontractors, with this Code through a supplier self-evaluation, site visit, and/or audit by the Company or an agent of the Company. If permission to conduct a site visit or audit is denied, the Company may terminate the supplier and its agreement with the Company.

Compliance with the standards set forth in this Code is among the criteria that are taken into consideration in the Company's supplier selection process. Suppliers must promptly report to the Company any known breach of this Code. Sotera Health reserves the right to terminate the business relationship with the supplier for its failure (or failure by its suppliers or subcontractors) to comply with these standards or with applicable laws, regulations or contract requirements, which also may give rise to other liability of supplier. The Company does not tolerate retaliation of any kind from a supplier against individuals who, in good faith, raise questions, report concerns or participate in investigations of suspected unethical conduct.

If a supplier is seeking advice on or knows of, or suspects, any violation of this Code, the supplier should either speak to their contact person on our supply chain management team, contact us at Suppliercode@soterahealth.com or report the concern through the Sotera Health Global Ethics Line or other contact resources listed in Appendix A.

Conclusion and Acknowledgement

This Sotera Health Supplier Code of Business Ethics and Conduct is not intended to conflict with any existing purchase order or contract and does not replace applicable law.

By signing below, the supplier acknowledges that it understands and agrees to comply with this Code. Any violations of this Code may be cause for the termination of the supplier's relationship with Sotera Health. Upon request by the Company, suppliers will re-certify that they understand and agree to comply with this Code.

_____

Authorized Representative – Printed Name and Position/Title

_____

Signature

_____

Supplier Name

_____

Date

Appendix A – Reporting a Concern

1. Global Ethics Line – International Contact Information

The Global Ethics Line is available 24 hours a day, 7 days a week to our suppliers worldwide. The Global Ethics Line may be reached toll-free at the numbers below, or you may access the website at www.soterahealth.ethicspoint.com. To find the AT&T Business Access Code for your location, please go to www.soterahealth.ethicspoint.com or www.business.att.com/bt/access. The Global Ethics Line is operated by a third-party service provider, NAVEX Global, Inc. Services are provided in the local language.

Global Ethics Line:

Country	Phone Number
Belgium	AT&T Access Code + 866-831-2542
Brazil	0800-892-0784
Canada	1-888-288-1841
China	4006009322
Costa Rica	AT&T Access Code + 866-831-2542
Denmark	AT&T Access Code + 866-831-2542
France	0800-91-8997
Germany	AT&T Access Code + 866-831-2542
Hong Kong	AT&T Access Code + 866-831-2542
Italy	800-792621
Mexico	001-844-372-9087
Thailand	1800-011-615
United Kingdom	0808-234-2692
United States	1-888-288-1841

2. Sotera Health Supply Chain Contact

(i) Your Sotera Health supply chain representative, or

(ii) By email: Suppliercode@soterahealth.com

3. Sotera Health Ethics Representatives

General Counsel – Direct line: +1.440.262.1409

Chief Human Resources Officer – Direct line: +1 440.262.1411

By email: Ethics@soterahealth.com

4. Sotera Health Legal Department

By email: Legal@soterahealth.com

Sotera Health

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soterahealth.com

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Nordion™ A Sotera Health company

Sterigenics® A Sotera Health company

EXHIBIT I

Sotera Health

Sotera Health's Sterigenics Announces Acquisition of Iotron Industries

Additional Electron Beam capacity enhances Sterigenics' global leadership in sterilization solutions

CLEVELAND, Ohio – **August 3, 2020** – Sotera Health, the world's leading, fully integrated protector of global health, announced today that it has acquired Canadian-based Iotron Industries. The acquisition expands the company's electron beam (EBeam) footprint and adds new expertise to its Sterigenics business. Iotron Industries is a leading outsourced provider of EBeam sterilization in North America.

With facilities in Columbia City (Indiana), Port Coquitlam (British Columbia), and Edmonton (Alberta), Iotron Industries has an outstanding reputation for customer service, technical expertise and quality performance. Iotron is well regarded for its proprietary IMPELA® accelerators, which provide high powered EBeam processing for the sterilization of medical devices and a wide range of industrial applications.

"Iotron Industries is a well-respected provider of electron beam sterilization known for its strong customer relationships and the expertise of its employees," said Michael B. Petras Jr., CEO of Sotera Health. "While this acquisition expands our overall sterilization footprint, it also enhances our EBeam capabilities and the strength of our offering to the market. We welcome Iotron's management and strong team as they join our mission of Safeguarding Global Health®."

"I am exceedingly proud of the thriving business and expert team that we have built together at Iotron, and we all look forward to accelerating our growth as part of a global leader," said Tino Pereira, President and CEO of Iotron Industries." Iotron and Sotera Health share common values around safety, customer focus, integrity, people and a commitment to excellence. We look forward to a brighter future together."

The addition of Iotron will complement Sotera Health's Sterigenics business and enhance Sterigenics' existing global, technology-agnostic sterilization platform.

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About Sotera Health: Sotera Health, along with its business entities, is the world's leading, fully integrated protector of global health. With over 500 years of combined scientific expertise, the company ensures the safety of healthcare by providing mission-critical services to the medical device, pharmaceutical, tissue and food industries.

Sotera Health operates 61 facilities in 13 countries. The company has over 2,600 employees globally and touches the lives of more than 180 million people around the world each year. Sotera Health serves more than 5,000 customers worldwide, including 75 of the top 100 medical device manufacturers.

Sotera Health goes to market through its three best-in-class companies – Nelson Labs®, Nordion® and Sterigenics® – with the mission of ensuring the safety of health care each and every day. Nelson Labs offers microbiological and analytical testing and expert advisory services to assist customers in developing and maintaining sterilization solutions in medical devices, tissue/implantable products, and the pharmaceutical and biologics fields. Nordion is the world's largest provider of Cobalt-60 used in the gamma sterilization process, and Sterigenics provides comprehensive contract sterilization and ionization solutions for the medical device, pharmaceutical, food safety and high-performance materials industries.

Sotera Health Holdings, LLC is owned by private equity firms Warburg Pincus and GTCR. Learn more about **Sotera Health** at soterahealth.com, **Nelson Labs** at nelsonlabs.com, **Nordion** at nordion.com and **Sterigenics** at sterigenics.com.

About Sterigenics: Sterigenics, is a global leader in comprehensive sterilization solutions and advisory services. Sterigenics has over 1600 engineers, scientists and safety specialists with deep expertise across Gamma, EtO, NO2, E-Beam and X-Ray sterilization. With operations that span 45 facilities in 13 countries, Sterigenics is the "point of safe" for customers. Sterigenics is committed to Safeguarding Global Health® – with every product they sterilize.

About Iotron Industries:

Iotron Industries Canada/USA Inc. are leaders in Electron Beam processing services and equipment, with locations in Indiana, USA and British Columbia and Edmonton, Canada. Iotron's IMPELA® Electron Beam Accelerators harness technology to modify the physical, chemical, molecular and biological properties of materials and products, improving their usefulness and enhancing their value. Iotron has supplied quality service to a diverse array of customers for more than 20 years. To learn more, visit www.iotron.com.

###

Media Contacts

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IOTRON INDUSTRIES:

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EXHIBIT J1

Sotera Health

About News

Privacy

HISTORY AND VALUES LEADERSHIP PRIVACY

Privacy Policy

Last Modified: July 16, 2018

Sotera Health LLC, with its global headquarters located at 9100 South Hills Boulevard, Suite

Our Values

SAFETY

We are uncompromising in our

300 Broadview Heights, Ohio 44147, United States of America, and its affiliates (hereafter, together and individually: "O ", " ", " " or " ") are committed to protecting and respecting your privacy. This Privacy Policy ("L ") describes how we gather and use your information. This Policy applies to the information we collect, or you provide, through any of Sotera Health's digital resources (for example, via our websites, applications, email correspondence, marketing materials, and other online or downloadable tools) (collectively, " ") that reference or display a link to this Policy. By using websites and other online resources that reference or display a link to this Policy, you are accepting and agreeing to the practices described herein.

This Privacy Policy is supported by our Cookie Policy, which describes the way our websites and other online resources use cookies.

The companies of Sotera Health operate websites and provide online resources to provide you with information about their

commitment to health and well-being.

CUSTOMER FOCUS

We are driven to fulfill our customers' needs with the highest quality and care.

PEOPLE

We value our people who are part of a global team that is diverse, respectful, passionate and collaborative.

INTEGRITY

We are honest, reliable and accountable in

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business and the products and services they offer. Some of the online resources we offer are in collaboration with third-party service providers. Our relationships with these service providers are governed by agreements that require your information to be processed and held securely. There are three ways in which we gather information:

- : We collect information that you give us by filling in forms or data fields on our websites, or by corresponding with us by phone, email or otherwise. This includes information you provide to us when you complete a contact form, register on our website, or subscribe to Sotera Health communications. The information you give us may include your name, date of birth, contact information (postal address, email address, phone number), professional credentials, function, and contact preferences. To the extent necessary to process a payment, you may also give us certain of your financial information, including credit card information, bank details, tax data, or information regarding credit history.

- : When you

everything we do.

EXCELLENCE

We exceed the expectations of our stakeholders and continue to improve and innovate in everything we do.

visit our websites or otherwise use Sotera Health online resources, we (or a third-party designated by us) may collect information about the computer or electronic device you are using. Information we collect may include the following:

- technical information, including the Internet Protocol (IP) address used to connect your computer to the internet, browser type and version, time zone setting, browser plug-in types and versions, operating system and platform;

- information provided by tracking technologies, such as cookies, single-pixel tags, local share objects (Flash), local storage, Etags and scripts.

- information about your visit, including the full Uniform Resource Locators (URL), clickstream to, through and from our website (including date and time), the products or services you viewed or searched for, page response times, download errors, length of visits to certain pages, page interaction information (such as scrolling, clicks, and mouse-overs), methods used to browse away from

the page and any phone number used to call our customer service number;

- if you use a mobile device to access our website or online resources, we may collect information about your device, including your device ID and device type, as well as usage information about your device and your use of our mobile websites and other mobile resources.

- This is information we receive about you from public sources, including trade and business registers or directories, trade fairs, exhibitions, and news or internet sources. We engage third-party service providers who provide us with technical services, including related to payment processing, data analytics, and advertising, from whom we receive and process information about you. We may also receive information about you from business associations, credit agencies, and insurance companies.

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R

We use information we hold about you only for permitted purposes, in accordance with applicable national or local data protection laws and applicable provisions of the European General Data Protection Regulation (“ L ”).

- :
  - to carry out our obligations arising from any contracts entered in to between you and us and to provide you with the information, goods and services that you request from us;
  - to provide you with information about other goods or services we offer that are similar to those that you have already used or inquired about;
  - to provide you with information about goods or services we believe may interest you;
  - to provide you with the possibility to pay online for the goods or services you have requested from us;

- to review and assess your job application;

- to notify you about changes to our products or services, or changes to regulatory requirements that may affect our products or services or your use of them; and

- to ensure that the content from our website is presented in the most effective manner for you and for your computer or device.

- : We (or a third party designated by us) use this information as follows:
  - to improve our website and ensure that content is presented in the most effective manner for you and your computer or device;

  - to measure or understand the effectiveness of advertising we deliver to you and others, and to deliver relevant advertising to you; and

  - to make suggestions and recommendations to you and other

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users of our website about goods or services that may interest you or them.

- Sometimes we combine the information given to us by you with the information we have collected and the information we have from other sources. We use this information, including the combined information, for the following purposes:
  - to measure or understand the effectiveness of advertising we deliver to you and others, and to deliver relevant advertising to you; and,
  - to make suggestions and recommendations to you and other users of our website about goods or services that may interest you or them.

We process your information on the following legal bases:

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- If it is necessary for pursuit of, or to safeguard, the legitimate interests of Sotera Health, provided that these interests are not overridden by your fundamental rights and freedoms. For example, we use your information to better personalize our product and service offerings, to provide improved customer service, to prevent fraud, and to secure our website.

- If it is necessary to fulfill our contractual obligations. The extent and purpose of our use of your information depends on the contract that we have concluded.

- If it is required to comply with our legal obligations. These obligations may arise from applicable provisions of national or European laws or regulations, including regarding commerce, trade, and tax.

- If you consent to our use of your information. If you have given us your prior express consent we will use your information for business purposes in a manner consistent with the scope of that consent.

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If permitted pursuant to our contractual obligations with you, we may share your information with other entities in the Sotera Health group of companies. We make your information available to our affiliates as necessary to fulfil legal and contractual obligations. For example, where permitted, we share your information with our affiliates to facilitate the provision of centralized supplier or customer management services, centralized IT services, and internal finance and accounting shared services. If permitted, we may also share your information with other Sotera Health affiliates so that they may offer you products or services complementary to those you already receive from us.

We work closely with third-party service providers to fulfil certain of our contractual and legal obligations as well. Typical examples of this include the hosting of IT infrastructure, certain payment processing services, and logistics and delivery. You agree that we have the right to share your information with those third-party service providers used to support our business, including:

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- Providers of marketing related services and solutions;
- Providers of legal and compliance services and solutions;
- Providers of whistleblowing services;
- Public authorities and national administrations;
- Providers of auditing services;
- Providers of IT related services and solutions;
- Providers of banking services and solutions;
- Providers of online payment services.

We will also disclose your information to third parties:

- In the event we sell or buy any business or assets, in which case we may disclose your information to the prospective seller or buyer of such business or assets;

- If Sotera Health or substantially all of its assets are acquired by a third party, in which case information held by it about its customers may be one of the transferred assets;

- If we are under a duty to disclose or share your information in order to comply with any legal obligation or to protect the rights, property, or safety of Sotera Health, our customers, or others. This includes exchanging information with public authorities (including judicial and police authorities) in the event of, for example, a cyber security incident;

- If appropriate to achieve any of the purposes set out in Section 2 of this Privacy Policy.

P

If you are based in the European Union, we may transfer your information to a destination outside the European Economic Area (“ ”), which might include transfers to Canada and the United States of America. Such transfers can be performed, if appropriate to (i) achieve

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any of the purposes set out in Section 2, or (ii) disclose your information to a third party, in accordance with Section 3.

If we transfer information originating in the EEA to a destination outside the EEA, we will make sure that such information is protected by the following safeguards:

- The laws of the country to which the information is transferred ensure an adequate level of data protection (Article 45, GDPR));
- The transfer is subject to data protection clauses approved by the European Commission (Article 46.2, GDPR) or is subject to the EU-US Privacy Shield; or
- The transfer is based on Binding Corporate Rules (Article 47, GDPR); an approved Code of Conduct (Article 40, GDPR); an approved certification mechanism (Article 42, GDPR); an approved data transfer agreement (Article 46.3, GDPR).

If you wish to receive more information relating to the transfers of such information

originating from the EEA or the safeguards that have been implemented (including on how to receive a copy thereof), you can contact us as set out in Section 11, below.

If you are of resident of the European Union, you have certain rights regarding the personal information we hold about you.

- You have the right to access this information – we want you to be aware of the information we have about you and enable you to verify whether we process your information in accordance with applicable data protection laws and regulations.

- You have the right, under certain circumstances, to block or restrict our further use of your information.

- If your information is inaccurate or incomplete, you have the right to request rectification of your information.

- You have the right, under certain circumstances, to request deletion or

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removal of your information from our systems.

- If our processing of your personal information is based specifically on your consent, you have the right to withdraw that consent at any time.

- You have the right to obtain from us, under certain circumstances, your information in a structured, commonly used and machine-readable format so you can reuse it for your own purposes across different services.

- You have the right to object to certain types of processing, including processing for direct marketing purposes.

- If you are unsatisfied with our handling of your personal information, you also have the right to lodge a complaint with your national data protection authority.

If you would like to exercise or discuss any of these rights please contact us as set forth in Section 11, below.

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O

We have implemented a number of security features throughout our website in order to prevent the unauthorized release of, or access to, information we collect and receive from you. While we endeavor to create a website that is always secure and reliable, we cannot guarantee the confidentiality of communications or materials transmitted to or from us (or to or from any other party), via the Sotera Health website or other online resources. We accept no responsibility and are in no way liable for the security of the information transmitted via our website or other online resources.

We do not keep your information longer than necessary to achieve the purposes stated in this Privacy Policy, unless we are required to do so to comply with applicable legal obligations, including laws and regulations related to the maintenance of commercial and tax documentation and evidence. The retention

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period for your information is determined based on several criteria, including:

- Time elapsed since your last interaction with us
- End of your contractual relationship with us
- Sensitivity of the information or personal data
- Security reasons
- Applicable statutes of limitation
- Ongoing or potential litigation or dispute (e.g., we need this information to establish or defend legal claims)
- Applicable regulatory or legal obligations

Our online resources may, from time to time, contain links to third-party websites. If you access a third-party website by clicking on a hyperlink, or advertisement incorporating a hyperlink, consult the privacy policies of those

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websites before you submit information to them. Sotera Health is not responsible for the privacy practices of third-party websites.

R

D L

L

By using Sotera Health websites or other online resources, you acknowledge that you have read the terms of this Privacy Policy and you agree with the collection and the use of your information as set out above.

We may amend this Policy from time to time. Changes we make to the Policy in the future will be posted on this page and, where appropriate, notified to you by email. Please check back frequently to see any updates or changes to the Policy. Your continued use of our websites and online resources following the posting of changes to this Policy will indicate your acceptance of the Policy changes.

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Questions, comments and requests regarding the Privacy Policy must be addressed to our General Counsel at legal@soterahealth.com. Be sure to include "Privacy Policy" in the subject line of your email, and include as an attachment a copy of your identity card or other proof of identity (e.g., driver's license), which will help us prevent unauthorized individuals from accessing, changing or deleting your information.

9100 South Hills Blvd, Suite 300
Broadview Heights, OH 44147

EXHIBIT J2

Sotera Health

About News

About Us

HISTORY AND VALUES LEADERSHIP PRIVACY

About Sotera Health

Sotera Health brings together Sterigenics, Nelson Labs and Nordion, each of which are established, highly reputable players in the global health arena. Working as a team, Sotera

Our Values

SAFETY

We are uncompromising in our

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Health and its companies have one common goal: Safeguarding Global Health™. With these three companies operating together, Sotera Health, formerly Sterigenics International, leverages more than 500 combined years of scientific expertise to ensure safety across the medical device, pharma, tissue and food industries. With over 2,800 employees globally, including more than 350 scientists, the company operates 63 facilities worldwide across 13 countries. Our purpose is bigger than the products and services we provide. We ensure that health care around the world is consistently and reliably safe every day. Our purpose, our conduct, and our values are at the heart of our commitment to employee safety, environmental responsibility, and sustainability principles. Download Our Sustainability Report

Our History

The Sotera Health name is new, but our track record for reliability and safety in global health is well established. Formed in 2017 as the parent company for Nelson Labs, Nordion and Sterigenics, Sotera Health is the leader in protecting global health thanks to the longstanding reputation for quality across each of its companies. In aggregate, Sotera Health

commitment to health and well-being.

CUSTOMER FOCUS

We are driven to fulfill our customers' needs with the highest quality and care.

PEOPLE

We value our people who are part of a global team that is diverse, respectful, passionate and collaborative.

INTEGRITY

We are honest, reliable and accountable in

has over 185 years of combined industry leadership. Sterigenics has provided safe sterilization services since the 1930s. Nordion has established expertise in gamma technologies and medical isotopes since 1946. Nelson Labs has provided expert lab testing since 1985. Our most recent addition to the Sotera Health family, Toxikon Europe, has established a leading extractables and leachables testing platform since 1990. An impressive history that points to an even brighter future.

everything we do.

EXCELLENCE

We exceed the expectations of our stakeholders and continue to improve and innovate in everything we do.

9100 South Hills Blvd, Suite 300
Broadview Heights, OH 44147

EXHIBIT J4

Sotera Health Nelson Labs Nordion Sterigenics Sterigenics GPS Login

Sterigenics A Sotera Health company

Technologies Industries Advisory Services Resources
News & Events About Contact

Search here...

Have a question? (
+1 (800) 47

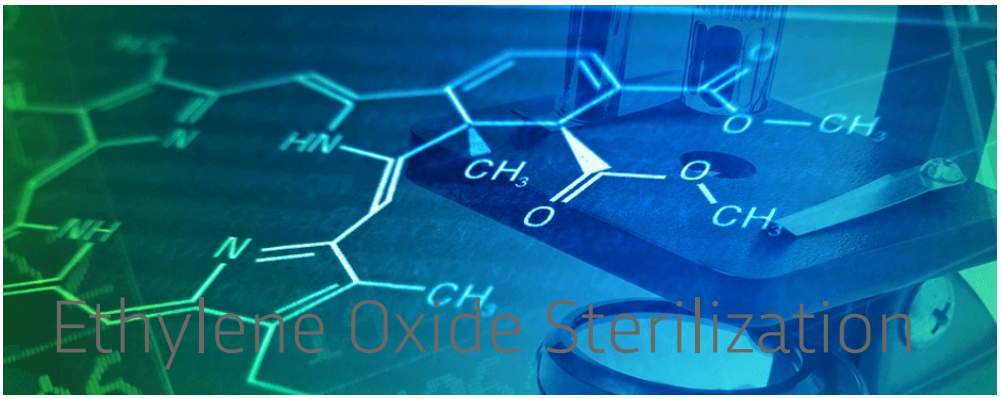
TECHNOLOGIES

Ethylene Oxide Sterilization

Gamma Irradiation

Electron Beam Irradiation

Noxilizer (NO_2 Sterilizer)


Ethylene Oxide Sterilization

Based on a gas diffusion process, Ethylene Oxide (EO or ETO) is capable of sterilizing and rendering products free of viable microorganisms. Sterility occurs when an EO gas molecule reacts with and destroys the microbial DNA. The process requires the simultaneous control of four variables, but interdependent parameters: gas concentration, temperature, relative humidity, and time of exposure. EO sterilization effectiveness depends on its ability to freely diffuse through a product and packaging. All products must be placed in breathable packaging that allows gas to penetrate the sterile barrier and reach all surfaces of the device or product.

Key Benefits

The EO process delivers a wide variety of sterilization benefits including:

- **Sterilization at Low Temperatur** Ensures the integrity of both the product and packaging
- **Product Compatibility** Effectively sterilizes a broad rang of polymers, resins, natural materials, and metals as well as dual drug-device combination products that require external contact surface sterilization
- **Sterility Assurance and Treatment Efficacy** Consistently meets product and regulatory requirements

We use cookies to improve your site experience, assess usage of the site, and to support the marketing of our services. For information about how to set cookie preferences, please visit our Cookie Policy. If you agree to our use of cookies press "I Agree", or continue to use our site, which will be considered consent.

I Agree Cookie policy

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Best Suited For

EO is considered the sterilization method with the broadest application available for medical products and medical devices due to its effectiveness at lower temperatures and its general compatibility with a diversity of materials, resins, and product types, including:

- Polymer resin-based products
- Single-use medical devices
- Procedure kits
- Surgical trays
- Synthetic gowns
- External terminal sterilization of sealed combination drug-devices (filled syringes, drug-coated stents)

- **Flexibility and Versatility**
  Effectively sterilizes a wide range of products with different variations in dose requirements, densities, and packaging/box size
- **Parametric Release**
  Allows for the release of product directly after processing which results in fast turn times to help get product to market rapidly

General guide to Ethylene Oxide Sterilization

Download Brochure

Stored energy device safety assessment checklist and overview

Download Brochure

Contact Us To Get Your Project Started

We use cookies to improve your site experience, assess usage of the site, and to support the marketing of our services. For information about how to set cookie preferences, please visit our Cookie Policy. If you agree to our use of cookies press “I Agree”, or continue to use our site, which will be considered consent.

Contact Us

I Agree Cookie policy

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or give us a call +1 (800) 472-4508

Contact Us Certifications Privacy Policy Terms of Use Careers Codes of Conduct
Site Map

Sterigenics U.S., LLC
2015 Spring Road, Suite 650
Oak Brook, IL 60523
+1 (800) 472-4508

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I Agree Cookie policy

EXHIBIT K

Sterigenics
A Sotera Health company

July 30, 2019

Mr. Eric Cornwell
Program Manager
Stationary Source Permitting
Georgia EPD - Air Protection Branch
4244 International Parkway, Suite 120
Atlanta, Georgia 30354-3906

Subject: **SIP Permit Application**
Sterigenics, Atlanta Facility - Permit No. 7389-067-0093-S-05-0
AIRS Number 04-13-067-00093

Dear Mr. Cornwell:

Please find enclosed the SIP application for an emission reduction project at the Sterigenics US LLC Atlanta Facility located at 2971 Olympic Industrial Drive in Atlanta, Georgia. Sterigenics requests to expedite this application process if possible.

If you have any questions regarding this submittal, please call me at (630) 928-1724.

Sincerely,

Laura Hartman
Manager Environment, Health and Safety

Enclosures:

1. Expedited Permitting Program Application
2. SIP Air Permit Application Forms 1.00, 2.00, 2.06, 3.00, 4.00, 5.00, 6.00, and 7.00
3. Attachments A-F

copy: Daryl Mosby, Atlanta Facility General Manager

Sterigenics International LLC
2015 Spring Road, Suite 650 • Oak Brook, IL 60523
Tel 630.928.1700 • Fax 630.928.1701 • www.sterigenics.com

State of Georgia
Department of Natural Resources
Environmental Protection Division
Air Protection Branch

Stationary Source Permitting Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404/363-7000
Fax: 404/363-7100

EXPEDITED PERMITTING PROGRAM – APPLICATION FOR ENTRY TO PROGRAM FOR AIR PERMITS

EPD Use Only

Date Received: _____ Application No. _____

To be eligible for expedited review, this application form must be accompanied by the complete permit application for the type of air permit being requested, and a pre-application meeting with EPD must have been conducted.

1. Contact Information

Facility Name: Sterigenics Atlanta Facility

AIRS No. (if known): 04-13- 067 - 00093

Contact Person: Laura Hartman Title: EHS Manager

Telephone No.: 630-928-1724 Alternate Phone No.: _____

Email Address: lhartman@sterigenics.com

If EPD is unable to contact me, please contact the alternate contact person:

Contact Person: Kevin Wagner Title: Director, EH&S

Telephone No.: 630-928-1771 Alternate Phone No.: _____

Email Address: KWagner@sterigenics.com

On Page 2 of this form, please check the appropriate box for which type of air permit you are requesting expedited review.

I have read the Expedited Review Program Standard Operating Procedures and accept all of the terms and conditions within. I understand that it is my responsibility to ensure an application of the highest quality is submitted and to address any requests for additional information by the deadline specified. I understand that submittal of this request form is not a guarantee that expedited review will be granted.

Signature: Laura Hartman Date: 30 July 2019

2. Applying For Which Type Of Permit: (Please Check Appropriate Box)

Expedited Review Fees for Air Permits	
Permit Type – Please Check One	**Expedited Review Fee***
☐ Generic Permit: Concrete Batch Plant – Minor Source	$1,000
☐ Generic Permit: Concrete Batch Plant – Synthetic Minor Source	$1,500
☐ Generic Permit: Hot Mix Asphalt Plant – Synthetic Minor Source	$2,000
☐ Minor Source Permit (or Amendment)	$3,000
■ Synthetic Minor Permit (or Amendment)	$4,000
☐ Major Source SIP Permit not subject to PSD or 112(g)	$6,000
☐ Title V 502(b)(10) Permit Amendment	$4,000
☐ Title V Minor Modification with Construction	$4,000
☐ Title V Significant Modification	$6,000
☐ Major Source SIP Permit subject to 112(g) but not subject to PSD	$15,000
☐ PSD Permit (or Amendment) not subject to NAAQS and/or PSD Increment Modeling	$15,000
☐ PSD Permit (or Amendment) subject to NAAQS and/or PSD Increment Modeling but not subject to Modeling for $PM_{2.5}$, NO_2, or SO_2	$20,000
☐ PSD Permit (or Amendment) subject to NAAQS and/or PSD Increment Modeling for $PM_{2.5}$, NO_2, or SO_2	$25,000
☐ PSD Permit (or Amendment) subject to NAAQS and/or PSD Increment Modeling for $PM_{2.5}$, NO_2, or SO_2 and also impacting a Class I Area	$30,000
* Do not send fee payment with this form. Upon acceptance of application for the expedited permit program, EPD will notify you by phone. Fees must be paid via check to "Georgia Department of Natural Resources" within five (5) business days of acceptance.	

3. Comments.

This section is optional. Applicants may use this field to include specific comments or requests for EPD consideration. For example, the applicant may use this field to request a public hearing or to remind EPD of review time needs and/or expectations that may differ from the time frames in the procedures.

State of Georgia
Department of Natural Resources
Environmental Protection Division
Air Protection Branch

Stationary Source Permitting Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354
404/363-7000
Fax: 404/363-7100

SIP AIR PERMIT APPLICATION

EPD Use Only

Date Received: _____ Application No. _____

FORM 1.00: GENERAL INFORMATION

1. Facility Information

Facility Name: Sterigenics US LLC
AIRS No. (if known): 04-13- 067 - 00093
Facility Location: Street: 2971 Olympic Industrial Drive SE, Suite 116
City: Atlanta Georgia Zip: 30339 County: Cobb
Is this facility a "small business" as defined in the instructions? Yes: ☐ No: ☒

2. Facility Coordinates

Latitude: ° ' " **NORTH** Longitude: ° ' " **WEST**
UTM Coordinates: 734,200 **EAST** 3,746,411 **NORTH** **ZONE** 16

3. Facility Owner

Name of Owner: Sterigenics US LLC
Owner Address Street: 2015 Spring Road, Suite 650
City: Oak Brook State: IL Zip: 60523

4. Permitting Contact and Mailing Address

Contact Person: Laura Hartman Title: EHS Manager
Telephone No.: 630-928-1724 Ext. _____ Fax No.: 630-928-1701
Email Address: LHartman@sterigenics.com
Mailing Address: Same as: Facility Location: ☐ Owner Address: ☒ Other: ☐
If Other: Street Address: _____
City: _____ State: _____ Zip: _____

5. Authorized Official

Name: Kathleen Hoffman Title: Sr Vice President of EH&S
Address of Official Street: 2015 Spring Road Suite 650
City: Oak Brook State: IL Zip: 60523

This application is submitted in accordance with the provisions of the Georgia Rules for Air Quality Control and, to the best of my knowledge, is complete and correct.

Signature: KA Hoffman Date: 30-Jul-2019

6. **Reason for Application: (Check all that apply)**

☐ New Facility (to be constructed)

☒ Existing Facility (initial or modification application)

☒ Permit to Construct

☒ Permit to Operate

☐ Change of Location

☒ Permit to Modify Existing Equipment: Affected Permit No.: 7389-067-0093-S-05

☐ Revision of Data Submitted in an Earlier Application

Application No.: _____

Date of Original Submittal: _____

7. **Permitting Exemption Activities (for permitted facilities only):**

Have any exempt modifications based on emission level per Georgia Rule 391-3-1-.03(6)(i)(3) been performed at the facility that have not been previously incorporated in a permit?

☒ **No** ☐ **Yes, please fill out the SIP Exemption Attachment** (See Instructions for the attachment download)

8. **Has assistance been provided to you for any part of this application?**

☐ **No** ☐ **Yes, SBAP** ☒ **Yes, a consultant has been employed or will be employed.**

If yes, please provide the following information:

Name of Consulting Company: Ramboll

Name of Contact: Joseph Hower

Telephone No.: (213) 943-6319 Fax No.: _____

Email Address: JHower@ramboll.com

Mailing Address: Street: 350 South Grand Avenue Suite 2800

City: Los Angeles State: CA Zip: 90071

Describe the Consultant's Involvement:

9. **Submitted Application Forms:** Select only the necessary forms for the facility application that will be submitted.

No. of Forms	Form
2	2.00 Emission Unit List
	2.01 Boilers and Fuel Burning Equipment
	2.02 Storage Tank Physical Data
	2.03 Printing Operations
	2.04 Surface Coating Operations
	2.05 Waste Incinerators (solid/liquid waste destruction)
2	2.06 Manufacturing and Operational Data
1	3.00 Air Pollution Control Devices (APCD)
	3.01 Scrubbers
	3.02 Baghouses & Other Filter Collectors
	3.03 Electrostatic Precipitators
1	4.00 Emissions Data
1	5.00 Monitoring Information
1	6.00 Fugitive Emission Sources
1	7.00 Air Modeling Information

10. **Construction or Modification Date**

Estimated Start Date: 9/1/2019

11. If confidential information is being submitted in this application, were the guidelines followed in the "Procedures for Requesting that Submitted Information be treated as Confidential"?

☐ No ☐ Yes X N/A

12. New Facility Emissions Summary

Criteria Pollutant	New Facility	
	Potential (tpy)	Actual (tpy)
Carbon monoxide (CO)		
Nitrogen oxides (NOx)		
Particulate Matter (PM) (filterable only)		
PM <10 microns (PM10)		
PM <2.5 microns (PM2.5)		
Sulfur dioxide (SO_2)		
Volatile Organic Compounds (VOC)		
Greenhouse Gases (GHGs) (in CO2e)		
Total Hazardous Air Pollutants (HAPs)		
Individual HAPs Listed Below:		

13. Existing Facility Emissions Summary

Criteria Pollutant	Current Facility		After Modification	
	Potential (tpy)	Actual (tpy)	Potential (tpy)	Actual (tpy)
Carbon monoxide (CO)	<10	0.9	<10	
Nitrogen oxides (NOx)	<25	1.1	<25	
Particulate Matter (PM) (filterable only)	<100	0.1	<100	
PM <10 microns (PM10)	<100	0.1	<100	
PM <2.5 microns (PM2.5)	<100	0.1	<100	
Sulfur dioxide (SO_2)	<250	0.01	<250	
Volatile Organic Compounds (VOC)	<10	0.1	<10	
Greenhouse Gases (GHGs) (in CO2e)				
Total Hazardous Air Pollutants (HAPs)	<10		<10	0.019
Individual HAPs Listed Below:				
Ethylene Oxide	3.28	0.13	0.187	0.019
Propylene Oxide	0.13	0.0005	0.01	0.00007

14. 4-Digit Facility Identification Code:

SIC Code: 7389 SIC Description: Business Services Not Elsewhere Classified

NAICS Code: 561910 NAICS Description: Packaging and Labeling – Product Sterilization

15. Description of general production process and operation for which a permit is being requested. If necessary, attach additional sheets to give an adequate description. Include layout drawings, as necessary, to describe each process. References should be made to source codes used in the application.

Sterigenics operates a commercial sterilization facility in Atlanta, Georgia. Please see attached for a description of the sterilization process and proposed changes.

16. Additional information provided in attachments as listed below:

Attachment A - Description of Process and Proposed Improvements to Emissions Capture and Control System

Attachment B - Plot Plan

Attachment C - Flow Diagram

Attachment D - Emission Calculations

Attachment E - Additional Data on production throughput estimate

Attachment F - Modeling Data

17. Additional Information: Unless previously submitted, include the following two items:

☒ Plot plan/map of facility location or date of previous submittal: _____

☒ Flow Diagram or date of previous submittal: _____

18. Other Environmental Permitting Needs:

Will this facility/modification trigger the need for environmental permits/approvals (other than air) such as Hazardous Waste Generation, Solid Waste Handling, Water withdrawal, water discharge, SWPPP, mining, landfill, etc.?

☒ **No** ☐ **Yes, please list below:**

_____

19. List requested permit limits including synthetic minor (SM) limits.

20. Effective March 1, 2019, permit application fees will be assessed. The fee amount varies based on type of permit application. Application acknowledgement emails will be sent to the current registered fee contact in the GECO system. If fee contacts have changed, please list that below:

Fee Contact name:

Fee Contact email address:

Fee Contact phone number:

Fee invoices will be created through the GECO system shortly after the application is received. It is the applicant's responsibility to access the facility GECO account, generate the fee invoice, and submit payment within 10 days after notification.

Facility Name: Sterigenics Atlanta Facility **Date of Application:** 30 July 2019

FORM 2.00 – EMISSION UNIT LIST

Emission Unit ID	Name	Manufacturer and Model Number	Description
SEV-1	Chamber 1 vacuum pump	Existing	Six-pallet Sterilization Chamber 1 vacuum pump
SEV-2	Chamber 2 vacuum pump	Existing	Six-pallet Sterilization Chamber 2 vacuum pump
SEV-3	Chamber 3 vacuum pump	Existing	Nine-pallet Sterilization Chamber vacuum pump
SEV-4	Chamber 4 vacuum pump	Existing	Five-pallet Sterilization Chamber vacuum pump
SEV-5	Chamber 5 vacuum pump	Existing	Thirteen-pallet Sterilization Chamber vacuum pump
SEV-6	Chamber 6 vacuum pump	Existing	Thirteen-pallet Sterilization Chamber vacuum pump
SEV-7	Chamber 7 vacuum pump	Existing	Thirteen-pallet Sterilization Chamber vacuum pump
SEV-8	Chamber 8 vacuum pump	Existing	Thirteen-pallet Sterilization Chamber vacuum pump
SEV-10	Chamber 10 vacuum pump	Existing	Thirty-pallet Sterilization Chamber vacuum pump
SEV-11	Chamber 11 vacuum pump	Existing	Thirty-pallet Sterilization Chamber vacuum pump
CEV-1	Backvent for Chamber 1	Existing	Backvent for Chamber 1
CEV-2	Backvent for Chamber 2	Existing	Backvent for Chamber 2
CEV-3	Backvent for Chamber 3	Existing	Backvent for Chamber 3
CEV-4	Backvent for Chamber 4	Existing	Backvent for Chamber 4
CEV-5	Backvent for Chamber 5	Existing	Backvent for Chamber 5
CEV-6	Backvent for Chamber 6	Existing	Backvent for Chamber 6
CEV-7	Backvent for Chamber 7	Existing	Backvent for Chamber 7
CEV-8	Backvent for Chamber 8	Existing	Backvent for Chamber 8
CEV-10	Backvent for Chamber 10	Existing	Backvent for Chamber 10

Facility Name: Sterigenics Atlanta Facility **Date of Application:** 30 July 2019

FORM 2.00 – EMISSION UNIT LIST

Emission Unit ID	Name	Manufacturer and Model Number	Description
CEV-11	Backvent for Chamber 11	Existing	Backvent for Chamber 11
AR-1	Aeration Room 1	Existing	Aeration Room 1
SR-1	Spice Room 1	N/A	Storage Room for Processed spices - Proposed
IA-1	Indoor Air	N/A	Capture indoor air from chamber room, processed warehouse, shipping, and work aisle

Facility Name: Sterigenics Atlanta **Date of Application:** 30 July 2019

FORM 2.06 – MANUFACTURING AND OPERATIONAL DATA

Normal Operating Schedule: 24 hours/day 7 days/week 52 weeks/yr

Additional Data Attached? ☐ - No ☒ - Yes, please include the attachment in list on Form 1.00, Item 16.

Seasonal and/or Peak Operating Periods: N/A

Dates of Annually Occurring Shutdowns: N/A

PRODUCTION INPUT FACTORS

Emission Unit ID	Emission Unit Name	Const. Date	Input Raw Material(s)	Annual Input	Hourly Process Input Rate		
					Design	Normal	Maximum
SEV-1	Chamber 1 vacuum pump	1967	Ethylene Oxide Propylene Oxide	12.9 tpy 0.5 tpy		2.9 lb 0.1 lb	
SEV-2	Chamber 2 vacuum pump	1967	Ethylene Oxide Propylene Oxide	12.9 tpy 0.5 tpy		2.9 lb 0.1 lb	
SEV-3	Chamber 3 vacuum pump	1967	Ethylene Oxide Propylene Oxide	19.4 tpy 0.8 tpy		4.4 lb 0.2 lb	
SEV-4	Chamber 4 vacuum pump	1967	Ethylene Oxide Propylene Oxide	10.8 tpy 0.4 tpy		2.5 lb 0.1 lb	
SEV-5	Chamber 5 vacuum pump	1987	Ethylene Oxide Propylene Oxide	28.0 tpy 1.1 tpy		6.4 lb 0.3 lb	
SEV-6	Chamber 6 vacuum pump	1992	Ethylene Oxide Propylene Oxide	28.0 tpy 1.1 tpy		6.4 lb 0.3 lb	
SEV-7	Chamber 7 vacuum pump	1994	Ethylene Oxide Propylene Oxide	28.0 tpy 1.1 tpy		6.4 lb 0.3 lb	
SEV-8	Chamber 8 vacuum pump	1994	Ethylene Oxide Propylene Oxide	28.0 tpy 1.1 tpy		6.4 lb 0.3 lb	
SEV-10	Chamber 10 vacuum pump	2014	Ethylene Oxide Propylene Oxide	64.5 tpy 2.6 tpy		14.7 lb 0.6 lb	
SEV-11	Chamber 11 vacuum pump	2015	Ethylene Oxide Propylene Oxide	64.5 tpy 2.6 tpy		14.7 lb 0.6 lb	
CEV-1	Chamber 1 Backvent	1967	Ethylene Oxide Propylene Oxide	0.1 tpy 0.005 tpy		0.03 lb 0.001 lb	
CEV-2	Chamber 2 Backvent	1967	Ethylene Oxide Propylene Oxide	0.1 tpy 0.005 tpy		0.03 lb 0.001 lb	
CEV-3	Chamber 3 Backvent	1967	Ethylene Oxide Propylene Oxide	0.2 tpy 0.008 tpy		0.05 lb 0.002 lb	

PRODUCTS OF MANUFACTURING

Emission Unit ID	Description of Product	Production Schedule		Hourly Production Rate (Give units: e.g. lb/hr, ton/hr)			
		Tons/yr	Hr/yr	Design	Normal	Maximum	Units

Facility Name: Sterigenics Atlanta Facility **Date of Application:** 30 July 2019

FORM 2.06 – MANUFACTURING AND OPERATIONAL DATA

Normal Operating Schedule: 24 hours/day 7 days/week 52 weeks/yr

Additional Data Attached? ☐ - No ☒ - Yes, please include the attachment in list on Form 1.00, Item 16.

Seasonal and/or Peak Operating Periods: N/A

Dates of Annually Occurring Shutdowns: N/A

PRODUCTION INPUT FACTORS

Emission Unit ID	Emission Unit Name	Const. Date	Input Raw Material(s)	Annual Input	Hourly Process Input Rate		
					Design	Normal	Maximum
CEV-4	Chamber 4 Backvent	1967	Ethylene Oxide Propylene Oxide	0.1 tpy 0.005 tpy		0.03 lb 0.001 lb	
CEV-5	Chamber 5 Backvent	1987	Ethylene Oxide Propylene Oxide	0.3 tpy 0.01 tpy		0.07 lb 0.003 lb	
CEV-6	Chamber 6 Backvent	1992	Ethylene Oxide Propylene Oxide	0.3 tpy 0.01 tpy		0.07 lb 0.003 lb	
CEV-7	Chamber 7 Backvent	1994	Ethylene Oxide Propylene Oxide	0.3 tpy 0.01 tpy		0.07 lb 0.003 lb	
CEV-8	Chamber 8 Backvent	1994	Ethylene Oxide Propylene Oxide	0.3 tpy 0.01 tpy		0.07 lb 0.003 lb	
CEV-10	Chamber 10 Backvent	2014	Ethylene Oxide Propylene Oxide	0.7 tpy 0.03 tpy		0.07 lb 0.003 lb	
CEV-11	Chamber 11 Backvent	2015	Ethylene Oxide Propylene Oxide	0.7 tpy 0.03 tpy		0.16 lb 0.01 lb	
AR-1	Aeration Room 1		Ethylene Oxide Propylene Oxide	12.5 tpy 0.5 tpy		2.9 lb 0.01 lb	
SR-1	Spice Room	new	Ethylene Oxide	0.02 tpy		0.005 lb	
IA-1	Indoor Air capture	new	Ethylene Oxide Propylene Oxide	0.2 tpy 0.01 tpy		0.04 lb 0.001 lb	

PRODUCTS OF MANUFACTURING

Emission Unit ID	Description of Product	Production Schedule		Hourly Production Rate (Give units: e.g. lb/hr, ton/hr)			
		Tons/yr	Hr/yr	Design	Normal	Maximum	Units

Facility Name: Sterigenics Atlanta Facility

Date of Application: 30 July 2019

Form 3.00 – AIR POLLUTION CONTROL DEVICES - PART A: GENERAL EQUIPMENT INFORMATION

APCD Unit ID	Emission Unit ID	APCD Type (Baghouse, ESP, Scrubber etc)	Date Installed	Make & Model Number (Attach Mfg. Specifications & Literature)	Unit Modified from Mfg Specifications?	Gas Temp. °F		Inlet Gas Flow Rate (acfm)
						Inlet	Outlet	
EC3/EC2	SEV 1-11	Scrubber		Ceilcote Acid Scrubber and AAT Scrubber System with Dry Bed	No	98	98	
EC2	CEV1-11, AR1, SR1	Scrubber with dry beds		AAT Scrubber System with Dry Bed Adsorber	No	98	98	12,000
EC4	IA-1	Dry Beds	new	Advance Air Technology Dry beds	No	70	70	18,000

Facility Name: Sterigenics Atlanta Facility **Date of Application:** 30 July 2019

Form 3.00 – AIR POLLUTION CONTROL DEVICES – PART B: EMISSION INFORMATION

APCD Unit ID	Pollutants Controlled	Percent Control Efficiency		Inlet Stream To APCD		Exit Stream From APCD		Pressure Drop Across Unit (Inches of water)
		Design	Actual	lb/hr	Method of Determination	lb/hr	Method of Determination	
EC2	Ethylene Oxide Propylene Oxide	99	99.833	4.3 0.17	Mass balance	0.04 0.002	Mass balance and performance test	NA
EC4	Ethylene Oxide Propylene Oxide	99	NEW	0.04 0.001	Mass balance	0.0004 0.00001	Mass balance and performance test	TBD

Facility Name: Sterigenics Atlanta **Date of Application:** 30 July 2019

FORM 4.00 – EMISSION INFORMATION

Emission Unit ID	Air Pollution Control Device ID	Stack ID	Pollutant Emitted	Emission Rates				
				Hourly Actual Emissions (lb/hr)	Hourly Potential Emissions (lb/hr)	Actual Annual Emission (tpy)	Potential Annual Emission (tpy)	Method of Determination
Refer to	Attachment D							

Facility Name: Sterigenics Atlanta Facility **Date of Application:** 30 July 2019

FORM 5.00 MONITORING INFORMATION

Emission Unit ID/ APCD ID	Emission Unit/APCD Name	Monitored Parameter		Monitoring Frequency
		Parameter	Units	
EC2	AAT Scrubber with dry beds	Control efficiency or outlet concentration	percent removal or ppm	Weekly
EC2	AAT Scrubber with dry beds	Scrubber liquor level	inches	daily
EC2	AAT Scrubber with dry beds	Scrubber liquor pH	pH	daily
EC3	Ceilcote Scrubber	Scrubber liquor level	inches	daily
EC3	Ceilcote Scrubber	Scrubber liquor pH	pH	daily
EC4	New Dry Bed	Control efficiency or outlet concentration	percent removal or ppm	Weekly

Comments:

Facility Name: Sterigenics Atlanta Facility **Date of Application:** 30 July 2019

FORM 6.00 – FUGITIVE EMISSION SOURCES

Fugitive Emission Source ID	Description of Source	Emission Reduction Precautions	Pot. Fugitive Emissions	
			Amount (tpy)	Pollutant
*	Equipment leaks	Leak detection monitors and preventive maintenance	<0.01	Ethylene Oxide

Facility Name: Sterigenics Atlanta Facility **Date of Application:** 30 July 2019

FORM 7.00 – AIR MODELING INFORMATION: Stack Data

Stack ID	Emission Unit ID(s)	Stack Information			Dimensions of largest Structure Near Stack		Exit Gas Conditions at Maximum Emission Rate			
		Height Above Grade (ft)	Inside Diameter (ft)	Exhaust Direction	Height (ft)	Longest Side (ft)	Velocity (ft/sec)	Temperature (°F)	Flow Rate (acfm)	
									Average	Maximum
Refer	to	Attachment F								

NOTE: If emissions are not vented through a stack, describe point of discharge below and, if necessary, include an attachment. List the attachment in Form 1.00 *General Information*, Item 16.

Facility Name: Sterigenics Atlanta Facility **Date of Application:** 30 July 2019

FORM 7.00 AIR MODELING INFORMATION: Chemicals Data

Chemical	Potential Emission Rate (lb/hr)	Toxicity	Reference	MSDS Attached
Ethylene Oxide-see attached modeling				☒
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Attachment A

DESCRIPTION OF PROCESS AND PROPOSED IMPROVEMENTS TO EMISSIONS CAPTURE AND CONTROL SYSTEMS

This application addresses improvements to the Atlanta facility located at 2971 Olympic Industrial Drive SE, Suite 116, Atlanta, Georgia. Sterigenics is voluntarily requesting to add control devices and improve control efficiencies of certain emission sources. These additional controls currently are not required by Georgia EPD or the UESPA, but the company has determined that it can reduce emissions further.

Overview of Sterigenics Atlanta Facility

Sterigenics operates a commercial contract sterilization facility in Atlanta, GA. This application addresses improvements to the emission control measures at the Atlanta facility.

Sterigenics' Atlanta facility utilizes ethylene oxide to sterilize customers' product. It also has the ability to use propylene oxide to treat nutmeats and a cosmetic ingredient. Ethylene oxide and propylene oxide are sterilants that regulatory agencies such as the U.S. Food and Drug Administration and U.S. Environmental Protection Agency (administering the Federal Insecticide, Fungicide, and Rodenticide Act) allow to be used on products. In addition, medical devices must meet a certain level of sterility as regulated by U.S. Food and Drug Administration and other regulatory agencies.

When ethylene oxide is used for medical device sterilization, the medical devices must have a specifically defined sterilization process, which is validated for a specific sterilization chamber or chambers. The Atlanta facility uses ten sterilization chambers ranging in size from 6 pallets up to 30 pallets. While all ten sterilization chambers are similar in design, each chamber may only process products approved for that chamber and cannot process other products that have not been validated and approved by the appropriate regulatory agency for that specific chamber.

As a contract sterilization facility, Atlanta sterilizes many different products from many different customers.

Purpose of Project

The purpose of the project is to further reduce ethylene oxide emissions from the sterilization process by adding additional controls; this project is being undertaken voluntarily, even though the facility is and has historically been in compliance with existing regulations and permit conditions. Sterigenics is not proposing to change the actual sterilization process at the Atlanta facility.

Attachment A

Description of Sterilization Process

The Atlanta facility performs sterilization operations for many customers. Each product has specific requirements which specify details of the sterilization process to be followed.

Receiving and Pre-Conditioning

Customers ship packaged products to Sterigenics. Once the product is received, the sterilization process follows the same flow through the facility. The first step after receipt of the product is to place the product into a preconditioning room. Preconditioning rooms are enclosed rooms which are heated and maintained at high humidity to prepare the product for sterilization. The product is in the preconditioning room for the time required for the specific product. No ethylene oxide is introduced or present in this step of the process.

Once preconditioning is complete, the product is moved to the appropriate sterilization chamber. There are ten sterilization chambers. A chamber is sized based on the number of pallets that it can hold and range from six pallets to thirty pallets. Once the product is loaded into the chamber, the chamber is closed and sealed. At the beginning of each sterilization cycle, safety checks are performed to ensure ethylene oxide does not escape from the chamber during the cycle. In addition, the cycle is monitored to ensure that vacuum is maintained within acceptable parameters.

Drum Storage

At Atlanta, ethylene oxide is stored in sealed drums in an outside storage area before use. The drums are U.S. Department of Transportation rated UN 1A1 containers. The storage area complies with the requirements of NFPA 55 Chapter 14 for an outside storage area. No dispensing takes place in the drum storage area. To dispense ethylene oxide, the drums are moved with a drum cart from the storage area to the dispensing stations located inside the chamber room area. Once in place at the dispensing station, the ethylene oxide drum is connected to the dispensing system for the specific sterilization chamber.

Chamber Operation, Vacuum Pump Emissions

As mentioned above, there is a validated cycle for each product. This validated cycle must meet specific regulatory requirements and will detail the times, parameters, and testing required for each product and the specific chamber approved. The sterilization process begins with evacuating the air from the chamber and introducing nitrogen. While under negative pressure inside the chamber, ethylene oxide is introduced into the sterilization chamber to sterilize the product. Once ethylene oxide is introduced, the dwell stage can last from 30 minutes up to several hours according to the validated cycle for the product. Once complete, the sterilization chamber vacuum pumps remove most of the ethylene oxide from the chamber by exhausting

Attachment A

and purging with nitrogen multiple times. Vacuum pump emissions are routed to the Ceilcote wet acid scrubber. The Ceilcote scrubber (EC3) currently is exhausted to a dedicated stack.

Backvents and Aeration Emissions

Once the sterilization chamber process is complete and the chamber door is partially opened, the back vent fan activates to extract residual amounts of ethylene oxide from the chamber. This fan remains on while the chamber door is open. After fifteen minutes, the pallets of product are removed from the sterilization chamber and placed into aeration rooms to further off-gas residual ethylene oxide. During spice fumigation, the chamber process includes additional gas washes to remove ethylene oxide from the product which eliminates the need for time in an aeration room. Both the backvents and aeration rooms are ducted to an existing AAT scrubber system and treated with 12 dry bed reactors (EC2). The AAT scrubber with dry beds currently exhausts to a dedicated stack.

<u>Proposed Project Detail</u>

This permit application proposes to make the following improvements to the existing capture and control equipment and to reduce the ethylene oxide emissions from the Atlanta facility. With these improvements, the facility will have technology that provides the greatest reduction in ethylene oxide emissions that is now available.

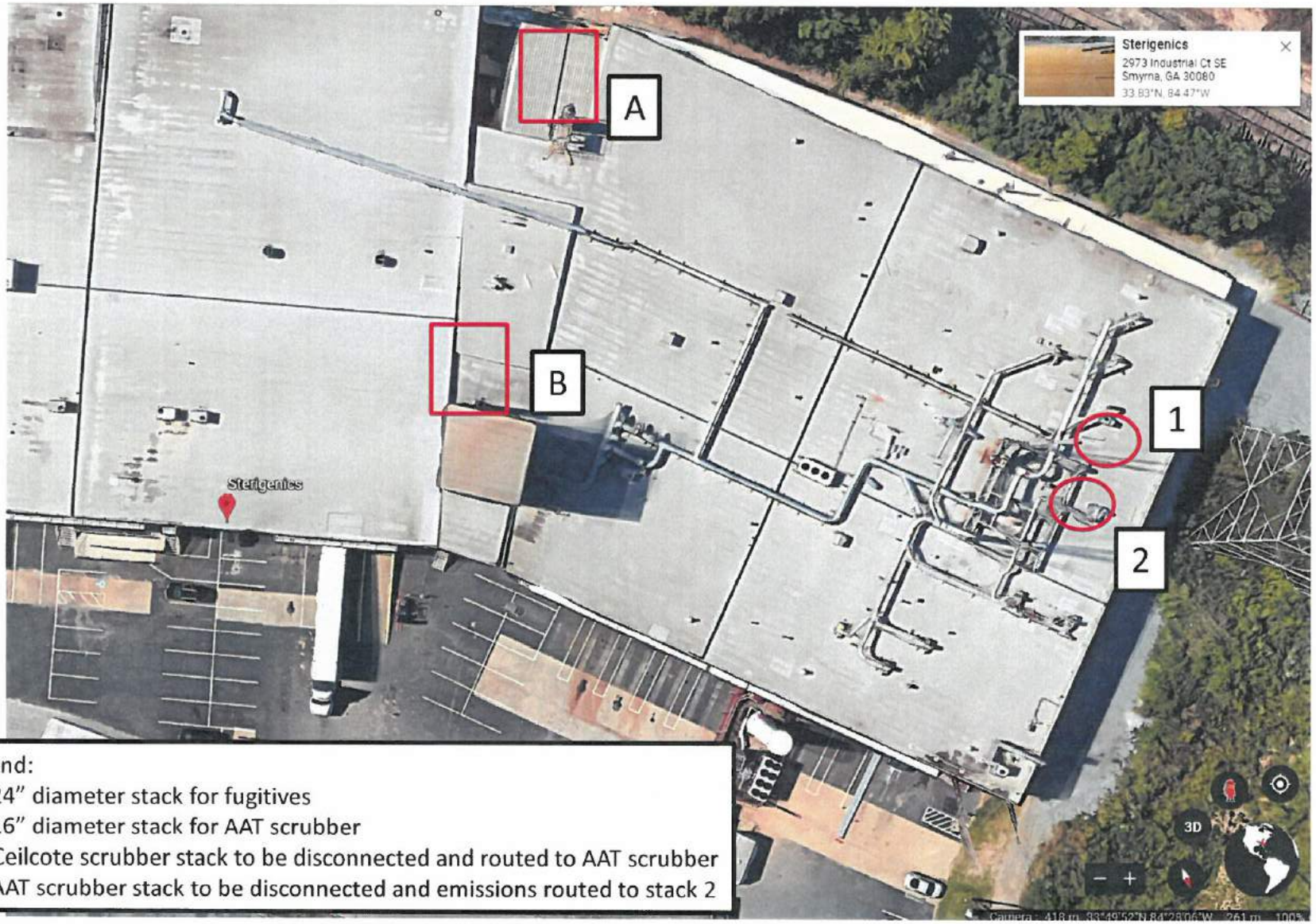
1) Currently the existing Atlanta Ceilcote scrubber (EC3) exhausts to atmosphere via a dedicated stack. Sterigenics proposes to duct the outlet of the Ceilcote Scrubber to the existing Advanced Air Technologies (AAT) scrubber with dry bed (EC2) to further reduce vacuum pump emissions.
2) Currently, the existing AAT scrubber with dry beds (EC2) exhausts to atmosphere via a dedicated stack. Sterigenics proposes to duct the outlet of the AAT scrubber with dry beds to a different existing stack measuring 80 feet tall and 16 inches in diameter. This stack exists but is currently not being used.
3) An additional negative pressure system is proposed to capture air internally from chamber rooms, work aisles, processed product storage, and shipping areas. With this negative pressure system, the facility will route the indoor air to a new dry bed control system consisting of 18 dry beds. These dry beds will exhaust to atmosphere via an existing stack measuring 80 feet tall and 2 feet in diameter.
4) In addition to these emission reduction projects, Sterigenics is proposing to build a room to be dedicated to storing treated spices after the fumigation process is complete. This spice room will be exhausted to the existing AAT scrubber system with dry beds (EC2).

Attachment A

Control Efficiencies

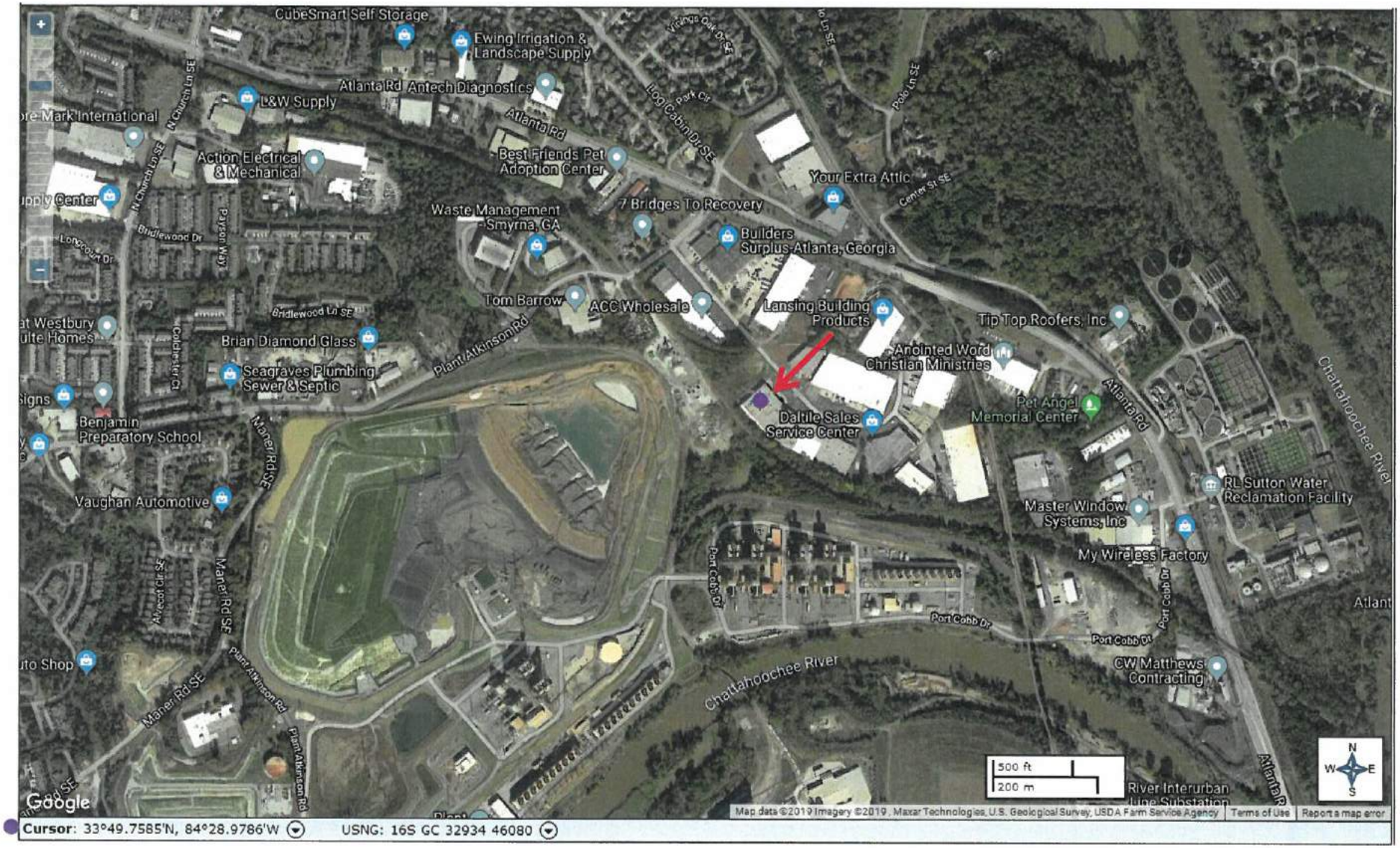
The Ceilcote scrubber controls the sterilization chamber vacuum pump emissions. The Ceilcote scrubber has control efficiency greater than 99%. The AAT Scrubber with dry beds controls the aeration and back vent emissions. The AAT scrubber dry beds have a control efficiency greater than 99% destruction efficiency. This project is proposing to route the outlet of the Ceilcote scrubber to the AAT scrubber with dry beds.

Attachment B: Plot Plan



Legend:
1 = 24" diameter stack for fugitives
2 = 16" diameter stack for AAT scrubber
A = Ceilcote scrubber stack to be disconnected and routed to AAT scrubber
B = AAT scrubber stack to be disconnected and emissions routed to stack 2

Attachment B: Plot Plan

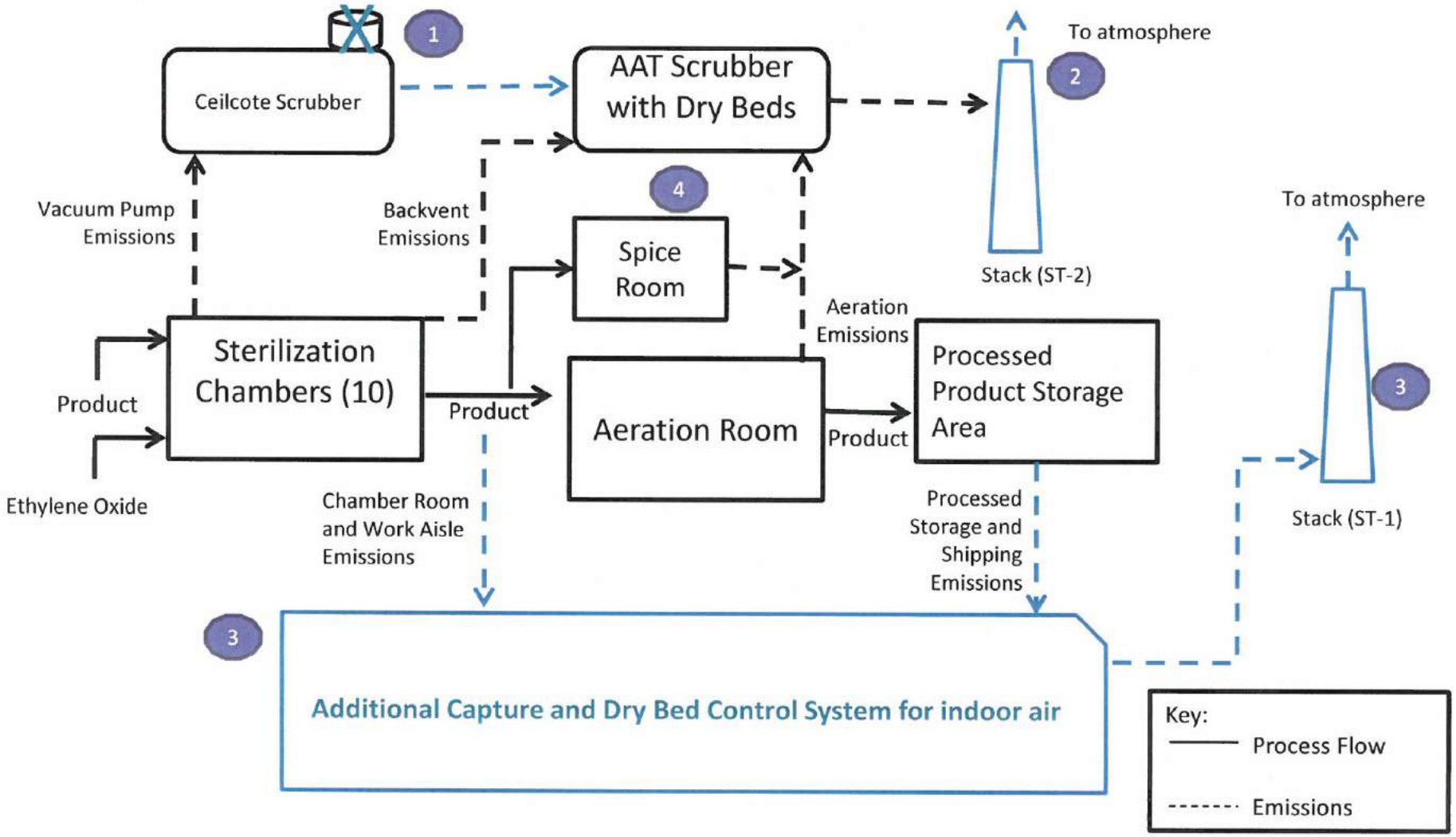


● Sterigenics Atlanta location

Attachment C: Sterigenics Atlanta Process Flow Diagram
(Changes noted in Blue)

Additional Capture/Control Equipment:

1) Route Ceilcote emissions to AAT Scrubber and eliminate Ceilcote stack
2) Route AAT scrubber to an 80 foot stack. Eliminate AAT stack.
3) Installation of capture and control system for indoor air in processed areas and route to an 80 foot stack.
4) Build a dedicated room for processed spices and duct to existing AAT scrubber.



Attachment D Emission Calculations

	Existing Emission Controls			Proposed Emission Controls		
	Control Devices	Required Existing Efficiency	Actual Existing Efficiency	Control Devices	Required Proposed Efficiency	Actual Expected Efficiency
Sterilizer Vacuum Pump	Ceilcote Scrubber	99.0%	99.999%	Ceilcote Scrubber and AAT	99.99%	99.999998%
Aeration Rooms	AAT System	99.0%	99.833%	AAT System	99.0%	99.833%
Backvent	AAT System	99.0%	99.833%	AAT System	99.0%	99.833%
Fugitives	None	0.0%	0.00%	Dry Bed system (new)	99.0%	99.000%

	Existing				Proposed			
	Ethylene Oxide Potential (lbs)	Ethylene Oxide 2018 (lbs)	Propylene Oxide Potential (lbs)	Propylene Oxide 2018 (lbs)	Ethylene Oxide Potential (lbs)	Ethylene Oxide Expected (lbs) (2018)	Propylene Oxide Potential (lbs)	Propylene Oxide Expected (lbs) (2018)
Usage (pounds)	625,000	425,000	25000	1569	625,000	425000	25000	1569
Sterilizer Emissions	5,937.5	4.04	237.5	0.0149	59.4	0.007	2.4	0.00002
Aeration Emissions	250.00	28.39	10.00	0.10	250.0	28.4	10.0	0.105
Backvent Emissions	62.50	7.10	2.50	0.03	62.5	7.1	2.5	0.026
Fugitive Emissions	312.5	212.5	12.5	0.8	3.1	2.1	0.1	0.008
TOTAL Emissions	**6,563**	**252**	**263**	**0.93**	**375.0**	**37.62**	**15.00**	**0.14**
TOTAL Emissions (tons)	**3.28**	**0.13**	**0.13**	**0.00047**	**0.187**	**0.019**	**0.0075**	**0.00007**

Assumptions

95% Usage through Chamber Vacuum Pumps

4% Usage through Aeration

1% Usage through Back Vents

0.05% Usage Assumed as fugitives

Example Calculations:

Emission Source = (mass balance)(EtO usage)(1-efficiency %)

Sterilizer Emissions = 0.95*425000*(1 - 0.99999) = 4.04lbs

Aeration Emissions = 0.04*425000*(1 - 0.99833) = 28.39 lbs

Backvent Emissions = 0.01*425000*(1-.99833)= 7.10 lbs

Fugitive Emissions = 0.0005*425000 = 212.5 lbs

Attachment E Additional Data on Production Throughput Estimate

				SEV Emissin Units				CEV Emission Units			
				Annual Throughput		Average Hourly Process Input Rate		CEV Annual Throughput		Average Hourly Process Input Rate	
Equipment	Pallet Size	Ethylene Oxide Usage lb/yr	Propylene Oxide Usage lb/yr	Ethylene Oxide (tpy)	Propylene Oxide (tpy)	Ethylene Oxide (lb/hr)	Propylene Oxide (lb/hr)	Ethylene Oxide (tpy)	Propylene Oxide (tpy)	Ethylene Oxide (lb/hr)	Propylene Oxide (lb/hr)
Chamber 1	6	27174	1087	12.9	0.52	2.9	0.12	0.1	0.0054	0.03	0.0012
Chamber 2	6	27174	1087	12.9	0.52	2.9	0.12	0.1	0.005	0.03	0.0012
Chamber 3	9	40761	1630	19.4	0.77	4.42	0.18	0.2	0.008	0.05	0.0019
Chamber 4	5	22645	906	10.8	0.43	2.46	0.10	0.1	0.005	0.03	0.0010
Chamber 5	13	58877	2355	28.0	1.12	6.39	0.26	0.3	0.012	0.07	0.0027
Chamber 6	13	58877	2355	28.0	1.12	6.39	0.26	0.3	0.012	0.07	0.0027
Chamber 7	13	58877	2355	28.0	1.12	6.39	0.26	0.3	0.012	0.07	0.0027
Chamber 8	13	58877	2355	28.0	1.12	6.39	0.26	0.3	0.012	0.07	0.0027
Chamber 10	30	135870	5435	64.5	2.58	14.73	0.59	0.7	0.027	0.16	0.0062
Chamber 11	30	135870	5435	64.5	2.58	14.73	0.59	0.7	0.027	0.16	0.0062

	Annual Throughput		Average Hourly Process Input Rate	
Emission Unit	Ethylene Oxide (tpy)	Propylene Oxide (tpy)	Ethylene Oxide (lb/hr)	Propylene Oxide (lb/hr)
AR-1 (Aeration Room 1)	12.5	0.50	2.9	0.1
SR-1 (Spice Room 1)	0.02	0.00	0.005	0.0
IA-1 (Indoor Air)	0.16	0.0063	0.036	0.0014

Assumptions

Average EO lb/pallet/yr based on 625000 lb of EO 4529

Average PO lb/pallet/yr based on 25000 lb of PO 181

Chamber usage based on number of pallets. Actual throughput thru chamber may vary

95% of chemical from Chamber via SEV

1% of chemical from Chamber via CEV

4% of chemical via Aeration

Proposed Improvement Project includes the following elements:

1. Route vacuum pump emissions from the Ceilcote scrubber stack to the AAT scrubber, which will further reduce vacuum pump emissions by 99%
2. Route AAT stack emissions to one of the 80' roof stacks (16" diameter)
3. Install a fugitive emission capture system and route all indoor emissions through a new dry bed system. Emissions from the dry beds will be routed to the second 80' stack on the roof (24" diameter)

Ethylene Oxide (EtO) Emissions

Emission Source	Estimated Annual EtO Throughput (lb)	Efficiency	Estimated EtO Emissions (lb/yr)
AAT Scrubber (5%)	425,000	99.833%	35.49
Ceilcote (95%)		99.9990%	
Fugitives (0.05%)		99%	2.13

Model Input Parameters for EtO Emissions Sources

Model ID	Stack Description	Source Type	UTM E[1] (m)	UTM N[1] (m)	Elevation[2] (m)	Modeled EtO Emissions[3] (g/s)	Stack Height		Stack Temperature		Exhaust Gas Flow Rate (scfm)	Exhaust Gas Flow Rate (acfm)	Exit Velocity		Stack Diameter	
							(ft)	(m)	(°F)	(K)			(ft/s)	(m/s)	(ft)	(m)
STK2	AAT Scrubber	POINT	734,200	3,746,411	250.92	5.11E-04	80.0	24.38	98	309.82	12,000	13,052.00	155.8	47.4869	1.3	0.406
STK1	Fugitives	POINT	734,194	3,746,406	250.58	3.06E-05	80.0	24.38	70	294.26	18,000	18,576.00	98.5	30.0377	2.0	0.610

Notes:

1. Coordinates are based on UTM NAD83, Zone 16.
2. Modeled elevations were incorporated using AERMAP version 18081. Terrain elevation data was obtained using the National Elevation Data (NED) files from the USGS Multi-Resolution Land Characteristics Consortium (MRLC).
3. AERMOD version

Results

Pollutant	Averaging Period	Receptor Type	Maximum Receptor ID	UTM E (m)	UTM N (m)	Modeled Concentration ($\mu g/m^3$)
EtO	Period	Commercial/Industrial	D257	734,328.2	3,746,286.7	0.0022
		Residential/Sensitive	D167	734,078.2	3,746,836.7	0.0005

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Model Input Parameters for On-Site Buildings

Model ID	UTM E[1] (m)	UTM N[1] (m)	Elevation[2] (m)	Building Height (ft)	Building Height (m)
BLD1T1	734,217.7	3,746,444.6	251.01	17	5.18
	734,264.5	3,746,393.1			
	734,399.2	3,746,317.5			
	734,370.0	3,746,263.8			
	734,236.0	3,746,338.7			
	734,242.6	3,746,351.1			
	734,239.3	3,746,354.0			
	734,231.3	3,746,344.9			
	734,224.7	3,746,350.0			
	734,221.8	3,746,347.4			
	734,195.5	3,746,371.9			
	734,168.4	3,746,403.0			
	734,168.4	3,746,403.0			
	734,217.7	3,746,444.6			
BLD1T2	734,217.7	3,746,444.6	250.87	25	7.62
	734,264.5	3,746,393.1			
	734,399.2	3,746,317.5			
	734,370.0	3,746,263.8			
	734,236.0	3,746,338.7			
	734,242.6	3,746,351.1			
	734,239.3	3,746,354.0			
	734,231.3	3,746,344.9			
	734,224.7	3,746,350.0			
	734,221.8	3,746,347.4			
	734,172.3	3,746,406.0			
BLD1T3	734,257.9	3,746,379.5	251.58	68	20.73
	734,250.5	3,746,385.1			
	734,255.5	3,746,391.8			
	734,261.5	3,746,387.7			
	734,257.9	3,746,379.5			

Notes:

1. Coordinates reflect UTM NAD83, Zone 16.
2. Modeled elevations were incorporated using AERMAP v180181. Terrain elevation data was obtained using the National Elevation Data (NED) files from the USGS Multi-Resolution Land Characteristics Consortium (MRLC).

Attachment F: Modeling

Model Input Parameters for Nearby Buildings

Model ID	UTM E[1] (m)	UTM N[1] (m)	Elevation[2] (m)	Building Height (ft)	Building Height (m)
NORTH1	734,335.3	3,746,507.2	254.75	23.6	7.19
	734,301.6	3,746,458.0			
	734,263.8	3,746,485.7			
	734,296.7	3,746,516.1			
NORTH2	734,341.4	3,746,505.1	254.98	25.3	7.71
	734,303.4	3,746,446.8			
	734,446.0	3,746,389.2			
	734,470.9	3,746,452.2			
	734,341.4	3,746,505.1			
EAST	734,474.7	3,746,363.3	253.63	22.6	6.89
	734,508.3	3,746,330.3			
	734,458.1	3,746,280.4			
	734,433.9	3,746,264.5			
	734,410.6	3,746,333.7			
	734,458.1	3,746,347.2			
	734,474.7	3,746,363.3			

Notes:

1. Coordinates reflect UTM NAD83, Zone 16.
2. Modeled elevations were incorporated using AERMAP 18081. Terrain elevation data was obtained using the National Elevation Data (NED) files from the USGS Multi-Resolution Land Characteristics Consortium (MRLC).

Ethylene Oxide

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1. IDENTIFICATION OF THE SUBSTANCE OR MIXTURE AND OF THE SUPPLIER	
1.1. GHS product identifier.	Ethylene Oxide
Other means of identification.	Oxirane
1.2. Recommended use and restrictions on use.	Recommended: Chemical intermediate for production of anti-freeze, polyester resins, non-ionic surfactants and specialty solvents; sterilizing agent for controlling microorganisms in health care applications; fumigant for controlling insect infestation in whole and ground spices and cosmetics; sterilization of musical wind instruments. Advised Against: Consumer use.
1.3. Supplier's details.	Name: ARC Specialty Products c/o Balchem Corporation Address: 52 Sunrise Park Road New Hampton, NY 10958 USA Phone number: +1 845-326-5611 Fax number: +1 845-326-5706 Internet: www.arcspecialtyproducts.com Email: sds@balchem.com
1.4. Emergency phone number.	EMERGENCY TELEPHONE (24 hrs. / 7 days per week) In US: CHEMTREC (800) 424-9300 Outside US & Canada: CHEMTREC (703) 527-3887

2. HAZARDS IDENTIFICATION	
2.1. GHS classification of the substance or mixture and any national or regional information.	Flammable Gas 1 Pressurized Gas (Liquefied Gas) Carcinogen Category 1B Mutagen Category 1B Acute Toxicity Category 3 (Inhalation); Category 4(oral) Eye Irritant Category 2A Specific Target Organ Toxicity – Single Exposure 3 Skin Irritant 2
2.2. GHS label elements, including precautionary statements.	Product Label Name: ETHYLENE OXIDE Signal Word: DANGER **Hazard statement:** H220: Extremely flammable gas. H280: Contains gas under pressure; may explode if heated H302: Harmful if swallowed H315: Causes skin irritation H319: Causes serious eye irritation H331: Toxic if inhaled H335: May cause respiratory irritation H340: May cause genetic defects

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	H350:	May cause cancer
	Precautionary statement:	
	P201:	Obtain special instructions before use.
	P202:	Do not handle until all safety precautions have been read and understood.
	P210:	Keep away from heat/sparks/open flames/hot surfaces. — No smoking.
	P261:	Avoid breathing gas/vapours.
	P264:	Wash hands thoroughly after handling.
	P270:	Do not eat, drink or smoke when using this product.
	P271:	Use only outdoors or in a well-ventilated area.
	P280:	Wear protective gloves/protective clothing/ eye protection/face protection.
	P281:	Use personal protective equipment as required.
	P301;P312:	IF SWALLOWED: Call a POISON CENTER or doctor/physician if you feel unwell.
	P330:	Rinse mouth.
	P302;P352:	IF ON SKIN: Wash with plenty of soap and water.
	P362:	Take off contaminated clothing and wash before reuse.
	P332;P313:	If skin irritation occurs: Get medical advice/attention.
	P304;P340:	IF INHALED: Remove person to fresh air and keep comfortable for breathing.
	P305;P351;P338	IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses, if present and easy to do. Continue rinsing.
	P337;P313:	If eye irritation persists: Get medical advice/attention.
	P312:	Call a POISON CENTER or doctor/physician if you feel unwell.
	P308;P313:	IF exposed or concerned: Get medical advice/attention.
	P321:	Specific treatment: See first aid section of SDS.
	P377:	Leaking gas fire: Do not extinguish, unless leak can be stopped safely.
	P381:	Eliminate all ignition sources if safe to do so.
	P403;P233:	Store in a well-ventilated

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		place. Keep container tightly closed.
	P405:	Store locked up.
	P410;P403:	Protect from sunlight. Store in a well-ventilated place.
	P501:	Dispose of contents/container in accordance with local/regional/national/ international regulation.
2.3. Other hazards which do not result in classification or are not covered by the GHS.	EUH006:	Explosive with or without contact with air.

3. COMPOSITION/INFORMATION ON INGREDIENTS			
3.1. **Substance:**			
Chemical identity.	Ethylene Oxide		
Common name, synonyms, etc.	Oxirane, EO, EtO, Dihydroxirene, 1-2 Epoxyethane, Dimethylene Oxide, Oxane, Oxirane, Alpha/Beta-Oxidoethane, Oxacyclopropane		
CAS number, EC number, etc.	CAS#: 75-21-8; EC#: 200-849-9 (from EINECS) Chemical Family: Epoxide Formula: $(CH_2)_2O$ Molecular Weight: 44.053 g/mol		
Impurities and stabilizing additives which are themselves classified and which contribute to the classification of the substance.	Contains no other components or impurities which will influence the classification of the product.		
3.2. **Mixture:**			
The chemical identity and concentration or concentration ranges of all ingredients which are hazardous within the meaning of the GHS and are present above their cutoff levels.	**Chemical Identity:**	**Concentration:**	**CAS No.:**
	No applicable information found (i.e. material is not a mixture).		

4. FIRST AID MEASURES	
4.1. Description of first aid measures.	EYE CONTACT: Immediately flush eyes, including the entire surface of the eyes and under the eyelids, gently but thoroughly with plenty of running water for at least 15 minutes. Obtain medical attention immediately. **NOTE: Never wear contact lenses when working with ethylene oxide.** SKIN CONTACT: Immediately flush skin thoroughly with water for at least 15 minutes while removing contaminated clothing and shoes. Obtain medical attention immediately. Treat for possible cryogenic injury, if needed by warming affected areas with tepid water (wrap with a blanket if lukewarm water is not available). Wash clothing before reuse and discard contaminated leather articles such as shoes and belts. INHALATION: Remove exposed person to fresh air. If

	breathing has stopped, give artificial respiration then have qualified personnel administer oxygen, if needed. Get immediate medical attention. INGESTION: If patient is conscious give plenty of water (minimum of two glasses) but **DO NOT INDUCE VOMITING**. This material is corrosive. Keep head lower than hips to avoid aspiration, should vomiting occur. Get medical attention immediately. MEDICAL CONDITIONS AGGRAVATED BY EXPOSURE: Preexisting skin, eye and respiratory disorders; lung, blood, nervous system and peripheral nerve disorders.
4.2. Most important symptoms/effects.	SIGNS AND SYMPTOMS OF OVEREXPOSURE: Effects include skin, eye and respiratory tract irritation or burns. Central nervous system effects initially cause headache, dizziness and nausea and in extreme cases, unconsciousness and death. Peripheral nerve damage may result in muscular weakness, giddiness, irrational behavior and loss of sensation in the extremities. Dulling of the sense of smell may occur.
4.3. Indication of immediate medical attention and special treatment needed, if necessary.	NOTE TO PHYSICIANS: Respiratory symptoms include nausea, vomiting and irritation of the nose and throat. Pulmonary edema may occur. Respiratory effects may be delayed. Consider oxygen administration. If a chemical burn is present, decontaminate skin and treat as any thermal burn. No specific antidote is known, however consider gastric lavage and administration of a charcoal slurry.

5. FIREFIGHTING MEASURES	
5.1. Suitable (and unsuitable) extinguishing media.	EXTINGUISHING MEDIA: Carbon dioxide, dry chemical or water spray for small fires. Water spray, polymer or alcohol resistant foams for large fires. Dilution of liquid ethylene oxide with 22 volumes of water should render it non-flammable. Dilution with 100 parts water to one part of ethylene oxide vapor may be required to control build up of flammable vapors in closed systems. Water spray can be used to reduce flame intensity, cool fire-exposed containers and dilute spills to render non-flammable.
5.2. Specific hazards arising from the chemical.	EMERGENCY OVERVIEW: Colorless liquid or heavier-than-air gas with a sweet, ether-like odor. Extremely flammable liquefied gas which burns in the absence of oxygen and can explode when exposed to elevated temperatures. Toxic when inhaled. Causes severe skin and eye irritation or burns and respiratory tract irritation; effects may be delayed. Harmful if swallowed or absorbed through the skin. Contact with liquid may cause frostbite. Statement of Hazards: DANGER! Extremely flammable

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liquid and gas under pressure. May form explosive mixtures with air. Highly Reactive. Harmful or fatal if inhaled and may cause delayed lung injury, respiratory system and nervous system damage. Inhalation may cause dizziness or drowsiness. Liquid contact may cause frostbite. May cause allergic skin reaction. Harmful if swallowed. May cause adverse blood effects, liver and kidney damage based on animal data. Cancer and reproductive hazard.

HAZARD RATINGS: (0 = minimum; 4 = maximum)

HMIS Rating: Health = 3
Flammability = 4
Reactivity = 3
Personal Protection Code = X
(Consult your supervisor or standard operating procedures for special handling directions.)

NFPA Rating: Health = 3
Flammability = 4
Reactivity = 3

UNUSUAL FIRE AND EXPLOSION HAZARDS:
Ethylene oxide is dangerously explosive under fire conditions; it is flammable over an extremely large range of concentrations in air and burns in the absence of oxygen. Liquid ethylene oxide is lighter than water (floats) and vapors are heavier than air and may travel along ground long distances to sources of ignition, and then flash back. Avoid storage at warm temperatures [around 100 °F (38 °C)] in order to prevent polymerization. Do not store at temperatures above 125 °F (52 °C) under any circumstances. Containers are fitted with metallic plugs which melt and release contents when temperature increases to a range of 157-170 °F (69-77 °C). Vapors are extremely flammable and are readily ignited by static charge, sparks and flames at concentrations above 2.6%.

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5.3. Special protective equipment and precautions for firefighters.	SPECIAL FIRE-FIGHTING PROCEDURES: Wear NIOSH-approved self-contained breathing apparatus (SCBA) operated in the pressure-demand mode and full chemical-resistant protective clothing. Evacuate all personnel from danger area and keep upwind. Immediately cool containers with water spray from maximum safe distance. Stop flow of gas, if without risk, while continuously cooling containers with water. Do not extinguish flames unless flow is stopped, since explosive re-ignition can occur. Remove containers from fire area, if without risk. Refer to the most current edition of the "North American Emergency Response Guidebook" for isolation and evacuation distances.

6. ACCIDENTAL RELEASE MEASURES	
6.1. Personal precautions, protective equipment and emergency procedures.	PRECAUTIONS: Treat any ethylene oxide leak as an emergency. All cleanup personnel must wear full protective equipment. Evacuate all personnel from the area except those directly engaged in stopping the leak or in cleaning up.
6.2. Environmental precautions.	ENVIRONMENTAL: Dike runoff water, if possible, to prevent contaminated water from entering sewers, ditches, streams and ponds. It is mandatory to call the National Response Center (800-424-8802) if 10 pounds (4.54 kg) or more is spilled or released to the environment.
6.3. Methods and materials for containment and cleaning up.	SPILL CLEANUP: Eliminate all ignition sources if this can be done safely. Ethylene oxide/air mixtures ignite readily and may detonate. Use water fog or spray to disperse vapors. Flood spill with water spray to dilute and render non-flammable.

7. HANDLING AND STORAGE	
7.1. Precautions for safe handling.	HANDLING AND STORAGE PRECAUTIONS: Wear all recommended protective clothing and devices when handling this material. Have established handling and emergency response procedures in place prior to use. Ground and bond shipping container, transfer line, and receiving container. Protect containers from physical damage and regularly inspect them for cracks, leaks or faulty valves.
7.2. Conditions for safe storage, including any incompatibilities.	STORAGE SEGREGATION: Store ethylene oxide in a cool, dry, well-ventilated area away from incompatible chemicals and sources of ignition. Store cylinders and drums upright; secure containers tightly; do not drag or slide; and move in a carefully supervised manner with a suitable hand truck. **DO NOT STORE IN DIRECT SUNLIGHT**. SHIPPING AND STORAGE CONTAINERS: (See 49 CFR 173.323) Ethylene oxide is shipped and stored in UN 1A1 specification drums and DOT specification drums and cylinders. Nitrogen must be charged into the container after filling with ethylene oxide, bringing the

	total container pressure up to 50 psig. Before returning container to supplier, pressurize container with nitrogen to 50 psig total pressure; close valves and replace valve plugs tightly in outlets. **Check container valves and plugs for leaks prior to shipment.** In addition, please refer to the most current edition of NFPA Publication 55, 'Compressed Gases and Cryogenic Fluids Code.'. INCOMPATIBILITIES: Ethylene oxide is very reactive. Runaway exothermic polymerization reactions can result from contamination with amines, ammonia, water, acids, bases, metal chlorides, metal oxides, metallic potassium, mercaptans, alcohols, oxidizers and many other organic and inorganic materials.

8. EXPOSURE CONTROLS/PERSONAL PROTECTION

8.1. Control parameters.

Exposure Limits			
SOURCE	TWA (8-hr)	STEL (15-min)	OTHER
OSHA	1 ppm	5 ppm (9 mg/m^3)	0.5 ppm action level (8-hr TWA)
ACGIH	1 ppm (1.8 mg/m^3)	No applicable information found	800 ppm IDLH

8.2. Appropriate engineering controls.

ENGINEERING CONTROLS: Ethylene oxide, a major fire hazard, can burn in the absence of oxygen. All electrical devices used in areas processing or handling ethylene oxide must be engineered and designed to the applicable local electrical/fire codes. Safeguards can include designing electrical devices as explosion-proof and/or intrinsically safe. When considering engineering controls, users of ethylene oxide should consult the current edition of NFPA 55 (Compressed Gases and Cryogenic Fluids Code, Section 14: Storage, Handling and Use of Ethylene Oxide for Sterilization and Fumigation). Sterilization facilities should consult NIOSH Publication NO. 2007-164 (Alert: Preventing Worker Injuries and Deaths from Explosions in Industrial Ethylene Oxide Sterilization Facilities).

VENTILATION: Install and operate general and local exhaust ventilation systems powerful enough to maintain airborne levels of ethylene oxide below the OSHA PEL in the worker's breathing area. Ventilation systems must be of maximum explosion-proof design. Emission controls must be in compliance with Federal, State and local regulations.

SAFETY SHOWERS: Have eyewash stations, emergency deluge showers, and washing facilities available in all work areas.

	OTHER PROTECTION: Design all engineering systems to be explosion-proof in any area where this gas may be present. Container and system must be electrically grounded/bonded before unloading. Practice good personal hygiene; always wash thoroughly after using this material. Do not eat, drink or smoke in work area.
8.3. Individual protection measures, such as personal protective equipment.	RESPIRATORY PROTECTION: Refer to OSHA respirator regulations cited at 29 CFR 1910.134 and 29 CFR 1910.1047. Wear a NIOSH-approved full facepiece respirator for routine use situations where atmosphere is at or above OSHA's Action Level. Do not exceed the maximum use conditions of the respirator. For emergency or non-routine uses where concentrations are unknown, wear an SCBA with a full facepiece operated in the pressure-demand or positive pressure mode. EYE PROTECTION: Always wear chemical safety glasses. If splashing may occur, wear a full face shield as a supplementary protective measure over safety glasses. **NEVER WEAR CONTACT LENSES** when working with ethylene oxide. SKIN PROTECTION: Wear impervious gloves (see www.ethyleneoxide.com for permeation data); boots; aprons; head cover; and clean impervious body-covering clothing to prevent any possibility of skin contact. Launder contaminated clothing and discard contaminated leather shoes, belts, etc.

9. PHYSICAL AND CHEMICAL PROPERTIES	
9.1. Information on basic physical and chemical properties.	
Appearance (physical state, color, etc.).	Colorless liquid or gas
Corrosivity	Not Corrosive
Odor.	Sweet ether-like
Odor threshold.	261 ppm – detectable 500 to 700 ppm - recognizable
pH.	7, neutral (100 g/L in water)
Melting point/freezing point.	-169 °F (-112 °C)
Initial boiling point and boiling range.	50.7 °F (10.4 °C)
Flash point.	Tag Closed Cup: < 0 °F (< -18 °C)
Evaporation rate.	100% volatile by volume
Flammability (solid, gas).	Flammable
Upper/lower flammability or explosive limits.	Upper flammable limit: 100% vol/vol Lower flammable limit: 2.6% vol/vol
Vapor pressure.	1095 mmHg @ 20 °C
Vapor density.	1.5 (Air = 1)
Relative density.	0.875 at 20 °C
Solubility (ies).	100% in water
Partition coefficient: n-octanol/water.	-0.3
Autoignition temperature.	833 °F (445 °C); Burns in the absence of air
Decomposition temperature.	~932 °F (~773 °K)
Viscosity.	0.255 centipoise at 80 °F

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Oxidizing properties.	Not an oxidizer

10. STABILITY AND REACTIVITY	
10.1. Reactivity.	Not reactive under normal conditions. Under abnormal conditions (for example external heating, contamination), thermal decomposition and runaway polymerization can occur and may lead to explosion.
10.2. Chemical stability.	STABILITY: Material is stable for extended periods in closed, airtight, pressurized containers at room temperature, under normal storage and handling conditions. Vapors may explode when exposed to common ignition sources. In the presence of catalysts, polymerization and decomposition of liquid may occur and is accelerated at temperatures above 800 °F (426 °C).
10.3. Possibility of hazardous reactions.	HAZARDOUS POLYMERIZATION: Dangerous exothermic polymerization reaction can occur when ethylene oxide is contaminated or when heated.
10.4. Conditions to avoid (e.g., static discharge, shock or vibration).	CONDITIONS TO AVOID: Avoid storage at warm temperatures [around 100 °F (38 °C)] in order to prevent polymerization. Do not store at temperatures above 125 °F (52 °C) under any circumstances. Avoid contact of ethylene oxide with incompatible chemicals to avoid highly exothermic polymerization reaction. Prevent exposure to all sources of ignition such as heat, flame, lighted tobacco products or electrical or mechanical sparks.
10.5. Incompatible materials.	See section 7.2
10.6. Hazardous decomposition products.	HAZARDOUS DECOMPOSITION PRODUCTS: Ethylene oxide undergoes thermal decomposition to form carbon dioxide and carbon monoxide gases.

11. TOXICOLOGICAL INFORMATION	
11.1. Information on the likely routes of exposure (inhalation, ingestion, skin and eye contact);	PRIMARY ROUTES OF EXPOSURE: Inhalation; eye contact; skin contact/absorption.
11.2. Symptoms related to the physical, chemical and toxicological characteristics;	**ACUTE HEALTH EFFECTS:** INHALATION: Inhaling concentrated vapor may cause serious health effects, possibly death. Inhalation may progressively cause mucous membrane and respiratory irritation, headache, vomiting, cyanosis, drowsiness, weakness, loss of coordination, CNS depression, lachrymation, nasal discharge and salivation, gasping, and labored breathing. Delayed effects may include nausea, diarrhea, edema of the lungs, paralysis, convulsions and possibly death. NOTE: Ethylene oxide has a high odor threshold (> 250 ppm) and the sense of smell does not provide adequate protection against its toxic effects. EYE CONTACT: Liquid ethylene oxide is severely irritating and corrosive to the eyes and contact can cause swelling of the conjunctiva and irreversible corneal injury.

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	Contact with liquid ethylene oxide can cause frostbite. Vapors may cause eye irritation, tearing, redness and swelling of the conjunctiva. SKIN CONTACT: Prolonged contact with liquid ethylene oxide can cause a local erythema, edema, and formation of blisters. Response is more severe on damp skin. There may be a latency period of several hours prior to the onset of symptoms. Ethylene oxide may be absorbed by the skin, and sustained contact may produce adverse effects such as headache, dizziness, nausea and vomiting. Ethylene oxide is a skin sensitizer and some individuals may suffer an allergic skin reaction. Skin contact may also cause allergic contact dermatitis in some exposed individuals. Liquid ethylene oxide evaporates rapidly and may chill the skin causing frostbite. INGESTION: This relatively unlikely route of exposure is expected to cause severe irritation and burns of the mouth and throat, abdominal pain, nausea, vomiting, collapse and coma. Aspiration may occur during swallowing or vomiting, resulting in lung damage.
11.3. Delayed and immediate effects and also chronic effects from short- and long-term exposure;	**CHRONIC HEALTH EFFECTS:** SKIN CONTACT: Long term effects are unknown but are expected to be similar to acute effects of skin exposure. EYE CONTACT: Some cases of cataract formation have been reported. INHALATION: Respiratory irritation which can result in permanent lung injury, chromosomal aberrations and peripheral neurotoxic effects with a numbing of the sense of smell. Cognitive and CNS impairment may result from long term exposures. INGESTION: May cause anemia, gastrointestinal irritation, effects on liver, kidneys, and adrenal glands. CARCINOGENICITY: **OSHA** classifies ethylene oxide as a cancer/reproductive hazard and considers that, at excessive levels, ethylene oxide may present reproductive, mutagenic, genotoxic, neurologic and skin sensitization hazards. **ACGIH** classifies ethylene oxide as "A2" - suspected human carcinogen. **NTP** classifies ethylene oxide as a known human carcinogen. **IARC** classifies ethylene oxide in Group I (carcinogenic to humans). **NIOSH** classifies ethylene oxide as a potential human carcinogen.

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11.4. Numerical measures of toxicity (such as acute toxicity estimates).	TOXICOLOGICAL - ACUTE INHALATION: LC_{50} (1 hr. exposure) 5748 ppm (male rat) 4439 ppm (female rat) 5029 ppm (rat - combined sexes) Various mammalian species exposed to lethal concentrations of ethylene oxide had symptoms of mucous membrane irritation, central nervous system depression, lacrimation, nasal discharge, salivation, nausea, vomiting, diarrhea, respiratory irritation, loss of coordination and convulsions. TOXICOLOGICAL - CHRONIC INHALATION: Symptoms of chronic exposure are similar to those observed in acute studies, including lung, kidney and liver damage and testicular tubule degeneration in some species. Studies demonstrated neuromuscular effects as the most sensitive indicator of ethylene oxide overexposure. TOXICOLOGICAL - ACUTE DERMAL: No dermal LD_{50} information is available on this product. It is expected to be corrosive to rabbit skin. TOXICOLOGICAL - CHRONIC DERMAL: No chronic dermal toxicity data are available on this product. TOXICOLOGICAL - EYE: No eye irritation animal data are available on this product; however, it is expected to be extremely irritating to rabbit eyes. TOXICOLOGICAL - ACUTE INGESTION: The acute oral LD_{50} for this product is: 330 mg/kg, rat. TOXICOLOGICAL - CHRONIC INGESTION: The effects of chronic ingestion of this product are unknown. CARCINOGENICITY: A recent assessment of available epidemiology studies related to ethylene oxide concluded that the evidence indicates that ethylene oxide does not cause heart disease, an excess of cancers overall, or brain, stomach or pancreatic cancers which were seen in some animal and isolated human studies. The findings with respect to leukemia and non-Hodgkin's lymphoma are less definitive. While the majority of the evidence does not indicate that ethylene oxide causes these cancers, there are some suggestive trends. A longer follow-up of ethylene oxide was completed in 2004 to better clarify these relationships. NIOSH reported no overall elevated risk for any type of cancer or other diseases as compared to the general population, however, among those workers with very high ethylene oxide exposure (combination of exposure level and years worked); there was evidence of an elevated risk for blood

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	cancers among men and breast cancer among women. Two inhalation studies with rats demonstrated carcinogenic responses consisting of increased incidences of mononuclear cell leukemia, peritoneal mesotheliomas, and primary brain tumors. In 2-year inhalation studies with mice there was evidence of carcinogenic activity as indicated by dose-related incidences of benign or malignant neoplasms of the uterus, mammary gland, and hematopoietic system (lymphoma). MUTAGENICITY: While ethylene oxide has demonstrated, in epidemiological studies with exposed workers, an increased incidence of chromosomal aberrations and sister chromatid exchanges, the relevance of such effects to human health hazard evaluation is currently uncertain. In rodent studies, dose related exposure to ethylene oxide induces increases in numbers of adducts in DNA and hemoglobin. Laboratory studies with mice have shown that acute exposure to ethylene oxide at 300 ppm and above caused testicular injury as evidenced by concentration-related increased embryonic deaths following mating of exposed males to non-exposed females (Dominant-Lethal Test). NEUROTOXICITY: Effects are similar to those of acute (short term) exposure, namely, headaches, nausea, diarrhea, lethargy and irrational behavior. Muscle weakness, loss of sensation in the extremities and a reduction in the sense of smell and/or taste may also result. Studies on workers indicate that CNS and cognitive impairment may result from chronic exposures to ethylene oxide. REPRODUCTIVE EFFECTS: Some limited epidemiological data suggests that women exposed to ethylene oxide have a greater incidence of miscarriage. A one-generation reproduction study in rats showed decreased numbers of pups at 100 ppm but not at 33 ppm. In a two-generation reproduction study involving exposure of rats to ethylene oxide vapor for 6 hrs/day, 5 days/week, there was parental toxicity at 33 ppm and 100 ppm. Post implantation losses with reduction in litter size and offspring body weight were found at 33 ppm and 100 ppm. The no-observable effect concentration for adult toxicity, offspring effect and reproductive effect was 10 ppm. TERATOLOGY: Inhalation development toxicity studies with rats exposed to ethylene oxide vapor at concentrations of 50 ppm, 125 ppm and 225 ppm showed that maternal toxicity occurred at 125 and 225 ppm. Fetotoxicity, evidenced by reduced fetal body weight, occurred at all concentrations. At 225 ppm and

	to a lesser extent at 125 ppm an increased incidence of skeletal variants was found. There was no evidence of embryotoxicity or malformations. TARGET ORGANS: Overexposure to this product may affect the skin, eyes, respiratory system, liver, kidneys, brain, blood, reproductive system and central nervous system.

12. ECOLOGICAL INFORMATION	
12.1. Ecotoxicity (aquatic and terrestrial, where available).	AQUATIC TOXICITY: Acute 96-hr. LC_{50} data: 57-84 mg/L, fathead minnow (Pimephales promelas) 90 mg/L, goldfish (Carassius auratus) 137-300 mg/L, water flea (Daphnia magna) Material is slightly toxic to marine invertebrates. 48 hr. LC_{50} in brine shrimp: 490 mg/L
12.2. Persistence and degradability.	CHEMICAL FATE INFORMATION: BOD_5: 0.35 p/p. BOD_{10}: 1.1 p/p. BOD_{20}: 1.3 p/p.
12.3. Bioaccumulative potential.	Log octanol/water partition coefficient (log Kow) is low. Partitioning from water to oil is low. Bioconcentration is not expected to occur due to high water solubility and a low log Kow. Ethylene oxide hydrolyzes to ethylene glycol. Biodegradation of ethylene oxide occurs at a moderate rate after acclimation (3-20% degradation after 5 days; 70% after 20 days). Biodegradation is expected in a wastewater treatment plant. Ethylene oxide has an estimated half life in the atmosphere of 105 days. EO does not readily absorb into sediments or soils and does not persist in soils; if absorbed, soil organisms will over time convert EO to glycols eliminating any persistence in the soil.
12.4. Mobility in soil.	EO does not readily absorb into sediments or soils.
12.5. Results of PBT and vPvB	No applicable information found.
12.6. Other adverse effects.	No applicable information found.

13. DISPOSAL CONSIDERATIONS	
13.1. Description of waste residues and information on their safe handling and methods of disposal, including the disposal of any contaminated packaging.	WASTE MANAGEMENT/DISPOSAL: When disposed, ethylene oxide is a RCRA hazardous waste with waste code U115 (Commercial chemical product - listed for toxicity and ignitability). Waste ethylene oxide may be incinerated in an approved hazardous waste incinerator or can be biologically treated in an approved facility. **DO NOT INCINERATE ANY ETHYLENE OXIDE CONTAINERS.** Ethylene oxide is banned from land disposal. Dispose of waste materials in accordance with all applicable Federal, State and local laws and regulations.

14. TRANSPORT INFORMATION	
14.1. UN number.	UN 1040
14.2. UN proper shipping name.	Ethylene Oxide

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14.3. Transport hazard class (es).	DOT Primary: 2.3 (Poison Gas); Secondary: 2.1 (Flammable Gas) Poison-Inhalation Hazard Zone D Reportable Quantity 10 lb (4.54 kg) IMO Primary: 2.3 (Toxic Gas); Secondary: 2.1 (Flammable Gas) TDG (from or within Canada) Primary: 2.3 (Toxic Gas); Secondary: 2.1 (Flammable Gas) Shipments of residual amounts of ethylene oxide are considered hazardous material. All facilities shipping or receiving ethylene oxide are subject to registration as a shipper of hazardous material (49 CFR 107, Subpart G). All facilities handling ethylene oxide must also maintain a written security plan (49 CFR 172.00 – 804, 49 CFR 172.704)
14.4. Packing group, if applicable.	Not applicable
14.5. Marine pollutant (Yes/No).	No
14.6. Special precautions which a user needs to be aware of or needs to comply with in connection with transport or conveyance either within or outside their premises.	See Section 7.2
14.7. Transportation in bulk according to Annex II of MARPOL 73/78 and the IBC Code.	Product is not supplied in bulk

15. REGULATORY INFORMATION		
15.1. Safety, health and environmental regulations specific for the product in question.		
US Federal:	CERCLA:	Section 103: Reportable Quantity – 10 lb (40 CFR 302.4)
	CWA:	Release into a waterway may require reporting to the National Response Center @ 800-424-8802 (40 CFR 116.4).
	FIFRA	If this chemical is a pesticide product registered by the United States Environmental Protection Agency, it is subject to certain labeling requirements under federal pesticide law. These requirements differ from the classification criteria and hazard information required for safety data sheets (SDS), and for workplace labels of non-pesticide chemicals. The hazard information required on the pesticide label is reproduced below. The pesticide label also includes other important information, including directions for use. EPA Registration No. 36736-2 and EPA Registration No. 36736-8 **DANGER!** Causes eye and skin burns. Harmful if inhaled. May cause nervous system damage. Cancer hazard and reproductive hazard. May be fatal if inhaled in high concentrations. May cause irritation of the respiratory tract. May cause immediate or delayed skin irritation or blisters. May cause allergic skin reaction. Do not breathe vapor. Highly flammable liquid and gas under pressure.
	RCRA:	If discarded in purchased form, this product is a listed and characteristic hazardous waste. However, under RCRA, it is the responsibility of the product user to determine at the time of disposal whether a material containing the product or derived from the product should be classified

		as a hazardous waste (40 CFR 261.20-24).
	RMP:	Listed under the EPA Chemical Accidental Prevention Provisions (Risk Management Plan: 40 CFR 68.130) as a Toxic with a 10000 lb Threshold Quantity
	SARA TITLE III:	Section 302 Extremely Hazardous Substances – Listed; 1000 lb Threshold Planning Quantity (40 CFR 355 Appendix A) Section 304 – Listed 10 lb Reportable Quantity (40 CFR 302.4) Section 311/312 Hazard Categories – Acute, Chronic, Fire, Reactive, Sudden Release (40 CFR 370.66) Section 313 Toxic Chemicals – Listed (40 CFR 372.65)
	TSCA:	On TSCA inventory.
	Other EPA	EPA list of Hazardous Air Contaminants: Listed EPA Organic Hazardous Air Pollutant (HAP) list (40 CFR 61.01): Listed EPA list of Pesticide Chemicals (40 CFR 180.151): Listed EPA NESHAPS (40 CFR 63.360) VOC Rule: 100% VOC
	FDA/USDA:	Not applicable.
	OSHA:	This product is hazardous under the criteria of the Federal OSHA Hazard Communication Standard 29 CFR 1910.1200. Ethylene Oxide Standard 29 CFR 1910.1047
	Other OSHA:	Listed under the Process Safety Management standard (29 CFR 1910.119) with 5000 lb Threshold Quantity.
US State:	California Proposition 65: Listed; cancer hazard; reproductive hazard California Director's List: Listed Florida Hazardous Substance List: Listed Massachusetts Extraordinarily Hazardous Substance List: Listed Minnesota Hazardous Substance List: Listed New Jersey Hazardous Substance List: Listed sn 0882 (Special Hazardous Substance; Environmental Hazardous Substance) Pennsylvania Right-to-know List: Listed	
Canadian:	DSL:	Listed as Oxirane (published 5 April 1994)
	WHMIS:	Ingredient Disclosure List: Listed 0.1%, item 725 (1310) Classification: A; B1; D1A; D2A; D2B; F This MSDS complies with the Canadian Controlled Product Regulations.
EU:	CLP:	This product is not sold into the European Union.
	EINECS:	
	REACH:	
	Safety Data Sheets:	

16. OTHER INFORMATION INCLUDING INFORMATION ON PREPARATION AND REVISION		
Last Revision Date:	See top of each page under 'Effective Date'	
Reason for Issue:	Rev A supersedes Rev. 22 Jul 2009	Reformatted per OSHA GHS. Added part 10.1. Changed 11.4 Acute Ingestion LD50 from 72 to 330 mg/kg (no evidence located to support 72; web review, including IPCS. 2003. Ethylene Oxide. Geneva, World Health Organization, International Program on Chemical Safety, Concise International Chemical Assessment Document 54, p 1-57. http://www.inchem.org/documents/cicads/cicads/cicad54.htm.
	B	Correct flash point temperature from 18°C to -18°C
	C	Remove Canutec phone contact information
	D	Added Corrosivity to section 9 physical and chemical properties to support 29 CFR 1910.119(d)(1)
Risk Phrases Used:	See Section 2.	

Ethylene Oxide

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Hazard Ratings:	See Section 5.2

THE FOLLOWING ABBREVIATIONS MAY BE USED IN THIS DOCUMENT:	
ACGIH	American Council of Governmental Industrial Hygienists
AICS	Australian Inventory of Chemical Substances
BOD 5, 10, 20	Biochemical Oxygen Demand, 5, 10 or 20 day
CAS	Chemical Abstract Service
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CLP	Classification, Labeling and Packaging
CNS	Central nervous system
CWA	Clean Water Act
D.O.T. or DOT	Department of Transportation
DSL	Domestic Substance List (Canada)
EC_{50}	Effective concentration which induces a response halfway between the baseline and maximum.
EC	European Community
ECL	Existing Chemicals List (Korea)
EINECS	European Inventory of Existing Commercial Substances
EPA	Environmental Protection Agency
EU	European Union
FDA	Food and Drug Administration
FIFRA	Federal Insecticide, Fungicide and Rodenticide Act
GHS	Globally Harmonized System
HAP	Hazardous Air Pollutant
HMIS	Hazardous Materials Information System
IARC	International Agency for Research on Cancer
IBC	International Bulk Chemical Code
IDL	Ingredient disclosure list
IDLH	Immediately Dangerous to Life and Health
IMO	International Maritime Organization
K_{St}	Deflagration Index
LC_{50}	Median lethal concentration for 50% mortality of subject species by the inhalation route
LD_{50}	Median lethal dose for 50% mortality of subject species by the oral or dermal route
LD_{LO}	Median lethal dose low; the lowest dose of a substance introduced by any route other than inhalation reported to have caused death in humans or animals.
LEL / LFL	Lower Explosive Limit / Lower Flammable Limit
MARPOL	International Convention for the Prevention of Pollution from Ships
MSHA	Mine Safety Health Administration
NESHAPS	National Emission Standards for Hazardous Air Pollutants
NFPA	National Fire Protection Association
NIOSH	National Institute of Occupational Safety and Health
NTP	National Toxicology Program
OSHA	Occupational Safety and Health Administration
PBT	Persistent Bioaccumulative Toxic
PEL	Permissible Exposure Limit (default 8 hour day, 40 hour week TWA)
p/p	Parts per part
Ppm	Parts per million
p.s.i.g. or psig	Pounds per square inch (gauge pressure)
PSM	Process Safety Management
PVC	Polyvinyl chloride
RCRA	Resource Conservation and Recovery Act
REACH	Registration, Evaluation, Authorization and Restriction of Chemical Substances

ARC
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REL	Recommended Exposure Limit (default 10 hour day, 40 hour week TWA)
RMP	Risk Management Plan
SARA	Superfund Amendment and Reauthorization Act of 1990
SCBA	Self-contained breathing apparatus
STEL	Short Term Exposure Limit (default 15 minute TWA)
TD_{LO}	Lowest dose to which humans or animals have been exposed and reported to produce a toxic effect other than cancer
TDG	Transportation of Dangerous Goods
TLV	Threshold limit value
TSCA	Toxic Substance Control Act
TWA	Time Weighted Average
UFL	Upper Flammable Limit
USDA	United States Department of Agriculture
VOC	Volatile organic chemical
vPvB	Very Persistent, Very Bioaccumulative
WHMIS	Workplace Hazardous Material Information System Regulations

The information provided in this Safety Data Sheet is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

EXHIBIT L

Ö Hoffman, Kathy <KHoffman@sterigenics.com>
÷ Monday, April 27, 2020 12:41 PM
è Hays, Karen
÷ FW: Sterigenics Atlanta Facility

ÐÂ–èÞ\^ This email originated from outside of the organization. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Karen:

Given the negative pressure capture and emissions control system operation, we estimate the amount of EO discharge post-control to the environment to be about one quarter of one ounce or less.

Regards,
Kathy Hoffman

õ¸•] ĸHoffman, Kathy
W@:ĸSaturday, April 25, 2020 10:53 AM
X•ĸkaren.hays@dnr.ga.gov
W ^{@:ĸSterigenics Atlanta Facility

Karen:

We had elevated internal EO readings within our chamber room at the Atlanta facility yesterday at about 1pm ET. All of the EO was captured within the negative pressure system and controlled with the new emission controls. There were no uncontrolled EO emissions to the environment.

The increased internal EO readings resulted from our Chamber #2 vacuum pump system when we were starting up Chamber #2 for the first routine production cycle since we temporarily suspended operations in August. Upon further investigation, we identified a minor maintenance issue with the oil/water separator tank that is connected to Chamber #2 vacuum pump. We have not had this issue with any other chamber during our startup period and inspected all other chambers to ensure that there are no similar issues. We estimate the increased EO contributions within the internal negative pressure system to be about 0.8 to 1.8 pounds of EO. Again, we confirmed that the new negative pressure capture and control system was working properly at the time and that there were no uncontrolled EO emissions to the environment.

Kathleen Hoffman
Senior Vice President - Global Environmental, Health & Safety
Sotera Health

2015 Spring Road, Suite 650
Oak Brook, IL 60523
Office: 630.928.1758
khoffman@soterahealth.com

Sotera Health

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EXHIBIT M1

Georgia Department of Natural Resources
Environmental Protection Division · Air Protection Branch
4244 International Parkway · Suite 120 · Atlanta · Georgia 30354
Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

FEB 17 2015

MEMORANDUM:

TO: Sean Taylor
THROUGH: Ross Winne, Richard Taylor
FROM: Anna Gray
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Sterigenics U.S. LLC
COMPANY LOCATION	Smyrna, GA
SOURCE TESTED	Areation Room/Advanced Air Technologies (AAT) emission control system
POLLUTANT DETERMINED	Ethylene Oxide
REPORT REVIEWED BY	Anna Gray
TEST WITNESSED BY	Anna Gray
DATE(S) OF TEST	October 23, 2014 to October 24, 2014
DATE RECEIVED BY APB	January 8, 2015
APPLICABLE REGULATION	Permit No. 7389-067-0093-S-05-0, Conditions 2.3, 6.2 and 6.3
MEMORANDUM	The reduction efficiency test of the Two stage Advanced Air Technologies (AAT) emission control system, which controls the emissions from the aeration room, was conducted in accordance o USEPA CFR 40, Part 63.365. The emissions reduction should be at least 99%. Average EtO concentration on inlet= 27.94 ppm Average EtO concentration on outlett= 0.0122 ppm Average EtO Control Efficiency: 99.95% Aeration time on each run: 60 min Average flow on the outlet: 9831 dscfm EtO average mass flow on the outlet: 0.000824 lbs/hr The inlet flow was assumed the same as the outlet. Each test run was performed with freshly sterilized product in the aeration chambers. Parameters during test: Scrubber flow rate= 1537 gpm; 0.9 pH; Storage tank level for the scrubber: 108"; Glycol concentration=30.4%

:c: Ross Winne
Reference Number: 201500164

AIRS Number: 06700093
Printed: 2/17/2015

FEB 17 2015

Georgia Department of Natural Resources
Environmental Protection Division · Air Protection Branch
4244 International Parkway · Suite 120 · Atlanta · Georgia 30354
Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

MEMORANDUM:

TO: Sean Taylor
THROUGH: Ross Winne, Richard Taylor
FROM: Anna Gray
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Sterigenics U.S. LLC
COMPANY LOCATION	Smyrna, GA
SOURCE TESTED	10-Sterilizer Chambers/Ceilcote Scrubber
POLLUTANT DETERMINED	Ethylene Oxide
REPORT REVIEWED BY	Anna Gray
TEST WITNESSED BY	Anna Gray
DATE(S) OF TEST	October 23, 2014
DATE RECEIVED BY APB	January 8, 2015
APPLICABLE REGULATION	Permit No. 7389-067-0093-S-05-0, Conditions 2.3, 6.2 and 6.3
MAXIMUM EXPECTED OPERATING CAPACITY	12,000 ACFM
OPERATING CAPACITY	N/A
ALLOWABLE EMISSION RATE	99 % DRE
CONTROL EQUIPMENT AND MONITORING DATA	Scrubber flow rate= 155 gpm; 1.7 pH; Storage tank level for the scrubber: 185"; Glycol concentration=35.7%

cc: Ross Winne
Reference Number: 201500030

AIRS Number: 06700093
Printed: 2/17/2015

Georgia Department of Natural Resources
Environmental Protection Division · Air Protection Branch
4244 International Parkway · Suite 120 · Atlanta · Georgia 30354
Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

MEMORANDUM

The reduction efficiency test of the Ceilcote packed tower scrubber emission control system was conducted in accordance o USEPA CFR 40, Part 63.365. At least one of the test runs was performed using emissions from the new30-pallet sterilizer.

Run #1 Inlet EtO= 27.4 lbs
Outlet EtO= 0.0010212 lbs
EtO Control Efficiency= 99.996%
Minutes/cycle= 22

Run #2 Inlet EtO=61.0 lbs
Outlet EtO= 0.0041159 lbs
EtO Control Efficiency= 99.993%
Minutes/cycle= 23

Run #3 Inlet EtO= 218.1 lbs
Outlet EtO= 0.0189873 lbs
EtO Control Efficiency= 99.991%
Minutes/cycle= 27
Average EtO Control Efficiency: 99.993%

The amount of ethylene oxide used during each sterilization cycle was calculated by the Gas law and the conditions at the beginning and the end of every exhaust phase. All exhaust phase testing wsa conducted during normal process load conditions, but with an empty sterilization chamber to facilitate inlet mass calculation and the performance of multiple test runs.

TEST REPORT TRANSMISSION SUMMARY
(Submit separate summary sheet for each pollutant test report)

Submit to:
Ross Winne, Program Manager
Industrial Source Monitoring Program
4244 International Parkway, Suite 120
Atlanta, GA 30354

RECEIVED
JAN 29 2015
ISMP

ISMP Database *(Air Protection Branch use only)*
No. 2015 00164

Facility Name: Sterigenics U.S. LLC

Facility Address: 2973 Olympic Industrial Blvd., Smyrna, Georgia 30080
Address City Zip

Facility Contact: Daryl Mosby – General Manager Phone No. 404.355.4485

PART A

Emission Point (one only): AAT Emission Control System

Pollutant (one only): Ethylene Oxide Date test performed: 24 Oct.14

Applicable Rule(s), Regulation(s) or Permit Conditions (Indicate Permit # and Condition #'s): NESHAP regulation for AAT Safe Cell, Permit # 7389-067-0093-S-05-0, Requirements 6.2 and 6.3

Maximum expected operating capacity: 12,000 cfm

Operating capacity during test: 99.96%

Computed allowable emission rate(s) or limitation(s): ≥ 99% or < 1 ppm
(Determined for each applicable rule, regulation or permit condition using same units)

Reported emissions to atmosphere: 5.03 pounds (2013)
(In same units as rule, regulation or permit condition)

The test report should include a compilation of all CEMS data, control devise parameters and process operating data related to the test.

PART B

For any facility operating under a Part 70 Permit, Condition 8.8.3 of that permit requires the following certification should be signed by a responsible official and included with the report:

I certify that based on my information and belief formed after reasonable inquiry, the statements and information in this report are true, accurate, and complete.

Kathleen Hoffman	KA Hoffman	SVP - Global EHS	23 - Jan-2015
NAME	**SIGNATURE**	**TITLE**	**DATE**

RECEIVED
DEC 23 2014
AIR PROTECTION
BRANCH

REPORT OF AIR POLLUTION SOURCE TESTING OF AN ETHYLENE OXIDE EMISSION-CONTROL SYSTEM OPERATED BY STERIGENICS, INC. IN SMYRNA, GEORGIA ON OCTOBER 24, 2014

#2015000064

Submitted to:

GEORGIA DEPARTMENT OF NATURAL RESOURCES
Environmental Protection Division
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Submitted by:

STERIGENICS U.S., LLC.
2973 Olympic Industrial Boulevard
Smyrna, Georgia 30080-7322

GDNR Permit Number 7839-067-0093-S-05-0

Prepared by:

ECSI, INC.
PO Box 848
San Clemente, California 92674-0848

December 7, 2014

ECSi

CONTACT SUMMARY

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FACILITY

Mr. Daryl Mosby
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Phone: (404)355-4485
FAX: (404)355-4852
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TEST DATE

October 24, 2014

REGULATORY AGENCY

Mr. Don Holder
Principal Environmental Engineer
Stationary Source Compliance Program
GEORGIA DEPARTMENT OF NATURAL RESOURCES
Environmental Protection Division, Air Protection Branch
4244 International Parkway, Suite 120
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TESTING CONTRACTOR

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ECSi

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ECSi

1.0 INTRODUCTION

On Friday, October 24, 2014, ECSi, Inc. performed air pollution source testing of an ethylene oxide (EtO) emission-control device operated by Sterigenics, Inc. in Smyrna, Georgia. The control device tested was a two-stage Advanced Air Technologies Safe Cell emission-control system, which is currently used to control emissions from one aeration room. The purpose of the testing program was to demonstrate continued compliance with the conditions established in the Air Quality Permit granted to Sterigenics by the Georgia Department of Natural Resources, Environmental Protection Division (GDNR).

2.0 EQUIPMENT

The EtO gas-sterilization system is comprised of nine commercial sterilizers, which are discharged through liquid-ring vacuum pumps to a Ceilcote packed tower scrubber emission-control system, nine sterilizer exhaust vents (backvents), which are currently discharged to atmosphere, and one aeration room, which is discharged to a two-stage Advanced Air Technologies (AAT) Safe Cell emission-control system. As an alternative emission-control scenario, the facility also has the capability to discharge the sterilization chamber vacuum pumps to the AAT Safe Cell system. The gas-sterilization and emission-control equipment consist of the following:

- Nine Gas Sterilizers, two 5-pallet, two 6-pallet, four 13-pallet, and one new 30-pallet capacity, each comprised of a steam-heated sterilization chamber, a recirculating vacuum pump chamber evacuation system, a backdraft valve, and a fugitive emissions exhaust hood;

- One aeration room (AR-1), 152,400 cubic feet capacity, comprised of a heated aeration chamber and a chamber exhaust system.

Sterilizer vacuum pump emissions are be controlled by:

- One Ceilcote packed tower chemical scrubber, equipped with: a reaction/interface column, 27' 4" high, 42" in diameter, with a 20' bed of #1 Tellerette packing; a 115 GPM scrubber fluid recirculation system; and two 28,000 gallon reaction/storage tanks.

Sterilizer aeration emissions are controlled by:

- One two-stage Advanced Air Technologies Safe Cell emission-control system, comprised of a packed-tower chemical scrubber (SC1), equipped with a packed reaction/interface column, a scrubber fluid recirculation system, and a scrubber fluid reaction/storage tank, and a dry bed reactor/scrubber (SC2), comprised of a bank of solid-bed reaction vessels, connected in parallel, installed downstream of SC1 and upstream of a dedicated blower exhaust system.

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3.0 TESTING

EtO source testing was conducted in accordance with the procedures outlined in USEPA CFR40, Part 63.365. EtO emissions monitoring was conducted simultaneously at the inlet and outlet of the AAT Safe Cell System during a one-hour interval of the 24-hour aeration process. A total of three test runs were performed.

During aeration testing, EtO emissions at the inlet and the outlet of the AAT Safe Cell System were determined using direct source sample injection into the gas chromatograph (GC). All aeration testing was performed using freshly sterilized product. The testing program was conducted in accordance with the procedures outlined in the following sections.

4.0 RULE/COMPLIANCE REQUIREMENTS

The EtO gas-sterilization system at Sterigenics was tested to demonstrate compliance with the EPA requirements, as specified in the GDNR Air Quality Permit. The following requirements must be met:

- The emissions from the aeration process must be discharged to control equipment with an EtO emission-reduction efficiency of at least 99.0% by weight.

Testing is required to demonstrate compliance with these requirements. Source testing of the AAT Safe Cell System is required initially, and may be required periodically thereafter.

ECSi

5.0 TEST METHOD REFERENCE

5.1 INTRODUCTION

EtO source testing was conducted in accordance with the procedures outlined in USEPA CFR40, Part 63.365. EtO emissions monitoring was conducted simultaneously at the inlet and outlet of the AAT Safe Cell System during a one-hour interval of the 24-hour aeration process. A total of three test runs were performed.

During aeration testing, EtO emissions at the inlet and the outlet of the AAT Safe Cell System were determined using direct source sample injection into the gas chromatograph (GC). All aeration testing was performed using freshly sterilized product. The testing program was conducted in accordance with the procedures outlined in the following sections.

Operation and documentation of process conditions was performed by personnel from Sterigenics, Inc. using existing monitoring instruments installed by the manufacturer on the equipment to be tested. In accordance with the procedures established in USEPA CFR40, Part 63, Subpart O, scrubber liquor level was recorded. This parametric monitoring data is attached as Appendix G.

5.2 VOLUMETRIC FLOW MEASUREMENT

Exhaust gas flow at the outlet of the scrubber was determined by 40 CFR 60, Appendix A, Method 2, using an s-type pitot tube and an inclined-oil manometer. Sampling ports were located in accordance with 40 CFR 60, Appendix A, Method 1. The test ports were located far enough from any flow disturbances to permit accurate flow measurement.

Temperature measurements were obtained from a type K thermocouple and thermometer attached to the sampling probe. Exhaust gas composition was assumed to be air and small amounts of water vapor. Water vapor was negligible and, based on previous test data, a value of 2 percent was used for flow calculations.

5.3 CONTROL EFFICIENCY AND MASS EMISSIONS MEASUREMENT

During the aeration process, EtO emissions at the inlet and outlet of the AAT Safe Cell System were determined using direct source sample injection into the GC. The mass of EtO emitted from the outlet was determined using Equation 2, shown below in Section 5.9. Mass-mass control-efficiency of EtO during the aeration process was calculated by comparing the mass of EtO vented to the system inlet to the mass of EtO vented from the system outlet.

During aeration, vented gas was analyzed by an SRI, Model 8610, portable gas chromatograph (GC), equipped with the following: dual, heated sample loops and injectors; dual columns; and dual detectors. A flame ionization detector (FID) was used to quantify inlet EtO emissions, and a photoionization detector (PID) was used to quantify low-level EtO emissions at the emission-control system outlet.

5.4 SAMPLE TRANSPORT

Source gas was pumped to the GC at approximately 500-1000 cubic centimeters per minute (cc/min) from the sampling ports through two lengths of Teflon® sample line, each with a nominal volume of approximately 75 cubic centimeters (cc) and an outer diameter of 0.25 inch. At the inlet of the Safe Cell System, the sampling port was located in the plenum immediately upstream packed tower scrubber. At the outlet of the Safe Cell System, sampling ports were located in the exhaust stack downstream of the dry bed reactors.

5.5 GC INJECTION

Source-gas samples were then injected into the GC which was equipped with two heated sampling loops, each containing a volume of approximately 2cc and maintained at 100 degrees Celsius (C). Injections occurred at approximately five-minute intervals during aeration testing. Helium was the carrier gas for both the FID and the PID.

5.6 GC CONDITIONS

The packed columns for the GC were both operated at 80 degrees C. The columns were stainless steel, 6 feet long, 0.125 inch outer diameter, packed with 1 percent SP-1000 on 60/80 mesh Carbopack B.

During the analysis, the FID was operated at 250 degrees C. The support gases for the FID were hydrogen (99.995% pure) and air (99.9999% pure). Any unused sample gas was vented from the GC system back to the inlet of the control device being tested.

5.7 CALIBRATION STANDARDS

The FID was calibrated for mid-range part-per-million-by-volume (ppmv) level analysis using gas proportions similar to the following:

1) 100 ppmv EtO, balance nitrogen
2) 50 ppmv EtO, balance nitrogen (audit gas)
3) 10 ppmv EtO, balance nitrogen
4) 1 ppmv EtO, balance nitrogen

The PID was calibrated for low-range ppmv level analyses using gas proportions similar to the following:

1) 100 ppmv EtO, balance nitrogen
2) 50 ppmv EtO, balance nitrogen (audit gas)
3) 10 ppmv EtO, balance nitrogen
4) 1 ppmv EtO, balance nitrogen

Each of these calibration standards was in a separate, certified manufacturer's cylinder. Copies of the calibration gas laboratory certificates are attached as Appendix F.

5.8 SAMPLING DURATION

Since aeration is a 24-hour process at this facility, with constant discharge flow from the aeration chambers to the emission-control system, aeration testing consisted of three 1-hour test runs. Each test run was performed with freshly sterilized product in the aeration chambers.

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5.9 CONTROL-EFFICIENCY/MASS-EMISSIONS CALCULATIONS

Mass emissions of EtO during aeration were calculated using the following equation:

MassRate = (VolFlow)(MolWt)(ppmv EtO/10^6)/(MolVol)

Where:

MassRate	=	EtO mass flow rate, pounds per minute
VolFlow	=	Corrected volumetric flow rate, standard cubic feet per minute at 68 degrees F
MolWt	=	44.05 pounds EtO per pound mole
ppmv EtO	=	EtO concentration, parts per million by volume
10^6	=	Conversion factor, ppmv per "cubic foot per cubic foot"
MolVol	=	385.32 cubic feet per pound mole at one atmosphere and 68 degrees F

Results of the control-efficiency testing are presented in Section 8.0 and in Table 1.

6.0 TEST SCENARIO

The aeration testing was performed during normal process load conditions. Three aeration test runs were conducted in series to verify the performance of the emission-control system. The testing schedule was as follows:

1) Testing equipment was set up and calibrated.
2) Aeration Phase Test Run #1 was conducted with freshly sterilized product in aeration. Sampling was performed at the inlet and the outlet of the Safe Cell System.
3) Aeration Phase Test Run #2 was conducted with freshly sterilized product in aeration. Sampling was performed at the inlet and the outlet of the Safe Cell System.
4) Aeration Phase Test Run #3 was conducted with freshly sterilized product in aeration. Sampling was performed at the inlet and the outlet of the Safe Cell System.
5) Post calibration check was performed, testing equipment was packed.

7.0 QA/QC

7.1 FIELD TESTING QUALITY ASSURANCE

At the beginning of the test, the sampling system was leak checked at a vacuum of 15 inches of mercury. The sampling system was considered leak free when the flow indicated by the rotameters fell to zero.

At the beginning of the test, a system blank was analyzed to ensure that the sampling system was free of EtO. Ambient air was introduced at the end of the heated sampling line and drawn through the sampling system line to the GC for analysis. The resulting chromatogram also provided a background level for non-EtO components (i.e. ambient air, carbon dioxide, water vapor) which are present in the source gas stream due to the ambient dilution air which is drawn into the emission-control device, and due to the destruction of EtO by the emission-control device which produces carbon dioxide and water vapor. This chromatogram, designated AMB, is included with the calibration data in Appendix A.

7.2 CALIBRATION PROCEDURES

The GC system was calibrated at the beginning and conclusion of each day's testing. Using the Peaksimple II analytical software, a point-to-point calibration curve was constructed for each detector. A gas cylinder of similar composition as the calibration gases, but certified by a separate supplier, was used to verify calibration gas composition and GC performance.

All calibration gases and support gases used were of the highest purity and quality available. A copy of the laboratory certification for each calibration gas is attached as Appendix F.

8.0 TEST RESULTS

The AAT Safe Cell System demonstrated an EtO control efficiency of 99.96 percent. In accordance with EPA requirements, as specified in the GDNR Air Quality Permit, this control equipment must have an EtO control efficiency of 99 percent or more in control of emissions from the aeration process. The AAT Safe Cell System met this requirement.

The test results are summarized in Table 1. This table includes results for EtO control efficiency of the emission-control device. Chromatograms and chromatographic supporting data are attached as Appendices A through D. Copies of field data and calculation worksheets are attached as Appendix E.

TABLES

TABLE 1
ETHYLENE OXIDE CONTROL EFFICIENCY - AERATION OF AN ETHYLENE OXIDE EMISSION CONTROL DEVICE OPERATED BY STERIGENICS, INC. IN SMYRNA, GEORGIA ON OCTOBER 24, 2014

RUN NUMBER	INJECTION TIME	INLET ETO CONC. (PPM)(1)	OUTLET ETO CONC. (PPM)(2)	ETO CONTROL EFFICIENCY
1(3)	942	25.9	0.02	99.9228
1	947	26.5	0.01	99.9623
1	952	24.8	0.03	99.8790
1	957	25.8	0.01	99.9612
1	1002	25.9	0.03	99.8842
1	1007	24.9	0.01	99.9598
1	1012	25.2	0.04	99.8413
1	1017	25.2	0.01	99.9603
1	1022	25.3	0.01	99.9605
1	1027	25.3	0.01	99.9605
1	1032	25.4	0.01	99.9606
1	1037	26.6	0.01	99.9624
2(4)	1042	25.8	0.01	99.9612
2	1047	25.1	0.01	99.9602
2	1052	26.4	0.01	99.9621
2	1057	26.2	0.01	99.9618
2	1102	26.3	0.01	99.9620
2	1107	25.7	0.01	99.9611
2	1112	24.5	0.01	99.9592
2	1117	26.9	0.01	99.9628
2	1122	27.6	0.01	99.9638
2	1127	28.9	0.01	99.9654
2	1132	29.0	0.01	99.9655
2	1137	28.3	0.01	99.9647
3(5)	1142	29.6	0.01	99.9662
3	1147	30.1	0.01	99.9668
3	1152	29.7	0.01	99.9663
3	1157	30.6	0.01	99.9673
3	1202	31.1	0.01	99.9678
3	1207	31.0	0.01	99.9677
3	1212	30.9	0.01	99.9676
3	1217	32.9	0.01	99.9696
3	1222	31.7	0.01	99.9685
3	1227	33.2	0.01	99.9699
3	1232	33.1	0.01	99.9698
3	1237	34.5	0.01	99.9710
TIME-WEIGHTED AVERAGE:		**27.94**	**0.0122**	**99.9551**
		GDNR REQUIRED CONTROL EFFICIENCY:		**99%**

Notes:
(1) - PPM = parts per million by volume
(2) - 0.01 ppm is the quantification limit for the detector used at the outlet.
(3) - Aeration Phase Test Run #1 started at 9:40, ended at 10:40.
(4) - Aeration Phase Test Run #2 started at 10:40, ended at 11:40.
(5) - Aeration Phase Test Run #3 started at 11:40, ended at 12:40.

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APPENDICES

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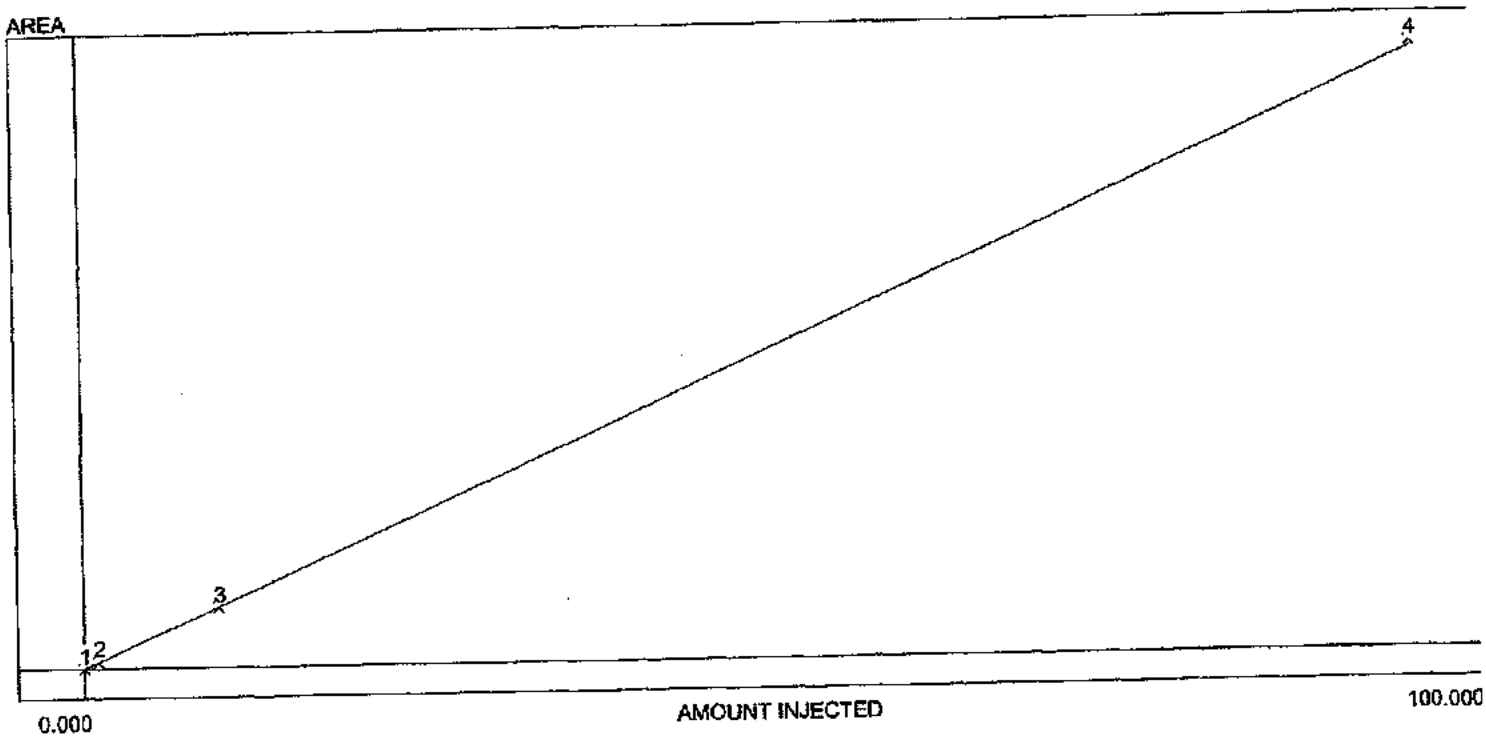
APPENDIX A

Calibration Data

ECSi

ık	Name	Start	End	Calibration	Int.Std	Units
	Dead Vol / Air	0.000	0.350		0.000	
	Ambient H2O	0.350	0.500		0.000	
	Ethylene Oxide	0.500	0.600	C:\peak359\1Ster	0.00014	ppm
	Acetaldehyde	0.600	0.800		0.000	
	CO2	0.800	1.000		0.000	

ibration file: C:\peak359\1SterGA2014.cal

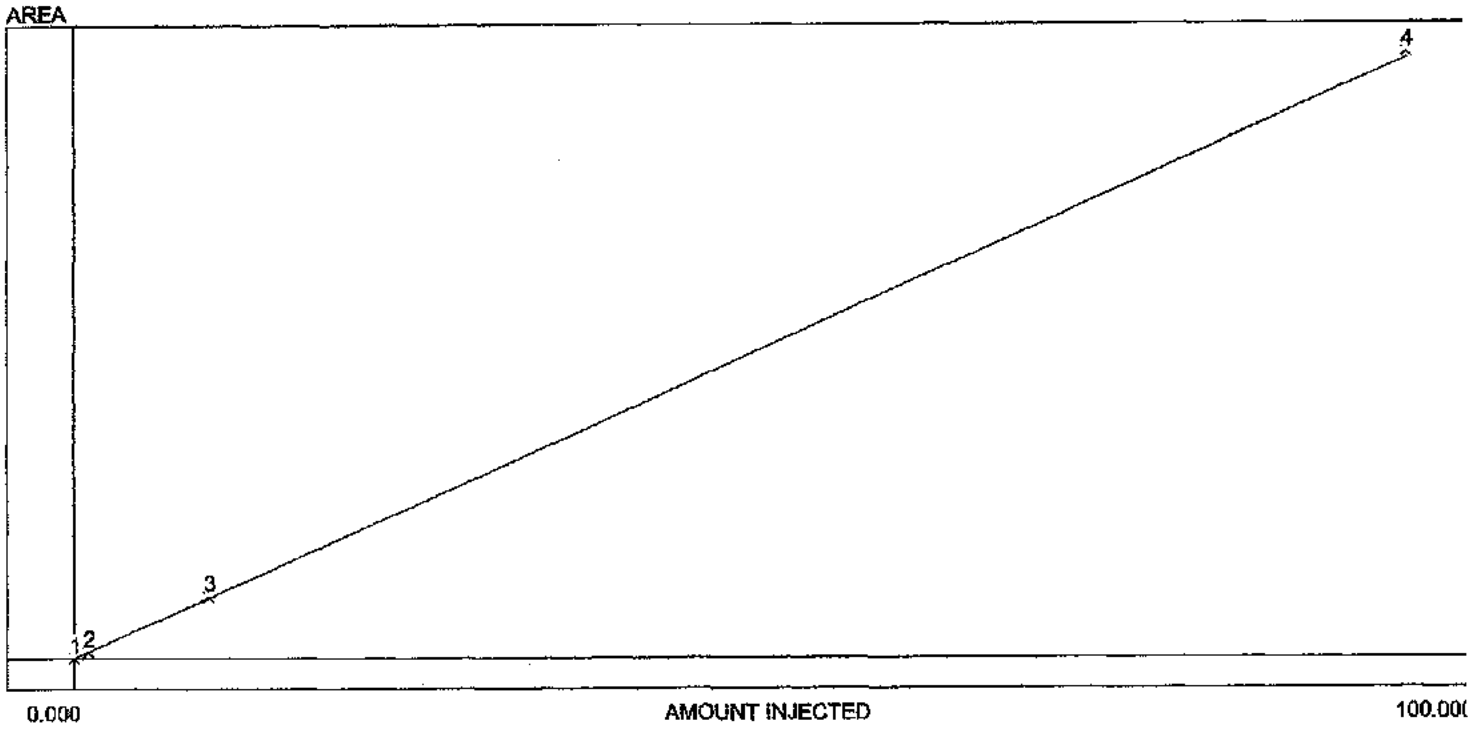


slope of curve: 0.37
ds intercept: 0.00
arity: 1.00
nber of levels: 4
rel SD of CF's: 0.2/66.7
.3715X
[illegible]
rated: Thu Oct 23 12:52:16 2014

Area/ht.	Amount	CF	Current	Previous #1	Previous #2
0.000	0.000	0.000	0.000	N/A	N/A
0.405	1.100	0.368	0.405	N/A	N/A
3.750	10.100	0.371	3.750	N/A	N/A
37.500	100.000	0.375	37.500	N/A	N/A

k	Name	Start	End	Calibration	Int.Std	Units
	Dead Vol / Air	0.000	0.350		0.000	
	Ambient H2O	0.350	0.500		0.000	
	Ethylene Oxide	0.500	0.600	C:\peak359\2Ster	0.00014.cpm	
	Acetatdehyde	0.600	0.800		0.000	
	CO2	0.800	1.000		0.000	

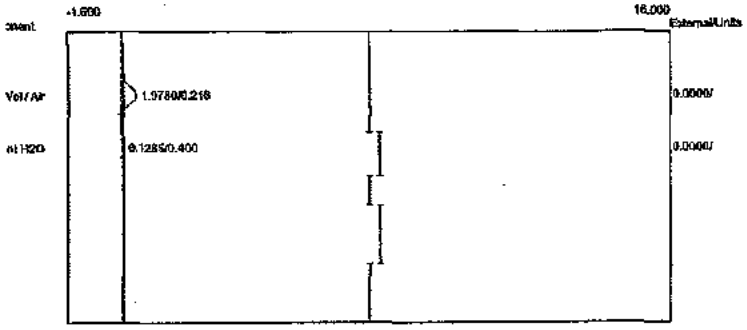
ibration file: C:\peak359\2SterGA2014.cal



ı slope of curve: 1.79
xis intercept: 0.00
ıarity: 1.00
nber of levels: 4
rel SD of CF's: 0.9/66.8
..7897X
1.0000
rated: Thu Oct 23 12:51:40 2014

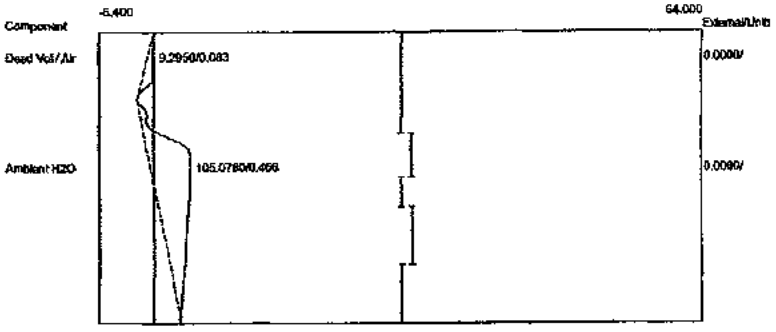
Area/ht.	Amount	CF	Current	Previous #1	Previous #2
0.000	0.000	0.000	0.000	N/A	N/A
1.900	1.100	1.727	1.900	N/A	N/A
18.500	10.100	1.832	18.500	N/A	N/A
181.000	100.000	1.810	181.000	N/A	N/A

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:01:43
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-Amb.CHR (c:\peak359)
Sample: Ambient Background
Operator: D. Kremer



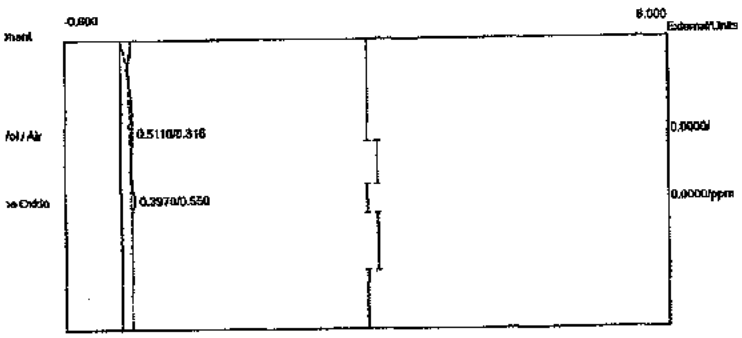
Component	Retention	Area	External	Units
ad Vol / Air	0.216	1.9780	0.0000	
bient H2O	0.400	0.1285	0.0000	
		2.1065	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:01:43
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-Amb.CHR (c:\peak359)
Sample: Ambient Background
Operator: D. Kremer



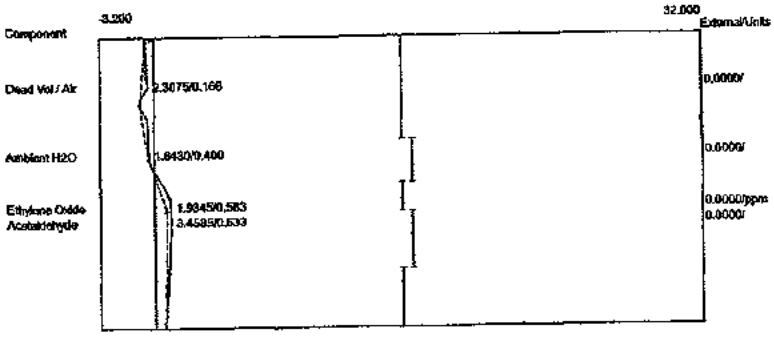
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	9.2950	0.0000	
Ambient H2O	0.466	105.0780	0.0000	
		114.3730	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:14:35
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-C01.CHR (c:\peak359)
Sample: 1.10 ppm EtO std
Operator: D. Kremer



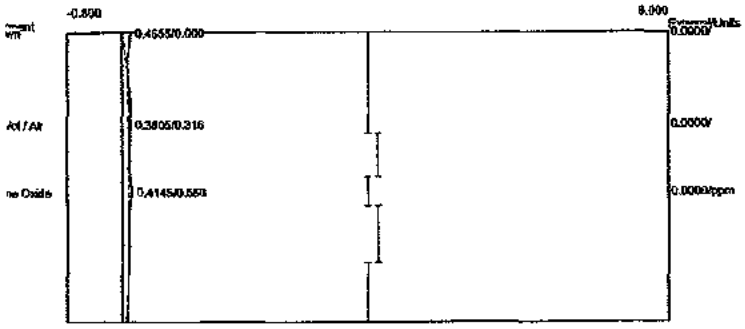
Component	Retention	Area	External	Units
ad Vol / Air	0.316	0.5110	0.0000	
ylene Oxide	0.550	0.3970	0.0000	ppm
		0.9080	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:14:35
Method: Direct Injection
Description: CHANNEL 2 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C01.CHR (c:\peak359)
Sample: 1.10 ppm EtO std
Operator: D. Kremer



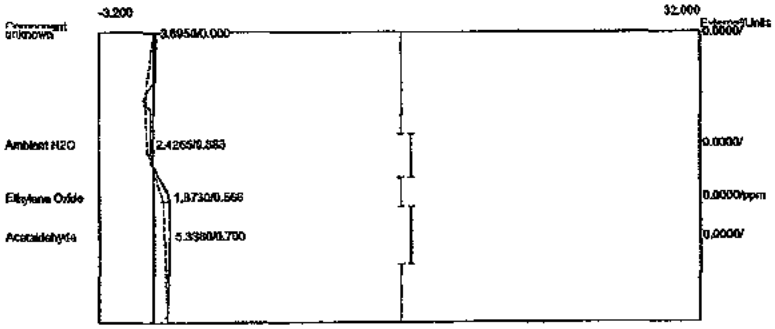
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	2.3075	0.0000	
Ambient H2O	0.400	1.6430	0.0000	
Ethylene Oxide	0.583	1.9345	0.0000	ppm
Acetaldehyde	0.633	3.4585	0.0000	
		9.3435	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
alysis date: 10/23/2014 12:16:10
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-C02.CHR (c:\peak359)
Sample: 1.10 ppm EtO std
Operator: D. Kremer



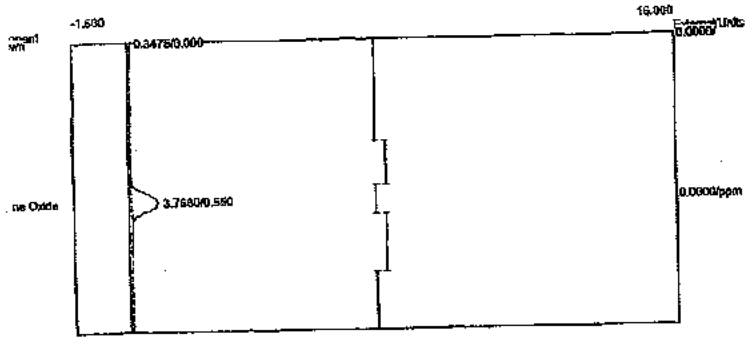
Component	Retention	Area	External	Units
ad Vol / Air	0.316	0.3805	0.0000	
ylene Oxide	0.550	0.4145	0.0000	ppm
		0.7950	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:16:10
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C02.CHR (c:\peak359)
Sample: 1.10 ppm EtO std
Operator: D. Kremer



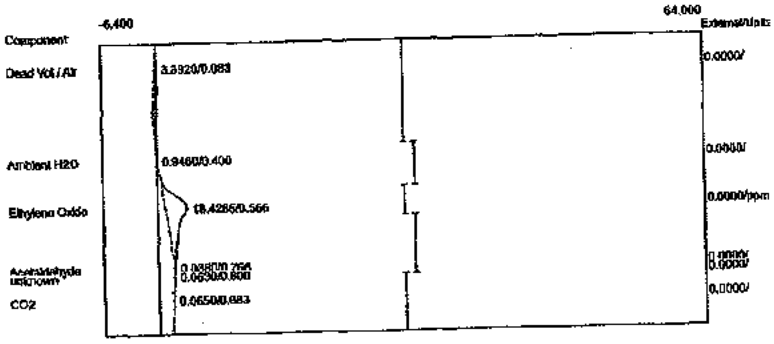
Component	Retention	Area	External	Units
Ambient H2O	0.383	2.4265	0.0000	
Ethylene Oxide	0.566	1.8730	0.0000	ppm
Acetaldehyde	0.700	5.3380	0.0000	
		9.6375	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:20:41
Method: Direct Injection
Description: CHANNEL 1 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-C03.CHR (c:\peak359)
Sample: 10.1 ppm EtO std
Operator: D. Kremer



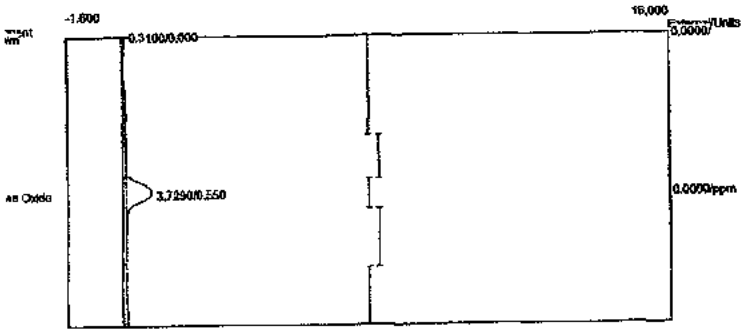
Component	Retention	Area	External	Units
ylene Oxide	0.550	3.7680	0.0000	ppm
		3.7680	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:20:41
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C03.CHR (c:\peak359)
Sample: 10.1 ppm EtO std
Operator: D. Kremer



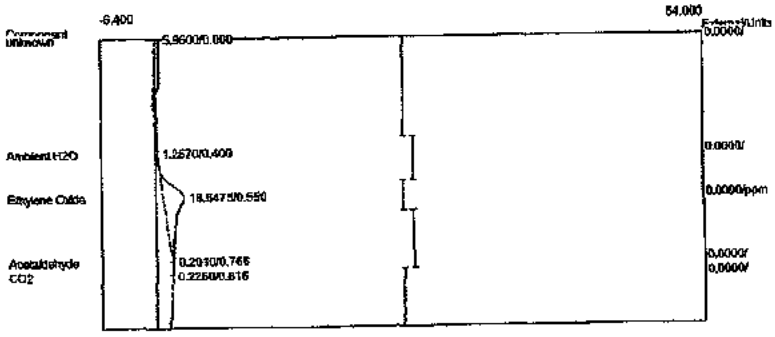
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	3.3920	0.0000	
Ambient H2O	0.400	0.9460	0.0000	
Ethylene Oxide	0.566	18.4285	0.0000	ppm
Acetaldehyde	0.766	0.0380	0.0000	
CO2	0.883	0.0650	0.0000	
		22.8695	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:23:25
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-C04.CHR (c:\peak359)
Sample: 10.1 ppm EtO std
Operator: D. Kremer



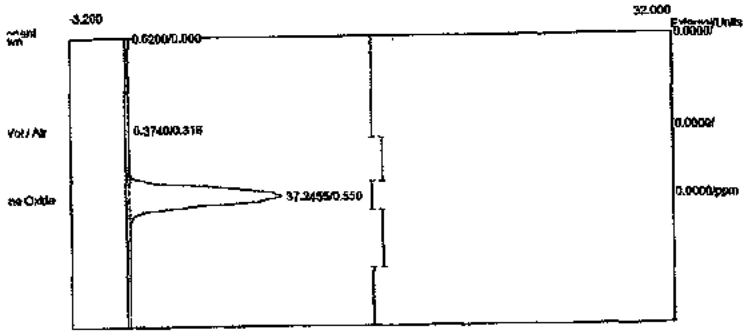
Component	Retention	Area	External	Units
ylene Oxide	0.550	3.7290	0.0000	ppm
		3.7290	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:23:25
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C04.CHR (c:\peak359)
Sample: 10.1 ppm EtO std
Operator: D. Kremer



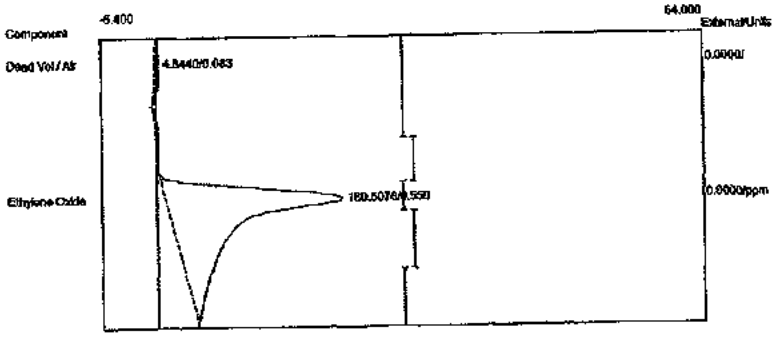
Component	Retention	Area	External	Units
Ambient H2O	0.400	1.2570	0.0000	
Ethylene Oxide	0.550	18.6475	0.0000	ppm
Acetaldehyde	0.766	0.2010	0.0000	
CO2	0.816	0.2260	0.0000	
		20.3315	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:31:29
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-C05.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



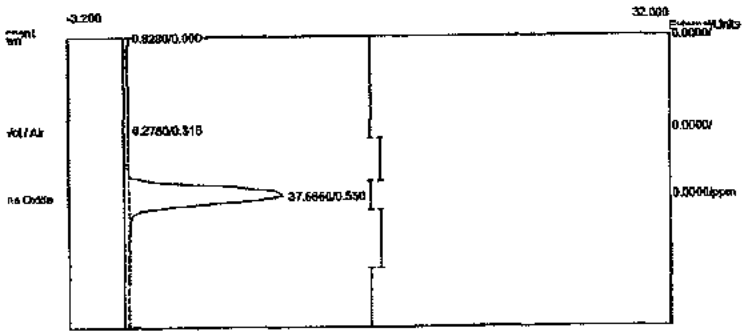
Component	Retention	Area	External	Units
ad Vol / Air	0.316	0.3740	0.0000	
ylene Oxide	0.550	37.2455	0.0000	ppm
		37.6195	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:31:29
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C05.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



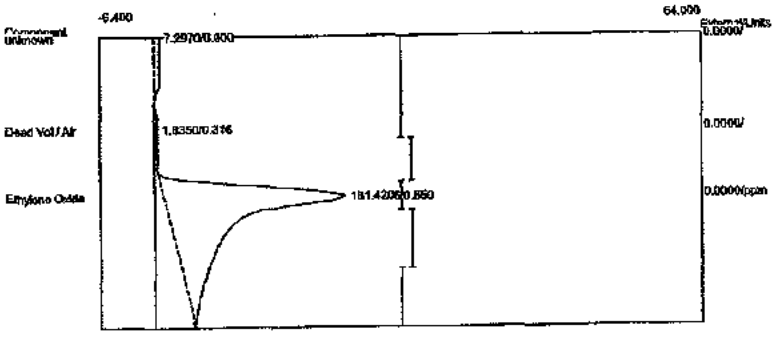
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	4.8440	0.0000	
Ethylene Oxide	0.550	180.5070	0.0000	ppm
		185.3510	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:34:41
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-C06.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



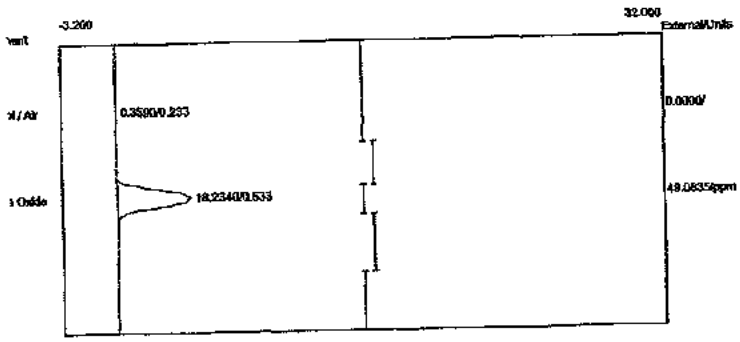
Component	Retention	Area	External	Units
ad Vol / Air	0.316	0.2780	0.0000	
ylene Oxide	0.550	37.6660	0.0000	ppm
		37.9440	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:34:41
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C06.CHR (c:\peak359)
Sample: 100 ppm EtO std
Operator: D. Kremer



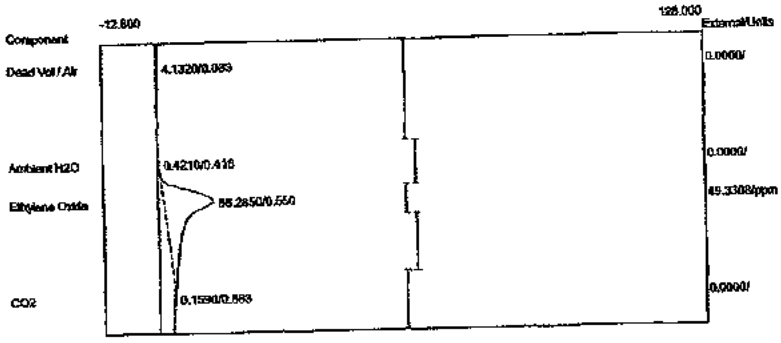
Component	Retention	Area	External	Units
Dead Vol / Air	0.316	1.8350	0.0000	
Ethylene Oxide	0.550	181.4205	0.0000	ppm
		183.2555	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
alysis date: 10/23/2014 12:51:00
Method: Direct Injection
lescription: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
prog: eto-100.tem
nents: eto1-100.cpt
Data file: 1SterGA2014-C07.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



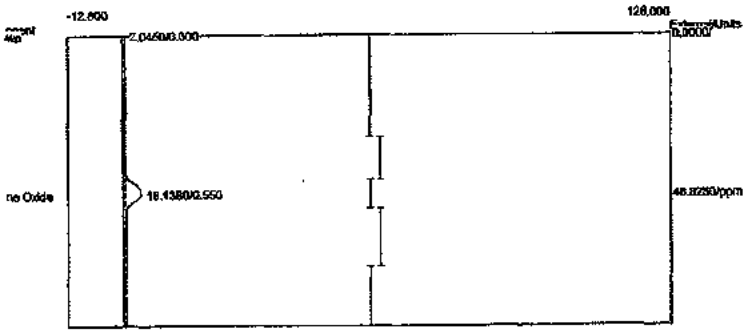
Component	Retention	Area	External	Units
d Vol / Air	0.233	0.3590	0.0000	
lene Oxide	0.533	18.2340	49.0835	ppm
		18.5930	49.0835	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/23/2014 12:51:00
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C07.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



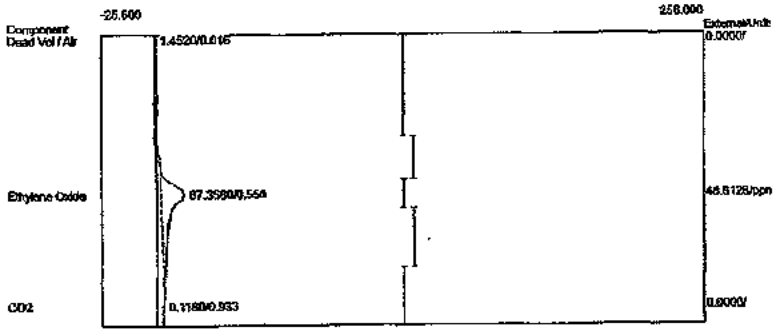
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	4.1320	0.0000	
Ambient H2O	0.416	0.4210	0.0000	
Ethylene Oxide	0.550	88.2850	49.3308	ppm
CO2	0.883	0.1590	0.0000	
		92.9970	49.3308	

Client: Sterigenics - Smyrna, GA
Client ID: PostCal
Analysis date: 10/23/2014 16:04:33
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-C08.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



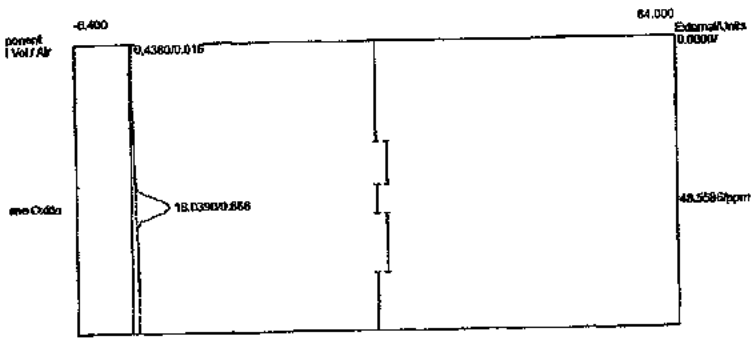
Component	Retention	Area	External	Units
ylene Oxide	0.550	18.1380	48.8250	ppm
		18.1380	48.8250	

Client: Sterigenics - Smyrna, GA
Client ID: PostCal
Analysis date: 10/23/2014 16:04:33
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C08.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



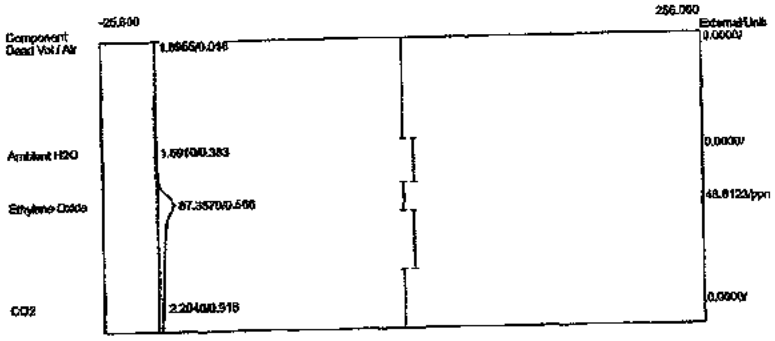
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	1.4520	0.0000	
Ethylene Oxide	0.550	87.3580	48.8128	ppm
CO2	0.933	0.1180	0.0000	
		88.9280	48.8128	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
nalysis date: 10/24/2014 09:35:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
n. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-C09.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



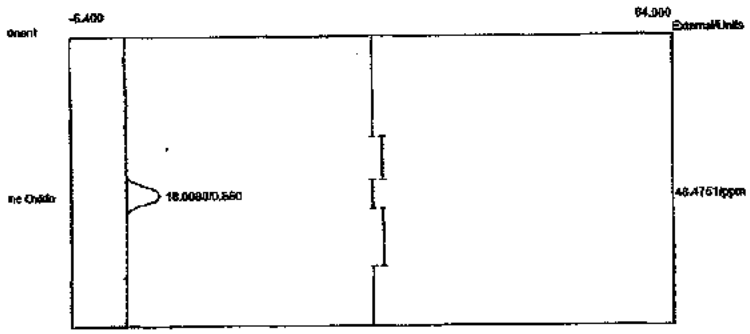
Component	Retention	Area	External	Units
ad Vol / Air	0.016	0.4380	0.0000	
ylene Oxide	0.566	18.0390	48.5586	ppm
		18.4770	48.5586	

Client: Sterigenics - Smyrna, GA
Client ID: PreCal
Analysis date: 10/24/2014 09:35:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C09.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



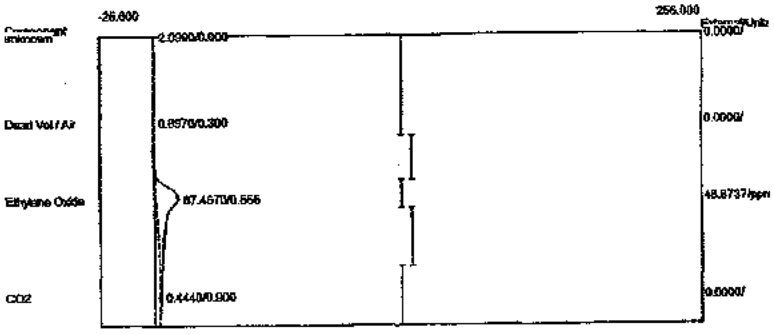
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	1.8955	0.0000	
Ambient H2O	0.383	1.6910	0.0000	
Ethylene Oxide	0.566	87.3570	48.8123	ppm
CO2	0.916	2.2040	0.0000	
		93.1475	48.8123	

Client: Sterigenics - Smyrna, GA
Client ID: PostCal
Analysis date: 10/24/2014 12:41:43
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-C10.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



Component	Retention	Area	External	Units
ylene Oxide	0.550	18.0080	48.4751	ppm
		18.0080	48.4751	

Client: Sterigenics - Smyrna, GA
Client ID: PostCal
Analysis date: 10/24/2014 12:41:43
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-C10.CHR (c:\peak359)
Sample: 48.8 ppm EtO std
Operator: D. Kremer



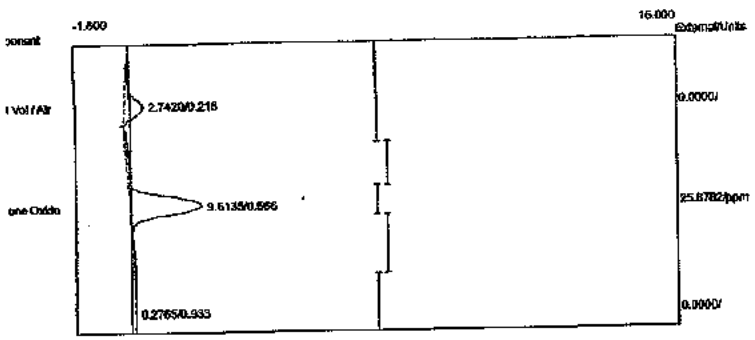
Component	Retention	Area	External	Units
Dead Vol / Air	0.300	0.8970	0.0000	
Ethylene Oxide	0.566	87.4670	48.8737	ppm
CO2	0.900	0.4440	0.0000	
		88.8080	48.8737	

APPENDIX B

Run#1 Chromatograms

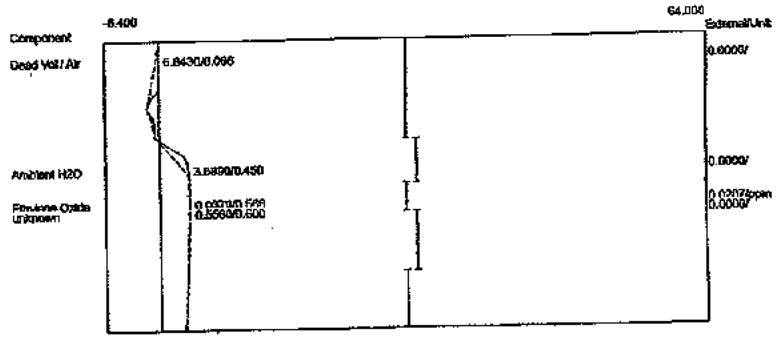
ECSi

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 09:42:27
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
, prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-1A01.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



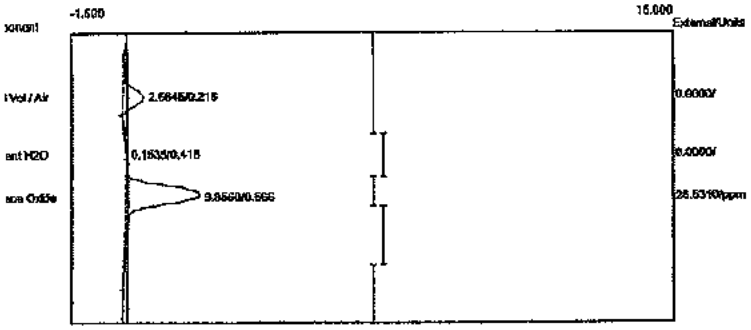
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.7420	0.0000	
ylene Oxide	0.566	9.6135	25.8782	ppm
)2	0.933	0.2765	0.0000	
		12.6320	25.8782	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 09:42:27
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A01.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



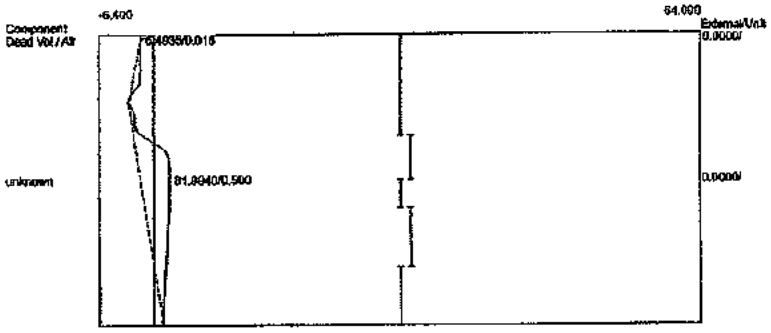
Component	Retention	Area	External	Units
Dead Vol / Air	0.066	6.8430	0.0000	
Ambient H2O	0.450	3.6890	0.0000	
Ethylene Oxide	0.566	0.0370	0.0207	ppm
		10.5690	0.0207	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 09:47:38
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
T[illegible]. prog: eto-100.tem
[illegible]nents: eto1-100.cpt
Data file: 1SterGA2014-1A02.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



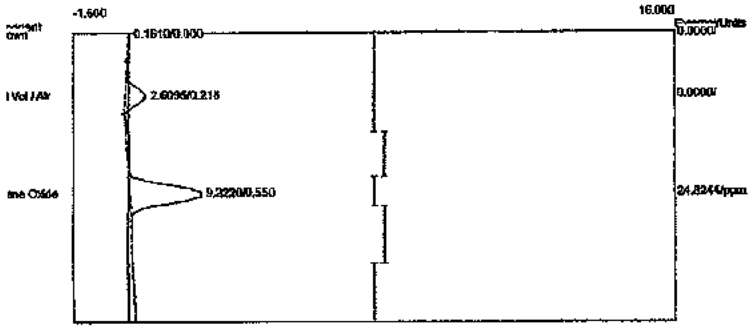
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.6645	0.0000	
ıbient H2O	0.416	0.1535	0.0000	
ıylene Oxide	0.566	9.8560	26.5310	ppm
		12.6740	26.5310	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 09:47:38
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A02.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



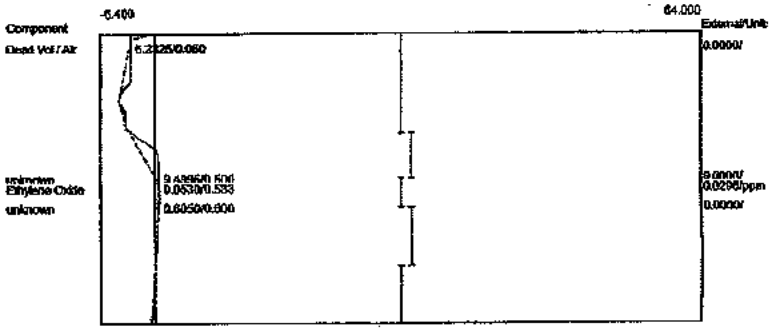
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	6.4935	0.0000	
		6.4935	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 09:52:24
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
. prog: eto-100.tem
...onents: eto1-100.cpt
Data file: 1SterGA2014-1A03.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



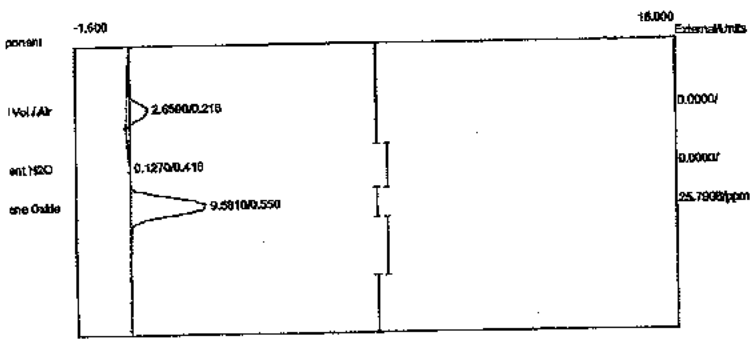
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.6095	0.0000	
ylene Oxide	0.550	9.2220	24.8244	ppm
		11.8315	24.8244	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 09:52:24
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A03.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



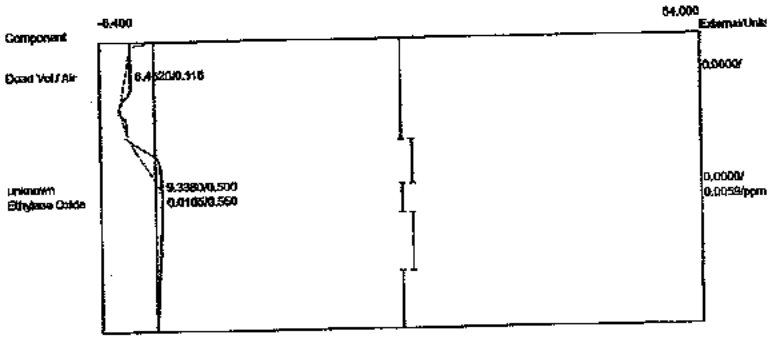
Component	Retention	Area	External	Units
Dead Vol / Air	0.050	6.2325	0.0000	
Ethylene Oxide	0.533	0.0530	0.0296	ppm
		6.2855	0.0296	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 09:58:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-1A04.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



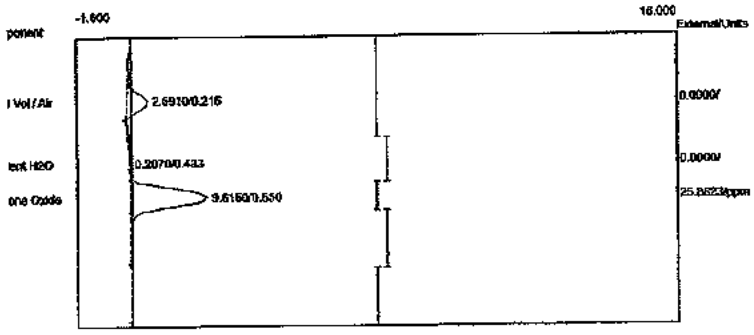
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.6590	0.0000	
nbient H2O	0.416	0.1270	0.0000	
ylene Oxide	0.550	9.5810	25.7908	ppm
		12.3670	25.7908	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 09:58:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A04.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



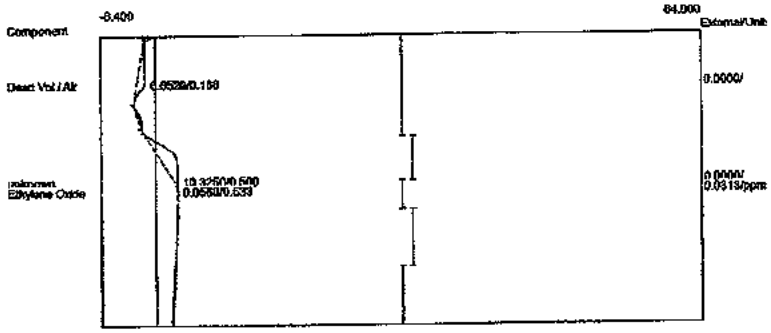
Component	Retention	Area	External	Units
Dead Vol / Air	0.116	6.4520	0.0000	
Ethylene Oxide	0.550	0.0105	0.0059	ppm
		6.4625	0.0059	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 10:02:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
p. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-1A05.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



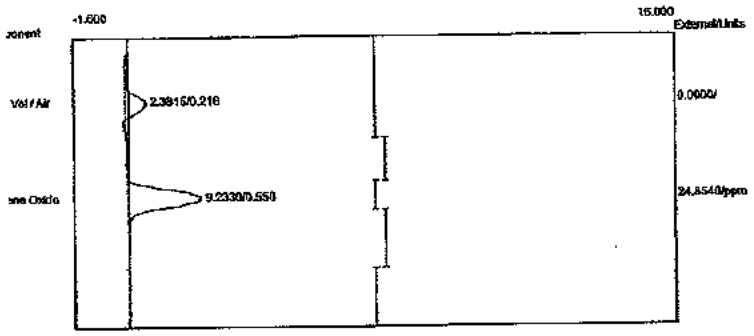
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.5910	0.0000	
ıbient H2O	0.433	0.2070	0.0000	
ıylene Oxide	0.550	9.6150	25.8823	ppm
		12.4130	25.8823	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:02:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A05.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



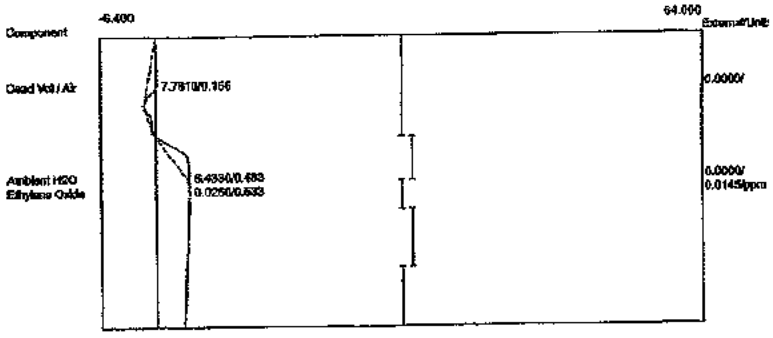
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	6.6520	0.0000	
Ethylene Oxide	0.533	0.0560	0.0313	ppm
		6.7080	0.0313	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 10:07:06
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
p. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-1A06.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



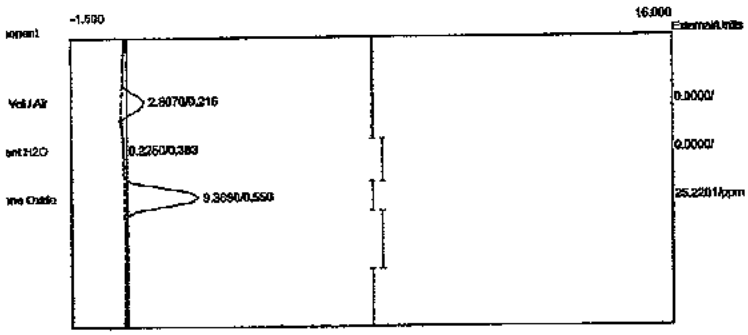
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.3815	0.0000	
ıylene Oxide	0.550	9.2330	24.8540	ppm
		11.6145	24.8540	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:07:06
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A06.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



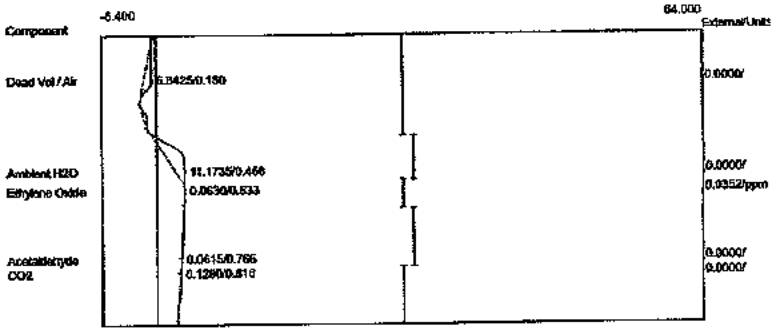
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	7.7810	0.0000	
Ambient H2O	0.483	8.4330	0.0000	
Ethylene Oxide	0.533	0.0260	0.0145	ppm
		16.2400	0.0145	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 10:12:06
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-1A07.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



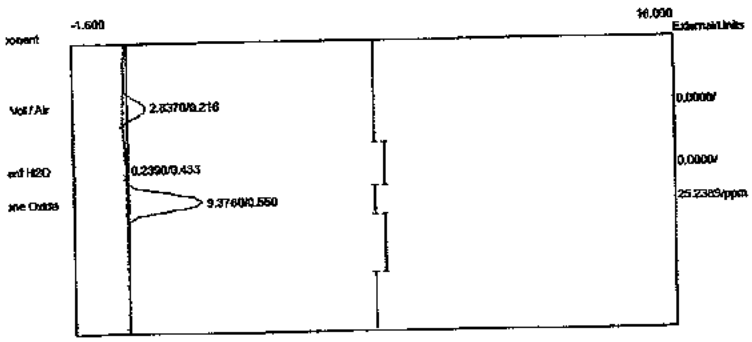
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.8070	0.0000	
ıbient H2O	0.383	0.2250	0.0000	
ıylene Oxide	0.550	9.3690	25.2201	ppm
		12.4010	25.2201	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:12:06
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A07.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



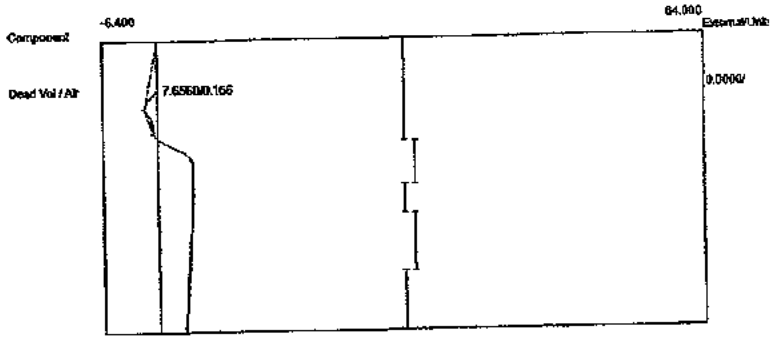
Component	Retention	Area	External	Units
Dead Vol / Air	0.150	6.8425	0.0000	
Ambient H2O	0.466	11.1735	0.0000	
Ethylene Oxide	0.533	0.0630	0.0352	ppm
Acetaldehyde	0.766	0.0615	0.0000	
CO2	0.816	0.1280	0.0000	
		18.2685	0.0352	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 10:17:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
. prog: eto-100.tem
.onents: eto1-100.cpt
Data file: 1SterGA2014-1A08.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



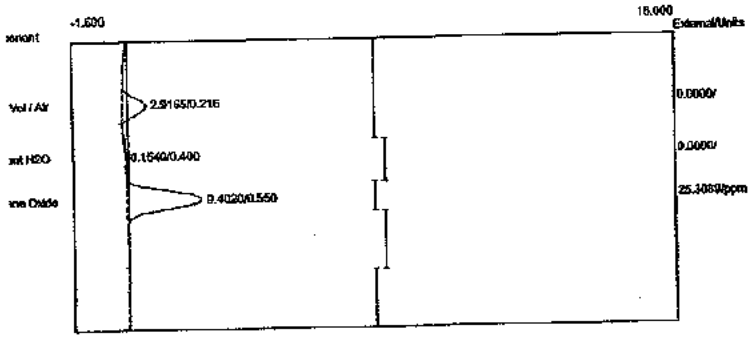
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.8370	0.0000	
ıblent H2O	0.433	0.2390	0.0000	
ıylene Oxide	0.550	9.3760	25.2389	ppm
		12.4520	25.2389	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:17:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A08.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



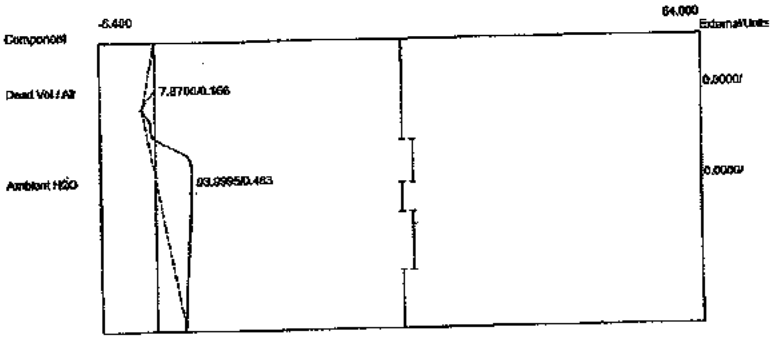
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	7.6560	0.0000	
		7.6560	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:22:23
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-1A09.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



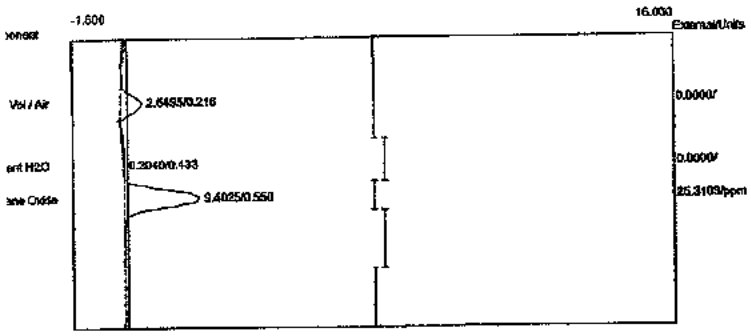
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.9165	0.0000	
ıbient H2O	0.400	0.1540	0.0000	
ıylene Oxide	0.550	9.4020	25.3089	ppm
		12.4725	25.3089	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:22:23
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A09.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



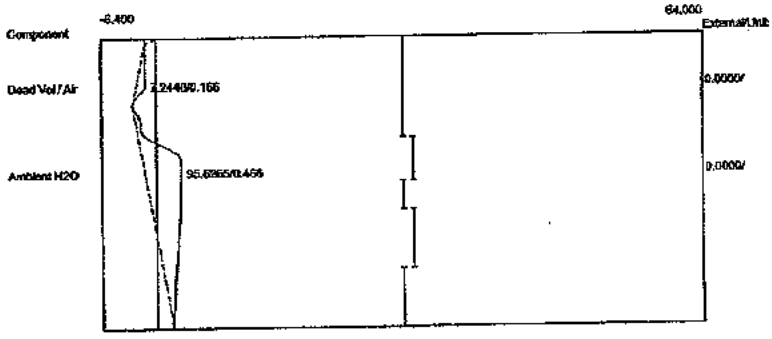
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	7.8700	0.0000	
Ambient H2O	0.483	93.9995	0.0000	
		101.8695	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 10:27:14
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
'p. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-1A10.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



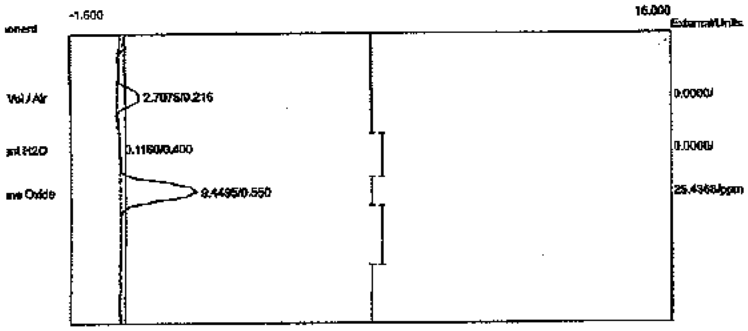
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.6495	0.0000	
ıbient H2O	0.433	0.2040	0.0000	
ıylene Oxide	0.550	9.4025	25.3103	ppm
		12.2560	25.3103	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:27:14
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A10.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



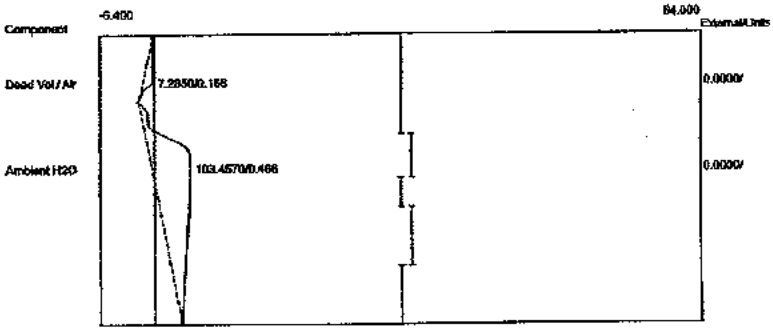
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	7.2440	0.0000	
Ambient H2O	0.466	95.6265	0.0000	
		102.8705	0.0000	

Client: Sterigenics-Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:32:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-1A11.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



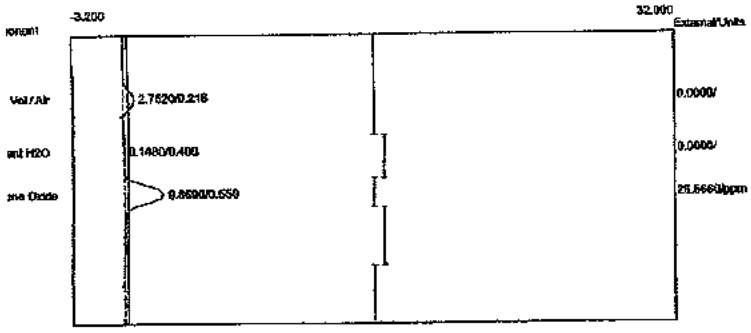
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.7075	0.0000	
ıbient H2O	0.400	0.1160	0.0000	
ıylene Oxide	0.550	9.4495	25.4368	ppm
		12.2730	25.4368	

Client: Sterigenics-Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:32:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A11.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



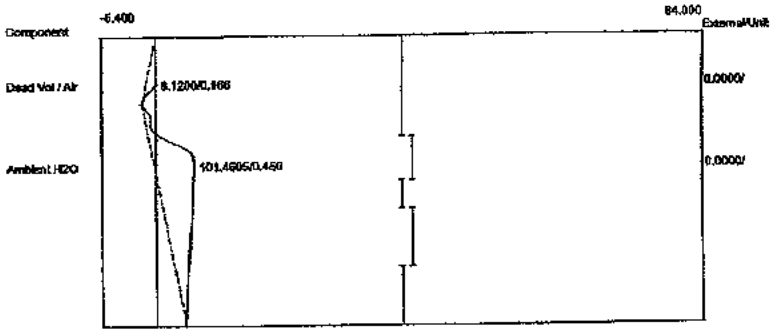
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	7.2850	0.0000	
Ambient H2O	0.466	103.4570	0.0000	
		110.7420	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
nalysis date: 10/24/2014 10:37:26
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-1A12.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.7520	0.0000	
ıbient H2O	0.400	0.1480	0.0000	
ıylene Oxide	0.550	9.8690	26.5660	ppm
		12.7690	26.5660	

Client: Sterigenics - Smyrna, GA
Client ID: Run#1Aer
Analysis date: 10/24/2014 10:37:26
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-1A12.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



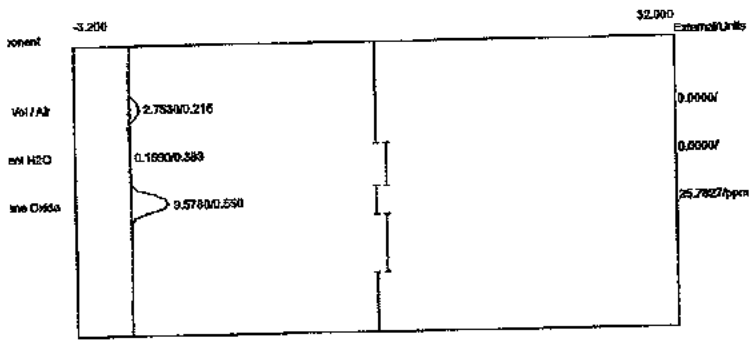
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	8.1200	0.0000	
Ambient H2O	0.450	101.4605	0.0000	
		109.5805	0.0000	

APPENDIX C

Run#2 Chromatograms

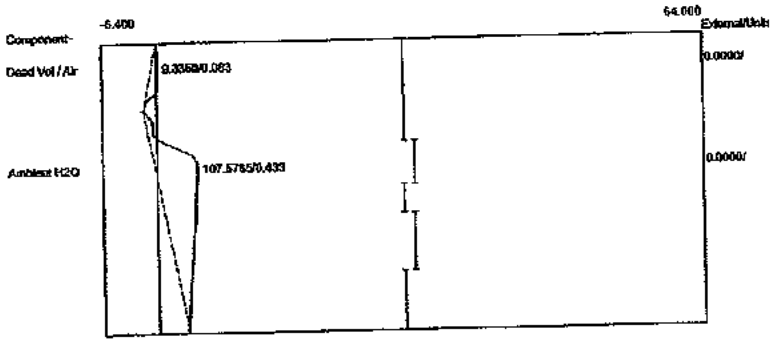
ECSi

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
ıalysis date: 10/24/2014 10:42:05
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
'p. prog: eto-100.tem
,onents: eto1-100.cpt
Data file: 1SterGA2014-2A01.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



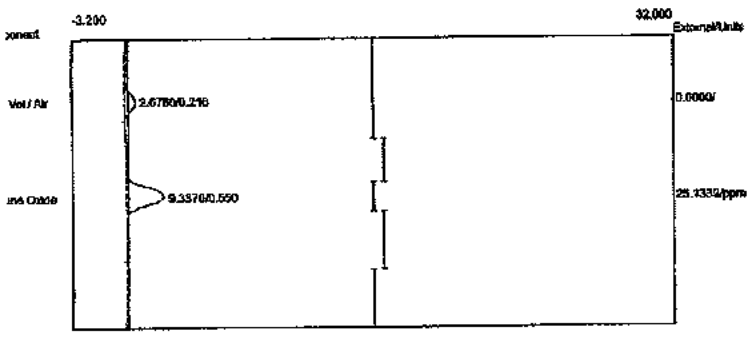
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.7530	0.0000	
ıbient H2O	0.383	0.1690	0.0000	
ıylene Oxide	0.550	9.5780	25.7827	ppm
		12.5000	25.7827	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 10:42:05
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A01.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



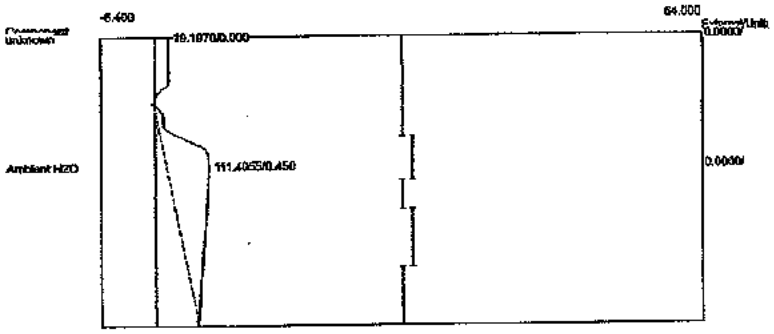
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	9.3350	0.0000	
Ambient H2O	0.433	107.5765	0.0000	
		116.9115	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
nalysis date: 10/24/2014 10:47:57
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
n. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-2A02.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



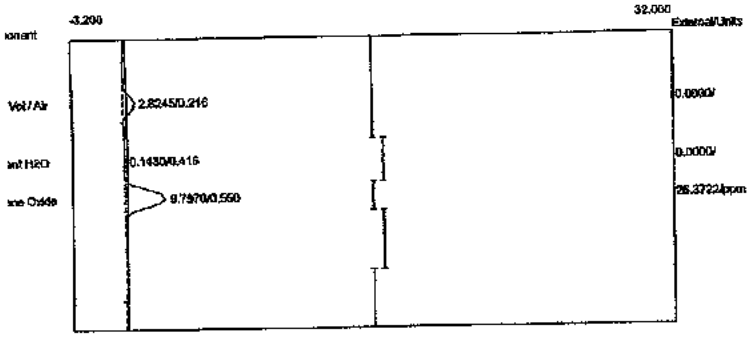
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.6780	0.0000	
ylene Oxide	0.550	9.3370	25.1339	ppm
		12.0150	25.1339	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 10:47:57
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A02.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



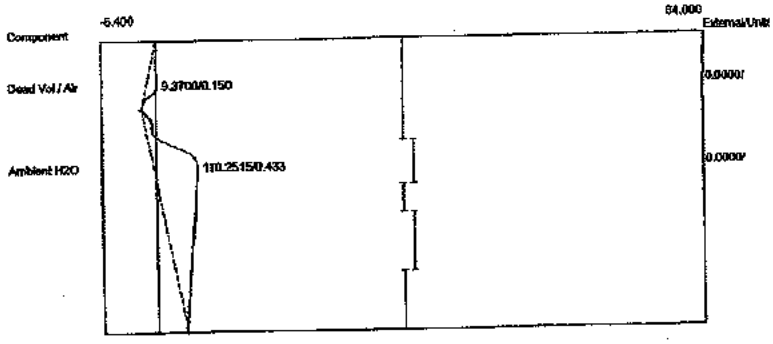
Component	Retention	Area	External	Units
Ambient H2O	0.450	111.4055	0.0000	
		111.4055	0.0000	

Client: Sterigenics Smyrna, GA
Client ID: Run#2Aer
ıalysis date: 10/24/2014 10:52:08
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
ɔ. prog: eto-100.tem
.onents: eto1-100.cpt
Data file: 1SterGA2014-2A03.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



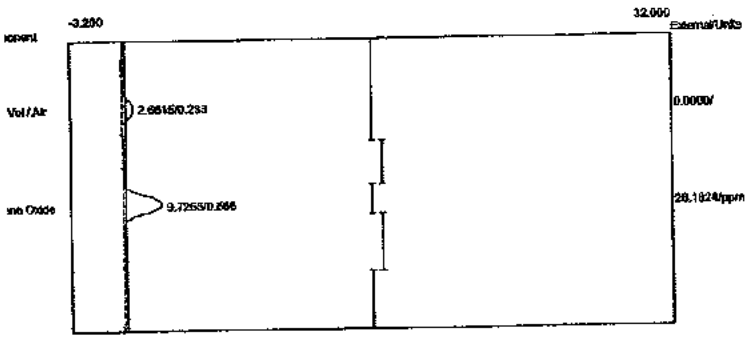
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.8245	0.0000	
ıbient H2O	0.416	0.1430	0.0000	
ıylene Oxide	0.550	9.7970	26.3722	ppm
		12.7645	26.3722	

Client: Sterigenics Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 10:52:08
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A03.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



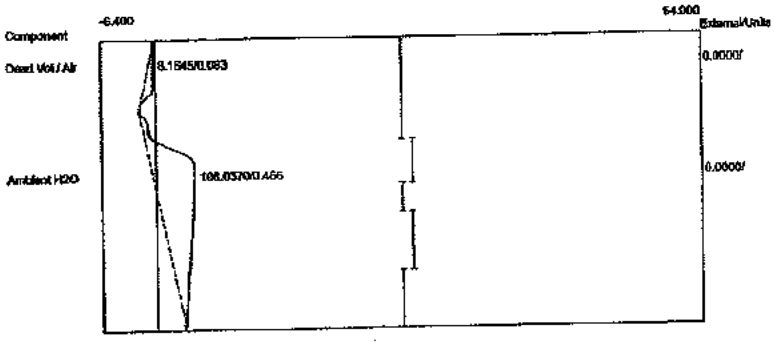
Component	Retention	Area	External	Units
Dead Vol / Air	0.150	9.3700	0.0000	
Ambient H2O	0.433	110.2515	0.0000	
		119.6215	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 10:57:12
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-2A04.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



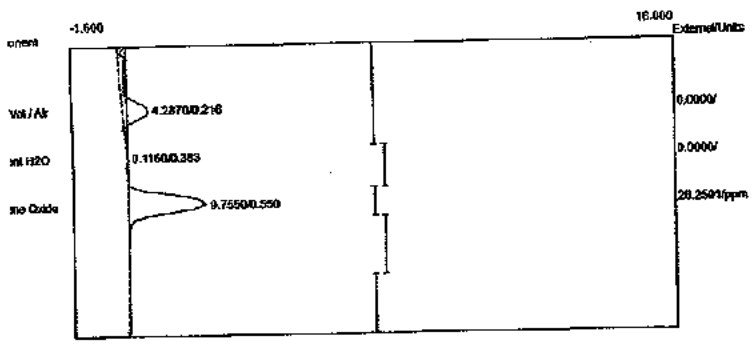
Component	Retention	Area	External	Units
ad Vol / Air	0.233	2.6615	0.0000	
ylene Oxide	0.566	9.7265	26.1824	ppm
		12.3880	26.1824	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 10:57:12
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A04.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



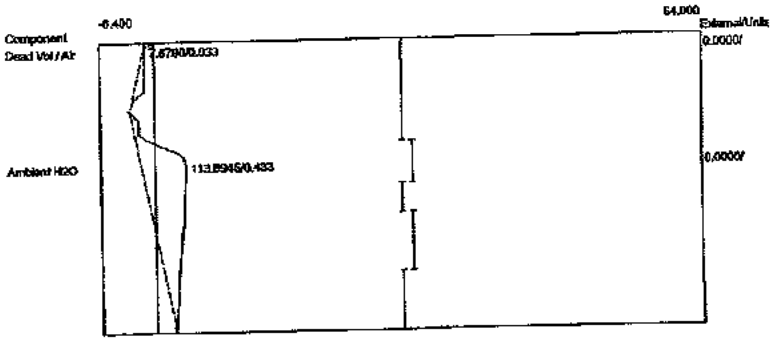
Component	Retention	Area	External	Units
Dead Vol / Air	0.083	8.1645	0.0000	
Ambient H2O	0.466	108.0370	0.0000	
		116.2015	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
ıalysis date: 10/24/2014 11:02:30
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
ı. prog: eto-100.tem
.onents: eto1-100.cpt
Data file: 1SterGA2014-2A05.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



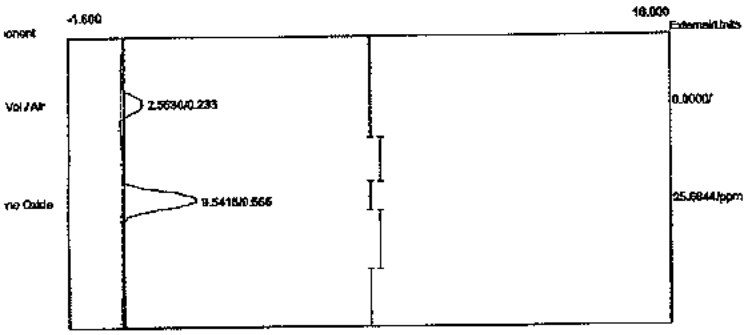
Component	Retention	Area	External	Units
ad Vol / Air	0.216	4.2870	0.0000	
ıbient H2O	0.383	0.1160	0.0000	
ıylene Oxide	0.550	9.7550	26.2591	ppm
		14.1580	26.2591	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:02:30
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A05.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



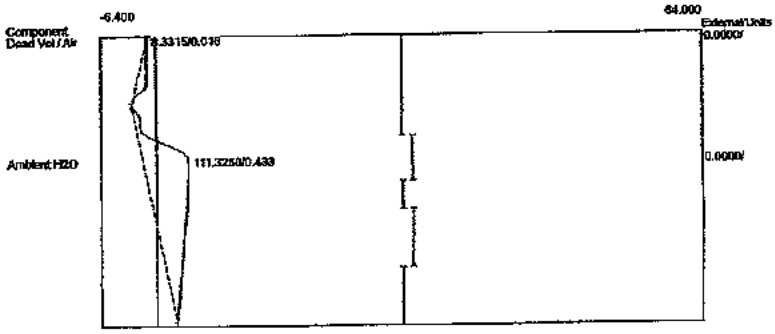
Component	Retention	Area	External	Units
Dead Vol / Air	0.033	7.8790	0.0000	
Ambient H2O	0.433	113.5945	0.0000	
		121.4735	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
ıalysis date: 10/24/2014 11:07:15
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
ɔ. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-2A06.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



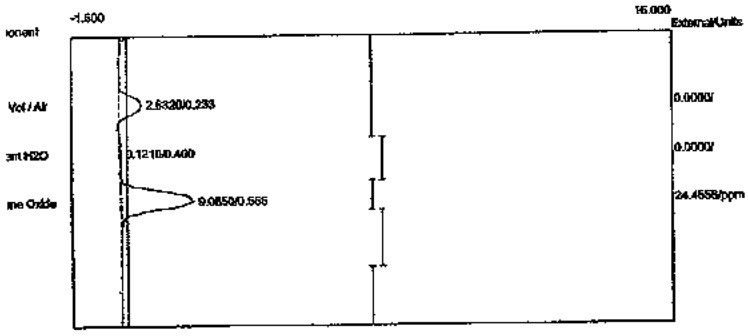
Component	Retention	Area	External	Units
ad Vol / Air	0.233	2.5630	0.0000	
ıylene Oxide	0.566	9.5415	25.6844	ppm
		12.1045	25.6844	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:07:15
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A06.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



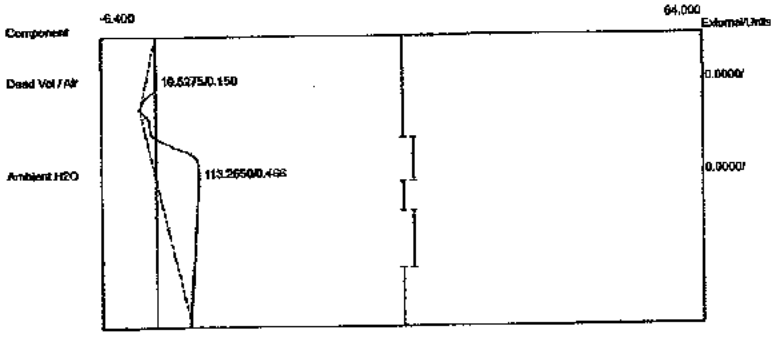
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	8.3315	0.0000	
Ambient H2O	0.433	111.3250	0.0000	
		119.6565	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:12:58
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-2A07.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



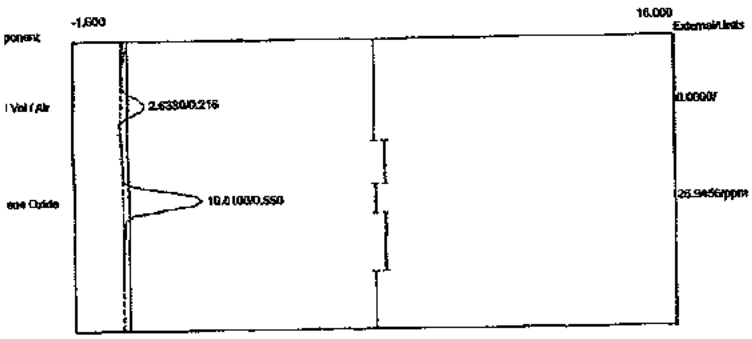
Component	Retention	Area	External	Units
ad Vol / Air	0.233	2.6320	0.0000	
ıbient H2O	0.400	0.1210	0.0000	
ıylene Oxide	0.566	9.0850	24.4556	ppm
		11.8380	24.4556	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:12:58
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A07.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



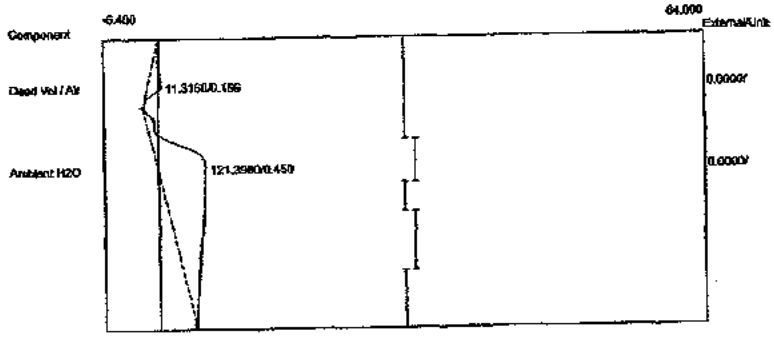
Component	Retention	Area	External	Units
Dead Vol / Air	0.150	10.5275	0.0000	
Ambient H2O	0.466	113.2650	0.0000	
		123.7925	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
nalysis date: 10/24/2014 11:17:12
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
p. prog: eto-100.tem
ponents: eto1-100.cpt
Data file: 1SterGA2014-2A08.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



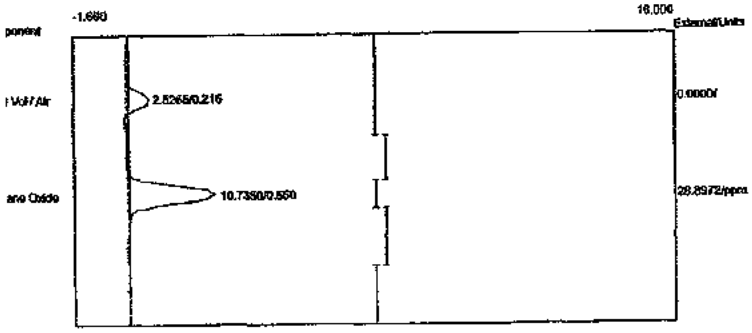
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.6330	0.0000	
ylene Oxide	0.550	10.0100	26.9456	ppm
		12.6430	26.9456	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:17:12
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A08.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



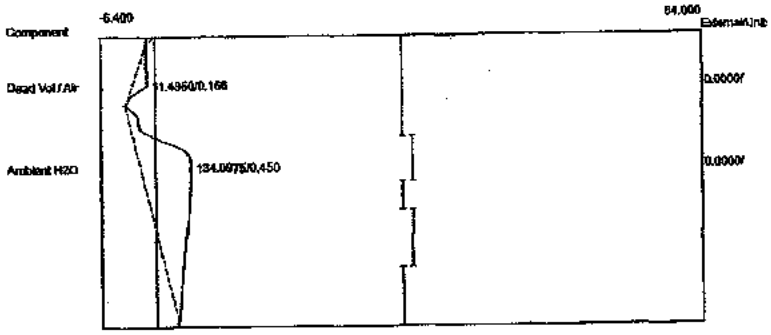
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	11.3160	0.0000	
Ambient H2O	0.450	121.3980	0.0000	
		132.7140	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
nalysis date: 10/24/2014 11:27:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
mp. prog: eto-100.tem
ponents: eto1-100.cpt
Data file: 1SterGA2014-2A10.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



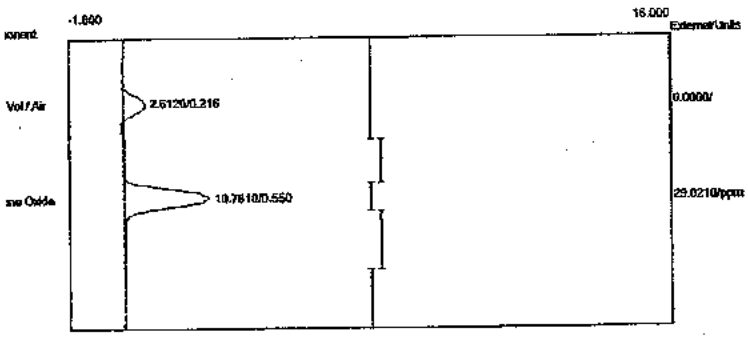
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.5265	0.0000	
ıylene Oxide	0.550	10.7350	28.8972	ppm
		13.2615	28.8972	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:27:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A10.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



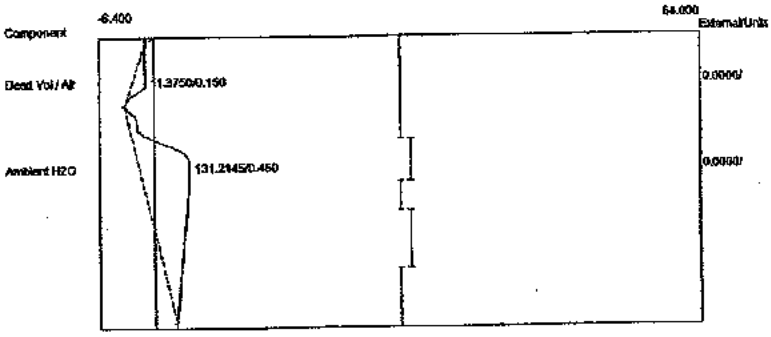
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	11.4950	0.0000	
Ambient H2O	0.450	134.0975	0.0000	
		145.5925	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:32:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-2A11.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



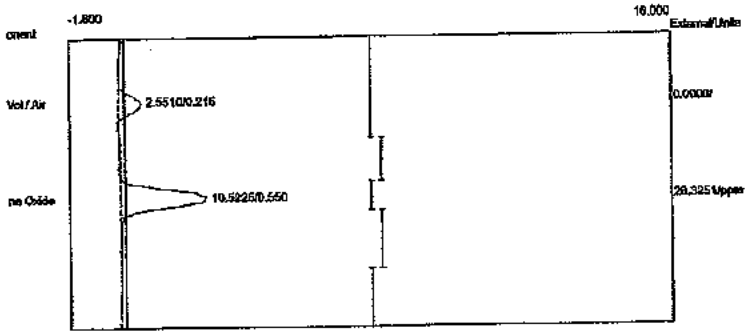
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.6120	0.0000	
ylene Oxide	0.550	10.7810	29.0210	ppm
		13.3930	29.0210	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:32:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A11.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



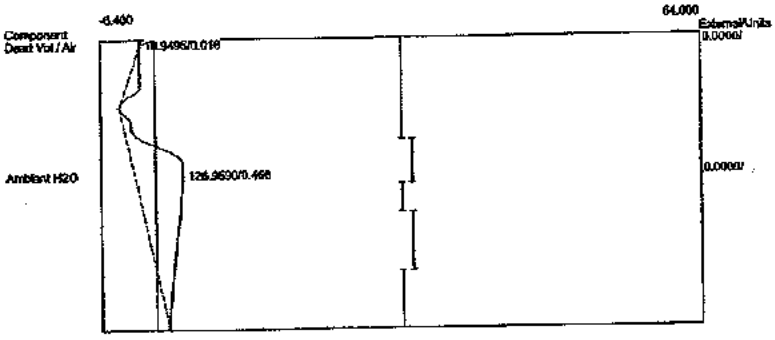
Component	Retention	Area	External	Units
Dead Vol / Air	0.150	11.3750	0.0000	
Ambient H2O	0.450	131.2145	0.0000	
		142.5895	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:37:22
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-2A12.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.5510	0.0000	
ylene Oxide	0.550	10.5225	28.3251	ppm
		13.0735	28.3251	

Client: Sterigenics - Smyrna, GA
Client ID: Run#2Aer
Analysis date: 10/24/2014 11:37:22
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-2A12.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



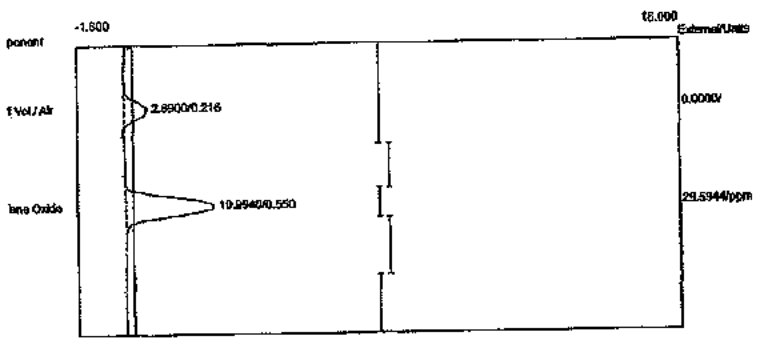
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	10.9495	0.0000	
Ambient H2O	0.466	126.9590	0.0000	
		137.9085	0.0000	

APPENDIX D

Run#3 Chromatograms

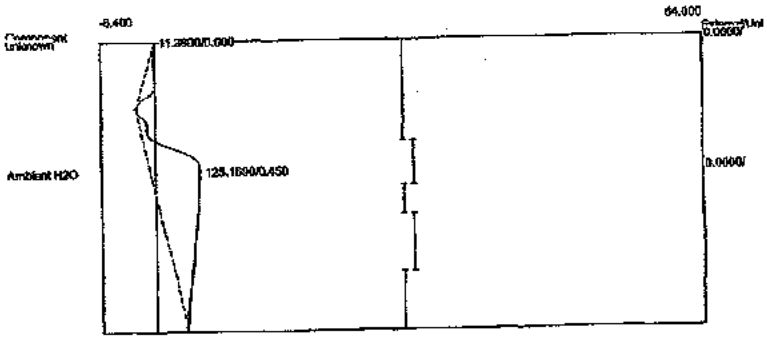
ECSi

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
nalysis date: 10/24/2014 11:42:28
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
ıp. prog: eto-100.tem
ponents: eto1-100.cpt
Data file: 1SterGA2014-3A01.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



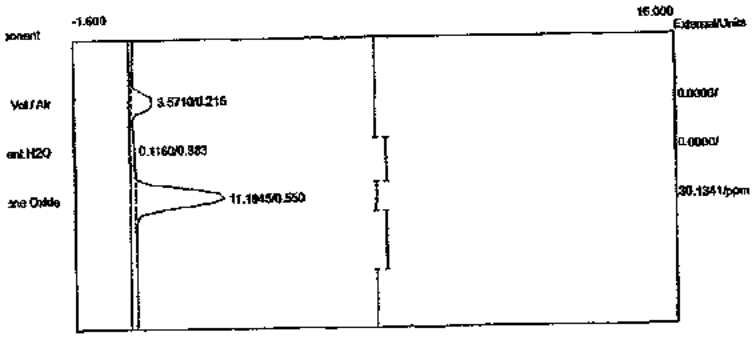
Component	Retention	Area	External	Units
ıad Vol / Air	0.216	2.6900	0.0000	
ıylene Oxide	0.550	10.9940	29.5944	ppm
		13.6840	29.5944	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 11:42:28
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A01.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



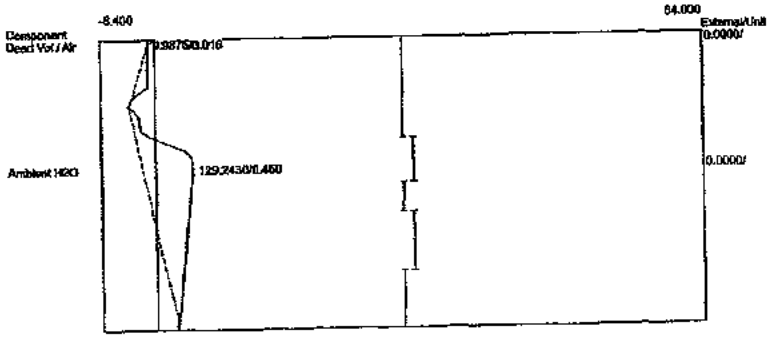
Component	Retention	Area	External	Units
Ambient H2O	0.450	125.1690	0.0000	
		125.1690	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 11:47:31
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-3A02.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



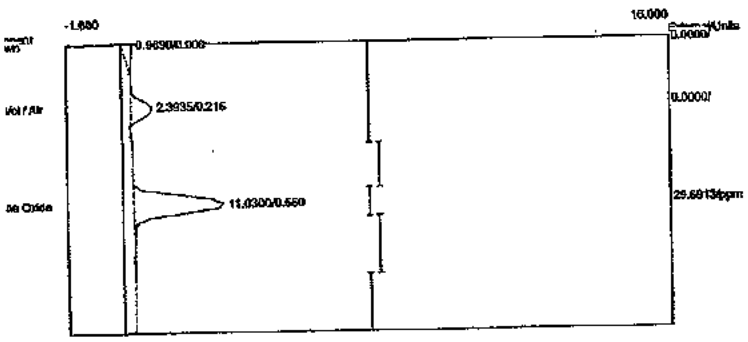
Component	Retention	Area	External	Units
ad Vol / Air	0.216	3.5710	0.0000	
ıbient H2O	0.383	0.1160	0.0000	
ıylene Oxide	0.550	11.1945	30.1341	ppm
		14.8815	30.1341	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 11:47:31
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A02.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



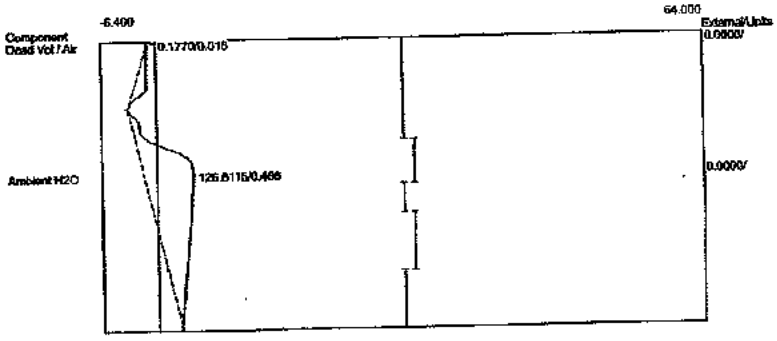
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	9.9875	0.0000	
Ambient H2O	0.450	129.2430	0.0000	
		139.2305	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 11:52:02
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-3A03.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



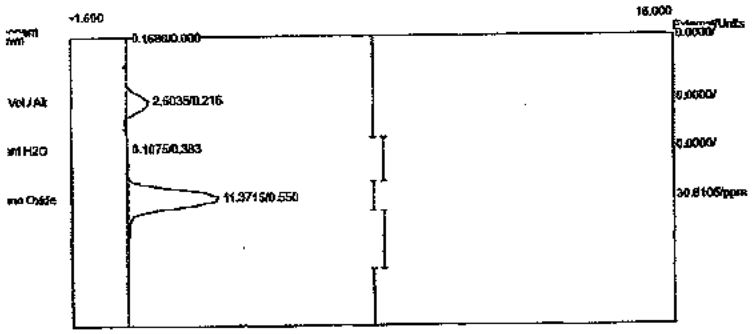
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.3935	0.0000	
ylene Oxide	0.550	11.0300	29.6913	ppm
		13.4235	29.6913	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 11:52:02
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A03.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



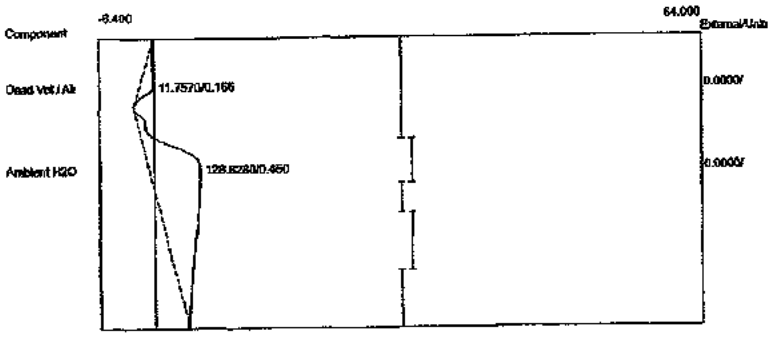
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	10.1770	0.0000	
Ambient H2O	0.466	126.8115	0.0000	
		136.9885	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 11:57:25
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-3A04.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



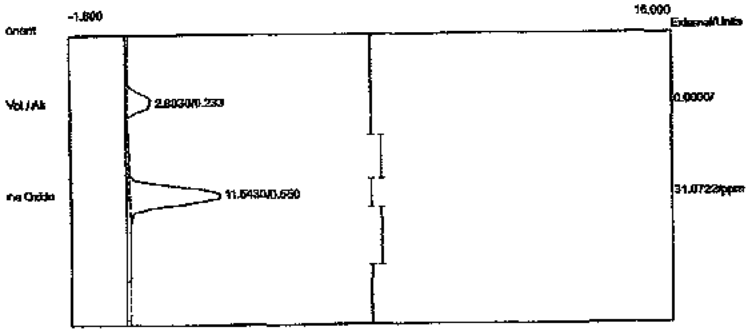
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.6035	0.0000	
ıbient H2O	0.383	0.1075	0.0000	
ıylene Oxide	0.550	11.3715	30.6105	ppm
		14.0825	30.6105	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 11:57:25
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A04.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



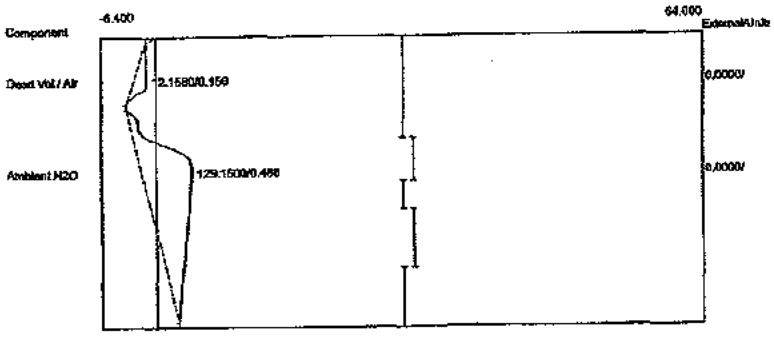
Component	Retention	Area	External	Units
Dead Vol / Air	0.166	11.7570	0.0000	
Ambient H2O	0.450	128.8280	0.0000	
		140.5850	0.0000	

Client: Sterigenics, Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:02:07
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-3A05.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



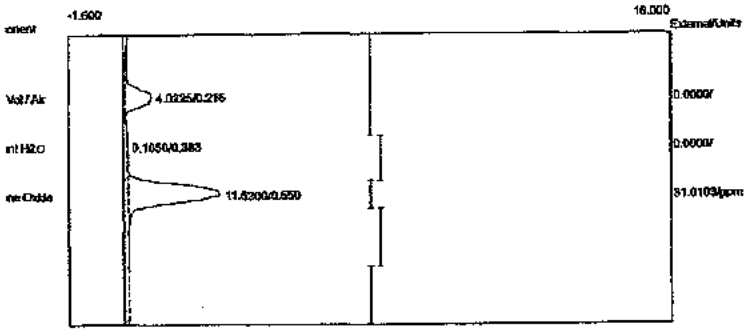
Component	Retention	Area	External	Units
ad Vol / Air	0.233	2.8030	0.0000	
ylene Oxide	0.550	11.5430	31.0722	ppm
		14.3460	31.0722	

Client: Sterigenics, Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:02:07
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A05.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



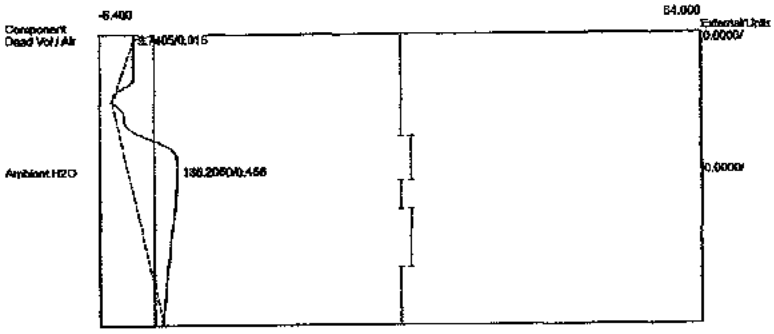
Component	Retention	Area	External	Units
Dead Vol / Air	0.150	12.1580	0.0000	
Ambient H2O	0.466	129.1600	0.0000	
		141.3180	0.0000	

Client: Sterigenics, Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:07:31
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-3A06.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



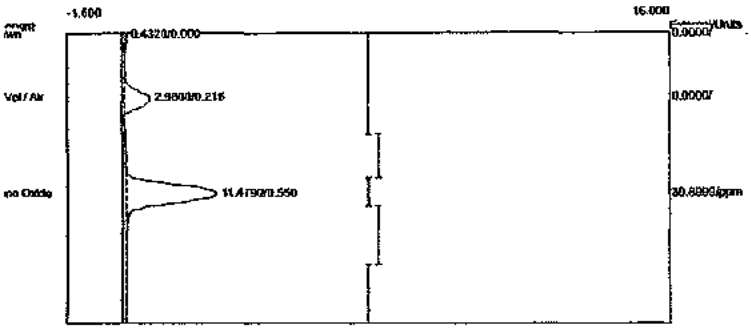
Component	Retention	Area	External	Units
ad Vol / Air	0.216	4.0225	0.0000	
ibient H2O	0.383	0.1050	0.0000	
ylene Oxide	0.550	11.5200	31.0103	ppm
		15.6475	31.0103	

Client: Sterigenics, Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:07:31
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A06.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



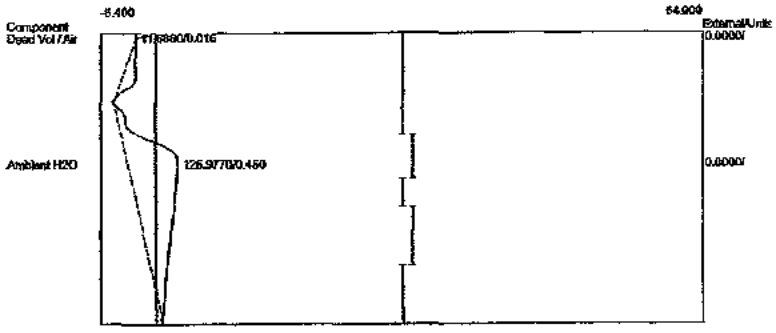
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	9.7405	0.0000	
Ambient H2O	0.466	136.2060	0.0000	
		145.9465	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:12:03
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-3A07.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



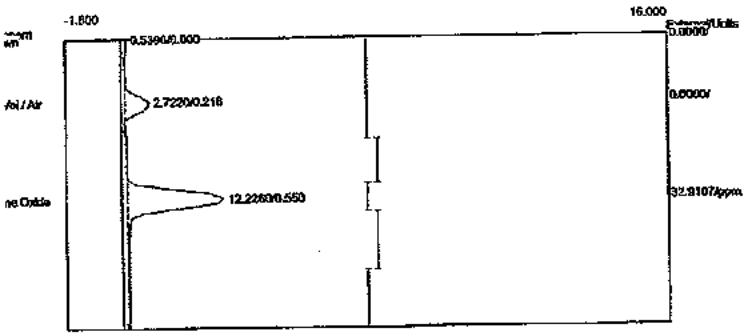
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.9800	0.0000	
ylene Oxide	0.550	11.4790	30.8999	ppm
		14.4590	30.8999	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:12:03
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A07.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



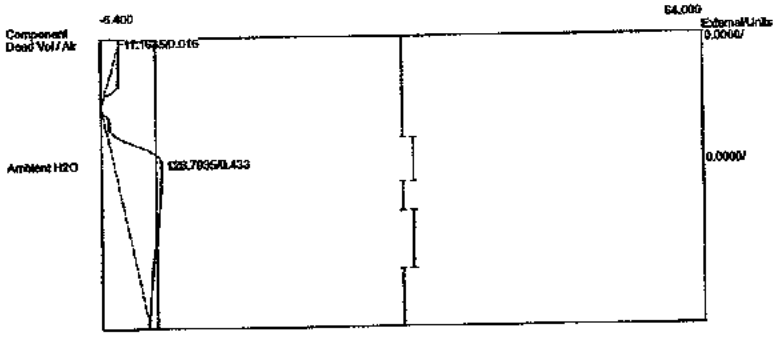
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	11.6880	0.0000	
Ambient H2O	0.450	126.9770	0.0000	
		138.6650	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
alysis date: 10/24/2014 12:17:39
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
prog: eto-100.tem
nents: eto1-100.cpt
Data file: 1SterGA2014-3A08.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



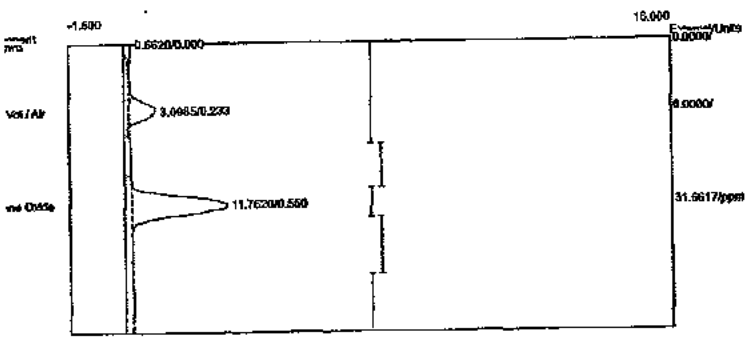
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.7220	0.0000	
ylene Oxide	0.550	12.2260	32.9107	ppm
		14.9480	32.9107	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:17:39
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A08.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



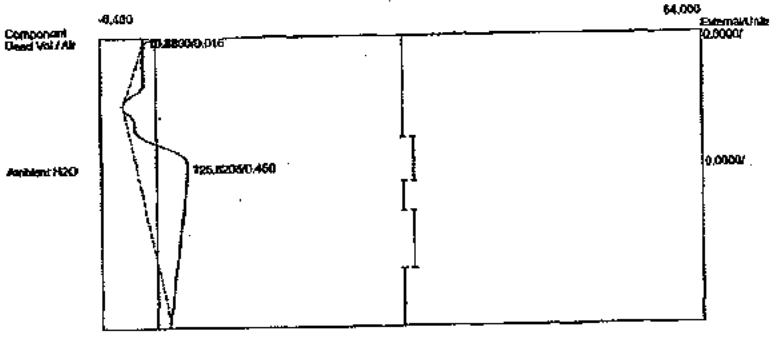
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	11.1635	0.0000	
Ambient H2O	0.433	126.7935	0.0000	
		137.9570	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:22:08
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto1-100.cpt
Data file: 1SterGA2014-3A09.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



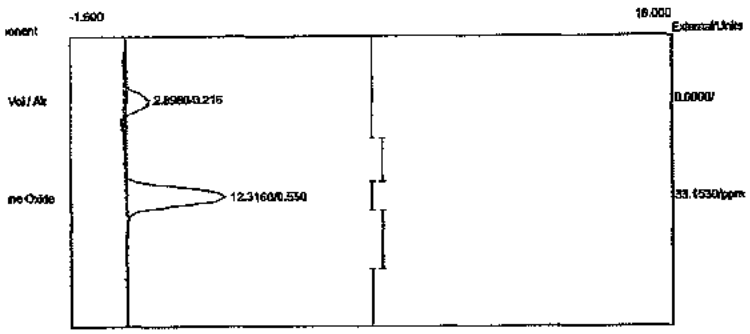
Component	Retention	Area	External	Units
ad Vol / Air	0.233	3.0985	0.0000	
ylene Oxide	0.550	11.7620	31.6617	ppm
		14.8605	31.6617	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:22:08
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A09.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



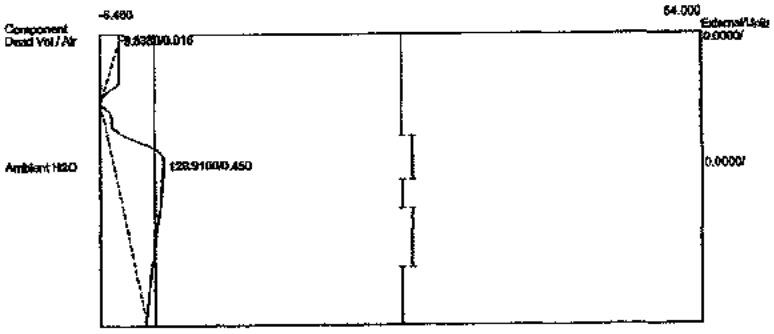
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	10.8800	0.0000	
Ambient H2O	0.450	125.8205	0.0000	
		136.7005	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
ıalysis date: 10/24/2014 12:27:19
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-3A10.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



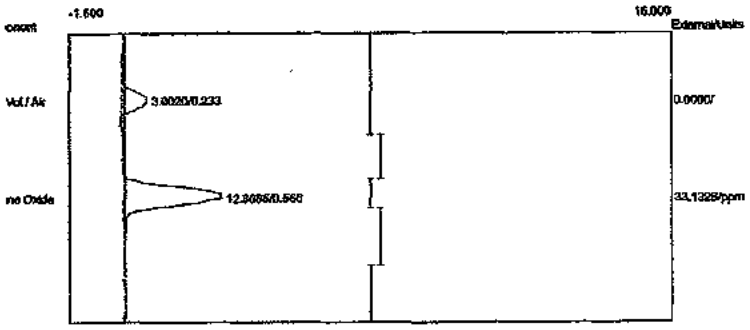
Component	Retention	Area	External	Units
ad Vol / Air	0.216	2.8980	0.0000	
ıylene Oxide	0.550	12.3160	33.1530	ppm
		15.2140	33.1530	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:27:19
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A10.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



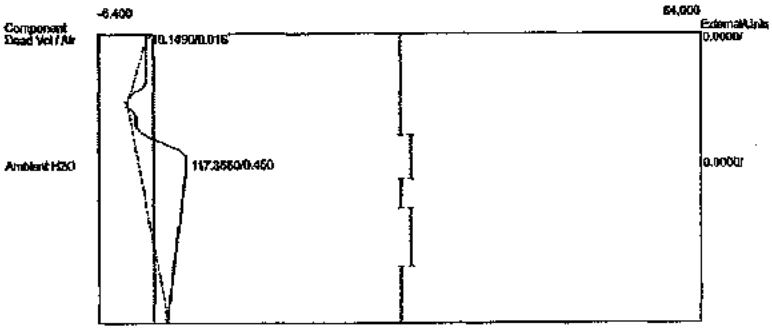
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	9.8380	0.0000	
Ambient H2O	0.450	128.9100	0.0000	
		138.7480	0.0000	

Client: Sterigenics, Smyrna, GA
Client ID: Run#3Aer
nalysis date: 10/24/2014 12:32:11
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-3A11.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



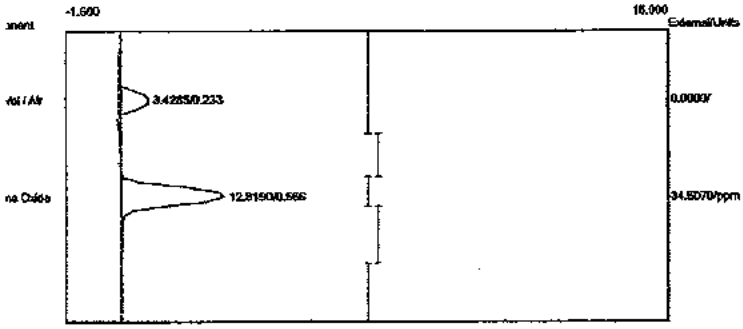
Component	Retention	Area	External	Units
ad Vol / Air	0.233	3.0020	0.0000	
ylene Oxide	0.566	12.3085	33.1328	ppm
		15.3105	33.1328	

Client: Sterigenics, Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:32:11
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A11.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



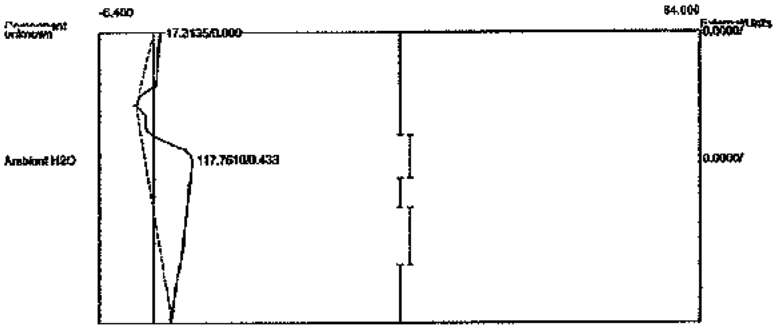
Component	Retention	Area	External	Units
Dead Vol / Air	0.016	10.1490	0.0000	
Ambient H2O	0.450	117.3660	0.0000	
		127.5150	0.0000	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
alysis date: 10/24/2014 12:37:20
Method: Direct Injection
Description: CHANNEL 1 - FID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
. prog: eto-100.tem
onents: eto1-100.cpt
Data file: 1SterGA2014-3A12.CHR (c:\peak359)
Sample: AAT Safe Cell Inlet
Operator: D. Kremer



Component	Retention	Area	External	Units
ad Vol / Air	0.233	3.4285	0.0000	
ylene Oxide	0.566	12.8190	34.5070	ppm
		16.2475	34.5070	

Client: Sterigenics - Smyrna, GA
Client ID: Run#3Aer
Analysis date: 10/24/2014 12:37:20
Method: Direct Injection
Description: CHANNEL 2 - PID
Column: 1% SP-1000, Carbopack B
Carrier: HELIUM
Temp. prog: eto-100.tem
Components: eto2-100.cpt
Data file: 2SterGA2014-3A12.CHR (c:\peak359)
Sample: AAT Safe Cell Outlet
Operator: D. Kremer



Component	Retention	Area	External	Units
Ambient H2O	0.433	117.7610	0.0000	
		117.7610	0.0000	

APPENDIX E

Field Data and Calculation Worksheets

ECSi

ECSi, Inc.

Ethylene Oxide Mass Emissions Data and Calculations - Aeration

Sterigenics, Inc. - Smyrna, Georgia - October 24, 2014
AAT Safe Cell System

DeltaP	SqRtDeltaP	Temp (F)	ppm EtO
	Run #1		
0.37	0.6083	91	0.02
0.37	0.6083	91	0.01
0.37	0.6083	91	0.03
0.37	0.6083	91	0.01
0.37	0.6083	91	0.03
0.37	0.6083	91	0.01
0.37	0.6083	92	0.04
0.37	0.6083	92	0.01
0.37	0.6083	92	0.01
0.37	0.6083	92	0.01
0.37	0.6083	92	0.01
0.37	0.6083	92	0.01
	Run #2		
0.37	0.6083	92	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
0.37	0.6083	93	0.01
	Run #3		
0.37	0.6083	93	0.01
0.37	0.6083	94	0.01
0.37	0.6083	94	0.01
0.37	0.6083	94	0.01
0.37	0.6083	94	0.01
0.37	0.6083	94	0.01
0.37	0.6083	95	0.01
0.37	0.6083	95	0.01
0.37	0.6083	95	0.01
0.37	0.6083	95	0.01
0.37	0.6083	95	0.01
0.37	0.6083	95	0.01
Average =			
0.37	0.6083	92.9	**0.0122**
	=	553	degR

stack ID =	28	in.
stack area =	4.276	sq. in.
press =	29.20	in. Hg
Tstd =	528	deg R
Pstd =	29.92	in Hg
Cp =	0.99	
Kp =	85.49	
Velocity =	42.0	ft/sec
Flow =	**9831**	**dscfm**
MWeto =	44.05	
MolVol =	385.32	
ppmv/ft3 =	1000000	
EtO Mass Flow =	**0.000014**	**lbs/min**
EtO Mass Flow =	**0.000824**	**lbs/hr**

ETHYLENE OXIDE SOURCE TEST/CALIBRATION DATA

Client: Sterigenics-Smyrna, GA

Source Tested: Ceilcote Packed Power Scrubber and an AAT Safe Cell system

Date: 10/23-24/14

PRE CALIBRATION

	Calibration Gas Conc. (ppmv)	1.10 ppm EtO	10.1 ppm EtO	100 ppm EtO	1000 ppm EtO	10080 ppm EtO			
Inlet (FID)	Area Counts #1	.40	3.77	37.2					
	Area Counts #2	.41	3.73	37.7					
	Average Area	.405	3.75	37.5					
	Audit Standard (48.8 ppmv) Result					49.1 ✓			
Outlet (PID)	Calibration Gas Conc. (ppmv)	1.10 ppm EtO	10.1 ppm EtO	100 ppm EtO					
	Area Counts #1	1.93	18.4	181					
	Area Counts #2	1.87	18.6	181					
	Average Area	1.90	18.5	181					
	Audit Standard (48.8 ppmv) Result					49.3 ✓			

	Ch.1 Run #1	Ch.8 Run #2	Ch.10 Run #3
Ceilcote start/stop:	1335/1357	1413/1435	1521/1548
AAT start/stop:	940/1040	1040/1140	1140/1240

P_{bar}: 29.20

%H_2O: 3

EtO Usage (lbs/yr): —

Cycles Per Week: —

POST CALIBRATION

	Calibration Gas Conc. (ppmv)	1.10 ppm EtO	10.1 ppm EtO	100 ppm EtO	1000 ppm EtO	10080 ppm EtO			
Inlet (FID)	Area Counts #1								
	Area Counts #2					✓	✓	✓	
	Average Area		✓			10/23/14 PM	10/24/14 AM	10/24/14 PM	
	Audit Standard (48.8 ppmv) Result					48.8	48.6	48.5	
Outlet (PID)	Calibration Gas Conc. (ppmv)	1.10 ppm EtO	10.1 ppm EtO	100 ppm EtO					
	Area Counts #1								
	Area Counts #2					✓	✓	✓	
	Average Area		✓			10/23/14 PM	10/24/14 AM	10/24/14 PM	
	Audit Standard (48.8 ppmv) Result					48.8	48.8	48.9	

ECSi

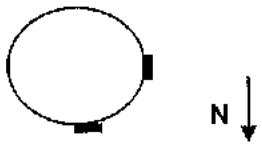
Case 1:22-cv-00928-MHC Document 84-10 Filed 03/02/22 Page 6 of 53

ECSI, INC. - VELOCITY TRAVERSE DATA

Client: Sterigenics, Inc. Run #: 1 Date: 10/24/2014 Port Sketch:

Location: Smyrna, Georgia Probe Type: Std. Baro Press: 29.20

Source: AAT Safe Cell System Outlet Stack I.D.: 28 in. DSCFM: 9860



	Port 1							Port 2						
Inches From Port	Point#	Delta P Low	Delta P High	Delta P Average	Delta P Sq Root	Stack Temp (F)	Cyclonic Angle	Point#	Delta P Low	Delta P High	Delta P Average	Delta P Sq Root	Stack Temp (F)	Cyclonic Angle
0.6	1	0.35	0.35	0.35	0.5916	90	0	1	0.35	0.35	0.35	0.5916	90	0
1.8	2	0.35	0.36	0.355	0.5958	90	0	2	0.35	0.36	0.355	0.5958	90	0
3.2	3	0.36	0.36	0.36	0.6000	90	0	3	0.36	0.36	0.36	0.6000	90	0
5.0	4	0.37	0.37	0.37	0.6083	90	0	4	0.36	0.37	0.365	0.6042	90	0
7.0	5	0.38	0.38	0.38	0.6164	90	0	5	0.37	0.37	0.37	0.6083	90	0
10.0	6	0.39	0.39	0.39	0.6245	90	0	6	0.38	0.39	0.385	0.6205	90	0
18.0	7	0.39	0.39	0.39	0.6245	91	0	7	0.39	0.39	0.39	0.6245	90	0
21.0	8	0.38	0.38	0.38	0.6164	91	0	8	0.38	0.39	0.385	0.6205	91	0
23.0	9	0.37	0.38	0.375	0.6124	91	0	9	0.38	0.38	0.38	0.6164	91	0
24.8	10	0.36	0.37	0.365	0.6042	91	0	10	0.37	0.38	0.375	0.6124	91	0
26.2	11	0.35	0.36	0.355	0.5958	91	0	11	0.36	0.37	0.365	0.6042	91	0
28.4	12	0.35	0.35	0.35	0.5916	91	0	12	0.36	0.36	0.36	0.6000	91	0
	13							13						
	14							14						
	15							15						
	16							16						
	17							17						
	18							18						
	19							19						
	20							20						
	21							21						
	22							22						
	23							23						
	24							24						
										Average Values:	0.3692	0.6075	90.5	0.0

APPENDIX F

Gas Certifications

ECSi

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
2600 CAJON BLVD., SAN BERNARDINO, CA 92411
Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-001
Item No.: 02020001210TCL
P.O. No.: VBL - 3 KREMER

Cylinder Number: CAL4448
Cylinder Size: CL
Certification Date: 14Apr2014

Customer

ECSI -NC
PO BOX 646
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	1.10	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: _____ DATE: 4-14-14

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
[illegible] CAJON BLVD., SAN BERNARDINO, CA 92411
Phone: 909-887-2571 Fax: 909-887-0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164 C03
Item No.: 0202000132OTCL
P.O. No.: VBL – D KREMER

Cylinder Number: CLM003232
Cylinder Size: CL
Certification Date: 14Apr2014

Customer

ECSL INC
PO BOX 846
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	10.1	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY _____ DATE: 4-14-14

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
[illegible] CAJON BLVD., SAN BERNARDINO, CA 92411
Phone 909-887-2571 Fax 909 887 0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02 87164-004
Item No.: 02020001330TCL
P.O. No.: VS_-D KREMER

Cylinder Number: CLM011385
Cylinder Size: CL
Certification Date: 14Apr2014

Customer

BCSI, INC
PO BOX 848
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	100	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: B. McCall
ELM

DATE 4-14-14

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
2600 CAJON BLVD., SAN BERNARDINO, CA 92411
Phone: 909 887 2571 Fax: 909 887 0549

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164 006
Item No.: 0202000 1340TCL
P.O. No.: VEL - D KREMER

Cylinder Number: CLM003810
Cylinder Size: CL
Certification Date: 14Apr2014

Customer

ECSI, INC
PO BOX 845
SAN CLEMENTE, CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	1,000.	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: [signature]

DATE: 4-14-14

CERTIFIED WORKING CLASS

Single-Certified Calibration Standard

Scott Specialty Gases
2500 CAJON BLVD SAN BERNARDINO CA 92411
Phone: 909-887-2571 Fax 909 887-8348

CERTIFICATE OF ACCURACY: Certified Working Class Calibration Standard

Product Information
Project No.: 02-57164-006
Item No.: 02020001340TCL
P.O. No.: VBL – C KREMER

Cylinder Number: CLM005787
Cylinder Size: CL
Certification Date: 14Apr2014

Customer
ECSI, INC
PO BOX 818
SAN CLEMENTE CA 92672

CERTIFIED CONCENTRATION

Component Name	Concentration (Moles)		Accuracy (+/-%)
ETHYLENE OXIDE	10,000	PPM	5
NITROGEN		BALANCE	

TRACEABILITY

Traceable To

Scott Reference Standard

APPROVED BY: [signature] BLM

DATE: 4-14-14

CERTIFICATE OF ANALYSIS

Customer Name:	[illegible] Inc.
Stock or Analyzer Tag Number:	[illegible]
Customer Reference:	[illegible]
MESA Reference:	[illegible]
Date of Certification:	[illegible]
Recommended Shelf Life:	[illegible]
Cylinder Number:	SA25925
Product Class:	Certified Standard
Cylinder - Contents[1]:	[illegible]
Cylinder-CGA:	[illegible]
Analysis Method:	[illegible]
Preparation Method:	[illegible]

Component	Requested Concentration[2]	Reported Concentration[2,3]
[illegible]	50 ppm	48.8 ppm
Nitrogen	Balance	Balance

Authorized Signature: [illegible]

[illegible]

MESA Specialty Gases & Equipment
[illegible]

APPENDIX G

Parametric Monitoring Data

ECSi

Sterigenics UNCONTROLLED COPY

MJF 24 OCT 14

Weekly Scrubber Preventive Maintenance

SCRUBBER DOWN TIME IS NOT REQUIRED

Scrubber Type: AAT Number/Location: EC2

	Description		Inspectors Initials/Date
1	Check and record flow rate to Absorption Tower. Flow Rate = 1537 **Note: Acceptable Flow ranges - Environmental permit may dictate.**	OK ☑ N/A ☐ C/A ☐	[initials] 24 Oct 14
2	Perform alarm light test.	OK ☑ N/A ☐ C/A ☐	[initials] 24 Oct 14
3	Check the scrubber liquor and record the following values: • Storage Tank level 108 In or Gal (If liquor is shipped for recycling, record in MP2) • 0.9 pH (Range ~ 0.5 to 1.0; Environmental permit may dictate) • Inlet Temperature 72 °F N/A ☐ - System does not monitor this parameter • Outlet Temperature 82 °F N/A ☐ - System does not monitor this parameter **Note: Acceptable ranges - Environmental permit may dictate. System capabilities determine parameters.**	OK ☑ N/A ☐ C/A ☐	[initials] 24 Oct 14
4	Check all pumps, pipes, seals, and rings for leaks.	OK ☑ N/A ☐ C/A ☐	[initials] 24 Oct 14
5	Check pressure relief valve for leaks or discharge.	OK ☑ N/A ☐ C/A ☐	[initials] 24 Oct 14
6	Record Glycol concentration 30.4 %. **Note: Ensure concentration does NOT exceed permit conditions.**	OK ☑ N/A ☐ C/A ☐	[initials] 24 Oct 14
7	Check scrubber EO Levels. Wet scrubber outlet/dry bed inlet 0.00 PPM EO (High flow system only) Dry bed outlet 0.00 PPM EO **Note: If dry bed outlet concentration reaches permitted maximum levels make the necessary arrangements for dry bed absorbent replacement.**	OK ☑ N/A ☐ C/A ☐	[initials] 24 Oct 14

Instructions:

- Write the scrubber type and number/location on the line provided above.
- If the inspection shows the item does not need further inspection or attention then mark the [OK] Checkbox.
- If a particular equipment item is not present, the inspector will mark the [N/A] Checkbox.
- If corrective action is required, mark the [C/A] Checkbox and then record the corrective action or Work Order # below.
- Work Order number must be recorded below whenever possible.

CA - Corrective Action: (Include item #, and action, i.e. W.O # or other)

Reviewed by: [signature] Date: 24-Oct-14

EXHIBIT M2

Sterigenics.

RECEIVED
OCT 05 2015
AIR PROTECTION BRANCH

October 1, 2015

Mr. Don Holder
Georgia EPD
Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Subject: **Notification: Chamber 11 – Anticipated Date of Start-Up**
Permit No. 7389-067-0093-S-05-3

Dear Mr. Holder:

As required by our air permit, section 7.8, Sterigenics is providing notification of the anticipated date of start-up of Chamber 11 (SEV-11).

Chamber 11 (SEV-11)
The Atlanta facility anticipates a start-up date for Chamber 11 in early to mid-November 2015, (Condition 7.8-b). An letter of initial start-up will follow when the chamber is placed into production per permit condition 7.8-c.

Please do not hesitate to contact me with questions. You can reach me at (630) 928-1768.

Kind Regards,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

pc:

Kathy Hoffman – Sr. VP, EH&S
Daryl Mosby - Smyrna General Manager
Juan Segovia – VP – EO Operations
Kevin Wagner – Director, EHS

Mr. Michael Odom, Unit Manager
Georgia EPD, Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

US EPA Region IV
Air and EPCRA Enforcement Branch
61 Forsyth Street
Atlanta, GA 30303

Mr. Sean Taylor
Georgia EPD, Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Sterigenics International LLC
2015 Spring Road, Suite 650 • Oak Brook, IL 60523
Tel 630.928.1700 • Fax 630.928.1701 • www.sterigenics.com

AIRS # 067-00093

Sterigenics.

RECEIVED
SEP 11 2015
AIR PROTECTION BRANCH

September 9, 2015

Mr. Don Holder
Georgia EPD
Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Subject: **Notification: Chamber 11 – Commencement of Construction**
Permit No. 7389-067-0093-S-05-3

Dear Mr. Holder:

As required by our air permit, section 7.8, Sterigenics is providing notification of construction commencement of Chamber 11 (SEV-11).

Chamber 11 (SEV-11)
Construction was started on Chamber 11 on August 1, 2015. (Condition 7.8-a).

The Atlanta facility currently anticipates start-up date for Chamber 11 in late October or early November 2015, (Condition 7.8-b). I will follow-up in a few weeks with an update to provide a more accurate projection.

Please do not hesitate to contact me with questions. You can reach me at (630) 928-1768.

Kind Regards,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

pc:

Kathy Hoffman – Sr. VP, EH&S
Daryl Mosby - Smyrna General Manager
Juan Segovia – VP – EO Operations
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Mr. Michael Odom, Unit Manager
Georgia EPD, Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

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61 Forsyth Street
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Sterigenics International LLC
2015 Spring Road, Suite 650 • Oak Brook, IL 60523
Tel 630.928.1700 • Fax 630.928.1701 • www.sterigenics.com

AIRS # 067-00093

Holder, Don

From: Holder, Don
Sent: Tuesday, January 27, 2015 11:30 AM
To: sreinhardt@sterigenics.com
Subject: 2nd semi-annual report 2014

The Division received the semi-annual report dated January 12, 2015 for your facility for the July through December 2014 reporting period. The report, received on January 26, 2015, appears to satisfy the requirements of Condition 7.7 of Georgia Air Quality Permit 7389-067-0093-S-5-0, as amended, and Condition 6.1.4 of the previous Permit No. 7389-067-0093-S-05-0.

If you have any questions about compliance with your permit, please contact me at 404/362-4846 or by email at: don.holder@dnr.state.ga.us.

AIRS# 067-00093

Sterigenics.

September 9, 2015

RECEIVED
SEP 11 2015
AIR PROTECTION BRANCH

Mr. Don Holder
Georgia EPD
Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Subject: **Notification: Chamber 11 – Commencement of Construction**
Permit No. 7389-067-0093-S-05-3

Dear Mr. Holder:

As required by our air permit, section 7.8, Sterigenics is providing notification of construction commencement of Chamber 11 (SEV-11).

Chamber 11 (SEV-11)
Construction was started on Chamber 11 on August 1, 2015. (Condition 7.8-a).

The Atlanta facility currently anticipates start-up date for Chamber 11 in late October or early November 2015, (Condition 7.8-b). I will follow-up in a few weeks with an update to provide a more accurate projection.

Please do not hesitate to contact me with questions. You can reach me at (630) 928-1768.

Kind Regards,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

pc:

Kathy Hoffman – Sr. VP, EH&S
Daryl Mosby - Smyrna General Manager
Juan Segovia – VP – EO Operations
Kevin Wagner – Director, EHS

Mr. Michael Odom, Unit Manager
Georgia EPD, Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

US EPA Region IV
Air and EPCRA Enforcement Branch
61 Forsyth Street
Atlanta, GA 30303

Mr. Sean Taylor
Georgia EPD, Air Protection Branch
Stationary Source Compliance Program
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Atlanta, Georgia 30354

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2015 Spring Road, Suite 650 • Oak Brook, IL 60523
Tel 630.928.1700 • Fax 630.928.1701 • www.sterigenics.com

AIRS # 067-00093

Georgia Department of Natural Resources
Environmental Protection Division • Air Protection Branch
4244 International Parkway • Suite 120 • Atlanta • Georgia 30354
404/363-7000 • Fax: 404/363-7100
Judson H. Turner, Director

AUG 27 2015

Susan M. Reinhardt
EH&S Manager
Sterigenics U.S. LLC
2015 Spring Road, Suite 650
Oak Brook, IL 60523

Re: SM, Application Nos. 23461, 23229, & 22970, Dated August 3, 2015, April 27, 2015 and November 18, 2014
Facility AIRS No. : 067-00093

Dear Ms. Reinhardt:

Enclosed please find Air Quality Permit No. 7389-067-0093-S-05-3 for the installation and operation of a new 30-pallet chamber and vacuum pump (Chamber 11: SEV-11 and CEV-11), the change in ownership and facility address, and the routing of the sterilization chamber back vents to the existing AAT scrubber (EC2) at the Sterigenics facility located in Atlanta, Georgia.

Note that any future modifications that might affect potential emissions from your facility will require review and possible permitting through this office.

The following types of correspondence should be sent to the Division personnel indicated:

- Testing: Ross Winne – Program Manager, Industrial Source Monitoring Program
- Monitoring and Compliance (reports): Sean Taylor - Program Manager, Stationary Source Compliance Program.

Thank you for your cooperation. If you have any questions or need more information, please contact me at (404) 363-7135 or via email at *chan.spraley@dnr.state.ga.us*.

Sincerely,

Chan Spraley

Chan Spraley
Environmental Engineer
Stationary Source Permitting Program

Enclosure

AIRS # 067-00093

Sterigenics.

July 14, 2015

RECEIVED
JUL 16 2015
AIR PROTECTION BRANCH

Georgia Department of Natural Resources
Environmental Protection Division
Stationary Source Compliance Program
Air Protection Branch
Atlanta Tradeport, Suite 120
4244 International Parkway
Atlanta, Georgia 30354-3908

Attention: Ms. Karen Hays, Unit Manager

Subject: Semiannual Synthetic Minor Deviation Report for Sterigenics, U.S., LLC, Atlanta, Georgia Facility Operating **Permit No. 7389-0670093-S-05-0** for the period of January 01, 2015 to June 30, 2015

This letter provides information for the semi-annual Synthetic Minor Permit Deviation Report for Sterigenics, Inc.'s Atlanta, Georgia facility covering the period from January 1, 2015 through June 30, 2015. This report is intended to satisfy the monitoring and reporting requirements of Condition 5.4, 7.4 and 7.7 of Part 70 operating permit number 7389-067-0093-S-05-0. For ease of reference, this report is organized by permit condition.

Semiannual Deviation Reporting Requirements

Condition 5.4 requires:

The Permittee shall maintain and operate the AAT Scrubber System (EC2) to ensure a maximum emission level of 1 ppmv or a reduction of 99% for aeration room vents (AR-1, AR-11 through AR-13) and a reduction efficiency of 99% for sterilization chamber vents (SEV-1- SEV-10):

a. Aeration room vents: AR-1, AR-11 through AR-13 – Once per month the Permittee shall simultaneously collect and record the concentration of a 15-minute ethylene oxide bag sample from both the inlet and outlet of the dry bed absorbers:	
i. Facilities complying with the 1ppmvd standard, as specified in condition No. 2.4, and the concentration of ethylene oxide in the outlet sample of the dry bed absorbers increases to 0.9 ppmv or greater, the Permittee shall replace the dry bed material within 30 days, prior to the next scheduled aeration room exhaust sampling event.	We did not exceed 0.9 ppm or greater in the outlet.
ii. Facilities complying with the 99% reduction efficiency standard, as specified in Condition No. 2.4, and the AAT Scrubber System reduction efficiency decreases to 99.1% or less, the Permittee shall replace the dry bed material within 30 days prior to the next scheduled aeration exhaust sampling event. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed absorbers.	Performance testing conducted on October 24, 2014 indicated efficiency for the AAT scrubber at 99.96%.

AIRS # 067-00093

b. Aeration room vents (AR-1, AR-11 – AR-13) and sterilization chamber vents (SEV-1 through SEV-10) – any instance when sterilization chamber exhausts and aeration room exhausts are simultaneously vented through the AAT Scrubber System, the Permittee shall comply with the 99% reduction efficiency standard. During any such event, the Permittee shall collect and record the concentration of a 15-minute ethylene oxide bag sample from the outlet of the dry bed adsorbers within 96 hours of changeover. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed adsorbers. If the reduction efficiency of the AAT Scrubber System is less than 99.1%, the Permittee shall not route any sterilization replaced. Bag testing shall continue at a sampling frequency of once per week during the changeover of the sterilization chamber vents from the Ceilcote Scrubber (EC3) to the AAT Scrubber System.	N/A
c. When the Permittee is sampling in accordance with Condition Number 5.3a or 5.3b, the ethylene oxide loading to the AAT Scrubber System, the ethylene oxide mass out of the AAT dry adsorbers and the AAT Scrubber System reduction efficiency shall be recorded for each sampling event. These records shall be kept in a form suitable for inspection or submission to the Division. Methods of calculation for these measurements shall be submitted in the site-specific monitoring plan.	N/A
d. The dates of dry bed material placement shall be recorded and kept in a form suitable for inspection or submission to the Division.	N/A

Reporting Requirements

Condition 7.4 For each monthly sampling event conducted in accordance with conditions 5.4.a and 5.4.b, the Permittee shall include the following information in the semi-annual report required by Condition 7.8.

a. AAT Scrubber (EC2): List any occurrence when analysis of the dry bed adsorber outlet sample concentration exceeded 1 ppmv.	N/A Dry Bed Testing is available upon department request
b. For the AAT Scrubber System (EC2), list any occurrence when the AAT Scrubber reduction efficiency indicates that the efficiency is less than 99%.	N/A
c. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3, list any occurrence when the ethylene glycol concentration in the acid-water scrubber liquor is in excess of the maximum ethylene glycol concentration established during initial performance testing.	N/A

d. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3, list any occurrence when the liquor recirculation tank level of the acid-water scrubber is in excess of the maximum liquor tank level established during initial performance testing.	N/A
e. For the acid-water scrubbers (AAT Scrubber System EC2) and Ceilcote Scrubber EC3, any occurrence wh4en the scrubbing liquor pH rises above the manufacturers recommended level of 2.	N/A
f. For the AAT Scrubber System (EC2) list any occurrence when analysis of the dry bed adsorber outlet sample indicates the concentration exceeds 0.9 ppmv, but is less than or equal to 1 ppmv.	N/A
g. For the AAT Scrubber System (EC2), list any occurrence when AAT Scrubber System reduction efficiency indicates the efficiency is less than 99.1%, but is greater than or equal to 99%.	N/A
h. For the AAT Scrubber System, (EC2), list any instance when the AAT Scrubber System breaches a dry bed adsorber material replacement threshold, but he dry bed material is not replace within 30 days.	N/A

Condition 7.7 requires:

The Permittee shall submit a written report containing any excess emissions, exceedances, and/or excursions as described in this permit and any monitor malfunctions for each semiannual period ending January 1 and June 30 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, July 30 and January 30, respectively. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state. Otherwise, the contents of each report shall be as specified by the Division's Procedures for Testing and Monitoring sources of Air Pollutants and shall contain the following: [391-3-1-.02(6)(b) 1 and 40 CFR 63.10 (e)]

a. A Summary report of excess emissions, exceedances and excursions, and monitor downtime, deviations and monitor downtime in accordance with Section 1.5 (c) and (d) of the above referenced document, including any failure to follow required work practice procedures.

   There were no recordkeeping/ procedural deviations or excess emissions or excursions associated with section 7.7.

b. Total process operating time during each reporting period. Total processing time was:

   4,320 hours (180 days)

c. The magnitude of all excess emissions, exceedances and excursions computed in accordance with the applicable definitions as determined by the Director, and any conversion factors used, and the date and time of the commencement and completion of each time period of such occurrence.

   There were no deviations during the period.

d. Specific identification of each period of such excess emissions, exceedances, and excursions that occur during startups, shutdowns, or malfunctions of the affected facility. Include the nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

There were no deviations during the period.

e. The date and time identifying each period during which any required monitoring system or device was inoperative (including periods of malfunction) except for zero and span checks, and the nature of the repairs, adjustments, or replacement. When the monitoring system or device has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

There were no breakdowns of the monitoring system or devices during the reporting period.

f. Certification by a Responsible Official, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

Required Statement

Sterigenics U.S. LLC has reviewed all applicable provisions of the Atlanta Synthetic Minor operating permit.

There have not been deviations from applicable limitations or standards or monitor malfunctions during the reporting period from January 01, 2015 through June 30, 2015.

KA Hoffman 13-Jul-2015

Kathleen Hoffman
Senior Vice President, Environment, Health and Safety

Date

If you have any questions regarding this submittal, please call me at (630) 928-1768.

Kind Regards,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

cc: Air and EPCRA Enforcement Branch, U.S. EPA Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Kathleen Hoffman, Senior Vice-President- EHS
Juan Segovia – Vice President, Operations
Daryl Mosby – Smyrna, Georgia General Manager
Kevin Wagner, Director EH&S

SMR:cmq

Sterigenics International, Inc.
2015 Spring Road, Suite 650 • Oakbrook, IL 60523
Tel 800.472.4508 • Fax 630.928.1701 • www.sterigenics.com

Sterigenics.

June 30, 2015

Georgia Department of Natural Resources
Environmental Protection Division
Stationary Source Compliance Program
Air Protection Branch
Atlanta Tradeport, Suite 120
4244 International Parkway
Atlanta, Georgia 30354-3908

Attention: Ms. Karen Hays, Unit Manager

Subject: Semiannual Synthetic Minor Deviation Report for Sterigenics, U.S., LLC, Atlanta, Georgia Facility Operating **Permit No. 7389-0670093-S-05-0** for the period of January 01, 2015 to June 30, 2015

This letter provides information for the semi-annual Synthetic Minor Permit Deviation Report for Sterigenics, Inc.'s Atlanta, Georgia facility covering the period from January 1, 2015 through June 30, 2015. This report is intended to satisfy the monitoring and reporting requirements of Condition 5.4, 7.4 and 7.7 of Part 70 operating permit number 7389-067-0093-S-05-0. For ease of reference, this report is organized by permit condition.

Semiannual Deviation Reporting Requirements

Condition 5.4 requires:

The Permittee shall maintain and operate the AAT Scrubber System (EC2) to ensure a maximum emission level of 1 ppmv or a reduction of 99% for aeration room vents (AR-1, AR-11 through AR-13) and a reduction efficiency of 99% for sterilization chamber vents (SEV-1- SEV-10):

a.	Aeration room vents: AR-1, AR-11 through AR-13 – Once per month the Permittee shall simultaneously collect and record the concentration of a 15-minute ethylene oxide bag sample from both the inlet and outlet of the dry bed absorbers:	
i.	Facilities complying with the 1ppmvd standard, as specified in condition No. 2.4, and the concentration of ethylene oxide in the outlet sample of the dry bed absorbers increases to 0.9 ppmv or greater, the Permittee shall replace the dry bed material within 30 days, prior to the next scheduled aeration room exhaust sampling event.	We did not exceed 0.9 ppm or greater in the outlet.
ii.	Facilities complying with the 99% reduction efficiency standard, as specified in Condition No. 2.4, and the AAT Scrubber System reduction efficiency decreases to 99.1% or less, the Permittee shall replace the dry bed material within 30 days prior to the next scheduled aeration exhaust sampling event. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed absorbers.	Performance testing conducted on October 24, 2014 indicated efficiency for the AAT scrubber at 99.96%.

b. Aeration room vents (AR-1, AR-11 – AR-13) and sterilization chamber vents (SEV-1 through SEV-10) – any instance when sterilization chamber exhausts and aeration room exhausts are simultaneously vented through the AAT Scrubber System, the Permittee shall comply with the 99% reduction efficiency standard. During any such event, the Permittee shall collect and record the concentration of a 15-minute ethylene oxide bag sample from the outlet of the dry bed adsorbers within 96 hours of changeover. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed adsorbers. If the reduction efficiency of the AAT Scrubber System is less than 99.1%, the Permittee shall not route any sterilization replaced. Bag testing shall continue at a sampling frequency of once per week during the changeover of the sterilization chamber vents from the Ceilcote Scrubber (EC3) to the AAT Scrubber System.	N/A
c. When the Permittee is sampling in accordance with Condition Number 5.3a or 5.3b, the ethylene oxide loading to the AAT Scrubber System, the ethylene oxide mass out of the AAT dry adsorbers and the AAT Scrubber System reduction efficiency shall be recorded for each sampling event. These records shall be kept in a form suitable for inspection or submission to the Division. Methods of calculation for these measurements shall be submitted in the site-specific monitoring plan.	N/A
d. The dates of dry bed material placement shall be recorded and kept in a form suitable for inspection or submission to the Division.	N/A

Reporting Requirements

Condition 7.4 For each monthly sampling event conducted in accordance with conditions 5.4.a and 5.4.b, the Permittee shall include the following information in the semi-annual report required by Condition 7.8.

a. AAT Scrubber (EC2): List any occurrence when analysis of the dry bed adsorber outlet sample concentration exceeded 1 ppmv.	N/A Dry Bed Testing is available upon department request
b. For the AAT Scrubber System (EC2), list any occurrence when the AAT Scrubber reduction efficiency indicates that the efficiency is less than 99%.	N/A
c. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3, list any occurrence when the ethylene glycol concentration in the acid-water scrubber liquor is in excess of the maximum ethylene glycol concentration established during initial performance testing.	N/A

d. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3, list any occurrence when the liquor recirculation tank level of the acid-water scrubber is in excess of the maximum liquor tank level established during initial performance testing.	N/A
e. For the acid-water scrubbers (AAT Scrubber System EC2) and Ceilcote Scrubber EC3, any occurrence wh4en the scrubbing liquor pH rises above the manufacturers recommended level of 2.	N/A
f. For the AAT Scrubber System (EC2) list any occurrence when analysis of the dry bed adsorber outlet sample indicates the concentration exceeds 0.9 ppmv, but is less than or equal to 1 ppmv.	N/A
g. For the AAT Scrubber System (EC2), list any occurrence when AAT Scrubber System reduction efficiency indicates the efficiency is less than 99.1%, but is greater than or equal to 99%.	N/A
h. For the AAT Scrubber System, (EC2), list any instance when the AAT Scrubber System breaches a dry bed adsorber material replacement threshold, but he dry bed material is not replace within 30 days.	N/A

7.7 requires:

The Permittee shall submit a written report containing any excess emissions, exceedances, and/or excursions as described in this permit and any monitor malfunctions for each semiannual period ending January 1 and June 30 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, July 30 and January 30, respectively. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state. Otherwise, the contents of each report shall be as specified by the Division's Procedures for Testing and Monitoring sources of Air Pollutants and shall contain the following: [391-3-1-.02(6)(b) 1 and 40 CFR 63.10 (e)]

a. A Summary report of excess emissions, exceedances and excursions, and monitor downtime, deviations and monitor downtime in accordance with Section 1.5 (c) and (d) of the above referenced document, including any failure to follow required work practice procedures.

   There were no recordkeeping/ procedural deviations or excess emissions or excursions associated with section 7.7.

b. Total process operating time during each reporting period. Total processing time was:

   4,344 hours (181 days)

c. The magnitude of all excess emissions, exceedances and excursions computed in accordance with the applicable definitions as determined by the Director, and any conversion factors used, and the date and time of the commencement and completion of each time period of such occurrence.

   There were no deviations during the period.

d. Specific identification of each period of such excess emissions, exceedances, and excursions that occur during startups, shutdowns, or malfunctions of the affected facility. Include the nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

There were no deviations during the period.

e. The date and time identifying each period during which any required monitoring system or device was inoperative (including periods of malfunction) except for zero and span checks, and the nature of the repairs, adjustments, or replacement. When the monitoring system or device has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

There were no breakdowns of the monitoring system or devices during the reporting period.

f. Certification by a Responsible Official, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

Required Statement

Sterigenics U.S. LLC has reviewed all applicable provisions of the Atlanta Synthetic Minor operating permit.

There have not been deviations from applicable limitations or standards or monitor malfunctions during the reporting period from January 01, 2015 through June 30, 2015.

Daryl Mosby
General Manager

06 Jul 2015
Date

If you have any questions regarding this submittal, please call me at (630) 928-1768.

Kind Regards,

Susan M. Reinhardt
Manager
Environment, Health and Safety

cc: Air and EPCRA Enforcement Branch, U.S. EPA Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Kathleen Hoffman, Senior Vice-President- EHS
Juan Segovia – Vice President, Operations
Daryl Mosby – Smyrna, Georgia General Manager
Kevin Wagner, Director EH&S

Holder, Don

From: Holder, Don
Sent: Thursday, July 23, 2015 10:01 AM
To: sreinhardt@sterigenics.com
Subject: 1st semi-annual report 2015

The Division received the semi-annual report dated July 14, 2015 for your facility for the January through June 2015 reporting period. The report, received on July 16, 2015, appears to satisfy the requirements of Condition 7.7 of Georgia Air Quality Permit 7389-067-0093-S-5-0, as amended.

If you have any questions about compliance with your permit, please contact me at 404/362-4846 or by email at: don.holder@dnr.state.ga.us.

Sincerely,

Don Holder
Principal Environmental Engineer
Stationary Source Compliance Program

AIRS # 067-00093

Georgia Department of Natural Resources
Environmental Protection Division • Air Protection Branch
4244 International Parkway • Suite 120 • Atlanta • Georgia 30354
404/363-7000 • Fax: 404/363-7100
Judson H. Turner, Director

Compliance Monitoring Report

1. General Information

Date of Inspection:	June 25, 2015
Date of Report Completed:	July 2, 2015
Compliance Monitoring Category:	Unannounced Inspection
Inspector Name:	Don Holder DH
Reviewing Manager:	Michael Odom MO

2. Facility Information

Facility Name:	Sterigenics U.S. LLC
Facility AIRS No.:	067-00093
Facility Location:	2973 Olympic Industrial Park Smyrna, Georgia, 30080, Cobb County
Facility Mailing Address:	2015 Spring Road, Suite 650 Oak Brook, Illinois 60523
Facility Contact:	Darayl Mosby, General Manager 404-355-4485 [email]
CMS Designation:	Synthetic Minor Source

Air Quality Permit No. 7389-067-0093-S-01-0 **Effective Date: May 27, 2014**

Issued for the operation of an ethylene oxide and propylene oxide sterilization facility. The Permit is also for the installation and operation of a 30-pallet sterilization chamber and an aeration room.

Air Quality Permit Amendment No. 7389-067-0093-S-01-1 **Effective Date: November 17, 2014**

Issued for change of address from Smyrna to Atlanta.

Air Quality Permit Amendment No. 7389-067-0093-S-01-2 **Effective Date: April 1, 2015**

Issued for the installation and operation of a new 30-pallet chamber and vacuum pump.

Permit(s) can be accessed at www.georgiaair.org

3. **Inspection Summary / Recommended Actions:**

The facility appeared to be in compliance with the permit at the time of the inspection. Facility issued a new Synthetic Minor permit on April 1, 2015.

4. **Previous Enforcement Actions and Inspections:**

There have been no enforcement actions for this facility during the previous five years. See attached Full Compliance Evaluation (FCE) Report for details.

5. **Complaint Investigations since last Full Compliance Evaluation:**

There have been no complaints received for this facility during the previous five years. See Complaint Tracking System (CTS) for further details.

6. **Applicable Requirements, Description of Regulated Emission Units, and Inspection Determinations:**

Table 6

Emission Units			Air Pollution Control Devices		Inspection	
ID No.	Description	Corresponding Permit Conditions	ID No.	Description	Evaluated During Inspection?	Inspection Determination
SEV-1	Six-pallet Sterilization Chamber 1 vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	No issues noted.
SEV-2	Six-pallet Sterilization Chamber 2 vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	No issues noted.
SEV-3	Nine-pallet Sterilization Chamber vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	No issues noted.
SEV-4	Five-pallet Sterilization Chamber vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	No issues noted.
SEV-5	Thirteen-pallet Sterilization Chamber vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	No issues noted.

Table 6						
Emission Units		Corresponding Permit Conditions	Air Pollution Control Devices		Inspection	
ID No.	Description		ID No.	Description	Evaluated During Inspection?	Inspection Determination
SEV-6	Thirteen-pallet Sterilization Chamber vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	No issues noted.
SEV-7	Thirteen-pallet Sterilization Chamber vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	No issues noted.
SEV-8	Thirteen-pallet Sterilization Chamber vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	No issues noted.
SEV-9	Fifteen-pallet Sterilization Chamber vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	Out of commission. To be removed from service..
SEV-10	Thirty-pallet Sterilization Chamber vacuum pump	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.2, 5.3, 6.1, 6.2, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 8.1, 8.2, 8.3	EC2 EC3	AAT Scrubber System (with Dry Bed Adsorber) Ceilcote Scrubber	Yes	No issues noted.
CEV-1	Back vent for Chamber 1	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--
CEV-2	Back vent for Chamber 2	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--
CEV-3	Back vent for Chamber 3	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--
CEV-4	Back vent for Chamber 4	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--
CEV-5	Back vent for Chamber 5	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--
CEV-6	Back vent for Chamber 6	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--
CEV-7	Back vent for Chamber 7	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--
CEV-8	Back vent for Chamber 8	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--
CEV-9	Back vent for Chamber 9	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--

Table 6						
Emission Units		Corresponding Permit Conditions	Air Pollution Control Devices		Inspection	
ID No.	Description		ID No.	Description	Evaluated During Inspection?	Inspection Determination
CEV-10	Back vent for Chamber 10	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 3.1, 4.1, 4.2, 4.3	NA	None	No	--
AR-11	Aeration Room 11	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.4, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.4, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2	AAT Scrubber System (with Dry Bed Adsorber)	Yes	No issues noted.
AR-12	Aeration Room 12	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.4, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.4, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2	AAT Scrubber System (with Dry Bed Adsorber)	Yes	No issues noted.
AR-13	Aeration Room 13	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.4, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.4, 6.1, 7.1, 7.2, 7.3, 7.4, 7.6, 7.7, 8.1, 8.2, 8.3	EC2	AAT Scrubber System (with Dry Bed Adsorber)	Yes	No issues noted.
AR-1	Aeration Room 1	1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.4, 2.5, 3.1, 4.1, 4.2, 4.3, 5.1, 5.4, 6.1, 6.3, 7.1, 7.2, 7.3, 7.4, 7.5, 7.6, 7.7, 8.1, 8.2, 8.3	EC2	AAT Scrubber System (with Dry Bed Adsorber)	Yes	No issues noted.

7. **Compliance Monitoring Activities – Details not included in table above:**

a. Describe any deviation from compliance noted during the inspection listed on Table 6:

No deviations noted.

b. Describe any compliance assistance provided during inspection:

No compliance assistance was required.

c. Describe any action taken by the facility to come back into compliance during the inspection:

None.

d. Deviations noted during the inspection, not previously listed. Include equipment ID or equipment description and condition number:

No deviations noted during the inspection.

8. Additional Permit Requirements:

a. Periodic Reports:
All semi-annual reports submitted as required.
See attached Full Compliance Evaluation (FCE) Report for details.

b. Permit Fees:
All fees paid as required.
See attached Full Compliance Evaluation (FCE) Report for details.

c. Permit Renewal and Expiration:
Not Applicable.

d. For any overall emission/production/usage limit:

Table 8.d.		
Permit Condition	**Permit Limit**	**Actual**
2.1, 2.2, 2.3, 2.4	Meet requirements of Ethylene Oxide Emission Standards for Sterilization Facilities. Reduce emissions from each Sterilization Vent by 99%. Reduce emissions from each Aeration Vent to 1 ppm or by 99%, whichever is less stringent.	Last tested on October 23, 2014 following new chamber installation. EC-2 efficiency – 99/95% EC-3 efficiency – 99.993%
2.6	Fire only natural gas in all fuel burning units.	Facility only uses natural gas.

9. Attachments:

a. Inspection Observations:
See attachment

b. Performance Tests:
See attachment or not applicable

c. Full Compliance Evaluation (FCE) Report:
See attachment

Attachment: Inspection Observations

Fugitive Emissions

Permit Condition	Permit Limit	Observation
3.1	Minimize fugitive emissions.	None observed.

Process & Control Equipment

Permit Condition	Permit Limit	Observation
4.1	Conduct routine maintenance as needed. Maintain maintenance records.	Preventive maintenance program in place. Results maintained on file.
4.2	A spare parts inventory for control equipment shall be maintained.	Spare parts for control systems maintained on site.
4.3	Implement repairs to control equipment as expeditiously as possible.	Repairs conducted within minimal times.

Monitoring

Permit Condition	Monitoring Requirement	Observation
5.1	All monitoring systems shall be in continuous operation. Maintenance and repair shall be conducted to minimize periods of non-service.	All monitors in place and operational.
5.2, 5.3	For the AAT Scrubber (Source Code EC2) and the Ceilcote Scrubber (Source Code EC3) install and maintain monitoring devices for the measurement of scrubber liquor level in the recirculation tank (a liquid level indicator) and the pH of the scrubber liquor for each of the scrubbers. Maintain the level of the scrubber liquor at or below the levels established during the initial performance testing. The pH levels of the scrubber liquor shall be maintained in accordance with the pH levels recommended by the manufacturers. Measurements shall be made weekly.	All data on file. All monitoring devices in place and operational. pH levels below 2. Tank levels on EC-2 at maximum levels – facility has reduced levels by 5% for buffer with operating limits established during testing.

5.4	Maintain and operate the AAT Scrubber System (Source Code: EC2) to ensure a maximum emission level of 1 ppmv or a reduction of 99% for aeration room vents (Source Codes: AR-1, AR-11 through AR-13) and a reduction efficiency of 99% for sterilization chamber vents (Source Codes SEV-1 through SEV-10).	
	a. For Source Codes AR-1, AR-11 through AR-13, collect and record the concentrations of a 15-minute ethylene oxide bag sample from both the inlet and the outlet of the dry bed adsorber monthly. i. When complying with the 1 ppmvd standard, if the concentration of ethylene oxide in the outlet sample of the dry bed adsorbers increases to 0.9 ppmv or greater, replace the dry bed material within 30 days. ii. When complying with the 99% reduction efficiency standard, if the AAT Scrubber System reduction efficiency decreases to 99.1% or less, replace the dry bed material within 30 days. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed adsorbers.	Monthly bag sampling conducted all results on file. All exhaust gasses at 100% reduction.
	b. For Source Codes AR-1, AR-11 through AR-13 and Source Codes SEV-1 through SEV- 10, when sterilization chamber exhausts and aeration room exhausts are simultaneously vented through the AAT Scrubber System, comply with the 99% reduction efficiency standard. Collect and record the concentration of a 15-minute ethylene oxide bag sample from the outlet of the dry bed adsorbers within 96 hours of the changeover. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed adsorbers. If the reduction efficiency for the AAT Scrubber System is less than 99.1%, the	Facility has not operated in this manner.

	Permittee shall not route any sterilization chamber exhausts through the AAT Scrubber System until the dry bed material has been replaced. Bag testing shall continue at a sampling frequency of once per week during the changeover of the sterilization chamber vents from the Ceilcote Scrubber (Source Code: EC3) to the AAT Scrubber System.	
	c. For a and b above, the AAT Scrubber System reduction efficiency shall be recorded for each sampling event.	Reduction efficiency recorded with each sampling event.
	d. The dates of dry bed material replacement shall be recorded and maintained on file.	Dry beds last replaced on August 15, 2014.

Notification, Reporting and Record Keeping

Permit Condition	Permit Limit	Observation
7.1	Maintain records of any startup, shutdown, or malfunction, any malfunction of the air pollution control equipment or any periods during which a continuous monitoring system or monitoring device is inoperative. Retain records for a period of five years.	All records on file as required.
7.2	Maintain a file of all measurements required by this permit, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by this part recorded in a permanent form suitable for inspection for five years.	All records on file as required.
7.3	Maintain general records and CMS records as specified by 40 CFR 63.10(b)(2) and (c), respectively, and Table 1 of 40 CFR 63 Subpart O.	All records on file as required.

7.4	Include the following information in the semiannual report. a. For the AAT Scrubber System (Source Code EC2), any occurrence when analysis of the dry bed adsorber outlet sample indicates that the concentration exceeds 1 ppmv. b. For the AAT Scrubber System (Source Code EC2), any occurrence when AAT Scrubber System reduction efficiency indicates that the efficiency is less than 99%. c. For the acid-water scrubbers [AAT Scrubber System (Source Code EC2) and Ceilcote Scrubber (Source Code EC3)], any occurrence when the ethylene glycol concentration in the acid-water scrubber liquor is in excess of the maximum ethylene glycol concentration established during initial performance testing. d. For the acid-water scrubbers [AAT Scrubber System (Source Code EC2) and Ceilcote Scrubber (Source Code EC3)], any occurrence when the liquor recirculation tank level of the acid-water scrubber is in excess of the maximum liquor tank level established during initial performance testing. e. For the acid-water scrubbers [AAT Scrubber System (Source Code EC2) and Ceilcote Scrubber (Source Code EC3)], any occurrence when the scrubbing liquor pH rises above the manufacturers' recommended level of 2. f. For the AAT Scrubber System (Source Code EC2), any occurrence when analysis of the dry bed adsorber outlet sample indicates that the concentration exceeds 0.9 ppmv, but is less than or equal to 1 ppmv. g. For the AAT Scrubber System (Source Code EC2), any occurrence when AAT Scrubber System reduction efficiency	No violations reported for operations.

	indicates that the efficiency is less than 99.1%, but is greater than or equal to 99%. h. For the AAT Scrubber System (Source Code EC2), any instance when the AAT Scrubber System breaches a dry bed adsorber material replacement threshold, but the dry bed material is not replaced within 30 days.	
7.5	Submit the following reports for Sterilization Chamber SEV-10 and Aeration Room AR-1: a. A notification of the date when construction commenced, not later than 30 days after such date. b. A notification of the anticipated date of startup, not more than 60 days nor less than 30 days before such date; and c. A notification of the actual date of initial startup, within 15 calendar days after that date.	Construction completed
7.6	Submit the following reports as per Subpart O: a. Deviation reports; and b. Continuous Monitoring System performance and summary reports	All reports submitted as required.

Attachment: Performance Tests

Previous test results

Source Tested	Pollutant	Date of Test	Required Testing Frequency	Limit	Actual	Percent of Allowable
Sterilization Chamber SEV-10 Scrubber EC-2	EtO	October 23, 2014	Upon startup	99% DRE	99.95% DRE	N/A
Aeration Chamber AR-1 Scrubber EC-3	EtO	October 23, 2014	Upon startup	99% DRE	99.993% DRE	N/A

Georgia Department of Natural Resources
Environmental Protection Division · Air Protection Branch
4244 International Parkway · Suite 120 · Atlanta · Georgia 30354
Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

Full Compliance Evaluation (FCE) Report

Fiscal Year Ending:	Sep 30, 2015
Facility AIRS Number:	06700093
Facility Name:	Sterigenics U.S. LLC
Facility Address:	2973 Olympic Industrial Drive
Compliance Engineer:	Don Holder
Unit:	Air Toxics

SIP Subject

MACT 63 Subject

Title V Subject

Final Compliance Status

Date Full Compliance Evaluation Completed: 02-Jul-2015

Comments: In compliance

Inspection(s)

GA EPD Tracking Number: 57862
Staff Responsible: Holder, Don
Inspection Date: 25-Jun-2015
Reason for Inspection: Planned Unannounced
Follow Up Action Taken: No
Comments:
In compliance.

GA EPD Tracking Number: 47683
Staff Responsible: Holder, Don
Inspection Date: 11-Apr-2013
Reason for Inspection: Planned Unannounced
Follow Up Action Taken: No
Comments:
In compliance.

GA EPD Tracking Number: 38826
Staff Responsible: Holder, Don
Inspection Date: 22-Jun-2011
Reason for Inspection: Planned Unannounced
Follow Up Action Taken: No
Comments:
In compliance.

Performance Test(s) - 5 year history if available

GA EPD Reference Number: 201500164
Date Test Performed: 10/23/2014
Follow Up Action Taken: No
SSCP Comments:
In compliance. Re-establish scrubber flow rate at 1537 gpm and storage tank level of 108"

Test Type: SOURCE TEST - Memorandum (Standard)
Emission Source: Areation Room/Advanced Air Technologies (AAT) emission control system

Full Compliance Evaluation (FCE) Report

Fiscal Year Ending: Sep 30, 2015
Facility AIRS Number: 06700093
Facility Name: Sterigenics U.S. LLC
Facility Address: 2973 Olympic Industrial Drive
Compliance Engineer: Don Holder
Unit: Air Toxics

Pollutant: Ethylene Oxide
ISMP Test Status: In Compliance
ISMP Comments:
N/A

GA EPD Reference Number: 201500030
Date Test Performed: 10/23/2014
Follow Up Action Taken: No
SSCP Comments:
In compliance. Re-establish scrubber flow rate of 155 gpm and storage tank level of 185"

Test Type: SOURCE TEST - PTE (Perminate Total Enclosure)
Emission Source: 10-Sterilizer Chambers/Ceilcote Scrubber
Pollutant: Ethylene Oxide
ISMP Test Status: In Compliance
ISMP Comments:
N/A

Report(s)

GA EPD Tracking Number: 57863
Type of Report: First Semiannual
Date Report Received: 08-Jul-2014
Follow Up Action Taken: No
Comments:
In compliance.

GA EPD Tracking Number: 55176
Type of Report: Second Semiannual
Date Report Received: 26-Jan-2015
Follow Up Action Taken: No
Comments:
In compliance.

GA EPD Tracking Number: 50191
Type of Report: Second Semiannual
Date Report Received: 08-Jan-2014
Follow Up Action Taken: No
Comments:
In compliance.

GA EPD Tracking Number: 46451
Type of Report: Second Semiannual
Date Report Received: 14-Jan-2013
Follow Up Action Taken: No
Comments:
In compliance.

GA EPD Tracking Number: 42065
Type of Report: Second Semiannual
Date Report Received: 25-Jan-2012
Follow Up Action Taken: No

Full Compliance Evaluation (FCE) Report

Fiscal Year Ending:	Sep 30, 2015
Facility AIRS Number:	06700093
Facility Name:	Sterigenics U.S. LLC
Facility Address:	2973 Olympic Industrial Drive
Compliance Engineer:	Don Holder
Unit:	Air Toxics

Comments:
In compliance.

GA EPD Tracking Number: 48455
Type of Report: First Semiannual
Date Report Received: 09-Jul-2013
Follow Up Action Taken: No
Comments:
In compliance.

GA EPD Tracking Number: 44476
Type of Report: First Semiannual
Date Report Received: 18-Jul-2012
Follow Up Action Taken: No
Comments:
In compliance.

GA EPD Tracking Number: 39323
Type of Report: First Semiannual
Date Report Received: 01-Aug-2011
Follow Up Action Taken: No
Comments:
In compliance.

Title V Annual Certification(s)

GA EPD Tracking Number: 57266
Date Received: 11-Feb-2014
Date Report Completed: 29-Apr-2015
Follow Up Action Taken: No
Comments:
N/A

GA EPD Tracking Number: 55755
Date Received: 29-Jan-2015
Date Report Completed: 19-Feb-2015
Follow Up Action Taken: No
Comments:
In compliance.

Fees Data - 5 year history if available

Fee Year: 2013
Payment Stutus: Paid in Full
IAIP Status: Paid in Full
Invoiced Amount: $4,500.00
Payment Amount: $4,500.00

Fee Year: 2012
Payment Stutus: Paid in Full
IAIP Status: Paid in Full
Invoiced Amount: $4,500.00
Payment Amount: $4,500.00

Full Compliance Evaluation (FCE) Report

Fiscal Year Ending:	Sep 30, 2015
Facility AIRS Number:	06700093
Facility Name:	Sterigenics U.S. LLC
Facility Address:	2973 Olympic Industrial Drive
Compliance Engineer:	Don Holder
Unit:	Air Toxics

Fee Year: 2011

Payment Stutus:	Paid in Full
IAIP Status:	Paid in Full
Invoiced Amount:	$4,100.00
Payment Amount:	$4,100.00

Fee Year: 2010

Payment Stutus:	Paid in Full
IAIP Status:	Paid in Full
Invoiced Amount:	$4,161.50
Payment Amount:	$4,161.50

Sterigenics.

RECEIVED
APR 30 2015
AIR PROTECTION BRANCH

April 27, 2015

Mr. Chan Spraley
Environmental Engineer
Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Subject: **Address modification to the Air Quality Permit for Sterigenics, Atlanta Facility Permit No. 7389-067-0093-S-05-2, AIRS Number 067-00093**

Dear Mr. Spraley:

Thank you very much for the recent amendment to the Atlanta, Georgia air quality permit. We have been informed the facility address has changed to: 2971 Olympic Industrial Drive SE, Suite 116, Atlanta, Georgia 30339 and request this address modification be applied to our Air Quality Permit.

If you have any questions regarding this request, please call me at (630) 928-1768.

Sincerely,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

Copy: Daryl Mosby, Atlanta, Georgia General Manager
Kevin Wagner, Director EHS

Mr. Ross Winne
Program Manager
Air Protection Branch
Industrial Source Monitoring Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Mr. Michael Odom
Unit Manager
Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

SMR:cmq

Sterigenics International LLC
2015 Spring Road, Suite 650 • Oak Brook, IL 60523
Tel 630.928.1700 • Fax 630.928.1701 • www.sterigenics.com

AIRS #067-00093

Georgia Department of Natural Resources
Environmental Protection Division · Air Protection Branch
4244 International Parkway · Suite 120 · Atlanta · Georgia 30354
Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

FEB 17 2015

MEMORANDUM:

TO: Sean Taylor
THROUGH: Ross Winne, Richard Taylor
FROM: Anna Gray
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Sterigenics U.S. LLC
COMPANY LOCATION	Smyrna, GA
SOURCE TESTED	Areation Room/Advanced Air Technologies (AAT) emission control system
POLLUTANT DETERMINED	Ethylene Oxide
REPORT REVIEWED BY	Anna Gray
TEST WITNESSED BY	Anna Gray
DATE(S) OF TEST	October 23, 2014 to October 24, 2014
DATE RECEIVED BY APB	January 8, 2015
APPLICABLE REGULATION	Permit No. 7389-067-0093-S-05-0, Conditions 2.3, 6.2 and 6.3
MEMORANDUM	The reduction efficiency test of the Two stage Advanced Air Technologies (AAT) emission control system, which controls the emissions from the aeration room, was conducted in accordance o USEPA CFR 40, Part 63.365. The emissions reduction should be at least 99%. Average EtO concentration on inlet= 27.94 ppm Average EtO concentration on outlett= 0.0122 ppm Average EtO Control Efficiency: 99.95% Aeration time on each run: 60 min Average flow on the outlet: 9831 dscfm EtO average mass flow on the outlet: 0.000824 lbs/hr The inlet flow was assumed the same as the outlet. Each test run was performed with freshly sterilized product in the aeration chambers. Parameters during test: Scrubber flow rate= 1537 gpm; 0.9 pH; Storage tank level for the scrubber: 108"; Glycol concentration=30.4%

cc: Ross Winne
Reference Number: 201500164

AIRS Number: 06700093
Printed: 2/17/2015

FEB 17 2015

Georgia Department of Natural Resources
Environmental Protection Division · Air Protection Branch
4244 International Parkway · Suite 120 · Atlanta · Georgia 30354
Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

MEMORANDUM:

TO: Sean Taylor
THROUGH: Ross Winne, Richard Taylor
FROM: Anna Gray
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Sterigenics U.S. LLC
COMPANY LOCATION	Smyrna, GA
SOURCE TESTED	10-Sterilizer Chambers/Ceilcote Scrubber
POLLUTANT DETERMINED	Ethylene Oxide
REPORT REVIEWED BY	Anna Gray
TEST WITNESSED BY	Anna Gray
DATE(S) OF TEST	October 23, 2014
DATE RECEIVED BY APB	January 8, 2015
APPLICABLE REGULATION	Permit No. 7389-067-0093-S-05-0, Conditions 2.3, 6.2 and 6.3
MAXIMUM EXPECTED OPERATING CAPACITY	12,000 ACFM
OPERATING CAPACITY	N/A
ALLOWABLE EMISSION RATE	99 % DRE
CONTROL EQUIPMENT AND MONITORING DATA	Scrubber flow rate= 155 gpm; 1.7 pH; Storage tank level for the scrubber: 185"; Glycol concentration=35.7%

cc: Ross Winne
Reference Number: 201500030

AIRS Number: 06700093
Printed: 2/17/2015

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Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

MEMORANDUM

The reduction efficiency test of the Ceilcote packed tower scrubber emission control system was conducted in accordance o USEPA CFR 40, Part 63.365. At least one of the test runs was performed using emissions from the new30-pallet sterilizer.

Run #1 Inlet EtO= 27.4 lbs
Outlet EtO= 0.0010212 lbs
EtO Control Efficiency= 99.996%
Minutes/cycle= 22

Run #2 Inlet EtO=61.0 lbs
Outlet EtO= 0.0041159 lbs
EtO Control Efficiency= 99.993%
Minutes/cycle= 23

Run #3 Inlet EtO= 218.1 lbs
Outlet EtO= 0.0189873 lbs
EtO Control Efficiency= 99.991%
Minutes/cycle= 27
Average EtO Control Efficiency: 99.993%

The amount of ethylene oxide used during each sterilization cycle was calculated by the Gas law and the conditions at the beginning and the end of every exhaust phase. All exhaust phase testing wsa conducted during normal process load conditions, but with an empty sterilization chamber to facilitate inlet mass calculation and the performance of multiple test runs.

cc: Ross Winne
Reference Number: 201500030

AIRS Number: 06700093
Printed: 2/17/2015

Holder, Don

From: Holder, Don
Sent: Thursday, February 19, 2015 10:39 AM
To: sreinhardt@sterigenics.com
Subject: 2014 ACC submittal

The Division received the 2014 Title V Annual Compliance Certification for your facility on January 29, 2015 for the period of January 1, 2014 through May 26, 2014. The submittal correctly reported the compliance status of all terms and conditions of the permit. This is consistent with the information available to the Division. The submittal appears to comply with the requirements of Condition 8.14.1 of Georgia Air Quality Permit No. 7389-067-0093-V-04-0 as issued on November 14, 2013, as amended.

Thank you for your cooperation in this matter. If you have any questions or comments concerning this letter or your air quality permit, please contact me at 404/362-4846 or by email at: don_holder@dnr.state.ga.us .

AIRS # 067-00093

Sterigenics.

RECEIVED
JAN 29 2015
AIR PROTECTION BRANCH

January 22, 2015

Mr. Don Holder
Georgia EPD
Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Subject: **Annual Title V Compliance Certification for Sterigenics, Smyrna Facility – Part 70 Operating Permit No. 7389-067-0093-V-04-0**
AIRS Number 04-13-067-00093

Dear Mr. Holder:

Enclosed please find the Title V Annual Compliance Certification in place for our Smyrna facility for the first five months of 2014. All of the sections within this report have been reviewed and have been in continuous compliance with the exception of a late report filing in 2014.

If you have any questions regarding this submittal, please call me at (630) 928-1768.

Sincerely,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

Attachment: Annual 2014 Title V Compliance Certification

pc: Kathy Hoffman – Senior VP, EHS
Daryl Mosby - Smyrna General Manager
Kevin Wagner – Director, EHS

US EPA Region IV
Air and EPCRA Enforcement Branch61 Forsyth Street
Atlanta, GA 30303

Sterigenics International LLC
2015 Spring Road, Suite 650 • Oak Brook, IL 60523
Tel 630.928.1700 • Fax 630.928.1701 • www.sterigenics.com

AIRS # 067-00093

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TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 1 – FACILITY INFORMATION AND CERTIFICATION

FACILITY INFORMATION							
Period Covered By Report:	1-1-14 to 5-26-14						
Facility Name:	Sterigenics U.S., LLC			AIRS Number:	04-13-067-00093		
Facility Physical Address:	2973 Olympic Industrial Drive						
City:	Smyrna	State:	GA	ZIP Code:	30080		
Facility Mailing Address:	2973 Olympic Industrial Drive						
City:	Smyrna	State:	GA	ZIP Code:	30080		
Responsible Official:	Kathleen Hoffman	Phone:	630-928-1758	FAX:	630-928-1701		
Environmental Contact:	Susan M. Reinhardt	Phone:	630-928-1768	FAX:	630-928-1701		
Permit and Amendment Number(s):	7389-067-0093-V-04-0	Permit and Amendment Effective Date(s):		V-04-0 5-19-2010 to 05-26-2014			

TRUTH, ACCURACY, AND COMPLETENESS CERTIFICATION BY RESPONSIBLE OFFICIAL		
I certify that, based on information and belief formed after reasonable inquiry, the statements and information contained in the attached annual compliance certification are true, accurate, and complete.		
Signature:	KA Hoffman	Date: 23-Jan-2015
Responsible Official Title:	Senior Vice-President EHS	

Number of Attached Pages:	9

For the purposes of this form, the term "deviation" includes any excess emissions, exceedance, or excursion identified in the permit or any non-compliance with any term or condition of the Title V Operating Permit including those attributable to equipment malfunction, breakdown, or upset condition. The acknowledgement of deviations from the specific permit requirements is not necessarily an acknowledgement of a violation. However, failure to report any and all deviations may constitute a violation of the Title V Operating Permit.

The Title V Annual Compliance Certification must be submitted to both the Georgia EPD and US EPA Region IV.

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Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, GA 30354

US EPA Region IV
Air and EPCRA Enforcement Branch
61 Forsyth Street
Atlanta, GA 30303

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TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 2 – COMPLIANCE STATUS

Facility Name:	Sterigenics U.S., LLC		
AIRS Number:	04-13-067-00093	For Reporting Period:	1-1-14 to 5-26-14

Permit Number & Condition Number	Compliance Status	Monitoring Method	Identification of Deviations		
			Previously Reported	Not Previously Reported (See Part 3)	Total
V-04-0 3.3.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 3.3.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	ST	----	----	0
V-04-0 3.3.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 3.3.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 3.3.5	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 4.1.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 4.1.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 4.1.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 5.1.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 5.2.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 5.2.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 5.2.3a	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0
V-04-0 5.2.3b	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	----	----	0

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Monitoring Method Abbreviations: RR = Record keeping Requirement; ST = Source Testing; CEMS = Continuous Emissions Monitoring System; COMS = Continuous Opacity Monitoring System; CFM = Continuous Fuel Monitoring; VE = Visible Emissions Monitoring; PEMS = Predictive Emissions Monitoring System; CERMS = Continuous Emission Rate Monitoring System; PMS = Parametric Monitoring System; OMP = Operations and Maintenance Plan; IN = Inspection; Other = Method not listed, provide description.

TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 2 – COMPLIANCE STATUS

Facility Name:	Sterigenics U.S., LLC		
AIRS Number:	04-13-067-00093	For Reporting Period:	1-1-14 to 5-26-14

Permit Number & Condition Number	Compliance Status	Monitoring Method	Identification of Deviations		
			Previously Reported	Not Previously Reported (See Part 3)	Total
V-04-0 5.2.3c	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 5.2.3d	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.1.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.1.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.1.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.1.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.1.5	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.1.6	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.1.7	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.2.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.2.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 6.2.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0

Monitoring Method Abbreviations: RR = Record keeping Requirement; ST = Source Testing; CEMS = Continuous Emissions Monitoring System; COMS = Continuous Opacity Monitoring System; CFM = Continuous Fuel Monitoring;

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VE = Visible Emissions Monitoring; PEMS = Predictive Emissions Monitoring System; CERMS = Continuous Emission Rate Monitoring System; PMS = Parametric Monitoring System; OMP = Operations and Maintenance Plan; IN = Inspection; Other = Method not listed, provide description.

TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 2 – COMPLIANCE STATUS

Facility Name:	Sterigenics U.S., LLC		
AIRS Number:	04-13-067-00093	For Reporting Period:	1-1-14 to 5-26-14

Permit Number & Condition Number	Compliance Status	Monitoring Method	Identification of Deviations		
			Previously Reported	Not Previously Reported (See Part 3)	Total
V-04-0 6.2.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 7.1.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 7.2.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 7.2.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 7.10.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 7.11.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 7.11.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 7.12	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.1.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.1.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.2.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.2.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0

Monitoring Method Abbreviations: RR = Record keeping Requirement; ST = Source Testing; CEMS = Continuous Emissions Monitoring System; COMS = Continuous Opacity Monitoring System; CFM = Continuous Fuel Monitoring; VE = Visible Emissions Monitoring; PEMS = Predictive Emissions Monitoring System; CERMS = Continuous Emission

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Rate Monitoring System; PMS = Parametric Monitoring System; OMP = Operations and Maintenance Plan; IN = Inspection; Other = Method not listed, provide description.

TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 2 – COMPLIANCE STATUS

Facility Name:	Sterigenics U.S., LLC		
AIRS Number:	04-13-067-00093	For Reporting Period:	1-1-14 to 5-26-14

Permit Number & Condition Number	Compliance Status	Monitoring Method	Identification of Deviations		
			Previously Reported	Not Previously Reported (See Part 3)	Total
V-04-0 8.2.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.3.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.3.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.3.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.3.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.4.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.5.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.5.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.5.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.6.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.7.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.8.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0

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TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 2 – COMPLIANCE STATUS

Facility Name:	Sterigenics U.S., LLC		
AIRS Number:	04-13-067-00093	For Reporting Period:	1-1-14 to 5-26-14

Permit Number & Condition Number	Compliance Status	Monitoring Method	Identification of Deviations		
			Previously Reported	Not Previously Reported (See Part 3)	Total
V-04-0 8.8.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.8.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.8.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.9.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.9.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.10.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.11.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.11.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.11.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.11.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.11.5	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.11.6	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0

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TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 2 – COMPLIANCE STATUS

Facility Name:	Sterigenics U.S., LLC		
AIRS Number:	04-13-067-00093	For Reporting Period:	1-1-14 to 5-26-14

Permit Number & Condition Number	Compliance Status	Monitoring Method	Identification of Deviations		
			Previously Reported	Not Previously Reported (See Part 3)	Total
V-04-0 8.12.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.13.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.13.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.13.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.13.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.14.1	☐ Continuous ☒ Intermittent ☐ Not Applicable	RR	---	The 2013 annual compliance report was completed on 11 February 2014.	1
V-04-0 8.14.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.14.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.14.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.15.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.16.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.16.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0

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TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 2 – COMPLIANCE STATUS

Facility Name:	Sterigenics U.S., LLC		
AIRS Number:	04-13-067-00093	For Reporting Period:	1-1-14 to 5-26-14

Permit Number & Condition Number	Compliance Status	Monitoring Method	Identification of Deviations		
			Previously Reported	Not Previously Reported (See Part 3)	Total
V-04-0 8.17.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.17.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.18.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.19.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.19.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.19.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.20.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.21.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.22.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.22.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.23.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0

Monitoring Method Abbreviations: RR = Record keeping Requirement; ST = Source Testing; CEMS = Continuous Emissions Monitoring System; COMS = Continuous Opacity Monitoring System; CFM = Continuous Fuel Monitoring; VE = Visible Emissions Monitoring; PEMS = Predictive Emissions Monitoring System; CERMS = Continuous Emission Rate Monitoring System; PMS = Parametric Monitoring System; OMP = Operations and Maintenance Plan; IN = Inspection; Other = Method not listed, provide description.

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TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 2 – COMPLIANCE STATUS

Facility Name:	Sterigenics U.S., LLC		
AIRS Number:	04-13-067-00093	For Reporting Period:	1-1-14 to 5-26-14

Permit Number & Condition Number	Compliance Status	Monitoring Method	Identification of Deviations		
			Previously Reported	Not Previously Reported (See Part 3)	Total
V-04-0 8.24.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.24.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.24.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.24.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.25.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.26.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.27.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	-------

Monitoring Method Abbreviations: RR = Record keeping Requirement; ST = Source Testing; CEMS = Continuous Emissions Monitoring System; COMS = Continuous Opacity Monitoring System; CFM = Continuous Fuel Monitoring; VE = Visible Emissions Monitoring; PEMS = Predictive Emissions Monitoring System; CERMS = Continuous Emission Rate Monitoring System; PMS = Parametric Monitoring System; OMP = Operations and Maintenance Plan; IN = Inspection; Other = Method not listed, provide description.

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Fax: (404) 363-7100

TITLE V ANNUAL COMPLIANCE CERTIFICATION FORM
PART 2 – COMPLIANCE STATUS

Facility Name:	Sterigenics U.S., LLC		
AIRS Number:	04-13-067-00093	For Reporting Period:	1-1-14 to 5-26-14

Permit Number & Condition Number	Compliance Status	Monitoring Method	Identification of Deviations		
			Previously Reported	Not Previously Reported (See Part 3)	Total
V-04-0 8.24.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.24.2	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.24.3	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.24.4	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.25.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.26.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0
V-04-0 8.27.1	☒ Continuous ☐ Intermittent ☐ Not Applicable	RR	---	---	0

Monitoring Method Abbreviations: RR = Record keeping Requirement; ST = Source Testing; CEMS = Continuous Emissions Monitoring System; COMS = Continuous Opacity Monitoring System; CFM = Continuous Fuel Monitoring; VE = Visible Emissions Monitoring; PEMS = Predictive Emissions Monitoring System; CERMS = Continuous Emission Rate Monitoring System; PMS = Parametric Monitoring System; OMP = Operations and Maintenance Plan; IN = Inspection; Other = Method not listed, provide description.

Sterigenics.

RECEIVED
JAN 26 2015
AIR PROTECTION BRANCH

January 12, 2015

Georgia Department of Natural Resources
Environmental Protection Division
Stationary Source Compliance Program
Air Protection Branch
Atlanta Tradeport, Suite 120
4244 International Parkway
Atlanta, Georgia 30354-3908

Attention: Ms. Karen Hays, Unit Manager

Subject: Semi-annual Synthetic Minor Operating Permit No. 7389-067-0093-S-05-0 for the period of July 1, 2014 to December 31, 2014

This letter provides information for the semi-annual report for the Synthetic Minor Operating Permit for the period July 1, 2014 through December 31, 2014. This report is intended to satisfy all requirements of Condition 7.7 of operating permit number No. 7389-067-0093-S-05-0. For ease of reference, this report is organized by permit condition.

Semi-annual Reporting Requirements

Condition 7.7 requires:

The Permittee shall submit a written report containing any excess emissions, exceedances, and/or excursions as described in this permit and any monitor malfunctions for each semiannual period ending January 1 and June 30 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, July 30 and January 30, respectively. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state. Otherwise, the contents of each report shall be as specified by the Division's Procedures for Testing and Monitoring sources of Air Pollutants and shall contain the following: [391-3-3-.2(6)(b)1.; 40CFR 63.10 (e)]

a. A Summary report of excess emissions, exceedances and excursions, and monitor downtime, deviations and monitor downtime in accordance with Section 1.5 (c) and (d) of the above referenced document, including any failure to follow required work practice procedures.

There were no recordkeeping/ procedural deviations or excess emissions or excursions associated with section 7.7.

b. Total process operating time during each reporting period. Total processing time was:

4,392 hours (183 days)

Ains # 067-00093

Sterigenics.

c. The magnitude of all excess emissions, exceedances and excursions computed in accordance with the applicable definitions as determined by the Director, and any conversion factors used, and the date and time of the commencement and completion of each time period of occurrence.

There were no excess emissions, exceedances or excursions during the report period.

d. Specific identification of each period of such excess emissions, exceedances, and excursions that occur during startups, shutdowns, or malfunctions of the affected facility. Include the nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

There were no excess emissions, exceedances or excursions during the report period.

e. The date and time identifying each period during which any required monitoring system or device was inoperative (including periods of malfunction) except for zero and span checks, and the nature of the repairs, adjustments, or replacement. When the monitoring system or device has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

There were no breakdowns of the monitoring system or devices during the reporting period.

f. Per Permit Section 7.4, we have enclosed copies of the monthly testing the Dry Beds for the period July 1, 2014 to December 31, 2014. We did not exceed 0.9 ppm or greater in the outlet.

g. Certification by a Responsible Official, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

Required Statement
Sterigenics U.S., LLC has reviewed all applicable provisions of the Synthetic Minor operating permit.

There have not been deviations from applicable limitations, standards or monitor malfunctions during the reporting period from July 1, 2014 through December 31, 2014.

KA Hoffman 13-Jan-2015

Kathleen Hoffman
Senior Vice President, Environment, Health and Safety

Date

If you have any questions regarding this submittal, please call me at (630) 928-1768.

Kind Regards,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

Sterigenics.

Enclosure: Dry Bed Tests – July 1, 2014 – December 31, 2014

Pc: Air and EPCRA Enforcement Branch, U.S. EPA Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Kathleen Hoffman, Senior Vice-President- EHS
Juan Segovia, Vice-President - Operations
Daryl Mosby – General Manager – Smyrna, Georgia
Kevin Wagner, Director EH&S

SMR:cmq

Sterigenics

AAT Sampling Log

Emission samples of the AAT will be recorded below. The sample will be taken once each month or when needed as per permit.

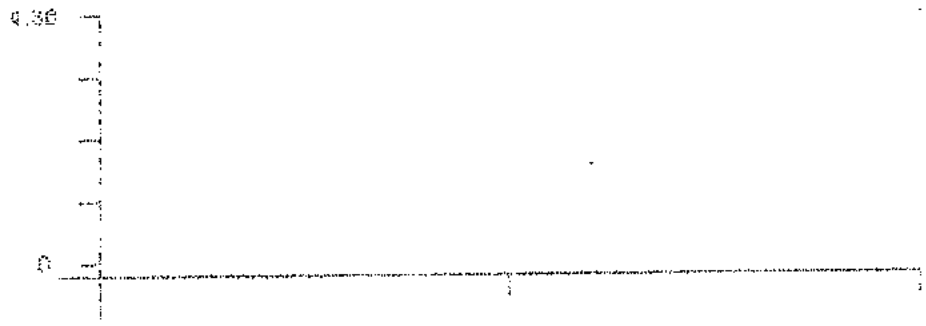
Date of sample collection/testing: 25/July/2014	
Location / Emission type tested: Aeration Chamber	Position tested: Inlet Outlet
☑ Aeration ☐ 1 Chamber Vacuum	
Person collecting the sample: Ken Martin	
Collection time (15 minute minimum): 19:09 GMT – 19:27 GMT	
Type of bag used and amount of gas collected: SKC	
Analysis system used: ☑ In-house Perkin-Elmer ☐ Other:	
Last system calibration Date & Time: 25/July/2014 @ 19:36 GMT	
Sample results: ☐ Inlet Run 1: 0.86 Run 2: 1.76 Run 3: 4.36 Average: 2.33	
Sample results: ☐ Outlet Run 1: 0.00 Run 2: 0.00 Run 3: 0.00 Average: 0.00	
Comments: Test performed in accordance with FWI-SM-025.	

Reviewed By: [signature] Date: 25 Jul 2014

Monitor Single Port

Inlet

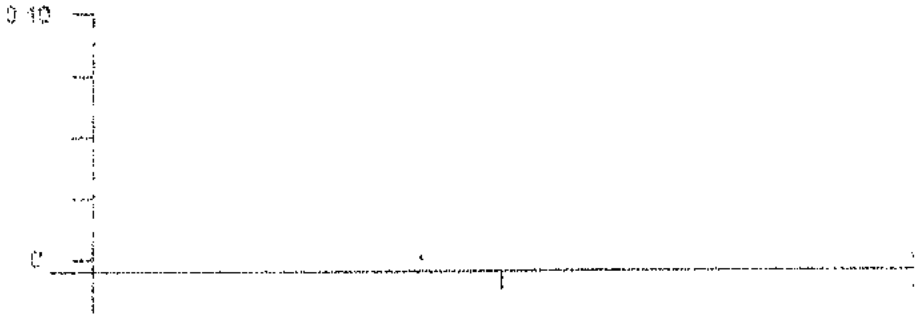
Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Jul 25,2014 19:55
End Time: Jul 25,2014 19:58
Number of points: 3
Average Value: 2.33



Monitor Single Port

Outlet

Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Jul 25,2014 20:04
End Time: Jul 25,2014 20:09
Number of points: 3
Average Value: 0.00



Sterigenics

AAT Sampling Log

Emission samples of the AAT will be recorded below. The sample will be taken once each month or when needed as per permit.

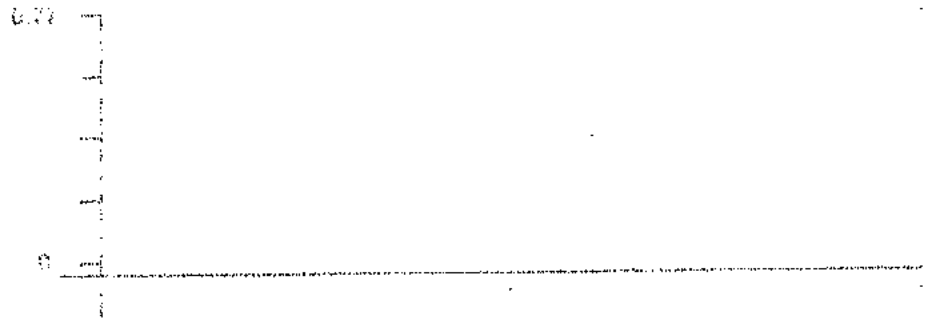
Date of sample collection/testing: 28 August 2014	
Location / Emission type tested: Aeration Chamber	Position tested: Inlet Outlet
☑ Aeration ☐ 1 Chamber Vacuum	
Person collecting the sample: Ken Martin	
Collection time (15 minute minimum): 15:47 GMT – 16:05 GMT	
Type of bag used and amount of gas collected: SKC	
Analysis system used: ☑ In-house Perkin-Elmer ☐ Other:	
Last system calibration Date & Time: 28 August 2014 @ 16:10GMT	
Sample results: ☐ Inlet Run 1: 0.00 Run 2: 0.37 Run 3: 0.77 Average: 0.38	
Sample results: ☐ Outlet Run 1: 0.00 Run 2: 0.00 Run 3: 0.00 Average: 0.00	
Comments: Test performed in accordance with SM-WI-025.	

Reviewed By: [signature] Date: 28 Aug 2014

Monitor Single Point

[illegible]

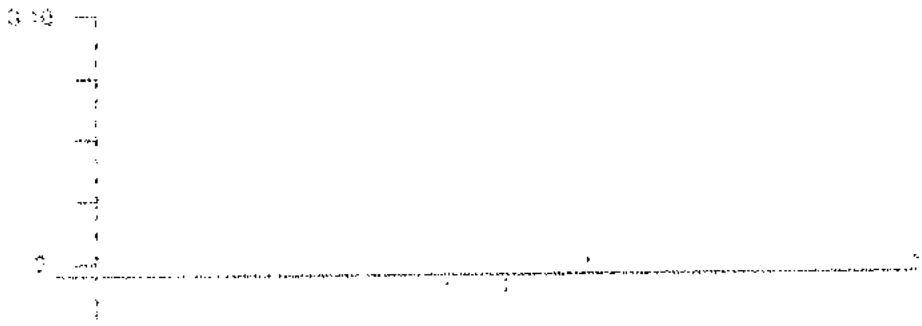
Part: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Aug 28,2014 18:24
End Time: Aug 28 2014 18:29
Number of points: 3
Average Value: 0.39



Manner Single Port

Outlet

Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Aug 28,2014 16:35
End Time: Aug 28,2014 16:40
Number of points: 5
Average Value: 0.00



Sterigenics

AAT Sampling Log

Emission samples of the AAT will be recorded below. The sample will be taken once each month or when needed as per permit.

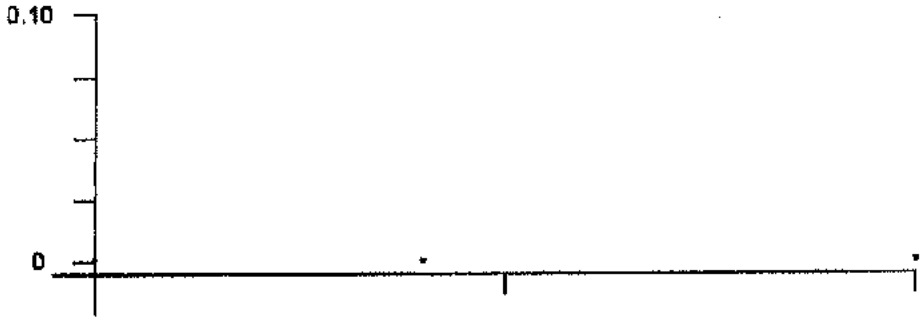
Date of sample collection/testing: 30-Sep-14	
Location / Emission type tested: Aeration Chamber	Position tested: Inlet Outlet
☑ Aeration ☐ 1 Chamber Vacuum	
Person collecting the sample: Ken Martin	
Collection time (15 minute minimum): 14:35 GMT – 14:53 GMT	
Type of bag used and amount of gas collected: Flexfoil	
Analysis system used: ☑ In-house Perkin-Elmer ☐ Other:	
Last system calibration Date & Time: 30-Sep-14 @ 14:55	
Sample results: ☐ Inlet Run 1: 0.00 Run 2: 0.00 Run 3: 0.00 Average: 0.00	
Sample results: ☐ Outlet Run 1: 0.00 Run 2: 0.00 Run 3: 0.00 Average: 0.00	
Comments: Test performed and completed in accordance with FWI-SM-025.	

Reviewed By: [signature] Date: 30 Sep 2014

Monitor Single Port

Outlet

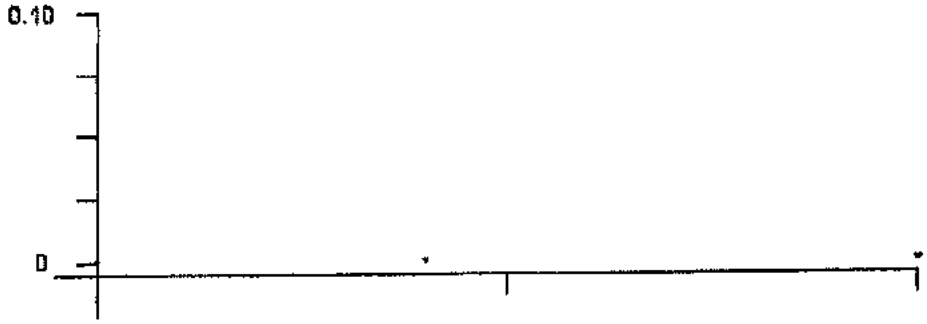
Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Sep 30,2014 14:57
End Time: Sep 30,2014 15:02
Number of points: 3
Average Value: 0.00



Monitor Single Port

Inlet

Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Sep 30,2014 14:46
End Time: Sep 30,2014 14:51
Number of points: 3
Average Value: 0.00



Sterigenics

AAT Sampling Log

Emission samples of the AAT will be recorded below. The sample will be taken once each month or when needed as per permit.

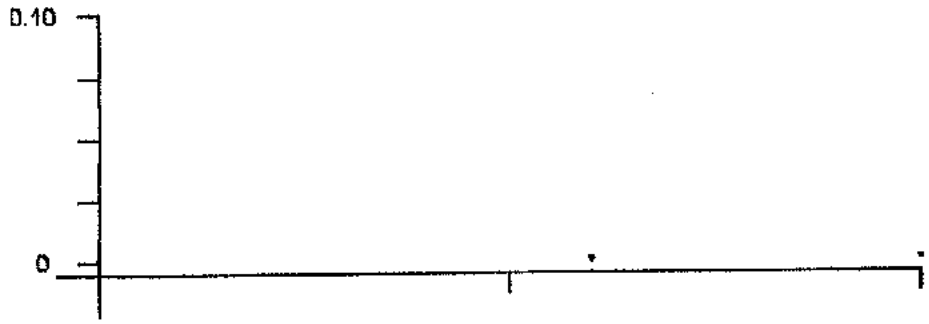
Date of sample collection/testing: 31/ OCT /2014	
Location / Emission type tested: Aeration Chamber	Position tested: Inlet Outlet
☑ Aeration ☐ 1 Chamber Vacuum	
Person collecting the sample: Ken Martin	
Collection time (15 minute minimum): 17:47 GMT – 18:09	
Type of bag used and amount of gas collected: SKC	
Analysis system used: ☑ In-house Perkin-Elmer ☐ Other:	
Last system calibration Date & Time: 31/October/2014 @ 18:19 GMT	
Sample results: ☐ Inlet Run 1: 0.00 Run 2: 0.00 Run 3: 0.00 Average: 0.00	
Sample results: ☐ Outlet Run 1: 0.00 Run 2: 0.00 Run 3: 0.00 Average: 0.00	
Comments: Test performed in accordance with FWI-SM-025.	

Reviewed By: [signature] Date: 31 Oct 2014

Monitor Single Port

Outlet

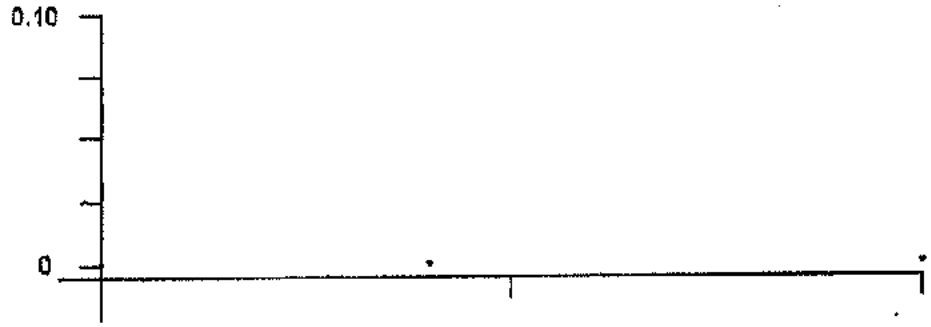
Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Oct 31,2014 18:41
End Time: Oct 31,2014 18:46
Number of points: 3
Average Value: 0.00



Monitor Single Port

Inlet

Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Oct 31,2014 18:30
End Time: Oct 31,2014 18:35
Number of points: 3
Average Value: 0.00



Sterigenics

AAT Sampling Log

Emission samples of the AAT will be recorded below. The sample will be taken once each month or when needed as per permit.

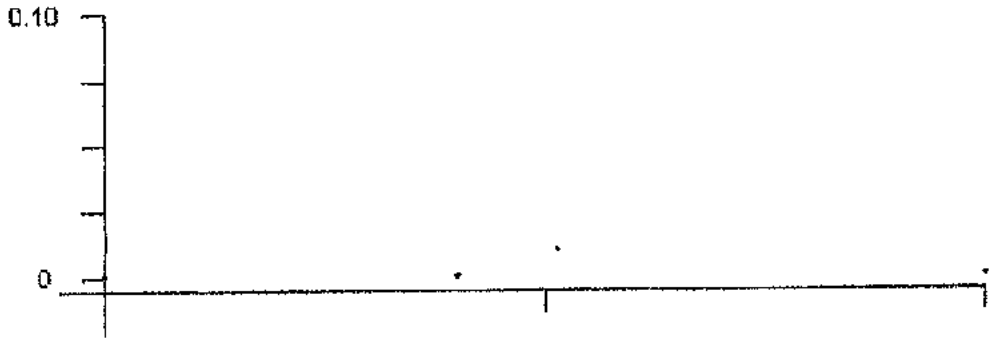
Date of sample collection/testing: 26-November-2014	
Location / Emission type tested: Aeration Chamber	Position tested: Inlet Outlet
☑ Aeration ☐ 1 Chamber Vacuum	
Person collecting the sample: Ken Martin	
Collection time (15 minute minimum): 22:09 GMT -22:27 GMT	
Type of bag used and amount of gas collected: SKC	
Analysis system used: ☑ In-house Perkin-Elmer ☐ Other:	
Last system calibration Date & Time: 26-November-14 @ 22:30 GMT	
Sample results: ☐ Inlet Run 1: 3.75 Run 2: 3.75 Run 3: 3.85 Average: 2.84	
Sample results: ☐ Outlet Run 1: 0.00 Run 2: 0.00 Run 3: 0.00 Average: 0.00	
Comments: Test performed in accordance with FWI-SM-025.	

Reviewed By: [signature] Date: 30 Nov 2014

Monitor Single Port

~~INLET~~ Km
Outlet 13-JAN-15

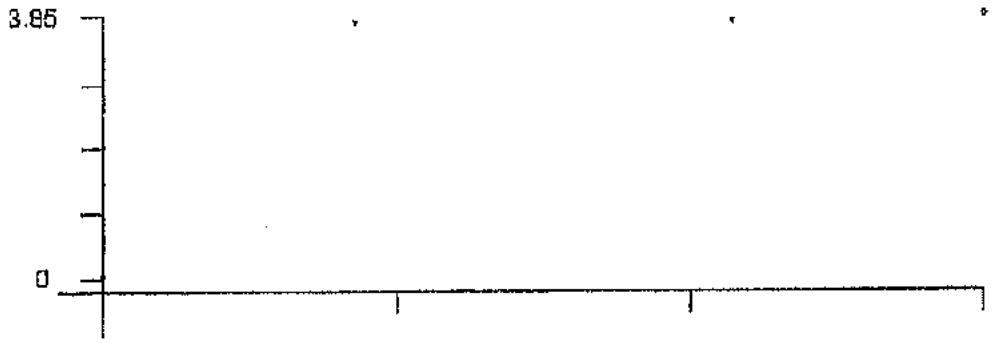
Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Nov 26,2014 22:35
End Time: Nov 26,2014 22:40
Number of points: 3
Average Value: 0.00



Monitor Single Port

~~OUTLET~~ Km
Inlet 13-JAN-15

Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Nov 26,2014 22:46
End Time: Nov 26,2014 22:53
Number of points: 4
Average Value: 2.84



Sterigenics

AAT Sampling Log

Emission samples of the AAT will be recorded below. The sample will be taken once each month or when needed as per permit.

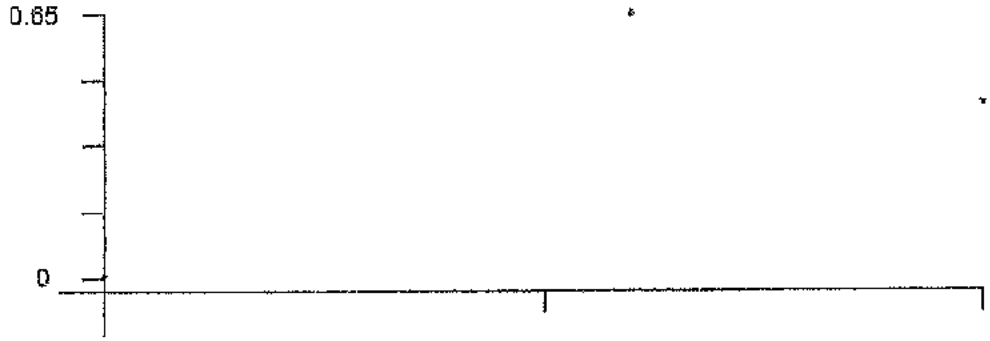
Date of sample collection/testing: 23-December-2014	
Location / Emission type tested: (Aeration) Chamber	Position tested: (Inlet) (Outlet)
☑ Aeration ☐ 1 Chamber Vacuum	
Person collecting the sample: Ken Martin	
Collection time (15 minute minimum): 19:38 GMT to 19:56 GMT	
Type of bag used and amount of gas collected: SKC	
Analysis system used: ☑ In-house Perkin-Elmer ☐ Other:	
Last system calibration Date & Time: 23-December-2014 @ 19:59 GMT	
Sample results: ☐ Inlet Run 1: 5.19 Run 2: 5.04 Run 3: 3.94 Average: 4.72	
Sample results: ☐ Outlet Run 1: 0.00 Run 2: 0.65 Run 3: 0.42 Average: 0.36	
Comments: Test conducted in accordance with FWI-SM-025.	

Reviewed By: _____ Date: 29 Dec 2014

Monitor Single Port

~~Inlet~~ Outlet Km 13-Jan-15

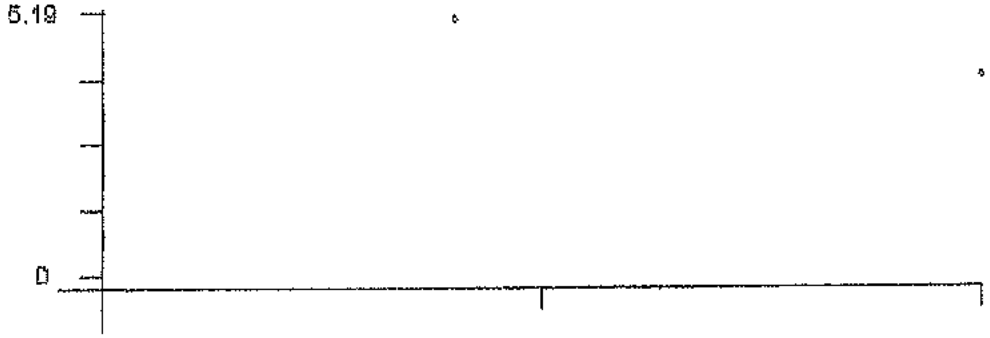
Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Dec 23,2014 20:06
End Time: Dec 23,2014 20:11
Number of points: 3
Average Value: 0.36



Monitor Single Port

~~Outlet~~ KM
Inlet 13·JAN·15

Port: Diagnostic
Component: ETHYLENE OXIDE
Start Time: Dec 23,2014 20:18
End Time: Dec 23,2014 20:23
Number of points: 3
Average Value: 4.72



Sterigenics.

RECEIVED
AUG 14 2014
AIR PROTECTION BRANCH

August 11, 2014

Mr. Don Holder
Georgia EPD
Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Subject: **Notification: Completion of Construction**
Permit No. 7389-067-0093-S-05-0

Dear Mr. Holder:

As required by our air permit, section 7.5, Sterigenics is providing construction completion notification of Chamber 10 (SEV-10) and Aeration Room 1 (AR-1).

Chamber 10 (SEV-10)
Construction was completed on Chamber 10 on August 7, 2014. (Condition 7.5-a) The current anticipated start-up date for Chamber 10 is October 10, 2014. (Condition 7.5-b)

Aeration Room 1(AR-1)
The Aeration Room 1 construction was completed and placed into service on June 6, 2014 (Condition 7.5, a-c).

Please do not hesitate to contact me with questions. You can reach me at (630) 928-1768.

Kind Regards,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

pc:

Kathy Hoffman – Sr. VP, EH&S
Daryl Mosby - Smyrna General Manager
Juan Segovia – VP – EO Operations
Kevin Wagner – Director, EHS

Mr. Michael Odom, Unit Manager
Georgia EPD, Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

US EPA Region IV
Air and EPCRA Enforcement Branch
61 Forsyth Street
Atlanta, GA 30303

Mr. Heather Cottrell
Georgia EPD, Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Sterigenics International LLC
2015 Spring Road, Suite 650 • Oak Brook, IL 60523
Tel 630.928.1700 • Fax 630.928.1701 • www.sterigenics.com

AIRS # 067-00093

Holder, Don

From: Holder, Don
Sent: Monday, July 25, 2016 11:58 AM
To: sreinhardt@sterigenics.com
Subject: March 2016 Ceilcote Scrubber System testing
Attachments: Ceilcote Packed Tower Scrubber March 2016.pdf

The Industrial Source Monitoring Program of the Air Protection Branch has reviewed the Performance Test Report for the Sterigenics, U.S., LLC Ceilcote Scrubber System conducted on March 17-18, 2016.

The review of the report indicates an average destruction efficiency of 99.9999%. The test results appear to comply with the requirements of ~~Part 70~~ Permit 7389-067-0093-S-05-3. A copy of the test report review is attached for your files.

If you have any questions concerning this letter or compliance with your air quality permits, please contact me at 404/362-4846 or by e-mail at don_holder@mail.dnr.state.ga.us.

AIRS # 067-00093

Georgia Department of Natural Resources
Environmental Protection Division · Air Protection Branch
4244 International Parkway · Suite 120 · Atlanta · Georgia 30354
Telephone: 404/363-7000 · Fax: 404/363-7100
Judson H. Turner, Director

JUL 18 2016

MEMORANDUM:

TO: Michael Odom
THROUGH: Ross Winne, Marcus Cureton
FROM: Anna Gray
SUBJECT: SOURCE TEST REPORT REVIEW

The following test has been reviewed and was conducted in an acceptable fashion for the purpose intended.

COMPANY NAME	Sterigenics U.S. LLC
COMPANY LOCATION	Atlanta, GA
SOURCE TESTED	10-Sterilizer Chambers/Ceilcote Packed Tower Scrubber
POLLUTANT DETERMINED	Ethylene Oxide
REPORT REVIEWED BY	Anna Gray
TEST WITNESSED BY	Ross Winne
DATE(S) OF TEST	March 17, 2016 to March 18, 2016
DATE RECEIVED BY APB	May 24, 2016
APPLICABLE REGULATION	Permit No. 7389-067-0093-S-05-3, Condition 2.3
MEMORANDUM	The reduction efficiency test of the Ceilcote packed tower scrubber emission control system was conducted in accordance with USEPA CFR 40, Part 63.365. At least one of the test runs was performed using emissions from the new30-pallet sterilizer (Chamber#11). The other two chambers were: #3 and #8. Run #1 Inlet EtO= 44.9 lbs Outlet EtO= 0.0000065 lbs EtO Control Efficiency= 99.9999% Minutes/cycle= 24 Run #2 Inlet EtO=61.9 lbs Outlet EtO= 0.0000141 lbs EtO Control Efficiency= 99.9999% Minutes/cycle= 23 Run #3 Inlet EtO= 76.1 lbs Outlet EtO= 0.0000076 lbs EtO Control Efficiency= 99.9999% Minutes/cycle= 20 Average EtO Control Efficiency: 99.9999% Required EtO Control Efficiency: 99% The amount of ethylene oxide used during each sterilization cycle was calculated by the Gas law and the conditions at the beginning and the end of every exhaust phase. All exhaust phase testing wsa conducted during normal process load conditions, but with an empty sterilization chamber to facilitate inlet mass calculation and the performance of multiple test runs. Parameters during test: Ceilcote scrubber readings: pH= 1.2 ; Storage tank level=: 186 inches ;Glycol concentration=36.3% AAT scrubber readings: pH=0.9; Tank level= 105 inches; Glycol concentration=36.8%

cc: Ross Winne
Reference Number: 201600650

AIRS Number: 06700093
Printed: 7/12/2016

Sterigenics.

RECEIVED
MAR 14 2016
AIR PROTECTION BRANCH

March 8, 2016

Mr. Don Holder
Georgia EPD
Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

POSTMARK
MAR 11 2016
DATE

Subject: **Notification: Chamber 11 – Initial Date of Start-Up**
Permit No. 7389-067-0093-S-05-3

Dear Mr. Holder:

As required by our air permit, section 7.8, Sterigenics is providing notification of the initial start-up date of Chamber 11 (SEV-11).

Chamber 11 (SEV-11)
The Atlanta facility began production with the use of Chamber 11 today, March 8, 2016, (Condition 7.8-c). Performance testing is scheduled to begin the afternoon of March 17, through March 18, 2016 and Mr. Ross Winne is aware and invited to attend the testing.

Please do not hesitate to contact me with questions. You can reach me at (630) 928-1768.

Kind Regards,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

pc:

Kathy Hoffman – Sr. VP, EH&S
Daryl Mosby - Smyrna General Manager
Juan Segovia – VP – EO Operations
Kevin Wagner – Director, EHS

Mr. Michael Odom, Unit Manager
Georgia EPD, Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

US EPA Region IV
Air and EPCRA Enforcement Branch
61 Forsyth Street
Atlanta, GA 30303

Mr. Sean Taylor
Georgia EPD, Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Sterigenics International LLC
2015 Spring Road, Suite 650 • Oak Brook, IL 60523
Tel 630.928.1700 • Fax 630.928.1701 • www.sterigenics.com

AIRS # 067-00093

Holder, Don

From: Holder, Don
Sent: Friday, January 29, 2016 12:40 PM
To: sreinhardt@sterigenics.com
Subject: 2nd semiannual report 2015

The Division received the semi-annual report dated January 14, 2016 for your facility for the July through December 2015 reporting period. The report, received on January 20, 2016, appears to satisfy the requirements of Condition 7.7 of Georgia Air Quality Permit 7389-067-0093-S-5-0, as amended, and Condition 6.1.4 of the previous Permit No. 7389-067-0093-S-05-0.

If you have any questions about compliance with your permit, please contact me at 404/362-4846 or by email at: don.holder@dnr.state.ga.us.

AIRS # 067-00093

Sterigenics.

RECEIVED
JAN 20 2016
AIR PROTECTION BRANCH

January 14, 2016

Georgia Department of Natural Resources
Environmental Protection Division
Stationary Source Compliance Program
Air Protection Branch
Atlanta Tradeport, Suite 120
4244 International Parkway
Atlanta, Georgia 30354-3908

Attention: Ms. Karen Hays, Unit Manager

Subject: Semiannual Synthetic Minor Deviation Report for Sterigenics, U.S., LLC, Atlanta, Georgia Facility Operating **Permit No. 7389-0670093-S-05-0** for the period of July 01, 2015 to December 31, 2015

This letter provides information for the semi-annual Synthetic Minor Permit Deviation Report for Sterigenics, Inc.'s Atlanta, Georgia facility covering the period from January 1, 2015 through June 30, 2015. This report is intended to satisfy the monitoring and reporting requirements of Condition 5.4, 7.4 and 7.7 of Part 70 operating permit number 7389-067-0093-S-05-0. For ease of reference, this report is organized by permit condition.

Semiannual Deviation Reporting Requirements

Condition 5.4 requires:

The Permittee shall maintain and operate the AAT Scrubber System (EC2) to ensure a maximum emission level of 1 ppmv or a reduction of 99% for aeration room vents (AR-1, AR-11 through AR-13) and a reduction efficiency of 99% for sterilization chamber vents (SEV-1- SEV-10):

a. Aeration room vents: AR-1, AR-11 through AR-13 – Once per month the Permittee shall simultaneously collect and record the concentration of a 15-minute ethylene oxide bag sample from both the inlet and outlet of the dry bed absorbers:	
i. Facilities complying with the 1ppmvd standard, as specified in condition No. 2.4, and the concentration of ethylene oxide in the outlet sample of the dry bed absorbers increases to 0.9 ppmv or greater, the Permittee shall replace the dry bed material within 30 days, prior to the next scheduled aeration room exhaust sampling event.	We did not exceed 0.9 ppm or greater in the outlet.
ii. Facilities complying with the 99% reduction efficiency standard, as specified in Condition No. 2.4, and the AAT Scrubber System reduction efficiency decreases to 99.1% or less, the Permittee shall replace the dry bed material within 30 days prior to the next scheduled aeration exhaust sampling event. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed absorbers.	Performance testing conducted on October 24, 2014 indicated efficiency for the AAT scrubber at 99.96%.

AIRS #067-00093

b. Aeration room vents (AR-1, AR-11 – AR-13) and sterilization chamber vents (SEV-1 through SEV-10) – any instance when sterilization chamber exhausts and aeration room exhausts are simultaneously vented through the AAT Scrubber System, the Permittee shall comply with the 99% reduction efficiency standard. During any such event, the Permittee shall collect and record the concentration of a 15-minute ethylene oxide bag sample from the outlet of the dry bed adsorbers within 96 hours of changeover. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed adsorbers. If the reduction efficiency of the AAT Scrubber System is less than 99.1%, the Permittee shall not route any sterilization replaced. Bag testing shall continue at a sampling frequency of once per week during the changeover of the sterilization chamber vents from the Ceilcote Scrubber (EC3) to the AAT Scrubber System.	N/A
c. When the Permittee is sampling in accordance with Condition Number 5.3a or 5.3b, the ethylene oxide loading to the AAT Scrubber System, the ethylene oxide mass out of the AAT dry adsorbers and the AAT Scrubber System reduction efficiency shall be recorded for each sampling event. These records shall be kept in a form suitable for inspection or submission to the Division. Methods of calculation for these measurements shall be submitted in the site-specific monitoring plan.	N/A
d. The dates of dry bed material placement shall be recorded and kept in a form suitable for inspection or submission to the Division.	N/A

Reporting Requirements

Condition 7.4 For each monthly sampling event conducted in accordance with conditions 5.4.a and 5.4.b, the Permittee shall include the following information in the semi-annual report required by Condition 7.8.

a. AAT Scrubber (EC2): List any occurrence when analysis of the dry bed adsorber outlet sample concentration exceeded 1 ppmv.	N/A Dry Bed Testing is available upon department request
b. For the AAT Scrubber System (EC2), list any occurrence when the AAT Scrubber reduction efficiency indicates that the efficiency is less than 99%.	N/A
c. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3, list any occurrence when the ethylene glycol concentration in the acid-water scrubber liquor is in excess of the maximum ethylene glycol concentration established during initial performance testing.	N/A

d. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3, list any occurrence when the liquor recirculation tank level of the acid-water scrubber is in excess of the maximum liquor tank level established during initial performance testing.	N/A
e. For the acid-water scrubbers (AAT Scrubber System EC2) and Ceilcote Scrubber EC3, any occurrence wh4en the scrubbing liquor pH rises above the manufacturers recommended level of 2.	N/A
f. For the AAT Scrubber System (EC2) list any occurrence when analysis of the dry bed adsorber outlet sample indicates the concentration exceeds 0.9 ppmv, but is less than or equal to 1 ppmv.	N/A
g. For the AAT Scrubber System (EC2), list any occurrence when AAT Scrubber System reduction efficiency indicates the efficiency is less than 99.1%, but is greater than or equal to 99%.	N/A
h. For the AAT Scrubber System, (EC2), list any instance when the AAT Scrubber System breaches a dry bed adsorber material replacement threshold, but he dry bed material is not replace within 30 days.	N/A

Condition 7.7 requires:

The Permittee shall submit a written report containing any excess emissions, exceedances, and/or excursions as described in this permit and any monitor malfunctions for each semiannual period ending January 1 and June 30 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, July 30 and January 30, respectively. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state. Otherwise, the contents of each report shall be as specified by the Division's Procedures for Testing and Monitoring sources of Air Pollutants and shall contain the following: [391-3-1-.02(6)(b) 1 and 40 CFR 63.10 (e)]

a. A Summary report of excess emissions, exceedances and excursions, and monitor downtime, deviations and monitor downtime in accordance with Section 1.5 (c) and (d) of the above referenced document, including any failure to follow required work practice procedures.

There were no recordkeeping/ procedural deviations or excess emissions or excursions associated with section 7.7.

b. Total process operating time during each reporting period. Total processing time was:

4,416 hours (184 days)

c. The magnitude of all excess emissions, exceedances and excursions computed in accordance with the applicable definitions as determined by the Director, and any conversion factors used, and the date and time of the commencement and completion of each time period of such occurrence.

There were no deviations during the period.

d. Specific identification of each period of such excess emissions, exceedances, and excursions that occur during startups, shutdowns, or malfunctions of the affected facility. Include the nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

There were no deviations during the period.

e. The date and time identifying each period during which any required monitoring system or device was inoperative (including periods of malfunction) except for zero and span checks, and the nature of the repairs, adjustments, or replacement. When the monitoring system or device has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

There were no breakdowns of the monitoring system or devices during the reporting period.

f. Certification by a Responsible Official, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

Required Statement

Sterigenics U.S. LLC has reviewed all applicable provisions of the Atlanta Synthetic Minor operating permit.

There have not been deviations from applicable limitations or standards or monitor malfunctions during the reporting period from July 01, 2015 through December 31, 2015.

KA Hoffman 15-Jun-2016

Kathleen Hoffman
Senior Vice President, Environment, Health and Safety

Date

If you have any questions regarding this submittal, please call me at (630) 928-1768.

Kind Regards,

Susan M. Reinhardt

Susan M. Reinhardt
Manager
Environment, Health and Safety

cc: Air and EPCRA Enforcement Branch, U.S. EPA Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Kathleen Hoffman, Senior Vice-President- EHS
Juan Segovia – Vice President, Operations
Daryl Mosby – Smyrna, Georgia General Manager
Kevin Wagner, Director EH&S

SMR:cmq

EXHIBIT M3

Waldron, Sherry

From: Waldron, Sherry
Sent: Thursday, August 9, 2018 10:50 AM
To: Mosby, Daryl (DMosby@sterigenics.com)
Subject: 40 CFR 63 Subpart O report, Sterigenics in Atlanta, Georgia

The Division has reviewed the above referenced report, received on July 25, 2018. The report met the reporting requirements of Georgia Air Permit No. 7389-067-0093-S-05-0, as amended. No deviations were reported.

Thank you for your timely and complete submittal.

Sherry Waldron
Environmental Engineer
Georgia Environmental Protection Division
Air Protection Branch
4244 International Pkwy.
Ste. 120
Atlanta, Georgia 30354
(404)362-4569

66700093

Sterigenics
A Sotera Health company

July 25, 2018

RECEIVED
JUL 27 2018
Air Protection Branch

Georgia Department of Natural Resources
Environmental Protection Division
Stationary Source Compliance Program
Air Protection Branch
Atlanta Tradeport, Suite 120
4244 International Parkway
Atlanta, Georgia 30354-3908

Attention: Ms. Karen Hays, Unit Manager

Subject: Semiannual Synthetic Minor Deviation Report for Sterigenics, U.S., LLC, Atlanta, Georgia Facility Operating **Permit No. 7389-0670093-S-05-0** for the period of January 01, 2018 to June 30, 2018

This letter provides information for the semi-annual Synthetic Minor Permit Deviation Report for Sterigenics, Inc.'s Atlanta, Georgia facility covering the period from January 1, 2018 through June 30, 2018. This report is intended to satisfy the monitoring and reporting requirements of Condition 5.4, 7.4 and 7.7 in operating permit number 7389-067-0093-S-05-0. For ease of reference, this report is organized by permit condition.

Semiannual Deviation Reporting Requirements

Condition 5.4 requires:

The Permittee shall maintain and operate the AAT Scrubber System (EC2) to ensure a maximum emission level of 1 ppmv or a reduction of 99% for aeration room vents (AR-1) and a reduction efficiency of 99% for sterilization chamber vents (SEV-1, SEV-2, SEV-3, SEV-4, SEV-5, SEV-6, SEV-7 SEV-8, SEV-10, SEV-11):

a. Aeration room vents: AR-1 – Once per month the Permittee shall simultaneously collect and record the concentration of a 15-minute ethylene oxide bag sample from both the inlet and outlet of the dry bed absorbers:	
i. If the facility is complying with the 1ppmvd standard, as specified in condition No. 2.4, and the concentration of ethylene oxide in the outlet sample of the dry bed absorbers increases to 0.9 ppmv or greater, the Permittee shall replace the dry bed material within 30 days, prior to the next scheduled aeration room exhaust sampling event.	Dry Bed outlet concentration did not exceed 0.9 ppm during this reporting period.
ii. If the facility is complying with the 99% reduction efficiency standard, as specified in Condition No. 2.4, and the AAT Scrubber System reduction efficiency decreases to 99.1% or less, the Permittee shall replace the dry bed material within 30 days prior to the next scheduled aeration exhaust sampling event. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed absorbers.	N/A
b. Aeration room vents (AR-1) and sterilization chamber vents (SEV-1	N/A

AIRS# 067-00093

through SEV-9, and SEV-10 through SEV-11) – any instance when sterilization chamber exhausts and aeration room exhausts are simultaneously vented through the AAT Scrubber System, the Permittee shall comply with the 99% reduction efficiency standard. During any such event, the Permittee shall collect and record the concentration of a 15-minute ethylene oxide bag sample from the outlet of the dry bed adsorbers within 96 hours of changeover. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed adsorbers. If the reduction efficiency of the AAT Scrubber System is less than 99.1%, the Permittee shall not route any sterilization replaced. Bag testing shall continue at a sampling frequency of once per week during the changeover of the sterilization chamber vents from the Ceilcote Scrubber (EC3) to the AAT Scrubber System.	
c. When the Permittee is sampling in accordance with Condition Number 5.3a or 5.3b, the ethylene oxide loading to the AAT Scrubber System, the ethylene oxide mass out of the AAT dry adsorbers and the AAT Scrubber System reduction efficiency shall be recorded for each sampling event. These records shall be kept in a form suitable for inspection or submission to the Division. Methods of calculation for these measurements shall be submitted in the site-specific monitoring plan.	N/A
d. The dates of dry bed material placement shall be recorded and kept in a form suitable for inspection or submission to the Division.	Records are maintained

Reporting Requirements

Condition 7.4 For each monthly sampling event conducted in accordance with conditions 5.4.a.i and 5.4.b, the Permittee shall include the following information in the semi-annual report required by Condition 7.8.

a. For AAT Scrubber (EC2), any occurrence when analysis of the dry bed adsorber outlet sample concentration exceeded 1 ppmv.	None
b. For the AAT Scrubber System (EC2), any occurrence when the AAT Scrubber reduction efficiency indicates that the efficiency is less than 99%.	N/A
c. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3), any occurrence when the ethylene glycol concentration in the acid-water scrubber liquor is in excess of the maximum ethylene glycol concentration established during initial performance testing.	N/A
d. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3), any occurrence when the liquor recirculation tank level of the acid-water scrubber is in excess of the maximum liquor tank level established during initial performance testing.	None
e. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3), any occurrence when the scrubbing liquor pH rises above the manufacturers recommended level of 2.	None
f. For the AAT Scrubber System (EC2) list any occurrence when analysis of the dry bed adsorber outlet sample indicates the concentration exceeds 0.9	None

ppmv, but is less than or equal to 1 ppmv.	
g. For the AAT Scrubber System (EC2), list any occurrence when AAT Scrubber System reduction efficiency indicates the efficiency is less than 99.1%, but is greater than or equal to 99%.	N/A
h. For the AAT Scrubber System, (EC2), list any instance when the AAT Scrubber System breaches a dry bed adsorber material replacement threshold, but the dry bed material is not replace within 30 days.	N/A

Condition 7.7 requires:

The Permittee shall submit a written report containing any excess emissions, exceedances, and/or excursions as described in this permit and any monitor malfunctions for each semiannual period ending January 1 and June 30 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, July 30 and January 30, respectively. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state. Otherwise, the contents of each report shall be as specified by the Division's Procedures for Testing and Monitoring sources of Air Pollutants and shall contain the following: [391-3-1-.02(6)(b) 1 and 40 CFR 63.10 (e)]

a. A Summary report of excess emissions, exceedances and excursions, and monitor downtime, deviations and monitor downtime in accordance with Section 1.5 (c) and (d) of the above referenced document, including any failure to follow required work practice procedures.

   There were no recordkeeping/ procedural deviations or excess emissions or excursions associated with section 7.7.

b. Total process operating time during each reporting period. Total processing time was:

   4,302hours

c. The magnitude of all excess emissions, exceedances and excursions computed in accordance with the applicable definitions as determined by the Director, and any conversion factors used, and the date and time of the commencement and completion of each time period of such occurrence.

   There were no deviations during the period.

d. Specific identification of each period of such excess emissions, exceedances, and excursions that occur during startups, shutdowns, or malfunctions of the affected facility. Include the nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

   There were no deviations during the period.

e. The date and time identifying each period during which any required monitoring system or device was inoperative (including periods of malfunction) except for zero and span checks, and the nature of the repairs, adjustments, or replacement. When the monitoring system or device has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

There were no breakdowns of the monitoring system or devices during the reporting period.

f. Certification by a Responsible Official, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

Required Statement

Sterigenics U.S. LLC has reviewed all applicable provisions of the Atlanta Synthetic Minor operating permit. There have not been deviations from applicable limitations or standards or monitor malfunctions during the reporting period from July 01, 2017 through December 31, 2017.

KA Hoffman 25-Jul-2018

Kathleen Hoffman
Senior VP, EH&S and Tech Services

Date

If you have any questions regarding this submittal, please call me at (630) 928-1724.

Kind Regards,

Laura Hartman
Manager
Environment, Health and Safety

cc: Air and EPCRA Enforcement Branch, U.S. EPA Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Daryl Mosby – Atlanta General Manager
Juan Segovia – VP of Operations

Waldron, Sherry

From: Waldron, Sherry
Sent: Wednesday, February 07, 2018 12:40 PM
To: 'Mosby, Daryl'
Subject: Semiannual air report for the second half of 2017

The Division received the semiannual report for the July 1, 2017 through December 31, 2017 reporting period for the Sterigenics - Atlanta Facility on January 31, 2018. The report submitted satisfies the reporting requirements of the permit for the reporting period.

Thank you for your timely submittal. If you have any questions about compliance with your permit, please feel free to contact me at 404/362-4569 or by e-mail.

Sincerely,

Sherry Waldron
Environmental Engineer
Georgia Environmental Protection Division
Air Protection Branch
Stationary Source Compliance Program
4244 International Pkwy., Suite 120
Atlanta, GA 30354
404-362-4569

06700093

Sterigenics
A Sotera Health company

RECEIVED
JAN 31 2018
AIR PROTECTION BRANCH

January 29, 2018

Georgia Department of Natural Resources
Environmental Protection Division
Stationary Source Compliance Program
Air Protection Branch
Atlanta Tradeport, Suite 120
4244 International Parkway
Atlanta, Georgia 30354-3908

Attention: Ms. Karen Hays, Unit Manager

Subject: Semiannual Synthetic Minor Deviation Report for Sterigenics, U.S., LLC, Atlanta, Georgia Facility Operating **Permit No. 7389-0670093-S-05-0** for the period of July 01, 2017 to December 31, 2017

This letter provides information for the semi-annual Synthetic Minor Permit Deviation Report for Sterigenics, Inc.'s Atlanta, Georgia facility covering the period from July 1, 2017 through December 31, 2017. This report is intended to satisfy the monitoring and reporting requirements of Condition 5.4, 7.4 and 7.7 in operating permit number 7389-067-0093-S-05-0. For ease of reference, this report is organized by permit condition.

Semiannual Deviation Reporting Requirements

Condition 5.4 requires:

The Permittee shall maintain and operate the AAT Scrubber System (EC2) to ensure a maximum emission level of 1 ppmv or a reduction of 99% for aeration room vents (AR-1) and a reduction efficiency of 99% for sterilization chamber vents (SEV-1, SEV-2, SEV-3, SEV-4, SEV-5, SEV-6, SEV-7 SEV-8, SEV-10, SEV-11):

a. Aeration room vents: AR-1 – Once per month the Permittee shall simultaneously collect and record the concentration of a 15-minute ethylene oxide bag sample from both the inlet and outlet of the dry bed absorbers:	
i. If the facility is complying with the 1ppmvd standard, as specified in condition No. 2.4, and the concentration of ethylene oxide in the outlet sample of the dry bed absorbers increases to 0.9 ppmv or greater, the Permittee shall replace the dry bed material within 30 days, prior to the next scheduled aeration room exhaust sampling event.	Dry Bed outlet concentration did not exceed 0.9 ppm during this reporting period.
ii. If the facility is complying with the 99% reduction efficiency standard, as specified in Condition No. 2.4, and the AAT Scrubber System reduction efficiency decreases to 99.1% or less, the Permittee shall replace the dry bed material within 30 days prior to the next scheduled aeration exhaust sampling event. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed absorbers.	N/A
b. Aeration room vents (AR-1) and sterilization chamber vents (SEV-1	N/A

AIRD# 067-00093

through SEV-9, and SEV-10 through SEV-11) – any instance when sterilization chamber exhausts and aeration room exhausts are simultaneously vented through the AAT Scrubber System, the Permittee shall comply with the 99% reduction efficiency standard. During any such event, the Permittee shall collect and record the concentration of a 15-minute ethylene oxide bag sample from the outlet of the dry bed adsorbers within 96 hours of changeover. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed adsorbers. If the reduction efficiency of the AAT Scrubber System is less than 99.1%, the Permittee shall not route any sterilization replaced. Bag testing shall continue at a sampling frequency of once per week during the changeover of the sterilization chamber vents from the Ceilcote Scrubber (EC3) to the AAT Scrubber System.	
c. When the Permittee is sampling in accordance with Condition Number 5.3a or 5.3b, the ethylene oxide loading to the AAT Scrubber System, the ethylene oxide mass out of the AAT dry adsorbers and the AAT Scrubber System reduction efficiency shall be recorded for each sampling event. These records shall be kept in a form suitable for inspection or submission to the Division. Methods of calculation for these measurements shall be submitted in the site-specific monitoring plan.	N/A
d. The dates of dry bed material placement shall be recorded and kept in a form suitable for inspection or submission to the Division.	Records are maintained

Reporting Requirements

Condition 7.4 For each monthly sampling event conducted in accordance with conditions 5.4.a.i and 5.4.b, the Permittee shall include the following information in the semi-annual report required by Condition 7.8.

a. For AAT Scrubber (EC2), any occurrence when analysis of the dry bed adsorber outlet sample concentration exceeded 1 ppmv.	None
b. For the AAT Scrubber System (EC2), any occurrence when the AAT Scrubber reduction efficiency indicates that the efficiency is less than 99%.	N/A
c. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3), any occurrence when the ethylene glycol concentration in the acid-water scrubber liquor is in excess of the maximum ethylene glycol concentration established during initial performance testing.	N/A
d. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3), any occurrence when the liquor recirculation tank level of the acid-water scrubber is in excess of the maximum liquor tank level established during initial performance testing.	None
e. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3), any occurrence when the scrubbing liquor pH rises above the manufacturers recommended level of 2.	None
f. For the AAT Scrubber System (EC2) list any occurrence when analysis of the dry bed adsorber outlet sample indicates the concentration exceeds 0.9	None

ppmv, but is less than or equal to 1 ppmv.	
g. For the AAT Scrubber System (EC2), list any occurrence when AAT Scrubber System reduction efficiency indicates the efficiency is less than 99.1%, but is greater than or equal to 99%.	N/A
h. For the AAT Scrubber System, (EC2), list any instance when the AAT Scrubber System breaches a dry bed adsorber material replacement threshold, but the dry bed material is not replace within 30 days.	N/A

Condition 7.7 requires:

The Permittee shall submit a written report containing any excess emissions, exceedances, and/or excursions as described in this permit and any monitor malfunctions for each semiannual period ending January 1 and June 30 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, July 30 and January 30, respectively. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state. Otherwise, the contents of each report shall be as specified by the Division's Procedures for Testing and Monitoring sources of Air Pollutants and shall contain the following: [391-3-1-.02(6)(b) 1 and 40 CFR 63.10 (e)]

a. A Summary report of excess emissions, exceedances and excursions, and monitor downtime, deviations and monitor downtime in accordance with Section 1.5 (c) and (d) of the above referenced document, including any failure to follow required work practice procedures.

   There were no recordkeeping/ procedural deviations or excess emissions or excursions associated with section 7.7.

b. Total process operating time during each reporting period. Total processing time was:

   4,416 hours

c. The magnitude of all excess emissions, exceedances and excursions computed in accordance with the applicable definitions as determined by the Director, and any conversion factors used, and the date and time of the commencement and completion of each time period of such occurrence.

   There were no deviations during the period.

d. Specific identification of each period of such excess emissions, exceedances, and excursions that occur during startups, shutdowns, or malfunctions of the affected facility. Include the nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

   There were no deviations during the period.

e. The date and time identifying each period during which any required monitoring system or device was inoperative (including periods of malfunction) except for zero and span checks, and the nature of the repairs, adjustments, or replacement. When the monitoring system or device has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

There were no breakdowns of the monitoring system or devices during the reporting period.

f. Certification by a Responsible Official, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

Required Statement

Sterigenics U.S. LLC has reviewed all applicable provisions of the Atlanta Synthetic Minor operating permit. There have not been deviations from applicable limitations or standards or monitor malfunctions during the reporting period from July 01, 2017 through December 31, 2017.

KAHoffman 30-Jun-2018

Kathleen Hoffman
Senior Vice President, Environment, Health and Safety

Date

If you have any questions regarding this submittal, please call me at (630) 928-1724.

Kind Regards,

Laura Hartman

Laura Hartman
Manager
Environment, Health and Safety

cc: Air and EPCRA Enforcement Branch, U.S. EPA Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Daryl Mosby – Atlanta General Manager
Juan Segovia – VP of Operations

EXHIBIT M4

Waldron, Sherry

From: Waldron, Sherry
Sent: Tuesday, March 5, 2019 2:30 PM
To: 'lhartman@sterigenics.com'
Subject: Semiannual Subpart O and deviation report, Sterigenics, Atlanta, Georgia

The Division has reviewed the above referenced reports, received on February 5, 2019. The report met the reporting requirements of Georgia Air Permit No. 7389-067-0093-S-05-0, as amended, and 40 CFR 63 Subpart O. No deviations were reported.

Thank you for your timely and complete submittal.

Sherry Waldron
Environmental Engineer
Georgia Environmental Protection Division
Air Protection Branch
4244 International Pkwy.
Ste. 120
Atlanta, Georgia 30354
(404)362-4569

06700093

Sterigenics
A Sotera Health company

RECEIVED
FEB 05 2019
Air Protection Branch
pm 1/31/19

January 29, 2019

Georgia Department of Natural Resources
Environmental Protection Division
Stationary Source Compliance Program
Air Protection Branch
Atlanta Tradeport, Suite 120
4244 International Parkway
Atlanta, Georgia 30354-3908

Attention: Ms. Karen Hays, Unit Manager

Subject: Semiannual Synthetic Minor Deviation Report for Sterigenics, U.S., LLC, Atlanta, Georgia Facility Operating **Permit No. 7389-0670093-S-05-0** for the period of July 01, 2018 to December 31, 2018

This letter provides information for the semi-annual Synthetic Minor Permit Deviation Report for Sterigenics, US LLC Atlanta, Georgia facility covering the period from July 1, 2018 through December 31, 2018. This report is intended to satisfy the monitoring and reporting requirements of Condition 5.4, 7.4 and 7.7 in operating permit number 7389-067-0093-S-05-0. For ease of reference, this report is organized by permit condition.

Semiannual Deviation Reporting Requirements

Condition 5.4 requires:

The Permittee shall maintain and operate the AAT Scrubber System (EC2) to ensure a maximum emission level of 1 ppmv or a reduction of 99% for aeration room vents (AR-1) and a reduction efficiency of 99% for sterilization chamber vents (SEV-1, SEV-2, SEV-3, SEV-4, SEV-5, SEV-6, SEV-7 SEV-8, SEV-10, SEV-11):

a. Aeration room vents: AR-1 – Once per month the Permittee shall simultaneously collect and record the concentration of a 15-minute ethylene oxide bag sample from both the inlet and outlet of the dry bed absorbers:	
i. If the facility is complying with the 1ppmvd standard, as specified in condition No. 2.4, and the concentration of ethylene oxide in the outlet sample of the dry bed absorbers increases to 0.9 ppmv or greater, the Permittee shall replace the dry bed material within 30 days, prior to the next scheduled aeration room exhaust sampling event.	Dry Bed outlet concentration did not exceed 0.9 ppm during this reporting period.
ii. If the facility is complying with the 99% reduction efficiency standard, as specified in Condition No. 2.4, and the AAT Scrubber System reduction efficiency decreases to 99.1% or less, the Permittee shall replace the dry bed material within 30 days prior to the next scheduled aeration exhaust sampling event. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed absorbers.	N/A
b. Aeration room vents (AR-1) and sterilization chamber vents (SEV-1	N/A

067-00093

through SEV-9, and SEV-10 through SEV-11) – any instance when sterilization chamber exhausts and aeration room exhausts are simultaneously vented through the AAT Scrubber System, the Permittee shall comply with the 99% reduction efficiency standard. During any such event, the Permittee shall collect and record the concentration of a 15-minute ethylene oxide bag sample from the outlet of the dry bed adsorbers within 96 hours of changeover. The AAT Scrubber System reduction efficiency shall be calculated by comparing the ethylene oxide loading into the AAT Scrubber System to the ethylene oxide mass exiting the dry bed adsorbers. If the reduction efficiency of the AAT Scrubber System is less than 99.1%, the Permittee shall not route any sterilization replaced. Bag testing shall continue at a sampling frequency of once per week during the changeover of the sterilization chamber vents from the Ceilcote Scrubber (EC3) to the AAT Scrubber System.	
c. When the Permittee is sampling in accordance with Condition Number 5.3a or 5.3b, the ethylene oxide loading to the AAT Scrubber System, the ethylene oxide mass out of the AAT dry adsorbers and the AAT Scrubber System reduction efficiency shall be recorded for each sampling event. These records shall be kept in a form suitable for inspection or submission to the Division. Methods of calculation for these measurements shall be submitted in the site-specific monitoring plan.	N/A
d. The dates of dry bed material placement shall be recorded and kept in a form suitable for inspection or submission to the Division.	Records are maintained. Dry bed material replaced on Dec 3, 2018

Reporting Requirements

Condition 7.4 For each monthly sampling event conducted in accordance with conditions 5.4.a.i and 5.4.b, the Permittee shall include the following information in the semi-annual report required by Condition 7.8.

a. For AAT Scrubber (EC2), any occurrence when analysis of the dry bed adsorber outlet sample concentration exceeded 1 ppmv.	None
b. For the AAT Scrubber System (EC2), any occurrence when the AAT Scrubber reduction efficiency indicates that the efficiency is less than 99%.	N/A
c. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3), any occurrence when the ethylene glycol concentration in the acid-water scrubber liquor is in excess of the maximum ethylene glycol concentration established during initial performance testing.	N/A
d. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3), any occurrence when the liquor recirculation tank level of the acid-water scrubber is in excess of the maximum liquor tank level established during initial performance testing.	None
e. For the acid-water scrubbers (AAT Scrubber System EC2 and Ceilcote Scrubber EC3), any occurrence when the scrubbing liquor pH rises above	None

the manufacturers recommended level of 2.	
f. For the AAT Scrubber System (EC2) list any occurrence when analysis of the dry bed adsorber outlet sample indicates the concentration exceeds 0.9 ppmv, but is less than or equal to 1 ppmv.	None
g. For the AAT Scrubber System (EC2), list any occurrence when AAT Scrubber System reduction efficiency indicates the efficiency is less than 99.1%, but is greater than or equal to 99%.	N/A
h. For the AAT Scrubber System, (EC2), list any instance when the AAT Scrubber System breaches a dry bed adsorber material replacement threshold, but the dry bed material is not replace within 30 days.	N/A

Condition 7.7 requires:

The Permittee shall submit a written report containing any excess emissions, exceedances, and/or excursions as described in this permit and any monitor malfunctions for each semiannual period ending January 1 and June 30 of each year. All reports shall be postmarked by the 30th day following the end of each reporting period, July 30 and January 30, respectively. In the event that there have not been any excess emissions, exceedances, excursions or malfunctions during a reporting period, the report should so state. Otherwise, the contents of each report shall be as specified by the Division's Procedures for Testing and Monitoring sources of Air Pollutants and shall contain the following: [391-3-1-.02(6)(b) 1 and 40 CFR 63.10 (e)]

a. A Summary report of excess emissions, exceedances and excursions, and monitor downtime, deviations and monitor downtime in accordance with Section 1.5 (c) and (d) of the above referenced document, including any failure to follow required work practice procedures.

   There were no recordkeeping/ procedural deviations or excess emissions or excursions associated with section 7.7.

b. Total process operating time during each reporting period. Total processing time was:

   4,408 hours

c. The magnitude of all excess emissions, exceedances and excursions computed in accordance with the applicable definitions as determined by the Director, and any conversion factors used, and the date and time of the commencement and completion of each time period of such occurrence.

   There were no deviations during the period.

d. Specific identification of each period of such excess emissions, exceedances, and excursions that occur during startups, shutdowns, or malfunctions of the affected facility. Include the nature and cause of any malfunction (if known), the corrective action taken or preventative measures adopted.

   There were no deviations during the period.

e. The date and time identifying each period during which any required monitoring system or device was inoperative (including periods of malfunction) except for zero and span checks, and

the nature of the repairs, adjustments, or replacement. When the monitoring system or device has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

There were no breakdowns of the monitoring system or devices during the reporting period.

f. Certification by a Responsible Official, based on information and belief formed after reasonable inquiry, the statements and information in the report are true, accurate, and complete.

Required Statement

Sterigenics U.S. LLC has reviewed all applicable provisions of the Atlanta Synthetic Minor operating permit. There have not been deviations from applicable limitations or standards or monitor malfunctions during the reporting period from July 01, 2018 through December 31, 2018.

KA Hoffman 29-Jan-2019

Kathleen Hoffman
Senior VP, EH&S and Tech Services

Date

If you have any questions regarding this submittal, please call Laura Hartman at (630) 928-1724.

Kind Regards,

Kevin Wagner
Director
Environment, Health and Safety

cc: Air and EPCRA Enforcement Branch, U.S. EPA Region 4
61 Forsyth Street
Atlanta, Georgia 30303

Daryl Mosby – Atlanta General Manager
Juan Segovia – VP of Operations

EXHIBIT N1

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway
Suite 120
Atlanta, Georgia 30354
404-363-7000

October 9, 2019

Kathleen Hoffman
Sr. Vice President of EH&S
Sterigenics U.S., LLC
2015 Spring Road, Suite 650
Oak Brook, IL 60523

Re: Request for additional information regarding
Application No. 27153 received July 31, 2019
Sterigenics U.S., LLC, Atlanta, AIRS No: 06700093

Dear Kathy Hoffman:

I write to notify you that the Division requires additional information to evaluate the modifications Sterigenics proposed in Application No. 27153. Specifically, emissions testing under the new controls configuration is required as detailed in this letter and as authorized by Georgia Rules for Air Quality Control Chapter 391-3-1-.03(2)(c)[1] prior to issuance of a permit authorizing the proposed modifications. The Division also requires certain engineering analyses and documentation as detailed below. Please submit test plans to the Division for our review and approval. Upon receipt of the Division's approval of the test plans, and any necessary approvals from Cobb County, please conduct and complete the following testing/engineering analyses and provide written results/reports to the Division within 30 days after completion.

1. Ethylene oxide performance testing of the sterilization chamber vents. Conduct ethylene oxide (EtO) performance testing of the sterilization chamber vents (Source Codes SEV-1, SEV-2, SEV-3, SEV-4, SEV-5, SEV-6, SEV-7, SEV-8, SEV-10, SEV-11). Conduct the performance testing according to: the procedures listed in 40 CFR 63.7, the applicability of 40 CFR Part 63, Subpart O as identified in Table 1 of 40 CFR 63.360, the procedures listed in 40 CFR 63.363, and the test methods listed in 40 CFR 63.365. The test results will be used to establish the maximum ethylene glycol concentration, the maximum liquor tank levels, and maximum pH for the scrubbers. The test report shall list the control efficiency of the Ceilcote Scrubber, the AAT Scrubber System with Dry Bed Adsorber, and the total system. The test report shall

[1] *See* Ga. Comp. R. & Regs. 391-3-1-.02 (c) which provides in relevant that, "as a condition for the issuance of an operating permit, the Director may require the applicant to conduct performance tests and monitoring and provide reports concerning operations, to demonstrate compliance with the Act and the rules and regulations. Such tests and monitoring shall be conducted, and such required reports submitted, in accordance with methods and procedures approved by the Director."

list the final exhaust mass emission rate of ethylene oxide. The tests for each system (Ceilcote and AAT) shall be conducted simultaneously.

a. Testing of the chamber vents should occur at the maximum loading. When you submit the test plan prior to testing, explain what conditions constitute "maximum loading." Sterigenics should expect that the chamber operating scenario during testing may be used to establish an operational limit in the permit (i.e. – limit the number of chambers operating at any given time). Record or otherwise document the maximum airflow of each chamber vacuum pump to ensure that combined airflow shall not exceed 1200 ACFM.

b. Explain why direct testing of the vacuum pump stream prior to the Ceilcote scrubber is not feasible.

2. Ethylene oxide performance testing on the sterilization chamber back vents and the aeration room vent. Conduct ethylene oxide performance testing on the sterilization chamber back vents (Source Codes CEV-1, CEV-2, CEV-3, CEV-4, CEV-5, CEV-6, CEV-7, CEV-8, CEV-10, CEV-11) and the aeration room vent (Source Code AR-1). The testing shall be conducted according to: the procedures listed in 40 CFR 63.7, the applicability of 40 CFR Part 63, Subpart O as identified in Table 1 of 40 CFR 63.360, the procedures listed in 40 CFR 63.363, and the test methods listed in 40 CFR 63.365. The test shall be used to establish the maximum ethylene glycol concentration, the maximum liquor tank level, and maximum pH for the AAT scrubber (Source Code EC2). The test report shall list the final exhaust mass emission rate of ethylene oxide.

   a. Testing of the back vents and aeration room should occur at the maximum airflow, and loading, if possible.

3. Ethylene oxide performance testing of the Indoor Air System. Conduct ethylene oxide performance testing of the Indoor Air System (IA-1) according to: the procedures listed in 40 CFR 63.7, the applicability of 40 CFR Part 63, Subpart O as identified in Table 1 of 40 CFR 63.360, the procedures listed in 40 CFR 63.363, and the test methods listed in 40 CFR 63.365. The test report shall list the final exhaust mass emission rate of ethylene oxide.

4. Provide support for the assumption that at least 95% of the ethylene oxide used is exhausted through the vacuum pumps. Conduct testing and/or provide engineering analysis to support the assumption that at least 95% of the ethylene oxide used is exhausted through the vacuum pumps (aka chamber vents routed to the Ceilcote Scrubber and AAT Scrubber). These tests shall be conducted using the "worst case" batch cycle recipe. The worst case will result in the lowest percentage of EtO usage being routed to the vacuum pumps and generally means shorter wash times leaving more EtO in product and chamber air. The company shall provide a reasoned explanation for their choice as worst case.

5. Demonstrate that the Indoor Air System enclosure meets 100% capture. Conduct testing to demonstrate that the indoor air system enclosure meets 100% capture and provide operating parameters that reflect such conditions (e.g. – fan amps, pressure across enclosure, air flow direction at openings).

6. Determine the highest level of sensitivity of the Gas Chromatograph mass spectrometer used for the periodic bag sample monitoring, in terms of ppm ethylene oxide. Conduct testing and/or provide engineering analysis that determines the highest level of sensitivity of the Gas Chromatograph mass spectrometer used for the periodic bag sample monitoring, in terms of ppm of ethylene oxide Explain if the unit can achieve a 0.01 ppm detection limit or lower and determine the accuracy at levels below 0.1 ppm. If the unit cannot achieve a detection level of 0.01 ppm, explain why not. For reference, stack exhaust concentrations of 0.01 ppm equate to roughly 10 pounds per year for each stack.

7. Determine the highest level of sensitivity achievable by the stack testing laboratory. Provide documentation of the sensitivity achievable by the laboratory selected to analyze the performance testing data.

8. Verify the stack height, airflow, and diameter of each stack. Provide documentation verifying the stack height, airflow, and diameter of each stack, and explain how each value was determined.

The Division expects that testing of the operations should be completed within 20 days after testing has begun. If Sterigenics believes a longer test period will be required, submit a detailed justification for a longer test period as part of the test plans submitted to the Division for review. The length of the test period may not extend beyond what is specifically approved by the Division. The test plan submitted for review must also include details regarding Sterigenics' possible sterilization of products during testing. Tests and monitoring shall be conducted only upon the Division's approval of the testing methods and procedures.

An Operating (SIP) Permit Amendment shall be obtained prior to operation of this facility for production purposes. If you have any questions or concerns, please contact me at (404) 363-7020 or via e-mail at eric.cornwell@dnr.ga.gov.

Sincerely,

Eric Cornwell

Eric Cornwell
Manager
Stationary Source Permitting Program

EXHIBIT N2

GEORGIA
DEPARTMENT OF NATURAL RESOURCES

ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway
Suite 120
Atlanta, Georgia 30354
404-363-7000

OCT 3 1 2019

Ms. Kathleen Hoffman
Senior Vice President – Global Environmental, Health & Safety and Technical Services
Sterigenics U.S. LLC
2015 Spring Road, Suite 650
Oak Brook, IL 60523

RE: **Consent Order No. EPD-AQC-6980**
Sterigenics, U.S. LLC, Atlanta, Georgia

Dear Ms. Hoffman:

On October 22, 2019, the Division received the revised Work Practice Plan for the Sterigenics Atlanta facility required by Consent Order No. EPD-AQC-6980. The Work Practice Plan originally received on September 9, 2019 was updated to reflect the Division's requested changes. The revised Work Practice Plan meets the requirements of Condition No. 3 of the Consent Order.

Sterigenics must update the Work Practice Plan to be consistent with the amended air quality permit, when issued. Additional changes may be needed to the plan at that time and, if amended, should also be submitted to the Division for approval within fifteen days of such date.

Thank you for your cooperation. If you have any questions concerning this correspondence, please feel free to contact Sherry Waldron at 404-362-4569 or Sherry.Waldron@dnr.ga.gov.

Sincerely,

Sean Taylor

Sean Taylor
Program Manager
Stationary Source Compliance Program

SMT:sgw

c: Daryl Mosby, Sterigenics

AIRS No. 067-00093

Sterigenics®
A Sotera Health company

October 21, 2019

Mr. Sean Taylor, Program Manager
Georgia EPD – Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Subject: **Sterigenics Atlanta facility Work Practice Plan – Requested Revisions**

Dear Mr. Taylor

In response to your request, Sterigenics is providing an updated work practice plan for the Sterigenics Atlanta facility located at 2971 Olympic Industrial Drive, Suite 116, in Atlanta, Georgia.

Sterigenics reviewed your requested changes to the work practice plan and is submitting an updated work practice plan to address those items that are applicable to the negative pressure system. Two proposed changes refer to the entire facility; however, the proposed negative pressure system includes areas within the facility where ethylene oxide could be present. Specifically, as stated in the permit application, the negative pressure system is proposed to capture air internally from chamber rooms, work aisles, processed product storage, and shipping areas. Therefore the following two comments are only relevant to the negative pressure area and not the facility.

Letter states "*Addition of daily negative pressure verifications along all outside walls of the facility, either by airflow observations using a smoke test or similar visual method or using permanently installed differential pressure gauges.* "

Letter states "*Addition of specifying the protocol for the sequence of using dock door seals and opening rollup doors during offloading/loading operations and associated training of affected employees.*"

Please contact me at lhartman@sterigenics.com or 630-928-1700 for questions or additional information.

Regards,

Laura Hartman

Laura Hartman
Manager, Environmental Health and Safety

Attachment: Work Practice Plan

CC: General Manager, Sterigenics Atlanta Facility

Sterigenics Atlanta

EO Fugitives – Work Practice Plan

DRAFT

I. PURPOSE

This work instruction describes the practices taken to help limit fugitive emissions from the EO sterilization process

II. SCOPE

Covers the routine sterilization processing as well as non-routine tasks which could generate leaks, releases, or fugitive emissions of EO.

III. PROCESS OWNER

Atlanta EO facility management

IV. APPLICATION

This procedure applies to operations and areas of the facility where EO is used or contains sources which could emit EO including Chamber room, work aisle, emission control areas, aeration room, and the processed storage/shipping warehouse.

V. IMPLEMENTATION REQUIREMENTS

All requirements of this procedure will be implemented on the effective date

VI. PROCEDURE

REQUIREMENTS

A. Employees will ensure work practices are followed to minimize generation of EO fugitive emissions.

B. Emission control systems will be utilized to capture and control EO fugitive emissions to the extent practical.

C. The Advanced Air Technologies (AAT) scrubber/dry bed system will be inspected and tested frequently to ensure required efficiency is maintained.

D. Enhanced reporting of confirmed Lower Explosive Limit (LEL) or Gas Chromatograph (GC) alarms which show a released amount of EO to the environment to local agencies will be followed.

E. Initial and refresher training is required.

F. The facility will implement practices to ensure 100% of emissions in accordance with EPA procedures are captured and all dry bed systems reduce emissions to an acceptable level:

1. Outlet reading of AAT dry beds will not exceed 1ppm
2. Outlet reading of the Negative pressure system dry beds will not exceed 1ppm.

PROCEDURE

A. Minimizing EO Fugitives

1. Upon receipt of EO drums from the supplier, employees will use existing work practices (as described in G-WI-EO-OPS-013, EO Drums: Safe Storage and Handling) to ensure drums are leak free

DRAFT

and in good condition prior to being brought into the facility.

2. The monitoring devices in the EO drum storage area will be operational to monitor for leaks.
3. The setting for Chamber Door Interlock/VAPORS will be set to 5% or less.
4. At the end of the sterilization cycle, the chamber door will be opened slightly and the operator must allow the backvents to run for a minimum of 15-minutes prior to unloading the sterile product.
5. When unloading sterilization chambers of product, remove and immediately transport pallets directly to the aeration room, and do not stage pallets in the aisle before transporting to aeration.
6. Maximize, to the extent practicable, the duration that a product remains in aeration before removal, consistent with customer approvals and customer shipping demands for each particular product
7. The Shipping warehouse doors will remain closed unless in use for loading trailers.
8. Maintenance personnel will ensure safe practices for isolating EO lines and inspecting equipment are followed to prevent leaks/releases.
9. Enhance the current capture and control equipment:
   i. The AAT drybed unit will be tested weekly using current sample bags and analysis with GC. The measured level cannot exceed 1ppm.
   ii. The barometric dampers in the sterilization chamber room exhaust to the AAT. The dampers will be used to the extent possible to capture any fugitive emissions in the area.
   iii. Maintenance to ensure any deviations to scrubber or dry bed operation are reported immediately to Corporate EH&S (scrubber tank level, pH, flow, EO concentration)

B. Reporting of EO Leaks and Releases

1. In addition to current procedures for detecting and assessing leaks or releases, the facility will immediately notify corporate EH&S of any high level EO alarms so a joint investigation can be completed to determine quantity of the leak.
2. The affected part of the process will be stopped until the investigation is complete to ensure safety.
3. If the leaked amount of EO is determined to be > 10 lbs.or unknown within 15-minutes then an immediate notification to the National Response Center, Georgia EPD, the LEPC (Cobb County Fire Department) will be made.
4. When safe to do so, a complete investigation for each incident will be conducted to determine root cause with corrective actions
5. Follow-up reporting with each respective agency will be completed to report the final investigation report.

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C. Training

1. Training is to be provided to all employees on this work instruction within 30 days.
2. Annual training is required.

D. Operation and Maintenance of Negative Pressure System and Dry Beds

1. Negative pressure system:
   i. Upon startup of the negative pressure system, demonstrate capture within the negative pressure area. The demonstration will determine the number of rollup doors that can be opened in the negative pressure area. See *Appendix 1* for diagram of the negative pressure enclosure.
   ii. On a daily basis, verify and record the pressure within the negative pressure area.
   iii. Calibrate pressure measuring device(s) for the negative pressure area annually.
2. All facility dry beds:
   i. Dry bed media will be tracked to predict end of useful life in accordance with manufacturers recommendations based on EO usage.
   ii. In addition to the above, each dry bed system will be monitored weekly by taking an outlet sample with a Tedlar bag for 15-minutes. The sample will be analyzed with the GC and shall not exceed 1ppm
   iii. If a sample exceeds 1ppm a notification will be made to Corporate EH&S. A plan will be implemented to resample the system. If two consecutive samples are > 1ppm then the dry bed media will be changed out.
   iv. When dry bed media is changed out, each dry bed cell will be isolated from the system via damper valves. This will ensure the system can still operate with expected efficiency. The changeout of each bed will continue until all are complete.
3. Facility doors
   i. Doors located in the negative pressure area will remain closed when not in use to ensure the negative pressure system is effective.
   ii. The facility will limit the number of dock doors that can be opened at a time within the negative pressure area based on the demonstration per D1. Dock seals will be installed to limit any openings around the docks while trailers are actively being loaded.
   iii. Prior to opening a dock door, operators will ensure the trailer is aligned correctly with the dock door seals.
   iv. Dock door seals will be visually inspected weekly to check the integrity and these inspections will be recorded.

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4. Special emission control work practices in case of breakdown
   i. If the sterilization chamber emission control system unexpectedly fails the chamber cycles will be suspended.
   ii. If the negative dry bed system fan fails the secondary blower fan will be put online to ensure continued operation of the system.
   iii. Verifications of negative pressure within the affected operational areas will be conducted while any portion of those systems affecting air flow are inoperable.
   iv. If the facility loses power, then *EOP-001 Power Outages* will be followed and handheld monitors will be used throughout the facility to measure any EO levels.
   v. All doors and openings in the negative pressure area will remain closed during power outages.

VII. DEFINITIONS/ABBREVIATIONS

N/A

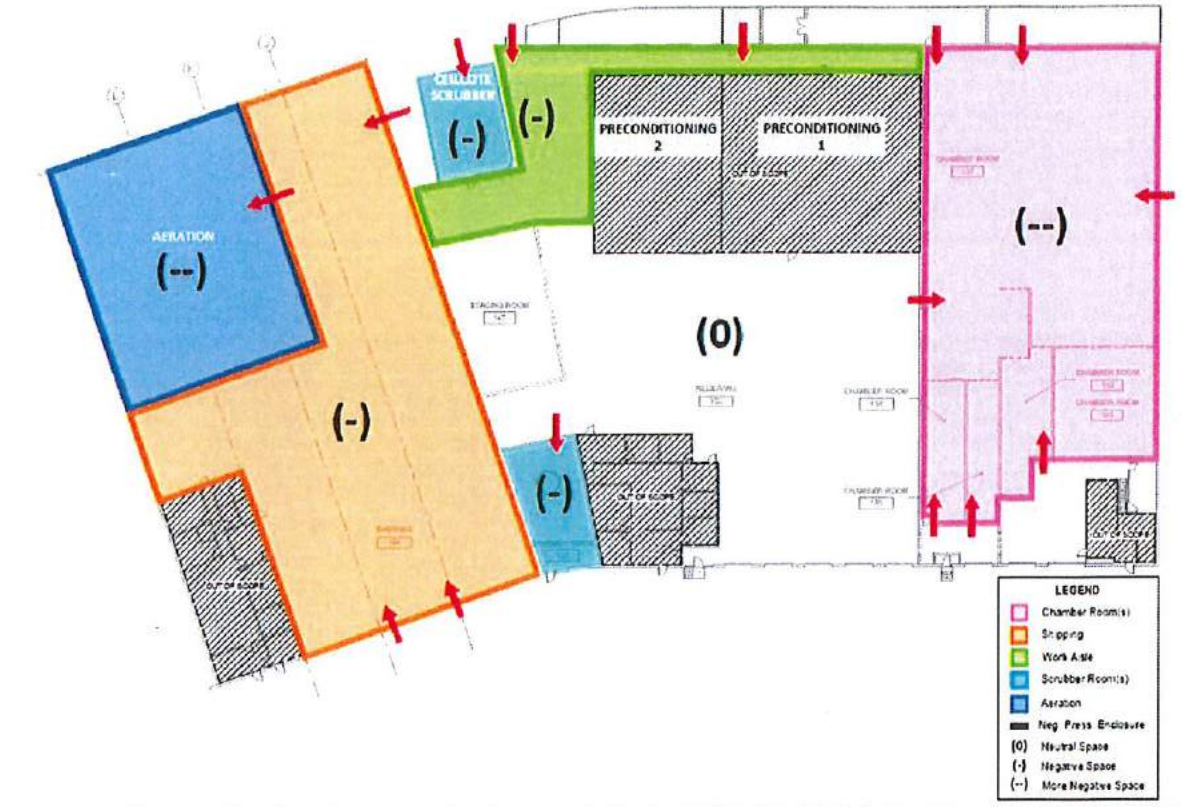
VIII. REVISION HISTORY

Revision	Section	Description of Change
1	ALL	New work instruction

DRAFT

OVERALL PRESSURE PLAN

STERIGENICS ATLANTA



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RECEIVED
SEP 09 2019
Air Protection Branch

September 6, 2019

Mr. Sean Taylor, Program Manager
Georgia EPD – Air Protection Branch
Stationary Source Compliance Program
4244 International Parkway, Suite 120
Atlanta, Georgia 30354

Subject: **Sterigenics Atlanta facility Work Practice Plan**

Dear Mr. Taylor

In accordance with Order Number EPD-AQC-6980, Sterigenics is providing a work practice plan for the Sterigenics Atlanta facility located at 2971 Olympic Industrial Drive, Suite 116, in Atlanta, Georgia.

Please contact me at kwagner@sterigenics.com or 630-928-1771 for questions or additional information.

Regards,

Kevin Wagner
Director, Environmental Health and Safety

Attachment: Work Practice Plan

CC: General Manager, Sterigenics Atlanta Facility

2015 Spring Road, Suite 650, Oak Brook, IL 60523
630-928-1700 | sterigenics.com

06700093

Sterigenics Atlanta
EO Fugitives – Work Practice Plan

I. PURPOSE

This work instruction describes the practices taken to help limit fugitive emissions from the EO sterilization process

II. SCOPE

Covers the routine sterilization processing as well as non-routine tasks which could generate leaks, releases, or fugitive emissions of EO.

III. PROCESS OWNER

Atlanta EO facility management

IV. APPLICATION

This procedure applies to operations and areas of the facility where EO is used or contains sources which could emit EO including Chamber room, work aisle, emission control areas, aeration room, and the processed storage/shipping warehouse.

V. IMPLEMENTATION REQUIREMENTS

All requirements of this procedure will be implemented on the effective date

VI. PROCEDURE

REQUIREMENTS	The Work Practice Plan is divided into two phases for implementation according to construction of the negative air system. A. Prior to final construction of the negative air system employees will ensure work practices are followed to minimize generation of EO fugitive emissions. B. Emission control systems will be utilized to the extent practical to capture and control EO fugitive emissions. C. The Advanced Air Technologies (AAT) scrubber/dry bed system will be inspected and tested frequently to ensure required efficiency is maintained. D. Enhanced reporting of confirmed Lower Explosive Limit (LEL) or Gas Chromatograph (GC) alarms which show a released amount of EO to the environment to local agencies. E. Initial and refresher training is required. F. Once new emission controls and negative pressure systems are installed, the facility will implement practices to ensure 100% of emissions are captured and all dry bed systems reduce emissions to an acceptable level: 1. AAT dry beds will not exceed an outlet reading of 1ppm 2. Negative pressure system dry beds will not exceed an outlet reading of 1ppm.

PROCEDURE	A. Prior to installation of negative pressure system and dry beds: 1. Upon receipt of EO drums from supplier, employees will use work practices already in place (as described in G-WI-EO-OPS-013, EO Drums: Safe Storage and Handling) to ensure drums are in good condition with no leaks prior to being brought into the facility. 2. The monitoring devices in the EO drum storage area will be operational to monitor for leaks. 3. Program the setting for Chamber Door Interlock/VAPORS to lowest levels (5% LEL/3% Release levels) 4. At the end of the sterilization cycle, the chamber door will be opened slightly and the operator must allow the backvents to run for a minimum of 15-minutes prior to unloading the sterile product. 5. During unloading of the sterile product and transfer to aeration pallets will not be staged and will be taken directly from chamber to aeration through the facility additional personnel will be used to decrease the time taken to move the product through uncontrolled areas. 6. When unloading sterilization chambers of product, remove and immediately transport pallets directly to the aeration room, and do not stage pallets in the aisle before transporting to aeration. 7. Maximize, to the extent practicable, the duration that a product remains in aeration before removal, consistent with customer approvals and customer shipping demands for each particular product 8. The Shipping warehouse doors will be kept closed unless in use for loading trailers. Only one dock door can be opened at a time. 9. Maintenance personnel will ensure safe practices for isolating EO lines, inspection of equipment, are followed to prevent leaks/releases. 10. Enhance the current capture and control equipment: i. The AAT drybed unit will be tested weekly using current sample bags and analysis with GC. The measured level cannot exceed 1ppm. ii. The barometric dampers in the sterilization chamber room exhaust to the AAT. The dampers will be used to the extent possible to capture any fugitive emissions in the area. iii. Maintenance to ensure any deviations to scrubber or dry bed operation are reported immediately to Corporate EH&S (scrubber tank level, pH, flow, EO concentration) B. Reporting of EO Leaks and Releases 1. In addition to current procedures for detecting and assessing leaks or releases, the facility will immediately notify corporate EH&S of any high

level EO alarms so a joint investigation can be completed to determine quantity of the leak.

2. The affected part of the process will be stopped until the investigation is complete to ensure safety.
3. If the leaked amount of EO is determined to be > 10 lbs.or unknown within 15-minutes then an immediate notification to the National Response Center, Georgia EPD, the LEPC (Cobb County Fire Department) will be made.

   a. Until the negative pressure system is installed, leaks will be reported to the LEPC and Georgia EPD regardless of amount.
4. When safe to do so, a complete investigation for each incident will be conducted to determine root cause with corrective actions
5. Follow-up reporting with each respective agency will be completed to report the final investigation report.

C. Training

1. Training to be provided to all employees on this work instruction within 30 days.
2. Annual training is required.

D. Operation and Maintenance of Negative Pressure System and Dry Beds

1. All facility dry beds:
   i. Dry bed media will be tracked to predict end of useful life in accordance with manufacturers recommendations based on EO usage.
   ii. In addition to the above, each dry bed system will be monitored weekly by taking an outlet sample with a Tedlar bag for 15-minutes. The sample will be analyzed with the GC and shall not exceed 1ppm
   iii. If a sample exceeds 1ppm a notification will be made to Corporate EH&S. A plan will be implemented to resample the system. If two consecutive samples are > 1ppm then the dry bed media will be changed out.
   iv. When dry bed media is changed out, each dry bed cell will be isolated from the system via damper valves. This will ensure the system can still operate with expected efficiency. The changeout of each bed will continue until all are complete.
2. Facility doors
   i. Doors to the facility will remain closed to ensure the negative pressure system is effective.
   ii. The facility will limit one dock door to be opened at a time. Dock seals will be installed to limit any openings around the docks while trailers are actively being loaded or unloaded.

	3. Special emission control work practices in case of breakdown i. If an emission control system unexpectedly fails the process will be cycle stoped. ii. If the negative dry bed system fan fails the secondary blower fan will be put online to ensure continued operation of the system. iii. If the facility loses power, then EOP-001 Power Outages will be followed and handheld monitors will be used throughout the facility to measure any EO levels.

VII. DEFINITIONS/ABBREVIATIONS

N/A

VIII. REVISION HISTORY

Revision	Section	Description of Change
1	ALL	New work instruction

EXHIBIT O

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway
Suite 120
Atlanta, Georgia 30354
404-363-7000

April 1, 2020

Ms. Kathleen Hoffman
Senior Vice President – Global Environmental, Health & Safety and Technical Services
Sterigenics U.S. LLC
2015 Spring Road, Suite 650
Oak Brook, IL 60523

RE: Georgia Air Quality Permit 7389-067-0093-S-05-0
Permit Application No. 27153
Sterigenics, U.S. LLC, Atlanta, Georgia

Dear Ms. Hoffman:

I write to notify you that Air Quality Permit 7389-067-0093-S-05-0 which was issued to Sterigenics U.S. LLC ("Sterigenics") on May 27, 2014, for the operation of Sterigenics' Atlanta facility in Cobb County, Georgia ("the Facility"), as amended, remains in effect until the Division has taken final action with regard to Permit Application No. 27153 submitted to the Division on July 31, 2019. *See* O.C.G.A. § 50-13-18(b) ("When a licensee has made timely and sufficient application for the renewal of a license or for a new license with reference to any activity of a continuing nature, the existing license does not expire until the application has been finally determined by the agency…").

As you know, on August 7, 2019, the Director executed Consent Order No. EPD-AQC-6980 with Sterigenics to establish an enforceable agreement whereby, among other things, Sterigenics would install new pollution control equipment to reduce its emissions of ethylene oxide at the Facility. The Division approved both a testing protocol for Sterigenics' new pollution control equipment and Sterigenics' Work Practice Plan on October 31, 2019. On March 24, 2020, EPD staff attended a negative pressure test at the Facility. While there, EPD staff observed that the new pollution control equipment has been installed and is operational.

EPD understands that Sterigenics intends to commence full operations as soon as possible in light of the Temporary Restraining Order (TRO) issued in the United States District Court for the Northern District of Georgia today.[1] The Division expects that Sterigenics will operate its facility at all times using the new pollution control equipment, the indoor air capture system including the dry bed system, and the modified control device configuration on the sterilization chambers. In addition, the Division expects that all emissions will be routed through the taller stacks at the Facility. These measures submitted as part of

[1] EPD is not a party to the litigation underlying the TRO and does not intend to imply with this letter that it takes any position with regard to the pending litigation. This letter is merely intended to provide guidance to Sterigenics regarding EPD's expectation for the operations of the Facility.

Sterigenics' permit application are designed to significantly reduce the Facility's ethylene oxide emissions.

The Division expects Sterigenics to implement the EPD-approved testing protocol. The Division is aware that, under the approved testing protocol, testing cannot commence until Sterigenics is sterilizing at the Facility's maximum loading. Sterigenics must commence testing as soon as the Facility is operating at maximum loading and must notify EPD prior to testing.

Lastly, the Division expects Sterigenics to report any spill or release of ethylene oxide, regardless of the amount, to the Division in writing within 24 hours of discovering such spill or release.

Thank you for your cooperation. If you have any questions concerning this correspondence, please feel free to contact Sean Taylor at 404-363-7047 or Sean.Taylor@dnr.ga.gov.

Sincerely,

Karen Hays

Karen D. Hays, P.E.
Chief
Air Protection Branch

KDH:sgw

c: Daryl Mosby, Sterigenics

EXHIBIT P

GEORGIA
DEPARTMENT OF NATURAL RESOURCES
ENVIRONMENTAL PROTECTION DIVISION

Richard E. Dunn, Director

Air Protection Branch
4244 International Parkway
Suite 120
Atlanta, Georgia 30354
404-363-7000

May 12, 2020

Ms. Kathleen Hoffman
Senior Vice President-Global
Environmental, Health &
Safety and Technical Service
2015 Spring Road
Suite 650
Oak Brook, IL 60523

Mr. Daryl Mosby
General Manager
Sterigenics U.S. LLC
2971 Olympic Industrial Drive SE
Suite 116
Atlanta, GA 30339

RE: **Consent Order No. EPD-AQC-6980**
Sterigenics U.S. LLC
2971 Olympic Industrial Drive SE
Atlanta, GA 30339

Dear Ms. Hoffman and Mr. Mosby:

On August 7, 2019, Consent Order No. EPD-AQC-6980 was executed with Sterigenics U.S. LLC ("Sterigenics") related to the Georgia Air Quality Act, the Georgia Rules for Air Quality Control, and Air Quality Permit No. 7389-067-0093-S-05-0. The Order required the Company to commence construction on planned modifications to the above-referenced facility, ensure that all equipment listed in permit application 27153 was installed and operational within 24 weeks of commencing construction, and to provide and implement a Work Practice Plan.

Based on the information received by the Division, the Consent Order has been terminated by the full and complete performance of each condition. Please note that, in accordance with our letter of April 1, 2020 and to significantly reduce ethylene oxide emissions at the facility, the Division expects that Sterigenics will, at all times, operate the new pollution control equipment, indoor air capture system, and modified control device configuration on the sterilization chambers and that Sterigenics will route all emissions through the taller stacks at the facility. Further, the Division expects Sterigenics to implement the Division-approved testing protocol at the facility. If you have any questions concerning this issue, please feel free to contact me at 404-363-7047 or sean.taylor@dnr.ga.gov. Thank you for your cooperation in this matter.

Sincerely,

Sean Taylor

Sean Taylor
Program Manager
Stationary Source Compliance Program

EXHIBIT Q1

bsi.

By Royal Charter

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 9001:2015

This is to certify that:

Sotera Health LLC
2015 Spring Road
Suite 650
Oak Brook
Illinois
60523
USA

Holds Certificate No: **FM 545551**

and operates a Quality Management System which complies with the requirements of ISO 9001:2015 for the following scope:

The provision of ethylene oxide and radiation services. Chemistry, microbiology, and consulting services for the sterilization industry.

For and on behalf of BSI:

Carlos Pitanga, Chief Operating Officer Assurance – Americas

Original Registration Date: 2009-02-04
Latest Revision Date: 2019-12-19

Effective Date: 2018-03-27
Expiry Date: 2021-03-26

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To be read in conjunction with the scope above or the attached appendix.
Information and Contact: BSI, Kitemark Court, Davy Avenue, Knowlhill, Milton Keynes MK5 8PP. Tel: + 44 345 080 9000
BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

Certificate No: **FM 545551**

Location	Registered Activities
Sotera Health LLC 2015 Spring Road Suite 650 Oak Brook Illinois 60523 USA	The provision of Ethylene Oxide and Radiation Sterilization and Radiation Dosimetry services.
Sterigenics UK Ltd Cotes Park Lane Somercotes Alfreton DE55 4NJ United Kingdom	The provision of Ethylene Oxide Sterilization services and associated Laboratory services
Sterigenics US, LLC 4900 Gifford Avenue Los Angeles California 90058 USA	Contract Ethylene Oxide Sterilization
Sterigenics US, LLC 3125 Wichita Court Fort Worth Texas 76140 USA	Contract Gamma Irradiation
Sterigenics US, LLC 2971 Olympic Industrial Drive SE Suite 116 Atlanta Georgia 30339 USA	Contract Ethylene Oxide Sterilization
Sterigenics US, LLC 10821 Withers Cove Park Drive Charlotte North Carolina 28278 USA	Contract Ethylene Oxide Sterilization.

Original Registration Date: 2009-02-04

Effective Date: 2018-03-27

Latest Revision Date: 2019-12-19

Expiry Date: 2021-03-26

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A Member of the BSI Group of Companies.

Certificate No: **FM 545551**

Location	Registered Activities
Sterigenics US, LLC 5725 W. Harold Gatty Drive Salt Lake City Utah 84116 USA	Contract Ethylene Oxide Sterilization
Sterigenics US, LLC 2400 Airport Road Santa Teresa New Mexico 88008 USA	Contract Ethylene Oxide Sterilization
Sterigenics US, LLC 84 Park Road Queensbury New York 12804 USA	Contract Ethylene Oxide Sterilization
Sterigenics US, LLC 1302 Avenue T Grand Prairie Texas 75050 USA	Contract Ethylene Oxide Sterilization
Sterigenics US, LLC 344 Bonnie Circle Corona California 92880 USA	Contract Gamma Irradiation
Sterigenics US, LLC 711 East Cooper Court Schaumburg Illinois 60173 USA	Contract Gamma Irradiation

Original Registration Date: 2009-02-04

Latest Revision Date: 2019-12-19

Effective Date: 2018-03-27

Expiry Date: 2021-03-26

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A Member of the BSI Group of Companies.

Certificate No: **FM 545551**

Location	Registered Activities
Sterigenics US, LLC 305 Enterprise Drive Lewis Center Ohio 43035-9418 USA	Contract Gamma Irradiation
Sterigenics US, LLC 1401 Morgan Circle Tustin California 92780 USA	Contract Gamma Irradiation
Sterigenics US, LLC 1003 Lakeside Drive Gurnee Illinois 60031 USA	Contract Gamma Irradiation
Sterigenics US, LLC 2311 Lincoln Avenue Hayward California 94545 USA	Contract Gamma Irradiation
Sterigenics US, LLC 1148 Porter Avenue Haw River North Carolina 27258 USA	Contract Gamma Irradiation
Sterigenics US, LLC 75 Tilbury Road Salem New Jersey 08079 USA	Contract Gamma Irradiation

Original Registration Date: 2009-02-04

Latest Revision Date: 2019-12-19

Effective Date: 2018-03-27

Expiry Date: 2021-03-26

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A Member of the BSI Group of Companies.

Certificate No: **FM 545551**

Location	Registered Activities
Sterigenics US, LLC 5900 Obata Way, Suite A Gilroy California 95020 USA	Contract Gamma Irradiation
Sterigenics US, LLC 108 Lake Denmark Road Rockaway New Jersey 07866 USA	Contract Gamma Irradiation
Sterigenics US, LLC 1700 College Blvd West Memphis Arkansas 72301 USA	Contract Gamma Irradiation
Sterigenics US, LLC 7695 Formula Place San Diego California 92121 USA	Contract Electron Beam Irradiation
Sterigenics EO Canada, Inc. 781 Pharmacy Avenue Toronto Ontario M1L3K2 Canada	Contract Ethylene Oxide Sterilization
Sterigenics S.de R.L de C.V. Calle Norte 7 s/n Parque Industrial Tepeji Tepeji del Rio de Ocampos Edo. de Hidalgo CP 42850 Mexico	Contract Gamma Irradation.

Original Registration Date: 2009-02-04

Effective Date: 2018-03-27

Latest Revision Date: 2019-12-19

Expiry Date: 2021-03-26

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Certificate No: **FM 545551**

Location	Registered Activities
Sterigenics (Thailand) Ltd. 109/16 Eastern Seaboard Industrial Estate (Rayong), Moo 4 T. Pluakdaeng A. Pluakdaeng, Rayong Province 21140 Thailand	The provision of Gamma Irradiation
Sterigenics US, LLC 10811 Withers Cove Park Drive Charlotte North Carolina 28278 USA	Contract Gamma Irradiation.
Sterigenics Shanghai ETO Ltd. No. 333, Shuang Hui Road Yang Shan Free Port Shanghai 201308 China	The provision of Ethylene Oxide Sterilization services & associated Laboratory services
Sterigenics Shanghai E Beam Ltd. A603 Lane 108 No. 588, Chuantu Road, Chuan Sha, Pudong Shanghai 201202 China	The provision of Electron Beam Irradiation & associated Laboratory services
Sterigenics Belgium (Fleurus) SA Zoning Industriel de Fleurus Avenue De L'Esperance 1 Fleurus, Hainaut B-6220 Belgium	The provision of Gamma Irradiation Sterilization services
Sterigenics Germany GmbH Kasteler Straße 45 Wiesbaden 65203 Germany	The provision of Ethylene Oxide Sterilization services & associated Laboratory services

Original Registration Date: 2009-02-04

Effective Date: 2018-03-27

Latest Revision Date: 2019-12-19

Expiry Date: 2021-03-26

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A Member of the BSI Group of Companies.

Certificate No: **FM 545551**

Location	Registered Activities
Sterigenics Belgium (Petit- Rechain) SA Zoning Industriel de Petit-Rechain Avenue Andre Ernst 21 Verviers, Liege B-4800 Belgium	The provision of Ethylene Oxide Sterilization services & associated Laboratory services
Sterigenics Denmark A/S Aa Louis-Hansens Alle 11 Espergaerde, Region Sjaelland DK-3060 Denmark	The provision of Electron Beam Irradiation & associated Laboratory services
Sterigenics SAS 8 Rue Parmentier Rantigny 60290 France	The provision of Ethylene Oxide Sterilization services & associated Laboratory services
Sotera Health LLC 303 Heron Drive Swedesboro New Jersey 08085 USA	Radiation Dosimetry Services.
Sterigenics Costa Rica S.R.L. Zona Franca PROPARK Calle Principal, Edificio 10 El Coyol Alajuela 20101 Costa Rica	The provision of ethylene oxide sterilization services.
Sterigenics US, LLC 687 S. Wanamaker Avenue Ontario California 91761 USA	The provision of ethylene oxide sterilization services.

Original Registration Date: 2009-02-04

Effective Date: 2018-03-27

Latest Revision Date: 2019-12-19

Expiry Date: 2021-03-26

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A Member of the BSI Group of Companies.

Certificate No: **FM 545551**

Location	Registered Activities
Sotera Health LLC James Watt No. 22 Parque Industrial Cuamatla Cuautitlan Izcalli Edo. de México CP 54730 Mexico	The provision of ethylene oxide sterilization services.
Sterigenics UK Limited Seymour Link Road Woodthorpe, Mastin Moor Chesterfield S43 3FG United Kingdom	The provision of radiation sterilization services. Chemistry, microbiology and consulting services for the sterilization industry.

Original Registration Date: 2009-02-04

Effective Date: 2018-03-27

Latest Revision Date: 2019-12-19

Expiry Date: 2021-03-26

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BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

EXHIBIT Q2

By Royal Charter

Certificate of Registration

QUALITY MANAGEMENT SYSTEM - ISO 13485:2016 & EN ISO 13485:2016

This is to certify that:

Sotera Health LLC
2015 Spring Road
Suite 650
Oak Brook
Illinois
60523
USA

Holds Certificate Number: **MD 544716**

and operates a Quality Management System which complies with the requirements of ISO 13485:2016 & EN ISO 13485:2016 for the following scope:

The provision of ethylene oxide and radiation sterilization services in accordance with EN ISO 11135:2014 & EN ISO 11137-1:2015.

Chemistry, microbiology and consulting services for the sterilization industry.

For and on behalf of BSI:

Gary E Slack, Senior Vice President - Medical Devices

Original Registration Date: 2009-01-19
Latest Revision Date: 2020-01-14

Effective Date: 2018-03-27
Expiry Date: 2021-03-26

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A Member of the BSI Group of Companies.

Certificate No: **MD 544716**

Location	Registered Activities
Sotera Health LLC 2015 Spring Road Suite 650 Oak Brook Illinois 60523 USA	The provision of ethylene oxide and radiation sterilization services in accordance with EN ISO 11135:2014 & EN ISO 11137-1:2015. Chemistry, microbiology, consulting and associated laboratory services for the sterilization industry.
Sterigenics UK Ltd Cotes Park Lane Somercotes Alfreton DE55 4NJ United Kingdom	The provision of ethylene oxide sterilization services and associated laboratory services in accordance with EN ISO 11135:2014. Chemistry, microbiology and associated laboratory services for the sterilization industry.
Sterigenics US, LLC 4900 Gifford Avenue Los Angeles California 90058 USA	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014
Sterigenics US, LLC 3125 Wichita Court Fort Worth Texas 76140 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 2971 Olympic Industrial Drive SE Suite 116 Atlanta Georgia 30339 USA	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014.
Sterigenics US, LLC 10821 Withers Cove Park Drive Charlotte North Carolina 28278 USA	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014.

Original Registration Date: 2009-01-19

Latest Revision Date: 2020-01-14

Effective Date: 2018-03-27

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A Member of the BSI Group of Companies.

Certificate No: **MD 544716**

Location	Registered Activities
Sterigenics US, LLC 5725 W. Harold Gatty Drive Salt Lake City Utah 84116 USA	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014.
Sterigenics US, LLC 2400 Airport Road Santa Teresa New Mexico 88008 USA	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014
Sterigenics US, LLC 84 Park Road Queensbury New York 12804 USA	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014.
Sterigenics US, LLC 1302 Avenue T Grand Prairie Texas 75050 USA	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014.
Sterigenics US, LLC 344 Bonnie Circle Corona California 92880 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 711 East Cooper Court Schaumburg Illinois 60173 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.

Original Registration Date: 2009-01-19

Latest Revision Date: 2020-01-14

Effective Date: 2018-03-27

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BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

Certificate No: **MD 544716**

Location	Registered Activities
Sterigenics US, LLC 305 Enterprise Drive Lewis Center Ohio 43035-9418 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 1401 Morgan Circle Tustin California 92780 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 1003 Lakeside Drive Gurnee Illinois 60031 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 2311 Lincoln Avenue Hayward California 94545 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 1148 Porter Avenue Haw River North Carolina 27258 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 75 Tilbury Road Salem New Jersey 08079 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.

Original Registration Date: 2009-01-19

Latest Revision Date: 2020-01-14

Effective Date: 2018-03-27

Expiry Date: 2021-03-26

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BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

Certificate No: **MD 544716**

Location	Registered Activities
Sterigenics US, LLC 5900 Obata Way, Suite A Gilroy California 95020 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 108 Lake Denmark Road Rockaway New Jersey 07866 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 1700 College Blvd West Memphis Arkansas 72301 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 7695 Formula Place San Diego California 92121 USA	The provision of electron beam radiation services in accordance with EN ISO 11137-1:2015.
Sterigenics EO Canada, Inc. 781 Pharmacy Avenue Toronto Ontario M1L3K2 Canada	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014.
Sterigenics S.de R.L de C.V. Calle Norte 7 s/n Parque Industrial Tepeji Tepeji del Rio de Ocampos Edo. de Hidalgo CP 42850 Mexico	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.

Original Registration Date: 2009-01-19

Effective Date: 2018-03-27

Latest Revision Date: 2020-01-14

Expiry Date: 2021-03-26

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BSI Assurance UK Limited, registered in England under number 7805321 at 389 Chiswick High Road, London W4 4AL, UK.
A Member of the BSI Group of Companies.

Certificate No: **MD 544716**

Location	Registered Activities
Sterigenics (Thailand) Ltd. 109/16 Eastern Seaboard Industrial Estate (Rayong), Moo 4 T. Pluakdaeng A. Pluakdaeng, Rayong Province 21140 Thailand	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics US, LLC 10811 Withers Cove Park Drive Charlotte North Carolina 28278 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics Shanghai ETO Ltd. No. 333, Shuang Hui Road Yang Shan Free Port Shanghai 201308 China	The provision of ethylene oxide sterilization services and associated laboratory services in accordance with EN ISO 11135:2014.
Sterigenics Shanghai E Beam Ltd. A603 Lane 108 No. 588, Chuantu Road, Chuan Sha, Pudong Shanghai 201202 China	The provision of electron beam irradiation and associated laboratory services in accordance with EN ISO 11137-1:2015. Chemistry, microbiology, and associated laboratory services for the sterilization industry.
Sterigenics Belgium (Fleurus) SA Zoning Industriel de Fleurus Avenue De L'Esperance 1 Fleurus, Hainaut B-6220 Belgium	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics Germany GmbH Kasteler Straße 45 Wiesbaden 65203 Germany	The provision of ethylene oxide sterilization services and associated laboratory services in accordance with EN ISO 11135:2014. Chemistry, microbiology, and associated laboratory services for the sterilization industry.

Original Registration Date: 2009-01-19

Latest Revision Date: 2020-01-14

Effective Date: 2018-03-27

Expiry Date: 2021-03-26

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Certificate No: **MD 544716**

Location	Registered Activities
Sterigenics Belgium (Petit- Rechain) SA Zoning Industriel de Petit-Rechain Avenue Andre Ernst 21 Verviers, Liege B-4800 Belgium	The provision of ethylene oxide sterilization services and associated laboratory services in accordance with EN ISO 11135:2014. Chemistry, microbiology, and associated laboratory services for the sterilization industry.
Sterigenics Denmark A/S Aa Louis-Hansens Alle 11 Espergaerde, Region Sjaelland DK-3060 Denmark	The provision of electron beam irradiation and associated laboratory services in accordance with EN ISO 11137-1:2015. Chemistry, microbiology, and associated laboratory services for the sterilization industry.
Sterigenics SAS 8 Rue Parmentier Rantigny 60290 France	The provision of ethylene oxide sterilization services and associated laboratory services in accordance with EN ISO 11135:2014. Chemistry, microbiology, and associated laboratory services for the sterilization industry.
Sterigenics Costa Rica S.R.L. Zona Franca PROPARK Calle Principal, Edificio 10 El Coyol Alajuela 20101 Costa Rica	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014.
Sterigenics US, LLC 687 S. Wanamaker Avenue Ontario California 91761 USA	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014.
Sterigenics S.de R.L de C.V. James Watt No. 22 Parque Industrial Cuamatla Cuautitlan Izcalli Edo. de Mexico CP 54730 Mexico	The provision of ethylene oxide sterilization services in accordance with EN ISO 11135:2014.

Original Registration Date: 2009-01-19

Latest Revision Date: 2020-01-14

Effective Date: 2018-03-27

Expiry Date: 2021-03-26

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A Member of the BSI Group of Companies.

Certificate No: **MD 544716**

Location	Registered Activities
Sterigenics US, LLC 502 Prairie Mine Road Mulberry Florida 33860 USA	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.
Sterigenics UK Limited Seymour Link Road Woodthorpe, Mastin Moor Chesterfield S43 3FG United Kingdom	The provision of gamma radiation sterilization services in accordance with EN ISO 11137-1:2015.

Original Registration Date: 2009-01-19

Latest Revision Date: 2020-01-14

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EXHIBIT R1

U.S. FOOD & DRUG ADMINISTRATION

FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	Drapes/Set-up Covers 36xx-01, 44xx-01, 54xxC,; Equipment Covers; Machine/Microscope Covers 01-xxxx, 02-xxxx, 03-KPxx, 04-CCxx, 05-CDxx, 07-Caxxx, 08-CCxxx, 09-GLxxx, 09-MKxxx
Classification Name:	SYSTEM, X-RAY, FLUOROSCOPIC, IMAGE-INTENSIFIED
Product Code:	JAA[6]
Device Class:	2
Regulation Number:	892.1650[7]
Medical Specialty:	Radiology
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	1018470
Premarket Submission Number:	K850959[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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5. https://www.fda.gov/medical-devices/device-advice-comprehensive-regulatory-assistance/medical-device-databases
6. /scripts/cdrh/cfdocs/cfPCD/classification.cfm?ID=5467
7. /scripts/cdrh/cfdocs/cfCFR/CFRsearch.cfm?FR=892.1650
8. /scripts/cdrh/cfdocs/cfRL/rl.cfm?rid=146925
9. /scripts/cdrh/cfdocs/cfpmn/pmn.cfm?id=K850959

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EXHIBIT R2

U.S. FOOD & DRUG ADMINISTRATION

FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	Arterial Fluid Sets; CONNECTOR; DLP® Adapter Multiple Perfusion Set; DLP® Adapter Tubing extension with clamp
Classification Name:	ADAPTOR, STOPCOCK, MANIFOLD, FITTING, CARDIOPULMONARY BYPASS
Product Code:	DTL[6]
Device Class:	2
Regulation Number:	870.4290[7]
Medical Specialty:	Cardiovascular
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	1018470
Premarket Submission Number:	K911884[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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7. /scripts/cdrh/cfdocs/cfCFR/CFRsearch.cfm?FR=870.4290
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9. /scripts/cdrh/cfdocs/cfpmn/pmn.cfm?id=K911884
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EXHIBIT R3

U.S. FOOD & DRUG ADMINISTRATION

FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	Fluid Delivery Sets
Classification Name:	SET, ADMINISTRATION, INTRAVASCULAR
Product Code:	FPA[6]
Device Class:	2
Regulation Number:	880.5440[7]
Medical Specialty:	General Hospital
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	1018470
Premarket Submission Number:	K900187[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R4

FDA U.S. FOOD & DRUG ADMINISTRATION

FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search Back To Search Results

Classification Name:	TROCAR
Product Code:	DRC[6]
Device Class:	2
Regulation Number:	870.1390[7]
Medical Specialty:	Cardiovascular
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	1018470
Premarket Submission Number:	K895455[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R5

U.S. FOOD & DRUG ADMINISTRATION

FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search | Back To Search Results

Proprietary Name:	Arterial Needles
Classification Name:	TROCAR
Product Code:	DRC[6]
Device Class:	2
Regulation Number:	870.1390[7]
Medical Specialty:	Cardiovascular
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	1018470
Premarket Submission Number:	K895454[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R6

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Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name: 0TOQ234; 17472/20; 19082/20; 24-685/20; 9204/20; ACL DISPOSABLE KIT; ADK001/05; ANATOMIC ACL DISPOSABLE KIT; APPLICATOR ABSORBENT TIPPED NON STERILE BULK; ASB001/10; ASB002/10; BANDAGE ELASTIC COTON BULK NON STERILE 2 inch 3 inch 4 inch 6 inch; BBF001/10; BBF002/10; BBF005/10; BBF006/10; BBF007/10; BBF008/10; BBF009/10; BBF011/10; BBF012/05; BBF013/10; BBF014/10; BBF015/05; BBF018/10; BBT003/20; BFK001/10; BMB001/20; BPT406/20; BPT408/20; Carilex VT Extension Tube; CBK018/20; CDT202/20; CDT701/05; CDT703/05; CGCM01/10; CHT002/20; CHT004/10; CHT005/20; CHT006/10; CHT007/10; CHT007/20; CHT009/20; CHT010/10; CHT010/20; CHT012/20; CHT013/20; CHT015/10; CHT019/20; CHT021/10; CHT030/10; CHT032/20; CIR-1937; CIR001/20; CIR010/20; CIR011/20; CIR039/20; CIR100/20; CIR220A/20; CIR301/20; CIR601/20; CJD001/01; CJD002/01; CJD003/01; CJD005/01; CJD006/01; COTTON BALLS MEDIUM AND LARGE NON STERILE BULK; CPCT01/20; CPDK01/100; DAT001/10; DBFK01/10; DBR001/20; DBR006/50; DBR009/20; DCH002/20; DCK001/10; DCNS01/20; DCPD01/20; DERM01/20; DERM02/20; DISPOSABLE PERCUTANEOUS PACK FOR C617X REUSABLE GUIDES; DPHP01/20; DRS001/50; DRS006/20; EMR002/20; EMR007/20; EMR008B/20; EMR009/20; EMR013/20; EMR707/10; EMR710/10; ENDO01/20; ENT002/10; ENT003/10; ENT003/20; EPI002/20; FPK013/20; HDT010/10; HDT200/20; HDT300/20; HIP ARTHROSCOPY DISPOSABLE KIT; HPK002/20; INC03/20; INC15/20; INC40/20; INST10/50; INST11/20; IUDKS1/20; JuggerLoc; JuggerLoc and ToggleLoc 2.9; KHBF01/10; LAC103/20; LAC107/20; LAC109/20; LAC117/20; LAC120/20; LAC121/20; LAC122/20; LAC124/20; LAC126/20; LAC131/20; LAC132/20; LAC133/20; LAC134/20; LAC137/20; LAC138/20; LAC139/20; LAC141/20; LAC142/10; LAC146/20; LAC147/20; LAC290/20; LAC333/20; LAC501A/50; LAC701/20; LAC866/20; LAH001/10; MGH001/10; MHH001/10; MOHS02/20; MOK001/25; MOK001/50; MPP001/20; MST202/20; NAZB01/10; NBT001/5; NCK310/10; NCK400/10; NHH001 PART 1; NHH001/05; NPT002/20; NSL001/20; NSL003/20; NSL008/20; OBG001/20; OBG004/20; OEPT01/20; OKD001/10; PBF001/10; PBT001/20; PCK001/20; PCRS01/10; PCT001/20; PDP101/20; PLT001/20; PLT002/10; PLV013/20; PLV014/20; PRK001/20; PRP008/20; PRP009/20; PRP101/25; PWL001/20; QMC001/10; SBT210/20; SJT001/10; SMH001/05; SMR001/20; SNBS01/05; SPA001/20; SPIP01/20; SPONGES GAUZE NON STERILE BULK 2X2 8 PLY; SPONGES GAUZE NON STERILE BULK 3X3 12 PLY; SPONGES GAUZE NON STERILE BULK 4X4 12 PLY; SPONGES GAUZE NON STERILE BULK 4X4 16PLY; SPONGES GAUZE NON

	STERILE BULK 4X4 16PLY GAUZE WASHED BOLT NON STERILE BULK; SPONGES GAUZE NON STERILE BULK 4X4 8 PLY; SSK100/06; SSK119/06; SSK119R/06; SSK120/06; SSK121/06; SSK124/06; SSK125/06; SSK149/06; STARNT/20; Sterilized Convenience Kit; STOCKINETTE COTTON; Surgical Instrument Kit Disposable; Surgical Instrument Tray (SIT) Kit; SUT009/20; SUT035/20; SUT036/20; SUT106/50; SUT110/20; SUT112/50; SUT113/50; SUT120/20; SUT121/20; SUT123/20; SUT124/50; SUT125/50; SUT130/50; SUT292/50; SUT401/50; SUT866/50; SUTGEN001/100; TBT100/10; THT001/10; THT201/20; THT706/20; ToggleLoc 2.9; TOQ232; TOQ233; TOQ234; TOWELS COTTON NON STERILE BULK; TRT019/10; TRT110/20; TRT120/10; TRT121/10; TRT122/10; TRT125/10; TRT126/10; TRT710/05; UBT001/20; UCPT01/10; UNIVERSAL ACL DISPOSABLE KIT; VAT706/20; VST405/20; VST406/20; VT 100 Y - Connector; VT Circle Drape 5pcs pack; VT Drape 5pcs pack; VT Drape and Port Set Kit L Lock; VT Drape and Port Set Kit M Lock; VT Drape and Port Set Kit S Lock; VT Port Set Kit; WHK002/50; Y-KNOT FLEX 1.3MM DISPOSABLE PERCUTANEOUS PACK WITH T-GUIDE; Y-KNOT FLEX DISPOSABLE PERCUTANEOUS PACK FOR Y-G00X REUSABLE GUIDES
Classification Name:	KIT, SURGICAL INSTRUMENT, DISPOSABLE
Product Code:	KDD[6]
Device Class:	1
Regulation Number:	878.4800[7]
Medical Specialty:	General & Plastic Surgery
Registered Establishment Name:	Sterigenics U.S. LLC[8]
Registered Establishment Number:	1054811
Owner/Operator:	Sotera Health LLC[9]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R7

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Proprietary Name:	UNIMED ELECTROSURGICAL ELECTRODE
Classification Name:	ELECTROSURGICAL, CUTTING & COAGULATION & ACCESSORIES
Product Code:	GEI[6]
Device Class:	2
Regulation Number:	878.4400[7]
Medical Specialty:	General & Plastic Surgery
Registered Establishment Name:	Sterigenics U.S. LLC[8]
Registered Establishment Number:	1054811
Premarket Submission Number:	K944433[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R8

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Establishment Registration & Device Listing

New Search Back To Search Results

Classification Name:	SURGEON'S GLOVES
Product Code:	KGO[6]
Device Class:	1
Regulation Number:	878.4460[7]
Medical Specialty:	General & Plastic Surgery
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	2029015
Premarket Submission Number:	K011721[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R9

Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	AXERA Access System
Classification Name:	INTRODUCER, CATHETER
Product Code:	DYB[66]
Device Class:	2
Regulation Number:	870.1340[77]
Medical Specialty:	Cardiovascular
Registered Establishment Name:	Sterigenics U.S. LLC[88]
Registered Establishment Number:	2953359
Premarket Submission Number:	K121521[99]
Owner/Operator:	Sotera Health LLC[1010]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R10

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Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	LAMINAR Flow Phaco Tips - 19 gauge
Classification Name:	UNIT, PHACOFRAGMENTATION
Product Code:	HQC[6]
Device Class:	2
Regulation Number:	886.4670[7]
Medical Specialty:	Ophthalmic
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	1036836
Premarket Submission Number:	K844373[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R11

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FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	Balloon Flow-Assisted Bipolar Electrode Catheter & Balloon Flow-Assisted Bipolar Electrode Catheter w/Right Heart Curve; Heparin Bonded Balloon Flow-Assisted Bipolar Electrode Catheter & Heparin Bonded Balloon Flow-Assisted Bipolar Electrode; MYO/WIRE TEMPORARY CARDIAC PACING WIRE; NBIH, NBIH Soft Tip, Goetz, Geotz Soft Tip, Semi-Floating, Zucker Lumen, Myler Lumen, CVP & Gorlin Lumen Electrode Cathe
Classification Name:	ELECTRODE, PACEMAKER, TEMPORARY
Product Code:	LDF[6]
Device Class:	2
Regulation Number:	870.3680[7]
Medical Specialty:	Cardiovascular
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	1319639
Premarket Submission Number:	K803086[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R12

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FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	HiResolution Bionic Ear System
Classification Name:	IMPLANT, COCHLEAR
Product Code:	MCM[6]
Device Class:	3
Registered Establishment Name:	Sterigenics U.S., LLC[7]
Registered Establishment Number:	1721676
Premarket Submission Number:	P960058[8]
Owner/Operator:	Sotera Health LLC[9]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R13

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Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	ACCESS PORT W / STABILITY 5 X 100MM; ACCESS PORT W / STABILITY 5 X 125MM; ACCESS PORT W / STABILITY 5/10 X 100MM; ACCESS PORT W / STABILITY 5/10/12 X125MM; ACCESS PORT W / STABILITY 8 X 100MM; ACCESS PORT W/ STABILITY 5/10/12 X 100MM; CANNULA W/STABILITY 5 X 100MM; CANNULA W/STABILITY 5/10 X 100MM; CANNULA W/STABILITY 5/10/12 X 100MM; TAUT; TAUT ADAPt 5/10/12MM X 100MM UNIVERSAL C; TAUT ADAPT 5/10MM X 100MM UNIVERSAL; TAUT ADAPt 5/10MM X 100MM UNIVERSAL CANN; TAUT ADAPT 5/12 MM X 100 MM UNIV/HASSON; TAUT ADAPT 5/12 MM X 125 MM UNIV/HASSON; TAUT ADAPT 5/12MM X 100MM UNIVERSAL; TAUT ADAPT 5/12MM X 125MM UNIVERSAL; TAUT ADAPt 5MM X 100MM CANNULA-ONLY; TAUT ADAPt PORTS 5MM X 125MM LONG PORT; Weck Vista
Classification Name:	LAPAROSCOPE, GENERAL & PLASTIC SURGERY
Product Code:	GCJ[6]
Device Class:	2
Regulation Number:	876.1500[7]
Medical Specialty:	Gastroenterology
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	1420032
Premarket Submission Number:	K023261[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R14

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Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	Elliquence Bipolar Electrodes XEE401A, 4792.6912
Classification Name:	ELECTROSURGICAL, CUTTING & COAGULATION & ACCESSORIES
Product Code:	GEI[6]
Device Class:	2
Regulation Number:	878.4400[7]
Medical Specialty:	General & Plastic Surgery
Registered Establishment Name:	Sterigenics U.S., LLC[8]
Registered Establishment Number:	2219920
Premarket Submission Number:	K003126[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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6. /scripts/cdrh/cfdocs/cfPCD/classification.cfm?ID=5769
7. /scripts/cdrh/cfdocs/cfCFR/CFRsearch.cfm?FR=878.4400
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EXHIBIT R15

U.S. FOOD & DRUG ADMINISTRATION

FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	ActiVAC, 5 Pack; ASSY, 10 PACK V.A.C. 3M TEGADERM DRAPE; KCI VAC GRANUFOAM LARGE BRIDGE DRESSING 5 PACK; VAC WhiteFoam Large Dressing (foam only); VAC WhiteFoam Large Dressing w/ SensaTRAC; VAC WhiteFoam Small Dressing (foam only); VAC WhiteFoam Small Dressing w/ SensaTRAC
Classification Name:	NEGATIVE PRESSURE WOUND THERAPY POWERED SUCTION PUMP
Product Code:	OMP[6]
Device Class:	2
Regulation Number:	878.4780[7]
Medical Specialty:	General & Plastic Surgery
Registered Establishment Name:	STERIGENICS UK LIMITED[8]
Registered Establishment Number:	3015219237
Premarket Submission Number:	K063692[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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9. /scripts/cdrh/cfdocs/cfpmn/pmn.cfm?id=K063692
10. /scripts/cdrh/cfdocs/cfRL/rl.cfm?start_search=1&OwnerOperatorNumber=10029425

Page Last Updated: 09/07/2020

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EXHIBIT R16

U.S. FOOD & DRUG ADMINISTRATION

FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name: .2MM CRS DMSTK,L; .5MM DIAMOND BALL; .5MM DIAMOND BALL, 10CM; .5MM DIAMOND BALL, EXTENDED; .5MM DIAMOND BALL, STANDARD; .8MM DIAMOND BALL, 10CM; .95MM X 12.8MM FLUTED ROUTER; 0.5MM DBALL,EX,S; 0.5MM DIAMOND BALL, 5.6CM; 0.5MM DIAMOND BALL, 7.3CM; 0.5MM DIAMOND BALL, EXT; 0.5MM FLUTED BALL; 0.6MM DIAMOND BALL; 0.6MM DIAMOND BALL, 5.6CM; 0.6MM DIAMOND BALL, 7.3CM; 0.7MM DIAMOND BALL, 5.6CM; 0.7MM DIAMOND BALL, 7.3CM; 0.8MM DIAMOND BALL; 0.8MM DIAMOND BALL, 5.6CM; 0.8MM DIAMOND BALL, 7.3CM; 1.0MM DRILL FOR 1.25MM SCREW; 1.0MM TW DRILL FOR 1.25MM SCR; 1.0MM TWIST DR FOR 1.25MM SCW; 1.0MM X 4.0MM TWISTDRILL W/STP; 1.12MM X 6.35MM FLUTED ROUTER; 1.12MM X 6.35MM FRTR,S; 1.12MM X 6.35MM FRTR,SHD; 1.15MM TWIST DRILL FOR 1.5 X 4MM SCREW; 1.1MM DRILL FOR 1.5MM SCREW; 1.1MM TW DRILL FOR 1.50MM SCR; 1.2MM DIAMOND BALL, EXT; 1.2MM X 12.8MM FLUTED ROUTER; 1.2MM X 12.8MM FLUTED ROUTER, 4 SERIES; 1.2MM X 12.8MM FRTR,4S,M; 1.2MM X 12.8MM FRTR,L; 1.2MM X 12.8MM FRTR,M; 1.2MM X 3MM TWIST DRILL; 1.2MM X 7.5MM TWIST DRILL; 1.3MM DRILL FOR 1.7MM SCREW; 1.3MM TW DRILL FOR 1.70MM SCR; 1.3MM TWIST DR FOR 1.70MM SCW; 1.3MM X 12.8MM FLUTED ROUTER; 1.3MM X 12.8MM FRTR,CRNP; 1.42MM X 6.4MM STRAIGHT ROUTER; 1.4MM X 12.8MM FLUTED ROUTER; 1.4MM X 12.8MM FLUTED ROUTER, 4 SERIES; 1.4MM X 12.8MM FRTR,4S,CRNP; 1.4MM X 12.8MM FRTR,CRNP; 1.4MM X 12.8MM FRTR,S; 1.4MM X 17MM FLUTED,SPIRAL ROUTER; 1.55MM DRILL FOR 2.0MM SCREW; 1.55MM TW DRILL FOR 2.0MM SCR; 1.55MM TWIST DR FOR 2.0MM SCW, ADG; 1.55MM X 10MM FLUTED TWIST DRL; 1.55MM X 10MM TWIST DR,S; 1.55MM X 10MM TWIST DRILL; 1.5MM C. DIAMOND BALL 120/140; 1.5MM COARSE DIAMOND BALL, 120/140 GRIT; 1.5MM COARSE DIAMOND BALL, EXT; 1.5MM COARSE DIAMOND BALL, STD; 1.5MM COARSE DIAMOND BALL,TAPERED EXTEND; 1.5MM CRS DBALL,EX,S; 1.5MM DBALL,EX,S; 1.5MM DBALL,ST,S; 1.5MM DIAMOND BALL; 1.5MM DIAMOND BALL, 19CM; 1.5MM DIAMOND BALL, 5.6CM; 1.5MM DIAMOND BALL, 7.3CM; 1.5MM DIAMOND BALL, EXT; 1.5MM DIAMOND BALL, EXTENDED; 1.5MM DIAMOND BALL, STANDARD; 1.5MM DIAMOND BALL, STD; 1.5MM FBALL,EX,S; 1.5MM FBALL,ST,S; 1.5MM FLUTED BALL; 1.5MM FLUTED BALL, 10CM; 1.5MM FLUTED BALL, 5.6CM; 1.5MM FLUTED BALL, 7.3CM; 1.5MM FLUTED BALL, EXT; 1.5MM FLUTED BALL, STD; 1.5MM STD DIAMOND BALL, 15CM; 1.5MM X 6MM FLUTED TWIST DRILL; 1.5MM X 7.5MM CYL CARBIDE DRUM; 1.5MM X 7.5MM

CYLINDRICAL CARBIDE DRUM,; 1.7MM X 11.9 DRILL W/DP STOP, AESCULAP®; 1.7MM X 11.9MM DRILL W/DP STOP,AESCULAP®; 1.7MM X 11.9MM TWIST DR,D STOP,ASCLP,SHD; 1.85MM X 16 MM FRTR,4S,CRNA; 1.85MM X 16 MM FRTR,CRNA; 1.85MM X 16MM FLUTED ROUTER; 1.85MM X 16MM FLUTED ROUTER, 4 SERIES; 1.8MM FLUTE MATCHSTICK; 1.8MM FLUTED MATCHSTICK; 1.8MM FLUTED MATCHSTICK, 10CM; 1.8MM FLUTED MATCHSTICK, 15CM; 1.8MM FLUTED MATCHSTICK, 19CM; 1.8MM FLUTED MATCHSTICK, 4 SERIES; 1.8MM FMSTK,M; 1.8MM FMSTK,S; 1.93MM SUT PASS DRILL/1.17 EYE; 1.93MM SUT PASS,1.17 EYE,SHD; 10.06MM BORING TOOL; 10.5MM SMALL BONE BUR; 10.8MM CORING TOOL; 10MM X 20MM GRAFT HARVESTING BLADE; 10MMX14MM FLUTED DRUM SIDE CUT; 11.1MM FLUTED ROUTER; 11.5MM CORING TOOL; 11MM X 20MM GRAFT HARVESTING BLADE; 12.6MM BORING TOOL; 12.6MM BORING TOOL, USE WITH XMAX ONLY; 12.6MM X 10.4MM BORING TL,3FLUTE,EM2+/XM; 12.7MM FLUTED DRUM; 12MM X 20MM GRAFT HARVESTING BLADE; 13.23MM BORING TOOL; 13.5MM CORING TOOL; 14.7MM CORING TOOL; 14MM X 5.5MM OSC. MICRO BLADE; 15.2MM X 9.5MM SAG MICRO BLADE; 15MM, 13 TEETH/CM RECIP. MICRO BLADE; 16.8MM CORING TOOL; 17MM DIAMOND DISC; 18.5MM X 10MM OSC. MICRO BLADE; 18.5MM X 9MM OSCILLATING MICRO BLADE; 18.5MM X 9MM SAGITTAL MICRO BLADE; 1MM CARBIDE FLUTED BALL; 1MM CARBIDE FLUTED BALL, EXTENDED; 1MM COARSE DIAMOND BALL; 1MM COARSE DIAMOND BALL, EXT; 1MM COARSE DIAMOND BALL, EXTENDED LENGTH; 1MM COARSE DIAMOND BALL, STD; 1MM CRS DBALL,EX,M; 1MM CRS DBALL,ST,S; 1MM DBALL,EX,S; 1MM DBALL,ST,S; 1MM DIAMOND BALL; 1MM DIAMOND BALL, 5.6CM; 1MM DIAMOND BALL, 7.3CM; 1MM DIAMOND BALL, EXT; 1MM DIAMOND BALL, STANDARD; 1MM DIAMOND BALL, STD; 1MM DIAMOND BALL,STANDARD; 1MM FBALL,EX,S; 1MM FBALL,ST,L; 1MM FBALL,ST,S; 1MM FLUTED BALL; 1MM FLUTED BALL, 10CM; 1MM FLUTED BALL, 5.6CM; 1MM FLUTED BALL, 7.3CM; 1MM FLUTED BALL, EXTENDED; 1MM FLUTED BALL, STANDARD; 2.15MM X 22MM FLUTED SPIRAL ROUTER; 2.15MM X 22MM SPIRAL ROUTER; 2.15MM X 22MM SPIRAL ROUTER, 4 SERIES; 2.15MM X 22MM SRTR,4S,CRNA; 2.15MM X 22MM SRTR,CRNA; 2.15MM X 25.4MM FLUTED ROUTER; 2.15MM X 25.4MM FRTR,SHD; 2.3MM FLUTED BALL; 2.3MM FLUTED MATCHSTICK; 2.3MM FLUTED MATCHSTICK, 10CM; 2.3MM FLUTED MATCHSTICK, 15CM; 2.3MM FLUTED MATCHSTICK, 19CM; 2.3MM FLUTED MATCHSTICK, EXTENDS 22MM; 2.3MM FMSTK,L; 2.3MM FMSTK,M; 2.3MM FMSTK,S; 2.3MM X 4.5MM FLUTED MATCHSTIK; 2.47 X 30.3MM SPIRAL ROUTER, 4 SERIES; 2.47MM X 30.2MM SPIRAL ROUTER; 2.47MM X 30.3MM SPIRAL ROUTER; 2.47MM X 30.3MM SRTR,L; 2.4MM X 3.3MM TWIST DRILL; 2.5MM COARSE DIAMOND BALL, STD; 2.5MM CRS DIAMOND BALL, EXTENDED LENGTH; 2.5MM CRSE DIAMOND BALL; 2.5MM DBALL,EX,S; 2.5MM DIAMNOND MATCHSTICK; 2.5MM DIAMOND BALL; 2.5MM DIAMOND BALL, EXT; 2.5MM DIAMOND BALL, STANDARD; 2.5MM DIAMOND BALL, STD; 2.5MM DIAMOND MATCHSTICK; 2.5MM DMSTK,L;

2.5MM DMSTK,M; 2.5MM FBALL,ST,S; 2.5MM FLUTED BALL; 2.5MM FLUTED BALL, 10CM; 2.5MM FLUTED BALL, EXT; 2.5MM FLUTED BALL, STD; 2.5MM X 25.4MM FLUTED ROUTER; 2.5MM X 25.4MM FRTR,L; 2.8MM X 22MM FLTD SPIRL ROUTER; 2.9MM FLUTED BALL; 21.35MM, 13TEETH/CM RECIP. MICRO BLADE; 21MM X 5.5MM OSC. MICRO BLADE; 22.9MM, 9TEETH/CM RECIP. MICRO BLADE; 25.1MM, 14 TEETH/CM RECIP. MICRO BLADE; 25.4MM DDISC,MHD; 25.4MM DDISC,SHD; 25.4MM DIAMOND DISC; 25.4MM, 9 TEETH/CM RECIP. MICRO BLADE; 25.5MM X 4.5MM SAG MICRO BLADE; 25.5MM X 5.5MM SAG MICRO BLADE; 25.5MM X 9.5MM SAG MICRO BLADE; 25.5MMX9.5MM COARSE SAG MBLADE; 28.5MM X 5.5MM OSC. MICRO BLADE; 2MM CARBIDE FLUTED BALL; 2MM CARBIDE FLUTED BALL, EXTENDED; 2MM CARBIDE FLUTED BALL,STANDARD,8 FLUTE; 2MM COARSE DIAMOND BALL; 2MM COARSE DIAMOND BALL, EXT; 2MM COARSE DIAMOND BALL, STD; 2MM COARSE DIAMOND BALL, TAPERED; 2MM CRS DBALL,EX,S; 2MM CRS DBALL,ST TPR,S; 2MM CRS DBALL,ST,M; 2MM CRS DBALL,ST,S; 2MM DBALL,EX,M; 2MM DBALL,EX,S; 2MM DBALL,ST,L; 2MM DBALL,ST,M; 2MM DBALL,ST,S; 2MM DIAMOND BALL; 2MM DIAMOND BALL, 10 CM; 2MM DIAMOND BALL, 15CM; 2MM DIAMOND BALL, 19CM; 2MM DIAMOND BALL, 5.6CM; 2MM DIAMOND BALL, 7.3CM; 2MM DIAMOND BALL, EXT; 2MM DIAMOND BALL, STANDARD; 2MM DIAMOND BALL, STD; 2MM DIAMOND BALL,120/140 GRIT,STD LENGTH; 2MM FBALL,EX,M; 2MM FBALL,EX,S; 2MM FBALL,ST,CBD,S; 2MM FBALL,ST,L; 2MM FBALL,ST,M; 2MM FBALL,ST,S; 2MM FLUTED BALL; 2MM FLUTED BALL, 10CM; 2MM FLUTED BALL, 15CM; 2MM FLUTED BALL, 19CM; 2MM FLUTED BALL, 5.6CM; 2MM FLUTED BALL, 7.3CM; 2MM FLUTED BALL, EXT; 2MM FLUTED BALL, STANDARD; 2MM FLUTED BALL, STANDARD, 4 SERIES; 2MM FLUTED BALL, STD; 2MM FLUTED BALL,TAPERED,STANDARD LENGTH; 2MM X 15.6MM FLUTED ROUTER; 2MM X 15.6MM,FRTR,CRNA; 2MM X 27.6MM FL,SPIRAL RTR; 3.05MM X 38.2MM FLUTED ROUTER; 3.2MM BELL CUTTER; 3.2MM COARSE DIA MATCHSTICK; 3.2MM COARSE DIAMOND MATCHSTICK; 3.2MM DIAMOND MATCHSTICK; 3.2MM DIAMOND MATCHSTICK, EXTENDS 28.5MM; 3.2MM DMSTK,L; 3.2MM DMSTK,M; 3.2MM FLUTED CARBIDE SIDE CUTR; 3.2MM FLUTED CARBIDE SIDE CUTTER; 3.2MM FMSTK,L AGG,M; 3.2MM SIDE CUT,CBD,MHD; 3.2MM X 5MM DRILL W/STOP; 3.5MM COARSE DIAMOND BALL,STD; 3.5MM CRS DBALL,EX,S; 3.5MM CRS DIAMOND BALL, EXTENDED LENGTH; 3.5MM CRSE DIAMOND BALL; 3.5MM DBALL,EX,S; 3.5MM DBALL,ST,S; 3.5MM DIAMOND BALL; 3.5MM DIAMOND BALL, EXT; 3.5MM DIAMOND BALL, STANDARD; 3.5MM DIAMOND BALL, STD; 3.5MM FBALL,EX,S; 3.5MM FBALL,ST,S; 3.5MM FLUTED BALL, EXT; 3.5MM FLUTED BALL, STD; 3.5MM X 19.8MM FDRM,LHD; 3.5MM X 19.8MM FLUTED DRUM; 3.5MM X 8.4MM FLUTED DRUM; 3.7MM COARSE DIAMOND MTCHSTCK; 31MM X 10MM OSC. MICRO BLADE; 31MM X 9MM OSCILLATING MICRO BLADE; 31MM X 9MM SAGITTAL MICRO BLADE; 34MM X 4MM SAG MICRO BLADE; 39.5MM X 9.0MM RECIP MICR0 BLADE; 3MM CARBIDE FLUTED BALL; 3MM CARBIDE FLUTED BALL, EXTENDED; 3MM

CARBIDE FLUTED MATCHSTICK, LESS AGGR; 3MM COARSE DIAMOND BALL; 3MM COARSE DIAMOND BALL, 22MM SHAFT EXP; 3MM COARSE DIAMOND BALL, EXT; 3MM COARSE DIAMOND BALL, STD; 3MM COARSE DIAMOND BALL, TAPERED, STD LG; 3MM COARSE DIAMOND MATCHSTICK; 3MM COARSE DIAMOND MATCHSTICK, 19CM; 3MM COARSE DMND MATCHSTCK,10CM; 3MM CRS DBALL,EX,S; 3MM CRS DBALL,ST,L; 3MM CRS DBALL,ST,M; 3MM CRS DBALL,ST,S; 3MM CRS DIAMOND BALL, 2MM SHAFT EXPOSURE; 3MM CRS DIAMOND BALL,50/60 GRIT,STD LG; 3MM CRSE DMND MTCHSTCK,15CM; 3MM DBALL,100/120,ST,S; 3MM DBALL,EX,M; 3MM DBALL,EX,S; 3MM DBALL,ST,L; 3MM DBALL,ST,M; 3MM DBALL,ST,S; 3MM DIAMOND BALL; 3MM DIAMOND BALL, 10CM; 3MM DIAMOND BALL, 15CM; 3MM DIAMOND BALL, 19CM; 3MM DIAMOND BALL, EXT; 3MM DIAMOND BALL, STANDARD; 3MM DIAMOND BALL, STD; 3MM DIAMOND BALL, STD 100/120; 3MM DIAMOND BALL,100/120 GRIT,STD LENGT; 3MM FBALL,EX,CBD,S; 3MM FBALL,EX,M; 3MM FBALL,EX,S; 3MM FBALL,ST TPR,S; 3MM FBALL,ST,CBD,S; 3MM FBALL,ST,L; 3MM FBALL,ST,LHD; 3MM FBALL,ST,M; 3MM FBALL,ST,S; 3MM FLTD MATCHSTK,EXT 8.9MM,LESS AGGRESS; 3MM FLUTED BALL; 3MM FLUTED BALL, 10CM; 3MM FLUTED BALL, 15CM; 3MM FLUTED BALL, 19CM; 3MM FLUTED BALL, 2MM SHAFT EXPOSURE; 3MM FLUTED BALL, EXT; 3MM FLUTED BALL, STANDARD; 3MM FLUTED BALL, STANDARD, 4 SERIES; 3MM FLUTED BALL, STD; 3MM FLUTED BALL, STD. 4 SERIES; 3MM FLUTED BALL,4-SERIES,EXTENDED LENGTH; 3MM FLUTED BALL,4-SERIES,STANDARD LENGTH; 3MM FLUTED BALL,STANDARD; 3MM FLUTED BALL,TAPERED,STANDARD LENGTH; 3MM FLUTED MATCHSICTK (LESS AGGRESSIVE); 3MM FLUTED MATCHSTICK; 3MM FLUTED MATCHSTICK LESS AGG; 3MM FLUTED MATCHSTICK, 10CM; 3MM FLUTED MATCHSTICK, 15CM; 3MM FLUTED MATCHSTICK, 19CM; 3MM FLUTED MATCHSTICK, EXTENDS 20.8MM; 3MM FLUTED MATCHSTICK, LESS AGGRESSIVE; 3MM FLUTED MATCHSTICK,EXTENDS 8.9MM LESS; 3MM FLUTED MATCHSTICK,LESS AGG; 3MM FLUTED MATCHSTICK,LESS AGGRSVE-MIA16; 3MM FLUTED MTCHSTK,LESS AGGRES; 3MM FLUTED MTCHSTK-LESS AGGRES; 3MM FMSTK,L; 3MM FMSTK,L AGG,8.9MM EXP,S; 3MM FMSTK,L AGG,CBD,L; 3MM FMSTK,L AGG,L; 3MM FMSTK,L AGG,LHD; 3MM FMSTK,L AGG,M; 3MM FMSTK,LHD; 3MM FMSTK,M; 3MM FMSTK,MHD; 3MM FMSTK,S; 3MM FMSTK,SHD; 3MM X 11.3MM FLUTED BARREL, 14 FLUTES; 3MM X 9.5MM FLUTE CARBIDE DRUM; 4.7MM X 20MM FDRM,LHD; 4.7MM X 20MM FLUTED DRUM; 4.7MM X 20MM FLUTED DRUM (SIDE CUT); 4.7MM X 8MM FLUTED DRUM; 4.7MMX20MM FLUTD DRM(SIDE CUT); 4.8 MM X 4 MM TWIST DRILL W/ DEPTH STOP; 4.8MM X 2MM TWIST DRILL W/DEPTH STOP; 4.8MM X 9.2MM DRILL W/STOP; 41MM X 14MM COARSE SAGITTAL SAW BLADE; 41MM X 19.5MM SAGITTAL SAW BLADE; 41MM X 9.5MM SAGITTAL SAW BLADE; 42MM X 13.3MM OSCILLATING MICRO BLADE; 42MM X 13.3MM SAGITTAL MICRO BLADE; 4MM CARBIDE FLUTED BALL; 4MM CARBIDE FLUTED BALL, 10 FLUTES; 4MM CARBIDE FLUTED

BALL, EXT 27MM; 4MM COARSE DIAMOND BALL; 4MM COARSE DIAMOND BALL, 15 CM; 4MM COARSE DIAMOND BALL, 22MM SHAFT EXP; 4MM CRS DBALL,L; 4MM CRS DBALL,M; 4MM CRS DBALL,S; 4MM DBALL,27MM EXP,S; 4MM DBALL,L; 4MM DBALL,M; 4MM DBALL,S; 4MM DIAMOND BALL; 4MM DIAMOND BALL, 100/120; 4MM DIAMOND BALL, 10CM; 4MM DIAMOND BALL, 15CM; 4MM DIAMOND BALL, 19CM; 4MM DIAMOND BALL, EXTENDS 27MM; 4MM EXTRA COARSE DIAMOND BALL; 4MM FBALL,27MM EXP,CBD,S; 4MM FBALL,4S,L; 4MM FBALL,4S,S; 4MM FBALL,CBD,S; 4MM FBALL,L; 4MM FBALL,M; 4MM FBALL,S; 4MM FLUTED ACORN; 4MM FLUTED BALL; 4MM FLUTED BALL, 19CM; 4MM FLUTED BALL, 4 SERIES; 4MM FLUTED BALL, EXTENDS 27MM; 4MM FLUTED BALL, TAPERED; 4MM X 10MM DIAMOND FLAME; 4MM X 11MM FLUTED BARREL, 14 FLUTES; 4MM X 5MM EXTRA COARSE DIAMOND DRUM; 4MM X 8.9MM DRUM (SIDE CUT); 4MM X 8MM COARSE DIAMOND OVAL; 4MM X 8MM DIAMOND OVAL; 4MM X 8MM FBAR,L; 4MM X 8MM FLUTED BARREL; 4MM X 8MM FLUTED OVAL; 4MM X 8MM FOVL,M; 4MM X-COARSE DIAMOND BALL, 20/30 GRIT; 4MM XCRS DBALL,L; 4MM XCRS DBALL,M; 4MM XCRS DBALL,S; 4MMX8.9MM FLUTED DRUM,SIDE CUT; 5.5 MM X 10MM CARBIDE FLUTED OVAL; 5.56MM BORING TOOL; 5.5MM COARSE DIAMOND BALL; 5.5MM X 10MM FLUTED OVAL; 5.6MM FLUTED DRUM; 5MM CARBIDE FLUTED BALL; 5MM CARBIDE FLUTED BALL, 10 FLUTES; 5MM COARSE DIAMOND BALL; 5MM COARSE DIAMOND BALL, 22MM SHAFT EXP; 5MM COARSE DIAMOND BALL, 40/60 GRIT; 5MM CRS DBALL,L; 5MM CRS DBALL,M; 5MM CRS DBALL,S; 5MM DBALL,L; 5MM DBALL,M; 5MM DBALL,S; 5MM DIAMOND BALL; 5MM DIAMOND BALL, 100/120; 5MM DIAMOND BALL, 2MM SHAFT EXPOSURE; 5MM EXTRA COARSE DIAMOND BALL; 5MM FACN,L; 5MM FACN,M; 5MM FACN,S; 5MM FBALL,2MM SHAFT EXP,S; 5MM FBALL,4S,L; 5MM FBALL,4S,M; 5MM FBALL,CBD,S; 5MM FBALL,L; 5MM FBALL,LHD; 5MM FBALL,M; 5MM FBALL,S; 5MM FBALL,SHD; 5MM FLUTED ACORN; 5MM FLUTED BALL; 5MM FLUTED BALL, 12 FLUTES; 5MM FLUTED BALL, 2MM SHAFT EXPOSURE; 5MM FLUTED BALL, 4 SERIES; 5MM FLUTED BALL, EXTENDS 27MM; 5MM FLUTED BALL, LESS AGGRESSIVE; 5MM X 10MM FLUTED BARREL; 5MM X 10MM FLUTED OVAL; 5MM X 10MM FOVL,L; 5MM X 11.3MM FLUTED BARREL; 5MM X 12MM FLUTED DRUM; 5MM X 16.2MM FDRM,LHD; 5MM X 16.2MM FLUTED DRUM; 5MM X 20MM FLUTED BARREL; 5MM X 20MM GRAFT HARVESTING BLADE; 5MM X 6MM FLUTED OVAL; 5MM X 8.4MM FDRM,L; 5MM X 8.4MM FDRM,M; 5MM X 8.4MM FLUTED DRUM; 5MM X 8.4MM FLUTED DRUM FOR MIA16; 5MM X 8MM FLUTED OVAL; 5MM X14MM FLUTED DRUM,SIDE CUT; 5MM XCRS DBALL,L; 5MM XCRS DBALL,M; 5MM XCRS DBALL,S; 5MMX14MM FLUTED DRUM(SIDE CUT); 6.2MM BELL SHAPE (SIDE CUT); 6.2MM FLUTED BELL (SIDE CUT); 6.2MM FLUTED BELL SIDECUT ONLY; 6.2MM X 4.6MM FLUTED DRUM, SIDE CUT ONLY; 6.2MMX4.6MM DRUM (SIDE CUT); 6.2MMX4.6MM DRUM, (SIDE CUT); 6.47MM CORING TOOL; 6.4MM FLUTED CYLINDRIC CARBIDE; 6.4MM FLUTED CYLINDRICAL CARBIDE; 6.4MM FLUTED DRUM; 6.4MM X 4.8MM FLUTED DRUM, SIDE

CUT ONLY; 6.6MM, 9TEETH/CM RECIP. MICRO BLADE; 6.7MM CORING TOOL; 6.7MM X 45MM CORING TOOL; 6.8MM X 10.6MM CRSE DMND DRUM; 6.8MM X 10.6MM X-CRSE DIA DRUM; 6.8MM X 10.6MM XCRS DDRM,L; 6.8MM X 10.6MM XCRSE DMND DRUM; 6.8X10.6MM XCOARSE DIAMND DRUM; 6MM CARBIDE FLUTED BALL; 6MM COARSE DIAMOND BALL; 6MM CRS DBALL,S; 6MM CRS DIAMOND BALL, 2MM SHAFT EXPOSURE; 6MM CRSE DIAMOND BALL; 6MM DBALL,L; 6MM DBALL,M; 6MM DBALL,S; 6MM DIAMOND BALL; 6MM DIAMOND BALL, 100/120; 6MM EXTRA COARSE DIAMOND BALL; 6MM EXTRA COARSE DIAMOND BALL,20/30 GRIT; 6MM FACN,LHD; 6MM FACN,MHD; 6MM FACN,S; 6MM FACN,SHD; 6MM FBALL,4S,M; 6MM FBALL,CBD,S; 6MM FBALL,L; 6MM FBALL,LHD; 6MM FBALL,M; 6MM FBALL,S; 6MM FBALL,SHD; 6MM FLUTED ACORN; 6MM FLUTED BALL; 6MM FLUTED BALL, 4 SERIES; 6MM X 11.3MM FLUTED BARREL; 6MM X 11.8MM FLUTED PEAR; 6MM X 14MM FDRM,SIDE CUT,L; 6MM X 20MM GRAFT HARVESTING BLADE; 6MM X 8MM FLUTED DRUM; 6MM X 9MM DIAMOND PEAR; 6MM X 9MM FLUTED PEAR; 6MM X-COARSE DIAMOND BALL, 20/30 GRIT; 6MM X14MM FLUTED DRUM,SIDE CUT; 6MM XCRS DBALL,20/30,L; 6MM XCRS DBALL,L; 6MM XCRS DBALL,M; 6MM XCRS DBALL,S; 6MMX14MM FLUTED DRUM(SIDE CUT); 7 MM FLUTED BALL FOR MIA16; 7.5MM COARSE DIAMOND BALL; 7.5MM FACN,L AGG,SHD; 7.5MM FACN,SHD; 7.5MM FLUTED ACORN; 7.5MM FLUTED ACORN, LESS AGGRESSIVE; 7.6MM X 28.6MM FLUTED DRUM; 7MM CARBIDE FLUTED BALL; 7MM CARBIDE FLUTED BALL, 14 FLUTES; 7MM EXTRA COARSE DIAMOND BALL; 7MM FACN,L; 7MM FACN,M; 7MM FBALL,CBD,S; 7MM FBALL,L; 7MM FBALL,LHD; 7MM FBALL,M; 7MM FBALL,S; 7MM FBALL,SHD; 7MM FLUTED ACORN; 7MM FLUTED BALL; 7MM FLUTED BALL, EXTENDS 8.9MM; 7MM FLUTED BALL, MIA 20CM; 7MM X 11MM FLUTED DRUM; 7MM X 13.1MM FLUTED PEAR, INV.; 7MM X 20MM GRAFT HARVESTING BLADE; 7MM X14MM FLUTED DRUM,SIDE CUT; 7MMX14MM FLUTED DRUM(SIDE CUT); 8.48MM BORING TOOL; 8MM COARSE DIAMOND BALL; 8MM FBALL,S; 8MM FLUTED BALL; 8MM X 11MM FLUTED DRUM; 8MM X 12.5MM FLUTED BARREL; 8MM X 20MM GRAFT HARVESTING BLADE; 8MM X-COARSE DIAMOND BALL; 8MM X14MM FLUTED DRUM,SIDE CUT; 9.0MM FLUTED BALL; 9.2MM FACN,SHD; 9.2MM FLUTED ACORN; 9.5MM BOR TOOL,XM,MHD; 9.5MM BORING TOOL; 9.5MM BORING TOOL,USE WITH XMAX ONLY; 9.5MM FLUTED DRUM; 9.9MM CORING TOOL; 9MM FLUTED BALL; 9MM FLUTED BALL, FOR MHD ATTACHMENT; 9MM FLUTED BALL, MIA 20CM; 9MM X 20MM GRAFT HARVESTING BLADE; 9MM X14MM FLUTED DRUM,SIDE CUT; BONE COLLECTOR; CRANIAL PERFORATOR, 14-11 MM; eMax 2 Plus System; IRRIG CLIP, MED,LONG/-S,TURQ-L; IRRIGATION CLIP, QD11/-S,QD14; IRRIGATION CLIP, QD8,QD8-S; IRRIGATION CLIP, SHORT; IRRIGATION CLIP, SIL,SHD; IRRIGATION CLP,VIO,MHD,BLU,LHD; SUPER SUCKER LONG (SS1),SGL,STERILE; SUPER SUCKER SHORT (SS2),SGL,STERILE; SUPR SUCKR SH CURV (SS2C),SGL,STERILE; TWIST DR FOR 1.5MM X 4MM SCW,S; TWIST DR FOR 1.5MM X 6MM SCW,S; TWIST DRILL FOR

	1.25MMX4MM SCW; TWIST DRILL FOR 1.5MMX 4MM SCW; TWIST DRILL FOR 1.5MMX 6MM SCW; TWIST DRILL FOR 2MM X 4MM SCRW; TWIST DRILL FOR 2MM X 6MM SCRW; TWIST DRILL- 2MM X 4MM SCRW; TWIST DRILL- 2MM X 6MM SCRW; TWIST DRILL-1.25MMX4MM SCRW; TWIST DRILL-1.25MMX6MM SCRW; TWIST DRILL-1.5MMX4MM SCRW; TWIST DRILL-1.5MMX6MM SCRW
Classification Name:	MOTOR, SURGICAL INSTRUMENT, AC-POWERED
Product Code:	GEY[6]
Device Class:	1
Regulation Number:	878.4820[7]
Medical Specialty:	General & Plastic Surgery
Registered Establishment Name:	Sterigenics US, LLC[8]
Registered Establishment Number:	1526534
Premarket Submission Number:	K080802[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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EXHIBIT R17

U.S. FOOD & DRUG ADMINISTRATION

FDA Home[3] Medical Devices[4] Databases[5]

Establishment Registration & Device Listing

New Search Back To Search Results

Proprietary Name:	Liberty Cycler Set
Classification Name:	SYSTEM, PERITONEAL, AUTOMATIC DELIVERY
Product Code:	FKX[6]
Device Class:	2
Regulation Number:	876.5630[7]
Medical Specialty:	Gastroenterology
Registered Establishment Name:	IOTRON INDUSTRIES CANADA, INC.[8]
Registered Establishment Number:	9680579
Premarket Submission Number:	K173718[9]
Owner/Operator:	Sotera Health LLC[10]
Owner/Operator Number:	10029425
Establishment Operations:	Contract Sterilizer

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6. /scripts/cdrh/cfdocs/cfPCD/classification.cfm?ID=1948
7. /scripts/cdrh/cfdocs/cfCFR/CFRsearch.cfm?FR=876.5630
8. /scripts/cdrh/cfdocs/cfRL/rl.cfm?rid=277793
9. /scripts/cdrh/cfdocs/cfpmn/pmn.cfm?id=K173718
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EXHIBIT R18

Establishment Registration & Device Listing

New Search Back To Search Results

Establishment:
Sterigenics U.S., LLC
2971 Olympic Industrial Dr SE Ste 116
Atlanta , GA 30339
Registration Number: 1018470
FEI Number*: 1018470
Status: Active
Date Of Registration Status: 2020

Owner/Operator:

Sotera Health LLC[66]
2015 Spring Road
Suite 650
Oak Brook, IL US 60523
Owner/Operator Number: 10029425[77]

Official Correspondent:
Aaron Dement
2015 Spring Road
Suite 650
Oak Brook, IL 60523
Phone: 630-9281700

* Firm Establishment Identifier (FEI) should be used for identification of entities within the imports message set

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PLAINTIFF'S Exhibit PJ R19 Sotera Health SEC IPO Filing S-1/A 11.18.2020

As filed with the Securities and Exchange Commission on November 18, 2020

Registration No. 333-249648

UNITED STATES
SECURITIES AND EXCHANGE COMMISSION
Washington, D.C. 20549

Amendment No. 4 to
Form S-1
REGISTRATION STATEMENT
UNDER
THE SECURITIES ACT OF 1933

Sotera Health Company

(Exact name of Registrant as specified in its charter)

Delaware	7389	47-3531161
(State or other jurisdiction of incorporation or organization)	(Primary Standard Industrial Classification Code Number)	(I.R.S. Employer Identification Number)

9100 South Hills Blvd, Suite 300
Broadview Heights, Ohio 44147
(440) 262-1410
(Address including zip code, telephone number, including area code, of Registrant's Principal Executive Offices)

Matthew J. Klaben, Esq.
Senior Vice President, General Counsel and Secretary
Sotera Health Company
9100 South Hills Blvd, Suite 300
Broadview Heights, Ohio 44147
(440) 262-1409
(Name, address including zip code, telephone number, including area code, of agent for service)

Copies To:

David Lopez, Esq. Cleary Gottlieb Steen & Hamilton LLP One Liberty Plaza New York, New York 10006 (212) 225-2000	Arthur D. Robinson, Esq. John C. Ericson, Esq. Simpson Thacher & Bartlett LLP 425 Lexington Avenue New York, New York 10017 (212) 455-2000

Approximate date of commencement of proposed sale to the public: As soon as practicable after the effective date hereof.

If any of the securities being registered on this form are to be offered on a delayed or continuous basis pursuant to Rule 415 under the Securities Act, check the following box. ☐

If this form is filed to register additional securities for an offering pursuant to Rule 462(b) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(c) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

If this form is a post-effective amendment filed pursuant to Rule 462(d) under the Securities Act, check the following box and list the Securities Act registration statement number of the earlier effective registration statement for the same offering. ☐

Indicate by check mark whether the registrant is a large accelerated filer, an accelerated filer, a non-accelerated filer, a smaller reporting company or an emerging growth company. See the definitions of "large accelerated filer," "accelerated filer," "smaller reporting company" and "emerging growth company" in Rule 12b-2 of the Exchange Act.

Large accelerated filer	☐	Accelerated filer	☐
Non-accelerated filer	☒	Smaller reporting company	☐
		Emerging growth company	☒

If an emerging growth company, indicate by check mark if the registrant has elected not to use the extended transition period for complying with any new or revised financial accounting standards provided pursuant to Section 7(a)(2)(B) of the Securities Act. ☐

The Registrant hereby amends this Registration Statement on such date or dates as may be necessary to delay its effective date until the Registrant shall file a further amendment which specifically states that this Registration Statement shall thereafter become effective in accordance with Section 8(a) of the Securities Act of 1933 or until the Registration Statement shall become effective on such date as the Commission, acting pursuant to said Section 8(a), may determine.

The information in this prospectus is not complete and may be changed. We may not sell these securities until the registration statement filed with the Securities and Exchange Commission is effective. This prospectus is not an offer to sell these securities and it is not soliciting an offer to buy these securities in any jurisdiction where the offer or sale is not permitted.

SUBJECT TO COMPLETION, DATED NOVEMBER 18, 2020

Preliminary Prospectus

46,600,000 Shares

Sotera Health

Sotera Health Company

Common Stock

This is the initial public offering of shares of common stock of Sotera Health Company.

Prior to this offering, there has been no public market for our common stock. The initial public offering price of the common stock is expected to be between $20.00 and $23.00 per share. Our common stock has been approved for listing on the Nasdaq Global Select Market ("Nasdaq") under the symbol "SHC."

After the completion of this offering, investment funds and entities affiliated with Warburg Pincus LLC and investment funds and entities affiliated with GTCR, LLC together will own approximately 71.5% of the voting power of our common stock, assuming that the underwriters do not exercise their option to purchase additional shares. As a result, we may be considered a "controlled company" within the meaning of the Nasdaq corporate governance standards, and therefore we expect to also qualify for exemptions from certain corporate governance requirements. See "Management and Board of Directors."

We are an "emerging growth company" as defined in Section 2(a) of the Securities Act of 1933, as amended (the "Securities Act"), and as such, have elected to comply with certain reduced public company reporting requirements. See "Prospectus Summary—Implications of Being an Emerging Growth Company."

Investing in our common stock involves a high degree of risk. See "Risk Factors" beginning on page 22 to read about factors you should consider before deciding to invest in our common stock.

Neither the Securities and Exchange Commission (the "SEC") nor any state securities commission has approved or disapproved these securities or determined if this prospectus is truthful or complete. Any representation to the contrary is a criminal offense.

	Per share	Total
Initial public offering price	$	$
Underwriting discounts	$	$
Proceeds to us, before expenses	$	$

(1) We have agreed to reimburse the underwriters for certain expenses in connection with this offering. See "Underwriting (Conflicts of Interest)."

We have granted the underwriters an option to purchase up to 6,990,000 additional shares of common stock at the initial public offering price less the underwriting discount for a period of 30 days after the date of this prospectus.

Delivery of the shares of common stock will be made on or about , 2020.

J.P. Morgan **Credit Suisse** **Goldman Sachs & Co. LLC** **Jefferies**

Barclays **Citigroup** **RBC Capital Markets**

BNP PARIBAS **KeyBanc Capital Markets** **Citizens Capital Markets** **ING**

Academy Securities **Loop Capital Markets** **Penserra Securities LLC** **Siebert Williams Shank** **Tigress Financial Partners**

Prospectus dated , 2020.

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Through and including , 2020 (the 25th day after the date of this prospectus), all dealers effecting transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to a dealer's obligation to deliver a prospectus when acting as an underwriter and with respect to an unsold allotment or subscription.

You should rely only on the information contained in this prospectus, any amendment or supplement to this prospectus and any free writing prospectus prepared by us or on our behalf that we have referred you to. We have not, and the underwriters have not, authorized anyone to provide you with different or additional information or to make any representations other than those contained in this prospectus or in any free writing prospectuses we have authorized for use with respect to this offering. We take no responsibility for, and can provide no assurance as to the reliability of, any other information that others may give you or any representation that others may make to you. We are not making an offer of these securities in any state, country or other jurisdiction where the offer is not permitted. You should not assume that the information in this prospectus or any free writing prospectus is accurate as of any date other than the date of the applicable document regardless of its time of delivery or the time of any sales of our common stock. Our business, prospects, financial condition or results of operations may have changed since the date of the applicable document. Information contained in our web site does not constitute part of this prospectus.

No action is being taken in any jurisdiction outside the United States to permit a public offering of our common stock. Persons who come into possession of this prospectus in jurisdictions outside the United States are required to inform themselves about and to observe any restriction as to this offering and the distribution of this prospectus applicable to those jurisdictions.

Certain Trademarks, Service Marks and Trade Names

We own or otherwise have rights to the trademarks, service marks and trade names, including those mentioned in this prospectus, used in conjunction with the marketing and sale of our products and services. This prospectus includes trademarks, service marks and trade names, which are protected under applicable intellectual property laws and are our property and/or the property of our subsidiaries. This prospectus may also contain trademarks, service marks and trade names of other companies, which are the property of their respective owners. We do not intend our use or display of other companies' trademarks, service marks or trade names to imply a relationship with, or endorsement or sponsorship of us by, any other companies. Solely for convenience, trademarks, service marks and trade names referred to in this prospectus may appear without the ®, ™, or SM symbols, but such references are not intended to indicate, in any way, that we will not assert, to the fullest extent under applicable law, our rights or the rights of the applicable licensor, to these trademarks, service marks and trade names.

Market, Industry and Other Data

Historical and current market data used throughout this prospectus were obtained from internal company analyses, consultants' reports and industry publications. Industry surveys and publications generally state that the information contained therein has been obtained from sources believed to be reliable. This information involves many assumptions and limitations, and you are cautioned not to give undue weight to these estimates and information. We have not independently verified this market data. While we are not aware of any misstatements regarding any industry or similar data presented herein, such data involve risks and uncertainties and are subject to change based on various factors, including those discussed under the "Risk Factors" section in this prospectus.

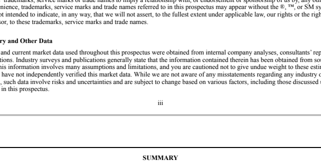
SUMMARY

The following summary highlights selected information about our company and this offering that is included elsewhere in this prospectus in greater detail. It does not contain all of the information that you should consider before investing in our common stock. For a more comprehensive understanding of our company and this offering, you should read this entire prospectus carefully, including the information presented under the heading "Risk Factors," "Cautionary Note Regarding Forward-Looking Statements," "Selected Consolidated Financial Information," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and in our consolidated financial statements and notes thereto.

In this prospectus, unless we indicate otherwise or the context requires, "Sotera Health," "Sotera Health Company," "our company," "the company," "we," "our," "ours" and "us" refer to Sotera Health Company and its consolidated subsidiaries.

Our Company

Overview



We are a leading global provider of mission-critical sterilization and lab testing and advisory services to the medical device and pharmaceutical industries. We are driven by our mission: Safeguarding Global Health®. We

provide end-to-end sterilization as well as microbiological and analytical lab testing and advisory services to help ensure that medical, pharmaceutical and food products are safe for healthcare practitioners, patients and consumers in the United States and around the world. Our customers include more than 40 of the top 50 medical device companies and eight of the top ten global pharmaceutical companies (based on revenue). Our services are an essential aspect of our customers' manufacturing process and supply chains, helping to ensure sterilized medical products reach healthcare practitioners and patients. Most of these services are necessary for our customers to satisfy applicable government requirements. We give our customers confidence that their products meet regulatory, safety and effectiveness requirements. With a combined tenure across our businesses of nearly 200 years and our industry-recognized scientific and technological expertise, we help to ensure the safety of millions of patients and healthcare practitioners around the world every year. Across our 63 facilities worldwide, we have nearly 2,900 employees who are dedicated to safety and quality. We are a trusted partner to more than 5,800 customers in over 50 countries.

Our Businesses

We serve our customers throughout their product lifecycles, from product design to manufacturing and delivery, helping to ensure the sterility, effectiveness and safety of their products for the end user. We operate across two core businesses: sterilization services and lab services. Each of our businesses has a long-standing record and is a leader in its respective market, supported and connected by our core capabilities including deep end market, regulatory, technical and logistics expertise. The combination of Sterigenics, our terminal sterilization business, and Nordion, our Cobalt-60 ("Co-60") supply business, makes us the only vertically integrated global gamma sterilization provider in the sterilization industry. This provides us with additional insights and allows us to better serve our customers.

- **Sterilization Services (our Sterigenics and Nordion brands):**
  - Under our Sterigenics brand, we provide outsourced terminal sterilization and irradiation services for the medical device, pharmaceutical, food safety and advanced applications markets. Terminal sterilization is the process of sterilizing a product in its final packaging. It is an essential, and often government-mandated, step in the manufacturing process of healthcare products before they are shipped to end-users. These products include medical protective barriers, including personal protective equipment ("PPE"), procedure kits and trays, implants, syringes, catheters, wound care products, laboratory products and pharmaceuticals. We offer our customers a complete range of outsourced terminal sterilization services, primarily using the three major sterilization technologies: gamma irradiation, ethylene oxide ("EO") processing and electron beam ("E-beam") irradiation.
    - **Gamma irradiation:** A process in which products are exposed to gamma rays emitted by Co-60. Gamma rays can penetrate even dense materials to kill microbes. Gamma is particularly effective at sterilizing high-density medical products such as sutures, surgical tools and stents.
    - **EO processing:** A gas sterilization process in which pallets of packaged goods are loaded into a secure chamber that is then injected with EO gas to penetrate the packaging. EO is the most widely used gaseous sterilization agent in the world and has been in use for nearly 90 years. The broad application to a range of medical devices is attributed to the fact that EO is compatible with many materials that cannot tolerate or are degraded by radiation or moist heat sterilization. For this reason, it is commonly the only method available to safely and effectively sterilize procedure kits, PPE and many devices used in cardiac procedures.
    - **E-beam irradiation:** A process in which products are exposed to machine-generated radiation in the form of a stream of electrons. E-beam is particularly effective for low density homogenous products such as glass labware. Several medical devices products also rely on E-beam as an effective form of sterilization, including certain types of syringes. In addition to medical device

sterilization, E-beam can also be used as an effective technology for materials modification, such as the crosslinking of certain polymers or for enriching the color of gemstones.

  - Under our Nordion brand, we are the leading global provider of Co-60 and gamma irradiators, which are key components to the gamma sterilization process. Co-60 is a radioactive isotope that is needed by medical device manufacturers and sterilizers including Sterigenics. Co-60 decays and must be replaced over time to produce the desired level of irradiation. We have the most comprehensive access to nuclear power reactor operators around the world which are able to produce Co-60. The capabilities that we provide to Nordion's customers include handling and processing of Co-60, recycling of depleted sources and global logistics enabled by our licensed container fleet. We are integral to our customers' operations due to highly coordinated and complex installation processes. In addition, under our Nordion brand, we are a leading supplier of Co-60 sources for stereotactic radiosurgery devices (such as the Gamma Knife®), which are used for certain oncology applications.
- **Lab Services (our Nelson Labs brand):**
  - Under our Nelson Labs brand, we are a global leader in outsourced microbiological and analytical chemistry testing and advisory services for the medical device and pharmaceutical industries. We provide our customers mission-critical lab testing services, which assess the product quality, effectiveness, patient safety and end-to-end sterility of products. These services are necessary for our customers' regulatory approvals, product releases and ongoing product performance evaluations.
    - Microbiology testing services help to identify and measure the potential risks of microbes to a product and ensure that the quality of the products is maintained.
    - Analytical chemistry lab testing is also a critical part of the pharmaceutical drug and medical device development and manufacturing process. This testing provides first-hand information as to the content, quality and safety of raw materials, intermediates and finished products.
    - We also provide expert advisory services to aid customers in navigating the regulatory requirements applicable throughout the product lifecycle.

    Nelson Labs serves over 3,800 customers across 13 facilities in the United States, Mexico, Asia and Europe. We have a comprehensive array of over 800 laboratory tests supporting our customers from initial product development and sterilization validation, through regulatory approval and ongoing product testing for sterility, safety and quality assurance. Our customers rely on our expertise in their industries to get their medical device and pharmaceutical products to market.
    - Medical device lab testing services include: microbiology, biocompatibility and toxicology assessments, material characterization, sterilization validation, sterility assurance, packaging validation and distribution simulation, reprocessing validations, facility and process validation and performance validation and verification of PPE barriers and material.
    - Pharmaceutical lab testing services include: microbiology, biocompatibility and toxicology assessments, extractables and leachables evaluations of pharmaceutical containers, sterilization validation, sterility assurance, packaging validation and distribution simulation and facility and process validation.

    Nelson Labs is highly complementary to our sterilization services business. In particular, microbiological testing validates the configuration and effectiveness of the sterilization process.

We believe that our sterilization service offerings, our Co-60 supply capabilities and the broad capabilities of our lab services business give us unique insights and technical expertise to serve the mission-critical needs of medical device and pharmaceutical manufacturers. We believe these provide us with a competitive advantage over other outsourced sterilization and lab testing service providers.

Our Markets and Customers

Medical device and pharmaceutical manufacturers often outsource their sterilization and lab services needs, as the technical and regulatory expertise and infrastructure required to establish those capabilities in-house can result in significant cost and resource burden.

We estimate that the total global addressable market for terminal sterilization and outsourced medical device and pharmaceutical lab testing was approximately $33 billion in 2019. Global terminal sterilization accounted for $3 billion of our estimated total addressable market in 2019. Global outsourced medical device and pharmaceutical lab testing services accounted for approximately $29 billion of our estimated total addressable market in 2019, with approximately $3 billion attributable to medical devices and approximately $26 billion attributable to pharmaceuticals. We believe the following secular trends underpin increasing demand for medical devices and pharmaceuticals: an aging population, increased access to, and demand for, healthcare services globally, growth in healthcare R&D spending and innovation, intensifying regulatory requirements and heightened focus on personal safety. As a service provider to manufacturers, we are not directly exposed to risks associated with reimbursement by public or private payors. We expect that increasing utilization of medical devices, including the equipment and consumables that we sterilize and test, expansion in pharmaceutical development and a growing focus on microbial decontamination (including viruses) will continue to drive growth in our business and provide us the opportunity to expand within our markets.

Our customers depend upon the end-to-end services we provide throughout the lifecycle of their products, from research and development, to product manufacturing and sterilization, as well as ongoing quality control. We often maintain long-term relationships with our customers, which average over a decade across our top 25 customers in 2019. We also benefit from minimal customer concentration, as no single customer accounted for more than 4% of our total revenues in 2019. Given the critical nature of our services, a significant portion of our revenues is supported by multi-year contracts. More than 90% of our sterilization services revenues in each of the year ended December 31, 2019 and the nine months ended September 30, 2020 were from customers under multi-year contracts. The quality of our service offerings is evidenced by close to 100% renewal rates of our top ten sterilization services customers in 2019 over the past five years. Most of our services are government-mandated and mission-critical, and sterilization services generally represent a small fraction of the total end product cost of medical devices.

Our Network and Expertise

All of the services we provide are highly regulated and require significant technical expertise. To manage these strict regulatory requirements safely and effectively, we have a highly trained and skilled workforce that creates, implements and manages complex quality assurance and environmental health and safety programs, procedures and control systems. We coordinate and communicate with numerous regulatory agencies globally across our businesses on an ongoing and regular basis.

With 63 facilities across our businesses located in 13 countries, our network of global facilities represents a significant competitive advantage in serving the healthcare industry. Our sterilization facilities are often strategically located near our healthcare customers' manufacturing sites or distribution hubs, which is intended to decrease our customers' transportation costs and help them optimize their supply chain and logistics. Our laboratory testing facilities are strategically located in order to meet the demanding and often complex needs of our customers. Extensive capital, technical expertise and regulatory knowledge are required to build, maintain and operate facilities like ours. We estimate that one new sterilization facility can cost over $30 million to build, on average, and require extensive and complex licensing approval and regulatory compliance processes. We estimate that the cost to replace the facilities in our network alone could be as high as $1.5 billion or more, in addition to the technical and regulatory requirements.

For the year ended December 31, 2019, we recorded net revenues of $778.3 million, net loss of $20.4 million, Adjusted Net Income of $100.4 million and Adjusted EBITDA of $379.9 million. In addition, for the nine months ended September 30, 2020, we recorded net revenues of $601.3 million, net income of $5.9 million, Adjusted Net Income of $77.1 million and Adjusted EBITDA of $306.8 million. For the definition of Adjusted Net Income and Adjusted EBITDA and the reconciliation of these measures from net income (loss), please see "Summary—Summary Historical Consolidated Financial and Other Data."

Industry Overview

We expect several positive secular trends to drive increased demand for our services, including:

- **Favorable demographic trends for healthcare worldwide:** Healthcare demand is increasing globally, driven primarily by an aging population and an increased prevalence of chronic diseases. According to data published by the United Nations in 2019, the world's population is expected to increase by 2 billion people in the next 30 years. In addition, one in six people are projected to be over the age of 65 globally by 2050, up from one in eleven in 2019. United Nations projections from 2019 also show that the number of people aged 80 or older is expected to triple in the next 30 years. These trends are driven by declining fertility and increasing longevity, as well as international migration. In many regions, the population aged 65 is projected to double by 2050, while global life expectancy beyond 65 is expected to increase by 19 years. In March 2020, the Centers for Medicare & Medicaid Services (the "CMS") estimated that health expenditures in the United States will increase from approximately 18% of gross domestic product in 2018 to approximately 20% in 2028.
- **Increased demand for healthcare services in global markets:** Stricter healthcare standards coupled with heightened regulatory requirements, greater availability of care and increased patient purchasing power are driving increased demand for healthcare services. In emerging markets, rapid urbanization and rising income, combined with an increase in diseases such as diabetes and cancer, have fueled the growth in access to, and demand for, healthcare services. In addition, the coronavirus ("COVID-19") pandemic has also increased awareness of the importance of decontamination and sterilization. In 2018, the CMS estimated global healthcare costs to be approximately $4 trillion in 2019 and projected they would reach more than $6 trillion by 2027.
- **Growth in R&D spending and innovation across healthcare:** The pharmaceutical and medical device industries are continuously innovating and developing new products, which we anticipate will increase the demand for sterilization and lab services. Worldwide pharmaceutical R&D spend is forecasted to grow steadily at a compound annual growth rate ("CAGR") of approximately 3% between 2019 and 2026, reaching $233 billion by 2026 (EvaluatePharma® July 2020, Evaluate Ltd.). In the medical devices market, the global top twenty companies based on R&D spending spent a combined $18 billion on R&D in 2017 (EvaluateMedTech® World Preview 2018, Evaluate Ltd.). This number is expected to grow at a 4% CAGR, reaching approximately $24 billion by 2024 (EvaluateMedTech® World Preview 2018, Evaluate Ltd.).

Key Strengths

We are a critical service provider in the healthcare value chain. Our customers rely on us to help ensure that medical, pharmaceutical and food products are safe for healthcare practitioners, patients and consumers. We provide services, including sterility assurance, product safety and effectiveness validation, that our customers need to get their products to market and into the hands of their end-users. Our breadth of services, technical and regulatory expertise, as well as our global scale, enable us to provide these mission-critical services which are necessary for Safeguarding Global Health®. These key strengths make us a global leader in our markets.

Comprehensive, global provider of mission-critical sterilization and lab services for the healthcare industry

Our customers value our scale and breadth of services. We offer customers comprehensive sterilization, lab testing and expert advisory services on a global scale. Our customers in the healthcare industry require these services to navigate and operate in an increasingly complex and technical regulatory environment, and we believe we provide a differentiated value proposition to our customers by offering these services in an integrated manner. Our robust sterilization capabilities across all key modalities allow our customers to help ensure the safety of their products prior to delivery to their end-users. We offer over 800 microbiology and analytical chemistry lab tests that, together with our expert advisory services, cover the entirety of the medical device and pharmaceutical product lifecycle to evaluate and ensure that our customers' products meet regulatory requirements. Our frequent interactions with our customers across multiple facets of their products' lifecycles give us deep and often early insights into the evolving needs of the manufacturers of medical devices and pharmaceuticals. We have a large, global and strategically-located network of facilities that allows us to deploy the full array of our services to our customers where they need us. These comprehensive and global services make us an essential player across the medical device and pharmaceutical value chain.

Industry leading participant in large and growing markets, underpinned by trends in global healthcare

We estimate that the total global addressable market for terminal sterilization and outsourced medical device and pharmaceutical lab testing was approximately $33 billion in 2019. Global terminal sterilization accounted for $3 billion of our estimated total addressable market in 2019. Global outsourced medical device and pharmaceutical lab testing services accounted for $29 billion of our total addressable market in 2019.

Given the mission-critical need for our services within the healthcare industry, our growth historically has been impacted by broader global healthcare trends as opposed to macroeconomic trends. Trends including an aging population and increased access to, and demand for, healthcare services globally, have driven increases in volume demand for medical device and pharmaceutical products. In addition, the need for product enhancement and innovation by manufacturers drives further demand for our services. We believe the sterilization and lab services markets will continue to benefit from these trends, as well as from the increasingly complex regulatory and compliance environment and heightened focus by consumers on personal safety. As our customers continue to focus on innovation of their own products, they have increasingly relied on our expertise and our outsourced services to help them get their products to market. We believe our ability to provide end-to-end sterilization and lab services makes us a trusted partner to our customers in these large and growing markets.

Sterilization services business with an established and durable customer base supported by long-term contracts provides highly recurring revenue streams

We provide expertise and end-to-end sterilization services for our customers leading to deep, trusted relationships that allow them to meet their global regulatory compliance needs. Our relationships with our Sterigenics and Nordion customers are typically governed by multi-year contracts with cost pass-through provisions, which have resulted in recurring revenue streams and accretive growth. In addition, these customers often look to us as a long-term provider given switching providers can be costly and burdensome. For example, in most circumstances, switching providers requires additional testing, re-validation and Food and Drug Administration ("FDA") submissions and can take anywhere from six months to three years depending upon the class of product. Our relationships with our top ten sterilization services customers in 2019 had an average tenure of over a decade. Our partnerships with these customers have led to close to 100% renewal rates over the past five years.

Expertise and strong track record in highly regulated markets

We and our customers operate in highly complex and regulated markets that require deep knowledge and technical expertise. We believe that the operational discipline that we employ to manage intricate quality

assurance and environmental health and safety ("EH&S") programs in our own operations gives our customers confidence that we are the best partner to support them in their businesses. For example, we design and install emission controls in our EO facilities that often outperform the regulatory standards that we are required to meet. We also have a skilled team which has developed trusted relationships with numerous regulatory bodies around the world. For example, in 2019 we were selected by the FDA as one of eight participants to move to the next stage of a public innovation challenge to encourage the development of new approaches to medical device sterilization and new strategies to reduce EO emissions. We work closely with our customers, the FDA and others to consider enhanced EO cycle design and processes that would reduce EO emissions from the EO sterilization process to as close to zero as reasonably possible. Our relationships, combined with our thought leadership that is recognized by regulators and customers alike, enable us to inform the process of creating, interpreting and advising on safety standards. They also allow us to educate and advise our customers on current and newly evolving standards and requirements.

Global scale and integrated facility network provide differentiated services to our customers

We have a global network of 63 facilities, consisting of 50 sterilization services facilities and 13 labs, through which we provide services to more than 5,800 customers that have operations in over 50 countries. We have worked to standardize our enterprise resource planning, global quality and EH&S systems to integrate our network of facilities globally. This integration is critical for our customers, who operate globally and look for partners that can provide the same level of service, experience and expertise wherever they operate. We serve many of our sterilization customers at more than one facility, with more than 80% of Sterigenics' net revenues attributable to customers using more than one of our facilities and more than 50% of Sterigenics' net revenues attributable to customers using five or more of our facilities in 2019. The capital to replicate the scale of our global facility network, extensive and complex upfront licensing processes and intense regulatory compliance requirements make it extremely difficult for new competitors to easily enter our markets and replicate our scale. The combination of Sterigenics and Nordion makes us the only vertically integrated global supplier of gamma irradiation services, which allows Nordion to more confidently make long-term investments to expand Co-60 supply for the medical products sterilization industry. We believe our global scale, supported by our integrated facility network and core capabilities including deep end market, regulatory, technical and logistics expertise, will allow us to continue to expand our service offerings and customer base.

Experienced management team with proven track record of execution and financial performance

Our management team has significant industry expertise, an unwavering commitment to operational excellence and a proven track record of delivering financial performance. Our culture of accountability runs throughout the entire organization and has contributed meaningfully to our operational achievements and commercial success. Our management team is supported by nearly 2,900 team members around the world who are dedicated to safety and quality, which is why we are a trusted partner to our customers. We have delivered revenue growth every year since 2005, even through significant economic downturns, and have implemented productivity initiatives which have led to margin expansion. Our team brings extensive experience and is highly skilled at recognizing and acting upon market expansion opportunities. Our disciplined approach to M&A has enabled the successful integration of two transformational and seven bolt-on acquisitions over the past six years. In addition, we are disciplined in our capital deployment strategy, which is focused on achieving attractive returns on investment. We pursue capacity expansions that will allow us to consistently grow earnings.

Our Strategy

Our strategy is designed to deliver on our mission of Safeguarding Global Health®, while generating sustainable growth, margins and cash flows for our business:

Drive organic growth by leveraging our leading capabilities, scale and global network

We believe that our established and durable relationships with our diverse customer base, along with the breadth and depth of our service offerings, provide us with a distinct leadership position within the markets that we serve. Our deep experience in sterilization and lab services allows us to be agile in identifying opportunities and decisive in deploying resources towards these opportunities to drive organic growth. We intend to continue capitalizing on our leadership position and integrated global facility network and capabilities to drive our growth by expanding existing customer relationships and attracting new customers. We also seek to accelerate our penetration in high-growth end-markets such as pharmaceuticals.

Deepen our customer relationships with our comprehensive service offerings in sterilization and lab services

Our customers around the world trust us to provide them with the highest quality sterilization and lab services. We are focused on broadening the number and range of services that each of our customers purchase from us by leveraging our core capabilities. We have continued to work on improving our customer interactions in order to deliver a "one company" experience across our sterilization and lab services so that we can further deepen our customer relationships. We provide comprehensive end-to-end services across our customers' value chains so they can efficiently deliver the safest products to their end-users. We are the only industry player that offers the range of sterilization and lab services at the scale that we do. We strive for the full integration of our global operations to drive consistency across our services and provide our customers with a coordinated and seamless experience, designed to reduce cycle times for our services and improve efficiency. Our offerings facilitate long-term partnerships with our customers and make us an integral part of their product development and commercialization processes. We have multiple decades of deep expertise across key sterilization modalities as well as lab testing services across our customers' full product lifecycles. We provide over 800 laboratory tests, which we believe is multiple times the number of offerings of our nearest competitor.

Expand footprint to meet the local needs of our growing global customer base

We are focused on aligning our facility network to best meet our customers' requirements. We believe our valuable insight into our customers' current and future needs will allow us to efficiently grow our business. Our global presence reflects our commitment to developing our footprint to serve our customers' supply chains. Our integrated network of facilities is important to our customers as they can rely on the same level of service at each of our facilities, regardless of where they are around the world. We believe our sterilization services customers are seeking a partner that can operate near their manufacturing sites and distribution centers around the world, as transportation and logistics costs can be meaningful for our customers. In certain circumstances we will invest in projects to build capacity ahead of demand in alignment with the strategic plans of our customers. Our lab services customers are seeking expertise with both international and U.S. regulatory bodies. As our customers expand their global operations, we are well-equipped to expand with them and serve them where they need us.

Invest in technical and regulatory capabilities to enhance our leadership position

Our customers depend on our deep and extensive technical knowhow to get their products to market. We plan to continue to invest in our technical expertise and regulatory knowhow to stay ahead of the dynamic and increasingly complex regulatory landscape in the healthcare industry. Our combination of technical and regulatory expertise allows us to advance the standards of safety for crucial products whose end-users include

healthcare practitioners and patients. As customers look to us for expertise, this landscape creates opportunities for us to drive growth in our advisory services offering. We believe that our position as a key industry thought leader makes us a trusted partner for customers as they are developing new products and a respected industry partner for regulators as they are defining industry standards of safety for the future.

Continue our commitment to operational excellence to drive business efficiency and results

Our focus on operational excellence has allowed us to increase capacity utilization and improve working capital, thereby growing our revenues while expanding margins and improving the customer experience. Our commitment to implementing and improving customer-experience enhancing initiatives and internal processes has been a key driver of our strong financial profile to date. Our customer-facing initiatives around cycle time reduction, quality self-service reporting, purchase order accuracy and scheduling efficiencies highlight our rigorous, detail-oriented approach to operational excellence and connectivity with our long-time customers. These initiatives are designed not only to reduce turnaround times and increase predictability of service for our customers, but also to maximize our financial results. We will continue to address our customers' expectations through our internal processes centered on talent management, quality, EH&S and information technology. We believe that these processes will enable us to continue to deliver growth, profitability and cash generation.

Pursue value-creating strategic acquisitions to expand our addressable market and enhance our global capabilities and footprint

Our disciplined approach to M&A has resulted in our successful track record of identifying, completing and integrating strategic acquisitions into our company and we intend to continue to pursue value-creating strategic acquisitions. We have implemented a disciplined framework to support our acquisition efforts that focuses on quality businesses that are well-regarded by our customers and aligned with our culture of accountability, customer service and operating with integrity. Illustrating this highly disciplined acquisition framework are our two transformational acquisitions of Nordion and Nelson Labs. In addition to these major acquisitions, we acquired FTSI, Gammarad, CBE, REVISS, Toxikon Europe NV, Gibraltar Laboratories and Iotron Industries Canada, Inc. ("Iotron"), which provided geographic, technical and service line expansions. Our acquisition of Nelson Labs expanded our capabilities by creating an enhanced lab services platform to provide microbiology testing within our existing customer end-markets and increasing the number of tests we could provide to our customers. We have a strong foundation to continually evaluate acquisition opportunities that would expand our addressable market and enhance our global capabilities and footprint. We are well positioned to evaluate other acquisitions that leverage our core capabilities while expanding our existing customer relationships. We currently have a significant pipeline of targets, ranging from small, owner operated businesses to larger businesses, and believe that we can identify the appropriate targets and integrate them seamlessly into our business.

Risk Factor Summary

Investing in our common stock involves a high degree of risk. These risks are discussed in more detail in "Risk Factors" beginning on page 22, and you should carefully consider these risks before making a decision to invest in our common stock. The following is a summary of some of the principal risks we believe we face:

- disruption in the availability of, or increases in the price of, EO, Co-60 or our direct materials, services and supplies, including as a result of geopolitical instability arising from U.S. relations with Russia and related sanctions;
- changes in industry trends, environmental, health and safety regulations or preferences and general economic, social and business conditions;

- health and safety risks associated with the use, transportation and disposal of potentially hazardous materials such as EO and Co-60;
- the impact and outcome of current and future legal proceedings and liability claims, including tort lawsuits alleging personal injury or property devaluation by purported exposure to emissions of EO from our facility in Willowbrook and our facility in Atlanta, the possibility that other claims will be made in the future relating to these or other facilities and any inadequacy of our insurance coverage to pay any judgments rendered against us, including that our per occurrence limit for claims relating to Willowbrook's EO emissions has been reached;
- compliance with regulatory requirements to which we are subject and the related costs, and any failures to receive or maintain, or delays in receiving, required clearance or approvals;
- competition we face;
- business continuity hazards and other risks associated with our operations;
- our ability to increase capacity at existing facilities, renew leases for our facilities and build new facilities in a timely and cost-effective manner;
- the risks of doing business internationally;
- cyber security breaches and data leaks, and our dependence on information technology systems;
- any inability to pursue strategic transactions, including to find suitable acquisition targets, and our failure to integrate strategic acquisitions successfully into our existing business or realize anticipated cost savings or synergies;
- any inability to implement effective internal controls over financial reporting;
- our history of net operating losses, including a net loss of $20.8 million and $5.9 million for the years ended December 31, 2019 and 2018, and the risk that we may not achieve or maintain profitability in the future;
- our substantial leverage could adversely affect our ability to raise additional capital, limit our ability to react to changes in the economy or our industry, limit our flexibility in operating our business through restrictions contained in our debt agreements and prevent us from meeting our obligations under our existing and future indebtedness. As of September 30, 2020, our indebtedness totaled approximately $2,910 million, and for the nine months ended September 30, 2020, our debt service obligations (principal and interest) represented approximately 66% of our net cash flows from operating activities (before giving effect to the payment of interest). As adjusted to give effect to this offering and the application of the net proceeds therefrom, as of September 30, 2020, our indebtedness would have totaled approximately $2,035 million, and for the nine months ended September 30, 2020, our debt service obligations (principal and interest) would have represented approximately 56% of our net cash flows from operating activities (before giving effect to the payment of interest);
- the Sponsors will continue to have substantial control over us after this offering, which could limit your ability to influence the outcome of key transactions, including a change of control; and
- the fact that we may be considered a "controlled company" within the meaning of the Nasdaq corporate governance standards and would qualify for exemptions from certain corporate governance requirements, which means that our stockholders may not have the same protections afforded to stockholders of companies that are subject to such requirements.

Corporate Information and Structure

Sotera Health Company was incorporated in Delaware in November 2017 as the parent company for Sterigenics, Nordion and Nelson Labs. In May 2015, investment funds and entities affiliated with either Warburg Pincus LLC ("Warburg Pincus") or GTCR, LLC ("GTCR") acquired a controlling interest in our predecessor through Sterigenics-Nordion Topco Parent LLC, now known as Sotera Health Topco Parent, L.P. ("Topco Parent"). On October 23, 2020, we changed our name from Sotera Health Topco, Inc. to Sotera Health Company. The issuer in this offering, Sotera Health Company, is a Delaware corporation and is a direct wholly owned subsidiary of Topco Parent. Pursuant to the terms of the corporate reorganization that will be completed prior to the completion of this offering, Topco Parent will distribute the shares of Sotera Health Company common stock to its partners in accordance with the limited partnership agreement of Topco Parent. For more information on our corporate reorganization and ownership of our common stock, see "Corporate Reorganization" and "Principal Stockholders."

Our principal executive offices are located at 9100 South Hills Blvd, Suite 300 Broadview Heights, Ohio 44147, and our telephone number is (440) 262-1410. Our corporate website address is www.soterahealth.com. We do not incorporate the information contained on, or accessible through, our corporate website into this prospectus, and you should not consider it part of this prospectus.

Our wholly owned subsidiary, Sotera Health Holdings, LLC ("SHH") is the borrower under our senior secured first lien credit facilities and the issuer of our senior secured first lien notes and our senior secured second lien notes. We and certain of our domestic subsidiaries are guarantors of SHH's obligations under our credit facilities and notes.

Principal Stockholders

Following this offering and based on an assumed initial public offering price of $21.50 per share (the midpoint of the estimated offering price range set forth on the cover page of this prospectus), certain investment funds and entities affiliates of Warburg Pincus and GTCR, which we refer to collectively as the "Sponsors," will own approximately 42.9% and 28.6%, respectively, of our common stock (approximately 41.9% and 27.9%, respectively, if the underwriters' option to purchase additional shares is exercised in full). Together the Sponsors will own, in the aggregate, approximately 71.5% of our common stock (approximately 69.8% if the underwriters' option to purchase additional shares is exercised in full).

Warburg Pincus is a global private equity firm focused on growth investing. The firm's active portfolio of more than 185 companies is highly diversified by stage, sector and geography. It has invested approximately $12.3 billion of equity in the healthcare industry, and possesses direct knowledge of the sterilization services industry's end markets and medical device customers through its investments in other healthcare companies. Warburg Pincus is an experienced partner to management teams seeking to build durable companies with sustainable value. Founded in 1966, Warburg Pincus has raised over 20 private equity funds with capital commitments totaling $99 billion and has invested more than $88 billion in over 930 companies across 40 countries. The firm is headquartered in New York with offices in Beijing, Berlin, Hong Kong, Houston, London, Mumbai, San Francisco, São Paulo, Shanghai and Singapore.

Founded in 1980, GTCR is a private equity firm focused on investing in growth companies in the Healthcare, Technology, Media & Telecommunications, Financial Services & Technology and Growth Business Services industries. The Chicago-based firm pioneered The Leaders Strategy™–finding and partnering with management leaders in core domains to identify, acquire and build market-leading companies through transformational acquisitions and organic growth. Since its inception, GTCR has invested more than $18 billion in over 200 companies. GTCR is an active investor in the healthcare products sector and has supported Sotera Health's significant growth since 2011.

Pursuant to certain agreements to be entered into prior to the consummation of this offering in connection with the corporate reorganization, we will be required to take all necessary action to cause our board of directors to include individuals designated by the Sponsors pursuant to certain ownership thresholds. Warburg Pincus and GTCR, individually, will be required to vote all of their shares, and take all other necessary actions, to cause our board of directors to include the individuals designated as directors by Warburg Pincus and GTCR, as applicable. After the completion of this offering, the Sponsors will control a majority of the voting power of shares of our common stock with respect to the election of directors and will control a majority of the board of directors.

Channels for Disclosure of Information

Following the completion of this offering, we intend to announce material information to the public through filings with the SEC, the investor relations page on our website (www.soterahealth.com), press releases, public conference calls and public webcasts.

Any updates to the list of disclosure channels through which we will announce information will be posted on the investor relations page on our website.

Implications of Being an Emerging Growth Company

We qualify as an "emerging growth company" as defined in Section 2(a) of the Securities Act, as modified by the Jumpstart Our Business Startups Act of 2012 (the "JOBS Act"). As an emerging growth company, we may choose to take advantage of specified reduced disclosure and other requirements otherwise applicable generally to public companies that are not emerging growth companies.

We may take advantage of these exemptions until such time that we are no longer an emerging growth company. We will remain an emerging growth company until the earliest of (i) the last day of the fiscal year following the fifth anniversary of the completion of this offering, (ii) the last day of the fiscal year in which we have total annual gross revenue of at least $1.07 billion, (iii) the date on which we are deemed to be a large accelerated filer under the Securities Exchange Act of 1934, as amended (the "Exchange Act"), which means the market value of our common stock that is held by non-affiliates exceeds $700.0 million as of the prior June 30 and (iv) the date on which we have issued more than $1.0 billion in non-convertible debt during the prior three-year period. We may choose to take advantage of some but not all of these reduced disclosure obligations in future filings. If we do, the information that we provide to stockholders may be different than you might get from other public companies in which you hold stock.

Under the JOBS Act, emerging growth companies can also delay adopting new or revised accounting standards until such time as those standards apply to private companies. We have elected to take advantage of the extended transition period for complying with new or revised accounting standards until those standards would otherwise apply to private companies or at which time we conclude it is appropriate to avail ourselves of early adoption provisions of applicable standards. As a result, our results of operations and financial statements may not be comparable to the results of operations and financial statements of other companies who have adopted the new or revised accounting standards.

The Offering

Common stock offered by us	46,600,000 shares.
Underwriters' option to purchase additional shares	We may sell up to 6,990,000 additional shares if the underwriters exercise their option to purchase additional shares.
Common stock to be outstanding after this offering	277,331,078 shares (or 284,321,078 shares if the underwriters exercise their option to purchase additional shares in full).
Use of proceeds	We estimate that our net proceeds from this offering will be approximately $949.3 million (or approximately $1,091.7 million if the underwriters exercise their option to purchase additional shares in full) at an assumed initial public offering price of $21.50 per share, the midpoint of the estimated offering price range set forth on the cover page of this prospectus, after deducting estimated underwriting discounts and commissions. We intend to use a portion of the net proceeds of this offering to (i) redeem all of the outstanding aggregate principal amount of the Second Lien Notes at the applicable redemption premium, plus accrued and unpaid interest to, but excluding, the date of redemption and (ii) repurchase 1,669,122 shares of our common stock (based on an assumed initial public offering price of $21.50, the midpoint of the estimated offering price range set forth on the cover page of this prospectus) from certain of our executive officers at a purchase price per share equal to the initial public offering price per share of our common stock less an amount equal to the underwriting discounts and commissions payable thereon (the "repurchase"). We plan to use the balance of the net proceeds of this offering to repay a portion of the outstanding indebtedness under our Term Loan. See "Use of Proceeds."
Dividend policy	We do not expect to pay dividends on our common stock for the foreseeable future. Instead, we anticipate that all of our earnings in the foreseeable future will be used for the operation and growth of our business and the repayment of indebtedness. See "Dividend Policy."
Risk factors	Investing in our common stock involves a high degree of risk. See "Risk Factors" for a discussion of factors you should carefully consider before deciding to invest in our common stock.
Stockholders' agreement	Following the completion of this offering, we will have a stockholders' agreement with certain holders of our common stock, including the Sponsors, that will provide certain rights to those holders. See "Certain Relationships and Related Party Transactions—Stockholders' Agreement."
Registration rights agreement	Following the completion of this offering, we will have a registration rights agreement with certain holders of our common stock, including

	the Sponsors, whereby, following this offering and the expiration of the lock-up agreement with the underwriters in this offering, we may be required to register under the Securities Act the sale of shares of our common stock under specified circumstances. See "Certain Relationships and Related Party Transactions—Registration Rights Agreement."
Conflicts of interest	Affiliates of Goldman Sachs & Co. LLC hold approximately $420 million aggregate principal amount of the Second Lien Notes, all of which will be redeemed at the applicable redemption premium, plus accrued and unpaid interest to, but excluding the date of redemption and less than $1.5 million of the aggregate principal amount of the Term Loan, a portion of which will be repaid, and as a result will receive approximately 45.1% of the net proceeds of this offering (at an assumed initial public offering price of $21.50, the midpoint of the estimated offering price range on the cover of this prospectus), assuming the underwriters do not exercise their option to purchase additional shares. See "Use of Proceeds." Accordingly, Goldman Sachs & Co. LLC is deemed to have a conflict of interest within the meaning of Rule 5121 ("Rule 5121") of the Financial Industry Regulatory Authority, Inc. ("FINRA"). Therefore, this offering is being made in compliance with the requirements of Rule 5121. This rule requires, among other things, that a "qualified independent underwriter" participate in the preparation of, and exercise the usual standards of "due diligence" with respect to, the registration statement and this prospectus. J.P. Morgan Securities LLC has agreed to act as qualified independent underwriter for this offering and to undertake the legal responsibilities and liabilities of an underwriter under the Securities Act. J.P. Morgan Securities LLC will not receive any additional fees for serving as qualified independent underwriter in connection with this offering. We have agreed to indemnify J.P. Morgan Securities LLC against liabilities incurred in connection with acting as qualified independent underwriter, including liabilities under the Securities Act. Pursuant to FINRA Rule 5121, Goldman Sachs & Co. LLC will not confirm sales of our common stock to any account over which it exercises discretionary authority without the prior written approval of the customer. For more information, see "Underwriting (Conflicts of Interest)."
Nasdaq symbol	"SHC"

The number of shares of common stock to be outstanding after the offering is based on 232,400,200 shares of common stock outstanding as of September 30, 2020, 1,669,122 shares to be repurchased from certain of our executive officers in the repurchase and 46,600,000 shares to be sold in the offering and an assumed initial public offering price of $ 21.50 per share (the midpoint of the estimated offering price range set forth on the cover page of this prospectus).

The number of shares of common stock to be outstanding after this offering does not take into account an aggregate of 27,900,000 shares of common stock reserved for future issuance under our 2020 Omnibus Incentive Plan (the "2020 Plan"), which we adopted in connection with this offering (including the IPO Awards (as defined below), which we expect to grant to certain of our employees and consultants in connection with this offering,

including grants to our Named Executive Officers with an aggregate grant date value currently estimated to be approximately $19.8 million. See "Executive Compensation—2020 Omnibus Incentive Plan" and "Executive Compensation—Equity Grants Made in Connection with This Offering."

In addition, except as otherwise noted, all information in this prospectus:

- assumes the completion of our corporate reorganization prior to the completion of this offering, including a forward stock split to reclassify all 3,000 shares of our common stock outstanding as 232,400,200 shares. See "Corporate Reorganization";
- gives effect to the amendment and restatement of our certificate of incorporation and amendment and restatement of our bylaws prior to the closing of this offering;
- gives effect to the repurchase of certain shares of common stock as described under "Use of Proceeds"; and
- assumes the underwriters do not exercise their option to purchase additional shares of our common stock.

Summary Historical Consolidated Financial and Other Data

The following tables present our summary historical consolidated financial and other data. The summary historical consolidated statements of operations data and statements of cash flows data for the years ended December 31, 2019 and 2018, and the summary historical balance sheet data as of December 31, 2019 and December 31, 2018, have been derived from our audited consolidated financial statements included elsewhere in this prospectus. The summary historical consolidated statements of operations data and statements of cash flows data for the nine months ended September 30, 2020 and 2019 and the summary historical consolidated balance sheet data as of September 30, 2020 have been derived from our unaudited interim condensed consolidated financial statements included elsewhere in this prospectus. Our unaudited interim condensed consolidated financial statements have been prepared on the same basis as our audited consolidated financial statements and, in the opinion of our management, reflect all adjustments, including normal recurring items, considered necessary for a fair presentation of this data.

The following summary consolidated financial data should be read in conjunction with the information contained in "Use of Proceeds," "Management's Discussion and Analysis of Financial Condition and Results of Operations" and the consolidated financial statements and related notes thereto included elsewhere in this prospectus. Our historical results are not necessarily indicative of our results in any future period and our results for any interim period are not necessarily indicative of results that may be expected for any full fiscal year.

Statement of Operations Data:	Year Ended December 31,		Nine Months Ended September 30,	
(in thousands, except per share amounts)	2019	2018	2020	2019
Revenues:				
Service	$ 673,037	$ 615,510	$ 524,025	$ 501,875
Product	105,290	130,639	77,288	82,967
Total net revenues	778,327	746,149	601,313	584,842
Cost of revenues:				
Service	333,290	326,559	247,386	248,406
Product	49,606	62,338	30,932	38,226
Total cost of revenues	382,896	388,897	278,318	286,632
Gross profit	395,431	357,252	322,995	298,210
Operating expenses:				
Selling, general and administrative expenses	147,480	133,363	125,369	110,360
Amortization of intangible assets	58,562	57,975	43,989	43,942
Impairment of long-lived assets	5,792	34,981	—	5,781
Impairment of GA-MURR intangible assets	—	50,086	—	—
Total operating expenses	211,834	276,405	169,358	160,083
Operating income	183,597	80,847	153,637	138,127
Interest expense, net	157,729	143,326	167,142	114,478
Loss on extinguishment of debt	30,168	—	—	—
Foreign exchange (gain) loss	3,862	13,075	(5,370)	8,444
Gain on sale of Medical Isotopes business	—	(95,910)	—	—
Other income, net	(7,246)	(3,866)	(4,353)	(4,746)
Income (loss) before income taxes	(916)	24,222	(3,782)	19,951
Provision (benefit) for income taxes	19,509	30,098	(9,677)	12,630
Net income (loss)	(20,425)	(5,876)	5,895	7,321
Less: Net income (loss) attributable to noncontrolling interests	425	(6)	832	271
Net income (loss) attributable to the company	$ (20,850)	$ (5,870)	$ 5,063	$ 7,050

Statement of Operations Data (continued):	Year Ended December 31,		Nine Months Ended September 30,	
(in thousands, except per share amounts)	2019	2018	2020	2019
Other comprehensive (loss) income, net of tax:				
Pension and post-retirement benefits	$ (12,126)	$ 873	$ 700	$ (409)
Interest rate swaps	179	—	(179)	509
Foreign currency translation	27,402	(67,917)	(31,304)	10,968
Comprehensive income (loss)	(4,970)	(72,920)	(24,888)	18,389
Less: comprehensive income attributable to noncontrolling interests	310	(186)	832	156
Comprehensive income (loss) attributable to the company	$ (5,280)	$ (72,734)	$ (25,720)	$ 18,233
Earnings (loss) per share:				
Basic and Diluted	$ (0.09)	$ (0.03)	$ 0.02	$ 0.03
Weighted-average shares used to compute earnings (loss) per share:				
Basic and Diluted	232,400	232,400	232,400	232,400
Pro forma as adjusted earnings (loss) per share (unaudited):(a)				
Basic and Diluted	$ 0.13		$ 0.20	
Pro forma as adjusted weighted-average shares used to compute earnings (loss) per share (unaudited):(b)				
Basic and Diluted	277,331		277,331	
Selected cash flow data:				
Net cash provided by operating activities	$ 149,041	$ 119,563	$ 98,740	$ 138,974
Net cash provided by (used in) investing activities(c)	(57,257)	96,638	(139,920)	(36,636)
Net cash provided by (used in) financing activities	(126,030)	(191,857)	83,961	(108,811)
Other data:				
Adjusted Net Income(d)	$ 100,386	$ 75,315	$ 77,144	$ 87,897
Adjusted EBITDA(d)	379,932	340,637	306,797	285,457

(a) Pro forma as adjusted earnings (loss) per share for the year ended December 31, 2019 has been adjusted to reflect $56.1 million of lower interest expense, net of taxes, assuming the repayment of previously outstanding $425.0 million Senior PIK Toggle Notes, due 2021, $450.0 million Senior Notes, due 2023 and $14.1 million of principal amount outstanding of the Term Loan, due 2022, using a portion of the proceeds of this offering as if such indebtedness had been repaid as of the beginning of the period. Pro forma as adjusted earnings (loss) per share for the nine months ended September 30, 2020 has been adjusted to reflect $51.4 million of lower interest expense, net of taxes, assuming the repayment of the $770.0 million of principal amount outstanding of the Second Lien Notes, due 2027, and $129.9 million of principal amount outstanding of our Term Loan, due 2026, using a portion of the proceeds of this offering as if such indebtedness had been repaid as of the beginning of the period.

(b) Pro forma as adjusted weighted-average shares has been adjusted to (i) include those shares of common stock to be issued in this offering necessary to pay down the debt referenced in footnote (a) above and (ii) reflect the number of shares of common stock that will be repurchased in the repurchase, in each case based on an assumed initial public offering price of $21.50 per share (the midpoint of the estimated offering price range set forth on the cover page of this prospectus), and after deducting the estimated underwriting discounts and commissions. Such shares are assumed to have been issued or repurchased, as applicable as of the beginning of the year ended December 31, 2019 and as of the beginning of the nine months ended September 30, 2020, respectively.

(c) Includes purchases of property, plant and equipment of $57,257, $72,613, $33,640 and $36,636, respectively (which includes Co-60 held at gamma irradiation sites).

(d) Adjusted Net Income and Adjusted EBITDA are non-GAAP financial measures. For a definition of Adjusted Net Income and Adjusted EBITDA and a reconciliation to net income (loss), see "—Non-GAAP Financial Measures."

	As of December 31,		As of September 30, 2020(a)	
	2019	2018	Actual	Pro Forma As Adjusted(a)(b)
Balance Sheet Data (as of period end):				
(in thousands)				
Cash and cash equivalents	$ 62,863	$ 96,272	$ 108,276	$ 104,122
Working capital(c)	128,364	169,488	163,810	159,656
Total assets	2,580,674	2,708,584	2,700,004	2,695,850
Total long-term debt (including current portion, less unamortized debt issuance costs and debt discounts)	2,817,204	2,204,906	2,909,980	2,035,377
Total liabilities	3,221,806	2,663,093	3,362,005	2,484,202
Total equity (deficit) attributable to the company	(642,574)	44,359	(663,858)	237,570
Noncontrolling interests	1,442	1,132	1,857	1,857
Total equity (deficit)	(641,132)	45,491	(662,001)	239,427

(a) The pro forma as adjusted balance sheet data reflects the share-based compensation expense of $4.0 million, net of tax, associated with Class B-2 Units that we will recognize upon the listing and public trading of our common stock, reflected as a $4.9 million increase to additional paid-in capital with an offsetting $4.0 million (net of tax) increase to retained deficit. The pro forma as adjusted balance sheet data gives further effect to (i) the sale of 46,600,000 shares of our common stock in this offering at an assumed initial public offering price of $21.50 per share (the midpoint of the estimated offering price range on the cover page of this prospectus), after deducting estimated underwriting discounts and commissions, and the payment of approximately $4.1 million of incremental offering expenses and (ii) the application of the net proceeds from this offering to (a) repay $899.9 million of our outstanding indebtedness under our Second Lien Notes and our Term Loan, and reflect a write-off of associated unamortized debt issuance costs and debt discounts, and payment of the estimated redemption premium of $15.4 million on our Second Lien Notes, which is reflected as a net of tax adjustment of $11.7 million to retained earnings, and (b) repurchase certain shares of common stock (in each case, as described under "Use of Proceeds").

(b) Each $1.00 increase or decrease in the assumed initial public offering price of $21.50 per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus, would decrease or increase each of our total long-term debt and total liabilities by $44.2 million and increase or decrease each of our total equity (deficit) attributable to the company and total equity (deficit) by $44.2 million, assuming no change in the assumed number of shares offered by us, and after deducting the estimated underwriting discounts and commissions. Each increase or decrease of 1.0 million shares in the number of shares offered would decrease or increase each of our total long-term debt and total liabilities by $20.4 million and increase or decrease each of our total equity (deficit) attributable to the company and total equity (deficit) by $20.4 million, assuming no change in the assumed initial public offering price and after deducting the estimated underwriting discounts and commissions payable.

(c) Working capital represents current assets less current liabilities.

Non-GAAP Financial Measures

To supplement our consolidated financial statements presented in accordance with GAAP, we consider Adjusted Net Income and Adjusted EBITDA, financial measures that are not based on any standardized methodology prescribed by GAAP.

We define Adjusted Net Income as net income (loss) before amortization and certain other adjustments that we do not consider in our evaluation of our ongoing operating performance from period to period as discussed further below. We define Adjusted EBITDA as Adjusted Net Income before interest expense, depreciation (including depreciation of Co-60 used in our operations) and income tax provision applicable to Adjusted Net Income.

We use Adjusted Net Income and Adjusted EBITDA, non-GAAP financial measures, as the principal measures of our operating performance. Management believes Adjusted Net Income and Adjusted EBITDA are useful because they allow management to more effectively evaluate our operating performance and compare the results of our operations from period to period without the impact of certain non-cash items and non-routine items that we do not expect to continue at the same level in the future and other items that are not core to our operations. We believe that these measures are useful to our investors because it provides a more complete understanding of the factors and trends affecting our business than could be obtained absent this disclosure. In addition, we believe Adjusted Net Income and Adjusted EBITDA will assist investors in making comparisons to our historical operating results and analyzing the underlying performance of our operations for the periods presented. Our management also uses Adjusted Net Income and Adjusted EBITDA in their financial analysis and operational decision-making and Adjusted EBITDA serves as the metric for attainment of our primary annual incentive program. Adjusted Net Income and Adjusted EBITDA may be calculated differently from, and therefore may not be comparable to, a similarly titled measure used by other companies.

Adjusted Net Income and Adjusted EBITDA should not be considered in isolation from, or as a substitute for, financial information prepared in accordance with GAAP. There are a number of limitations related to the use of Adjusted Net Income and Adjusted EBITDA rather than net income (loss), the nearest GAAP equivalent. For example, Adjusted Net Income and Adjusted EBITDA exclude:

- certain recurring non-cash charges such as depreciation of fixed assets, although these assets may have to be replaced in the future, as well as amortization of acquired intangible assets and asset retirement obligations;
- costs of acquiring and integrating businesses, which will continue to be a part of our growth strategy;
- non-cash gains or losses from fluctuations in foreign currency exchange rates, primarily related to remeasurement of intercompany loans denominated in currencies other than subsidiaries' functional currencies, and the mark-to-fair value of embedded derivatives relating to certain customer and supply contracts at Nordion;
- impairment charges on long-lived assets and intangible assets;
- expenses and charges related to the litigation and other activities associated with our ethylene oxide sterilization facilities in Willowbrook, Illinois and Atlanta, Georgia, even though that litigation remains ongoing;
- in the case of Adjusted EBITDA, interest expense or the cash requirements necessary to service interest or principal payments on our indebtedness; and
- share-based compensation expense, which has been, and will continue to be for the foreseeable future, a significant recurring expense and an important part of our compensation strategy.

In evaluating Adjusted Net Income and Adjusted EBITDA, you should be aware that in the future, we will incur expenses similar to the adjustments in this presentation. Our presentations of Adjusted Net Income and Adjusted EBITDA should not be construed as suggesting that our future results will be unaffected by these expenses or any unusual or non-recurring items. When evaluating our performance, you should consider Adjusted Net Income and Adjusted EBITDA alongside other financial performance measures, including our net income (loss) and other GAAP measures.

The following table presents a reconciliation of net income (loss), the most directly comparable financial measure calculated and presented in accordance with GAAP to Adjusted Net Income and Adjusted EBITDA, for each of the periods indicated:

	Year Ended December 31,		Nine Months Ended September 30,	
(in thousands)	2019	2018	2020	2019
Net income (loss)	$ (20,425)	$ (5,876)	$ 5,895	$ 7,321
Amortization expense	80,048	79,906	59,824	60,043
Impairment of long-lived assets and intangible assets(a)	5,792	85,067	—	5,781
Gain on sale of Medical Isotopes business(b)	—	(95,910)	—	—
Share-based compensation(c)	16,882	6,943	4,019	15,120
One-time bonuses(d)	2,040	—	—	530
(Gain) loss on foreign currency and embedded derivatives(e)	2,662	14,095	(4,791)	8,298
Acquisition and divestiture related charges, net(f)	(318)	1,168	2,970	(704)
Business optimization project expenses(g)	4,195	8,805	2,484	1,485
Plant closure expense(h)	1,712	—	2,388	1,145
Loss on extinguishment of debt(i)	30,168	—	—	—
Professional services relating to Willowbrook and Atlanta facilities(j)	11,216	4,739	25,370	7,788
Accretion of asset retirement obligation(k)	2,051	1,366	1,476	1,457
COVID-19 expenses(l)	—	—	2,363	—
Income tax benefit associated with pre-tax adjustments(m)	(35,637)	(24,988)	(24,854)	(20,367)
Adjusted Net Income	100,386	75,315	77,144	87,897
Interest expense, net	157,729	143,326	167,142	114,478
Depreciation(n)	66,671	66,910	47,334	50,085
Income tax provision (benefit) applicable to Adjusted Net Income(o)	55,146	55,086	15,177	32,997
Adjusted EBITDA	$ 379,932	$ 340,637	$ 306,797	$ 285,457

(a) For 2019, represents impairment charges related to the decision to not reopen the Willowbrook facility in September 2019. For 2018, represents impairment charges associated with the withdrawal of the GA-MURR project.

(b) Represents the gain on the divestiture of the Medical Isotopes business in July 2018.

(c) Includes non-cash share-based compensation expense. In 2019, also includes $10.0 million of one-time cash share-based compensation expense related to the Class C Performance and Time Vesting Units, which vested in the third quarter of 2019 based on the achievement of the aggregate distributions to the Class A Unitholder Members and the approval of the board of Topco Parent for accelerated vesting.

(d) Represents one-time cash bonuses for members of management relating to capital markets activity in 2019.

(e) Represents the effects of (i) fluctuations in foreign currency exchange rates, primarily related to remeasurement of intercompany loans denominated in currencies other than subsidiaries' functional currencies, and (ii) non-cash mark-to-fair value of embedded derivatives relating to certain customer and supply contracts at Nordion.

(f) Represents (i) certain direct and incremental costs related to the acquisition of Toxikon Europe NV ("Nelson Europe") in 2017, Gibraltar Laboratories, Inc. ("Nelson Fairfield") in 2018 and Iotron Industries Canada, Inc. in July 2020, and certain related integration efforts as a result of those acquisitions, (ii) the earnings impact of fair value adjustments (excluding those recognized within amortization expense) resulting from

the businesses acquired, and (iii) transition services income and non-cash deferred lease income associated with the terms of the divestiture of the Medical Isotopes business in 2018.

(g) Represents professional fees, contract termination and exit costs, severance and other payroll costs, and other costs associated with business optimization and cost savings projects relating to the integrations of Nordion and Nelson Labs, including the divestiture of Medical Isotopes, the withdrawal from the GA-MURR project, the Sotera Health rebranding, operating structure realignment and other process enhancement projects.

(h) Represents professional fees, severance and other payroll costs, and other costs including ongoing lease and utility expenses associated with the closure of the Willowbrook facility.

(i) Represents one-time expenses incurred in connection with the refinancing of our debt capital structure in December 2019, including accelerated amortization of prior debt issuance and discount costs, premiums paid in connection with early extinguishment and debt issuance and discount costs incurred for the new debt.

(j) Represents professional fees related to litigation associated with our EO sterilization facilities in Willowbrook and Atlanta and other related activities. See "Business—Legal Proceedings."

(k) Represents the non-cash accretion of asset retirement obligations related to Co-60 and gamma processing facilities, which are based on estimated site remediation costs for any future decommissioning of these facilities (without regard for whether the decommissioning services would be performed by employees of Nordion, instead of by a third party) and are accreted over the life of the asset.

(l) Represents non-recurring costs associated with the COVID-19 pandemic, including donations to related charitable causes and special bonuses for front-line personnel working on-site during lockdown periods.

(m) Represents the tax benefit or provision associated with the reconciling items between net income (loss) and Adjusted Net Income. To determine the aggregate tax effect of the reconciling items, we utilized statutory income tax rates ranging from 0% to 35%, depending upon

the applicable jurisdictions of each adjustment.
(n) Includes depre[illegible]
(o) Represents the difference between income tax expense or benefit as determined under U.S. GAAP and the income tax benefit associated with pre-tax adjustments described in footnote (m).

RISK FACTORS

Investing in our common stock involves a high degree of risk. You should carefully consider the following risks before deciding to invest in our common stock. The occurrence of any of the following risks could harm our business, revenue and financial results. In addition, risks and uncertainties that are not presently known to us or that we currently believe are immaterial could also harm our business, revenue and financial results. If any of these risks occur, the value of our common stock could decline and you may lose all or part of your investment.

Risks Related to the Company

We depend on a limited number of counterparties that provide the materials and resources we need to operate our business. Any disruption in the availability of, or increases in the price of, EO, Co-60 or our other direct materials, services and supplies, including as a result of current geopolitical instability arising from U.S. relations with Russia and related sanctions, may have a material adverse effect on our operating results.

We purchase certain direct materials, equipment and services necessary for the provision of our specialized products and services from a sole or limited number of suppliers and subcontractors, and purchase large quantities of product from an individual supplier in certain cases. If one or more of our significant suppliers or service providers were unable to meet their obligations under present arrangements, direct materials or equipment were to become unavailable within the geographic area from which they are now sourced, or supplies were otherwise constrained or disrupted for any reason (including as a result of a natural disaster or other adverse occurrence), we may incur increased costs for our direct materials or equipment and may be unable to accommodate new business or meet our current customer commitments. For example, in the United States there is a single supplier of EO for our sterilization business. Further, our reliance on a single or limited number of suppliers may limit our negotiating power, particularly during times of rising direct material costs.

We source a substantial portion of our Co-60 supply from three nuclear reactor operators in Canada and Russia under contracts that extend to between 2024 and 2064. See "Business—Our Businesses—Nordion—Nuclear Reactor Operators." If there were a decrease in output or disruption at any of these reactors (including as a result of a natural disaster or other adverse occurrence), the counterparties failed to perform under their agreements with us or declined to enter into renewal contracts with us for our future supply needs and we are unable to obtain supply from other sources, or if such sources begin to compete with us in one or more geographies, this could have a material adverse effect on our business. In addition, a number of reactors that have the capacity to generate Co-60 are government owned. Priorities of governments can change. Any repurposing of a government-owned reactor that generates Co-60 for an alternative use has in the past and could in the future lead to a decrease in Co-60 availability, which could have a material adverse effect on our business, prospects, financial condition or results of operations.

Further, approximately 20% of our supply of Co-60 currently is generated by Russian nuclear reactors. Over the next few years, we expect that there will be periods when, due to planned or unplanned outages and variability in supply from individual reactors, the proportion of our supply from Russian reactors may increase to as much as 50% for a given year. The United States, Canada and the European Union have imposed sanctions against Russian officials and certain Russian companies and individuals. Russia has responded with countermeasures, including limiting the import of certain goods from the United States and other countries. Expanded sanctions could target government-owned operations, including Russian nuclear reactor operators, and could prevent us from doing business with them. The U.S. government has also implemented certain sanctions targeting non-U.S. persons for activities conducted outside the United States that involve specific sanctions targets or certain activities related to sanctioned countries, any of which could prohibit us from conducting routine commercial transactions with Russian entities that are engaged in certain transactions related to sanctioned countries or sanctioned parties. If the U.S. government significantly broadens the scope of, or Canada or the European Union imposes, sanctions against Russia and prevents the importation of Russian-sourced Co-60 or the Russian government responds with further countersanctions, it may make it generally more difficult to do

business with Russian entities. Any sanctions or countermeasures could have a material adverse effect on our business, prospects, financial condition or results of operations.

Any interruptions that we experience with our key suppliers, regarding the availability of Co-60, changes in regulatory requirements regarding the use of Co-60 or unavailability or short-supply of raw materials or services, may disrupt or cause a shutdown of portions of our operations, materially increase our costs or have other adverse consequences on our business, prospects, financial condition or results of operations.

Industry trends could impact the demand for our products and services and could have a material adverse effect on our business.

Industry trends that affect medical device, pharmaceutical or biotechnology companies affect our business. The medical device industry is characterized by frequent product development and technological advances, which may reduce demand for our sterilizing and testing services if our existing services no longer meet our customers' requirements. Any significant decrease in life science research and development expenditures by medical device, pharmaceutical and biotechnology companies, including as a result of a general economic slowdown, could in turn impact the volumes of medical products that require sterilization or lab testing services. Future demand for Co-60 or our sterilization services could also be adversely impacted by changes to preferred sterilization modalities. Our ability to adapt our business to meet evolving customer needs depends upon the development and successful commercialization of new services, new or improved technologies and additional applications of our technology for our customers' new products. We can give no assurance that any such new services will be successful or that they will be accepted in the marketplace. Any failure to develop or commercialize new services and technologies and any decrease in demand for our products or services could have a material adverse effect on our business, prospects, financial condition or results of operations.

If changes in healthcare regulations or other developments in the healthcare industry, including concerns around single-use medical devices, were to lead to a material reduction in medical procedures or use of medical devices, demand for our services could be adversely affected. Demand for our products and services may also be affected by changes from time to time in the laws and regulations that govern our operations and industry, including the Patient Protection and Affordable Care Act, as amended by the Health Care and Education Reconciliation Act, which in turn impact industry trends. New regulatory requirements could lead to changes in the medical device industry and the behavior of our customers that are difficult to predict but could have a material adverse effect on our business, prospects, financial condition or results of operations. Further, if any significant disposal restrictions or requirements are imposed that materially increase the cost or administrative burden of the disposal process for single-use medical devices, hospitals and other end-users of such devices might decrease their use of such devices in favor of reusable medical products, which would decrease the demand for our services, which could in turn have a material adverse effect on our business, prospects, financial condition or results of operations.

Changes in environmental, health and safety regulations or preferences may negatively impact our business.

Federal, state and international authorities regulate the operation of our gamma irradiation and EO processing plants, as well as the operations of our customers. If any of the regulators that govern our operations or the operations of our customers were to institute severely restrictive policies or regulations that increase our costs or change the preferences or requirements of our customers, demand for our products and services may be materially affected. Additionally, certain regulators, including the FDA, have started initiatives to encourage development of sterilization alternatives to EO processing. We have taken part in some of these initiatives. We have made proactive, voluntary investments to enhance emissions controls. However, new regulations or changes to existing or expected regulations may require additional investments in new emissions control technology or otherwise increase the cost of our gamma irradiation or EO processing. Reconfiguring a gamma irradiation or EO processing plant so that it is suitable for a different sterilization technology, in response to changes in demand or other factors, would require significant capital investment and require us to suspend operations at the affected

facility during the conversion. Any of the foregoing could have a material adverse effect on our business, prospects, financial condition or results of operations.

Safety risks associated with the use and disposal of potentially hazardous materials, such as EO and Co-60, may result in accidents or liabilities that materially affect our results of operations.

EO is flammable and potentially explosive. An explosion or fire could occur at the sterilization facilities at which we use EO, including due to an accidental ignition of EO in an uncontrolled environment. Particular care must be exercised in order to avoid inadvertently causing an explosion or fire, which could interrupt our normal operations at or cause a shut-down of the affected facility while repairs are made. Any EO explosion or similar incident could result in the closure of our facilities, workplace injuries, property damage or otherwise adversely affect our business.

Because Co-60 is radioactive, its containment is very important in preventing contamination or improper exposure. If the double-encapsulated Co-60 pencils were to become damaged or corroded, Co-60 sources could develop a source leak, leading to radioactive contamination requiring comprehensive clean-up of the storage pool. Similarly, physical damage to the protective stainless-steel covering during the process of adding or removing Co-60 rods from an irradiator could also result in a source leak and contamination incident. Clean-up and disposal costs for damaged Co-60 rods and radioactive contamination could be significant. If any liability claims are made against us in the future, we could be liable for damages that are alleged to have resulted from such exposure or contamination.

In addition, these materials must be handled and disposed of properly. Accidents involving disposal or handling of these substances, including accidents resulting from employees failing to follow safety protocols, could result in injury to property, the environment and human health, as well as possible disruptions, restrictions or delays in production, and have in the past and could in the future result in claims relating to such events. For example, members of our workforce in the past have been injured in our facilities. Any injuries or damage to persons, equipment or property or other disruption in the disposal, production, processing or distribution of products could result in a significant decrease in operating revenue, a significant increase in costs to replace or repair and insure our assets and substantial reputational harm, which could materially adversely affect our business, prospects, financial condition or results of operations, and could have legal consequences that affect our ability to continue to operate the affected facility. Our customers served by an affected facility could choose to switch to an alternative sterilization service provider.

Any incident occurring at any of our EO or gamma facilities that causes harm to workers or others or the interruption of normal operations at the affected facility could result in substantial liability to us. We are currently the subject of lawsuits alleging that purported EO emissions from certain of our current and former facilities have resulted in toxicological or health-related impact on the environment, the communities that surround our facility and a customer's employees. We deny these allegations and intend to vigorously defend against these claims. We have also from time to time been involved with workers' compensation claims relating to potentially hazardous materials. We may be subject to similar claims in the future, and one or more adverse judgments could result in significant liability for us and have a material adverse effect on our business, financial condition and results of operations. See "—We are currently defending certain litigation, and we are likely to be subject to additional litigation in the future" and "—Potential health risks associated with the use of EO and Co-60 may subject us to future liability claims."

Nordion contracts for the activation of Co-59 "targets" (cobalt pellets and slugs) into Co-60 in certain nuclear reactors in Canada and Russia. Our Co-59 targets (and in Canada, our adjuster rods provided to us by a supplier) function as part of the reactors' reactivity control systems. While national laws or international conventions generally channel liability for nuclear incidents exclusively to reactor operators, equipment suppliers could be subject to lawsuits for damage to the nuclear installation or damages allegedly intentionally caused. While we make efforts to protect our interests through contractual provisions, quality assurance programs and the

nature of our commercial relationships, there is no assurance that any of these measures will prove effective in shielding us from liability, and any such liability or consequences could have a material adverse impact on our business, results of operation and financial condition.

We currently carry pollution liability insurance for all our facilities and related operations and liability insurance, including from third party bodily injury or property damage allegedly arising from the storage, use, transportation or accident involving EO and Co-60 sources throughout our operations. However, such insurance may not cover all risks associated with the potential hazards of our business and is subject to limitations, including deductibles and maximum liabilities covered. We may incur losses beyond the limits, or outside the coverage, of our insurance policies. Additionally, our ability to increase pollution liability insurance limits or replace any policies upon their expiration without exclusions for claims related to alleged EO exposure may be adversely impacted by claims against us, including current claims alleging that purported EO emissions from certain of our facilities have resulted in toxicological or health-related impact on the environment, the communities that surround our facility and a customer's employees. We deny these allegations and are vigorously defending against these claims. To the extent any pollution liability is not covered by our insurance or able to be recovered from other parties, our business, financial condition or results of operations could be materially adversely affected.

Safety risks associated with the transportation of potentially hazardous materials, such as EO and Co-60, may result in accidents or liabilities that materially affect our results of operations.

Our products, supplies and by-products are transported through a combination of ground, sea and air transport. Co-60 and EO are radioactive and potentially combustible, respectively, and must be handled carefully and in accordance with applicable laws and regulations. An incident in the transportation of our raw materials, products and by-products or our failure to comply with laws and regulations applicable to the transfer of such products could lead to human injuries or significant property damage, regulatory repercussions or could make it difficult to fulfill our obligations to our customers, any of which could have a material adverse effect on our business, prospects, financial condition or results of operations.

Our EO and Co-60 raw materials are potentially hazardous and could make our facilities and transportation vehicles targets for terrorists, which could have a material adverse effect on our operations. We are subject to stringent requirements regarding how we secure these materials. If our failure to adequately secure these materials leads to their being stolen or materially damaged, our licenses to operate could be suspended resulting in a material adverse effect to our business, prospects, financial condition or results of operations. Any such incident could also have legal consequences, such as violations of regulatory requirements and/or lawsuits for personal injuries, property damage or diminution, and similar claims could result in substantial liability to us. Additionally, loss of control of Co-60 sources by a customer could result in contamination and significant public health consequences.

Potential health risks associated with the use of EO may subject us to future liability claims and other adverse effects.

Potential health risks associated with exposure to EO under certain conditions subject us to the risk of liability claims being made against us by workers, contractors and others, including individuals who reside or have resided near our EO sterilization facilities and employees of our customers. Assessments of the potential health risks of exposure to EO have evolved over time. For example, although EO is present in the environment from a variety of sources and naturally produced by the human body, the U.S. Environmental Protection Agency ("USEPA") has identified a potential for increased risk of certain cancers from exposure to EO. In 2016, the USEPA published its Integrated Risk Information System toxicity assessment of EO (the "IRIS Assessment"), and in 2018, the USEPA published its most recent National Air Toxics Assessment, which utilized the IRIS Assessment and data collected in 2014, identifying EO as a potential cancer concern in several areas across the country, including areas surrounding our Willowbrook facility and our facilities in Atlanta and Santa Teresa,

New Mexico. Another organization has disagreed with aspects of the IRIS Assessment on the carcinogenic potency of EO, and we expect risk assessments related to EO will continue to evolve and be examined. We can give no assurance as to their impact on our business, prospects, financial condition or results of operations.

We are currently the subject of tort lawsuits alleging personal injury by purported exposure to emissions and releases of EO from our facility in Willowbrook and our facility in Atlanta. Additionally, we are defendants in a lawsuit by certain employees of a contract sterilization customer in Georgia who allege personal injury by workplace exposure to EO. We are also defendants in a lawsuit alleging that our Atlanta facility has devalued and harmed the plaintiffs' use of a real property they own in Smyrna, Georgia and additional property devaluation claims have been threatened. We deny the allegations and are vigorously defending these claims. See "—We are currently defending certain litigation, and we are likely to be subject to additional litigation in the future." and "Business—Legal Proceedings." It is likely that we will be subject to other claims by similar groups of plaintiffs in the future relating to any of our current or former facilities. In addition, we have encountered and will likely continue to encounter resistance, protests or other actions in communities where our existing facilities are located or where we seek to establish or expand facilities based on the perceptions of the risk associated with exposure to EO held by some residents and officials of these communities. This publicity may also have other adverse impacts, including damage to our reputation and public pressure against our facilities that may affect our ability to conduct our business.

Our liability insurance coverage may not be adequate to cover any liabilities arising out of such allegations or remain available to us at acceptable costs. A successful claim brought against us in excess of the insurance coverage then available to us could have a material adverse effect on our business, prospects, financial condition or results of operations.

We are currently defending certain litigation, and we are likely to be subject to additional litigation in the future.

Our business exposes us to significant potential risk from lawsuits, investigations and other legal proceedings. We are currently pursuing and defending various proceedings and will likely be subject to additional proceedings in the future, including potential litigation regarding the products and services we provide or which we or our predecessors have provided.

We are currently the subject of tort lawsuits alleging personal injury by purported exposure to emissions and releases of EO from our facility in Willowbrook and our facility in Atlanta. Additionally, we are defendants in a lawsuit by certain employees of a contract sterilization customer in Georgia who allege personal injury by purported workplace exposure to EO. We are also defendants in a lawsuit alleging that our Atlanta facility has devalued and harmed the plaintiffs' use of a real property they own in Smyrna, Georgia and additional property devaluation claims have been threatened. We deny the allegations and are vigorously defending against the claims. However, one or more adverse judgments could result in significant liability for us and have a material adverse effect on our business, financial condition and results of operations. In addition, we have been involved in litigation in Georgia against local officials to allow us to resume operations at our Atlanta facility that had been suspended while we installed enhancements to our EO emissions control systems, as well as to challenge local officials' unsupported claims of loss of neighboring residential property values in tax assessments. See "Business—Legal Proceedings" for more detail on our pending litigation.

In litigation, including those described above, plaintiffs may seek various remedies, including without limitation declaratory and/or injunctive relief; compensatory or punitive damages; restitution, disgorgement, civil penalties, abatement, attorneys' fees, costs and/or other relief. Settlement demands may seek significant monetary and other remedies, or otherwise be on terms that we do not consider reasonable under the circumstances. In some instances, even if we comply with applicable laws and regulations, including those relating to emission standards, an adverse judgment or outcome may occur based on other applicable laws or principles of common law, including negligence and strict liability, and result in significant liability and reputational damage for us. It is likely that we will be subject to other claims in addition to those described above

by similar groups of plaintiffs in the future relating to any of our current or former facilities or activities. In addition, awards against and settlements by our competitors or publicity associated with our current litigation could incentivize parties to bring additional claims against us.

Any claim brought against us, regardless of its merits, could be costly to defend and could result in an increase of our insurance premiums and exhaust our available insurance coverage. The financial impact of litigation, particularly class action and mass action lawsuits, is difficult to assess or quantify. Some claims brought against us might not be covered by our insurance policies or might exhaust our available insurance coverage for such occurrences. Furthermore, an insurer might refuse coverage, and even where the claim should be covered by insurance, we have significant self-insured retention amounts, which we would have to pay in full before obtaining any insurance proceeds. To the extent our insurance coverage is inadequate and we are not successful in identifying or purchasing additional coverage for such claims, we would have to pay the amount of any settlement or judgment that is in excess of policy limits. We have reached the per occurrence limit of our insurance coverage for claims related to Willowbrook's EO emissions due to legal costs associated with such claims and have not yet been and likely will not be successful in identifying or purchasing additional coverage for such claims. If any judgments are rendered against us and are upheld on appeal, we would not have insurance coverage to cover such judgment. Claims against us that result in entry of a judgment or we settle that are not covered or not sufficiently covered by insurance policies, or which fall within retained liability under our policies, could have a material adverse impact on our business, prospects, financial condition or results of operations.

Our business is highly competitive, and if we fail to compete successfully, our business, prospects, financial condition or results of operations may be adversely affected.

We face competition from other providers of outsourced sterilization and lab services. In addition, some manufacturers have in-house sterilization and lab testing and related capabilities, and further consolidation within our industry and within our customers' industries could impact our ability to compete. Further, our competitors and potential competitors are attempting to develop alternate technologies, in particular improved x-ray sterilization technology, which would not be reliant on the availability of Co-60. If any of our competitors significantly expand their sterilization or lab testing facility capacity, including as a result of these alternative technologies, it could lead to price fluctuations and competitive pricing pressure, diminish our profitability or lead to changes in our customer relationships across our business segments. We generally compete on the basis of quality, reputation, the cost of sterilization services, the cost of transportation to and from the sterilization facility and processing turnaround time. If our services, supply, support, distribution or cost structure do not enable us to compete successfully, including against alternative technologies, or we are unable to successfully develop and adopt alternative technologies ourselves, our business, prospects, financial condition or results of operations could be materially adversely affected. The expansion of alternative sterilization technologies may require us to build new facilities, which can be time-consuming and costly.

If Co-60 source suppliers in other countries, including China, India or Russia, significantly increase their involvement in the global Co-60 sources market, it could have a material adverse effect on our business, prospects, financial condition or results of operations. Additionally, several customers of our Nordion business are themselves providers of sterilization services and therefore are competitors of our Sterigenics business. If these customers were to shift to a different source for their supply of Co-60 sources, because they prefer to use a supplier not affiliated with us or for any other reason, it could materially adversely affect our business, prospects, financial condition or results of operations. Further, if a Nordion customer were to lose market share to a competitor using an alternative sterilization provider, we would similarly lose sales volumes, which may have a material adverse effect on our business, prospects, financial condition or results of operations.

Additionally, Nelson Labs faces a wide variety of competitors, including small, specialized niche players, large, broad multinational corporations and internal laboratories that can perform the services that we provide. Shifts in the market that diminish our customers' preference for outsourcing their testing and large, well-funded

competitors entering more directly into the specialized lab services that we provide may adversely affect our business.

Certain of our long-term contracts include variable price clauses and are subject to market changes, which could have a material adverse effect on our business.

The aggregate cost of our direct materials and energy represents a significant portion of our cost of revenues. The prices of the direct materials we utilize vary with market conditions and may be highly volatile. Additionally, the cost of energy for some of our facilities is regulated, and we are required to work with the local utility provider, which prevents us from contracting for a lower rate or seeking an alternate supplier. Although we have attempted, and will continue to attempt, to match increases in the prices of direct materials or energy with corresponding increases in prices for our products and services, our ability to pass through increases in the cost of direct materials or energy to customers is highly dependent upon market conditions and we may not be able to immediately raise such prices, if at all. Most of our customer contracts for sterilization services allow us to pass through our direct material costs, but we may not be able to immediately or completely implement increases in the prices of our products and services. Specifically, there is a risk that raising prices charged to our customers could result in a loss of sales volume. Reactions by our customers and competitors to our price increases could cause us to reevaluate and possibly reverse or reduce such price increases. Any increase in the price of one of these materials or energy could have a material adverse effect on our business, prospects, financial condition or results of operations.

Allegations of our failure to properly perform our services may expose us to potential product liability claims, recalls, penalties and reputational harm or could otherwise cause a material adverse effect on our business.

We face the risk of financial exposure to product and other liability claims alleging that our failure to adequately perform our services resulted in adverse effects, including product recalls or seizures, adverse publicity and safety alerts. In our Sterigenics business, for example, while our customers are generally responsible for determining the cycle parameters (the levels of temperature, humidity and EO concentration to which products are exposed during the sterilization process and the duration of such exposure) or dosage specifications (the amount of gamma or E-beam irradiation to which products are exposed) for their products, we are required to certify that such cycle or dosage parameters were achieved. If we fail to process a customer's product in accordance with the cycle parameters, dosage specifications or testing requirements prescribed by the customer, our standard contract requires us to inform our customer of the nonconformance, to reprocess or retest the product if that is a feasible alternative and to reimburse the customer (subject to a maximum) for the cost of any such product which is damaged as a result of the nonconformance. We could be held liable in the future for personal injury, contractual or other damages that are alleged to result from improper or incorrect processing, cycle parameters or dosage specifications, testing or product damage. Even where processing occurred within cycle parameters, we have faced in the past and may face in the future claims of personal injury resulting from processing. In our Nelson Labs business, if we fail to perform our services in accordance with regulatory requirements for medical products, regulatory authorities may take action against us or our customers. Regulatory authorities may disqualify certain analyses from consideration in connection with marketing authorizations, which could result in our customers not being able to rely on our services in connection with their submissions, may subject our customers to additional studies or testing and delays in the development or authorization process, and may lead our customers to take actions such as terminating their contracts with us. We could also face claims that we performed erroneous or out-of-specification testing or data integrity complaints, which could require retesting, and which could result in claims of economic or other loss or which could result in personal injury. We derive limited revenue from government customers and our government contracts may contain additional requirements that may increase our costs of doing business, subject us to additional government scrutiny and expose us to liability for failure to comply with contractual requirements. In our Nordion business, our processing and sale of medical-grade Co-60 used for radiation therapy involve an inherent risk of exposure to product liability claims, product recalls and product seizures. In addition, our installation of irradiators for our customers could expose us to design defect product liability claims, whether or not such claims are valid. A

product liability judgment against us could also result in substantial and unexpected costs, affect customer confidence in our products, damage our reputation and divert management's attention from other responsibilities.

Although we maintain product and professional liability insurance coverage in amounts we believe are customary, there can be no assurance that this level of coverage is adequate or that we will be able to continue to maintain our existing insurance or obtain comparable insurance at a reasonable cost, if at all. Our product and professional liability insurance also does not cover matters related to EO emissions. A product recall or seizure or a partially or completely uninsured judgment against us could have a material adverse effect on our business, prospects, financial condition or results of operations.

We are subject to extensive regulatory requirements and routine regulatory audits in our operations. We must receive permits, licenses and/or regulatory clearance or approval for our operations. Compliance with these regulations is costly, and failure to comply with all laws and regulations or to receive or maintain permits, licenses, clearances or approvals may hurt our revenues, profitability, financial condition or value.

Our industry is characterized by evolving regulations, and our operations are subject to extensive regulation in the United States and other countries where we do business. We are regulated by national and local agencies with jurisdiction over a number of areas directly or indirectly related to our businesses, including environmental, nuclear safety, homeland or national security, worker safety and health, food, drug and device manufacturing and marketing, transportation, drug enforcement (governing the handling of controlled substances) and agriculture, fish and wildlife. These laws and regulations regulate our use of potentially hazardous materials, such as EO and Co-60, and can require us to carefully manage, control emissions of or limit human exposure to, these materials. For example, Occupational Safety and Health Administration ("OSHA") regulations and similar laws in other jurisdictions limit worker exposure to EO. In addition, FDA regulations dictate the acceptable amount of EO residue on different types of sterilized products. In most jurisdictions, we are required to maintain and operate pollution control equipment to minimize emissions and releases of EO. Regulations issued by OSHA, the U.S. Nuclear Regulatory Commission (the "NRC") and other agencies also require that equipment used at our facilities be designed and operated in a manner that is safe. The use of EO for medical device sterilization is regulated by the USEPA under the Federal Insecticide, Fungicide and Rodenticide Act ("FIFRA") and the Clean Air Act (the "CAA"). Our supplier maintains FIFRA registrations for EO as a medical device sterilant for users of EO across the United States. The USEPA is in the process of reviewing EO's FIFRA re-registration eligibility in accordance with the provisions of FIFRA. As a condition of continued registration, the USEPA may require enhancements to the processes and equipment for use of EO as a medical device sterilant. The USEPA is also expected to propose updated National Emission Standards for Hazardous Air Pollutants ("NESHAP") air emission regulations for commercial EO sterilization facilities, which have not yet been published and with which sterilization facilities like ours will be required to comply. We expect to incur capital costs for enhancements to our equipment and to implement process automation and emission control enhancements to comply with these and other changing requirements. If the future regulations differ from our current expectation, they may require additional modifications and capital costs beyond what we have budgeted for, which could be material. Any future failure of the USEPA to allow reregistration of EO would have a material adverse effect on our business, prospects, financial condition or results of operations.

In the United States, our gamma irradiation facilities are heavily regulated, including by the NRC and state regulations. These laws and regulations specify the requirements for, among other things, maximum radiation doses, system designs, safety features and alarms and employee monitoring, testing and reporting. While some specific requirements are different in the various jurisdictions other than the United States, the fundamental concepts are consistent, since all are signatories to the International Atomic Energy Agency ("IAEA") conventions and have adopted safety standards from the IAEA and recommendations from the International Commission on Radiological Protection. The design, construction and operation of sterilization and lab testing facilities are highly regulated and require government licenses, including environmental approvals and permits, and may be subject to the imposition of related conditions that vary by jurisdiction. In some cases, these approvals and permits entail periodic review. We cannot predict whether all licenses required for a new facility

will be granted or whether the conditions associated with such licenses will be achievable. Changes in these laws and regulations have the potential to increase our costs.

Additionally, our operations in the United States and the majority of our facilities outside the United States (to the extent we are processing a product in that facility that will end up in the U.S. market) are regulated by the FDA. We are also regulated by other health regulatory authorities in other countries. Specifically, these operations include some of our sterilization and product testing activities that may constitute "manufacturing" activities and are subject to FDA requirements. The FDA may issue Form 483 findings or warning letters or take other administrative or enforcement actions for noncompliance with FDA laws and regulations and the issues raised by such warning letters require significant resources and time to correct. Failure to comply with regulatory requirements could have a material adverse effect on our business.

To the extent Nordion in the future ceases to operate its facility in Kanata, Canada, Nordion will be responsible for the radiological decommissioning of such facility, including in respect of the portion leased by BWX Technologies, Inc. ("BWXT") in connection with its acquisition of the Medical Isotopes business to the extent any contamination precedes such transaction. In addition, if Sterigenics in the future ceases to operate any of its irradiation facilities, it will be responsible for decommissioning costs in respect of such facilities. We currently provide financial assurance for approximately $50 million of such decommissioning liabilities in the aggregate in the form of letters of credit, surety bonds or other surety. Such potential decommissioning liabilities may be greater than currently estimated if additional irradiation facilities are licensed, unexpected radioactive contamination of those facilities occur, regulatory requirements change, waste volume increases, or decommissioning cost factors such as waste disposal costs increase.

See "Business—Regulation" for more information on the regulatory requirements of our businesses.

Compliance with these regulations, as well as our own voluntary programs that relate to maintaining the safety of our employees and facilities as well as the environment, may be difficult, burdensome or expensive. Any change in these regulations, the interpretation of such regulations as well as our customers' perception of such changes will require us to make adaptations that may subject us to additional costs, and ultimate costs and the timing of such costs may be difficult to accurately predict and could be material. Regulatory agencies may refuse to grant approval or clearance or may require the provision of additional data, and regulatory processes may be time consuming and costly, and their outcome may be uncertain in certain of the countries in which we operate. Regulatory agencies may also change policies, adopt additional regulations or revise existing regulations, each of which could impact our ability to provide our services or increase our costs. Additionally, local regulatory authorities may change the way in which they interpret and apply local regulations in response to negative public pressure about our facilities. For example, officials stopped operations at one of our facilities purportedly to review our fire and building code status and certificate of occupancy.

Our failure to comply with the regulatory requirements of these agencies may subject us to administratively or judicially imposed sanctions. These sanctions include, among others, warning letters, fines, civil penalties, criminal penalties, injunctions, debarment, product seizure or detention and total or partial suspension of operations, sale and/or promotion. While we strive to comply with these regulatory requirements, we have not always been and may not always be in compliance and, as a result, can be subject to significant civil and criminal fines and penalties, including the shutdown of our operations or the suspension of our licenses, permits or registrations. See "Business—Legal Proceedings" and "—Potential health risks associated with the use of EO may subject us to future liability claims and other adverse effects." The failure to receive or maintain, or delays in the receipt of, relevant U.S. or international regulatory qualifications could have a material adverse effect on our business, prospects, financial condition or results of operations.

Our operations are subject to a variety of business continuity hazards and risks, including our reliance on the use and sale of products and services from single locations, any of which could interrupt production or operations or otherwise adversely affect our performance, results or value.

In addition to the other risks described in this prospectus, our operations are subject to business continuity hazards and risks that include explosions, fires, earthquakes, inclement weather and other natural disasters; utility or other mechanical failures; unscheduled downtime; labor difficulties; disruption of communications; terrorist, security breach or other workplace violence event; changes in the use of government-owned reactors, including repurposing nuclear facilities; and pandemics or other public health crises.

It can be costly to ship products long distances for the purpose of sterilization; therefore, our ability to offer a full range of sterilization services close to our customers' manufacturing and distribution centers worldwide is critical for our business. An adverse occurrence at one of our facilities or the facilities of a supplier or customer could damage our business. While other facilities in our network may have the capacity to service our customers that had been served by an affected facility, we may not be able to transfer all interrupted services. The stringent regulations and requirements we are subject to regarding the manufacture of our products and provision of services and the complexities involved with processing of Co-60 may prevent or delay us from establishing additional or replacement sources for our production facilities. Any event, including those listed above or other circumstances that results in a prolonged business disruption or shutdown to one or more of our facilities, could create conditions that prevent, or significantly and adversely affect, our receiving, processing, manufacturing or shipping products at existing levels, or at all. Such events could adversely affect our sales, increase our expenses, create potential liabilities and/or damage our reputation, any of which could have a material adverse effect on our business, prospects, financial condition or results of operations.

In addition, since we obtain Co-60 from a limited number of reactors, if any of their facilities were to be seriously damaged or have their production materially decrease due to a natural disaster or other adverse occurrence, our access to Co-60 would be materially affected and we may be unable to meet all the needs of our customers. See "—We depend on a limited number of counterparties that provide the materials and resources we need to operate our business. Any disruption in the availability of, or increases in the price of, EO, Co-60 or our other direct materials, services and supplies, including as a result of current geopolitical instability arising from U.S. relations with Russia and related sanctions, may have a material adverse effect on our operating results."

Further, governmental action may disrupt the operations of our facilities that process potentially hazardous materials. For example, in February 2019 the Illinois Environmental Protection Agency ("IEPA") issued a seal order temporarily shutting down our sterilization activities at our Willowbrook facility, and in October 2019, county officials ordered our Atlanta facility, the operations of which we had voluntarily suspended at the time, remain closed until county approval is obtained. Although our Atlanta facility was allowed to resume operations under a Temporary Restraining Order imposed on county officials in April 2020, our facility could be forced to close again upon the resolution of related litigation. The occurrence of any of these or other events might disrupt or shut down operations or otherwise adversely impact the production or profitability of a particular facility or our operations as a whole.

While we maintain insurance policies covering, among other things, physical damage, business interruptions and liability resulting from our services in amounts that we believe are customary for our industries, our insurance coverage may be inadequate or unavailable and we could incur uninsured losses and liabilities arising from such events.

The COVID-19 pandemic has had and could continue to have adverse effects on our business, financial condition and results of operations, which could be material.

The global impact of the COVID-19 pandemic, including the governmental responses, has had a negative effect on the global economy, disrupting the financial markets and creating increasing volatility, and has

disrupted our operations. For example, during the pandemic, there has been an increase in deferred elective procedures, which negatively impacts demand for some of our products and services as a result of a decrease in the need for sterilized medical devices used in these procedures. Further, although our operations are considered "essential" in all locations where we operate, we have experienced, and may experience in the future, temporary facility closures while awaiting appropriate government approvals in certain jurisdictions or delays in delivering products or services to customers. The extent to which our operations will be impacted by the outbreak will largely depend on future developments, which are highly uncertain and cannot be accurately predicted, including mandatory closures of our facilities imposed by government authorities, work-from-home orders and social distancing protocols or other currently unforeseen restrictions that could adversely affect our ability to adequately staff and maintain our operations, and those effects could be material. For example, we experienced delayed deliveries at certain locations as a result of governmental travel restrictions enacted in response to the COVID-19 pandemic. We have implemented business continuity planning, including to transition staff off-site to decrease exposure risk and to manage supply chain risk for critical materials, but we cannot guarantee that these measures will be successful. If the COVID-19 outbreak disrupts our supply chain, it could adversely impact our ability to secure supplies for our facilities, which could adversely affect our operations, and those effects could be material. The pandemic and the response thereto continue to evolve, and we cannot at this time forecast its ultimate duration, severity or impact to our business, our customers or our supply chain. This negative impact could continue for an extended period of time or more severely impact our financial condition and results of operations, and continued weak or worsening economic conditions could negatively impact consumer demand for our products and services. Future pandemics and public crises could impact our business in a similar or worse manner. See "—Our operations are subject to a variety of business continuity hazards and risks, including our reliance on the use and sale of products and services from single locations, any of which could interrupt production or operations or otherwise adversely affect our performance, results or value."

If we are unable to increase capacity at existing facilities and build new facilities in a timely and cost-effective manner, we may not achieve our expected revenue growth or profitability or such revenue growth and profitability, if any, could be delayed.

Our growth strategy depends on expanding capacity in Europe, the Americas and Asia, which may include building new facilities and expanding existing facilities. The construction or expansion of modern and safe sterilization facilities requires significant expenditures. Delay in the review and licensing process for a new facility could impair or delay our ability to develop that facility or increase the cost so substantially that the facility becomes unattractive to us. Any failure to procure and maintain the necessary licenses would adversely affect ongoing development, construction and continuing operation of our facilities. Additionally, even when we maintain the necessary licenses and are in compliance with applicable regulations, we may be unable to maintain or expand our operations at existing facilities, or otherwise execute on our growth strategy, due to negative publicity or community resistance. Suspensions and closures of our facilities have in the past and may continue to impact our results of operations, and the effects could be material. Those new facilities that are constructed and begin operations may not meet our return expectations due to schedule delays, cost overruns or revenue shortfalls, or they may not generate the capacity that we anticipate or result in the receipt of revenue in the originally anticipated time period or at all. We may not maintain revenue growth or profitability, or such growth, if any, could be delayed if we are not successful in continuing to expand capacity. Additionally, if future demand trends warrant capacity in geographic areas that we have not targeted for new growth, we may be unable to capitalize on opportunities in a timely manner.

We occupy many of our facilities under long-term leases, and we may be unable to renew our leases at the end of their terms.

Many of our facilities, including many of our EO facilities and some of our gamma facilities, are located on leased premises. The terms of our leases vary in length and expire over a period ranging from 2021 to 2040, with options to renew for specified periods of time. At the end of the lease term and any renewal period for a facility, we may be unable to renew the lease without substantial additional cost, if at all. For example, in September

2019, we were unable to reach an agreement to renew the lease on our EO processing facility in Willowbrook, following community pressure resulting from negative publicity surrounding our Willowbrook facility. If we are unable to renew our facility leases, we may be required to relocate or close a facility. Relocating a facility involves significant expense in connection with the movement and installation of specialized equipment and any necessary recertification or licensing with regulatory authorities. Closing a facility, even briefly to relocate, would reduce the sales that such facility would have contributed to our revenues and could negatively impact our customer relations. Any such relocation or closure could have a material adverse effect on our business, prospects, financial condition or results of operations.

We conduct sales and distribution operations on a worldwide basis and are subject to a variety of risks associated with doing business outside the United States.

We maintain significant international operations, including operations in China, Brazil, Canada, Mexico, Costa Rica and other countries in Europe and Asia. As a result, we are subject to a number of risks and complications associated with international sales, services and other operations, as well as risks associated with U.S. foreign policy. These include:

- difficulties associated with compliance with numerous, potentially conflicting and frequently complex and changing laws in multiple jurisdictions, e.g., with respect to environmental matters, intellectual property, privacy and data protection, corrupt practices, embargoes, trade sanctions, competition, employment and licensing;
- general economic, social and political conditions in countries where we operate, including international and U.S. trade policies and currency exchange rate fluctuations;
- tax and other laws that restrict our ability to use tax credits, offset gains or repatriate funds;
- currency restrictions, transfer pricing regulations and adverse tax consequences, which may affect our ability to transfer capital and profits;
- inflation, deflation and stagflation in any country in which we have a manufacturing facility;
- foreign customers with longer payment cycles than customers in the United States; and
- imposition of or increases in customs duties and other tariffs.

We operate in a number of countries throughout the world, including in countries that do not have as strong a commitment to anti-corruption and ethical behavior that is required by U.S. laws or by our corporate policies. Based on the nature of our products, these activities involve potential interaction with government agencies, public officials or state-owned enterprises. We are subject to the risk that we, our U.S. employees or our employees located in other jurisdictions or any third party that we engage to do work on our behalf may take action determined to be in violation of anti-corruption laws in any jurisdiction in which we conduct business. The U.S. Foreign Corrupt Practices Act (the "FCPA") and the Canadian Corruption of Foreign Public Officials Act (the "CFPOA") prohibit corruptly providing anything of value to foreign officials for the purposes of obtaining or retaining business or securing any improper business advantage. We may deal with both governments and government-owned business enterprises, the employees of which are considered foreign officials for purposes of the FCPA and other applicable anti-corruption laws. The provisions of the Bribery Act extend beyond bribery of foreign public officials and are more onerous than the FCPA in a number of other respects. Any violation of the FCPA, the CFPOA, the U.K. Bribery Act of 2010 (the "Bribery Act") or any similar anti-corruption law or regulation could result in substantial fines, sanctions or civil and/or criminal penalties, debarment from business dealings with certain governments or government agencies or restrictions on the marketing of our products in certain countries, which could harm our business, financial condition or results of operations. If these anticorruption laws or our internal policies were to be violated, our reputation and operations could also be substantially harmed. Further, detecting, investigating and resolving actual or alleged violations is expensive and can consume significant time and attention of our senior management.

Compliance with multiple, and potentially conflicting, international laws and regulations, including anticorruption laws and exchange controls may be difficult, burdensome or expensive. While our employees and agents are required to comply with these laws, our internal policies and procedures may not always prevent violations. Further, in connection with past and future acquisitions by us, there is a risk of successor liability relating to such laws in connection with prior actions or alleged actions of an acquired company. Such matters or allegations related to such matters could adversely affect our reputation and the burden and cost associated with defending or resolving such matters could adversely affect our business, prospects, financial condition or results of operations.

Further, as a result of our global operations, we generate a significant portion of our revenue and incur a significant portion of our expenses in currencies other than the U.S. dollar, including the euro, the Brazilian real, the British pound sterling, the Chinese yuan, the Thai baht, the Mexican peso, the Danish krone, the Costa Rica colon and the Canadian dollar. Our results of operations are impacted by currency exchange rate fluctuations to the extent that we are unable to match net revenues received in foreign currencies with expenses incurred in the same currency. For example, where we have significantly more expenses than net revenues generated in a foreign currency, our profit from operations in that location would be adversely affected in the event that the U.S. dollar depreciates against that foreign currency.

We may be adversely affected by global and regional economic and political instability.

We may be adversely affected by global and regional economic and political conditions. The uncertainty or deterioration of the global economic and political environment could adversely affect us. Customers may modify, delay or cancel plans to purchase our products and services and suppliers may significantly and rapidly increase their prices or reduce their output because of cash flow problems. Any inability of current or potential customers to purchase or pay for our products due to, among other things, declining economic conditions as a result of inflation, rising interest rates, changes in spending patterns at medical device, pharmaceutical and biotechnology companies and the effects of governmental initiatives to manage economic conditions may have a negative impact on our business, prospects, financial condition or results of operations. Overall demand for our products could be reduced as a result of a global economic recession or political unrest, especially in such areas as the medical device, pharmaceutical, food safety and other end markets that we serve.

We depend upon our key personnel, the loss of whom could adversely affect our operations. If we fail to attract and retain the talent required for our business, our business could be materially harmed.

We depend to a significant degree on our ability to hire and retain highly qualified personnel with expertise in our industries. The loss of services from any of our key personnel may significantly delay or prevent the achievement of our business objectives. Competition for qualified employees in the industries in which we operate is intense. We may not be able to attract and retain these individuals on acceptable terms or at all, and our inability to do so could have a material adverse effect on our business, prospects, financial condition or results of operations.

We are subject to significant regulatory oversight of our import and export operations due to the nature of some of our product offerings.

Our products are subject to U.S. laws and regulations that may limit, restrict or require a license to import or export (or re-export from other countries). We are also subject to the export and import laws of those foreign jurisdictions in which we operate, sell our products into and from which we source our materials, including Co-60. In addition, if we introduce new products, we may need to obtain licenses or approvals from the United States and other governments to ship them into foreign countries. Because of increasing security controls and regulations regarding the shipment of materials including Co-60, it is likely that we may encounter additional regulations affecting the transportation, storage, sale and import/export of radioactive materials. Further, any delay or inability to obtaining these permits and licenses could delay our prevent us from fulfilling our obligations to our customers, which could harm our business, financial condition or results of operations.

Additionally, the U.S. Department of the Treasury's Office of Foreign Assets Control and other relevant agencies of the U.S. government administer certain laws and regulations that restrict U.S. persons and, in some instances, non-U.S. persons, from conducting activities, transacting business with or making investments in certain countries, or with governments, entities and individuals subject to U.S. economic sanctions. Our international operations subject us to these laws and regulations, which are complex, restrict our business dealings with certain countries, governments, entities and individuals and are constantly changing. Penalties for non-compliance with these complex laws and regulations can be significant and include substantial fines, sanctions or civil and/or criminal penalties and violations can result in adverse publicity, which could harm our business, financial condition or results of operations.

Our business may be subject to system interruptions, cyber security breaches and unauthorized data disclosures.

We increasingly rely upon technology systems and infrastructure. Our technology systems and infrastructure are potentially vulnerable to breakdowns or other interruptions by fire, power loss, system malfunction, unauthorized access and other events. Likewise, data privacy breaches by employees and others with both permitted and unauthorized access to our systems may pose a risk that sensitive data may be exposed to unauthorized persons or to the public, rendered inaccessible or permanently lost. The increasing use and evolution of technology creates additional opportunities for the unintentional dissemination or intentional destruction of confidential or proprietary information stored in our systems or portable media or storage devices. We could also experience a business interruption, information theft or reputational damage from industrial espionage attacks, malware or other cyber incidents or data breaches, which may compromise our system infrastructure or lead to data breaches, either internally or at our third-party providers or other business partners. Such incidents could compromise our trade secrets or other confidential information and result in such information being disclosed to third parties and becoming less valuable. Additionally, in response to the COVID-19 pandemic, a majority of our office employees are working remotely, which may increase the risk of cyber incidents or data breaches. Breaches in security, system interruptions and unauthorized disclosure of data, whether perceived or actual, could adversely affect our businesses, assets, revenues, brands and reputation and result in fines, litigation, regulatory proceedings and investigations, increased insurance premiums, remediation efforts, indemnification expenditures, lost revenues and other potential liabilities. We have taken steps to protect the security and integrity of the information we collect and have policies and procedures in place dealing with data privacy and security, but there can be no assurance that our efforts will prevent breakdowns, system failures, breaches in our systems or other cyber incidents or otherwise be fully effective. Any such breakdown, breach or incident could adversely affect our business, prospects, financial condition or results of operations, and our cyber insurance may not cover such risks or may be insufficient to compensate us for losses that may occur.

Part of our growth strategy is to pursue strategic transactions, including acquisitions, which subjects us to risks that could harm our business and we may not be able to find suitable acquisition targets or integrate strategic acquisitions successfully into our existing business.

As part of our strategy, we have in the past and may in the future seek to grow our business through acquisitions, and any such acquisition may be significant. Any future growth through acquisitions will depend in part upon the continued availability of suitable acquisition candidates at favorable prices and upon advantageous terms and conditions, which may not be available to us, as well as sufficient funds from our cash on hand, cash flow from operations, existing debt facilities and additional indebtedness to fund these acquisitions.

Not only is the identification of such suitable acquisition candidates difficult and competitive, but these transactions, including the acquisitions completed in recent years also involve numerous risks, including the diversion of management's attention and their ability to:

- successfully integrate acquired facilities, companies, products, systems or personnel into our existing business, especially with respect to businesses or operations that are outside of the United States;

- minimize any potential interruption to our ongoing business;
- successfully enter categories and markets in which we may have limited or no prior experience;
- achieve expected synergies and obtain the desired financial or strategic benefits;
- detect and address any financial or control deficiencies of the acquired company;
- retain key relationships with employees, customers, partners and suppliers of acquired companies as well as our own employees, customers, partners and suppliers; and
- maintain uniform compliance standards, controls, procedures and policies throughout acquired companies.

Companies, businesses or operations acquired or joint ventures created may not be profitable or may not achieve revenue and profitability levels that would justify the investments made. Recent and future acquisitions could also result in the incurrence of indebtedness, subject to the restrictions contained in the documents governing our then-existing indebtedness. See "—Our substantial leverage could adversely affect our ability to raise additional capital to fund our operations, limit our ability to react to changes in the economy or our industry, expose us to interest rate risk to the extent the interest rate on variable rate debt increases and prevent us from meeting our obligations under our existing and future indebtedness."

Recent and future acquisitions could also result in the assumption of contingent liabilities, material expenses related to certain intangible assets, increased operating expenses and compliance issues under international laws and regulations, including antitrust laws, anti-corruption laws, the FCPA and similar anti-bribery laws, which could adversely affect our business, prospects, financial condition or results of operations. In addition, to the extent that the economic benefits associated with any of our acquisitions diminish in the future, we may be required to record additional write-downs of goodwill, intangible assets or other assets associated with such acquisitions, which could adversely affect our business, prospects, financial condition or results of operations.

Certain of the acquisition agreements by which we have acquired companies require the former owners to indemnify us against certain liabilities related to the operation of the company before we acquired it. In most of these agreements, however, the liability of the former owners is limited, and certain former owners may be unable to meet their indemnification responsibilities. We cannot assure you that these indemnification provisions will protect us fully or at all, and as a result we may face unexpected liabilities that adversely affect our business, prospects, financial condition or results of operations.

In particular, as part of the acquisition by BWXT of our Medical Isotopes business, we lease one of our Canadian facilities to BWXT through July 2038, and BWXT operates under our Canadian Nuclear Safety Commission ("CNSC") license in an arrangement we expect to continue through 2021. If BWXT fails to comply with CNSC regulations, we could be liable, and although we are indemnified by BWXT for any such failures, such indemnification may be insufficient to cover any liabilities.

Our ability to realize the benefits we anticipate from our strategic transactions, including acquisition activities, anticipated cost savings and additional sales opportunities, will depend in large part upon whether we are able to integrate such businesses efficiently and effectively. If we are unable to successfully integrate the operations of acquired businesses into our business or on the timeline we expect, including with respect to our ongoing integration of Iotron, we may be unable to realize the sales growth, cost synergies and other anticipated benefits we expect to achieve as a result of such transactions and our business, prospects, financial condition or results of operations could be adversely affected.

Our internal controls over financial reporting may not be effective and our independent registered public accounting firm may not be able to certify as to their effectiveness, which could have a significant and adverse effect on our business and reputation.

Pursuant to the Sarbanes-Oxley Act, we will be required to furnish a report by our management on the effectiveness our internal control over financial reporting beginning with our second filing of an Annual Report on Form 10-K with the SEC after we become a public company. This assessment will need to include disclosure of any material weaknesses identified by our management in our internal control over financial reporting. However, we may not be required to have our independent registered public accounting firm attest to the effectiveness of our internal controls until as late as our annual report for the fiscal year ending December 31, 2025. At such time, if we then have a material weakness, we would receive an adverse opinion regarding our internal control over financial reporting from our independent registered accounting firm.

We have begun the process to identify and implement actions to improve the effectiveness of our internal control over financial reporting and disclosure controls and procedures. The process of reviewing and improving our internal controls is both costly and challenging. We will need to (i) continue to dedicate internal resources, including through hiring additional financial and accounting personnel, (ii) potentially engage outside consultants and adopt a detailed work plan to assess and document the adequacy of internal control over financial reporting, (iii) continue steps to improve control processes as appropriate, (iv) validate through testing that controls are functioning as documented and (v) implement a continuous reporting and improvement process for internal control over financial reporting. This process may also require substantial attention from our management team, which may negatively impact other matters that are important to our business.

If we identify a material weakness in connection with this ongoing assessment and we fail to remediate these identified material weaknesses within the prescribed period, we will be unable to assert that our internal controls over financial report are effective. We cannot assure you that there will not be material weaknesses or significant deficiencies in our internal control over financial reporting in the future. Any failure to maintain internal control over financial reporting could severely inhibit our ability to accurately report our financial condition or results of operations. In addition, we may be required to incur costs in improving our internal control system and the hiring of additional personnel. If we are unable to conclude that our internal control over financial reporting is effective, or if our independent registered public accounting firm determines we have a material weakness or significant deficiency in our internal control over financial reporting, we could lose investor confidence in the accuracy and completeness of our financial reports, the market price of shares of our common stock could decline and we could be subject to sanctions or investigations by the Nasdaq, the SEC or other regulatory authorities. Failure to remedy any material weakness in our internal control over financial reporting, or to implement or maintain other effective control systems required of public companies, could also restrict our future access to the capital markets.

We rely on intellectual property rights to maintain our competitive position and third parties may claim that we infringe or misappropriate their intellectual property rights.

We rely on proprietary technology and are dependent on our ability to protect such technology. We rely primarily on trade secrets and non-disclosure and confidentiality arrangements to protect our intellectual property rights, including such rights that relate to our Nelson Labs business and its lab testing services. The efforts we have taken to protect our intellectual property and proprietary technology may not be sufficient or effective. Third parties, including current or former employees, consultants, contractors, customers or partners, who have access to our confidential information (including our trade secrets and know-how), may unintentionally or willfully disclose our confidential information to others, and there can be no assurance that our trade secret rights and non-disclosure and confidentiality arrangements will provide meaningful protection of our proprietary technology. There can also be no assurance that others will not independently develop similar or superior technologies or duplicate any technology developed by us. Effective protection of intellectual property rights may not be available in every jurisdiction in which our products and services are made available, and monitoring

unauthorized use and disclosures of our proprietary technology or confidential information can be difficult and expensive. Actions to enforce our intellectual property rights could lead to disputes with third parties, including our customers, and could impact our future ability to gain business. Furthermore, legal proceedings to protect or enforce our intellectual property rights could result in narrowing the scope of our intellectual property rights or substantial cost to us, and they may be time consuming and divert resources and the attention of management and key personnel, and the outcomes of such actions may be unpredictable.

Additionally, we cannot be certain that the conduct of our business does not and will not infringe or misappropriate intellectual property rights of others. From time to time, we may become subject to claims, allegations and legal proceedings, including by means of counterclaims, that we infringe or misappropriate intellectual property or other proprietary rights of third parties. Such legal proceedings involving intellectual property rights are highly uncertain, can involve complex legal and scientific questions and may divert resources and the attention of management and key personnel. Our failure to prevail against infringement or misappropriation claims brought against us could also result in judgments awarding substantial damages against us, including possible treble damages and attorneys' fees, and could result in reputational harm. Judgments that result in equitable or injunctive relief could cause us to delay or cease selling or providing certain products or services or otherwise harm our operations. We also may have to seek third party licenses to intellectual property, which may be unavailable, require payment of significant royalties or be available only at commercially unreasonable, unfavorable or otherwise unacceptable terms.

If we are unable to adequately protect, establish, maintain or enforce our intellectual property rights or if we are subject to any infringement or misappropriation claims, our business, prospects, financial condition or results of operations may be adversely affected.

We are subject to complex and rapidly evolving data privacy and security laws and regulations and any ineffective compliance efforts with such laws and regulations may adversely impact our business.

We must comply with laws and regulations in federal and state governments in multiple jurisdictions governing the collection, dissemination, retention, access, use, protection, security and disposal of personal data, which mostly consists of our employees' data. The interpretation and application of many existing or recently enacted privacy and data protection laws and regulations in the United States, the European Union and elsewhere are uncertain and fluid, and it is possible that such laws and regulations may be interpreted or applied in a manner that is inconsistent with our existing practices. Companies are under increased regulatory scrutiny relating to data privacy and security. Any actual or perceived breach of such laws or regulations may subject us to claims and may lead to administrative, civil or criminal liability, as well as reputational harm. Moreover, these laws are evolving and are generally becoming stricter. For example, activities conducted from our EU facilities or related to products and services that we may offer to EU users or customers are subject the General Data Protection Regulation (Regulation (EU) 2016/679), which provides for enhanced data privacy obligations and fines of up to the higher of 4% of annual worldwide revenues or €20 million. Outside of the United States and the European Union, many jurisdictions have adopted or are adopting new data privacy laws that impose further onerous compliance requirements, such as data localization, which prohibit companies from storing outside the jurisdiction data relating to resident individuals. The proliferation of such laws may result in conflicting and contradictory requirements and there can be no assurance that the measures we have taken will be sufficient for compliance with such various laws and regulations. Complying with these various laws is an ongoing commitment and could cause us to incur substantial costs or require us to change our business practices in a manner adverse to our business. Privacy-related claims or lawsuits initiated by governmental bodies, employees, customers or third parties, whether meritorious or not, could adversely affect our businesses, assets, revenues, brands and reputation and result in fines, litigation, regulatory proceedings, regulatory investigations, increased insurance premiums, remediation efforts, indemnification expenditures, lost revenues and other potential liabilities. We take steps to comply with applicable data privacy and security laws, regulations and standards and applicable privacy policies, but there can be no assurance that our compliance efforts will be effective. Any such failure to comply could adversely affect our business, prospects, financial condition or results of operations.

We have a history of net losses and may not achieve or maintain profitability in the future.

We have a history of net operating losses, including a net loss of $20.8 million and $5.9 million for the years ended December 31, 2019 and 2018, respectively. We may not be able to achieve or maintain profitability for the current or any future fiscal year. Our ability to achieve and maintain profitability depends on a number of factors, including the growth rate of the sterilization and lab services industries, the price of our products and services, the cost to provide our products and services and the competitiveness of our products and services. We may incur significant losses in the future for a number of reasons, including due to principal and interest expense related to our substantial indebtedness and the other risks described in this prospectus, and we may encounter unforeseen expenses, difficulties, complications and delays and other unknown events. In addition, as a public company, we will incur significant legal, accounting and other expenses that we did not incur as a private company. As a result, our operations may not achieve profitability in the future and, even if we do achieve profitability, we may not be able to maintain or increase it.

We may incur impairment charges on our goodwill and other intangible assets with indefinite lives, which could negatively impact our business, financial condition or results of operations.

We are subject to Accounting Standards Codification Topic 350, Intangibles—Goodwill and Other, which requires that goodwill and other intangible assets that have an indefinite useful life be evaluated at least annually for impairment. Goodwill and other intangible assets with indefinite lives must also be evaluated for impairment between the annual tests if an event or change in circumstance occurs that would more likely than not reduce the fair value of the asset below its carrying amount. We have substantial goodwill and other intangible assets. If in the future, we determine that there has been an impairment, our financial results for the relevant period would be reduced by the amount of the non-cash impairment charge, net of any income tax effects, which could have an adverse effect on our financial condition or results of operations.

Unionization efforts and labor regulations in certain countries in which we operate could materially increase our costs or limit our flexibility.

Certain of our employees in non-U.S. markets are represented by works councils or labor unions and work under collective bargaining or similar agreements, some of which are subject to periodic renegotiation. Efforts have been made from time to time to unionize portions of our workforce in the United States. Unionization efforts, new collective bargaining agreements or work stoppages could materially increase our costs, reduce our net revenues or limit our flexibility. Certain legal obligations in these markets require us to contribute amounts to retirement funds and pension plans and restrict our ability to dismiss employees. Future regulations or court interpretations established in the countries in which we conduct our operations could increase our costs and materially adversely affect our business, financial condition or results of operations. Both of the collective bargaining agreements applicable to Brazilian employees were finalized and certified by the Ministry of Labor in 2017. The collective bargaining agreement applicable to Canadian employees located in Kanata expired on March 31, 2020. Negotiations have been postponed during the COVID-19 pandemic and are set to commence in December 2020. Failure to renew the agreements on similar terms could result in labor disruptions and/or increased labor costs, which could negatively affect our business and operations.

Our business is subject to a variety of laws involving the cannabis industry, many of which are unsettled and still developing and which could subject us to claims or otherwise harm our business.

We provide bioburden reduction irradiation services for the processing of cannabis, primarily in Canada and certain European countries. The commercial recreational cannabis industry is a relatively new industry in Canada, and in Canada, the Cannabis Regulations is a regime that has only been in effect in its current form since October 2018. Likewise, laws and regulations governing cannabis in European countries have evolved rapidly over recent years. In the United States, marijuana (all parts of the cannabis plant other than those parts that are exempt) is a Schedule I controlled substance under federal law. Our activity related to marijuana in the United

States is de minimis and has been limited to the irradiation of marijuana for clinical research under Drug Enforcement Administration authorization in compliance with applicable U.S. federal law. In other countries in which the cultivation and use of marijuana is legalized, most notably in Canada, our operations include irradiation services for recreational and medical marijuana. As laws in the United States, Canada, Europe and other jurisdictions evolve, our activities in these spaces may face additional regulations that may be costly or burdensome to be in compliance.

Government or private civil antitrust actions could harm our business, results of operations, financial condition and cash flows.

The antitrust laws prohibit, among other things, any joint conduct among competitors that would lessen competition in the marketplace. We believe that we are in compliance with the legal requirements imposed by the antitrust laws. However, a governmental or private civil action alleging the improper exchange of information, or unlawful participation in price maintenance or other unlawful or anticompetitive activity, even if unfounded, could be costly to defend and could harm our business, prospects, financial condition or results of operations.

Challenges to our tax positions in U.S. or non-U.S. jurisdictions, the interpretation and application of recent U.S. tax legislation or other changes in U.S. or non-U.S. taxation of our operations could harm our business, revenue and financial results.

We operate in a number of tax jurisdictions globally, including in the United States at the federal, state and local levels, and in many other countries, and we therefore are subject to review and potential audit by tax authorities in these various jurisdictions. Significant judgment is required in determining our worldwide provision for income taxes and other tax liabilities, and tax authorities may disagree with tax positions we take and challenge our tax positions. Successful unilateral or multi-jurisdictional actions by various tax authorities, including in the context of our current or future corporate operating structure and third-party and intercompany arrangements, may increase our worldwide effective tax rate, result in additional taxes or other costs or have other material consequences, which could harm our business, revenue and financial results.

Our effective tax rate may also change from year to year or vary materially from our expectations based on changes or uncertainties in the mix of activities and income allocated or earned among various jurisdictions, changes in tax laws and the applicable tax rates in these jurisdictions (including future tax laws that may become material), tax treaties between countries, our eligibility for benefits under those tax treaties and the valuation of deferred tax assets and liabilities. Such changes could result in an increase in the effective tax rate applicable to all or a portion of our income, impose new limitations on deductions, credits or other tax benefits or make other changes that may adversely affect our business, cash flows or financial performance. For example, if we are unable to fully realize the benefit of interest expense incurred in future periods as a result of recent tax law changes (as discussed below), we may need to recognize a valuation allowance on any related deferred tax assets, which would impact our annual effective income tax rate.

In particular, on December 22, 2017, the Tax Cuts & Jobs Act ("TCJA") was signed into law. The legislation significantly changed U.S. tax law by, among other things, lowering the U.S. federal corporate income tax rate from 35% to 21%, implementing a modified territorial tax system and imposing a transition tax on deemed repatriated earnings of foreign subsidiaries ("Section 965 Transition Tax"). Certain changes established by the TCJA increased our effective tax rate in prior years, including a new income inclusion item for global intangible low-taxed income ("GILTI") and the Section 965 Transition Tax on our accumulated offshore earnings held in cash and illiquid assets. Additional changes have impacted the timing of our recognition of certain items of loss and deduction, including a new limitation on the company's deduction for business interest expense and increased bonus depreciation from 50% to 100% for certain qualified property.

Furthermore, the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") was enacted on March 27, 2020 in response to the outbreak of COVID-19 and its consequences. The CARES Act introduced

substantial changes to the U.S. tax code, the overall impact of which on our business is uncertain. For example, among other changes, the CARES Act increased the interest expense deductibility limitations and waived certain limitations on the use of net operating losses, in each case, temporarily.

On July 23, 2020, final regulations were published that exempt certain income subject to a high rate of foreign tax from inclusion under GILTI for tax years beginning after December 31, 2017.

The cumulative impact of these and other changes in tax law is uncertain and our business and financial condition could be adversely affected.

Risks Related to Our Indebtedness and Liquidity

Our substantial leverage could adversely affect our ability to raise additional capital to fund our operations, limit our ability to react to changes in the economy or our industry, expose us to interest rate risk to the extent the interest rate on our variable rate debt increases and prevent us from meeting our obligations under our existing and future indebtedness.

We are highly leveraged. As of September 30, 2020, on an adjusted basis after giving effect to this offering and the application of the net proceeds therefrom, our total indebtedness (including that of our wholly owned subsidiaries) was approximately $2,035.4 million, all of which is indebtedness of Sotera Health Holdings, LLC that is guaranteed by the company and certain of its other subsidiaries. We also had an additional $190.0 million of unutilized capacity under our Revolving Credit Facility at that date (without giving effect to $64.3 million of letters of credit that were outstanding). See "Description of Certain Indebtedness."

Our estimated debt service obligations for the next 12 months on an as adjusted basis after giving effect to this offering (based on an assumed initial public offering price at the midpoint of the estimated offering price range set forth on the cover page of this prospectus) and the application of the net proceeds therefrom would be $142.9 million, based on the outstanding principal amount of indebtedness of $2,035.4 million as of September 30, 2020. For the nine months ended September 30, 2020, our cash flow used for debt service totaled $174.6 million, which includes scheduled quarterly principal payments of the Term Loan (as defined below) of $10.6 million and interest payments on our debt of $164.0 million. For the nine months ended September 30, 2020, our cash flows from operating activities totaled $98.7 million, which includes interest paid of $164.0 million. As such, our cash flows from operating activities (before giving effect to the payment of interest) amounted to $262.7 million. For the nine months ended September 30, 2020, cash payments used to service our debt represented approximately 66% of our net cash flows from operating activities (before giving effect to the payment of interest). As adjusted to give effect to this offering and the application of net proceeds therefrom, for the nine months ended September 30, 2020, our cash flow used for debt service would have totaled $109.8 million (based on an assumed initial public offering price at the midpoint of the estimated offering price range set forth on the cover page of this prospectus), our cash flows from operating activities (before giving effect to the payment of interest) would have amounted to $197.9 million and cash payments used to service our debt would have represented approximately 56% of our net cash flows from operating activities (before giving effect to the payment of interest).

Our high degree of leverage could have important consequences for you, including:

- making it more difficult for us to satisfy our obligations;
- increasing our vulnerability to general economic and industry conditions;
- requiring a substantial portion of cash flow from operations to be used to pay off principal and interest on our indebtedness, thereby reducing our ability to use our cash flow to fund our operations, capital expenditures and future business opportunities;
- exposing us to the risk of increased interest rates as our indebtedness is at variable interest rates;
- restricting us from making strategic acquisitions or causing us to make non-strategic divestitures;

- limiting our ability to obtain additional financing for working capital, capital expenditures, product development, debt service requirements, acquisitions and general corporate or other purposes;
- limiting our ability to adjust to changing market conditions and placing us at a disadvantage compared to our competitors that are less highly leveraged; and
- causing us to pay higher rates if we need to refinance our indebtedness at a time when prevailing market interest rates are unfavorable.

We and our subsidiaries may obtain substantial additional indebtedness in the future, subject to the restrictions contained in SHH's senior secured credit facilities (the "Senior Secured Credit Facilities") and the indentures governing SHH's senior secured first-lien notes (the "First Lien Notes") and SHH's senior secured second-lien notes (the "Second Lien Notes"). If new indebtedness is added to our current debt levels, the related risks that we now face could intensify.

Because we are exposed to interest rate risk through our variable-rate borrowings, we have entered into and may, in the future, enter into additional interest rate swaps that involve the exchange of floating for fixed rate interest payments in order to reduce interest rate volatility and interest rate cap agreements. However, we may not maintain interest rate swaps with respect to any of our variable rate indebtedness, and any swaps we enter into may not fully mitigate our interest rate risk. Further, current interest rates are relatively low. If interest rates increase, our debt service obligations on any variable rate indebtedness will increase even if the amount borrowed remains the same, and our net income and cash flows, including cash available for servicing our indebtedness, will correspondingly decrease. Based on our indebtedness outstanding as of September 30, 2020, on an adjusted basis after giving effect to this offering and the application of the net proceeds therefrom, a 1% increase in interest rates would result in an approximately $1.4 million increase in total annual interest expense under our outstanding debt obligations.

Our debt agreements contain restrictions that limit our flexibility in operating our business.

The Senior Secured Credit Facilities and the indentures governing the First Lien Notes and the Second Lien Notes contain various covenants that limit our ability to engage in specified types of transactions. These covenants limit our ability and our restricted subsidiaries' ability to, among other things:

- incur additional indebtedness or issue certain shares of preferred stock;
- pay dividends on, repurchase or make distributions in respect of our capital stock or make other restricted payments;
- make certain investments and acquisitions;
- sell or transfer assets;
- grant liens on our assets;
- consolidate, merge, sell or otherwise dispose of all or substantially all of our assets; and
- enter into certain transactions with our affiliates.

In addition, under certain circumstances we are required to satisfy and maintain specified financial ratios and other financial condition tests under certain covenants in our Senior Secured Credit Facilities. See "Description of Certain Indebtedness." Our ability to meet those financial ratios and tests can be affected by events beyond our control, including prevailing economic, financial market and industry conditions, and we cannot give assurance that we will be able to satisfy such ratios and tests when required.

A breach of any of these covenants could result in a default under each of our Senior Secured Credit Facilities and/or the indentures governing the First Lien Notes and the Second Lien Notes. Upon the occurrence

of an event of default, the lenders and/or noteholders, as applicable, could elect to declare all amounts outstanding under the Senior Secured Credit Facilities, the First Lien Notes and the Second Lien Notes to be immediately due and payable and terminate all commitments to extend further credit. If we were unable to repay those amounts, the lenders under the Senior Secured Credit Facilities or the indentures governing the First Lien Notes and Second Lien Notes could foreclose on the collateral granted to them to secure each such indebtedness. We have pledged substantially all of our assets as collateral under the Senior Secured Credit Facilities and the indentures governing the First Lien Notes and Second Lien Notes.

Our cash flows may not be sufficient to service our indebtedness, and if we are unable to satisfy our obligations under our indebtedness, we may be required to seek other financing alternatives, which may not be successful.

Our ability to make timely payments of principal and interest on our debt obligations, including our obligations under the Senior Secured Credit Facilities, the First Lien Notes and the Second Lien Notes, depends on our ability to generate positive cash flows from operations, which is subject to general economic conditions, competitive pressures and certain financial, business and other factors beyond our control. If our cash flows and capital resources are insufficient to make these payments, we may be required to seek additional financing sources, reduce or delay capital expenditures, sell assets or operations or refinance our indebtedness. These actions could have a material adverse effect on our business, financial conditions and results of operations. In addition, we may not be able to take any of these actions, and even if successful, these actions may not permit us to meet our scheduled debt service obligations. Our ability to restructure or refinance our existing indebtedness will depend on, among other things, the condition of the capital markets and our financial condition at the time. We may not be able to restructure or refinance any of our indebtedness on commercially reasonable terms or at all. If we cannot make scheduled payments on our debt, we will be in default and the outstanding principal and interest on our debt could be declared to be due and payable, in which case we could be forced into bankruptcy or liquidation or required to substantially restructure or alter our business operations or debt obligations.

A lowering or withdrawal of the ratings assigned to our debt by rating agencies may increase our future borrowing costs and reduce our access to capital.

Any rating assigned to our debt by a rating agency could be lowered or withdrawn entirely if, in that rating agency's judgment, future circumstances relating to the basis of the rating, such as adverse changes to our ability to service our debt obligations or our general financial condition, so warrant. Any future lowering of our ratings likely would make it more difficult or more expensive for us to obtain additional debt financing. Additionally, we enter into various forms of hedging arrangements against currency, interest rates or commodity price fluctuations. Financial strength and credit ratings are also important to the availability and pricing of any hedging activities we decide to undertake, and a downgrade of our credit ratings may make it more costly for us to engage in these activities.

LIBOR and certain other interest "benchmarks" may be subject to regulatory guidance and/or reform that could cause interest rates under our current or future debt agreements to perform differently than in the past or cause other unanticipated consequences.

Because our Senior Secured Credit Facilities, First Lien Notes and Second Lien Notes bear interest at variable interest rates, based on the London Interbank Offered Rate ("LIBOR") and certain other benchmarks, fluctuations in interest rates could have a material effect on our business. We currently utilize, and may in the future utilize, derivative financial instruments such as interest rate swaps or interest rate caps to hedge some of our exposure to interest rate fluctuations, but such instruments may not be effective in reducing our exposure to interest fluctuations, and we may discontinue utilizing them at any time. As a result, we may incur higher interest costs if interest rates increase. These higher interest costs could have a material adverse impact on our financial condition and the levels of cash we maintain for working capital.

In addition, LIBOR and certain other interest "benchmarks" may be subject to regulatory guidance and/or reform that could cause interest rates under our current or future debt agreements to perform differently than in the past or cause other unanticipated consequences. The United Kingdom's Financial Conduct Authority, which regulates LIBOR, has announced that it intends to stop encouraging or requiring banks to submit LIBOR rates after 2021, and it is unclear if LIBOR will cease to exist or if new methods of calculating LIBOR will evolve. If LIBOR ceases to exist or if the methods of calculating LIBOR change from their current form, interest rates on our current or future debt obligations may be adversely affected. If a published U.S. dollar LIBOR rate is unavailable, the interest rates on our first and second lien secured notes indexed to LIBOR will be determined in a manner that gives due consideration to the then prevailing market convention for determining a rate of interest for high yield notes in the United States at such time, and the interest rates on our Senior Secured Credit Facilities debt indexed to LIBOR will be determined in a manner that gives due consideration to the then prevailing market convention for determining a rate of interest for syndicated loans in the United States at such time; any of which could result in interest obligations that are more than or that do not otherwise correlate over time with the payments that would have been made on this debt if U.S. dollar LIBOR were available in its current form. Any of these proposals or consequences could have a material adverse effect on our financing costs. Moreover, the phaseout of LIBOR may adversely affect our assessment of effectiveness or measurement of ineffectiveness for accounting purposes of any future interest rate hedging agreements indexed to LIBOR.

Sotera Health Holdings, LLC is a holding company, and therefore its ability to make any required payment on our credit agreements depends upon the ability of its subsidiaries to pay it dividends or to advance it funds.

Sotera Health Holdings, LLC, the borrower under our Senior Secured Credit Facilities and the issuer of our First Lien Notes and Second Lien Notes, has no direct operations and no significant assets other than the equity interests of its subsidiaries. Because it conducts its operations through its operating subsidiaries, Sotera Health Holdings, LLC depends on those entities to generate the funds necessary to meet its financial obligations, including its required obligations under our Senior Secured Credit Facilities. The ability of our subsidiaries to make transfers and other distributions to Sotera Health Holdings, LLC will be subject to, among other things, the terms of any debt instruments of such subsidiaries then in effect and applicable law. If transfers or other distributions from our subsidiaries to Sotera Health Holdings, LLC were eliminated, delayed, reduced or otherwise impaired, our ability to make payments on the obligations under our credit agreements would be substantially impaired.

Risks Related to this Offering and Ownership of Our Common Stock

There is no current trading market for our common stock and an active market may never develop or be sustained.

Before this initial public offering, there has been no public market for our common stock. An active public trading market may not develop after completion of this offering or, if developed, may not be sustained. The lack of an active market may impair your ability to sell your shares at the time you wish to sell them or at a price that you consider reasonable. An inactive market may also impair our ability to raise capital by selling shares and may impair our ability to acquire other businesses or assets using our shares as consideration. Furthermore, although our common stock has been approved for listing on the Nasdaq, there can be no guarantee that we will continue to satisfy the continued listing standards of the Nasdaq. If we fail to satisfy the continued listing standards, we could be de-listed, which would have a negative effect on the price of our common stock.

The market and trading volume of our common stock may be volatile, and you could lose all or part of your investment.

The initial public offering price for our common stock will be determined through negotiations between the underwriters and us and may vary substantially from the market price of our common stock following this offering. This price may not reflect the public trading price of our common stock following this offering. If the market price of our common stock declines significantly, you may be unable to resell your shares at or above

your purchase price, if at all. The market price of our common stock may fluctuate or decline significantly in the future. Some of the factors that could negatively affect our share price or result in fluctuations in the price or trading volume of our common stock include those listed in "—Risks Related to the Company," "—Risks Related to Our Indebtedness and Liquidity" and the following, some of which are beyond our control:

- volatility or economic downturns in the markets in which we, our suppliers or our customers are located caused by pandemics, including the COVID-19 pandemic, and related policies and restrictions undertaken to contain the spread of such pandemics or potential pandemics;
- developments in our litigation matters and governmental investigations or additional significant lawsuits or governmental investigations relating to our services or facilities;
- regulatory or legal developments in the jurisdictions in which we operate;
- adverse publicity about us or the industries in which we participate;
- variations in our quarterly or annual results of operations, or in those of our competitors or of companies in the medical device and pharmaceutical industries;
- the financial projections we may provide to the public, any changes in these projections or our failure to meet these projections;
- sales of our common stock by us or our stockholders in the future or the perception that such sales may occur;
- publication of research reports about the industries in which we participate;
- changes in analysts' estimates, investors' perceptions, recommendations by securities analysts, our failure to achieve analysts' estimates or failure of analysts to maintain coverage of us;
- volatility in the trading prices and trading volumes of companies similar to us;
- changes in operating performance and stock market valuations of companies in our industry;
- changes in accounting principles, policies, guidance, interpretations or standards; and
- general market conditions and other factors unrelated to our operating performance or the operating performance of our competitors.

Certain broad market and industry factors may decrease the market price of our common stock, regardless of our actual operating performance. The stock market in general has from time to time experienced extreme price and volume fluctuations, including in recent months. In addition, in the past, following periods of volatility in the overall market and the market price of a company's securities, securities class action litigation has often been instituted against these companies. This litigation, if instituted against us, could result in substantial costs and a diversion of our management's attention and resources.

If securities or industry analysts do not publish research or reports about our business, or publish negative reports about our business, our share price and trading volume could decline.

The trading market for our common stock will depend in part on the research and reports that securities or industry analysts publish about us or our business, our market and our competitors. We do not have any control over these analysts. If one or more of the analysts who cover us downgrade our shares or change their opinion of our business, our share price would likely decline. If one or more of these analysts cease coverage of us or fail to regularly publish reports on us, we could lose visibility in the financial markets, which could cause our share price or trading volume to decline.

If you purchase our common stock in this offering, you will incur immediate and substantial dilution.

The assumed initial public offering price of $21.50 per share (the midpoint of the estimated offering price range set forth on the cover page of this prospectus) will be substantially higher than the pro forma net tangible

book deficit per share of our outstanding common stock of $(10.33) per share as of September 30, 2020 after this offering. Investors purchasing shares of our common stock in this offering will pay a price per share that substantially exceeds the book deficit of our tangible assets after subtracting our liabilities. As a result, investors purchasing common stock in this offering will incur immediate dilution of $26.91 per share, based on the assumed initial public offering price of $21.50 per share, which is the midpoint of the estimated offering price range set forth on the cover page of this prospectus.

This dilution is due to the substantially lower price paid by our stockholders who purchased shares prior to this offering as compared to the price offered to the public in this offering. As a result of the dilution to investors purchasing shares in this offering, investors may receive less than the purchase price paid in this offering, if anything, in the event of our liquidation. See "Dilution."

The future issuance of additional common stock in connection with our incentive plans, acquisitions or otherwise will dilute all other stockholdings.

After this offering, we will have an aggregate of 893,099,800 shares of common stock authorized but unissued (excluding shares of our common stock reserved for issuance under our incentive plans), as well as 1,669,122 treasury shares. We may issue all of these shares of common stock without any action or approval by our stockholders, subject to certain exceptions. We also intend to continue to evaluate acquisition opportunities and may issue common stock in connection with these acquisitions. Any common stock issued in connection with our incentive plans, acquisitions or otherwise would dilute the percentage ownership held by the investors who purchase common stock in this offering.

Future offerings of debt or equity securities by us may adversely affect the market price of our common stock.

In the future, we may attempt to obtain financing or to further increase our capital resources by issuing additional shares of our common stock or offering debt or other equity securities. Future acquisitions could require substantial additional capital in excess of cash from operations. We would expect to finance any future acquisitions through a combination of additional issuances of equity, corporate indebtedness, asset-backed acquisition financing and/or cash from operations.

Issuing additional shares of our common stock or other equity securities or securities convertible into equity may dilute the economic and voting rights of our existing stockholders or reduce the market price of our common stock or both. Upon liquidation, holders of such debt securities and preferred shares, if issued, and lenders with respect to other borrowings would receive a distribution of our available assets prior to the holders of our common stock. Debt securities convertible into equity could be subject to adjustments in the conversion ratio pursuant to which certain events may increase the number of equity securities issuable upon conversion. Preferred shares, if issued, could have a preference with respect to liquidating distributions or a preference with respect to dividend payments that could limit our ability to pay dividends to the holders of our common stock. Our decision to issue securities in any future offering will depend on market conditions and other factors beyond our control, which may adversely affect the amount, timing or nature of our future offerings. Thus, holders of our common stock bear the risk that our future offerings may reduce the market price of our common stock and dilute their stockholdings in us. See "Description of Capital Stock."

A sale of a substantial number of shares of our common stock, or the perception that such sales might occur, may cause the price of our common stock to decline.

Future sales of substantial amounts of our common stock in the public market after the lapse of lock-up and other legal or contractual restrictions on resale discussed in this prospectus, or the perception that such sales might occur, could cause the trading price of our common stock to decline. These sales, or the possibility that these sales may occur, also might make it more difficult for us to sell equity securities in the future at a time and at a price that we deem appropriate.

Upon the completion of this offering, we will have a total of 277,331,078 shares of our common stock outstanding based on the number of shares outstanding as of September 30, 2020 and based on an assumed initial public offering price of $21.50 per share (the midpoint of the estimated offering price range set forth on the cover page of this prospectus). Of these shares, all of the shares of common stock sold in this offering will be freely tradable, without restriction, in the public market immediately after the offering.

Holders of 224,483,041 shares of our common stock, including each of our directors and officers, have entered into lock-up agreements with the underwriters that restrict their ability to sell or transfer their shares. The lock-up agreements pertaining to this offering will expire 180 days from the date of this prospectus. J.P. Morgan Securities LLC, however, may, in its sole discretion, waive the contractual lock-up prior to the expiration of the lock-up agreements. Therefore, after the lock-up agreements expire, an additional 224,483,041 shares of common stock will be eligible for sale in the public market, of which 26,143,668 shares will be subject to vesting requirements and the transfer restrictions contained in the Stockholders' Agreement, unless such transfer restrictions are waived by a majority of the members of the compensation committee of the board of directors, as described below. In addition to the 26,143,668 shares, an additional 6,248,037 shares of our outstanding common stock as of September 30, 2020 are not subject to lock-up agreements but will be subject to vesting requirements and contractual restrictions on transfer under the terms of our Stockholders' Agreement described below.

Further, after this offering, 212,599,684 shares of our outstanding common stock as of September 30, 2020 will be held by directors, executive officers and other affiliates and will be subject to volume limitations under Rule 144 under the Securities Act. All of such holders will have rights to require us to file registration statements covering their shares or to include their shares in registration statements that we may file for ourselves or our stockholders.

We intend to file one or more registration statements on Form S-8 under the Securities Act to register all of the shares of common stock issued or issuable under our 2020 Plan. This registration statement is expected to become effective upon filing, and shares covered by this registration statement will be eligible for sale in the public markets, subject to Rule 144 limitations applicable to affiliates and any applicable contractual restrictions described above. If these additional shares are sold, or if it is perceived that they will be sold, in the public market, the trading price of our common stock could decline.

Any sales of securities by any of our stockholders described above could have a material adverse effect on the market price of our common stock.

In connection with this offering, we intend to enter into a stockholders' agreement with certain holders of our common stock, including investment funds and entities affiliated with either Warburg Pincus or GTCR and members of our management team, which we refer to as the Stockholders' Agreement. Under the Stockholders' Agreement, stockholders party to the agreement (other than the Sponsors and their affiliates) are subject to contractual restrictions on transfer of shares of our common stock. Those restrictions, however, may be waived at any time by a majority of the members of the compensation committee of the board of directors. See "Certain Relationship and Related Party Transactions—Stockholders' Agreement."

In the future, we may also issue securities in connection with investments or acquisitions. In particular, the number of shares of our common stock issued in connection with an investment or acquisition could constitute a material portion of our then-outstanding shares of our common stock. Any such issuance of additional securities in the future may result in additional dilution to you or may adversely impact the price of our common stock.

Although we do not expect to rely on the "controlled company" exemption, if we are a "controlled company" within the meaning of the Nasdaq corporate governance standards we would qualify for exemptions from certain corporate governance requirements.

Because the Sponsors will own a majority of our outstanding common stock following the completion of this offering, we may be considered a "controlled company" as that term is set forth in the Nasdaq corporate

governance standards. Under these rules, a company of which more than 50% of the voting power is held by another person or group of persons acting together is a "controlled company" and may elect not to comply with certain corporate governance requirements, including:

- the requirement that a majority of our board of directors consist of independent directors;
- the requirement that our director nominations be made, or recommended to the full board of directors, by our independent directors or by a nominations committee that is comprised entirely of independent directors with a written charter addressing the committee's purpose and responsibilities;

- Cash Flow Hedges. We may enter into derivative instruments designated as cash flow hedges to mitigate the risk of variability in cash flows attributable to changes in a benchmark interest rate associated with our floating rate debt. For derivatives designated as cash flow hedges, the effective portion of changes in the fair value of the derivative is recorded in accumulated other comprehensive income (loss) and subsequently reclassified into earnings when the hedged item affects earnings. Ineffective portions of changes in the fair value of cash flow hedges are recognized in earnings.

- Net Investment Hedges. We may enter into derivative instruments designated as net investment hedges to mitigate the risk of variability in foreign currency exchange rates attributable to our net investment in a foreign operation. For derivatives designated as net investment hedges, the effective portion of changes in the fair value of the derivative is recorded in accumulated other comprehensive income (loss) and subsequently reclassified into earnings when the hedged item affects earnings. Ineffective portions of changes in the fair value of net investment hedges are recognized in earnings.

- Undesignated Derivatives. We may enter into derivative instruments that are not designated as hedges to mitigate the risk of variability in foreign currency exchange rates attributable to certain foreign currency denominated assets and liabilities. Changes in the fair value of undesignated derivatives are recognized in earnings.

We do not enter into derivative instruments for trading or speculative purposes. We may enter into derivative instruments with financial institutions that are counterparties to our credit facilities and unsecured debt. We monitor the creditworthiness of counterparties, and we do not anticipate nonperformance by any counterparty.

Based on 2024 cash flows, a hypothetical 10% increase or decrease in our weighted-average interest rate would not have a material impact on our earnings and cash flows in 2025.

Foreign currency sensitivity risk related to our debt. We have exposure to foreign currency exchange rates on our debt denominated in currencies other than the U.S. dollar. We have entered into cross-currency swaps to hedge the foreign currency exchange risk associated with our Euro-denominated debt. Based on our debt and cross-currency swaps outstanding as of December 31, 2024, a hypothetical 10% increase or decrease in the exchange rates would not have a material impact on our earnings and cash flows in 2025.

Foreign currency sensitivity risk related to our net investments in foreign operations. We have exposure to foreign currency exchange rates on our net investments in foreign operations. We have entered into cross-currency swaps to hedge the foreign currency exchange risk associated with our net investments in foreign operations. Based on our net investments in foreign operations and cross-currency swaps outstanding as of December 31, 2024, a hypothetical 10% increase or decrease in the exchange rates would not have a material impact on our earnings and cash flows in 2025.

Equity price sensitivity risk related to our equity investments. We have exposure to equity price risk on our equity investments. Based on our equity investments as of December 31, 2024, a hypothetical 10% increase or decrease in the equity prices would not have a material impact on our earnings and cash flows in 2025.

Item 8. Financial Statements and Supplementary Data

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Management's Report on Internal Control over Financial Reporting

Our management is responsible for establishing and maintaining adequate internal control over financial reporting for Danaher. Our internal control system was designed to provide reasonable assurance to our management and our Board of Directors regarding the preparation and fair presentation of our published financial statements.

All internal control systems, no matter how well designed, have inherent limitations. Therefore, even those systems determined to be effective can provide only reasonable assurance with respect to financial statement preparation and presentation.

Our management assessed the effectiveness of our internal control over financial reporting as of December 31, 2024. In making this assessment, we used the criteria set forth by the Committee of Sponsoring Organizations of the Treadway Commission in *Internal Control – Integrated Framework (2013)*. Based on our assessment, we believe that, as of December 31, 2024, our internal control over financial reporting is effective based on those criteria.

Our independent registered public accounting firm has issued an audit report on our internal control over financial reporting. This report appears on page 64.

Report of Independent Registered Public Accounting Firm

To the Shareholders and the Board of Directors of Danaher Corporation

Opinions on the Financial Statements and Internal Control over Financial Reporting

We have audited the accompanying consolidated balance sheets of Danaher Corporation and its subsidiaries (the "Company") as of December 31, 2024 and December 31, 2023, and the related consolidated statements of income, of comprehensive income, of cash flows and of equity for each of the three years in the period ended December 31, 2024, including the related notes and financial statement schedule listed in the index appearing under Item 8 (collectively, the "consolidated financial statements"). We also have audited the Company's internal control over financial reporting as of December 31, 2024, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of the Company as of December 31, 2024 and December 31, 2023, and the results of its operations and its cash flows for each of the three years in the period ended December 31, 2024 in conformity with accounting principles generally accepted in the United States of America. Also in our opinion, the Company maintained, in all material respects, effective internal control over financial reporting as of December 31, 2024, based on criteria established in *Internal Control – Integrated Framework (2013)* issued by the Committee of Sponsoring Organizations of the Treadway Commission.

Basis for Opinions

The Company's management is responsible for these consolidated financial statements, for maintaining effective internal control over financial reporting and for its assessment of the effectiveness of internal control over financial reporting, included in the accompanying Management's Report on Internal Control over Financial Reporting. Our responsibility is to express opinions on the Company's consolidated financial statements and on the Company's internal control over financial reporting based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement, whether due to error or fraud, and whether effective internal control over financial reporting was maintained in all material respects.

Our audit of the consolidated financial statements included performing procedures to assess the risks of material misstatement of the consolidated financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the consolidated financial statements. Our audit also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the consolidated financial statements. We believe that our audit provides a reasonable basis for our opinions.

A company's internal control over financial reporting is a process designed to provide reasonable assurance regarding the reliability of financial reporting and the preparation of financial statements for external purposes in accordance with generally accepted accounting principles. A company's internal control over financial reporting includes those policies and procedures that (i) pertain to the maintenance of records that, in reasonable detail, accurately and fairly reflect the transactions and dispositions of the assets of the company; (ii) provide reasonable assurance that transactions are recorded as necessary to permit preparation of financial statements in accordance with generally accepted accounting principles, and that receipts and expenditures of the company are being made only in accordance with authorizations of management and directors of the company; and (iii) provide reasonable assurance regarding prevention or timely detection of unauthorized acquisition, use, or disposition of the company's assets that could have a material effect on the financial statements.

Because of its inherent limitations, internal control over financial reporting may not prevent or detect misstatements. Also, projections of any evaluation of effectiveness to future periods are subject to the risk that controls may become inadequate because of changes in conditions, or that the degree of compliance with the policies or procedures may deteriorate.

Critical Audit Matters

The critical audit matters communicated below are matters arising from the current period audit of the consolidated financial statements that were communicated or required to be communicated to the audit committee and that (i) relate to accounts or disclosures that are material to the consolidated financial statements and (ii) involved our especially challenging, subjective, or complex judgments. The communication of critical audit matters does not alter in any way our opinion on the consolidated financial statements, taken as a whole, and we are not, by communicating the critical audit matters below, providing separate opinions on the critical audit matters or on the accounts or disclosures to which they relate.

Goodwill Impairment Assessment – Certain Reporting Units

As described in Notes 1 and 5 to the consolidated financial statements, the Company's consolidated goodwill balance was $47,344 million as of December 31, 2024. Management tests goodwill for impairment annually in the fourth quarter of each year, or more frequently if events occur or circumstances change that would more likely than not reduce the fair value of a reporting unit below its carrying amount. Management estimates the fair value of a reporting unit using a discounted cash flow analysis. The key assumptions used in the discounted cash flow analysis include management's estimates of future revenue growth rates, future operating margins, and the discount rate applied to the projected cash flows.

We identified the assessment of goodwill impairment for certain reporting units as a critical audit matter because of the significant judgments made by management to estimate the fair value of these reporting units. In particular, the fair value estimates for these reporting units are sensitive to changes in the key assumptions, which are affected by expectations about future market or economic conditions. Auditing these assumptions required a high degree of auditor judgment and an increased extent of effort, including the need to involve our valuation specialists.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls related to the goodwill impairment assessment, including controls over the development of the fair value estimates for these reporting units and management's review of the key assumptions described above. We compared the key assumptions used by management to historical results and to relevant industry and economic trends. We also involved our valuation specialists to assist in evaluating the discount rate applied to the projected cash flows by comparing it to a range of discount rates that was independently developed using publicly available market data for comparable companies.

Income Taxes – Uncertain Tax Positions

As described in Notes 1 and 9 to the consolidated financial statements, the Company's consolidated income tax liability balance was $1,116 million as of December 31, 2024. The Company is subject to income taxes in the U.S. and numerous foreign jurisdictions. Significant judgment is required in determining the Company's provision for income taxes and in evaluating its tax positions. The Company establishes reserves for uncertain tax positions when, despite its belief that its tax positions are fully supportable, there remains uncertainty as to whether certain positions will be sustained upon examination by tax authorities. The Company evaluates its uncertain tax positions on a quarterly basis and adjusts the reserves in light of changing facts and circumstances, such as the progress of tax audits, lapses of applicable statutes of limitations, and changes in tax law.

We identified the assessment of uncertain tax positions as a critical audit matter because of the significant judgments made by management to estimate the amount of tax benefits that will ultimately be sustained upon examination by tax authorities. Auditing these judgments required a high degree of auditor judgment and an increased extent of effort, including the need to involve our tax specialists.

The following are the primary procedures we performed to address this critical audit matter. We evaluated the design and tested the operating effectiveness of certain internal controls related to the uncertain tax positions, including controls over the development of the estimate of the amount of tax benefits that will ultimately be sustained upon examination by tax authorities. We compared the key assumptions used by management to historical results and to relevant industry and economic trends. We also involved our tax specialists to assist in evaluating the amount of tax benefits that will ultimately be sustained upon examination by tax authorities by comparing it to a range of amounts that was independently developed using publicly available data for comparable companies.

/s/ PricewaterhouseCoopers LLP

Tampa, Florida

February 20, 2025

We have served as the Company's auditor since 1986.

CONSOLIDATED BALANCE SHEETS

(In millions, except per share amounts)

	December 31, 2024	December 31, 2023
ASSETS		
Current assets:		
Cash and equivalents	$ 3,512	$ 3,298
Trade accounts receivable, net of allowance for doubtful accounts of $ 87 and $ 84	3,722	3,722
Inventories	3,124	3,124
Prepaid expenses and other current assets	2,222	2,222
Total current assets	12,580	12,366
Property, plant and equipment, net	5,222	5,222
Other long-term assets	5,222	5,222
Goodwill	47,344	47,344
Other intangible assets	15,222	15,222
Total assets	$ 85,550	$ 85,336
LIABILITIES AND EQUITY		
Current liabilities:		
Accounts payable	$ 2,222	$ 2,222
Accrued expenses and other liabilities	5,222	5,222
Current portion of long-term debt	1,222	1,222
Total current liabilities	8,666	8,666
Long-term debt	19,222	19,222
Deferred income taxes	3,222	3,222
Other long-term liabilities	3,222	3,222
Total liabilities	34,332	34,332
Commitments and contingencies		
Equity:		
Common stock, par value $0.01 per share; 2,000 shares authorized; 1,000 shares issued and outstanding	10	10
Additional paid-in capital	22,222	22,222
Retained earnings	32,222	32,222
Accumulated other comprehensive income (loss)	(3,222)	(3,222)
Total Danaher shareholders' equity	51,222	51,222
Noncontrolling interests	222	222
Total equity	51,444	51,444
Total liabilities and equity	$ 85,550	$ 85,336

CONSOLIDATED STATEMENTS OF INCOME

(In millions, except per share amounts)

	Year Ended December 31,		
	2024	2023	2022
Product revenues	$ 22,222	$ 22,222	$ 22,222
Service revenues	2,222	2,222	2,222
Total revenues	24,444	24,444	24,444
Cost of product revenues	8,222	8,222	8,222
Cost of service revenues	1,222	1,222	1,222
Total cost of revenues	9,444	9,444	9,444
Gross profit	15,000	15,000	15,000
Operating expenses:			
Selling, general and administrative expenses	7,222	7,222	7,222
Research and development expenses	1,222	1,222	1,222
Total operating expenses	8,444	8,444	8,444
Operating profit	6,556	6,556	6,556
Nonoperating income (expense):			
Interest expense	(222)	(222)	(222)
Interest income	222	222	222
Other income (expense), net	222	222	222
Total nonoperating income (expense), net	222	222	222
Income before taxes	6,778	6,778	6,778
Taxes on income	1,222	1,222	1,222
Net income	5,556	5,556	5,556
Net income attributable to noncontrolling interests	22	22	22
Net income attributable to Danaher shareholders	$ 5,534	$ 5,534	$ 5,534
Earnings per share attributable to Danaher shareholders:			
Basic	$ 7.22	$ 7.22	$ 7.22
Diluted	$ 7.22	$ 7.22	$ 7.22
Average common stock and common equivalent shares outstanding:			
Basic	766	766	766
Diluted	766	766	766

CONSOLIDATED STATEMENTS OF COMPREHENSIVE INCOME

(In millions)

	Year Ended December 31,		
	2024	2023	2022
Net income	$ 5,556	$ 5,556	$ 5,556
Other comprehensive income (loss):			
Pension and other postretirement benefit plans	222	222	222
Currency translation adjustment	(2,222)	(2,222)	(2,222)
Cash flow hedges	222	222	222
Net investment hedges	222	222	222
Total other comprehensive income (loss)	(1,556)	(1,556)	(1,556)
Comprehensive income	4,000	4,000	4,000
Comprehensive income attributable to noncontrolling interests	22	22	22
Comprehensive income attributable to Danaher shareholders	$ 3,978	$ 3,978	$ 3,978

CONSOLIDATED STATEMENTS OF CASH FLOWS

(In millions)

	Year Ended December 31,		
	2024	2023	2022
Cash flows from operating activities:			
Net income	$ 5,556	$ 5,556	$ 5,556
Adjustments to reconcile net income to cash flows from operating activities:			
Depreciation	1,222	1,222	1,222
Amortization	1,222	1,222	1,222
Stock-based compensation expense	222	222	222
Deferred income taxes	(222)	(222)	(222)
Other non-cash adjustments, net	222	222	222
Changes in operating assets and liabilities, net of effects of acquisitions and divestitures:			
Trade accounts receivable	(222)	(222)	(222)
Inventories	(222)	(222)	(222)
Prepaid expenses and other assets	(222)	(222)	(222)
Accounts payable	222	222	222
Accrued expenses and other liabilities	222	222	222
Cash flows from operating activities	7,222	7,222	7,222
Cash flows from investing activities:			
Purchases of property, plant and equipment	(1,222)	(1,222)	(1,222)
Proceeds from sales of property, plant and equipment	222	222	222
Acquisitions of businesses and equity investments, net of cash acquired	(222)	(222)	(222)
Proceeds from sales of businesses and investments	222	222	222
Other investing activities, net	(222)	(222)	(222)
Cash flows from investing activities	(1,222)	(1,222)	(1,222)
Cash flows from financing activities:			
Repayments of borrowings	(2,222)	(2,222)	(2,222)
Proceeds from borrowings	2,222	2,222	2,222
Dividends paid to common shareholders	(1,222)	(1,222)	(1,222)
Other financing activities, net	(222)	(222)	(222)
Cash flows from financing activities	(3,444)	(3,444)	(3,444)
Effect of exchange rate changes on cash and equivalents	(222)	(222)	(222)
Net change in cash and equivalents	222	222	222
Cash and equivalents at beginning of year	3,298	3,298	3,298
Cash and equivalents at end of year	$ 3,512	$ 3,298	$ 3,298

CONSOLIDATED STATEMENTS OF EQUITY

(In millions, except per share amounts)

	Common Stock	Additional Paid-in Capital	Retained Earnings	Accumulated Other Comprehensive Income (Loss)	Total Danaher Shareholders' Equity	Noncontrolling Interests	Total Equity
Balance, December 31, 2021	$ 10	$ 22,222	$ 32,222	$ (3,222)	$ 51,222	$ 222	$ 51,444
Net income			5,534		5,534	22	5,556
Other comprehensive income (loss)				(1,556)	(1,556)		(1,556)
Dividends paid to common shareholders ($ 1.60 per share)			(1,222)		(1,222)		(1,222)
Stock-based compensation expense		222			222		222
Other						(22)	(22)
Balance, December 31, 2022	10	22,222	36,534	(4,778)	53,978	222	54,200
Net income			5,534		5,534	22	5,556
Other comprehensive income (loss)				(1,556)	(1,556)		(1,556)
Dividends paid to common shareholders ($ 1.60 per share)			(1,222)		(1,222)		(1,222)
Stock-based compensation expense		222			222		222
Other						(22)	(22)
Balance, December 31, 2023	10	22,222	36,534	(4,778)	53,978	222	54,200
Net income			5,534		5,534	22	5,556
Other comprehensive income (loss)				(1,556)	(1,556)		(1,556)
Dividends paid to common shareholders ($ 1.60 per share)			(1,222)		(1,222)		(1,222)
Stock-based compensation expense		222			222		222
Other						(22)	(22)
Balance, December 31, 2024	$ 10	$ 22,222	$ 32,222	$ (3,222)	$ 51,222	$ 222	$ 51,444

NOTES TO CONSOLIDATED FINANCIAL STATEMENTS

Note 1. Basis of Presentation and Significant Accounting Policies

Basis of Presentation

The accompanying consolidated financial statements include the accounts of Danaher Corporation and its subsidiaries (collectively, "Danaher" or the "Company"). All intercompany balances and transactions have been eliminated in consolidation.

Use of Estimates

The preparation of financial statements in conformity with generally accepted accounting principles ("GAAP") requires management to make estimates and assumptions that affect the amounts reported in the financial statements and accompanying notes. Actual results could differ from those estimates.

Revenue Recognition

Revenue is recognized when a customer obtains control of promised goods or services in an amount that reflects the consideration which we expect to receive in exchange for those goods or services. To determine revenue recognition for arrangements that we determine are within the scope of Accounting Standards Codification ("ASC") 606, we perform the following five steps: (i) identify the contract(s) with a customer; (ii) identify the performance obligations in the contract(s); (iii) determine the transaction price; (iv) allocate the transaction price to the performance obligations in the contract(s); and (v) recognize revenue when (or as) we satisfy the performance obligations.

Product revenues are recognized when the customer obtains control of our product, which occurs at a point in time, typically upon delivery to the customer. Service revenues are recognized over time as the services are performed. Revenues are measured as the amount of consideration we expect to receive in exchange for transferring goods or providing services. Sales and value-added taxes are excluded from revenues. Shipping and handling costs associated with outbound freight after control over a product has transferred to a customer are accounted for as a fulfillment cost and are included in cost of revenues.

Most of our contracts with customers contain a single performance obligation to transfer promised goods or services to the customer. Some contracts for the sale of capital equipment may include multiple performance obligations, such as installation services. For contracts with multiple performance obligations, we allocate the transaction price to each performance obligation using our best estimate of the standalone selling price of each distinct good or service in the contract. Contracts are occasionally modified to account for changes in the contract specifications and requirements. Contract modifications are accounted for either as part of the original contract or as a separate contract, depending on the nature of the modification.

We have elected to apply the optional exemption provided in ASC 606 and do not disclose the value of unsatisfied performance obligations for (i) contracts with an original expected length of one year or less and (ii) contracts for which we recognize revenue at the amount to which we have the right to invoice for services performed.

Contract assets relate to our conditional rights to consideration for work completed but not billed at the reporting date. Contract liabilities relate to payments received in advance of performance under the contract and are realized with the associated revenue recognized under the contract. Contract assets and contract liabilities are reported on a net basis at the contract level.

Cash and Equivalents

Cash and equivalents consist of cash and highly liquid investments with original maturities of three months or less.

Trade Accounts Receivable

Trade accounts receivable are recorded at the invoiced amount and do not bear interest. We maintain allowances for doubtful accounts for estimated losses resulting from the inability of our customers to make required payments. We estimate the allowance for doubtful accounts based on the credit risk of specific customers, historical trends and other information. Past-due balances are reviewed individually for collectibility. Account balances are charged off against the allowance when we believe it is probable that the receivable will not be recovered.

Inventories

Inventories are stated at the lower of cost or net realizable value. Cost is determined using the first-in, first-out ("FIFO") or average cost methods. Inventory costs include material, labor and manufacturing overhead.

Property, Plant and Equipment

Property, plant and equipment are recorded at cost and depreciated over their estimated useful lives using the straight-line method. Estimated useful lives are generally 10 to 40 years for buildings and improvements, 3 to 15 years for machinery and equipment, and 3 to 10 years for computer hardware and software. Leasehold improvements are depreciated over the shorter of the remaining lease term or their estimated useful lives. Maintenance and repair costs are expensed as incurred.

Goodwill and Other Intangible Assets

Goodwill represents the excess of the purchase price of an acquired business over the fair value of the net tangible and intangible assets acquired. Other intangible assets primarily consist of customer relationships, trademarks and trade names, patents, and technology. Goodwill and other intangible assets acquired in a business combination are recorded at their estimated fair values at the date of acquisition.

Goodwill and other intangible assets with indefinite lives are not amortized but are tested for impairment annually in the fourth quarter of each year, or more frequently if events occur or circumstances change that would more likely than not reduce the fair value of a reporting unit or other intangible asset below its carrying amount. Other intangible assets with finite lives are amortized over their estimated useful lives using the straight-line method.

Investments

Investments in equity securities with readily determinable fair values are measured at fair value with changes in fair value recognized in earnings. Investments in equity securities without readily determinable fair values are measured at cost, adjusted for changes resulting from observable price changes in orderly transactions for the identical or similar investment of the same issuer, less impairment. Investments in debt securities are classified as available-for-sale and are measured at fair value with unrealized gains and losses recognized in other comprehensive income (loss).

Derivatives

We may enter into derivative instruments to manage our exposure to interest rate risk, foreign currency exchange rate risk and equity price risk. We recognize all derivatives as assets or liabilities at fair value. The accounting for changes in the fair value of a derivative depends on the intended use of the derivative and the resulting designation.

- Cash Flow Hedges. We may enter into derivative instruments designated as cash flow hedges to mitigate the risk of variability in cash flows attributable to changes in a benchmark interest rate associated with our floating rate debt. For derivatives designated as cash flow hedges, the effective portion of changes in the fair value of the derivative is recorded in accumulated other comprehensive income (loss) and subsequently reclassified into earnings when the hedged item affects earnings. Ineffective portions of changes in the fair value of cash flow hedges are recognized in earnings.

- Net Investment Hedges. We may enter into derivative instruments designated as net investment hedges to mitigate the risk of variability in foreign currency exchange rates attributable to our net investment in a foreign operation. For derivatives designated as net investment hedges, the effective portion of changes in the fair value of the derivative is recorded in accumulated other comprehensive income (loss) and subsequently reclassified into earnings when the hedged item affects earnings. Ineffective portions of changes in the fair value of net investment hedges are recognized in earnings.

- Undesignated Derivatives. We may enter into derivative instruments that are not designated as hedges to mitigate the risk of variability in foreign currency exchange rates attributable to certain foreign currency denominated assets and liabilities. Changes in the fair value of undesignated derivatives are recognized in earnings.

We do not enter into derivative instruments for trading or speculative purposes. We may enter into derivative instruments with financial institutions that are counterparties to our credit facilities and unsecured debt. We monitor the creditworthiness of counterparties, and we do not anticipate nonperformance by any counterparty.

Leases

We lease certain real estate, vehicles, information technology hardware, and other equipment under operating leases. We determine if an arrangement is a lease at inception. Operating lease assets and liabilities are recognized at the lease commencement date based on the present value of the future minimum lease payments over the lease term. We use our incremental borrowing rate to determine the present value of the future minimum lease payments unless the implicit rate in the lease is readily determinable. Our incremental borrowing rate is determined using a portfolio approach based on the rate of interest that we would have to pay to borrow on a collateralized basis over a similar term an amount equal to the lease payments in a similar economic environment. Lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Lease expense for minimum lease payments is recognized on a straight-line basis over the lease term.

We have elected the practical expedient to not separate lease components from non-lease components for all of our leases.

Business Combinations

We allocate the purchase price of acquired businesses to the tangible assets, liabilities and identifiable intangible assets acquired based on their estimated fair values. The excess of the purchase price over the amounts allocated to the assets and liabilities is recorded as goodwill. We engage third-party appraisal firms when management lacks the relevant experience to value the assets or liabilities. We typically engage third-party appraisal firms to value intangible assets and may engage them to value tangible assets. The valuation of intangible assets typically includes significant estimates and assumptions, including but not limited to, estimating future cash flows, developing appropriate discount rates, and determining the estimated useful lives of the assets. We may also use third-party appraisal firms to assist us in valuing assets subject to operating leases in which we are the lessor.

Foreign Currency Translation

Assets and liabilities of our foreign operations are translated into U.S. dollars using the exchange rates in effect at the balance sheet date. Revenues and expenses are translated using the average exchange rates during the period. Currency translation adjustments are recorded in accumulated other comprehensive income (loss).

Pension and Other Postretirement Benefits

We sponsor defined benefit pension plans and other postretirement benefit plans for certain employees. Our policy is to fund our pension plans in accordance with applicable regulations. We recognize the funded status of our pension and other postretirement benefit plans on the balance sheet. Actuarial gains and losses are recognized in accumulated other comprehensive income (loss) and subsequently amortized into earnings over the remaining service period of active employees.

Stock-Based Compensation

We grant stock-based compensation awards, including stock options, restricted stock units ("RSUs"), performance stock units ("PSUs"), and other stock-based awards. We recognize stock-based compensation expense based on the grant-date fair value of the awards. We recognize forfeitures as they occur.

Income Taxes

We are subject to income taxes in the U.S. and numerous foreign jurisdictions. Significant judgment is required in determining our provision for income taxes and in evaluating our tax positions. We establish reserves for uncertain tax positions when, despite our belief that our tax positions are fully supportable, there remains uncertainty as to whether certain positions will be sustained upon examination by tax authorities. We evaluate our uncertain tax positions on a quarterly basis and adjust the reserves in light of changing facts and circumstances, such as the progress of tax audits, lapses of applicable statutes of limitations, and changes in tax law.

Earnings Per Share

Basic earnings per share is calculated by dividing net income attributable to Danaher shareholders by the weighted-average number of common shares outstanding during the period. Diluted earnings per share is calculated by dividing net income attributable to Danaher shareholders by the weighted-average number of common shares outstanding during the period, plus the effect of dilutive potential common shares outstanding during the period using the treasury stock method. Dilutive potential common shares include outstanding stock options and stock-based awards.

Segment Reporting

We have three reportable segments: Life Sciences, Diagnostics and Environmental & Applied Solutions. Our segments are determined based on how our chief operating decision maker ("CODM") regularly reviews financial information to allocate resources and assess performance. Our CODM is our President and Chief Executive Officer.

Recently Adopted Accounting Pronouncements

In November 2023, the Financial Accounting Standards Board ("FASB") issued Accounting Standards Update ("ASU") 2023-07, *Segment Reporting (Topic 280): Improvements to Reportable Segment Disclosures*. This ASU requires enhanced disclosures about significant segment expenses that are regularly provided to the CODM and included within each reported measure of segment profit or loss. We adopted this ASU in the fourth quarter of 2024 and applied the guidance retrospectively to all prior periods presented in the financial statements. See Note 14 for additional information.

Recently Issued Accounting Pronouncements

In December 2023, the FASB issued ASU 2023-09, *Income Taxes (Topic 740): Improvements to Income Tax Disclosures*. This ASU requires enhanced disclosures about the rate reconciliation and income taxes paid. We will adopt this ASU in the fourth quarter of 2025 and apply the guidance prospectively. We do not expect the adoption of this ASU to have a material impact on our consolidated financial statements.

In November 2024, the FASB issued ASU 2024-03, *Income Statement – Reporting Comprehensive Income – Expense Disaggregation Disclosures (Subtopic 220-40): Disaggregation of Income Statement Expenses*. This ASU requires enhanced disclosures about certain expenses included within each reported measure of segment profit or loss. We will adopt this ASU in the fourth quarter of 2027 and apply the guidance prospectively. We do not expect the adoption of this ASU to have a material impact on our consolidated financial statements.

Note 2. Revenue

Disaggregation of Revenue

The following tables present our revenues disaggregated by geographic region, by product and service type, and by timing of revenue recognition:

	Year Ended December 31, 2024			
	Life Sciences	Diagnostics	Environmental & Applied Solutions	Total
Geographic region:				
United States	$ 2,222	$ 2,222	$ 2,222	$ 6,666
Europe	1,222	1,222	1,222	3,666
Asia	1,222	1,222	1,222	3,666
China	1,222	1,222	1,222	3,666
Rest of world	1,222	1,222	1,222	3,666
Total revenues	$ 7,110	$ 7,110	$ 7,110	$ 21,330
Product and service type:				
Instruments	$ 2,222	$ 2,222	$ 2,222	$ 6,666
Consumables	3,222	3,222	3,222	9,666
Software and services	1,666	1,666	1,666	5,000
Total revenues	$ 7,110	$ 7,110	$ 7,110	$ 21,330
Timing of revenue recognition:				
Goods transferred at a point in time	$ 5,444	$ 5,444	$ 5,444	$ 16,330
Services transferred over time	1,666	1,666	1,666	5,000
Total revenues	$ 7,110	$ 7,110	$ 7,110	$ 21,330

	Year Ended December 31, 2023			
	Life Sciences	Diagnostics	Environmental & Applied Solutions	Total
Geographic region:				
United States	$ 2,222	$ 2,222	$ 2,222	$ 6,666
Europe	1,222	1,222	1,222	3,666
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Rest of world	1,222	1,222	1,222	3,666
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Total revenues	$ 7,110	$ 7,110	$ 7,110	$ 21,330

	Year Ended December 31, 2022			
	Life Sciences	Diagnostics	Environmental & Applied Solutions	Total
Geographic region:				
United States	$ 2,222	$ 2,222	$ 2,222	$ 6,666
Europe	1,222	1,222	1,222	3,666
Asia	1,222	1,222	1,222	3,666
China	1,222	1,222	1,222	3,666
Rest of world	1,222	1,222	1,222	3,666
Total revenues	$ 7,110	$ 7,110	$ 7,110	$ 21,330
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Instruments	$ 2,222	$ 2,222	$ 2,222	$ 6,666
Consumables	3,222	3,222	3,222	9,666
Software and services	1,666	1,666	1,666	5,000
Total revenues	$ 7,110	$ 7,110	$ 7,110	$ 21,330
Timing of revenue recognition:				
Goods transferred at a point in time	$ 5,444	$ 5,444	$ 5,444	$ 16,330
Services transferred over time	1,666	1,666	1,666	5,000
Total revenues	$ 7,110	$ 7,110	$ 7,110	$ 21,330

Contract Balances

Contract assets and

revenues was primarily attributable to the divestiture of the Medical Isotopes business in July 2018, which resulted in a decrease in revenues of $25.4 million.

Total Cost of Revenues

The following table compares our cost of revenues by type for the year ended December 31, 2019 to the year ended December 31, 2018.

(thousands of U.S. dollars) **Cost of revenues for the year ended December 31,**	**2019**	2018	$ Change	% Change
Service	**$333,290**	$326,559	$ 6,731	2.1%
Product	**49,606**	62,338	(12,732)	(20.4)%
Total cost of revenues	**$382,896**	$388,897	$ (6,001)	(1.5)%

Total cost of revenues accounted for approximately 49.2% and 52.1% of our consolidated net revenues for the years ended December 31, 2019 and 2018, respectively.

Cost of service revenues

Cost of service revenues increased $6.7 million, or 2.1%, for the year ended December 31, 2019 as compared to the prior year. The increase was primarily attributable to increased labor and other variable costs associated with higher sterilization processing and testing volumes referenced above. These increases were partially offset by a $2.2 million reduction in costs as a result of the Willowbrook facility closure.

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Cost of product revenues

Cost of product revenues decreased $12.7 million, or 20.4%, for the year ended December 31, 2019 as compared to the prior year. The decrease was primarily attributable to the divestiture of the Medical Isotopes business in July 2018.

Operating Expenses

The following table compares our operating expenses for the year ended December 31, 2019 to the year ended December 31, 2018:

(thousands of U.S. dollars) **Operating expenses for the Year Ended December 31,**	**2019**	2018	$ Change	% Change
Selling, general and administrative expenses	**$147,480**	$133,363	$ 14,117	10.6%
Amortization of intangible assets	**58,562**	57,975	587	1.0%
Impairment of long-lived assets	**5,792**	34,981	(29,189)	(83.4%)
Impairment of GA-MURR intangible assets	—	50,086	(50,086)	(100%)
Total operating expenses	**$211,834**	$276,405	$(64,571)	(23.4%)

Operating expenses accounted for approximately 27.2% and 37.0% of our consolidated net revenues for the year ended December 31, 2019 and 2018, respectively.

SG&A

SG&A increased $14.1 million, or 10.6%, for the year ended December 31, 2019 as compared to the prior year. The increase was driven primarily by the following:

- a $10.0 million increase in share-based compensation expense related to the Class C Performance and Time Vesting Units, which vested in the third quarter of 2019 based on the achievement of the aggregate distributions to the A Unitholder partners and the approval of the Board of Sotera Health Topco Parent, L.P. for accelerated vesting;
- an $8.6 million increase in third party professional fees, including $6.5 million of legal expenses, associated with EO litigation; and
- $2.0 million of costs associated with preparation for an initial public offering.

The increase was partially offset by the following items which were expensed in 2018 but did not recur in 2019:

- a $4.3 million settlement with a vendor in our sterilization services; and
- $2.4 million of contract termination and exits costs related to GA-MURR (as described below).

Asset impairments

In 2019, we recorded long-lived asset impairment expenses due to the closure of our Willowbrook facility citing the unstable legislative and regulatory landscape in Illinois, as well as the expiration of the primary Willowbrook facility lease.

In 2018, we recorded aggregate long-lived asset and intangible asset impairments expense of $35.0 million and $50.1 million, respectively, primarily due to the withdrawal from the GA-MURR project in early April 2018, which resulted in impairment of the associated long-lived assets (approximately $32.7 million) and intangible asset related to our MURR supply agreement (approximately $50.1 million). As a result of a strategic review of the Medical Isotopes business and other factors, we withdrew from the GA-MURR project which was intended to replace our supply of Molybdenum-99 ("Mo-99") utilized in our former Medical Isotopes business.

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Amortization of intangible assets

Amortization of intangible assets was $58.6 million for the year ended December 31, 2019, or 1.0% above the prior year. The change was insignificant as there were no significant changes to our finite-lived intangible assets.

Interest Expense, Net

Interest expense, net increased $14.4 million, or 10.0%, for the year ended December 31, 2019 as compared to the prior year. The increase was largely due to an increase in the outstanding amount of the Term Loan (due to a $320.0 million incremental borrowing in August 2019), the debt refinancing in December 2019 and an increase in the LIBOR rate in 2019. The weighted average interest rate was 6.08% and 5.92% at December 31, 2019 and 2018, respectively.

Other Income, Net

Other income, net was $7.2 million for the year ended December 31, 2019 and $3.9 million for the year ended December 31, 2018. The fluctuation was primarily driven by changes in the fair value of the embedded derivatives in Nordion's contracts. We recorded an unrealized gain on embedded derivatives of $1.2 million for the year ended December 31, 2019 as compared to an unrealized loss on embedded derivatives of $1.0 million for the year ended December 31, 2018. Also, we recognized an additional $0.9 million of income associated with deferred income on a lease for the year ended December 31, 2019 versus the year ended December 31, 2018. The prior year only included approximately a half a year's income compared to a full year in 2019.

Provision for Income Taxes

Provision for income tax expense decreased $10.6 million, or 35.2%, to $19.5 million for the year ended December 31, 2019 as compared to $30.1 million in the prior year primarily due to the income tax expense recognized on the sale of assets related to the Medical Isotopes business during 2018.

Provision for income taxes for the year ended December 31, 2019 differed from the statutory rate of 21% primarily due to the foreign rate differential, the partial valuation allowance against our excess interest expense carryforward balance, GILTI expense referenced above and non-deductible expenses. Provision for income taxes for the year ended December 31, 2018 differed from the statutory rate of 21% primarily due to the foreign rate differential, GILTI expense referenced above, an increase to our tax liability associated with the TCJA toll charge on unremitted foreign earnings, and the impact of the TCJA tax rate reduction on our deferred tax balances.

Net Loss, Adjusted Net Income and Adjusted EBITDA

Net loss for the year ended December 31, 2019 was $20.4 million, as compared to $5.9 million for the year ended December 31, 2018. Adjusted Net Income was $100.4 million for the year ended December 31, 2019, as compared to $75.3 million for the year ended December 31, 2018, due to the factors described above. Adjusted EBITDA was $379.9 million for the year ended December 31, 2019, as compared to $340.6 million for the year ended December 31, 2018, due to the factors described above. Please see "Summary—Summary Historical Consolidated Financial and Other Data" for a reconciliation of Adjusted Net Income and Adjusted EBITDA to their most directly comparable financial measure calculated and presented in accordance with GAAP.

SEGMENT RESULTS OF OPERATIONS

We currently have three reportable segments: Sterigenics, Nordion and Nelson Labs. Our chief operating decision maker evaluates performance and allocates resources within our business based on Segment Income,

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which excludes certain items which are included in income (loss) before tax as determined in our consolidated statement of operations and comprehensive income (loss). The accounting policies for our reportable segments are the same as those for the consolidated Company.

Our Segments

Sterigenics

Our Sterigenics business provides outsourced terminal sterilization and irradiation services for the medical device, pharmaceutical, food safety and advanced applications markets using three major technologies: gamma irradiation, EO processing and E-beam irradiation.

Nordion

Our Nordion business is a global provider of Co-60 and gamma irradiators, which are the key components to the gamma sterilization process.

As a result of the time required to meet regulatory and logistics requirements for delivery of radioactive products, combined with accommodations made to our customers to minimize disruptions to their operations during the installation of Co-60, Nordion sales patterns can often vary significantly from one quarter to the next. However, timing-related impacts on our sales performance tend to be resolved within several quarters, resulting in more consistent performance over longer periods of time. In addition, sales of production irradiators occur infrequently and tend to be for larger amounts.

Results for our Nordion segment are also impacted by Co-60 supplier mix, harvest schedules and product and service mix.

Nelson Labs

Our Nelson Labs business provides outsourced microbiological and analytical chemistry testing and advisory services for the medical device and pharmaceutical industries.

Other

The Other reportable segment consisted of the Medical Isotopes business, a global supplier of medical isotopes for research, healthcare diagnostic and therapeutic uses, prior to its divestiture on July 30, 2018. We finalized the sale of the assets of the Medical Isotopes business for $213.0 million.

For more information regarding our reportable segments please refer to "Business" and the *Segment and Geographic Information* note to consolidated financial statements elsewhere in this prospectus.

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Segment Results for the nine months ended September 30, 2020 and 2019

The following tables compare the net revenues and segment income of our reportable segments for the nine months ended September 30, 2020 to the same period in the prior year:

	Nine Months Ended September 30, 2020	2019	$ Change	% Change
Net Revenues				
Sterigenics	**$ 363,954**	$ 350,387	$ 13,568	3.9%
Nordion	**86,034**	91,869	(5,835)	(6.4%)
Nelson Labs	**151,325**	142,586	8,739	6.1%
Segment Income				
Sterigenics	**$ 192,803**	$ 180,362	$ 12,441	6.9%
Nordion	**50,692**	49,698	994	2.0%
Nelson Labs	**63,302**	55,397	7,905	14.3%
Segment Income Margin				
Sterigenics	**53.0%**	51.5%		
Nordion	**58.9%**	54.1%		
Nelson Labs	**41.8%**	38.9%		

Net Revenues

Sterigenics net revenues were $364.0 million for the nine months ended September 30, 2020, an increase of $13.6 million, or 3.9%, as compared to the same prior year period. The increase reflects favorable impact from pricing of 4.2% and a 1.9% increase due to organic volume growth. This was partially offset by a 2.0% headwind associated with the temporary suspension of operations at our Atlanta facility and the permanent closure of the Willowbrook facility. Net revenues were also slightly negatively impacted by reduced demand for medical devices associated with elective procedures, which were deferred due to COVID-19.

Nordion net revenues were $86.0 million for the nine months ended September 30, 2020, a decrease of $5.8 million, or 6.4%, as compared to the same prior year period. Volume contributed to a decline of approximately 11.6% relating to timing of medical use Co-60 sales due to COVID-19 and the scheduled timing of industrial use Co-60 harvest and customer deliveries, partially offset by favorable pricing of 3.8%.

Nelson Labs net revenues were $151.3 million for the nine months ended September 30, 2020, an increase of $8.7 million, or 6.1%, as compared to the same prior year period, primarily driven by an 8.9% increase in demand for testing services related to personal protective equipment used to provide protection against COVID-19, partially offset by a reduction in other lab testing volumes.

Segment Income

Sterigenics segment income was $192.8 million for the nine months ended September 30, 2020, an increase of $12.4 million, or 6.9%, as compared to the same prior year period. The 6.9% increase in segment margin was primarily a result of favorable pricing referenced above.

Nordion segment income was $50.7 million for the nine months ended September 30, 2020, an increase of $1.0 million, or 2.0%, as compared to the same prior year period. The increase in segment income was primarily due to a decrease in costs of medical use Co-60 attributed to COVID-19 disruptions of $4.1 million and favorable mix of Co-60 suppliers of $3.6 million. This was partially offset by the impact from the decline in sales referenced above.

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Nelson Labs segment income was $63.3 million for the nine months ended September 30, 2020, an increase of $7.9 million, or 14.3%, as compared to the same prior year period, primarily due to the increase in sales relating to personal protective equipment referenced above.

Segment Results for the years ended December 31, 2019 and 2018

The following tables compare segment net revenue and segment income for the year ended December 31, 2019 to the year ended December 31, 2018:

	Year Ended December 31, 2019	2018	$ Change	% Change
Net Revenues				
Sterigenics	**$471,708**	$435,733	$ 35,975	8.3%
Nordion	**116,165**	118,829	(2,664)	(2.2%)
Nelson Labs	**190,454**	166,217	24,237	14.6%
Other	—	25,370	(25,370)	(100%)
Segment Income				
Sterigenics	**$244,904**	$216,490	$ 28,414	13.1%
Nordion	**62,196**	60,288	1,908	3.2%
Nelson Labs	**72,832**	58,915	13,917	23.6%
Other	—	4,944	(4,944)	(100%)
Segment Income margin				
Sterigenics	**51.9%**	49.7%		
Nordion	**53.5%**	50.7%		
Nelson Labs	**38.2%**	35.4%		
Other	—	19.5%		

Net Revenues

Sterigenics net revenues were $471.7 million for the year ended December 31, 2019, an increase of $36.0 million, or 8.3%, as compared to the prior year. The increase was driven by favorable impacts from organic volume growth and pricing of 6.4% and 3.8%, respectively. This was partially offset by a 3.3% headwind associated with the closure of the Willowbrook facility.

Nordion net revenues were $116.2 million for the year ended December 31, 2019, a decrease of $2.7 million, or 2.2%, as compared to the prior year. The decrease reflects a 3.8% impact from lower volumes of industrial use Co-60 and a 1.6% impact from the weakening of the Canadian dollar compared to the U.S. dollar in 2019 as compared to the prior year, partially offset by a 3.7% impact from favorable pricing.

Nelson Labs net revenues were $190.5 million for the year ended December 31, 2019, an increase of $24.2 million, or 14.6%, as compared to the prior year. The increase is primarily attributable to a 6.6% impact from the acquisition of Gibraltar Laboratories, coupled with favorable pricing and growth in organic volumes of 3.9% and 3.0%, respectively.

We divested the Medical Isotopes business in July 2018 and as a result, no sales were recorded for the year ended December 31, 2019, as compared to net revenues of $25.4 million for the year ended December 31, 2018.

Segment Income

Sterigenics segment income was $244.9 million for the year ended December 31, 2019, an increase of $28.4 million, or 13.1%, as compared to the prior year. The 2.2% increase in segment margin was driven by improved operating leverage as facilities operate at higher levels of utilization due to organic volume growth referenced above as well as the favorable pricing referenced above.

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Nordion segment income was $62.2 million for the year ended December 31, 2019, an increase of $1.9 million, or 3.2%, as compared to the prior year. The increase in segment income was driven by the favorable pricing impact referenced above.

Nelson Labs segment income was $72.8 million for the year ended December 31, 2019, an increase of $13.9 million, or 23.6%, as compared to the prior year. The increase in segment income was driven by the acquisition of Gibraltar Laboratories, coupled with favorable pricing and improved operating leverage due to an increase in organic volume as referenced above.

LIQUIDITY AND CAPITAL RESOURCES

The primary sources of liquidity for our business are cash flows from operations and borrowings under our credit facilities. We expect that our primary liquidity requirements will be to service our debt, to invest in fixed assets to build and/or expand existing facilities, to fund selective business acquisitions, make capital expenditures and for other general corporate purposes.

As of September 30, 2020, we had $108.4 million of cash and cash equivalents, of which $0.2 million was restricted cash. This is an increase of $45.4 million from the balance at December 31, 2019. Our foreign subsidiaries held cash of approximately $84.7 million at September 30, 2020 and $43.4 million at December 31, 2019, to meet their liquidity needs. No material restrictions exist to accessing cash held by our foreign subsidiaries.

Our capital expenditure program is a component of our long-term strategy. This program includes, among other things, investments in new and existing facilities, business expansion projects, Co-60 used by Sterigenics at its gamma irradiation facilities and information technology enhancements. During 2019, our capital expenditures amounted to $57.3 million, compared to $72.6 million in 2018. Through the first nine months of 2020, our capital expenditures were $33.6 million. This amount includes approximately $5.0 million related to facility enhancements at EO sterilization facilities within our Sterigenics segment. Our capital expenditures through the first nine months of 2020 were lower than initially planned as a result of deferrals due largely to the COVID-19 pandemic.

In 2021, we expect to continue to invest in facility expansions, ongoing routine maintenance for existing facilities, and acquisition of Co-60 for use by our Sterigenics segment in its gamma irradiation facilities. In addition, we expect to invest in special projects related to development of new Co-60 supply sources and facility enhancements at our EO sterilization facilities. We currently expect our capital expenditures to be higher in 2021 than in recent years and remain elevated over the next several years as we execute on those special projects in addition to our normal growth and maintenance related investments. For 2021, considering our typical growth and maintenance projects, along with the special projects, we expect capital expenditures to exceed $100.0 million, approximately $12 million to $17 million of which relates to enhancements at EO sterilization facilities.

We may choose to temporarily defer planned capital expenditures due to fluctuations in demand for our products and services resulting from the COVID-19 pandemic and the needs of our customers.

We expect that cash on hand, operating cash flows and amounts available under our credit facilities will provide sufficient working capital to operate our business, make expected capital expenditures, meet litigation costs and meet foreseeable liquidity requirements, including debt service on our long-term debt, for at least the next twelve months. Subject to market conditions, we are considering upsizing our Revolving Credit Facility in the fourth quarter of 2020 to increase capacity under the facility by approximately $100-150 million. As of September 30, 2020, there were no borrowings on the Revolving Credit Facility. We expect to use cash provided by operations in excess of amounts needed for capital expenditures and required debt repayments to reduce our debt or to fund potential acquisitions, or for other general corporate purposes. Our ability to meet future working capital, capital expenditures and debt service requirements will depend on our future financial performance, which will be affected by a range of macroeconomic, competitive and business factors, particularly interest rates and changes in our industry, many of which are outside of our control.

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Cash Flow Information

Nine months ended September 30, 2020 compared to nine months ended September 30, 2019

(thousands of U.S. dollars)	**2020**	2019
Net Cash Provided by (Used in):		
Operating activities	**$ 98,740**	$ 138,974
Investing activities	**(139,920)**	(36,636)
Financing activities	**83,961**	(108,811)
Effect of foreign currency exchange rate changes on cash and cash equivalents	**2,639**	(4,030)
Net increase in cash and cash equivalents, including restricted cash, during the period	**$ 45,420**	$ (10,503)

Operating activities

Cash flows provided by operating activities decreased $40.3 million to net cash provided of $98.7 million in the nine months ended September 30, 2020 compared to $139.0 million for the nine months ended September 30, 2019. The primary driver was higher net interest expense in 2020 of $52.6 million, driven by a higher weighted average interest rate and a larger balance of debt outstanding.

Investing activities

Historically, our principal uses of cash for investing activities were related to acquisitions of property, plant and equipment, including Co-60 purchases, and business acquisitions. These investments support our growth activities, including capacity expansions and expenditures that extend the life or productivity of existing assets.

For the nine months ended September 30, 2020 cash used by investing activities increased $103.3 million to $139.9 million compared to $36.6 million for the nine-month period ended September 30, 2019. The increase is attributable to the July 2020 acquisition of Iotron.

Financing activities

Net cash provided by financing activities was $84.0 million for the nine months ended September 30, 2020 as compared to net cash used of $108.8 million for the nine months ended September 30, 2019. Proceeds of borrowings totaling $150.0 million were partially offset by payments on debt. In March 2020, we borrowed $50.0 million on our revolving credit facility to increase our cash balance in response to concerns regarding the COVID-19 impact to the financial markets; the $50.0 million was repaid in June 2020. In July 2020 we issued $100.0 million of First Lien Notes to fund the acquisition of Iotron. The primary use of cash in the nine months ended September 30, 2019 was dividends to shareholders and principal payments on debt.

Year ended December 31, 2019 compared to the year ended December 31, 2018

(thousands of U.S. dollars)	**2019**	2018
Net Cash Provided by (Used in):		
Operating activities	**$ 149,041**	$ 119,563
Investing activities	**(57,257)**	96,638
Financing activities	**(126,030)**	(191,857)
Effect of foreign currency exchange rate changes on cash and cash equivalents	**485**	(3,676)
Net increase (decrease) in cash and cash equivalents, including restricted cash, during the period	**$ (33,761)**	$ 20,668

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Operating activities

Cash flows provided by operating activities increased $29.4 million to net cash provided of $149.0 million in the year ended December 31, 2019 compared to $119.6 million for the prior year. The higher net loss in 2019 was impacted by a non-operating loss on extinguishment of debt of $30.2 million, lower deferred income taxes of $26.3 million and a non-cash impairment of long-lived assets of $5.8 million. This compares to non-cash impairments of $85.1 million in 2018 that were more than offset by a gain on the sale of the Medical Isotopes business of $95.9 million. This was partially offset by a $12.4 million decrease in net cash from operating assets and liabilities, resulting in a cash outflow of $8.4 million in the year ended December 31, 2019 compared to $4.0 million of cash inflows in the prior year. The remainder of the variance is due to a $10.1 million decrease in unrealized foreign exchange losses.

Investing activities

For the year ended December 31, 2019 cash used by investing activities was $57.3 million attributable to purchases of property, plant and equipment, compared to cash provided by investing activities of $96.6 million in the prior year. Cash from investing activities for the year ended December 31, 2018 was a direct result of proceeds from the sale of the Medical Isotopes business of $213.0 million, partially offset by the acquisition of Nelson Fairfield of $50.6 million and capital expenditures of $72.6 million.

Financing activities

Net cash used in financing activities was $126.0 million for the year ended December 31, 2019 as compared to $191.9 million for the year ended December 31, 2018. Our principal uses of cash for financing activities in 2019 were $2,561.1 million in payments on debt primarily in conjunction with the December 2019 refinancing as well as dividends and distributions to our sole stockholder of $691.2 million. This was partially offset by proceeds from borrowings totaling $3,144.6 million.

Debt Facilities

Senior Secured Credit Facilities

On December 13, 2019, Sotera Health Holdings, LLC ("SHH"), our wholly owned subsidiary, entered into new senior secured first lien credit facilities (the "Senior Secured Credit Facilities") and settled its previously outstanding term loan and senior notes.

The Senior Secured Credit Facilities consist of both a senior secured first lien term loan (the "Term Loan") and a $190 million senior secured first lien revolving credit facility (the "Revolving Credit Facility"). The Term Loan matures on December 13, 2026, and the Revolving Credit Facility matures on December 13, 2024. The Senior Secured Credit Facilities also provide SHH the right at any time and under certain conditions to request incremental term loans or incremental revolving credit commitments based on a formula defined in the Senior Secured Credit Facilities. As of September 30, 2020, total borrowings under the Term Loan were $2,109.4 million.

Beginning on June 30, 2020, the Term Loan is paid in equal quarterly installments in aggregate annual amounts equal to 1.00% of the Term Loan original principal amount, while the remaining balance matures on December 13, 2026. The Term Loan may bear interest at LIBOR or an alternate base rate ("ABR") subject to a 1.00% floor plus, an incremental margin of 4.50% in the case of LIBOR loans and 3.50% in the case of ABR loans. The weighted average interest rate on borrowings under the Term Loan at September 30, 2020 was 5.50%.

As of September 30, 2020, and December 31, 2019, capitalized debt issuance costs totaled $4.3 million and $4.7 million, respectively, and debt discounts totaled $39.3 million and $44.0 million, respectively, related to the Senior Secured Credit Facilities. Such costs are recorded as a reduction of debt on our consolidated balance sheets and amortized as a component of interest expense over the term of the debt agreement.

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Borrowings under the Revolving Credit Facility bear interest at a rate per annum equal to an applicable margin, plus, at our option, either (a) an ABR or (b) a LIBOR rate. The applicable margin under the Revolving Credit Facility may be reduced by reference to a leverage-based pricing grid with step-downs of 0.25% at a specified senior secured first lien net leverage ratio. In addition to paying interest on any outstanding borrowings under the Revolving Credit Facility, SHH is required to pay a commitment fee to the lenders under the Revolving Credit Facility in respect of the unutilized commitments thereunder and customary letter of credit fees. The Revolving Credit Facility contains a maximum senior secured first lien net leverage ratio covenant of 9.00 to 1.00, tested on the last day of each fiscal quarter if, on the last day of such fiscal quarter, the sum of (i) the aggregate principal amount of the revolving loans then outstanding under the Revolving Credit Facility, plus (ii) the aggregate amount of letter of credit ("LC") disbursements that have not been reimbursed within two business days following the end of the fiscal quarter, exceeds the greater of $76.0 million and 40.0% of the aggregate principal amount of the revolving commitments then in effect. Although this covenant did not apply as the conditions were not met, as of September 30, 2020 the first lien net leverage ratio, as defined in the Revolving Credit Facility, was approximately 5.10 to 1.00.

As of September 30, 2020, there were no borrowings on the Revolving Credit Facility. SHH borrowed $50.0 million on the Revolving Credit Facility during the first quarter of 2020 which was repaid in the second quarter of 2020. The interest rate on the borrowings under the Revolving Credit Facility averaged approximately 5.0%.

The Senior Secured Credit Facilities contain additional covenants that, among other things, restrict, subject to certain exceptions, our ability and the ability of our restricted subsidiaries to engage in certain activities, such as incur indebtedness or permit to exist any lien on any property or asset now owned or hereafter acquired, as specified in the debt facility. The Senior Secured Credit Facilities also contain certain customary affirmative covenants and events of default, including upon a change of control. As of September 30, 2020, we were in compliance with all the Senior Secured Credit Facilities covenants.

All of SHH's obligations under the Senior Secured Credit Facilities are unconditionally guaranteed by the Company and each existing and subsequently acquired or organized direct or indirect wholly-owned domestic restricted subsidiary of SHH, with customary exceptions including, among other things, where providing such guarantees is not permitted by law, regulation or contract or would result in material adverse tax consequences. All obligations under the Senior Secured Credit Facilities, and the guarantees of such obligations, are secured by substantially all of the assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the Senior Secured Credit Facilities.

Outstanding letters of credit are collateralized by encumbrances against the Revolving Credit Facility and the collateral pledged thereunder, or by cash placed on deposit with the issuing bank. As of September 30, 2020, the Company had $64.3 million of letters of credit issued against the Revolving Credit Facility, resulting in total availability under the Revolving Credit Facility of $125.7 million.

First Lien Notes

On July 31, 2020, SHH issued $100.0 million aggregate principal amount of senior secured first lien notes due 2026 (the "First Lien Notes"), which mature on December 13, 2026. The First Lien Notes bear interest at a rate equal to LIBOR subject to a 1.00% floor plus 6.00% per annum. Interest is payable on a quarterly basis with no principal due until maturity. The weighted average interest rate on the First Lien Notes at September 30, 2020 was 7.00%.

SHH is entitled to redeem all or a portion of the First Lien Notes, at any time and from time to time, subject to certain premiums depending on the date of redemption: any time on or prior to July 31, 2021, a customary make-whole premium applies and, thereafter, specified premiums that decline to zero apply (in each case as described in the indenture governing the First Lien Notes).

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All of SHH's obligations under the First Lien Notes are unconditionally guaranteed by the Company and each existing and subsequently acquired or organized direct or indirect wholly-owned domestic restricted subsidiary of SHH, with customary exceptions including, among other things, where providing such guarantees is not permitted by law, regulation or contract or would result in material adverse tax consequences. All obligations under the First Lien Notes, and the guarantees of such obligations, are secured by substantially all of the assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the First Lien Notes. Such collateral is substantially the same collateral that secures the Senior Secured Credit Facilities and Second Lien Notes. Such collateral securing the First Lien Notes ranks pari passu with that of the Senior Secured Credit Facilities and has priority over the collateral securing the Second Lien Notes.

At September 30, 2020, capitalized debt issuance costs were $0.7 million and debt discounts were $2.9 million, respectively, related to the First Lien Notes, which are recorded as a reduction of debt on our consolidated balance sheets and amortized into interest expense over the term of the debt agreement.

Second Lien Notes

On December 13, 2019, SHH issued $770.0 million aggregate principal amount of senior secured second lien notes due 2027 (the "Second Lien Notes"), which mature on December 13, 2027. The Second Lien Notes bear interest at a rate equal to LIBOR subject to a 1.00% floor plus 8.00% per annum. The weighted average interest rate on the Second Lien Notes at September 30, 2020 was 9.00%.

SHH is entitled to redeem all or a portion of the Second Lien Notes, at any time and from time to time, subject to certain premiums depending on the date of redemption: any time on or prior to December 13, 2020, a customary make-whole premium applies and, thereafter, specified premiums that decline to zero apply (in each case as described in the indenture governing the Second Lien Notes). In addition, under certain circumstances, such as an initial public offering or certain changes of control, SHH has certain additional redemption rights (as described in the indenture governing the Second Lien Notes).

All of SHH's obligations under the Second Lien Notes are unconditionally guaranteed by the Company and each existing and subsequently acquired or organized direct or indirect wholly-owned domestic restricted subsidiary of SHH, with customary exceptions including, among other things, where providing such guarantees is not permitted by law, regulation or contract or would result in material adverse tax consequences. All obligations under the Second Lien Notes, and the guarantees of such obligations, are secured by substantially all of the assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the Second Lien Notes. The combination of such collateral secures the Senior Secured Credit Facilities and the First Lien Notes, and any security interest or lien on shared collateral securing the Senior Secured Credit Facilities or the First Lien Notes shall have priority over any security interest or lien on shared collateral securing the Second Lien Notes.

At September 30, 2020 and December 31, 2019, capitalized debt issuance costs were $1.6 million and $1.8 million and debt discounts were $21.0 million and $23.2 million, respectively, related to the Second Lien notes, which are recorded as a reduction of debt on our consolidated balance sheets and amortized into interest expense over the term of the debt agreement.

2019 Refinancing

In conjunction with the December 2019 refinancing, the company redeemed, in full, the previously outstanding $1,659.0 million aggregate Term Loan due 2022, its $450.0 million Senior Notes due 2023 ("Senior Notes") and $425.0 million Senior PIK ("paid in kind") Toggle Notes due 2021. In total, we accelerated the amortization of $13.4 million of debt issuance and discount costs and recognized $14.6 million representing premiums paid in connection with the early extinguishment of the Senior Notes. In connection with the refinancing, we also recognized an additional $2.1 million of expense related to debt issuance and discount costs.

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We recognized these costs within the loss on extinguishment of debt in our consolidated statements of operations and comprehensive income (loss). Any additional proceeds were used to fund a dividend to our sole stockholder of $275.0 million.

CONTRACTUAL OBLIGATIONS AND COMMERCIAL COMMITMENTS

The following table describes our significant contractual cash obligations as of December 31, 2019:

	Payments due by period				
(thousands of U.S. dollars)	**Total**	**Less than 1 Year**	**2-3 Years**	**4-5 Years**	**More than 5 Years**
Long-term debt (a)	**$ 4,387,911**	$ 235,566	$ 444,397	$ 446,296	$ 3,261,652
Lease obligations:					
Capital (b)	**31,172**	1,288	2,204	2,506	25,174
Operating (c)	**60,173**	11,782	19,435	10,698	18,258
Supply and service obligations (d)	**1,619,045**	38,983	64,657	70,616	1,444,789
Direct material costs (e)	**28,185**	13,144	13,651	1,139	251
Total	**$ 6,126,486**	**$ 300,763**	**$ 544,344**	**$ 531,255**	**$ 4,750,124**

(a) Represents principal and interest payments on the Senior Secured Credit Facilities and Second Lien Notes. We have calculated the interest payments on the Senior Secured Credit Facilities and Second Lien Notes at an average of 6.1% (the LIBOR floor plus 4.5%) and 9.7% (the LIBOR floor plus 8.00%), respectively. Subsequent to December 31, 2019, SHH issued $100.0 million of First Lien Notes, which are not reflected in the table above.

(b) Consists of payments, net of interest, under our capital leases for various equipment and facilities.

(c) Represents minimum lease payments under our operating leases for several of our facilities and other property and equipment, net of sublease payments. We elected to early adopt ASU 2016-02 Leases as of January 1, 2020, resulting in the recognition of right-of-use assets and lease liabilities of $47.4 million and $48.9 million, respectively on our consolidated balance sheet.

(d) Consists of our best estimate of our obligations under various supply and service agreements, primarily Co-60, that are enforceable and legally binding on us.

(e) Consists of our best estimate of our obligations to purchase EO gas under commitments that are enforceable and legally binding on us. We have excluded contracts to purchase energy and other supplies, which generally have terms of one year or less. Our contract to purchase EO gas in the U.S. requires us to purchase all our requirements from our supplier, and our contracts to purchase EO gas outside the U.S. generally require that we purchase a specified percentage of our requirements for our operations in the countries covered by those contracts. Although our EO gas contracts generally do not contain fixed minimum purchase volumes, we have calculated the amounts set forth in the table above based on the percentage of our requirements specified in the contracts and our budgeted purchase volumes for those periods.

OFF-BALANCE SHEET ARRANGEMENTS

We do not have any relationships with unconsolidated entities or financial partnerships, such as entities referred to as structured finance or special purpose entities, which are established for the purpose of facilitating off-balance sheet arrangements or other contractually narrow or limited purposes. We do not have any off-balance sheet arrangements that have or are reasonably likely to have a current or future effect on the financial condition, changes in financial condition, revenues or expenses, results of operations, liquidity or capital expenditures or capital resources that are material to investors other than operating leases.

At December 31, 2019 and 2018, we had $92.9 million and $90.5 million, respectively, of standby letters of credit, surety bonds and other bank guarantees outstanding, primarily in favor of local and state licensing

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authorities for future decommissioning costs, and to support the unfunded portion of our pension obligation. We are obligated to provide financial assurance to local and state licensing authorities for possible future decommissioning costs associated with the various facilities that hold Co-60. At December 31, 2019 and 2018, $49.3 million and $47.8 million, respectively, of the standby letters of credit and surety bonds referenced above were outstanding in favor of the various local and state licensing authorities in the event we defaulted on our decommissioning obligation.

QUANTITATIVE AND QUALITATIVE DISCLOSURES ABOUT MARKET RISK

We are exposed to market risks, primarily from changes in commodity prices, interest rates and foreign currency exchange, in the ordinary course of business.

Commodity Price Risk

We purchase our supply of EO gas from various suppliers around the world, but in the United States there is a sole supplier for EO gas used for applications relevant to our business. We are exposed to market risk based on fluctuations in the price of EO gas.

We actively seek to manage the risk of fluctuating prices through long-term supply and service contracts. Most of our Sterigenics customer contracts contain provisions that permit us to pass all or a portion of our supply price increases to our customers, though some of our contracts do not contain these provisions. Even for contracts that do contain these provisions, there could be at least a brief lag between when we incur increased costs for supplies and when we can pass through these costs to our customers. In addition, even when we are contractually permitted to pass on price increases, we may decide not to do so to preserve our sales volumes.

Regulatory Risk

We are subject to extensive regulatory requirements and routine regulatory audits, and we must receive permits, licenses, and/or regulatory clearance or approval for our operations. Regulatory agencies may refuse to grant approval or clearance or may require the provision of additional data, and regulatory processes may be time consuming and costly, and their outcome may be uncertain in certain of the countries in which we operate. Regulatory agencies may also change policies, adopt additional regulations or revise existing regulations, each of which could impact our ability to provide our services. Our failure to comply with the regulatory requirements of these agencies may subject us to administratively or judicially imposed sanctions. These sanctions include, among others, warning letters, fines, civil penalties, criminal penalties, injunctions, debarment, product seizure or detention and total or partial suspension of operations. The failure to receive or maintain, or delays in the receipt of, relevant U.S. or international regulatory qualifications could have a material adverse effect on our business, prospects, financial condition or results of operations.

Interest Rate Risk

We are subject to interest rate risk on borrowings under our outstanding borrowings as the borrowings bear interest at floating rates. In October 2017, the company entered into two interest rate cap agreements with a total notional amount of $400.0 million for a total option premium of $0.6 million. The interest rate cap agreements terminated on September 30, 2020.

In June 2020, we entered into two interest rate cap agreements with notional amounts of $1,000.0 million and $500.0 million, respectively, for a total option premium of $0.3 million. These terminate on August 31, 2021 and February 28, 2022, respectively. The interest rate caps limit our cash flow exposure related to the LIBOR base rate under a portion of our variable rate borrowings to 1.0%.

During the third quarter of 2019, we entered into two interest rate swap agreements to hedge our exposure to interest rate movements and to manage interest expense related to our outstanding variable-rate debt. The

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notional amount of the interest rate swap agreements totaled $1,000.0 million and terminated on August 31, 2020. These swaps were designated as hedges against the changes in cash flows attributable to changes in LIBOR, the benchmark interest rate being hedged. We received interest at one-month LIBOR and paid a fixed interest rate under the terms of the swap agreement. After applying the effects of interest rate caps referenced above, a 1.0% increase in the interest rate under our outstanding obligations as of September 30, 2020, of $2,979.9 million, would increase interest expense by approximately $3.5 million per year.

See the *Financial Instruments and Financial Risk* note to consolidated financial statements included elsewhere in this prospectus for a summary of the activity of the interest rate caps for the periods presented.

Foreign Currency Risk

We are exposed to market risk from fluctuations in foreign currencies. We present our consolidated financial statements in U.S. dollars. Consequently, increases or decreases in the value of the U.S. dollar relative to the non-U.S. dollar functional currencies of the countries in which we operate may affect the value of these in our consolidated financial statements, even if their value has not changed in their local currency. We translate the financial statements of subsidiaries whose local currency is their functional currency to their U.S. dollar equivalents at end-of-period exchange rates for assets and liabilities and at average exchange rates for revenues and expenses. These translations could significantly affect the comparability of our results between financial periods and/or result in significant changes to the carrying value of our assets and liabilities. Translation adjustments are recorded as a component of accumulated other comprehensive income (loss) within equity.

Our results of operations are impacted by currency exchange rate fluctuations to the extent that we are unable to match net revenues received in foreign currencies with expenses incurred in the same currency. Transaction gains and losses arising from fluctuations in currency exchange rates on transactions denominated in currencies other than the functional currency are recognized in the consolidated statements of operations and comprehensive income (loss) as foreign exchange (gain) loss.

Approximately 39.6% of our revenues and 45.4% of our consolidated total assets as of September 30, 2020 are derived from operations outside the United States. Holding other variables constant (such as interest rates and debt levels), if the U.S. dollar had appreciated by 10% against the foreign currencies used by our operations in the combined nine months ended September 30, 2020, revenues would have been reduced by approximately $23.8 million and gross profit by approximately $11.5 million.

CRITICAL ACCOUNTING POLICIES AND ESTIMATES

The following subsections describe our most critical accounting policies, estimates, and assumptions. Our discussion of critical accounting policies and estimates is intended to supplement, not duplicate, our summary of significant accounting policies so that readers will have greater insight into the uncertainties involved in these areas. Our accounting policies are more fully described in the *Significant Accounting Policies* note to consolidated financial statements included elsewhere in this prospectus.

The preparation of consolidated financial statements and related disclosures in conformity with accounting principles generally accepted in the United States of America requires management to make judgments, estimates and assumptions at a specific point in time and in certain circumstances that affect amounts reported in the accompanying consolidated financial statements. In preparing these consolidated financial statements, management has made its best estimates and judgments of certain amounts, giving due consideration to materiality. The application of accounting policies involves the exercise of judgment and use of assumptions as to future uncertainties and, as a result, actual results could differ from these estimates.

Under the Jumpstart Our Business Startups Act of 2012, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. As an

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emerging growth company, we have elected to take advantage of the extended transition period for complying with new or revised accounting standards until those standards would otherwise apply to private companies or at which time we conclude it is appropriate to avail ourselves of early adoption provisions of applicable standards. As a result, our results of operations and financial statements may not be comparable to the results of operations and financial statements of other companies who have adopted the new or revised accounting standards.

Revenue Recognition. The majority of our sales agreements contain performance obligations satisfied at a point in time when control of promised goods or services have transferred to our customers. For agreements with multiple performance obligations, judgment is required to determine whether performance obligations specified in these agreements are distinct and should be accounted for as separate revenue transactions for recognition purposes. In these types of agreements, we generally allocate sales price to each distinct obligation based on the relative price of each item sold in stand-alone transactions. Revenues recognized over time are generally accounted for using an input measure to determine progress completed as of the end of the period.

Refunds, returns, warranties and other related obligations are not material to any of our business units, nor do we incur material incremental costs to secure customer contracts.

The Sterigenics segment provides outsourced terminal sterilization and irradiation services for the medical device, pharmaceutical, food safety and advanced applications markets. We typically have multi-year service contracts with our significant customers, and these sales contracts are primarily based on a customer's purchase order. Given the relatively short turnaround times, performance obligations are generally satisfied at a point-in-time upon the completion of sterilization or irradiation processing once approved by our quality assurance process at which time the service is complete.

The Nordion segment is a provider of Co-60 and gamma irradiators, which are key components to the gamma sterilization process. Revenue from the sale of Co-60 radiation sources is recognized at a point-in-time upon satisfaction of our performance obligations for delivery/installation and disposal of existing sources. Revenue from the production of equipment in our Nordion segment is recognized over time using an input measure of costs incurred and is immaterial to the overall business.

The Nelson Labs segment provides outsourced microbiological and analytical chemistry testing and advisory services for the medical device and pharmaceutical industries. We provide our customers mission-critical lab testing services, which assess the product quality, effectiveness, patient safety and end-to-end sterility of products. These services are necessary for our customers' regulatory approvals, product releases and ongoing product performance evaluations. Nelson Labs services are generally provided on a fee-for-service or project basis, and we recognize revenues over time using an input measure of time incurred to determine progress completed at the end of the period.

We do not capitalize sales commissions as substantially all of our sales commission programs have an amortization period of one year or less. Furthermore, costs to fulfill a contract are not material.

Provisions for discounts, rebates to customers, and other adjustments are provided for as reductions in net revenues in the period the related sale was recorded. Shipping and handling charges billed to customers are included in net revenues, and the related shipping and handling costs are included in cost of net revenues on the consolidated statements of operations and comprehensive income (loss). Taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction, that are collected by us from a customer, are excluded from net revenue.

Payment terms vary by the type and location of the customer and the products or services offered. Generally, the time between when revenue is recognized and when payment is due is not significant. We do not evaluate whether the selling price contains a financing component for contracts that have a duration of less than one year.

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Long-Lived Assets Other than Goodwill. We review long-lived assets, including finite-lived intangibles for impairment whenever events or circumstances indicate that the carrying amount of the assets may be impaired. Events or circumstances which would result in an impairment assessment include operating losses, a significant change in the use of an asset, or the planned disposal or sale of the asset. When we evaluate assets for impairment, we make certain judgments and estimates, including interpreting current economic indicators and market valuations, evaluating our strategic plans with regards to operations, historical and anticipated performance of operations, and other factors. If we incorrectly anticipate these factors, or unexpected events occur, our operating results could be materially affected. The asset or asset group would be considered impaired when the future net undiscounted cash flows generated by the asset or asset group are less than its carrying value.

An impairment loss would be recognized based on the amount by which the carrying value of the asset or asset group exceeds its estimated fair value. We provide additional information about our long-lived assets other than goodwill in notes titled *Property, Plant and Equipment and Capital Leases* and *Goodwill and Other Intangible Assets* of our consolidated financial statements included elsewhere in this prospectus.

Goodwill and Other Indefinite-Lived Intangibles. Assets and liabilities of the business acquired are accounted for at their estimated fair values as of the acquisition date. Any excess of the cost of the acquisition over the fair value of the net tangible and intangible assets acquired is recorded as goodwill. We generally supplement management expertise with valuation specialists in performing appraisals to assist us in determining the fair values of assets acquired and liabilities assumed. These valuations require us to make estimates and assumptions, especially with respect to intangible assets. We generally amortize our intangible assets over their useful lives with the exception of indefinite lived intangible assets. We do not amortize goodwill, but we evaluate it annually for impairment. Therefore, the allocation of the purchase price to intangible assets and goodwill has a significant impact on future operating results.

Goodwill and other indefinite-lived intangible assets, primarily certain regulatory licenses and tradenames, are tested for impairment annually as of October 1. If circumstances change during interim periods between annual tests that would indicate that the carrying amount of such assets may not be recoverable, the company would test such assets at an interim date for impairment. Factors which would necessitate an interim impairment assessment include prolonged negative industry or economic trends and significant underperformance relative to historical or projected future operating results.

We performed a quantitative assessment of all reporting units (Sterigenics, Nordion and Nelson Labs) as of October 1, 2019. The fair value of each reporting unit was calculated using a discounted cash flow analysis which was dependent on subjective market participant assumptions determined by management. Assumptions used in the analyses included discount rates and projected operating cash flows. Estimates of future cash flows are based upon relevant data at a point-in-time, are subject to change, and could vary from actual results. The estimated fair value of each reporting unit exceeded its carrying amount (including goodwill) by a minimum of 60% as of October 1, 2019. No factors were identified that would result in the potential impairment to the indefinite-lived intangible assets. In addition, there have been no significant events or circumstances that occurred since the annual assessment date of October 1 that would change the conclusions reached above. We provide additional information about our goodwill and other indefinite-lived intangible assets in the *Goodwill and Other Intangible Assets* note to consolidated financial statements included elsewhere in this prospectus.

Asset Retirement Obligations ("ARO"). ARO are legal obligations associated with the retirement of long-lived assets or the exit of a leased facility. We lease various facilities where sterilization and ionization services are performed. Under the lease agreements, we are required to return the facilities to their original condition and to perform decommissioning activities. In addition, certain of our owned facilities are required to be decommissioned when we vacate the facility. The decommissioning costs are paid in the period the expenditure is incurred. We recognize an initial liability for ARO's at fair value, and the associated asset retirement costs are then capitalized as part of the carrying amount of the long-lived asset. Accounting for the ARO at inception and in subsequent periods includes the determination of the present value of the ARO liability and offsetting long-

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lived asset, the subsequent accretion of the ARO liability and depletion of the long-lived asset, and a periodic review of the ARO liability estimates and associated discount rates used in the analysis. We provide additional information about our ARO in the *Asset Retirement Obligations ("ARO")* note to consolidated financial statements included elsewhere in this prospectus.

Income Taxes. We use the liability method of accounting for income taxes whereby we recognize deferred tax assets and liabilities for the future tax consequences of temporary differences between the tax bases of assets and liabilities and their reported amounts in the consolidated financial statements. We periodically review our deferred tax assets for recoverability and establish a valuation allowance based on historical taxable income, projected future taxable income, expected timing of reversals of existing temporary timing differences and the implementation tax planning strategies. Deferred tax assets will be reduced by a valuation allowance if, based on management's estimate, it is more likely than not that a portion of the deferred tax assets will not be realized in a future period. The estimates used in the recognition of deferred tax assets are subject to revision in future periods based on new facts and circumstances. If we are unable to generate sufficient future taxable income in certain tax jurisdictions, or if there is a material change in the effective income tax rates or time period within which the underlying temporary differences become taxable or deductible, we could be required to increase our valuation allowance, which would increase our effective income tax rate and could result in an adverse impact on our consolidated financial position or results of operations.

We determine whether it is more likely than not that a tax position will be sustained upon examination, including resolution of related appeals or litigation processes, based on the technical merits of the position. In evaluating whether a tax position has met the more likely-than-not recognition threshold, we presume that the position will be examined by the appropriate taxing authority and that the taxing authority will have full knowledge of all relevant information. A tax position that meets the more likely-than-not recognition threshold is measured at the largest amount of benefit that is greater than 50% likely of being realized upon ultimate settlement. Determining what constitutes an individual tax position and whether the more likely-than-not recognition threshold is met for a tax position are matters of judgment based on the individual facts and circumstances of that position evaluated in light of all available evidence. We review and adjust tax estimates periodically because of ongoing examinations by, and settlements with, the various taxing authorities, as well as changes in tax laws, regulations, and precedent.

We are subject to taxation from federal, state and local, and foreign jurisdictions. Tax positions are settled primarily through the completion of audits within each individual tax jurisdiction or the closing of a statute of limitation. Changes in applicable tax law or other events may also require us to revise past estimates. The United States Internal Revenue Service routinely conducts audits of our federal income tax returns. Additional information regarding income taxes is included in the *Income Taxes* note to consolidated financial statements.

Commitments and Contingencies. We are, and will likely continue to be, involved in a number of legal proceedings, government investigations and claims, which we believe generally arise in the course of our business, given our size, history, complexity and the nature of our business, products, customers, regulatory environment and industries in which we participate. These legal proceedings, investigations and claims generally involve a variety of legal theories and allegations, including, without limitation, personal injury (e.g., slip and falls, burns, vehicle accidents), regulation (e.g., failure to meet specification or failure to comply with regulatory requirements), commercial claims (e.g., breach of contract, economic loss, misrepresentation), financial (e.g., taxes, reporting), employment (e.g., wrongful termination, discrimination, benefits matters) and other claims for damage and relief.

We record a liability for such contingencies to the extent we conclude that their occurrence is both probable and estimable. We consider many factors in making these assessments, including the professional judgment of experienced members of management and our legal counsel. We have made estimates as to the likelihood of unfavorable outcomes and the amounts of such potential losses. In our opinion, the ultimate outcome of these proceedings and claims is not anticipated to have a material adverse effect on our consolidated financial position,

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results of operations, or cash flows. However, the ultimate outcome of proceedings, government investigations and claims is unpredictable and actual results could be materially different from our estimates. We record gain contingencies when realized, and expected recoveries under applicable insurance contracts when we are assured of recovery. Refer to the *Commitments and Contingencies* note of our consolidated financial statements included elsewhere in this prospectus for additional information.

NEW ACCOUNTING PRONOUNCEMENTS

For a description of recent accounting pronouncements applicable to our business, see the *Recent Accounting Standards* note to consolidated financial statements included elsewhere in this prospectus.

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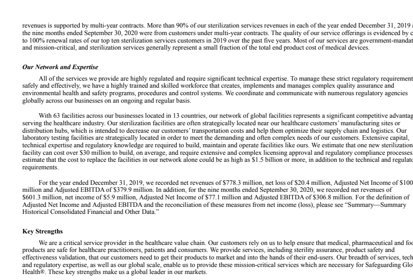
BUSINESS

Overview



We are a leading global provider of mission-critical sterilization and lab testing and advisory services to the medical device and pharmaceutical industries. We are driven by our mission: Safeguarding Global Health®. We provide end-to-end sterilization as well as microbiological and analytical lab testing and advisory services to help ensure that medical, pharmaceutical and food products are safe for healthcare practitioners, patients and consumers in the United States and around the world. Our customers include more than 40 of the top 50 medical device companies and eight of the top ten global pharmaceutical companies (based on revenue). Our services are an essential aspect of our customers' manufacturing process and supply chains, helping to ensure sterilized medical products reach healthcare practitioners and patients. Most of these services are necessary for our customers to satisfy applicable government requirements. We give our customers confidence that their products meet regulatory, safety and effectiveness requirements. With a combined tenure across our businesses of nearly 200 years and our industry-recognized scientific and technological expertise, we help to ensure the safety of millions of patients and healthcare practitioners around the world every year. Across our 63 facilities worldwide, we have nearly 2,900 employees who are dedicated to safety and quality. We are a trusted partner to more than 5,800 customers in over 50 countries.

Our Businesses

We serve our customers throughout their product lifecycles, from product design to manufacturing and delivery, helping to ensure the sterility, effectiveness and safety of their products for the end user. We operate across two core businesses: sterilization services and lab services. Each of our businesses has a long-standing

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record and is a leader in its respective market, supported and connected by our core capabilities including deep end market, regulatory, technical and logistics expertise. The combination of Sterigenics, our terminal sterilization business, and Nordion, our Co-60 supply business, makes us the only vertically integrated global gamma sterilization provider in the sterilization industry. This provides us with additional insights and allows us to better serve our customers.

- **Sterilization Services (our Sterigenics and Nordion brands):**
  - Under our Sterigenics brand, we provide outsourced terminal sterilization and irradiation services for the medical device, pharmaceutical, food safety and advanced applications markets. Terminal sterilization is the process of sterilizing a product in its final packaging. It is an essential, and often government-mandated, step in the manufacturing process of healthcare products before they are shipped to end-users. These products include medical protective barriers, including PPE, procedure kits and trays, implants, syringes, catheters, wound care products, laboratory products and pharmaceuticals. We offer our customers a complete range of outsourced terminal sterilization services, primarily using the three major sterilization technologies: gamma irradiation, EO processing and E-beam irradiation.
    - **Gamma irradiation:** A process in which products are exposed to gamma rays emitted by Co-60. Gamma rays can penetrate even dense materials to kill microbes. Gamma is particularly effective at sterilizing high-density medical products such as sutures, surgical tools and stents.
    - **EO processing:** A gas sterilization process in which pallets of packaged goods are loaded into a secure chamber that is then injected with EO gas to penetrate the packaging. EO is the most widely used gaseous sterilization agent in the world and has been in use for nearly 90 years. The broad application to a range of medical devices is attributed to the fact that EO is compatible with many materials that cannot tolerate or are degraded by radiation or moist heat sterilization. For this reason, it is commonly the only method available to safely and effectively sterilize procedure kits, PPE and many devices used in cardiac procedures.
    - **E-beam irradiation:** A process in which products are exposed to machine-generated radiation in the form of a stream of electrons. E-beam is particularly effective for low density homogenous products such as glass labware. Several medical devices products also rely on E-beam as an effective form of sterilization, including certain types of syringes. In addition to medical device sterilization, E-beam can also be used as an effective technology for materials modification, such as the crosslinking of certain polymers or for enriching the color of gemstones.
  - Under our Nordion brand, we are the leading global provider of Co-60 and gamma irradiators, which are key components to the gamma sterilization process. Co-60 is a radioactive isotope that is needed by medical device manufacturers and sterilizers including Sterigenics. Co-60 decays and must be replaced over time to produce the desired level of irradiation. We have the most comprehensive access to nuclear power reactor operators around the world which are able to produce Co-60. The capabilities that we provide to Nordion's customers include handling and processing of Co-60, recycling of depleted sources and global logistics enabled by our licensed container fleet. We are integral to our customers' operations due to highly coordinated and complex installation processes. In addition, under our Nordion brand, we are a leading supplier of Co-60 sources for stereotactic radiosurgery devices (such as the Gamma Knife®), which are used for certain oncology applications.
- **Lab Services (our Nelson Labs brand):**
  - Under our Nelson Labs brand, we are a global leader in outsourced microbiological and analytical chemistry testing and advisory services for the medical device and pharmaceutical industries. We provide our customers mission-critical lab testing services, which assess the product quality, effectiveness, patient safety and end-to-end sterility of products. These services are necessary for our customers' regulatory approvals, product releases and ongoing product performance evaluations.
    - Microbiology testing services help to identify and measure the potential risks of microbes to a product and ensure that the quality of the products is maintained.

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- Analytical chemistry lab testing is also a critical part of the pharmaceutical drug and medical device development and manufacturing process. This testing provides first-hand information as to the content, quality and safety of raw materials, intermediates and finished products.
- We also provide expert advisory services to aid customers in navigating the regulatory requirements applicable throughout the product lifecycle.

Nelson Labs serves over 3,800 customers across 13 facilities in the United States, Mexico, Asia and Europe. We have a comprehensive array of over 800 laboratory tests supporting our customers from initial product development and sterilization validation, through regulatory approval and ongoing product testing for sterility, safety and quality assurance. Our customers rely on our expertise in their industries to get their medical device and pharmaceutical products to market.

- Medical device lab testing services include: microbiology, biocompatibility and toxicology assessments, material characterization, sterilization validation, sterility assurance, packaging validation and distribution simulation, reprocessing validations, facility and process validation and performance validation and verification of PPE barriers and material.
- Pharmaceutical lab testing services include: microbiology, biocompatibility and toxicology assessments, extractables and leachables evaluations of pharmaceutical containers, sterilization validation, sterility assurance, packaging validation and distribution simulation and facility and process validation.

Nelson Labs is highly complementary to our sterilization services business. In particular, microbiological testing validates the configuration and effectiveness of the sterilization process.

We believe that our sterilization service offerings, our Co-60 supply capabilities and the broad capabilities of our lab services business give us unique insights and technical expertise to serve the mission-critical needs of medical device and pharmaceutical manufacturers. We believe these provide us with a competitive advantage over other outsourced sterilization and lab testing service providers.

Our Markets and Customers

Medical device and pharmaceutical manufacturers often outsource their sterilization and lab services needs, as the technical and regulatory expertise and infrastructure required to establish those capabilities in-house can result in significant cost and resource burden.

We estimate that the total global addressable market for terminal sterilization and outsourced medical device and pharmaceutical lab testing was approximately $33 billion in 2019. Global terminal sterilization accounted for $3 billion of our estimated total addressable market in 2019. Global outsourced medical device and pharmaceutical lab testing services accounted for approximately $29 billion of our estimated total addressable market in 2019, with approximately $3 billion attributable to medical devices and approximately $26 billion attributable to pharmaceuticals. We believe the following secular trends underpin increasing demand for medical devices and pharmaceuticals: an aging population, increased access to, and demand for, healthcare services globally, growth in healthcare R&D spending and innovation, intensifying regulatory requirements and heightened focus on personal safety. As a service provider to manufacturers, we are not directly exposed to risks associated with reimbursement by public or private payors. We expect that increasing utilization of medical devices, including the equipment and consumables that we sterilize and test, expansion in pharmaceutical development and a growing focus on microbial decontamination (including viruses) will continue to drive growth in our business and provide us the opportunity to expand within our markets.

Our customers depend upon the end-to-end services we provide throughout the lifecycle of their products, from research and development, to product manufacturing and sterilization, as well as ongoing quality control. We often maintain long-term relationships with our customers, which average over a decade across our top 25 customers in 2019. We also benefit from minimal customer concentration, as no single customer accounted for more than 4% of our total revenues in 2019. Given the critical nature of our services, a significant portion of our

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revenues is supported by multi-year contracts. More than 90% of our sterilization services revenues in each of the year ended December 31, 2019 and the nine months ended September 30, 2020 were from customers under multi-year contracts. The quality of our service offerings is evidenced by close to 100% renewal rates of our top ten sterilization services customers in 2019 over the past five years. Most of our services are government-mandated and mission-critical, and sterilization services generally represent a small fraction of the total end product cost of medical devices.

Our Network and Expertise

All of the services we provide are highly regulated and require significant technical expertise. To manage these strict regulatory requirements safely and effectively, we have a highly trained and skilled workforce that creates, implements and manages complex quality assurance and environmental health and safety programs, procedures and control systems. We coordinate and communicate with numerous regulatory agencies globally across our businesses on an ongoing and regular basis.

With 63 facilities across our businesses located in 13 countries, our network of global facilities represents a significant competitive advantage in serving the healthcare industry. Our sterilization facilities are often strategically located near our healthcare customers' manufacturing sites or distribution hubs, which is intended to decrease our customers' transportation costs and help them optimize their supply chain and logistics. Our laboratory testing facilities are strategically located in order to meet the demanding and often complex needs of our customers. Extensive capital, technical expertise and regulatory knowledge are required to build, maintain and operate facilities like ours. We estimate that one new sterilization facility can cost over $30 million to build, on average, and require extensive and complex licensing approval and regulatory compliance processes. We estimate that the cost to replace the facilities in our network alone could be as high as $1.5 billion or more, in addition to the technical and regulatory requirements.

For the year ended December 31, 2019, we recorded net revenues of $778.3 million, net loss of $20.4 million, Adjusted Net Income of $100.4 million and Adjusted EBITDA of $379.9 million. In addition, for the nine months ended September 30, 2020, we recorded net revenues of $601.3 million, net income of $5.9 million, Adjusted Net Income of $77.1 million and Adjusted EBITDA of $306.8 million. For the definition of Adjusted Net Income and Adjusted EBITDA and the reconciliation of these measures from net income (loss), please see "Summary—Summary Historical Consolidated Financial and Other Data."

Key Strengths

We are a critical service provider in the healthcare value chain. Our customers rely on us to help ensure that medical, pharmaceutical and food products are safe for healthcare practitioners, patients and consumers. We provide services, including sterility assurance, product safety and effectiveness validation, that our customers need to get their products to market and into the hands of their end-users. Our breadth of services, technical and regulatory expertise, as well as our global scale, enable us to provide these mission-critical services which are necessary for Safeguarding Global Health®. These key strengths make us a global leader in our markets.

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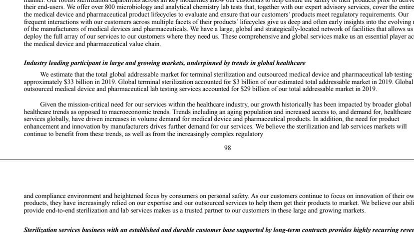

Comprehensive, global provider of mission-critical sterilization and lab services for the healthcare industry

Our customers value our scale and breadth of services. We offer customers comprehensive sterilization, lab testing and expert advisory services on a global scale. Our customers in the healthcare industry require these services to navigate and operate in an increasingly complex and technical regulatory environment, and we believe we provide a differentiated value proposition to our customers by offering these services in an integrated manner. Our robust sterilization capabilities across all key modalities allow our customers to help ensure the safety of their products prior to delivery to their end-users. We offer over 800 microbiology and analytical chemistry lab tests that, together with our expert advisory services, cover the entirety of the medical device and pharmaceutical product lifecycle to evaluate and ensure that our customers' products meet regulatory requirements. Our frequent interactions with our customers across multiple facets of their products' lifecycles give us deep and often early insights into the evolving needs of the manufacturers of medical devices and pharmaceuticals. We have a large, global and strategically-located network of facilities that allows us to deploy the full array of our services to our customers where they need us. These comprehensive and global services make us an essential player across the medical device and pharmaceutical value chain.

Industry leading participant in large and growing markets, underpinned by trends in global healthcare

We estimate that the total global addressable market for terminal sterilization and outsourced medical device and pharmaceutical lab testing was approximately $33 billion in 2019. Global terminal sterilization accounted for $3 billion of our estimated total addressable market in 2019. Global outsourced medical device and pharmaceutical lab testing services accounted for $29 billion of our total addressable market in 2019.

Given the mission-critical need for our services within the healthcare industry, our growth historically has been impacted by broader global healthcare trends as opposed to macroeconomic trends. Trends including an aging population and increased access to, and demand for, healthcare services globally, have driven increases in volume demand for medical device and pharmaceutical products. In addition, the need for product enhancement and innovation by manufacturers drives further demand for our services. We believe the sterilization and lab services markets will continue to benefit from these trends, as well as from the increasingly complex regulatory

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and compliance environment and heightened focus by consumers on personal safety. As our customers continue to focus on innovation of their own products, they have increasingly relied on our expertise and our outsourced services to help them get their products to market. We believe our ability to provide end-to-end sterilization and lab services makes us a trusted partner to our customers in these large and growing markets.

Sterilization services business with an established and durable customer base supported by long-term contracts provides highly recurring revenue streams

We provide expertise and end-to-end sterilization services for our customers leading to deep, trusted relationships that allow them to meet their global regulatory compliance needs. Our relationships with our Sterigenics and Nordion customers are typically governed by multi-year contracts with cost pass-through provisions, which have resulted in recurring revenue streams and accretive growth. In addition, these customers often look to us as a long-term provider given switching providers can be costly and burdensome. For example, in most circumstances, switching providers requires additional testing, re-validation and FDA submissions and can take anywhere from six months to three years depending upon the class of product. Our relationships with our top ten sterilization services customers in 2019 had an average tenure of over a decade. Our partnerships with these customers have led to close to 100% renewal rates over the past five years.

Expertise and strong track record in highly regulated markets

We and our customers operate in highly complex and regulated markets that require deep knowledge and technical expertise. We believe that the operational discipline that we employ to manage intricate quality assurance and EH&S programs in our own operations gives our customers confidence that we are the best partner to support them in their businesses. For example, we design and install emission controls in our EO facilities that often outperform the regulatory standards that we are required to meet. We also have a skilled team which has developed trusted relationships with numerous regulatory bodies around the world. For example, in 2019 we were selected by the FDA as one of eight participants to move to the next stage of a public innovation challenge to encourage the development of new approaches to medical device sterilization and new strategies to reduce EO emissions. We work closely with our customers, the FDA and others to consider enhanced EO cycle design and processes that would reduce EO emissions from the EO sterilization process to as close to zero as reasonably possible. Our relationships, combined with our thought leadership that is recognized by regulators and customers alike, enable us to inform the process of creating, interpreting and advising on safety standards. They also allow us to educate and advise our customers on current and newly evolving standards and requirements.

Global scale and integrated facility network provide differentiated services to our customers

We have a global network of 63 facilities, consisting of 50 sterilization services facilities and 13 labs, through which we provide services to more than 5,800 customers that have operations in over 50 countries. We have worked to standardize our enterprise resource planning, global quality and EH&S systems to integrate our network of facilities globally. This integration is critical for our customers, who operate globally and look for partners that can provide the same level of service, experience and expertise wherever they operate. We serve many of our sterilization customers at more than one facility, with more than 80% of Sterigenics' net revenues attributable to customers using more than one of our facilities and more than 50% of Sterigenics' net revenues attributable to customers using five or more of our facilities in 2019. The capital to replicate the scale of our global facility network, extensive and complex upfront licensing processes and intense regulatory compliance requirements make it extremely difficult for new competitors to easily enter our markets and replicate our scale. The combination of Sterigenics and Nordion makes us the only vertically integrated global supplier of gamma irradiation services, which allows Nordion to more confidently make long-term investments to expand Co-60 supply for the medical products sterilization industry. We believe our global scale, supported by our integrated facility network and core capabilities including deep end market, regulatory, technical and logistics expertise, will allow us to continue to expand our service offerings and customer base.

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Experienced management team with proven track record of execution and financial performance

Our management team has significant industry expertise, an unwavering commitment to operational excellence and a proven track record of delivering financial performance. Our culture of accountability runs throughout the entire organization and has contributed meaningfully to our operational achievements and commercial success. Our management team is supported by nearly 2,900 team members around the world who are dedicated to safety and quality, which is why we are a trusted partner to our customers. We have delivered revenue growth every year since 2005, even through significant economic downturns, and have implemented productivity initiatives which have led to margin expansion. Our team brings extensive experience and is highly skilled at recognizing and acting upon market expansion opportunities. Our disciplined approach to M&A has enabled the successful integration of two transformational and seven bolt-on acquisitions over the past six years. In addition, we are disciplined in our capital deployment strategy, which is focused on achieving attractive returns on investment. We pursue capacity expansions that will allow us to consistently grow earnings.

Our Strategy

Our strategy is designed to deliver on our mission of Safeguarding Global Health®, while generating sustainable growth, margins and cash flows for our business:

Drive organic growth by leveraging our leading capabilities, scale and global network

We believe that our established and durable relationships with our diverse customer base, along with the breadth and depth of our service offerings, provide us with a distinct leadership position within the markets that we serve. Our deep experience in sterilization and lab services allows us to be agile in identifying opportunities and decisive in deploying resources towards these opportunities to drive organic growth. We intend to continue capitalizing on our leadership position and integrated global facility network and capabilities to drive our growth by expanding existing customer relationships and attracting new customers. We also seek to accelerate our penetration in high-growth end-markets such as pharmaceuticals.

Deepen our customer relationships with our comprehensive service offerings in sterilization and lab services

Our customers around the world trust us to provide them with the highest quality sterilization and lab services. We are focused on broadening the number and range of services that each of our customers purchase from us by leveraging our core capabilities. We have continued to work on improving our customer interactions in order to deliver a "one company" experience across our sterilization and lab services so that we can further deepen our customer relationships. We provide comprehensive end-to-end services across our customers' value chains so they can efficiently deliver the safest products to their end-users. We are the only industry player that offers the range of sterilization and lab services at the scale that we do. We strive for the full integration of our global operations to drive consistency across our services and provide our customers with a coordinated and seamless experience, designed to reduce cycle times for our services and improve efficiency. Our offerings facilitate long-term partnerships with our customers and make us an integral part of their product development and commercialization processes. We have multiple decades of deep expertise across key sterilization modalities as well as lab testing services across our customers' full product lifecycles. We provide over 800 laboratory tests, which we believe is multiple times the number of offerings of our nearest competitor.

Expand footprint to meet the local needs of our growing global customer base

We are focused on aligning our facility network to best meet our customers' requirements. We believe our valuable insight into our customers' current and future needs will allow us to efficiently grow our business. Our global presence reflects our commitment to developing our footprint to serve our customers' supply chains. Our integrated network of facilities is important to our customers as they can rely on the same level of service at each of our facilities, regardless of where they are around the world. We believe our sterilization services customers

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are seeking a partner that can operate near their manufacturing sites and distribution centers around the world, as transportation and logistics costs can be meaningful for our customers. In certain circumstances we will invest in projects to build capacity ahead of demand in alignment with the strategic plans of our customers. Our lab services customers are seeking expertise with both international and U.S. regulatory bodies. As our customers expand their global operations, we are well-equipped to expand with them and serve them where they need us.

Invest in technical and regulatory capabilities to enhance our leadership position

Our customers depend on our deep and extensive technical knowhow to get their products to market. We plan to continue to invest in our technical expertise and regulatory knowhow to stay ahead of the dynamic and increasingly complex regulatory landscape in the healthcare industry. Our combination of technical and regulatory expertise allows us to advance the standards of safety for crucial products whose end-users include healthcare practitioners and patients. As customers look to us for expertise, this landscape creates opportunities for us to drive growth in our advisory services offering. We believe that our position as a key industry thought leader makes us a trusted partner for customers as they are developing new products and a respected industry partner for regulators as they are defining industry standards of safety for the future.

Continue our commitment to operational excellence to drive business efficiency and results

Our focus on operational excellence has allowed us to increase capacity utilization and improve working capital, thereby growing our revenues while expanding margins and improving the customer experience. Our commitment to implementing and improving customer-experience enhancing initiatives and internal processes has been a key driver of our strong financial profile to date. Our customer-facing initiatives around cycle time reduction, quality self-service reporting, purchase order accuracy and scheduling efficiencies highlight our rigorous, detail-oriented approach to operational excellence and connectivity with our long-time customers. These initiatives are designed not only to reduce turnaround times and increase predictability of service for our customers, but also to maximize our financial results. We will continue to address our customers' expectations through our internal processes centered on talent management, quality, EH&S and information technology. We believe that these processes will enable us to continue to deliver growth, profitability and cash generation.

Pursue value-creating strategic acquisitions to expand our addressable market and enhance our global capabilities and footprint

Our disciplined approach to M&A has resulted in our successful track record of identifying, completing and integrating strategic acquisitions into our company and we intend to continue to pursue value-creating strategic acquisitions. We have implemented a disciplined framework to support our acquisition efforts that focuses on quality businesses that are well-regarded by our customers and aligned with our culture of accountability, customer service and operating with integrity. Illustrating this highly disciplined acquisition framework are our two transformational acquisitions of Nordion and Nelson Labs. In addition to these major acquisitions, we acquired FTSI, Gammarad, CBE, REVISS, Toxikon Europe NV, Gibraltar Laboratories and Iotron, which provided geographic, technical and service line expansions. Our acquisition of Nelson Labs expanded our capabilities by creating an enhanced lab services platform to provide microbiology testing within our existing customer end-markets and increasing the number of tests we could provide to our customers. We have a strong foundation to continually evaluate acquisition opportunities that would expand our addressable market and enhance our global capabilities and footprint. We are well positioned to evaluate other acquisitions that leverage our core capabilities while expanding our existing customer relationships. We currently have a significant pipeline of targets, ranging from small, owner operated businesses to larger businesses, and believe that we can identify the appropriate targets and integrate them seamlessly into our business.

Industry Overview

We operate in the terminal sterilization and outsourced lab testing industries. We estimate that the total global addressable market for terminal sterilization and outsourced medical device and pharmaceutical lab testing

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was approximately $33 billion in 2019. Global terminal sterilization accounted for $3 billion of our estimated total addressable market in 2019 and we believe it is growing. Global outsourced medical device and pharmaceutical lab testing services accounted for $29 billion of our estimated total addressable market in 2019, with approximately $3 billion attributable to medical devices and approximately $26 billion attributable to pharmaceuticals, and we believe it is growing.

We expect several positive secular trends to drive increased demand for our services, including:

- **Favorable demographic trends for healthcare worldwide:** Healthcare demand is increasing globally, driven primarily by an aging population and an increased prevalence of chronic diseases. According to data published by the United Nations in 2019, the world's population is expected to increase by 2 billion people in the next 30 years. In addition, one in six people are projected to be over the age of 65 globally by 2050, up from one in eleven in 2019. United Nations projections from 2019 also show that the number of people aged 80 or older is expected to triple in the next 30 years. These trends are driven by declining fertility and increasing longevity, as well as international migration. In many regions, the population aged 65 is projected to double by 2050, while global life expectancy beyond 65 is expected to increase by 19 years. In March 2020, the CMS estimated that health expenditures in the United States will increase from approximately 18% of gross domestic product in 2018 to approximately 20% in 2028.
- **Increased demand for healthcare services in global markets:** Stricter healthcare standards coupled with heightened regulatory requirements, greater availability of care and increased patient purchasing power are driving increased demand for healthcare services. In emerging markets, rapid urbanization and rising income, combined with an increase in diseases such as diabetes and cancer, have fueled

Software Defined Storage is a storage architecture that separates storage hardware from the software that manages the storage infrastructure. The software enabling a software-defined storage environment provides policy management for feature and capacity provisioning, such as tiering, replication, and snapshots. Software-defined storage can be part of a software-defined data center, but can also be implemented in traditional and cloud-based environments. Software-defined storage is typically less expensive than purpose-integrated storage hardware. It can be highly scalable, and is designed to support virtual machines and containers. Software-defined storage is a key technology for hyperconverged infrastructure.

**Software-defined

The Board of Directors

Executive Officers

Our Executive Officers are charged with the conduct of our Capital Projects. The Executive Officers currently consist of three members, the Chief Executive Officer, the Chief Financial Officer and the Chief Operating Officer. Each Executive Officer is appointed by the Board of Directors and holds office until his or her successor is duly appointed or his or her earlier resignation or removal. Any vacancy among the Executive Officers may be filled by the Board of Directors at any regular or special meeting.

Our Executive Officers have the responsibility to manage the Capital Projects in accordance with the Capital Project Plan, and subject to the limitations set forth in the Capital Project Plan, the Executive Officers have the power and authority to:

- Enter into contracts for the purchase of goods and services and to commit the Company to such contracts;
- Hire employees, contractors and consultants and to enter into employment and consulting agreements with such persons;
- Open bank accounts, borrow money, enter into credit facilities and grant liens and security interests in our assets;
- Acquire, hold, mortgage and dispose of any real or personal property;
- Take any other actions and execute, deliver and perform any other agreements, documents and instruments that may be necessary, useful or advisable in connection with the foregoing; and
- Delegate any of the foregoing powers to any person or entity.

Any limitations on the foregoing powers of the Executive Officers are for internal purposes only and are not binding upon third parties absent knowledge of those limitations.

The Executive Officers will devote such time to the affairs of the Company as is necessary to manage the Capital Projects, but they are not required to devote their full time to the affairs of the Company. The Executive Officers are employed by the Company and receive compensation for their services as set forth in the Capital Project Plan. The Executive Officers are also entitled to reimbursement for reasonable expenses incurred in connection with their duties.

Chief Executive Officer

The Chief Executive Officer is responsible for the overall management of the Capital Projects. The Chief Executive Officer will be the principal executive officer of the Company and will have general supervision over the affairs of the Company and over its other officers, subject to the control of the Board of Directors. The Chief Executive Officer will preside at all meetings of the Board of Directors and will have such other powers and duties as may be designated from time to time by the Board of Directors.

Chief Financial Officer

The Chief Financial Officer will be responsible for the financial affairs of the Company, including but not limited to: (i) maintaining adequate books of account for the Company; (ii) establishing and maintaining a system of internal controls; (iii) preparing financial statements and reports; (iv) managing the Company's cash and investments; (v) overseeing the Company's tax affairs; and (vi) such other duties as may be assigned by the Chief Executive Officer or the Board of Directors.

Chief Operating Officer

The Chief Operating Officer will be responsible for the day-to-day operations of the Capital Projects, including but not limited to: (i) overseeing the construction of the Capital Projects; (ii) managing the Company's employees, contractors and consultants; (iii) ensuring that the Capital Projects are completed on time and within budget; (iv) maintaining the Company's equipment and facilities; and (v) such other duties as may be assigned by the Chief Executive Officer or the Board of Directors.

Committees of the Board of Directors

The Board of Directors may establish such committees as it deems necessary or advisable from time to time. Each committee will have such powers and duties as may be delegated to it by the Board of Directors, subject to the limitations set forth in the Capital Project Plan. The Board of Directors may also appoint such officers and employees as it deems necessary or advisable to assist the committees in the performance of their duties.

Audit Committee

The Audit Committee will be responsible for the oversight of the Company's financial reporting process, the effectiveness of the Company's internal controls, and the performance of the Company's independent auditors. The Audit Committee will have the following powers and duties:

- To review the annual financial statements of the Company and to recommend to the Board of Directors whether such statements should be approved;
- To review the Company's internal controls and to make recommendations to the Board of Directors regarding any material weaknesses or deficiencies;
- To select, retain and terminate the Company's independent auditors, and to approve the fees and other terms of their engagement;
- To review the independence and objectivity of the Company's independent auditors; and
- To perform such other duties as may be assigned to the Audit Committee by the Board of Directors.

The Audit Committee will consist of at least three members of the Board of Directors, all of whom must be independent directors. The members of the Audit Committee will be appointed by the Board of Directors and will serve at the pleasure of the Board of Directors.

Compensation Committee

The Compensation Committee will be responsible for the oversight of the Company's compensation policies and practices, including but not limited to: (i) reviewing and approving the compensation of the Executive Officers; (ii) reviewing and approving the Company's employee benefit plans; and (iii) such other duties as may be assigned by the Board of Directors.

The Compensation Committee will consist of at least three members of the Board of Directors, all of whom must be independent directors. The members of the Compensation Committee will be appointed by the Board of Directors and will serve at the pleasure of the Board of Directors.

Nominating and Governance Committee

The Nominating and Governance Committee will be responsible for the oversight of the Company's corporate governance practices, including but not limited to: (i) identifying and recommending candidates for the Board of Directors; (ii) reviewing and recommending changes to the Company's corporate governance guidelines; and (iii) such other duties as may be assigned by the Board of Directors.

The Nominating and Governance Committee will consist of at least three members of the Board of Directors, all of whom must be independent directors. The members of the Nominating and Governance Committee will be appointed by the Board of Directors and will serve at the pleasure of the Board of Directors.

Conflicts of Interest Policy

The Company has adopted a Conflicts of Interest Policy to ensure that the Company's directors, officers and employees act in the best interests of the Company and its stakeholders. The Conflicts of Interest Policy requires that all directors, officers and employees disclose any actual or potential conflicts of interest to the Board of Directors. The Board of Directors will then determine whether the conflict of interest is material and whether it should be waived.

The Conflicts of Interest Policy also prohibits directors, officers and employees from using their positions with the Company to obtain personal benefits or to advance their own interests at the expense of the Company. The Conflicts of Interest Policy also prohibits directors, officers and employees from competing with the Company.

Code of Ethics

The Company has adopted a Code of Ethics that applies to all directors, officers and employees. The Code of Ethics sets forth the Company's expectations for ethical conduct and includes provisions regarding honesty, integrity, compliance with laws and regulations, and reporting of violations.

Corporate Governance Guidelines

The Company has adopted Corporate Governance Guidelines that set forth the Company's principles of corporate governance. The Corporate Governance Guidelines address matters such as the composition of the Board of Directors, the duties of the Board of Directors, and the committees of the Board of Directors.

Whistleblower Policy

The Company has adopted a Whistleblower Policy that encourages employees to report any suspected violations of law or the Company's policies. The Whistleblower Policy provides that the Company will not retaliate against any employee who reports a suspected violation in good faith.

Insider Trading Policy

The Company has adopted an Insider Trading Policy that prohibits directors, officers and employees from trading in the Company's securities while in possession of material nonpublic information. The Insider Trading Policy also prohibits directors, officers and employees from tipping others who trade in the Company's securities while in possession of material nonpublic information.

Anti-Hedging Policy

The Company has adopted an Anti-Hedging Policy that prohibits directors, officers and employees from hedging the Company's securities. The Anti-Hedging Policy also prohibits directors, officers and employees from pledging the Company's securities as collateral for loans.

Clawback Policy

The Company has adopted a Clawback Policy that requires the Company to recover incentive-based compensation from executive officers in the event of a restatement of the Company's financial statements. The Clawback Policy applies to incentive-based compensation that is received by executive officers during the three years preceding the date on which the Company is required to restate its financial statements.

Compensation Committee Interlocks and Insider Participation

The Compensation Committee of the Board of Directors is responsible for determining the compensation of the Executive Officers. The Compensation Committee is composed of three members of the Board of Directors, all of whom are independent directors.

Chief Executive Officer's Compensation

The Chief Executive Officer's compensation is determined by the Compensation Committee. The Compensation Committee considers a number of factors in determining the Chief Executive Officer's compensation, including the Company's financial performance, the Chief Executive Officer's individual performance, and the compensation of chief executive officers at other companies in the Company's industry.

Chief Financial Officer's Compensation

The Chief Financial Officer's compensation is determined by the Compensation Committee. The Compensation Committee considers a number of factors in determining the Chief Financial Officer's compensation, including the Company's financial performance, the Chief Financial Officer's individual performance, and the compensation of chief financial officers at other companies in the Company's industry.

Chief Operating Officer's Compensation

The Chief Operating Officer's compensation is determined by the Compensation Committee. The Compensation Committee considers a number of factors in determining the Chief Operating Officer's compensation, including the Company's financial performance, the Chief Operating Officer's individual performance, and the compensation of chief operating officers at other companies in the Company's industry.

Director Compensation

Directors who are employees of the Company will not receive any additional compensation for their service as directors. Non-employee directors will receive an annual retainer of $[Illegible], payable in quarterly installments. Non-employee directors will also receive a fee of $[Illegible] for each meeting of the Board of Directors that they attend in person and a fee of $[Illegible] for each meeting of the Board of Directors that they attend by telephone or video conference.

Director Compensation Table

Name	Fees Earned or Paid in Cash ($)	Stock Awards ($)	Option Awards ($)	Non-Equity Incentive Plan Compensation ($)	Change in Pension Value and Nonqualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
[Illegible]	[Illegible]	—	—	—	—	—	[Illegible]
[Illegible]	[Illegible]	—	—	—	—	—	[Illegible]
[Illegible]	[Illegible]	—	—	—	—	—	[Illegible]

Executive Officer Compensation

The Executive Officers will receive compensation for their services as set forth in the Capital Project Plan. The Capital Project Plan provides that the Executive Officers will receive a base salary, a bonus, and other benefits. The amount of the base salary, bonus, and other benefits will be determined by the Board of Directors.

Executive Officer Compensation Table

Name and Principal Position	Year	Salary ($)	Bonus ($)	Stock Awards ($)	Option Awards ($)	Non-Equity Incentive Plan Compensation ($)	Change in Pension Value and Nonqualified Deferred Compensation Earnings ($)	All Other Compensation ($)	Total ($)
[Illegible]	[Illegible]	[Illegible]	[Illegible]	—	—	[Illegible]	—	[Illegible]	[Illegible]
[Illegible]	[Illegible]	[Illegible]	[Illegible]	—	—	[Illegible]	—	[Illegible]	[Illegible]
[Illegible]	[Illegible]	[Illegible]	[Illegible]	—	—	[Illegible]	—	[Illegible]	[Illegible]

Stock Exchange Listing: [•]

WHO'S WHO AND BOARD

Our Articles provide that the Directors may be appointed by ordinary resolution or by the Directors by resolution of the Directors. The Directors may also appoint a Director to fill a casual vacancy on the Board. Any Director appointed by the Directors shall hold office only until the next annual general meeting and shall then be eligible for re-election.

- Each person proposed for election as a Director must have, prior to his nomination, disclosed to the Company:
  - any family relationship with any Director or Executive Officer;
  - any material interest in any transaction with the Company; and
  - any criminal convictions.

Each Director shall hold office for the term, if any, fixed by the resolution appointing him or her (or, if no term is fixed, until the next annual general meeting) or until his or her earlier resignation or removal. Any Director may resign from office by delivering a written notice to the Company. Any Director may be removed from office by ordinary resolution of the Shareholders. The Directors may also remove a Director from office by resolution of the Directors.

Each Director is entitled to receive such remuneration for his services as may be determined by the Directors. Directors may also be paid all travel, hotel and other expenses properly incurred by them in connection with the Company's business or their duties as Directors, including any expenses incurred in connection with meetings of the Directors or committees of the Directors. Directors may also be granted such special remuneration as the Directors may determine for any extra services which, in the opinion of the Directors, go beyond the ordinary duties of a Director. Any such remuneration may be paid in addition to or in substitution for any ordinary remuneration as a Director.

The following table sets forth the annual compensation paid by us to our Directors and Executive Officers for the fiscal year ended December 31, 2024:

Name	Capacities in which compensation was received	Aggregate Compensation ($)
Mr. Ethan Caldwell	Chief Executive Officer and Director	1,250,000
Ms. Sophia Reynolds	Chief Financial Officer	1,000,000
Mr. Daniel Whitmore	Chief Operating Officer	1,000,000
Ms. Olivia Harrington	Director	500,000
Mr. Benjamin Carter	Director	500,000
Mr. Nathaniel Brooks	Director	500,000
Ms. Victoria Langley	Director	500,000

Pursuant to our Articles, we may indemnify our Directors and Executive Officers against any liability incurred by them in their capacity as such, except in respect of their own fraud or dishonesty. We may also purchase insurance against any liability incurred by our Directors and Executive Officers in connection with the performance of their duties, except where such liability arises from fraud or dishonesty.

Our Articles provide that the Directors may exercise all the powers of the Company to borrow money, to mortgage or charge its undertaking, property and assets (present and future) and to issue debentures, bonds and other securities, whether outright or as collateral security for any debt, liability or obligation of the Company or of any third party.

Pursuant to our Articles, the Directors may declare dividends and distributions on our Shares in issue and authorise payment of the dividends or distributions out of the funds of the Company lawfully available therefor. We may also pay interim dividends without shareholder approval.

Under our Articles, no dividend or distribution shall be paid unless the Directors determine that, immediately after the payment, the Company will be able to satisfy its liabilities as they become due in the ordinary course of its business and the realisable value of the Company's assets will be greater than its liabilities.

Subject to the rights of persons, if any, entitled to Shares with special rights as to dividends, all dividends shall be declared and paid according to the amounts paid up on the Shares on which the dividend is paid. All dividends shall be apportioned and paid proportionately to the amounts paid up on the Shares during any portion or portions of the period in respect of which the dividend is paid. If any Share is issued on terms providing that it shall rank for dividend as from a particular date, that Share shall rank for dividend accordingly.

The Directors may deduct from any dividend or distribution payable to any Shareholder all sums of money (if any) presently payable by such Shareholder to the Company on account of calls or otherwise in relation to the Shares of the Company.

CAPITALISATION, INDEBTEDNESS AND OTHER KEY FINANCIAL INFORMATION

The following table sets forth our capitalisation as of December 31, 2024, on an actual basis and as adjusted to reflect the Offering and the use of proceeds therefrom, as described in "Use of Proceeds."

	As of December 31, 2024
Cash and cash equivalents	$ 12,480,000
Short-term debt	$ 3,250,000
Long-term debt	$ 18,750,000
Total debt	$ 22,000,000
Shareholders' equity	$ 41,600,000
Total capitalisation	$ 63,600,000

The following table sets forth our indebtedness as of December 31, 2024, on an actual basis and as adjusted to reflect the Offering and the use of proceeds therefrom, as described in "Use of Proceeds."

	As of December 31, 2024
Secured bank loans	$ 15,000,000
Unsecured bank loans	$ 5,000,000
Lease liabilities	$ 2,000,000
Total indebtedness	$ 22,000,000

Except as disclosed in this Prospectus, there has been no material change in our capitalisation or indebtedness since December 31, 2024.

The following table sets forth our selected consolidated financial information for the periods indicated. The selected consolidated statement of profit or loss data for the years ended December 31, 2022, 2023 and 2024, and the selected consolidated statement of financial position data as of December 31, 2023 and 2024, have been derived from our audited consolidated financial statements included elsewhere in this Prospectus. The selected consolidated statement of profit or loss data for the year ended December 31, 2021, and the selected consolidated statement of financial position data as of December 31, 2021 and 2022, have been derived from our audited consolidated financial statements not included in this Prospectus. Our historical results are not necessarily indicative of the results that may be expected in the future.

	Year ended December 31,			
	2021	2022	2023	2024
	($ in thousands)			
Revenue	18,420	21,760	24,980	28,150
Cost of sales	(11,230)	(13,180)	(14,960)	(16,720)
Gross profit	7,190	8,580	10,020	11,430
Operating expenses	(4,860)	(5,310)	(5,940)	(6,420)
Profit before tax	2,330	3,270	4,080	5,010
Income tax expense	(470)	(660)	(820)	(1,010)
Profit for the year	1,860	2,610	3,260	4,000
Earnings per share (basic and diluted)	0.93	1.31	1.63	2.00

	As of December 31,			
	2021	2022	2023	2024
	($ in thousands)			
Total assets	24,150	27,980	32,410	37,260
Total liabilities	9,870	11,240	12,960	14,830
Total equity	14,280	16,740	19,450	22,430

Pristine Shores LLC, a limited liability company ("Pristine Shores"), is the parent entity of SCUBA 101, a leading online retailer of scuba diving equipment.

On January 1, 2024, Pristine Shores entered into a Tax Receivable Agreement (the "TRA") with its members, including Mr. Ethan Caldwell, our Chief Executive Officer, and Ms. Sophia Reynolds, our Chief Financial Officer.

Under the TRA, Pristine Shores is required to pay to each member 85% of the amount of any tax benefits that Pristine Shores realises as a result of certain transactions, including the exchange of interests in Pristine Shores for Shares in connection with this Offering. The remaining 15% of such tax benefits will be retained by Pristine Shores.

The following table sets forth the amounts payable under the TRA to our Executive Officers:

Name	Amount payable ($)
Mr. Ethan Caldwell	1,240,000
Ms. Sophia Reynolds	1,240,000
Mr. Daniel Whitmore	1,240,000

The TRA will remain in effect until all such tax benefits have been realised or have expired, unless terminated earlier in accordance with its terms. Early termination may require Pristine Shores to make a lump-sum payment to the members equal to the present value of the anticipated future tax benefits.

Each Director and Executive Officer has entered into a service agreement with the Company. The service agreements provide for annual base salaries, discretionary bonuses, and participation in the Company's benefit plans. The service agreements also contain customary confidentiality and non-compete provisions.

The following table sets forth the annual base salaries of our Executive Officers as of the date of this Prospectus:

Name	Annual Base Salary ($)
Mr. Ethan Caldwell	1,250,000
Ms. Sophia Reynolds	1,000,000
Mr. Daniel Whitmore	1,000,000

online brokerage account holders. Internet distributions will be allocated by the representatives to underwriters and selling group members that may make Internet distributi

We have agreed that, subject to certain exceptions, we will not, without the prior written consent of J.P. Morgan Securities LLC for a period of 180 days after the date of this prospectus, (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend, or otherwise transfer or dispose of, directly or indirectly, or publicly file with, the SEC a registration statement under the Securities Act relating to, any shares of common stock or any securities convertible into or exercisable or exchangeable for common stock, or publicly disclose the intention to undertake any of the foregoing or (ii) enter into any swap or other agreement that transfers, in whole or in part, any of the economic consequences of ownership of common stock or any such other securities.

Our executive officers, directors and certain holders of our common stock have entered into lock-up agreements with the underwriters pursuant to which each of them, subject to certain exceptions, for a period of 180 days after the date of this prospectus, may not, without the prior written consent of J.P. Morgan Securities LLC, (i) offer, pledge, sell, contract to sell, sell any option or contract to purchase, purchase any option or contract to sell, grant any option, right or warrant to purchase, lend or otherwise transfer or dispose of, directly or indirectly, any shares of our common stock or any securities convertible into or exercisable or exchangeable for our common stock; (ii) enter into any hedging, swap, or other agreement or transaction that transfers, in whole or in part, any of the economic consequences of ownership of the common stock or such other securities; (iii) make any demand for or exercise any right with respect to the registration of any shares of our common stock or any security convertible into or exercisable or exchangeable for our common stock, except as those demands or exercises do not involve any public disclosure or filing; or (iv) publicly disclose the intention to undertake any of the foregoing.

The lock-up restrictions described in the immediately preceding paragraph are subject to certain exceptions including, without limitation: (i) transfers as part of a sale of lock-up securities acquired in this offering or in open market transactions after the closing of this offering, (ii) transfers to us in connection with the vesting, settlement, or exercise of restricted stock units, shares of restricted stock, options, warrants or other rights to purchase shares of common stock, (iii) transfers in connection with existing arrangements disclosed in this prospectus under the heading "Certain Relationships and Related Party Transactions—Transactions with Certain of Our Executive Officers", (iv) transfers pursuant to an order of a court or regulatory agency related to the lock-up party's ownership of the lock-up securities; and (v) transfers by pledging, hypothecating or otherwise

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granting a security interest in any lock-up securities as collateral and transfer such lock-up securities to such lending institution upon foreclosure, among others.

We have agreed to indemnify the underwriters against certain liabilities, including liabilities under the Securities Act of 1933.

Our common stock has been approved for listing on the Nasdaq under the symbol "SHC."

In connection with this offering, the underwriters may engage in stabilizing transactions, which involves making bids for, purchasing and selling shares of common stock in the open market for the purpose of preventing or retarding a decline in the market price of the common stock while this offering is in progress. These stabilizing transactions may include making short sales of common stock, which involves the sale by the underwriters of a greater number of shares of common stock than they are required to purchase in this offering, and purchasing shares of common stock on the open market to cover positions created by short sales. Short sales may be "covered" shorts, which are short positions in an amount not greater than the underwriters' option to purchase additional shares referred to above, or may be "naked" shorts, which are short positions in excess of that amount. The underwriters may close out any covered short position either by exercising their option to purchase additional shares, in whole or in part, or by purchasing shares in the open market. In making this determination, the underwriters will consider, among other things, the price of shares available for purchase in the open market compared to the price at which the underwriters may purchase shares through the option to purchase additional shares. A naked short position is more likely to be created if the underwriters are concerned that there may be downward pressure on the price of the common stock in the open market that could adversely affect investors who purchase in this offering. To the extent that the underwriters create a naked short position, they will purchase shares in the open market to cover the position.

The underwriters have advised us that, pursuant to Regulation M of the Securities Act of 1933, they may also engage in other activities that stabilize, maintain or otherwise affect the price of the common stock, including the imposition of penalty bids. This means that if the representatives of the underwriters purchase common stock in the open market in stabilizing transactions or to cover short sales, the representatives can require the underwriters that sold those shares as part of this offering to repay the underwriting discount received by them.

These activities may have the effect of raising or maintaining the market price of the common stock or preventing or retarding a decline in the market price of the common stock, and, as a result, the price of the common stock may be higher than the price that otherwise might exist in the open market. If the underwriters commence these activities, they may discontinue them at any time. The underwriters may carry out these transactions on the Nasdaq, in the over-the-counter market or otherwise.

Prior to this offering, there has been no public market for our common stock. The initial public offering price will be determined by negotiations between us and the representatives of the underwriters. In determining the initial public offering price, we and the representatives of the underwriters expect to consider a number of factors including:

- the information set forth in this prospectus and otherwise available to the representatives;
- our prospects and the history and prospects for the industry in which we compete;
- an assessment of our management;
- our prospects for future earnings;
- the general condition of the securities markets at the time of this offering;
- the recent market prices of, and demand for, publicly traded common stock of generally comparable companies; and
- other factors deemed relevant by the underwriters and us.

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Neither we nor the underwriters can assure investors that an active trading market will develop for our common shares, or that the shares will trade in the public market at or above the initial public offering price.

Certain of the underwriters and their affiliates have provided in the past to us and our affiliates and may provide from time to time in the future certain commercial banking, financial advisory, investment banking and other services for us and such affiliates in the ordinary course of their business, for which they have received and may continue to receive customary fees and commissions. Certain affiliates of Goldman Sachs & Co. LLC hold (i) approximately $420 million aggregate principal amount of the Second Lien Notes, all of which will be redeemed at the applicable redemption premium, plus accrued and unpaid interest to, but excluding the date of redemption (see "Use of Proceeds") and (ii) approximately $33.3 million aggregate principal amount of the First Lien Notes. Affiliates of Goldman Sachs & Co. LLC hold less than $1.5 million of the aggregate principal amount of the Term Loan, a portion of which will be repaid. Certain of the underwriters and/or certain of their affiliates are lenders, and/or act as agents or arrangers, under our Senior Secured Credit Facilities, and as a result, will receive a portion of the net proceeds from this offering. See "Use of Proceeds." In addition, from time to time, certain of the underwriters and their affiliates may effect transactions for their own account or the account of customers, and hold on behalf of themselves or their customers, long or short positions in our debt or equity securities or loans, and may do so in the future.

The underwriters and their affiliates are full service financial institutions engaged in various activities, which may include sales and trading, commercial and investment banking, advisory, investment management, investment research, principal investment, hedging, market making, brokerage and other financial and non-financial activities and services. The underwriters and their respective affiliates have provided, and may in the future provide, a variety of these services to the issuer and to persons and entities with relationships with the issuer, for which they received or will receive customary fees and expenses.

In the ordinary course of their various business activities, the underwriters and their affiliates, officers, directors and employees may purchase, sell or hold a broad array of investments and actively traded securities, derivatives, loans, commodities, currencies, credit default swaps and other financial instruments for their own account and for the accounts of their customers, and such investment and trading activities may involve or relate to assets, securities and/or instruments of the issuer (directly, as collateral securing other obligations or otherwise) and/or persons and entities with relationships with the issuer. The underwriters and their affiliates may also communicate independent investment recommendations, market color or trading ideas and/or publish or express independent research views in respect of such assets, securities or instruments and may at any time hold, or recommend to clients that they should acquire, long and/or short positions in such assets, securities and instruments.

Other than in the United States, no action has been taken by us or the underwriters that would permit a public offering of the securities offered by this prospectus in any jurisdiction where action for that purpose is required. The securities offered by this prospectus may not be offered or sold, directly or indirectly, nor may this prospectus or any other offering material or advertisements in connection with the offer and sale of any such securities be distributed or published in any jurisdiction, except under circumstances that will result in compliance with the applicable rules and regulations of that jurisdiction. Persons into whose possession this prospectus comes are advised to inform themselves about and to observe any restrictions relating to the offering and the distribution of this prospectus. This prospectus does not constitute an offer to sell or a solicitation of an offer to buy any securities offered by this prospectus in any jurisdiction in which such an offer or a solicitation is unlawful.

Conflicts of Interest

Affiliates of Goldman Sachs & Co. LLC hold approximately $420 million aggregate principal amount of the Second Lien Notes, all of which will be redeemed at the applicable redemption premium and less than $1.5 million of the aggregate principal amount of the Term Loan, a portion of which will be repaid plus accrued and unpaid interest to, but excluding the date of redemption, and as a result will receive approximately 45.1% of the net proceeds of this offering (at an assumed initial public offering price of $21.50, the midpoint of the

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estimated offering price range on the cover of this prospectus), assuming the underwriters do not exercise their option to purchase additional shares. See "Use of Proceeds." Accordingly, Goldman Sachs & Co. LLC is deemed to have a conflict of interest within the meaning of Rule 5121. Therefore, this offering is being made in compliance with the requirements of Rule 5121. This rule requires, among other things, that a "qualified independent underwriter" participate in the preparation of, and exercise the usual standards of "due diligence" with respect to, the registration statement and this prospectus. J.P. Morgan Securities LLC has agreed to act as qualified independent underwriter for this offering and to undertake the legal responsibilities and liabilities of an underwriter under the Securities Act. J.P. Morgan Securities LLC will not receive any additional fees for serving as qualified independent underwriter in connection with this offering. We have agreed to indemnify J.P. Morgan Securities LLC against liabilities incurred in connection with acting as qualified independent underwriter, including liabilities under the Securities Act. Pursuant to FINRA Rule 5121, Goldman Sachs & Co. LLC will not confirm sales of our common stock to any account over which it exercises discretionary authority without the prior written approval of the customer.

Notice to Prospective Investors in the European Economic Area and the United Kingdom

In relation to each Member State of the European Economic Area and the United Kingdom (each a "Relevant State"), no shares have been offered or will be offered pursuant to this offering to the public in that Relevant State prior to the publication of a prospectus in relation to the shares which has been approved by the competent authority in that Relevant State or, where appropriate, approved in another Relevant State and notified to the competent authority in that Relevant State, all in accordance with the Prospectus Regulation, except that offers of shares may be made to the public in that Relevant State at any time under the following exemptions under the Prospectus Regulation:

a. to any legal entity which is a qualified investor as defined under the Prospectus Regulation;

b. to fewer than 150 natural or legal persons (other than qualified investors as defined under the Prospectus Regulation), subject to obtaining the prior consent of the representatives for any such offer; or

c. in any other circumstances falling within Article 1(4) of the Prospectus Regulation,

provided that no such offer of shares shall require the company or any underwriter to publish a prospectus pursuant to Article 3 of the Prospectus Regulation or supplement a prospectus pursuant to Article 23 of the Prospectus Regulation.

Each person in a Relevant State (other than a Relevant State where there is a permitted public offer) who initially acquires any shares or to whom any offer is made will be deemed to have represented, acknowledged and agreed to and with the company and the underwriters that it is a qualified investor within the meaning of the Prospectus Regulation.

In the case of any shares being offered to a financial intermediary as that term is used in Article 5(1) of the Prospectus Regulation, each such financial intermediary will be deemed to have represented, acknowledged and agreed that the shares acquired by it in the offer have not been acquired on a non-discretionary basis on behalf of, nor have they been acquired with a view to their offer or resale to, persons in circumstances which may give rise to an offer to the public other than their offer or resale in a Relevant State to qualified investors, in circumstances in which the prior consent of the underwriters has been obtained to each such proposed offer or resale.

The company, the underwriters and their affiliates will rely upon the truth and accuracy of the foregoing representations, acknowledgements and agreements.

For the purposes of this provision, the expression an "offer to the public" in relation to any shares in any Relevant State means the communication in any form and by any means of sufficient information on the terms of the offer and any shares to be offered so as to enable an investor to decide to purchase or subscribe for any shares, and the expression "Prospectus Regulation" means Regulation (EU) 2017/1129 (as amended).

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References to the Prospectus Regulation includes, in relation to the UK, the Prospectus Regulation as it forms part of UK domestic law by virtue of the European Union (Withdrawal) Act 2018.

Notice to Prospective Investors in the United Kingdom

In addition, in the United Kingdom, this document is being distributed only to, and is directed only at, and any offer subsequently made may only be directed at persons who are "qualified investors" (as defined in the Prospectus Regulation) (i) who have professional experience in matters relating to investments falling within Article 19(5) of the Financial Services and Markets Act 2000 (Financial Promotion) Order 2005, as amended (the "Order") and/or (ii) who are high net worth companies (or persons to whom it may otherwise be lawfully communicated) falling within Article 49(2)(a) to (d) of the Order (all such persons together being referred to as "relevant persons") or otherwise in circumstances which have not resulted and will not result in an offer to the public of the shares in the United Kingdom within the meaning of the Financial Services and Markets Act 2000.

Any person in the United Kingdom that is not a relevant person should not act or rely on the information included in this document or use it as basis for taking any action. In the United Kingdom, any investment or investment activity that this document relates to may be made or taken exclusively by relevant persons.

Notice of Prospective Investors in Switzerland

This prospectus is not intended to constitute an offer or solicitation to purchase or invest in the shares. The shares may not be publicly offered, directly or indirectly, in Switzerland within the meaning of the Swiss Financial Services Act ("FinSA") and no application has or will be made to admit the shares to trading on any trading venue (exchange or multilateral trading facility) in Switzerland. Neither this prospectus nor any other offering or marketing material relating to the shares constitutes a prospectus pursuant to the FinSA, and neither this prospectus nor any other offering or marketing material relating to the shares may be publicly distributed or otherwise made publicly available in Switzerland.

Notice to Prospective Investors in the Dubai International Financial Centre

This prospectus relates to an Exempt Offer in accordance with the Markets Rules 2012 of the Dubai Financial Services Authority ("DFSA"). This prospectus is intended for distribution only to persons of a type specified in the Markets Rules 2012 of the DFSA. It must not be delivered to, or relied on by, any other person. The DFSA has no responsibility for reviewing or verifying any documents in connection with Exempt Offers. The DFSA has not approved this prospectus nor taken steps to verify the information set forth herein and has no responsibility for the prospectus. The shares to which this prospectus relates may be illiquid and/or subject to restrictions on their resale. Prospective purchasers of the shares offered should conduct their own due diligence on the shares. If you do not understand the contents of this prospectus you should consult an authorized financial advisor.

In relation to its use in the DIFC, this prospectus is strictly private and confidential and is being distributed to a limited number of investors and must not be provided to any person other than the original recipient, and may not be reproduced or used for any other purpose. The interests in the securities may not be offered or sold directly or indirectly to the public in the DIFC.

Notice to Prospective Investors in Australia

This prospectus:

- does not constitute a disclosure document or a prospectus under Chapter 6D.2 of the Corporations Act 2001 (Cth) (the "Corporations Act");
- has not been, and will not be, lodged with the Australian Securities and Investments Commission ("ASIC"), as a disclosure document for the purposes of the Corporations Act and does not purport to

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include the information required of a disclosure document for the purposes of the Corporations Act; and

- may only be provided in Australia to select investors who are able to demonstrate that they fall within one or more of the categories of investors, available under section 708 of the Corporations Act ("Exempt Investors").

The shares may not be directly or indirectly offered for subscription or purchased or sold, and no invitations to subscribe for or buy the shares may be issued, and no draft or definitive offering memorandum, advertisement or other offering material relating to any shares may be distributed in Australia, except where disclosure to investors is not required under Chapter 6D of the Corporations Act or is otherwise in compliance with all applicable Australian laws and regulations. By submitting an application for the shares, you represent and warrant to us that you are an Exempt Investor.

As any offer of shares under this document will be made without disclosure in Australia under Chapter 6D.2 of the Corporations Act, the offer of those securities for resale in Australia within 12 months may, under section 707 of the Corporations Act, require disclosure to investors under Chapter 6D.2 if none of the exemptions in section 708 applies to that resale. By applying for the shares you undertake to us that you will not, for a period of 12 months from the date of sale of the shares, offer, transfer, assign or otherwise alienate those shares to investors in Australia except in circumstances where disclosure to investors is not required under Chapter 6D.2 of the Corporations Act or where a compliant disclosure document is prepared and lodged with ASIC.

Notice to Prospective Investors in Hong Kong

The shares have not been offered or sold and will not be offered or sold in Hong Kong, by means of any document, other than (a) to "professional investors" as defined in the Securities and Futures Ordinance (Cap. 571 of the Laws of Hong Kong) (the "SFO") of Hong Kong and any rules made thereunder; or (b) in other circumstances which do not result in the document being a "prospectus" as defined in the Companies (Winding Up and Miscellaneous Provisions) Ordinance (Cap. 32 of Hong Kong) (the "CO") or which do not constitute an offer to the public within the meaning of the CO. No advertisement, invitation or document relating to the shares has been or may be issued or has been or may be in the possession of any person for the purposes of issue, whether in Hong Kong or elsewhere, which is directed at, or the contents of which are likely to be accessed or read by, the public of Hong Kong (except if permitted to do so under the securities laws of Hong Kong) other than with respect to shares which are or are intended to be disposed of only to persons outside Hong Kong or only to "professional investors" as defined in the SFO and any rules made thereunder.

Notice to Prospective Investors in Japan

The shares have not been and will not be registered pursuant to Article 4, Paragraph 1 of the Financial Instruments and Exchange Law of Japan. Accordingly, none of the shares nor any interest therein may be offered or sold, directly or indirectly, in Japan or to, or for the benefit of, any "resident" of Japan (which term as used herein means any person resident in Japan, including any corporation or other entity organized under the laws of Japan), or to others for re-offering or resale, directly or indirectly, in Japan or to or for the benefit of a resident of Japan, except pursuant to an exemption from the registration requirements of, and otherwise in compliance with, the Financial Instruments and Exchange Act and any other applicable laws, regulations and ministerial guidelines of Japan in effect at the relevant time.

Notice to Prospective Investors in Singapore

Each underwriter has acknowledged that this prospectus has not been registered as a prospectus with the Monetary Authority of Singapore. Accordingly, each underwriter has represented and agreed that it has not offered or sold any shares or caused the shares to be made the subject of an invitation for subscription or

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purchase and will not offer or sell any shares or cause the shares to be made the subject of an invitation for subscription or purchase, and has not circulated or distributed, nor will it circulate or distribute, this prospectus or any other document or material in connection with the offer or sale, or invitation for subscription or purchase, of the shares, whether directly or indirectly, to any person in Singapore other than:

(a) to an institutional investor (as defined in Section 4A of the Securities and Futures Act (Chapter 289) of Singapore, as modified or amended from time to time (the "SFA")) pursuant to Section 274 of the SFA;

(b) to a relevant person (as defined in Section 275(2) of the SFA) pursuant to Section 275(1) of the SFA, or any person pursuant to Section 275(1A) of the SFA, and in accordance with the conditions specified in Section 275 of the SFA; or

(c) otherwise pursuant to, and in accordance with the conditions of, any other applicable provision of the SFA.

Where the shares are subscribed or purchased under Section 275 of the SFA by a relevant person which is:

(a) a corporation (which is not an accredited investor (as defined in Section 4A of the SFA)) the sole business of which is to hold investments and the entire share capital of which is owned by one or more individuals, each of whom is an accredited investor; or

(b) a trust (where the trustee is not an accredited investor) whose sole purpose is to hold investments and each beneficiary of the trust is an individual who is an accredited investor,

securities or securities-based derivatives contracts (each term as defined in Section 2(1) of the SFA) of that corporation or the beneficiaries' rights and interest (howsoever described) in that trust shall not be transferred within six months after that corporation or that trust has acquired the shares pursuant to an offer made under Section 275 of the SFA except:

(i) to an institutional investor or to a relevant person, or to any person arising from an offer referred to in Section 275(1A) or Section 276(4)(i)(B) of the SFA;

(ii) where no consideration is or will be given for the transfer;

(iii) where the transfer is by operation of law;

(iv) as specified in Section 276(7) of the SFA; or

(v) as specified in Regulation 37A of the Securities and Futures (Offers of Investments) (Securities and Securities-based Derivatives Contracts) Regulations 2018.

Notice to Prospective Investors in Canada

The shares may be sold only to purchasers purchasing, or deemed to be purchasing, as principal that are accredited investors, as defined in National Instrument 45-106 Prospectus Exemptions or subsection 73.3(1) of the Securities Act (Ontario), and are permitted clients, as defined in National Instrument 31-103 Registration Requirements, Exemptions and Ongoing Registrant Obligations. Any resale of the shares must be made in accordance with an exemption from, or in a transaction not subject to, the prospectus requirements of applicable securities laws.

Securities legislation in certain provinces or territories of Canada may provide a purchaser with remedies for rescission or damages if this prospectus (including any amendment thereto) contains a misrepresentation, provided that the remedies for rescission or damages are exercised by the purchaser within the time limit prescribed by the securities legislation of the purchaser's province or territory. The purchaser should refer to any applicable provisions of the securities legislation of the purchaser's province or territory for particulars of these rights or consult with a legal advisor.

Pursuant to section 3A.3 of National Instrument 33-105 Underwriting Conflicts (NI 33-105), the underwriters are not required to comply with the disclosure requirements of NI 33-105 regarding underwriter conflicts of interest in connection with this offering.

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LEGAL MATTERS

Cleary Gottlieb Steen & Hamilton LLP, New York, New York will pass upon the legality of the shares of common stock to be issued in this offering. Certain legal matters will be passed upon for the underwriters by Simpson Thacher & Bartlett LLP, New York, New York.

EXPERTS

The consolidated financial statements and schedules of Sotera Health Company (formerly known as Sotera Health Topco, Inc.) as of December 31, 2019 and 2018, and for each of the years then ended, appearing in this prospectus and the registration statement of which this prospectus is a part, have been audited by Ernst & Young LLP, independent registered public accounting firm, as set forth in their report thereon appearing elsewhere herein, and are included in reliance upon such report given on the authority of such firm as experts in accounting and auditing.

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WHERE YOU CAN FIND MORE INFORMATION

We have filed with the SEC a registration statement on Form S-1 under the Securities Act, with respect to our common stock offered by this prospectus. This prospectus, which forms part of the registration statement, does not contain all of the information set forth in the registration statement and the exhibits to the registration statement. Some items are omitted in accordance with the rules and regulations of the SEC. For further information about us and our common stock, we refer you to the registration statement and the exhibits to the registration statement filed as part of the registration statement. The SEC maintains an Internet site at www.sec.report, from which you can electronically access the registration statement, including the exhibits to the registration statement.

As a result of this offering, we will become subject to the full informational requirements of the Exchange Act. We will fulfill our obligations with respect to such requirements by filing periodic reports and other information with the SEC. We intend to furnish our stockholders with annual reports containing financial statements that have been examined and reported on, with an opinion expressed by an independent registered public accounting firm. We also maintain an Internet site at http://www.soterahealth.com. Our website is not a part of this prospectus.

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REPORT OF INDEPENDENT REGISTERED PUBLIC ACCOUNTING FIRM

To the Shareholders and the Board of Directors of Sotera Health Company (formerly known as Sotera Health Topco, Inc.)

Opinion on the Financial Statements

We have audited the accompanying consolidated balance sheets of Sotera Health Company (the Company) as of December 31, 2019 and 2018, the related consolidated statements of operations and comprehensive income (loss), equity (deficit) and cash flows for the years then ended, and the related notes and schedules (collectively referred to as the "consolidated financial statements"). In our opinion, the consolidated financial statements present fairly, in all material respects, the financial position of the Company at December 31, 2019 and 2018, and the results of its operations and its cash flows for the years then ended, in conformity with U.S. generally accepted accounting principles.

Basis for Opinion

These financial statements are the responsibility of the Company's management. Our responsibility is to express an opinion on the Company's financial statements based on our audits. We are a public accounting firm registered with the Public Company Accounting Oversight Board (United States) (PCAOB) and are required to be independent with respect to the Company in accordance with the U.S. federal securities laws and the applicable rules and regulations of the Securities and Exchange Commission and the PCAOB.

We conducted our audits in accordance with the standards of the PCAOB. Those standards require that we plan and perform the audit to obtain reasonable assurance about whether the financial statements are free of material misstatement, whether due to error or fraud. The Company is not required to have, nor were we engaged to perform, an audit of its internal control over financial reporting. As part of our audits we are required to obtain an understanding of internal control over financial reporting but not for the purpose of expressing an opinion on the effectiveness of the Company's internal control over financial reporting. Accordingly, we express no such opinion.

Our audits included performing procedures to assess the risks of material misstatement of the financial statements, whether due to error or fraud, and performing procedures that respond to those risks. Such procedures included examining, on a test basis, evidence regarding the amounts and disclosures in the financial statements. Our audits also included evaluating the accounting principles used and significant estimates made by management, as well as evaluating the overall presentation of the financial statements. We believe that our audits provide a reasonable basis for our opinion.

/s/ Ernst & Young LLP

We have served as the Company's auditor since 2019.

Akron, Ohio
September 2, 2020, except as to Note 21, as to which the date is November 18, 2020.

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Sotera Health Company

Consolidated Balance Sheets
(in thousands)

	As of December 31, 2019	As of December 31, 2018
Assets		
Current assets:		
Cash and cash equivalents	$ 62,863	$ 96,272
Restricted cash short-term	162	514
Accounts receivable, net of allowance for uncollectible accounts of $787 in 2019 and $928 in 2018	88,644	100,010
Inventories, net	37,396	37,599
Prepaid expenses and other current assets	52,644	57,359
Income taxes receivable	10,645	17,840
Assets held for sale	—	3,268
Total current assets	252,354	312,862
Property, plant, and equipment, net	581,954	586,436
Deferred income taxes	2,252	15,764
Other assets	12,243	4,154
Other intangible assets, net	696,006	766,054
Goodwill	1,035,865	1,023,314
Total assets	$ 2,580,674	$ 2,708,584
Liabilities and equity		
Current liabilities:		
Accounts payable	$ 42,004	$ 46,355
Accrued liabilities	58,536	75,709
Deferred revenue	3,631	4,615
Current portion of long-term debt	16,331	15,343
Current portion of capital lease obligations	1,288	1,352
Current portion of asset retirement obligations	2,200	—
Total current liabilities	123,990	143,374
Long-term debt, less current portion	2,800,873	2,189,563
Capital lease obligations, less current portion	29,883	31,535
Noncurrent asset retirement obligations	42,996	40,543
Deferred lease income	21,375	20,955
Post-retirement obligations	31,266	19,411
Mandatorily redeemable noncontrolling interest	13,625	13,625
Noncurrent liabilities	20,563	32,605
Deferred income taxes	137,235	171,482
Total liabilities	3,221,806	2,663,093
See Commitments and contingencies note		
Equity:		
Common stock, with $0.01 par value, 232,400 shares authorized, 232,400 shares issued and outstanding at December 31, 2019, and December 31, 2018	2,324	2,324
Additional paid-in capital	—	162,409
Retained earnings (deficit)	(550,511)	(10,417)
Accumulated other comprehensive loss	(94,387)	(109,957)
Total equity (deficit) attributable to Sotera Health Company	(642,574)	44,359
Noncontrolling interests	1,442	1,132
Total equity (deficit)	(641,132)	45,491
Total liabilities and equity (deficit)	$ 2,580,674	$ 2,708,584

Share amounts and per share data give retroactive effect to the forward stock split as described in the Subsequent Events footnote effective November 18, 2020.

See notes to consolidated financial statements.

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Sotera Health Company

Consolidated Statements of Operations and Comprehensive Income (Loss)
(in thousands, except per share amounts)

	Year Ended December 31, 2019	Year Ended December 31, 2018
Revenues:		
Service	$ 673,037	$ 615,510
Product	105,290	130,639
Total net revenues	778,327	746,149
Cost of revenues:		
Service	333,290	326,559
Product	49,606	62,338
Total cost of revenues	382,896	388,897
Gross profit	395,431	357,252
Operating expenses:		
Selling, general and administrative expenses	147,480	133,363
Amortization of intangible assets	58,562	57,975
Impairment of long-lived assets	5,792	34,981
Impairment of GA-MURR intangible assets	—	50,086
Total operating expenses	211,834	276,405
Operating income	183,597	80,847
Interest expense, net	157,729	143,326
Loss on extinguishment of debt	30,168	—
Foreign exchange loss	3,862	13,075
Gain on sale of Medical Isotopes business	—	(95,910)
Other income, net	(7,246)	(3,866)
Income (loss) before income taxes	(916)	24,222
Provision for income taxes	19,509	30,098
Net loss	(20,425)	(5,876)
Less: Net income (loss) attributable to noncontrolling interests	425	(6)
Net loss attributable to Sotera Health Company	$ (20,850)	$ (5,870)
Other comprehensive (loss) income net of tax:		
Pension and post-retirement benefits (net of taxes of ($4,085) and $294, respectively)	$ (12,126)	$ 873
Interest rate swaps (net of taxes of $63 and $0, respectively)	179	—
Foreign currency translation	27,402	(67,917)
Comprehensive income (loss)	(4,970)	(72,920)
Less: comprehensive income (loss) attributable to noncontrolling interests	310	(186)
Comprehensive loss attributable to Sotera Health Company	$ (5,280)	$ (72,734)
Loss per share attributable to Sotera Health Company		
Basic and diluted	$ (0.09)	$ (0.03)
Pro forma basic and diluted (unaudited)	(0.08)	
Weighted average number of shares outstanding attributable to Sotera Health Company		
Basic and diluted	232,400	232,400
Pro forma basic and diluted (unaudited)	246,152	

Share amounts and per share data give retroactive effect to the forward stock split as described in the Subsequent Events footnote effective November 18, 2020.

See notes to consolidated financial statements.

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Sotera Health Company

Consolidated Statements of Cash Flows
(in thousands)

	Year Ended December 31, 2019	Year Ended December 31, 2018
Operating activities		
Net loss	$ (20,425)	$ (5,876)
Adjustments to reconcile net loss to net cash provided by operating activities:		
Depreciation	66,671	66,910
Amortization of intangible assets	80,048	79,906
Impairment of long-lived assets	5,792	34,981
Impairment of GA-MURR intangible assets	—	50,086
Loss on extinguishment of debt	30,168	—
Deferred income taxes	(18,993)	(45,317)
Share-based non-cash compensation expense	6,882	6,943
Accretion of asset retirement obligations	2,051	1,330
Unrealized foreign exchange (gains) / losses	3,325	13,460
(Gain)/loss on embedded derivative instruments	(1,200)	1,019
Amortization of debt issuance costs	8,291	7,270
Gain on sale of Medical Isotopes business	—	(95,910)
Other	(5,218)	726
Changes in operating assets and liabilities:		
Accounts receivable	11,764	(2,906)
Inventories	(282)	(7,041)
Other current assets	15,322	2,500
Accounts payable	(8,968)	15,125
Accrued liabilities	(18,405)	(6,935)
Income taxes payable/receivable	(7,771)	4,724
Other liabilities	724	(2,627)
Other long-term assets	(735)	1,195
Net cash provided by operating activities	149,041	119,563
Investing activities		
Purchases of property, plant and equipment	(57,257)	(72,613)
Purchase of Gibraltar Laboratories, net of cash acquired	—	(50,603)
Purchase of Nelson Labs NV, net of cash acquired	—	432
Proceeds from sale of the Medical Isotopes business	—	212,993
Other	—	6,429
Net cash provided by (used in) investing activities	(57,257)	96,638
Financing activities		
Proceeds from borrowings	3,144,600	—
Payments of debt issuance costs and prepayment premium	(17,034)	—
Dividends and distributions to shareholders	(691,170)	(175,845)
Payments on debt	(2,561,084)	(14,634)
Other	(1,342)	(1,378)
Net cash used in financing activities	(126,030)	(191,857)
Effect of exchange rate changes on cash and cash equivalents	485	(3,676)
Net increase (decrease) in cash and cash equivalents, including restricted cash	(33,761)	20,668
Cash and cash equivalents, including restricted cash, at beginning of period	96,786	76,118
Cash and cash equivalents, including restricted cash, at end of period	$ 63,025	$ 96,786
Supplemental disclosures of cash flow information		
Cash paid during the period for interest	$ 151,005	$ 138,850
Cash paid during the period for income taxes, net of tax refunds received	44,614	68,610
Property and equipment acquired under capital leases	1,337	617
Equipment purchases included in accounts payable	5,197	3,487

See notes to consolidated financial statements.

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Sotera Health Company

Consolidated Statements of Equity (Deficit)
(in thousands)

	Shares Common Stock	Amount Common Stock	Additional Paid-In Capital	Retained Earnings / (Accumulated Deficit)	Accumulated Other Comprehensive (Loss) Income	Noncontrolling Interests	Total Equity
Balance at January 1, 2018	232,400	$ 2,324	$ 304,286	$ 22,630	$(43,093)	$1,318	$ 287,465
Dividends and distributions to shareholders	—	—	(148,668)	(27,177)	—	—	(175,845)
Purchase of noncontrolling interests in Sterigenics Belgium Fleurus, S.A.	—	—	(152)	—	—	—	(152)
Non-cash share-based compensation	—	—	6,943	—	—	—	6,943
Comprehensive income (loss):							
Pension and post-retirement plan adjustments, net of tax	—	—	—	—	873	—	873
Foreign currency translation	—	—	—	—	(67,737)	(180)	(67,917)
Net income (loss)	—	—	—	(5,870)	—	(6)	(5,876)
Balance at December 31, 2018	232,400	2,324	162,409	(10,417)	(109,957)	1,132	45,491
Cumulative-effect adjustment upon adoption of ASU 2014-09 (Note 2)	—	—	—	2,635	—	—	2,635
Dividends and distributions to shareholders	—	—	(169,291)	(521,879)	—	—	(691,170)
Non-cash share-based compensation	—	—	6,882	—	—	—	6,882
Comprehensive income (loss):							
Pension and post-retirement plan adjustments, net of tax	—	—	—	—	(12,126)	—	(12,126)
Foreign currency translation	—	—	—	—	27,517	(115)	27,402
Interest rate swaps	—	—	—	—	179	—	179
Net income (loss)	—	—	—	(20,850)	—	425	(20,425)
Balance at December 31, 2019	232,400	$ 2,324	$ —	$ (550,511)	$ (94,387)	$ 1,442	$(641,132)

Share amounts and per share data give retroactive effect to the forward stock split as described in the Subsequent Events footnote effective November 18, 2020.

See notes to consolidated financial statements.

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Sotera Health Company

Notes to Consolidated Financial Statements

1. Significant Accounting Policies

Principles of Consolidation – Sotera Health Company (formerly known as Sotera Health Topco, Inc.) (also referred to herein as the "Company," "we," "our," "us" or "its"), is a fully integrated provider of mission-critical health sciences, lab services and sterilization solutions with operations primarily in the Americas, Europe and Asia.

The accompanying consolidated financial statements include the assets, liabilities, operating results, and cash flows of the Company and its wholly owned subsidiaries prepared in accordance with U.S. generally accepted accounting principles ("GAAP").

We operate and report in three segments, Sterigenics, Nordion and Nelson Labs. We describe our reportable segments in the *Segment and Geographic Information* note. All significant intercompany balances and transactions have been eliminated in consolidation.

Noncontrolling interests represents the noncontrolling stockholders' proportionate share of the total equity in the Company's consolidated subsidiaries. On February 28, 2018, we purchased the remaining 3.8% of equity in Sterigenics Belgium Fleurus, S.A. from noncontrolling stockholders for $0.3 million. As of December 31, 2019, our subsidiaries were wholly owned by us, except for noncontrolling interests of 15% and 33% in our two China subsidiaries. In addition, a 15% noncontrolling interest remains from the August 2018 acquisition of Gibraltar Laboratories, Inc. (now known as Nelson Laboratories Fairfield, Inc.). See the *Acquisitions and Dispositions* note for additional details. We consolidate the results of operations of these subsidiaries with our results of operations and reflect the noncontrolling interests in our two China subsidiaries on our consolidated statements of operations and comprehensive income (loss) as "Net income (loss) attributable to noncontrolling interests." Our required future purchase of 15% noncontrolling interest in Gibraltar Laboratories, Inc., is considered mandatorily redeemable, and therefore no earnings are allocated to this noncontrolling interest.

Use of Estimates – In preparing our consolidated financial statements in conformity with GAAP, we make estimates and assumptions that affect the amounts reported and the accompanying notes. We regularly evaluate the estimates and assumptions used and revise them as new information becomes available. Actual results may vary from those estimates.

Cash and Cash Equivalents – We consider all highly liquid investments purchased with an original maturity of three months or less from the date of purchase to be cash equivalents. Cash and cash equivalents may include various deposit accounts and money market funds.

Allowance for Uncollectible Accounts Receivable – We maintain an allowance for uncollectible accounts receivable for estimated losses in the collection of amounts owed to us by customers. We estimate the allowance based on analyzing a number of factors, including amounts written off historically, customer payment practices, and general economic conditions. We also analyze significant customer accounts on a regular basis and record a specific allowance when we become aware of a specific customer's inability to pay, and generally require no collateral from our customers. We generally do not charge interest on accounts receivable. We record write-offs against the allowance for uncollectible accounts receivable when all reasonable efforts for collection have been exhausted. As a result, the related accounts receivable are reduced to an amount that we reasonably believe is collectible. These analyses require judgment. If the financial condition of our customers worsens, or economic conditions change, we may be required to make changes to our allowance for uncollectible accounts receivable.

Inventories – Inventories as of December 31, 2019 and 2018 are held at Nordion. Finished goods and work-in-process include the cost of material, labor, and certain manufacturing overhead such as insurance,

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Sotera Health Company

Notes to Consolidated Financial Statements

repairs and maintenance, and property taxes, and are recorded on a weighted average cost basis at the lower of cost or net realizable value. We review inventory on an ongoing basis, considering factors such as deterioration and obsolescence. We record a reserve for excess and obsolete inventory, which was immaterial at December 31, 2019 and 2018, when the facts and circumstances indicate that particular inventories will not be usable. If future market conditions vary from those projected, and our estimates prove to be inaccurate, we may be required to write-down inventory values and record an adjustment to cost of revenues.

Property, Plant, and Equipment – Property, plant, and equipment is carried at cost, or initially at fair value if acquired in an acquisition, less accumulated depreciation and amortization. Except for Cobalt 60 ("Co-60"), a radioactive isotope used in gamma radiation sterilization, all property, plant, and equipment depreciation is computed using the straight-line method over estimated useful lives. Leasehold improvements are amortized over their estimated useful lives or the term of the related lease, whichever is shorter. Co-60 is amortized using an accelerated method, which relates to the natural radioactive decay of the isotope over its estimated useful life which is approximately twenty years. Amortization of Co-60 is included within depreciation expense as a cost of revenue. Expenditures for major software purchases and software developed for internal use are capitalized and depreciated using the straight-line method over the estimated useful lives of the related assets, which are generally three to five years. For software obtained or developed for internal use, all external direct costs for materials and services and certain personnel costs incurred to develop the software during the application development stage are capitalized. At December 31, 2019 and 2018, we had undepreciated software costs of $4.7 million and $5.2 million, respectively, included in property, plant, and equipment, net. We recognized $3.0 million and $3.3 million, of depreciation expense related to software costs for the years ending December 31, 2019 and 2018, respectively.

Depreciation is computed using the assets' estimated useful lives as presented below:

Buildings and building improvements	15–44 years
Machinery and equipment	3–30 years
Leasehold improvements	2–20 years
Furniture and fixtures	3–10 years
Computer hardware and software	2–7 years

From time to time, we build or expand facilities. The cost of construction of these facilities is reflected as construction-in-progress until the asset is ready for its intended use, at which time the costs are reclassified to the appropriate depreciable category of property, plant, and equipment and depreciation commences. Fixed asset projects requiring one or more years to complete construction qualify for capitalization of interest costs in accordance with our policy. Interest related to property, plant and equipment projects with a construction period of less than one year are not capitalized and are immaterial. Repairs and maintenance costs that do not extend the useful life of an asset are expensed as incurred.

Upon sale or retirement of assets, the cost and related accumulated depreciation is removed from the consolidated balance sheet, and the resulting gain or loss is reflected as a component of operating income.

Long-Lived Assets Other than Goodwill – We review long-lived assets, including finite-lived intangibles for impairment whenever events or circumstances indicate that the carrying amount of the asset or asset group may be impaired. Events or circumstances which would result in an impairment assessment include operating losses, a significant change in the use of an asset or asset group, or the planned disposal or sale of the asset or asset group. The asset or asset group would be considered impaired when the future net undiscounted cash flows generated by the asset or asset group are less than its carrying value. An impairment loss would be recognized based on the amount by which the carrying value of the asset or asset group exceeds its estimated fair value.

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Sotera Health Company

Notes to Consolidated Financial Statements

Amortization of intangible assets is computed using the asset's estimated useful lives as presented below:

Land-use rights	50 years
Customer contracts and related relationships	10–15 years
Proprietary technology	8–20 years
Trade name/trademark	10–15 years
Sealed source and supply agreements	7–20 years

Goodwill and Other Indefinite-Lived Intangibles – Goodwill and other indefinite-lived intangible assets, primarily certain regulatory licenses and tradenames, are tested for impairment annually as of October 1. If circumstances change during interim periods between annual tests that would indicate that the carrying amount of such assets may not be recoverable, the Company would test such assets at an interim date for impairment. Factors which would necessitate an interim impairment assessment include prolonged negative industry or economic trends and significant underperformance relative to historical or projected future operating results.

We performed a quantitative assessment of all reporting units (Sterigenics, Nordion and Nelson Labs) as of October 1, 2019. The fair value of each reporting unit was calculated using a discounted cash flow analysis which was dependent on subjective market participant assumptions determined by management. We further corroborated such discounted cash flow analyses utilizing a market approach to determine the estimated enterprise fair value. Assumptions used in the analyses included discount rates and projected operating cash flows. Estimates of future cash flows are based upon relevant data at a point-in-time, are subject to change, and could vary from actual results. The estimated fair value of each reporting unit exceeded its carrying amount (including goodwill) by a minimum of 60% as of October 1, 2019. We performed a qualitative impairment assessment to evaluate any potential impairment to the indefinite-lived intangible assets. We considered significant events and circumstances that could affect the significant inputs used to determine the estimated fair value of the indefinite-lived intangible assets, and determined, after considering the totality of evidence that it is not more likely than not that the indefinite-lived intangible assets are impaired. In addition, there have been no significant events or circumstances that occurred since the annual assessment date of October 1 that would change the conclusions reached above.

Derivative Instruments – We may enter into derivative instruments and hedging activities to manage, where possible and economically efficient, commodity price risk, foreign currency exchange rate risk and interest rate risk related to borrowings. We also have identified embedded derivatives in certain supply and customer contracts. Certain interest rate swaps were designated as cash flow hedges allowing for changes in fair value to be recorded through comprehensive income (loss). Amounts in accumulated other comprehensive income (loss) will be reclassified into earnings in the same periods during which the hedged transaction affects earnings and are presented in "Interest expense, net" within the consolidated statements of operations and comprehensive income (loss). With the exception of aforementioned interest rate swaps, we currently do not designate any other contracts as hedges for accounting purposes. Derivatives not designated as hedges are recorded at fair value on the consolidated balance sheets, with any changes in the value being recorded in the consolidated statements of operations and comprehensive income (loss) in the same line item as the corresponding hedged item. We classify cash flows from derivative instruments and hedging activities as cash flows from operating activities in the consolidated statements of cash flows. To the extent that derivative arrangements are with the same counterparty and contractual right of offset exists under applicable master agreements, we offset assets and liabilities for reporting on the consolidated balance sheets.

Pension, Post-Retirement and Other Post-Employment Benefit Plans – We sponsor a defined-contribution retirement plan that covers substantially all U.S. employees. We also sponsor various post-employment benefit plans at our Nordion business in Canada including defined benefit and defined contribution pension plans, retirement compensation arrangements and plans that provide extended health care coverage to retired

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Sotera Health Company

Notes to Consolidated Financial Statements

employees. In addition, we provide other benefit plans at our foreign subsidiaries including a supplemental retirement arrangement, a retirement and termination allowance and post-retirement benefit plans, which include contributory healthcare benefits and contributory life insurance coverage. All non-pension post-employment benefit plans are unfunded.

These costs and obligations are affected by assumptions including the discount rate, expected long-term rate of return on plan assets, the annual rate of change in compensation for eligible employees, estimated changes in costs of healthcare benefits, and other demographic and economic factors. We review the assumptions used on an annual basis.

We recognize the over/under funded status of defined benefit pension and post-retirement benefits plans in our consolidated balance sheets. This amount is measured as the difference between the fair value of plan assets and the projected benefit obligation. Changes in the funded status of the plans are recorded in other comprehensive income (loss) in the year they occur. We measure plan assets and obligations as of the balance sheet date. We provide additional information about our pension and other post-retirement benefits plans in the *Employee Benefits* note.

Asset Retirement Obligations ("ARO") – ARO are legal obligations associated with the retirement of long-lived assets or the exit of a leased facility. We recognize a liability for an ARO in the period in which it is incurred if a reasonable estimate of fair value can be made, and the associated asset retirement costs are then capitalized as part of the carrying amount of the long-lived asset. We lease various facilities where sterilization and ionization services are performed. Under the lease agreements, we are required to return the facilities to their original condition and to perform decommissioning activities. In addition, certain of our owned facilities are required to be decommissioned when we vacate the facility. Accretion expense is recognized in cost of revenues in the consolidated statements of operations and comprehensive income (loss) over time as the discounted liability is accreted to its expected settlement value.

Deferred Financing Costs – We have incurred deferred financing fees associated with our long-term debt. The portion of these fees that are capitalized are recorded as a reduction of debt on the consolidated balance sheets and amortized into interest expense over the term of the debt agreement using the effective interest method. Deferred financing costs associated with the Company's revolving credit facilities are classified as assets unless there are outstanding borrowings under such arrangements.

Concentration of Credit Risk, Other Risks and Uncertainties – We maintain cash and cash equivalents in the form of demand deposits in accounts with major financial institutions in the U.S. and in countries where our subsidiaries operate. Deposits in these institutions may exceed amounts of insurance provided on such accounts. We have not experienced any losses on our deposits of cash and cash equivalents.

Our net revenues and accounts receivable are derived from customers located primarily in North America and Europe.

No customer accounted for 10% or more of accounts receivable at December 31, 2019 and 2018, or 10% or more of net revenues for the years ended December 31, 2019 and 2018.

Income Taxes –We use the liability method of accounting for income taxes whereby we recognize deferred tax assets and liabilities for the future tax consequences of temporary differences between the tax bases of assets and liabilities and their reported amounts in the consolidated financial statements. Deferred tax assets will be reduced by a valuation allowance if, based on management's estimate, it is more likely than not that a portion of the deferred tax assets will not be realized in a future period. The estimates used in the recognition of deferred tax assets are subject to revision in future periods based on new facts and circumstances.

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Sotera Health Company

Notes to Consolidated Financial Statements

We determine whether it is more likely than not that a tax position will be sustained upon examination, including resolution of related appeals or litigation processes, based on the technical merits of the position. In evaluating whether a tax position has met the more-likely-than-not recognition threshold, we presume that the position will be examined by the appropriate taxing authority and that the taxing authority will have full knowledge of all relevant information. A tax position that meets the more-likely-than-not recognition threshold is measured at the largest amount of benefit that is greater than 50% likely of being realized upon ultimate settlement. Determining what constitutes an individual tax position and whether the more-likely-than-not recognition threshold is met for a tax position are matters of judgment based on the individual facts and circumstances of that position evaluated in light of all available evidence. We review and adjust tax estimates periodically because of ongoing examinations by, and settlements with, the various taxing authorities, as well as changes in tax laws, regulations, and precedent.

Our policy is to recognize interest and penalties related to income tax matters as a component of the provision for income taxes in our consolidated statements of operations and comprehensive income (loss).

Foreign Currency Translation – The functional currency of our foreign subsidiaries is generally the local currency. Accordingly, assets and liabilities are generally translated into U.S. dollars at the current rates of exchange as of the balance sheet date, and revenues and expenses are translated using weighted-average rates prevailing during the period. Adjustments from foreign currency translation are included as a separate component of accumulated other comprehensive income (loss). The foreign exchange loss in our consolidated statements of operations and comprehensive income (loss) relates primarily to U.S. denominated intercompany indebtedness in certain of our European and Canadian subsidiaries.

Revenue Recognition – The majority of our sales agreements contain performance obligations satisfied at a point-in-time when control of promised goods or services have transferred to our customers. For agreements with multiple performance obligations, judgment is required to determine whether performance obligations specified in these agreements are distinct and should be accounted for as separate revenue transactions for recognition purposes. In these types of agreements, we generally allocate the sales price to each distinct obligation based on the relative price of each item sold in stand-alone transactions. Sales recognized over time are generally accounted for using an input measure to determine progress completed as of the end of the period.

Refunds, returns, warranties and other related obligations are not material to any of our segments, nor do we incur material incremental costs to secure customer contracts.

Our Sterigenics segment provides outsourced terminal sterilization and irradiation services for the medical device, pharmaceutical, food safety and advanced applications markets. We typically have multiyear service contracts with our significant customers, and these sales contracts are primarily based on a customer's purchase order. Given the relatively short turnaround times, performance obligations are generally satisfied at a point-in-time upon the completion of sterilization or irradiation processing once approved by our quality assurance process at which time the service is complete. Sterigenics segment revenues are included in service revenues in our consolidated statements of operations and comprehensive income (loss).

Our Nordion segment is a global provider of Co-60 and gamma irradiators, which are key components to the gamma sterilization process. Revenue from the sale of Co-60 sources is recognized as product revenue at a point-in-time upon satisfaction of our performance obligations for delivery of existing sources. Revenue from the production of equipment is recognized as product revenue over time using an input measure of costs incurred and is immaterial to the overall business. Revenues from Co-60 installation and disposal and production irradiator refurbishments and installations are recognized as service revenue.

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Our Nelson Labs segment provides outsourced microbiological and analytical chemistry testing and advisory services for the medical device and pharmaceutical industries. We provide our customers mission-critical lab testing services, which assess the product quality, effectiveness, patient safety and end-to-end sterility of products. These services are necessary for our customers' regulatory approvals, product releases and ongoing product performance evaluations. Nelson Labs services are generally provided on a fee-for-service or project basis, and we recognize revenues over time using an input measure of time incurred to determine progress completed at the end of the period. Nelson Labs segment revenues are included in service revenues in our consolidated statements of operations and comprehensive income (loss).

We do not capitalize sales commissions as substantially all of our sales commission programs have an amortization period of one year or less. Furthermore, costs to fulfill a contract are not material.

Provisions for discounts, rebates to customers, and other adjustments are provided for as reductions in net revenues in the period the related sale is recorded. Shipping and handling charges billed to customers are included in net revenues, and the related shipping and handling costs are included in cost of net revenues in the consolidated statements of operations and comprehensive income (loss). Taxes assessed by a governmental authority that are both imposed on and concurrent with a specific revenue-producing transaction, that are collected by us from a customer, are excluded from net revenue.

Payment terms vary by the type and location of the customer and the products or services offered. Generally, the time between when revenue is recognized and when payment is due is not significant. We do not evaluate whether the selling price contains a financing component for contracts that have a duration of less than one year.

On January 1, 2019, the Company adopted accounting standard update ("ASU") 2014-09, *Revenue from Contracts with Customers* ("ASU 2014-09"), as further described in the *Recent Accounting Standards* note. Prior to its adoption, revenue was recognized upon the completion of sterilization or irradiation processing once approved by our quality assurance process at which time the service was considered complete. Product revenue from the sale of Co-60 was recognized upon delivery, whereas related service revenue from installation and disposal services was recognized when services were completed. Nelson Labs services were recognized upon finalization of each test, typically evidenced with the shipment of a technical laboratory report.

Share-Based Compensation – Equity-based awards issued to employees include restricted unit awards, which vest based on either time or the achievement of certain performance and market conditions ("performance awards"). These equity-based awards represent an interest in our parent, Sotera Health Topco Parent, L.P., and are granted in respect of services provided to the Company and its subsidiaries. Compensation expense resulting from time vesting based awards is recognized in the consolidated statements of operations and comprehensive income (loss), primarily within general and administrative expenses at the grant date fair value over the requisite service period (typically five years on a straight-line basis for time vested awards). Compensation expense resulting from awards that vest upon satisfaction of a performance condition is recognized at grant date fair value when the performance condition is deemed probable, which may cause volatility in the timing of expense recognition. The calculated compensation expense for performance awards is adjusted based on an estimate of awards ultimately expected to vest. For awards with market conditions, the market condition is taken into account when calculating grant date fair value.

The fair value of performance based restricted unit awards is estimated using a simulation-based option valuation model incorporating multiple and variable assumptions over time, including assumptions such as unit price volatility, dividend and other assumptions.

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Earnings (Loss) Per Share – Basic earnings (loss) per common share is computed by dividing net loss attributable to Sotera Health Company by the weighted average number of common shares outstanding during the period. Diluted income (loss) per common share incorporates the dilutive effect of common stock equivalents on an average basis during the period. For the periods presented, there were no dilutive effects of common stock equivalents.

Commitments and Contingencies – Certain conditions may exist as of the date of the consolidated financial statements which may result in a loss to the Company but will only be resolved when one or more future events occur or fail to occur. Such liabilities for loss contingencies arising from claims, assessments, litigation, fines, penalties, and other sources, are recorded when management assesses that it is probable that a future liability has been incurred and the amount can be reasonably estimated. Recoveries of costs from third parties, which management assesses as being probable of realization, are recorded to the extent related contingent liabilities are accrued. Legal costs incurred in connection with matters relating to contingencies are expensed in the period incurred. We record gain contingencies when realized.

2. Recent Accounting Standards

Adoption of Accounting Standard Updates

Effective January 1, 2019, we adopted ASU 2014-09, *Revenue from Contracts with Customers*, and all related amendments, with new guidance on recognizing revenue from contracts with customers. Under this guidance, revenue is recognized to depict the transfer of goods or services to customers in an amount that reflects the consideration to which the entity expects to be entitled in exchange for those goods or services. ASU 2014-09 also requires expanded disclosures about the nature, amount, timing and uncertainty of revenue and cash flows arising from customer contracts, including significant judgments and changes in judgments and assets recognized from costs incurred to obtain or fulfill a contract. The new guidance primarily affects the Nelson Labs segment.

We applied the new guidance to all contracts that were not yet completed at the date of adoption using the modified retrospective method. We recognized the cumulative effect of initially applying the new guidance as an adjustment to the opening balance of retained earnings (deficit). Comparative information has not been restated and continues to be reported under the accounting standards in effect for those periods.

The adjustments made to our January 1, 2019 consolidated balance sheet for the adoption of the standards update were as follows:

(thousands of U.S. dollars)	Balance at December 31, 2018	Adjustments for New Standard	Balance at January 1, 2019
Prepaid expenses and other current assets	$ 57,359	$ 3,613	$ 60,972
Deferred income taxes	171,482	978	172,460
Retained earnings (deficit)	(10,417)	2,635	(7,782)

The impact of the adoption of the new revenue requirements on our consolidated statement of operations and comprehensive income (loss) for the year ended December 31, 2019 was an increase of $1.0 million to net revenues and a benefit of $0.8 million to net loss.

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The impact of adoption of the new revenue requirements on our consolidated balance sheet as of December 31, 2019 was as follows:

(thousands of U.S. dollars)	As Reported	Less Effect of Adoption	Balance without Adoption
Prepaid expenses and other current assets	$ 52,644	$ 4,622	$ 48,022
Income tax receivable	10,645	(1,204)	11,849
Deferred income taxes	137,235	(37)	137,198
Retained earnings (deficit)	(548,187)	(3,381)	(551,568)

Accounting Standard Updates Issued But Not Yet Adopted

Under the Jumpstart Our Business Startups Act of 2012, emerging growth companies can delay adopting new or revised accounting standards until such time as those standards apply to private companies. As an emerging growth company, we have elected to take advantage of the extended transition period for complying with new or revised accounting standards until those standards would otherwise apply to private companies or at which time we conclude it is appropriate to avail ourselves of early adoption provisions of applicable standards. As a result, our results of operations and financial statements may not be comparable to the results of operations and financial statements of other companies who have adopted the new or revised accounting standards.

In February 2016, the Financial Accounting Standards Board ("FASB") issued *ASU No. 2016-02, Leases* ("Topic 842"). The updated standard requires substantially all leases to be reported on the balance sheet as right-of-use assets and lease obligations. Topic 842 is effective for private companies for annual periods beginning after December 15, 2021. Early adoption is permitted. Topic 842 permits a modified retrospective transition method with the option to elect a package of practical expedients. We elected to early adopt the new standard as of January 1, 2020 resulting in the recognition of right-of-use assets and lease liabilities of $47.4 million and $48.9 million, respectively. The standard did not have a material impact on our consolidated statements of operations and comprehensive income (loss) or on our consolidated statements of cash flows. The level of disclosures related to leases will increase and require changes to our internal controls to support recognition and disclosure requirements under Topic 842.

In June 2016, the FASB issued *ASU 2016-13, Financial Instruments – Credit Losses* ("ASU 2016-13"): *Measurement of Credit Losses on Financial Instruments*, and subsequently issued additional guidance that modified ASU 2016-13. The standard requires an entity to change its accounting approach in determining impairment of certain financial instruments, including trade receivables, from an "incurred loss" to a "current expected credit loss" model. The standard will be effective for private companies for fiscal years beginning after December 15, 2022, including interim periods within such fiscal years. Early adoption is permitted. We are currently assessing the effect that ASU 2016-13 will have on our financial position, results of operations, and disclosures.

In December 2019, the FASB issued *ASU 2019-12 - Income Taxes (Topic 740): Simplifying the Accounting for Income Taxes*. The standard simplifies the accounting for income taxes and makes a number of changes meant to add or clarify guidance on accounting for income taxes. This update is effective for annual financial statement periods beginning after December 15, 2021 and interim periods beginning after December 15, 2022, with early adoption permitted in any interim period for which financial statements have not yet been filed. We are currently assessing the effect that ASU 2019-12 will have on our financial position, results of operations, and disclosures.

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3. Revenue Recognition

The following table shows disaggregated net revenues from contracts with external customers by timing of revenue and by segment for the year ended December 31, 2019:

	Sterigenics	Nordion	Nelson Labs	Consolidated
Point in time	$ 471,708	$116,165	$ —	$ 587,873
Over time	—	—	190,454	190,454
Total	$ 471,708	$116,165	$ 190,454	$ 778,327

Contract Balances

As of December 31, 2019, and January 1, 2019, contract assets included in prepaid expenses and other current assets on the consolidated balance sheet totaled approximately $8.5 million and $8.4 million, respectively, resulting from revenue recognized over time in excess of the amount billed to the customer.

When we receive consideration from a customer prior to transferring goods or services under the terms of a sales contract, we record deferred revenue, which represents a contract liability. Deferred revenue totaled $3.6 million and $4.6 million at December 31, 2019 and 2018, respectively. We recognize deferred revenue after we have transferred control of the goods or services to the customer and all revenue recognition criteria are met.

4. Acquisitions and Dispositions

Acquisition of Gibraltar Laboratories (now known as Nelson Laboratories Fairfield, Inc.)

On August 7, 2018, we acquired 85% of the outstanding shares of Gibraltar Laboratories, Inc. ("Gibraltar") for $50.6 million, net of cash acquired of $0.5 million. Pursuant to the transaction agreement, we are required to acquire the 15% noncontrolling interest within three years from the date of acquisition. As a result of our requirement to purchase the noncontrolling interest in the future, it represents a mandatorily redeemable financial instrument and the related liability was initially recorded at its estimated fair value of $13.6 million. Subsequent changes in fair value have been immaterial. Based on the mandatory nature of the obligation, no earnings are allocated to the noncontrolling interest.

Gibraltar's operations are in the New Jersey tri-state area, home to many of the top pharmaceutical manufacturers in the U.S., and it provides microbiological and analytical chemistry testing for pharmaceutical and medical device manufacturers. We acquired Gibraltar primarily for its expertise and customer relationships in testing and servicing the pharmaceutical industry. Additionally, its analytical testing capabilities expanded our presence in the Northeast region of the U.S. and enhanced Nelson Labs' existing strengths in medical device microbiology and expert advisory services.

The opening balance sheet for the Gibraltar acquisition reflects the net tangible and intangible assets acquired and liabilities assumed at their estimated fair values at the acquisition date.

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The fair value of the underlying acquired assets and assumed liabilities at August 7, 2018, the date of the Gibraltar acquisition, was as follows:

(thousands of U.S. dollars) **Allocation of purchase price to the fair value of net assets acquired (net of cash acquired):**	Amounts Recognized as of December 31, 2018	Measurement Period Adjustments	Final Acquisition Date Fair Value
Goodwill	$ 32,586	$ 1,589	$ 34,175
Intangibles	34,582	(762)	33,820
Property, plant, and equipment	5,444	(866)	4,578
Working capital, net	646	—	646
Deferred income tax liability	(8,875)	39	(8,836)
Other assets/liabilities, net	(155)	—	(155)
Total estimated purchase price	$ 64,228	$ —	$ 64,228

Approximately $34.2 million of goodwill was recorded related to the Gibraltar acquisition, representing the excess of the purchase price over estimated fair values of all the assets acquired and liabilities assumed. The fair value allocated to goodwill and tangible and intangible assets are not deductible for tax purposes. The qualitative elements of goodwill primarily represent the expanded future growth opportunities for the combined company, resulting from contributing factors such as synergies related to cross-selling opportunities with our other businesses, and the addition of Gibraltar's highly skilled workforce. We recorded $33.8 million for intangible assets as part of the acquisition related to customer relationships, proprietary technology, and the Gibraltar tradename.

Gibraltar's results of operations are included in our consolidated financial statements from the date of the transaction within the Nelson Labs segment. Had the transaction occurred on January 1, 2018, unaudited pro forma consolidated results for 2018, would have been as follows:

(thousands of U.S. dollars) Year Ended December 31,	2018
Net revenues	$755,955
Net loss	(2,672)

The unaudited pro forma consolidated results are based on our historical financial statements and those of Gibraltar, and do not necessarily indicate the results of operations that would have resulted had the acquisition been completed at the beginning of 2018. The unaudited pro forma consolidated results do not give effect to any synergies of the acquisition and are not indicative of the results of operations in future periods.

Net revenues and net income from the Gibraltar Laboratories acquisition included in the Company's results since August 7, 2018, the date of the acquisition, are as follows:

(thousands of U.S. dollars) Year Ended December 31,	2019	2018
Net revenues	$17,549	$6,593
Net income	3,833	1,318

In connection with the Gibraltar acquisition, we incurred approximately $0.5 million and $1.3 million in transaction costs for the years ended December 31, 2019 and 2018, respectively, which were included in selling, general and administrative expenses in the consolidated statements of operations and comprehensive income (loss).

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Disposition of the Medical Isotopes Business

On July 30, 2018 we finalized the sale of our Medical Isotopes ("MI") business to a subsidiary of BWX Technologies, Inc. ("BWXT") for $213.0 million. Through the agreement, BWXT acquired essentially all the former medical isotope net assets, including the medical isotope operation and contract manufacturing services in Kanata, Ontario and the medical isotope operation in Vancouver, British Columbia. Both companies continue to operate from Nordion's licensed facility in Kanata, Ontario, and approximately 150 employees transitioned to BWXT at the close of the sale. As a result of the transaction, we recorded a gain on sale of approximately $95.9 million, net of transaction expenses totaling $3.5 million during the year ended December 31, 2018. In addition, we recorded deferred income of $22.7 million and $2.0 million related to the lease of the Kanata facility and its associated regulatory licenses, respectively. The deferred income related to the lease of the Kanata facility is being recognized on a straight-line basis over the 40-year lease period, including lease extensions deemed probable of occurring. The deferred income on the associated operating licenses is included within "Deferred lease income" on the consolidated balance sheets and will be recognized over a period not to exceed 2 years from the date the transaction closed in accordance with the period of time by which BWXT is expected to obtain its own regulatory licenses for the site. The disposition of the MI business does not, nor is it expected to, have a major effect on the Company's consolidated operations and financial results. Prior to its divestiture, MI revenue was $25.4 million and income before income taxes, excluding the gain on sale, was not material in 2018.

5. Inventories

Inventories consist primarily of the following:

(thousands of U.S. dollars) As of December 31,	2019	2018
Raw materials and supplies	$29,640	$31,037
Work-in-process	1,961	1,371
Finished goods	5,892	5,284
	37,493	37,692
Reserve for excess and obsolete inventory	(97)	(93)
Inventories	$37,396	$37,599

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6. Prepaid Expenses and Other Current Assets

Prepaid expenses and other current assets consist primarily of the following:

(thousands of U.S. dollars) As of December 31,	2019	2018
Prepaid taxes	$ 18,614	$ 14,459
Prepaid business insurance	3,422	3,511
Prepaid rent	1,088	1,164
Accrual for revenue from customers	8,508	4,755
Insurance and indemnification receivables	2,751	16,516
Current deposits	5,060	4,800
Prepaid maintenance contracts	397	305
Derivative instruments (see *Financial Instruments* note)	242	752
Value added tax receivable	1,034	2,491
Prepaid software licensing	1,089	985
Stock supplies	2,263	1,943
Other	8,176	5,678
Prepaid expenses and other current assets	$ 52,644	$ 57,359

The reduction in insurance and indemnification receivables is primarily a result of the final judgment and settlement of litigation at Nordion. Refer to the *Accrued Liabilities* note.

7. Property, Plant and Equipment and Capital Leases

Property, plant, and equipment, net, consists of the following:

(thousands of U.S. dollars) As of December 31,	2019	2018
Land and buildings	$ 279,913	$ 252,472
Leasehold improvements	44,808	47,119
Machinery, equipment, including Co-60	459,728	428,755
Furniture and fixtures	6,984	6,432
Computer hardware and software	38,602	31,591
Asset retirement costs	4,313	3,888
Construction-in-progress	42,168	50,796
	876,516	821,053
Less accumulated depreciation	(294,562)	(234,617)
Property, plant and equipment, net	$ 581,954	$ 586,436

Depreciation and amortization expense for property, plant, and equipment, including property under capital leases, was $66.7 million and $66.9 million for the years ended December 31, 2019 and 2018, respectively. Capitalized interest totaled $0.1 million and $1.1 million for the years ended December 31, 2019 and 2018, respectively, and was recorded as a reduction in "Interest expense, net" in the consolidated statements of operations and comprehensive income (loss).

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Capital Leases

Included in the table above are certain assets we lease that are classified as capital leases with various terms. Assets held under such lease arrangements are included in property, plant, and equipment, net, as follows:

(thousands of U.S. dollars) As of December 31,	2019	2018
Machinery and equipment	$ 4,970	$ 4,800
Buildings	34,226	34,569
	39,196	39,369
Less accumulated depreciation	(8,121)	(5,774)
Capital leases, net	$31,075	$33,595

As discussed in the *Commitments and Contingencies* note, we have been involved in litigation related to our ethylene oxide sterilization operations in Willowbrook, Illinois. On September 30, 2019, we announced plans to exit our operations in Willowbrook citing the unstable legislative and regulatory landscape in Illinois as well as the expiration of the primary Willowbrook facility lease. Prior to this decision, we had approximately $9.8 million in net book value of fixed assets at the Willowbrook facilities, including $1.8 million of construction in process. Based on our initial estimate of fixed assets that can be transferred to other Sterigenics' facilities, we recorded a fixed asset impairment of approximately $5.8 million as recognized in "Impairment of long-lived assets" in the consolidated statement of operations and comprehensive income (loss) for the year ended December 31, 2019. Further, in conjunction with the decision not to reopen our Willowbrook facilities, we incurred certain restructuring costs consisting of employee termination benefits totaling $1.2 million in the year ended December 31, 2019. The $1.2 million in costs represents all termination benefits costs expected to be incurred in connection with the Willowbrook closure, and are included in "Cost of revenues" on the consolidated statement of operations and comprehensive income (loss) and are included in our Sterigenics segment. Decommissioning of the Willowbrook facilities began in October 2019 and is anticipated to take until the end of 2020. At December 31, 2019, we had an ARO of approximately $2.9 million representing our estimate of the costs to decommission the Willowbrook operations, of which $2.2 million is anticipated to be spent in the next 12 months as included in the "Current portion of asset retirement obligations" within the consolidated balance sheet as of December 31, 2019. This amount reflects incremental expense to increase the ARO in 2019 by $1.1 million based on higher expected demolition costs and is included in "Cost of revenues" on the consolidated statement of operations and comprehensive income (loss).

In 2015, we began working with General Atomics ("GA") and the Missouri University Research Reactor ("MURR") on a joint project ("GA-MURR project") to replace our supply of Molybdenum-99 ("Mo-99") utilized in our former MI operations, the production of which ceased after the previous supplier exited the market. This was a multi-year capital project to construct assets dedicated to the production of Mo-99. As a result of a strategic review of the MI business and other factors, we withdrew from the project in early April 2018. We wrote off $32.7 million of long-lived assets and inventory of $0.3 million. We incurred $2.4 million related to contract termination and exit costs associated with the project which were paid in the year recognized. The total fixed asset impairment charge of $32.7 million was recognized as a component of "Impairment of long-lived assets" in the consolidated statement of operations and comprehensive income (loss) for the year-ended December 31, 2018. The $0.3 million of inventory write-offs and $2.4 million of contract termination and exit costs were included in "Cost of revenues" and "Selling, general and administrative expenses", respectively, in the consolidated statement of operations and comprehensive income (loss) for the year ended December 31, 2018. The aforementioned expenses related to the GA-MURR project are reflected as a component of Other within the *Segment and Geographic Information* note.

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In the first quarter of 2018, management made plans to pursue the sale of a Nordion office building and associated land. As a result, these assets were classified as held-for-sale and an impairment of $2.3 million was recorded for the year ended December 31, 2018 based on the estimated selling price for the property and was recognized as a component of "Impairment of long-lived assets" in the consolidated statement of operations and comprehensive income (loss). The then estimated fair value of approximately $3.3 million is reported as "Assets held for sale" in the consolidated balance sheet as of December 31, 2018. In 2019, management determined this asset was no longer held for sale and decided to pursue other uses of the property.

8. Goodwill and Other Intangible Assets

Changes to goodwill during the years ended December 31, 2019 and 2018 were as follows:

(thousands of U.S. dollars)	Sterigenics	Nordion	Nelson Labs	Other	Total
Goodwill at January 1, 2018	$ 638,029	$292,293	$ 87,954	$ 70,926	$1,089,202
Gibraltar Laboratories acquisition[1]	—	—	32,586	—	32,586
Disposition of Medical Isotopes business	—	—	—	(68,156)	(68,156)
Toxikon Europe acquisition measurement period adjustments	—	—	1,428	—	1,428
Reallocation of goodwill	(20,000)	—	20,000	—	—
Changes due to foreign currency exchange rates	(4,392)	(23,021)	(1,563)	(2,770)	(31,746)
Goodwill at December 31, 2018	613,637	269,272	140,405	—	1,023,314
Gibraltar Laboratories acquisition[1] measurement period adjustments	—	—	1,589	—	1,589
Changes due to foreign currency exchange rates	(948)	12,618	(708)	—	10,962
Goodwill at December 31, 2019	**$ 612,689**	**$281,890**	**$ 141,286**	**$ —**	**$1,035,865**

[1] Gibraltar Laboratories is now known as Nelson Laboratories Fairfield, Inc.

Of the gross balances outstanding as of December 31, 2019, $490.8 million, $69.1 million and $235.7 million of customer relationships, proprietary technology, and sealed source and supply agreements, respectively, were initially recorded upon the recapitalization of the Company in connection with the acquisition by the Sponsors in 2015. We recorded additional customer relationship and proprietary technology intangibles of $121.3 million and $18.9 million, respectively, in conjunction with acquisitions in the period from 2015 through 2018, the majority of which related to the 2016 acquisition of Nelson Laboratories.

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Other intangible assets consist of the following:

(thousands of U.S. dollars) As of December 31, 2019	Gross Carrying Amount	Accumulated Amortization
Finite-lived intangible assets		
Customer relationships	$ 612,068	$ 248,931
Proprietary technology	87,971	30,224
Trade names	7,201	1,860
Land-use rights	8,896	1,011
Sealed source and supply agreements	235,706	74,825
Other	336	243
Total finite-lived intangible assets	**952,178**	**357,094**
Indefinite-lived intangible assets		
Regulatory licenses and other[1]	80,103	—
Trade names / trademarks	20,819	—
Total indefinite-lived intangible assets	**100,922**	—
Total	**$ 1,053,100**	**$ 357,094**

As of December 31, 2018	Gross Carrying Amount	Accumulated Amortization
Finite-lived intangible assets		
Customer relationships	$ 611,529	$ 193,077
Proprietary technology	86,948	23,020
Trade names	7,209	1,371
Land-use rights	9,013	803
Sealed source and supply agreements	225,084	56,017
Other	343	134
Total finite-lived intangible assets	940,126	274,422
Indefinite-lived intangible assets		
Regulatory licenses and other[1]	76,493	—
Trade names / trademarks	23,857	—
Total indefinite-lived intangible assets	100,350	—
Total	$ 1,040,476	$ 274,422

Amounts include the impact of foreign currency translation. Fully amortized amounts are written off.

[1] Includes certain transportation certifications, a class 1B nuclear license and other intangibles related to obtaining such licensure. These assets are considered indefinite-lived as the decision for renewal by the Canadian Nuclear Safety Commission is highly based on a licensee's previous assessments, reported incidents, and annual compliance and inspection results. New applications for license can take a significant amount of time and cost; whereas an existing licensee with a historical record of compliance and current operating conditions more than likely ensures renewal for another 10 year license period as Nordion has demonstrated over its 70 years of history.

As referenced in the *Property, Plant and Equipment and Capital Leases* note, we withdrew from the GA-MURR project in early April 2018. In addition to the impairment of fixed assets, an intangible asset initially recorded at

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its estimated fair value in connection with the Company's 2015 change in control related to the Company's MURR supply agreement with a carrying value of $50.1 million was written off. The resulting impairment charge of $50.1 million was recognized in "Impairment of GA-MURR intangible assets" in the consolidated statement of operations and comprehensive income (loss) for the year ended December 31, 2018.

Amortization expense for other intangible assets was $80.0 million ($21.5 million is included in "Cost of revenues" and $58.5 million in "Selling, general and administrative expenses" in the consolidated statements of operations and comprehensive income (loss)) and $79.9 million ($21.9 million is included in "Cost of revenues" and $58.0 million in "Selling, general and administrative expenses" in the consolidated statements of operations and comprehensive income (loss)) for the years ended December 31, 2019 and 2018, respectively.

The estimated aggregate amortization expense for finite-lived intangible assets for each of the next five years and thereafter is as follows:

(thousands of U.S. dollars)	
2020	$ 80,854
2021	80,426
2022	76,486
2023	76,476
2024	75,696
Thereafter	205,146
Total	$ 595,084

The weighted-average remaining useful life of the finite-lived intangible assets was approximately 10 years as of December 31, 2019.

9. Accrued Liabilities

Accrued liabilities consist of the following:

(thousands of U.S. dollars) As of December 31,	2019	2018
Accrued employee compensation	$ 28,912	$ 26,895
Legal reserves	2,751	18,506
Accrued interest expense	10,648	9,998
Embedded derivatives	3,478	5,248
Professional fees	4,329	5,390
Accrued utilities	1,135	1,049
Insurance accrual	1,241	1,478
Accrued taxes	2,363	2,651
Other	3,679	4,494
Accrued liabilities	$ 58,536	$ 75,709

The reduction in legal reserves is a result of the final judgment and settlement of litigation at Nordion in early 2019 for which we had insurance and indemnification receivables for a significant portion. Refer to the *Prepaid Expenses and Other Current Assets* note.

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10. Long-Term Debt and Capital Lease Obligations

Long-term debt and capital lease obligations consist of the following:

(thousands of U.S. dollars) As of December 31,	2019	2018
Term loan, due 2022	$ —	$ 1,350,303
Senior notes, due 2023	—	450,000
Term loan, due 2026	2,120,000	—
Senior notes, due 2027	770,000	—
Senior PIK Toggle notes due 2021	—	425,000
Capital lease obligations	31,171	32,887
Other long-term debt	881	2,049
Total long-term debt and capital lease obligations	2,922,052	2,260,239
Less current portion	(17,619)	(16,695)
Less unamortized debt issuance costs and debt discounts	(73,677)	(22,446)
Total long-term debt and capital lease obligations, less current portion and debt issuance costs and debt discounts	$ 2,830,756	$ 2,221,098

Debt Facilities

1st Lien Senior Secured Credit Facilities

On December 13, 2019, Sotera Health Holdings, LLC ("SHH"), our wholly owned subsidiary, entered into new Senior Secured 1st Lien Credit Facilities (the "1st Lien Credit Facilities") and settled its previously outstanding term loan and senior notes.

The 1st Lien Credit Facilities consist of both a 1st Lien Term Loan ("Term Loan") and Revolving Credit Facility that provide for additional senior secured financing of $190.0 million. The Term Loan matures on December 13, 2026, and the Revolving Credit Facility matures on December 13, 2024. The 1st Lien Credit Facilities also provide SHH the right at any time and under certain conditions to request incremental term loans or incremental revolving credit commitments based on a formula defined in the 1st Lien Credit Facilities. As of December 31, 2019, total borrowings under the Term Loan were $2,120.0 million and the Revolving Credit Facility remained unutilized. The Term Loan may bear interest at LIBOR or an alternate base rate ("ABR") subject to a 1.00% floor plus, an incremental margin of 4.50% in the case of LIBOR loans and 3.50% in the case of ABR loans.

Beginning on June 30, 2020, the Term Loan is paid in equal quarterly installments in aggregate annual amounts equal to 1.0% of the Term Loan original principal amount, while the remaining balance matures on December 13, 2026. The weighted average interest rate on borrowings under the Term Loan at December 31, 2019 was 6.29%.

As of December 31, 2019, capitalized debt issuance costs and debt discounts totaled $4.7 million and $44.0 million, respectively, related to the 1st Lien Credit Facilities. Such costs are recorded as a reduction of debt on our consolidated balance sheets and amortized as a component of interest expense over the term of the debt agreement.

Borrowings under the Revolving Credit Facility bear interest at a rate per annum equal to an applicable margin, plus, at our option, either (a) an ABR or (b) a LIBOR rate. The applicable margin under the Revolving Credit Facility may be reduced by reference to a leverage-based pricing grid with step-downs of 0.25% at a specified

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senior secured first lien net leverage ratios. In addition to paying interest on any outstanding borrowings under the Revolving Credit Facility, SHH is required to pay a commitment fee to the lenders under the Revolving Credit Facility in respect of the unutilized commitments thereunder and customary letter of credit fees. As of December 31, 2019, there are no borrowings on the Revolving Credit Facility. The Revolving Credit Facility contains a maximum senior secured first lien net leverage ratio covenant of 9.00 to 1.00, tested on the last day of each fiscal quarter if, on the last day of such fiscal quarter, the sum of (i) the aggregate principal amount of the revolving loans then outstanding under the Revolving Credit Facility, plus (ii) the aggregate amount of letter of credit ("LC") disbursements that have not been reimbursed within two business days following the end of the fiscal quarter, exceeds the greater of $76.0 million and 40.0% of the aggregate principal amount of the revolving commitments then in effect. Although this covenant did not apply as the conditions were not met, as of December 31, 2019 the first lien net leverage ratio, as defined in the Revolving Credit Facility, was approximately 5.40 to 1.00.

The 1st Lien Credit Facilities contain additional covenants that, among other things, restrict, subject to certain exceptions, our ability and the ability of our restricted subsidiaries to engage in certain activities, such as incur indebtedness or permit to exist any lien on any property or asset now owned or hereafter acquired, as specified in the debt facility. The 1st Lien Credit Facilities also contain certain customary affirmative covenants and events of default, including upon a change of control. As of December 31, 2019, we were in compliance with all the 1st Lien Credit Facilities covenants.

All of SHH's obligations under the 1st Lien Credit Facilities are unconditionally guaranteed by the Company and each existing and subsequently acquired or organized direct or indirect wholly-owned domestic restricted subsidiary of the Company, with customary exceptions including, among other things, where providing such guarantees is not permitted by law, regulation or contract or would result in material adverse tax consequences. All obligations under the 1st Lien Credit Facilities, and the guarantees of such obligations, are secured by substantially all assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the 1st Lien Credit Facilities.

Outstanding letters of credit are collateralized by encumbrances against the Revolving Credit Facility and the collateral pledged thereunder, or by cash placed on deposit with the issuing bank. As of December 31, 2019, the Company had $62.5 million of letters of credit issued against the Revolving Credit Facility, resulting in total availability under the Revolving Credit Facility of $127.5 million.

In October 2017, SHH entered into two interest rate cap agreements with a total notional amount of $400.0 million for a total premium of $0.6 million. The interest rate caps limit the Company's cash flow exposure related to the LIBOR base rate under the variable rate term loan borrowings to 3.0%. The interest rate cap agreements terminate on September 30, 2020. The interest rate caps were not designated as hedges and are recorded at fair value on the consolidated balance sheets, with any changes in the value being recorded in the consolidated statements of operations and comprehensive income (loss). See the *Financial Instruments and Financial Risk* note for a summary of the activity of the interest rate caps for the periods presented.

During the third quarter of 2019, SHH entered into two interest rate swap agreements to hedge exposure to interest rate movements and to manage interest expense related to outstanding variable-rate debt. These swaps were designated as hedges against the changes in cash flows attributable to changes in LIBOR, the benchmark interest rate being hedged. We receive interest at one-month LIBOR and pay a fixed interest rate under the terms of the swap agreement. The swap agreements terminated on August 31, 2020. The notional amount of the interest rate swap agreements totals $1,000.0 million. See the *Financial Instruments and Financial Risk* note for a summary of the activity of the interest rate swaps for the periods presented.

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2nd Lien Senior Secured Notes

On December 13, 2019, SHH issued $770.0 million of 2nd Lien Senior Secured Notes (the "2nd Lien Notes"), which mature on December 13, 2027. The 2nd Lien Notes bear interest at a rate equal to LIBOR subject to a 1.00% floor plus 8.00% per annum. The weighted average interest rate on the 2nd Lien Notes at December 31, 2019 was 9.89%.

SHH is entitled to redeem all or a portion of the 2nd Lien Notes, at any time and from time to time, subject to certain premiums depending on the date of redemption: any time prior to December 13, 2020, a customary make-whole premium applies and, thereafter, specified premiums that decline to zero apply (in each case as described in the indenture governing the 2nd Lien Notes). In addition, under certain circumstances, such as an initial public offering or certain changes of control, SHH has certain additional redemption rights (as described in the indenture governing the 2nd Lien Notes).

All of SHH's obligations under the 2nd Lien Notes are unconditionally guaranteed by the Company and each existing and subsequently acquired or organized direct or indirect wholly-owned domestic restricted subsidiary of the Company, with customary exceptions including, among other things, where providing such guarantees is not permitted by law, regulation or contract or would result in material adverse tax consequences. All obligations under the 2nd Lien Notes, and the guarantees of such obligations, are secured by substantially all of the assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the 2nd Lien Notes. Such collateral is substantially the same collateral that secures the 1st Lien Credit Facilities, and any security interest or lien on shared collateral securing the 1st Lien Credit Facilities has priority over any security interest or lien on shared collateral securing the 2nd Lien Notes.

As of December 31, 2019, capitalized debt issuance costs and debt discounts were $1.8 million and $23.2 million, respectively, related to the 2nd Lien Notes, which are recorded as a reduction of debt on our consolidated balance sheet and amortized into interest expense over the term of the debt agreement.

2019 Refinancing

In conjunction with the December 2019 refinancing, the Company redeemed, in full, the previously outstanding $1,659.0 million aggregate Term Loan due 2022, its $450.0 million Senior Notes due 2023 ("Senior Notes") and $425.0 million Senior PIK ("paid in kind") Toggle Notes due 2021. In total, we wrote off $13.5 million of debt issuance and discount costs and recognized $14.6 million representing premiums paid in connection with the early extinguishment of the Senior Notes. In connection with the refinancing, we also recognized an additional $2.1 million of expense related to debt issuance and discount costs. We recognized these costs within the loss on extinguishment of debt in our consolidated statements of operations and comprehensive income (loss). Any additional proceeds were used to fund a dividend to shareholders of $275.0 million.

Prior to the refinancing referenced above, the Company had the following long-term debt:

- Senior secured credit facilities consisting of a term loan and a revolving credit facility that provided for additional senior secured financing of $172.5 million. Borrowings under the term loan bore interest at either (i) an alternative base rate ("ABR") plus an additional margin of 2.00% or (ii) LIBOR plus an additional margin of 3.00%. Each of ABR and LIBOR were subject to a floor of 1.00%,
- $450 million aggregate principal amount of senior notes, at an interest rate of 6.5% per annum, payable semi-annually, and
- $425 million aggregate principal amount of Senior PIK ("paid in kind") Toggle notes at a rate of 8.125%/8.875% per annum, payable semi-annually.

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Aggregate Maturities

Aggregate maturities of the Company's long-term debt, including capital leases, and excluding debt discounts, as of December 31, 2019, are as follows:

(thousands of U.S. dollars)	
2020	$ 17,619
2021	22,304
2022	22,300
2023	22,833
2024	22,523
Thereafter	2,814,473
Total	$ 2,922,052

Aggregate Future Minimum Lease Payments Under Capital Leases

As of December 31, 2019, aggregate future minimum lease payments under capital leases are as follows:

(thousands of U.S. dollars)	
2020	$ 3,158
2021	2,900
2022	2,824
2023	2,833
2024	2,892
Thereafter	36,453
Total minimum lease payments	51,060
Less amounts representing interest	(19,889)
Present value of net minimum lease payments	$ 31,171

11. Income Taxes

The geographic sources of income (loss) before income taxes were as follows:

(thousands of U.S. dollars) Year ended December 31,	2019	2018
U.S.	$(99,733)	$(45,134)
Foreign	98,817	69,356
Income (loss) before income taxes	$ (916)	$ 24,222

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Provision for income taxes consists of the following:

(thousands of U.S. dollars) Year ended December 31,	2019	2018
Current		
Federal U.S.	$ 17,954	$ 22,302
State U.S.	3,662	4,882
Foreign	16,886	48,233
Total current provision	38,502	75,417
Deferred		
Federal U.S.	(18,177)	(15,437)
State U.S.	(5,958)	(2,396)
Foreign	5,142	(27,486)
Total deferred benefit	(18,993)	(45,319)
Total provision for income taxes	$ 19,509	$ 30,098

The provision for income taxes is reconciled with the U.S. federal statutory rate as follows:

(thousands of U.S. dollars) Year ended December 31,	2019	2018
(Benefit) provision computed at federal statutory rate	$ (192)	$ 5,088
(Decrease) increase in taxes as a result of:		
State taxes, net of federal benefit	(2,681)	(247)
Valuation allowance	5,147	(641)
Global intangible low-tax income (GILTI)	10,349	4,902
Nondeductible share-based compensation	3,545	1,458
Foreign tax rate	5,550	5,571
Impact of rate changes on deferred tax balances	(559)	5,296
Tax holiday	(571)	(456)
Audit settlement	879	2,517
Other	(1,958)	6,610
Total provision for income taxes	$19,509	$30,098

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The components of the tax effects of temporary differences and carryforwards that gave rise to significant portions of the deferred tax assets and liabilities are as follows:

(thousands of U.S. dollars) As of December 31,	2019	2018
Net operating loss carryforwards	$ 10,876	$ 11,173
Net capital loss carryforwards	3,916	—
Reserves and accruals	14,246	16,700
Employee benefits and compensation	8,279	5,434
Unrealized foreign currency exchange	3,083	2,464
Asset retirement obligation	10,535	9,380
Disallowed interest carryforward	41,723	21,161
Other	5,393	5,130
Deferred tax assets before valuation allowance	98,051	71,442
Valuation allowance	(22,962)	(16,678)
Net deferred tax assets	75,089	54,764
Depreciation and amortization	(210,010)	(178,764)
Partnership basis difference	—	(31,627)
Other	(62)	(91)
Total deferred tax liabilities	(210,072)	(210,482)
Net deferred tax liabilities	$(134,983)	$(155,718)
Noncurrent net deferred tax assets	$ 2,252	$ 15,764
Noncurrent net deferred tax liabilities	(137,235)	(171,482)
Noncurrent net deferred tax liabilities	$(134,983)	$(155,718)

At December 31, 2019 and 2018, the Company had available state net operating loss carryforwards of $11.8 million and $0, respectively, of which $11.5 million have no expiration date, and foreign net operating loss carryforwards of approximately $44.2 million and $46.7 million, respectively, the majority of which have no expiration date. At December 31, 2019 and 2018, a valuation allowance was established against foreign net operating loss carryforwards for $12.4 million and $12.1 million, respectively. Based on management's assessment, it is not more likely than not that these deferred tax assets will be realized through future taxable income.

At December 31, 2019 and 2018, no deferred tax liability has been recorded for repatriation of earnings for purposes of the Company's consolidated financial statements as these earnings are deemed to be indefinitely reinvested. Determining the amount of unrecognized deferred tax liability related to any remaining undistributed foreign earnings not subject to the transition tax and additional outside basis difference in these entities (i.e., basis difference in excess of that subject to the one-time transition tax) is not practicable.

As of December 31, 2019, and 2018, the gross reserve for uncertain tax positions, excluding accrued interest and penalties, was $0 and $9.9 million, respectively, as noted in the following reconciliation. In 2018 an allowance of $8.8 million was established relating to the uncertainty of the deductibility of certain assets in relation to Nordion's sale of its Medical Isotopes business, which uncertainties were resolved in 2019. The uncertain tax positions were reversed in 2019 once full deductibility was confirmed.

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The Company's unrecognized income tax benefits were as follows:

(thousands of U.S. dollars) For the period from January 1 – December 31,	2019	2018
Gross unrecognized tax benefits, beginning of year	$10,239	$ 1,383
Additions related to current year	—	8,832
Changes related to prior years	—	300
Settlements	(9,939)	—
Other	—	(276)
Gross unrecognized tax benefits, end of period	$ 300	$10,239

The Company recognizes interest and penalties as part of the provision for income taxes. For the years ended December 31, 2019 and 2018, interest and penalties related to uncertain income tax positions that were recognized in the consolidated statements of operations and comprehensive income (loss) were not material.

The Company, which represents all of its subsidiaries, files income tax returns in the U.S. federal jurisdiction and various states and foreign jurisdictions. The Company is no longer subject to U.S. federal, state, and local tax examinations before 2015, and non-U.S. income tax examinations by tax authorities for years before 2010. Tax years through December 31, 2016 have been audited by the Internal Revenue Service ("IRS") and are effectively closed for U.S. federal income tax purposes. The 2017 tax year is currently under audit. For Nordion's Canadian tax, all tax years through October 31, 2014 have been closed through audit or statute, and fiscal year 2016 is currently under audit.

A portion of the Company's foreign operations benefit from a tax holiday, which is set to expire in 2025. This tax holiday may be terminated early if certain conditions are not met. The tax benefit attributable to this holiday was $0.6 million and $0.5 million for the fiscal years ended December 31, 2019 and 2018, respectively.

12. Employee Benefits

Employee Retirement Benefits in the U.S.

We have a defined-contribution retirement plan that covers all U.S. employees upon date of hire. Contributions are directed by each participant into various investment options. Under this plan, we match participants' contributions based on plan provisions. The Company's contributions, which are expensed as incurred, were $3.8 million and $3.5 million for the years ended December 31, 2019 and 2018, respectively, and are recorded in the same line as the respective employee's wages. Administrative expenses related to the plan are paid by the Company and are not material.

Employee Retirement Benefits Outside the U.S.

The Company participates in qualified supplemental retirement and savings plans in various countries outside the U.S. where we operate. Under these defined-contribution plans, funding and costs are generally based upon a predetermined percentage of employee compensation. The Company's contributions, which are expensed as incurred and recorded in the same line as the respective employee's wages were $1.1 million and $0.9 million for the years ended December 31, 2019 and 2018, respectively.

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Defined Benefit Pension Plans

The Company also sponsors various post-employment benefit plans including, in certain countries outside the U.S., defined benefit and retirement compensation arrangements, and plans that provide extended health care coverage to retired employees, the majority of which relate to Nordion.

Defined Benefit Pension Plan

The interest cost and expected return on plan assets are recorded in "Other income, net" and the service cost component is included in the same financial statement line item as the applicable employee's wages in the consolidated statements of operations and comprehensive income (loss). The components of net periodic benefit cost for the defined benefit pension plans were as follows:

Year ended December 31, *(thousands of U.S. dollars)*	2019	2018
Service cost	$ 1,147	$ 2,258
Interest cost	8,521	8,690
Expected return on plan assets	(13,218)	(13,170)
Net periodic benefit	$ (3,550)	$ (2,222)

The following weighted average assumptions were used in the determination of the projected benefit obligation and the net periodic benefit:

Year ended December 31,	2019	2018
Projected benefit obligation		
Discount rate	3.07%	3.67%
Rate of compensation increase	3.00%	3.00%
Periodic benefit		
Discount rate	3.67%	3.59%
Expected return on plan assets	5.50%	5.00%
Rate of compensation increase	3.00%	3.00%

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The changes in the projected benefit obligation, fair value of plan assets, and the funded status of the plans are as follows:

(thousands of U.S. dollars) As of December 31,	2019	2018
Change in projected benefit obligation		
Projected benefit obligation, as of beginning of the year	$246,922	$284,977
Service cost	1,353	2,684
Interest cost	8,521	8,690
Benefits paid	(10,663)	(10,954)
Actuarial loss (gain)	35,813	(12,375)
Curtailments	—	(4,313)
Foreign currency exchange rate changes	12,329	(21,787)
Projected benefit obligation, end of year	$294,275	$246,922
Change in fair value of plan assets		
Fair value of plan assets as of the beginning of the year	238,204	272,835
Actual return on plan assets	35,045	(4,726)
Benefits paid	(10,663)	(10,954)
Employer contributions	725	1,576
Employee contributions	205	426
Foreign currency exchange rate changes	11,732	(20,953)
Fair value of plan assets, end of year	$275,248	$238,204
Underfunded status at end of year	$(19,027)	$ (8,718)
Accumulated benefit obligation, end of year	$288,355	$241,983

All defined benefit pension plans are underfunded as of December 31, 2019 and 2018.

The funded status measured as the difference between the fair value of the plan assets and the projected benefit obligation are included in post-retirement obligations in the consolidated balance sheets.

A reconciliation of the funded status to amounts recognized in the consolidated balance sheets is as follows:

(thousands of U.S. dollars) As of December 31,	2019	2018
Projected benefit obligation	$294,275	$246,922
Fair value of plan assets	275,248	238,204
Plan assets less than projected benefit obligation	(19,027)	(8,718)
Unrecognized net actuarial loss	36,166	20,922
Net amount recognized at year end	$ 17,139	$ 12,204
Noncurrent liabilities	$(19,027)	$ (8,718)
Accumulated other comprehensive (income) loss	36,166	20,922
Net amount recognized at year end	$ 17,139	$ 12,204

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The following table illustrates the amounts in accumulated other comprehensive (income) loss that have not yet been recognized as components of pension expense:

(thousands of U.S. dollars) As of December 31,	2019	2018
Net actuarial loss	$36,166	$20,922
Deferred income taxes	(9,136)	(5,285)
Accumulated other comprehensive loss – net of tax	$27,030	$15,637

The weighted average asset allocation of the Company's pension plans was as follows:

Asset Category	Target	2019	2018
Cash	0%	0.2%	0.3%
Fixed income	40%	39.5%	43.5%
Equities	37%	37.6%	56.2%
Hedge Funds	23%	22.7%	0%
Total	100%	100%	100%

The Company maintains target allocation percentages among various asset classes based on investment policies established for the pension plans, which are designed to maximize the total rate of return (income and appreciation) after inflation, within the limits of prudent risk taking, while providing for adequate near-term liquidity for benefit payments. Such investment strategies have adopted an equity-based philosophy in order to achieve their long-term investment goals by investing in assets that often have uncertain returns, such as Canadian and other foreign equities, and non-government bonds. However, the Company also attempts to reduce its overall level of risk by diversifying the asset classes and further diversifying within each individual asset class.

The Company's expected return on asset assumptions are derived from studies conducted by actuaries and investment advisors. The studies include a review of anticipated future long-term performance of individual asset classes and consideration of the appropriate asset allocation strategy given the anticipated requirements of the plans to determine the average rate of earnings expected on the funds invested to provide for the pension plans benefits. While the study considers recent fund performance and historical returns, the assumption is primarily a long-term, prospective rate.

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The following table provides a basis of fair value measurement for plan assets held by the Company's pension plans that are measured at fair value on a recurring basis. Refer to the discussion of fair value hierarchy in the *Financial Instruments and Financial Risk* note.

As of December 31, 2019 *(thousands of U.S. dollars)*	Level 1	Level 2	Total
Cash and cash equivalents	$ 550	$ —	$ 550
Fixed income securities	—	108,723	108,723
Equity securities	—	92,208	92,208
Hedge Funds	—	73,767	73,767
Total	$ 550	$274,698	$275,248

As of December 31, 2018	Level 1	Level 2	Total
Cash and cash equivalents	$ 714	$ —	$ 714
Fixed income securities	—	103,619	103,619
Equity securities	—	133,871	133,871
Total	$ 714	$ 237,490	$238,204

Expected future benefit payments from plan assets are as follows:

Year ended December 31 *(thousands of U.S. dollars)*	
2020	$ 11,126
2021	11,647
2022	12,034
2023	12,314
2024	12,584
2025 – 2029	66,160
	$ 125,865

Other Post Retirement Benefit Plans

Other benefit plans are all related to our foreign subsidiaries and include a supplemental retirement arrangement, a retirement and termination allowance, and post-retirement benefit plans, which include contributory health and dental care benefits and contributory life insurance coverage. All, but one, non-pension post-employment benefit plans are unfunded.

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The interest cost and amortization of net actuarial (gain) loss are recorded in "Other income, net" and the service cost component is included in the same financial statement line item as the applicable employee's wages in the consolidated statements of operations and comprehensive income (loss). The components of net periodic benefit cost for the other post-retirement benefit plans were as follows:

(thousands of U.S. dollars) Year Ended December 31,	2019	2018
Service cost	$ 30	$ 61
Interest cost	372	358
Amortization of net actuarial (gain) loss	123	1
Net periodic benefit cost	$525	$420

The weighted average assumptions used to determine the projected benefit obligation and net periodic pension cost for these plans were as follows:

Year Ended December 31,	2019	2018
Projected benefit obligation		
Discount rate	3.13%	3.52%
Rate of compensation increase	3.0%	3.0%
Initial health care cost trend rate	7.0%	5.72%
Ultimate health care cost trend rate	4.0%	4.5%
Years until ultimate trend rate is reached	13	14
Benefit cost		
Discount rate	3.52%	3.55%
Rate of compensation increase	3.0%	3.0%

Assumed health care cost trend rates have a significant effect on the amounts reported for the health care plans. A one-percentage point change in assumed health care cost trend rates would have had the following impact on our consolidated financial statements in 2019:

(thousands of U.S. dollars)	1% Increase	1% Decrease
Change in net periodic benefit cost	$ 27	$ (25)
Change in projected benefit obligation	979	(802)

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The changes in the projected benefit obligation and the funded status of the other post-retirement plans were as follows:

(thousands of U.S. dollars) As of December 31,	2019	2018
Change in projected benefit obligation		
Projected benefit obligation	$ 11,019	$ 12,842
Service cost	30	61
Interest cost	372	358
Benefits paid	(676)	(752)
Actuarial loss (gain)	1,166	(603)
Curtailments	170	88
Foreign currency exchange rate changes	540	(975)
Projected benefit obligation, end of year	$ 12,621	$ 11,019
Change in fair value of plan assets		
Fair value of plan assets as of the beginning of the year	$ 325	$ 306
Benefits paid	(676)	(752)
Employer contributions	546	628
Employee contributions	170	168
Foreign currency exchange rate changes	16	(25)
Fair value of plan assets, end of year	$ 381	$ 325
Underfunded status at end of year	$(12,240)	$(10,694)
Accumulated benefit obligation, end of year	$ 12,473	$ 10,880

All other post-retirement benefit pension plans are underfunded as of December 31, 2019 and 2018.

A reconciliation of the funded status to the net plan liabilities recognized in the consolidated balance sheets is as follows:

(thousands of U.S. dollars) As of December 31,	2019	2018
Projected benefit obligation	$(12,621)	$(11,019)
Fair value of plan assets	381	325
Plan assets less than projected benefit obligation	(12,240)	(10,694)
Unrecognized actuarial gains (losses)	107	(913)
Net amount recognized at year end	$(12,133)	$(11,607)
Noncurrent liabilities	$(12,240)	$(10,694)
Accumulative other comprehensive income (loss)	107	(913)
Net amount recognized at year end	$(12,133)	$(11,607)

The other benefit plan liabilities are presented on the consolidated balance sheets as post retirement obligations.

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The following table illustrates the amounts in accumulated other comprehensive income (loss) that have not yet been recognized as components of other benefit plan expense:

(thousands of U.S. dollars) As of December 31,	2019	2018
Net actuarial income (loss)	$107	$(913)
Deferred income taxes	(27)	229
Accumulated other comprehensive income (loss) – net of tax	$ 80	$(684)

Based on the actuarial assumptions used to develop the Company's benefit obligations as of December 31, 2019, the following benefit payments are expected to be made to plan participants:

Years ended December 31 *(thousands of U.S. dollars)*	
2020	$ 617
2021	610
2022	614
2023	590
2024	565
2025 – 2029	2,783
Total	$5,779

We currently expect funding requirements of approximately $3.0 million in each of the next five years to fund the regulatory solvency deficit, as defined by Canadian federal regulation, which require solvency testing on defined benefit pension plans.

During the years ended December 31, 2019 and 2018, we contributed $0.7 million and $0.6 million, respectively, to defined benefit plans on behalf of our employees.

The Company may obtain a qualifying letter of credit for solvency payments, up to 15% of the market value of solvency liabilities as determined on the valuation date, instead of paying cash into the pension fund. As of December 31, 2019 and 2018, we had letters of credit outstanding relating to the defined benefit plans totaling $41.0 million and $38.0 million, respectively. The deficit has risen due to falling real interest rates where the pension liabilities increased more than the increase in the value of pension assets. The actual funding requirements over the five-year period will be dependent on subsequent annual actuarial valuations. These amounts are estimates, which may change with actual investment performance, changes in interest rates, any pertinent changes in Canadian government regulations and any voluntary contributions.

13. Related Parties

The immediate family of a member of management are 25% owners of a facility that is under lease by the Company through June 2024, with one five-year renewal option through June 2029. The rental expense related to this facility is approximately $1.0 million per year.

During 2017, the Company issued loans totaling $0.6 million to two members of management to assist with the purchase of Class A Units. The loans are interest-bearing, and repayment of each loan is required within 3 years from the date of its execution. The total value of the loans as of December 31, 2018 was $0.1 million, and they were fully paid off in 2019.

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In addition, we do business with a number of other companies affiliated with Warburg Pincus and GTCR, our Sponsors. All transactions with these companies have been conducted in the ordinary course of our business and are not material to our operations.

14. Other Comprehensive Income (Loss)

Amounts in accumulated other comprehensive income (loss) are presented net of the related tax. Foreign currency translation is not adjusted for income taxes.

Changes in our accumulated other comprehensive income (loss) balances, net of tax, were as follows:

(thousands of U.S. dollars)	Defined Benefit Plans	Foreign Currency Translation	Interest Rate Swaps	Total
Beginning balance – January 1, 2019	$(14,987)	$ (94,970)	$ —	$(109,957)
Other comprehensive income (loss) before reclassifications	(676)	27,517	179	27,020
Amounts reclassified from accumulated other comprehensive income (loss)	(11,450)	—	—	(11,450)
Net current-period other comprehensive income (loss)	(12,126)	27,517	179	15,570
Ending balance – December 31, 2019	$(27,113)	$ (67,453)	$179	$ (94,387)
Beginning balance – January 1, 2018	$(15,860)	$ (27,233)	$ —	$ (43,093)
Other comprehensive income (loss) before reclassifications	443	(67,737)	—	(67,294)
Amounts reclassified from accumulated other comprehensive income (loss)	430	—	—	430
Net current-period other comprehensive income (loss)	873	(67,737)	—	(66,864)
Ending balance – December 31, 2018	$(14,987)	$ (94,970)	$—	$(109,957)

15. Share-Based Compensation

The Company's equity-based awards issued to employees include restricted unit awards which vest based on either time or the achievement of certain performance and market conditions. These equity-based awards represent an interest in our parent, Sotera Health Topco Parent, L.P. ("Topco Parent"), and are granted in respect of services provided to the Company and its subsidiaries.

Class B-1 time vesting units vest on a daily basis pro rata over a five-year period (20% per year), subject to the grantee's continued services on each vesting date. Upon the occurrence of a change in control of the Company, all then outstanding unvested Class B-1 Units held by Unitholders will become vested as of the date of consummation of such change in control, subject to the Unitholder's continued services through the consummation of the change in control.

Class B-2 Units are considered performance vesting units, and are scheduled to vest only upon satisfaction of certain thresholds. These units vest as of the first date on which (i) our Sponsors have received two and one-half times their invested capital in Topco Parent and (ii) the Sponsors' internal rate of return exceeds twenty percent, subject to such grantee's continued services through such date. No compensation expense has been recorded on the Class B-2 Units at this time as the related performance conditions are not considered probable of achievement. In the event of a change in control of the Company, any outstanding Class B-2 Units that remain

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unvested immediately following the consummation of such a change in control of the Company shall be immediately canceled and forfeited without compensation.

Class C Units were issued in June 2016, are considered performance and time vesting units, and were accounted for as liability awards. No compensation expense was recorded on the Class C Units prior to the third quarter of 2019, as the related performance conditions were not considered probable of achievement. In the third quarter of 2019, all Class C Units vested based on the achievement of the aggregate distributions to the A Unitholder Partners and approval of the Board of Sotera Health Topco Parent, L.P. for accelerated vesting, and $10.0 million of stock-compensation expense was recognized and paid in accordance with the terms for redemption of outstanding Class C Units. No Class C Units remain outstanding.

The Company recognized $16.9 million ($10.0 million related to Class C Units and $6.9 million related to Class B-1 Units) and $6.9 million (related to Class B-1 units) of stock-based compensation for the years ended December 31, 2019 and 2018, respectively.

Fair value of the Class B-1 time vesting, B-2 performance vesting, and C Performance vesting units granted is estimated on the date of grant using a simulation-based option valuation model incorporating multiple and variable assumptions over time, including assumptions such as employee forfeitures, unit price volatility and dividend assumptions.

The assumptions used to calculate the fair value of the Class B-1, Class B-2, and Class C units were as follows:

	2019	2018
Risk-free interest rate	2.7%	1.8%
Expected volatility	49%	59%
Expected dividends	None	None
Expected time until exercise (years)	1.5	2.5

A summary of the activity for the years ended December 31, 2019 and 2018 related to the Class B-1, B-2 and C units issued to Company employees is presented below:

	B-1 Time Vesting	B-2 Performance Vesting	C Performance Vesting
At January 1, 2018	53,344,377	17,004,885	4
Granted	225,000	75,000	—
Forfeited	(1,734,173)	(578,058)	—
Vested	(19,651,070)	—	—
At December 31, 2018	32,184,134	16,501,827	4
Granted	3,387,500	987,500	—
Forfeited	(4,028,843)	(2,478,071)	—
Vested	(17,092,528)	—	(4)
At December 31, 2019	14,450,263	15,011,256	—

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The following table provides a summary of the weighted average unit grant date fair value, weighted average remaining contractual term, total compensation cost and unrecognized compensation cost:

December 31, 2019 *(dollars in millions, except per award values)*	B-1 Time Vesting	B-2 Performance Vesting	C Performance Vesting	All Awards
Weighted average grant date fair value per unit of unvested units	$ 0.41	$ 0.34	N/A	$ 0.37
Weighted average remaining contractual term	0.8 years	N/A	N/A	N/A
Total compensation cost recognized during 2019	$ 6.9	$ —	$ 10.0	$ 16.9
Unrecognized compensation cost at December 31	$ 6.0	$ 5.1	N/A	$ 11.1

N/A – not applicable

16. Supplemental Pro Forma Loss Per Share (unaudited)

As further discussed in the *Subsequent Events* note, on November 18, 2020, the Company effected a forward stock split to reclassify all 3,000 shares of its common stock outstanding as 232,400,200 shares. The unaudited supplemental pro forma earnings per share data for the year ended December 31, 2019 is presented below giving effect to the stock split.

Under SEC SAB Topic 1.B.3, a dividend declared in the twelve months preceding an initial public offering would be deemed to be in contemplation of the offering with the intention of repayment out of offering proceeds to the extent that the dividend exceeded earnings during the same period. In December 2019, the Company paid $275.0 million of dividends to Sotera Health Topco Parent L.P. As the Company had a net loss in the twelve months preceding the initial public offering, no amount of the dividend was considered paid out of recent earnings, and as such, the unaudited supplemental pro forma loss per share and pro forma equivalent shares give effect to the issuance of the number of shares that would be required to generate net proceeds sufficient to pay the $275.0 million in December 2019. The number of incremental shares that would be required to be issued to pay the dividend is based on the assumed initial public offering price of $21.50 per share, the midpoint of the estimated offering price range set forth on the cover of the Company's prospectus, net of underwriting discount and commissions of $1.13 per share. As a result, 13,500,245 shares to be issued in the offering (the estimated proceeds from which are greater than the amount of the December 2019 dividends) have been included in the denominator for purposes of pro forma loss per share calculations for the year ended December 31, 2019.

The following table sets forth a computation of unaudited supplemental pro forma basic and diluted loss per share for the year ended December 31, 2019:

	(unaudited) December 31, 2019
Weighted average common shares outstanding—Basic and Diluted	232,400,200
Additional pro forma shares required to be issued in the offering necessary to pay the dividend	13,500,245
Supplemental pro forma weighted average common shares outstanding—Basic and Diluted	245,900,445
Supplemental pro forma net loss per share—Basic and Diluted	$ (0.08)

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17. Asset Retirement Obligations ("ARO")

Our ARO represent the present value of future remediation costs and an increase in the carrying amounts of the related assets in property, plant and equipment in the consolidated balance sheets. The capitalized future site remediation costs are depreciated and the ARO are accreted over the life of the related assets which is included in depreciation and amortization expense, respectively.

The fair value of the ARO is determined based on estimates requiring management judgment. The key assumptions include the timing and estimated decommissioning costs of the remediation activities and credit adjusted risk free interest rates. Changes in the assumptions based on future information may result in adjustments to the estimated obligations over time. No market risk premium has been included in the calculation for the ARO since no reliable estimate can be made by the Company. Any difference between costs incurred upon settlement of an ARO and the liability recognized for the estimated cost of asset retirements will be recognized as a gain or loss in our current period operating results.

Each year, we review decommissioning costs and consider changes in marketplace rates. The following table describes changes to our ARO liability during the years presented:

(thousands of U.S. dollars) For the Year Ended	2019	2018
ARO – beginning of period	$40,543	$41,297
Changes in estimates	1,640	61
Accretion expense	2,051	1,366
Foreign currency exchange and other	962	(2,181)
ARO – end of period	45,196	40,543
Less current portion of ARO	2,200	–
Noncurrent ARO – end of period	$42,996	$40,543

We recorded depreciation expense on the ARO of $0.3 million and $0.2 million, for the years ended December 31, 2019 and 2018, respectively.

We are obligated to provide financial assurance to local and state licensing authorities for possible future decommissioning costs associated with the various facilities that hold Co-60. At December 31, 2019 and 2018, $49.3 million and $47.8 million, respectively, of the standby letters of credit referenced above and surety bonds were outstanding in favor of the various local and state licensing authorities in the event we defaulted on our decommissioning obligation.

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18. Commitments and Contingencies

Leases

We lease certain facilities and equipment under various operating leases that expire through October 2034. At December 31, 2019, aggregate future minimum lease payments, net of sublease income, under all operating leases is shown below:

(thousands of U.S. dollars) Years ended December 31,	Operating Leases
2020	$ 11,782
2021	10,283
2022	9,151
2023	6,413
2024	4,286
Thereafter	18,258
Total	$ 60,173

Most of our real property leases provide for renewal periods and rent escalations and stipulate that we pay taxes, maintenance, and certain other operating expenses applicable to the leased premises. We recognize rent expense on a straight-line basis over the lease period and accrue for rent expenses incurred but not paid.

Total rent expense for all operating leases for the years ended December 31, 2019 and 2018 was $13.3 million and $13.6 million, respectively.

We depend on a limited number of suppliers for certain of our supply and direct material costs. This includes obligations under various supply agreements in our Nordion segment for Co-60 that are enforceable and legally binding on us. As of December 31, 2019, we had minimum purchase commitments primarily with domestic and international suppliers of raw materials for the Nordion business totaling $1,619 million. The terms of these long-term supply or service arrangements range from 1 to 45 years. In addition, our Sterigenics segment has obligations to purchase ethylene oxide ("EO") gas. Our contract to purchase EO gas in the U.S. requires us to purchase all of our requirements from one supplier, and our contracts to purchase EO gas outside the U.S. generally require that we purchase a specified percentage of our requirements for our operations in the countries covered by those contracts. Although our EO gas contracts generally do not contain fixed minimum purchase volumes, we estimate the amounts based on the percentage of our requirements specified in the contracts and our budgeted purchase volumes for future periods covered under the contracts to be $28.2 million as of December 31, 2019. Such volumes are expected to be utilized in the normal course of our business and are not recognized on the consolidated balance sheets as a liability.

From time to time, we may be subject to various lawsuits and other claims in the ordinary course of our business. In addition, from time to time, we receive communications from government or regulatory agencies concerning investigations or allegations of noncompliance with laws or regulations in jurisdictions in which we operate.

We establish reserves for specific liabilities in connection with regulatory and legal actions that we determine to be probable and reasonably estimable. No material amounts have been accrued in our consolidated financial statements with respect to any loss contingencies. In certain of the matters described below, we are not able to make a reasonable estimate of any liability because of the uncertainties related to the outcome and/or the amount or range of loss. While it is not possible to determine the ultimate disposition of each of these matters, we do not

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expect that the ultimate resolution of pending regulatory and legal matters in future periods, including the matters described below, will have a material effect on our financial condition or results of operations. Despite the above, the Company may incur material defense and settlement costs, diversion of management resources and other factors.

FM Global Business Interruption Claim (NRU Outage)

Nordion, due to the shutdown of AECL's NRU reactor in 2009, suffered a cessation of supply of radioisotopes and business interruption loss. Nordion, by Statement of Claim dated October 22, 2010, issued in Ontario Superior Court an action against the insurer, Factory Mutual Insurance Company (FM Global), claiming $25.0 million USD in losses resulting from the shutdown of AECL's reactor and its inability to supply radioisotopes through the specified period of approximately 15 months. FM Global objected to Nordion's claim.

Trial commenced in March 2019 and was completed in September 2019. On March 30, 2020, Nordion received a favorable judgment in the amount of $25.0 million USD, plus pre-judgment interest, for a total judgment value of $39.8 million USD, or $56.4 million CAD based on then prevailing exchange rates should Nordion opt for conversion to Canadian funds. In addition, costs and disbursements have been assessed and awarded by the trial court in favor of Nordion in the approximate amount of $1.1 million CAD ($0.8 million USD) and $161,863 CAD ($0.1 million USD), respectively. On April 27, 2020, FM Global filed notice to appeal the judgment before the Court of Appeal of Ontario. Pending a favorable judgment in the appellate court, any final proceeds would be subject to a contingent fee owed to legal counsel and applicable taxes. As the judgment is considered a contingent gain, any favorable outcome will be recognized in a future period when all appeals are exhausted. It is anticipated that the appeal process could take a year or more to complete.

Willowbrook, Illinois – Government Litigation

On October 30, 2018, the Illinois Attorney General and the State's Attorney of DuPage County, Illinois, sued Sterigenics U.S., LLC (the "IAG Action") alleging that authorized EO air emissions from a commercial sterilization facility Sterigenics formerly operated in Willowbrook, Illinois "cause, threaten, or allow air pollution" in violation of the Illinois Environmental Protection Act. The IAG Action did not assert that Sterigenics violated its permit from the Illinois Environmental Protection Agency ("IEPA") authorizing Sterigenics' release of regulated levels of EO at the Willowbrook facility.

On February 15, 2019, the acting IEPA director, John Kim, issued a "Seal Order" effectively precluding Sterigenics' operations at the Willowbrook facility based on many of the same allegations asserted in the IAG Action. Sterigenics disputed those allegations and opposed the IEPA's Seal Order. The Seal Order was resolved by a Consent Order entered on September 6, 2019. The Consent Order provided that Sterigenics did not admit the allegations of the IAG Action, provided for the removal of the Seal Order and allowed the Willowbrook facility to reopen upon implementation of supplemental emissions control measures consistent with a new law that became effective in Illinois in June 2019 and an IEPA permit that was approved in September 2019. Following entry of the Consent Order, the Seal Order was withdrawn.

On September 30, 2019, Sterigenics announced the closure of the Willowbrook facility due to the inability to reach an agreement to renew the facility's lease and the unstable legislative and regulatory landscape in Illinois. Sterigenics is in the process of decommissioning the facility and completing the work required by the terms of its lease to return the property to the landlord.

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Ethylene Oxide Tort Litigation – Illinois

Since September 2018, tort lawsuits on behalf of nearly 800 plaintiffs (which are described further in the following paragraphs) have been filed in Illinois state court against Sotera Health LLC, Sterigenics U.S., LLC and other parties related to Sterigenics' Willowbrook, Illinois operations. Specifically, those plaintiffs allege that they suffered personal injuries including cancer and other diseases, or wrongful death, resulting from purported emissions and releases of EO from the Willowbrook facility. Plaintiffs seek damages in an amount to be determined by the trier of fact. Plaintiffs have voluntarily dismissed without prejudice a number of cases since September 2018, including certain individual cases alleging personal injuries and two class actions seeking property damages.

Sterigenics successfully sought consolidation of certain of these cases for pretrial purposes, which cases have now been consolidated before Judge Lawler in the Cook County Circuit Court, Illinois (the "Consolidated Case"). At present, 71 individual personal injury claims remain pending in the Consolidated Case. All plaintiffs in the Consolidated Case filed a single Master Complaint on October 24, 2019 by which Sotera Health LLC was added as a co-defendant, followed by a First Amended Master Complaint on January 31, 2020. On April 28, 2020, the defendants filed motions to dismiss the claims in the First Amended Master Complaint. On August 17, 2020, the Court entered an order largely denying the motions to dismiss, and the same day plaintiffs filed a Second Amended Master Complaint. Fact discovery is taking place in the Consolidated Case. A May 3, 2021 trial date has been set for Kamuda v. Sterigenics, the first-filed of the individual cases now included in the Consolidated Case, which is the first scheduled trial in these proceedings. Four additional cases now included in the Consolidated Case are currently scheduled for trials starting in June, August, September and November 2021. We anticipate that additional trials will be scheduled after 2021 in roughly the order in which the individual cases were filed.

On or about August 21, 2020, approximately 750 plaintiffs filed similar personal injury lawsuits against Sotera Health LLC, Sterigenics U.S., LLC and other parties in the Cook County Circuit Court, Illinois (but not in the existing Consolidated Case). We expect that most or all of these newly filed cases will be consolidated for pre-trial purposes with the Consolidated Case. There is currently no date set for the defendants to answer or otherwise respond to these newly filed cases.

On August 19, 2020, a lawsuit against Sotera Health LLC, Sterigenics U.S., LLC and other parties was filed by seven plaintiffs in the DuPage County Circuit Court, Illinois. The plaintiffs allege that they suffered personal injuries including but not limited to cancer resulting from purported emissions and releases of EO from the Willowbrook facility. Plaintiffs seek damages in an amount to be determined by the trier of fact. It is possible that this case will also be transferred to and consolidated with the above described Consolidated Case pending in Cook County, Illinois.

Additional personal injury and property damage lawsuits may be filed in the future against Sotera Health LLC and Sterigenics U.S., LLC relating to Sterigenics' Willowbrook facility or other EO processing facilities. Sotera Health LLC and Sterigenics U.S., LLC intend to defend themselves vigorously in all such EO tort litigation.

The Company carries insurance to cover alleged environmental liabilities with limits of $10.0 million per occurrence and $20.0 million in the aggregate. The per occurrence limit related to the Willowbrook EO tort litigations was fully utilized by June 30, 2020. We have not provided for a contingency reserve in connection with these claims. While we intend to vigorously defend the Willowbrook proceedings, there can be no assurance that we will be successful. We are unable to predict the incidence or outcome of such litigation or to reasonably estimate the possible range of any losses that could be incurred. An adverse outcome in one or more of these proceedings could have a material adverse effect on our business, financial condition and results of operations.

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Ethylene Oxide Tort Litigation – Georgia

On May 19, 2020 a lawsuit against Sotera Health, LLC, Sterigenics U.S., LLC and other parties was filed in the State Court of Cobb County, Georgia by 53 employees of a contract sterilization customer of Sterigenics. Plaintiffs claim personal injuries resulting from alleged exposure to residual ethylene oxide while working at the customer's distribution center in Lithia Springs, Georgia and seek damages in an amount to be determined by the trier of fact. Motions to dismiss were filed by all defendants in August 2020. All defendants are being defended and indemnified by Sterigenics' contract sterilization customer (plaintiffs' employer).

In May 2020, the Cobb County, Georgia Board of Tax Assessors reduced certain residential property value assessments around the Sterigenics Atlanta facility by 10% citing an "Epd-identified environmental issue," without providing the requisite factual support for the reduction. On August 14, 2020, Sterigenics U.S., LLC filed a lawsuit against members of the Cobb County Board of Tax Assessors in the U.S. District Court for the Northern District of Georgia, seeking a declaration that the reduction in property value assessments is unlawful and is causing Sterigenics reputational and imminent economic harm. Defendants' responses to the complaint are due in September 2020, at which time the Court will also receive submissions by the parties on issues of standing and jurisdiction.

On August 17, 2020 a lawsuit against Sotera Health LLC, Sterigenics U.S., LLC and other parties was filed by two plaintiffs in the State Court of Cobb County, Georgia. Plaintiffs allege that they suffered personal injuries and loss of consortium resulting from purported emissions and releases of EO from Sterigenics' Atlanta facility. Plaintiffs seek damages in an amount to be determined by the trier of fact.

The Company carries insurance to cover alleged environmental liabilities with limits of $10.0 million per occurrence and $20.0 million in the aggregate, which is the same policy referred to under Ethylene Oxide Tort Litigation - Illinois above. We have not provided for a contingency reserve in connection with these claims.

Additional personal injury and property damage lawsuits may be filed in the future against Sotera Health LLC and Sterigenics U.S., LLC relating to Sterigenics' Atlanta facility or other EO processing facilities. Sotera Health LLC and Sterigenics U.S., LLC intend to defend themselves vigorously in all such EO tort litigation. While we intend to vigorously defend these proceedings, there can be no assurance that we will be successful. We are unable to predict the incidence or outcome of such litigation or to reasonably estimate the possible range of any losses that could be incurred. An adverse outcome in one or more of these proceedings could have a material adverse effect on our business, financial condition and results of operations.

Suspension of Georgia Facility Operations & Related Litigation

On August 7, 2019, Sterigenics U.S., LLC entered into a voluntary Consent Order with the Georgia Environmental Protection Division ("EPD") under which Sterigenics agreed to install emissions reduction enhancements at its Atlanta facility to further reduce the facility's EO emissions below already

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Notes to the Consolidated Financial Statements

Subject to Section 7.1 of the Agreement, the Company has agreed to indemnify the Seller Parties against certain losses relating to breaches of the Company's representations, warranties and covenants in the Agreement, subject to certain limitations. The Company's indemnification obligations for breaches of representations and warranties (other than certain fundamental representations and warranties) survive for 18 months following the Closing Date, and the Company's indemnification obligations for breaches of certain fundamental representations and warranties survive indefinitely or for the applicable statute of limitations. The Company's indemnification obligations for breaches of covenants survive for the period of time set forth in the applicable covenant. The Company's indemnification obligations are subject to a deductible of $1.5 million and a cap of $30.0 million, except that the deductible and cap do not apply to indemnification obligations for breaches of certain fundamental representations and warranties or for fraud.

Pursuant to the Agreement, the Company has agreed to pay the Seller Parties an earnout payment of up to $50.0 million, payable in cash, if the Company's Adjusted EBITDA for the fiscal year ending December 31, 2026 exceeds $100.0 million. The earnout payment is payable on March 15, 2027, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a transaction bonus of $5.0 million, payable in cash, upon the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $3.0 million, payable in cash, on the first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $2.0 million, payable in cash, on the second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $1.0 million, payable in cash, on the third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the tenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eleventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twelfth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fourteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventeenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the nineteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twentieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twenty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twenty-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twenty-third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twenty-fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twenty-fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twenty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twenty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twenty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the twenty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirtieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirty-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirty-third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirty-fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirty-fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the thirty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fortieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the forty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the forty-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the forty-third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the forty-fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the forty-fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the forty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the forty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the forty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the forty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fiftieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifty-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifty-third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifty-fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifty-fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the fifty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixtieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixty-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixty-third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixty-fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixty-fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the sixty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventy-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventy-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventy-third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventy-fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventy-fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventy-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventy-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventy-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the seventy-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eightieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighty-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighty-third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighty-fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighty-fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the eighty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninetieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninety-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninety-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninety-third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninety-fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninety-fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninety-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninety-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninety-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the ninety-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundredth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fourth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred tenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred eleventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twelfth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred thirteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fourteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fifteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred sixteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred seventeenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred eighteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred nineteenth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twentieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twenty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twenty-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twenty-third anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

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The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twenty-fifth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twenty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twenty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twenty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred twenty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred thirtieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred thirty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred thirty-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

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The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred thirty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred thirty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred thirty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred thirty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fortieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred forty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

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The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred forty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred forty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred forty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred forty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fiftieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fifty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fifty-second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

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The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fifty-sixth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fifty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fifty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred fifty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred sixtieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred sixty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

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The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred sixty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred sixty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred sixty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred seventieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred seventy-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

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The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred seventy-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

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The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred eightieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred eighty-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

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The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred eighty-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred eighty-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred eighty-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred ninetieth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred ninety-first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

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The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred ninety-seventh anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred ninety-eighth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the one hundred ninety-ninth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the two hundredth anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the two hundred first anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Seller Parties a retention bonus of $0.5 million, payable in cash, on the two hundred second anniversary of the Closing Date, subject to the terms and conditions of the Agreement.

The Company has agreed to pay the Se

All obligations under the Senior Secured Credit Facilities, and the guarantees of such obligations, are secured by substantially all of the assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the Senior Secured Credit Facilities.

Outstanding letters of credit are collateralized by encumbrances against the Revolving Credit Facility and the collateral pledged thereunder, or by cash placed on deposit with the issuing bank. As of September 30, 2020, the Company had $64.3 million of letters of credit issued against the Revolving Credit Facility, resulting in total availability under the Revolving Credit Facility of $125.7 million.

First Lien Notes

On July 31, 2020, SHH issued $100.0 million aggregate principal amount of senior secured first lien notes due 2026 (the "First Lien Notes"), which mature on December 13, 2026. The First Lien Notes bear interest at a rate equal to LIBOR subject to a 1.00% floor plus 6.00% per annum. Interest is payable on a quarterly basis with no principal due until maturity. The weighted average interest rate on the First Lien Notes at September 30, 2020 was 7.00%.

SHH is entitled to redeem all or a portion of the First Lien Notes, at any time and from time to time, subject to certain premiums depending on the date of redemption: any time on or prior to July 31, 2021, a customary make-whole premium applies and, thereafter, specified premiums that decline to zero apply (in each case as described in the indenture governing the First Lien Notes).

All of SHH's obligations under the First Lien Notes are unconditionally guaranteed by the Company and each existing and subsequently acquired or organized direct or indirect wholly-owned domestic restricted subsidiary of SHH, with customary exceptions including, among other things, where providing such guarantees is not permitted by law, regulation or contract or would result in material adverse tax consequences. All obligations under the First Lien Notes, and the guarantees of such obligations, are secured by substantially all of the assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the First Lien Notes. Such collateral is substantially the same collateral that secures the Senior Secured Credit Facilities and Second Lien Notes. Such collateral securing the First Lien Notes ranks pari passu with that of the Senior Secured Credit Facilities and has priority over the collateral securing the Second Lien Notes.

At September 30, 2020, capitalized debt issuance costs were $0.7 million and debt discounts were $2.9 million, respectively, related to the First Lien Notes, which are recorded as a reduction of debt on our consolidated balance sheets and amortized into interest expense over the term of the debt agreement.

Second Lien Notes

On December 13, 2019, SHH issued $770.0 million aggregate principal amount of senior secured second lien notes due 2027 (the "Second Lien Notes"), which mature on December 13, 2027. The Second Lien Notes bear interest at a rate equal to LIBOR subject to a 1.00% floor plus 8.00% per annum. The weighted average interest rate on the Second Lien Notes at September 30, 2020 was 9.00%.

SHH is entitled to redeem all or a portion of the Second Lien Notes, at any time and from time to time, subject to certain premiums depending on the date of redemption: any time on or prior to December 13, 2020, a customary make-whole premium applies and, thereafter, specified premiums that decline to zero apply (in each case as described in the indenture governing the Second Lien Notes). In addition, under certain circumstances, such as an initial public offering or certain changes of control, SHH has certain additional redemption rights (as described in the indenture governing the Second Lien Notes).

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All of SHH's obligations under the Second Lien Notes are unconditionally guaranteed by the Company and each existing and subsequently acquired or organized direct or indirect wholly-owned domestic restricted subsidiary of SHH, with customary exceptions including, among other things, where providing such guarantees is not permitted by law, regulation or contract or would result in material adverse tax consequences. All obligations under the Second Lien Notes, and the guarantees of such obligations, are secured by substantially all of the assets of the borrower and guarantors, subject to permitted liens and other exceptions and exclusions, as outlined in the Second Lien Notes. Such collateral is substantially the same collateral that secures the Senior Secured Credit Facilities and the First Lien Notes, and any security interest or lien on shared collateral securing the Senior Secured Credit Facilities or the First Lien Notes shall have priority over any security interest or lien on shared collateral securing the Second Lien Notes.

At September 30, 2020 and December 31, 2019, capitalized debt issuance costs were $1.6 million and $1.8 million and debt discounts were $21.0 million and $23.2 million, respectively, related to the Second Lien notes, which are recorded as a reduction of debt on our consolidated balance sheets and amortized into interest expense over the term of the debt agreement.

11. Income Taxes

Income tax expense is provided on an interim basis based upon our estimate of the annual effective income tax rate. In determining the estimated annual effective income tax rate, we analyze various factors, including projections of our annual earnings and the taxing jurisdictions where the earnings will occur, the impact of state and local taxes, our ability to utilize tax credits and net operating loss carryforwards and available tax planning alternatives.

Our effective tax rate was (255.9%) and 63.3% for the nine months ended September 30, 2020 and 2019, respectively. Income tax expense (benefit) for the nine months ended September 30, 2020 and 2019 differs from the statutory rate primarily due to the impact of global intangible low-taxed income ("GILTI") (including final 951A regulations), the foreign rate differential, and non-deductible expenses.

On March 27, 2020, the Coronavirus Aid, Relief, and Economic Security Act (the "CARES Act") was enacted in response to the COVID-19 pandemic, and among other things, provides tax relief to businesses. Tax provisions of the CARES Act include retroactive increases in the limitation on the deductibility of interest expense from 30% to 50% for tax years beginning in 2019 or 2020, and other provisions. As a result of the increased limitation on the deductibility of interest expense, we recognized a current tax benefit of $8.7 million in the nine months ended September 30, 2020 related to 2019 interest expense previously recorded as deferred. In addition, we currently estimate an additional $8.2 million current tax benefit for the 2020 tax year, which will be recognized in the fourth quarter. The increased limitation under the CARES Act resulted in a first quarter 2020 reversal of the $5.6 million valuation allowance recorded at the end of the 2019 tax year.

On July 23, 2020, final 951A regulations were published that exempts income subject to a high rate of foreign tax from inclusion as GILTI for tax years beginning after December 31, 2017. The reduction in Adjusted Taxable Income ("ATI") realized as a result of the final 951A regulations resulted in a $36.2 million valuation allowance recorded in the quarter ended September 30, 2020.

Our current estimate of 2020 current tax expense related to GILTI is $1.5 million, a reduction of $11.2 million from prior estimates, and is considered as a component of our estimated annual effective tax rate calculation. In 2019 and 2018, we recognized GILTI current tax expense of $10.3 million and $5.6 million, respectively. As a

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result of final 951A regulations, the 2019 and 2018 GILTI tax was reduced to $2.4 million and $0, respectively, and was recognized as a reduction to income tax expense in the third quarter of 2020.

12. Employee Benefits

The Company sponsors various post-employment benefit plans including, in certain countries outside the U.S., defined benefit and defined contribution pension plans, retirement compensation arrangements, and plans that provide extended health care coverage to retired employees, the majority of which relate to Nordion.

Defined benefit pension plan

The interest cost and expected return on plan assets are recorded in "Other income, net" and the service cost component is included in the same financial statement line item as the applicable employee's wages in the consolidated statements of operations and comprehensive income (loss). The components of net periodic pension cost for the plans for the nine months ended September 30, 2020 and 2019 were as follows:

(thousands of U.S. dollars)	Nine months ended September 30,	
Pension	**2020**	**2019**
Service cost	**$ 821**	$ 859
Interest cost	**5,974**	6,379
Expected return on plan assets	**(10,712)**	(9,896)
Amortization of net actuarial (gain) loss	**588**	—
Net periodic (benefit) cost	**$ (3,329)**	$ (2,658)

Other benefit plans

Other benefit plans include a supplemental retirement arrangement, a retirement and termination allowance, and post-retirement benefit plans, which include contributory health and dental care benefits and contributory life insurance coverage. All non-pension post-employment benefit plans are unfunded.

The components of other post-retirement benefit plans for the nine months ended September 30, 2020 and 2019 were as follows:

(thousands of U.S. dollars)	Nine months ended September 30,	
Other post-retirement benefits	**2020**	**2019**
Service cost	**$ 21**	$ 23
Interest cost	**218**	236
Amortization of net actuarial (gain) loss	**39**	(16)
Net periodic (benefit) cost	**$ 278**	$ 243

We currently expect funding requirements of approximately $3.0 million in each of the next five years to fund the regulatory solvency deficit, as defined by Canadian federal regulation, which require solvency testing on defined benefit pension plans.

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We may obtain a qualifying letter of credit for solvency payments, up to 15% of the market value of solvency liabilities as determined on the valuation date, instead of paying cash into the pension fund. As of September 30, 2020, and December 31, 2019, we had letters of credit outstanding totaling $42.8 million and $41.0 million, respectively, related to these liabilities. The deficit has decreased due to an increase in the value of the pension assets more than the increase in the value of pension liabilities. The actual funding requirements over the five-year period will be dependent on subsequent annual actuarial valuations. These amounts are estimates, which may change with actual investment performance, changes in interest rates, any pertinent changes in Canadian government regulations, and any voluntary contributions.

13. Other Comprehensive Income (Loss)

Changes in our accumulated other comprehensive income (loss) balances, net of tax, were as follows:

	Nine Months Ended September 30, 2020			
(thousands of U.S. dollars)	**Benefit Plans**	**Foreign Currency Translation**	**Interest Rate Swaps**	**Total**
Beginning balance – January 1, 2020	**$ (27,113)**	**$ (67,453)**	**$ 179**	**$ (94,387)**
Other comprehensive income (loss) before reclassifications	700	(30,887)	(5,234)	(35,421)
Amounts reclassified from accumulated other comprehensive income (loss)	—	—	5,055	5,055
Net current-period other comprehensive income (loss)	**700**	**(30,887)**	**(179)**	**(30,366)**
Ending balance – September 30, 2020	**$ (26,413)**	**$ (98,340)**	**$ —**	**$ (124,753)**

	Nine Months Ended September 30, 2019			
(thousands of U.S. dollars)	**Benefit Plans**	**Foreign Currency Translation**	**Interest Rate Swaps**	**Total**
Beginning balance – January 1, 2019	$ (14,987)	$ (94,970)	$ —	$ (109,957)
Other comprehensive income (loss) before reclassifications	(409)	10,968	509	11,068
Ending balance – September 30, 2019	$ (15,396)	$ (84,002)	$ 509	$ (98,889)

14. Related Party Activity

In April 2020, the Company approved a loan to a member of management for approximately $0.5 million to assist with personal taxes incurred on share-based grants received. The loan is collateralized by the shares, and proceeds of distributions will be applied against the loan.

The immediate family of a member of management are 25% owners of a facility that is under lease by the Company through June 2024, with one five-year renewal option through June 2029. The rental expense related to this facility is approximately $1.0 million per year.

In addition, we do business with a number of other companies affiliated with Warburg Pincus and GTCR, our Sponsors. All transactions with these companies have been conducted in the ordinary course of our business and are not material to our operations.

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15. Share-Based Compensation

The Company's equity-based awards issued to employees include restricted limited partnership units in our parent, Sotera Health Topco Parent, L.P. ("Topco Parent"). These units are referred to as "Class B Units" and are granted in respect of services provided to the Company and its subsidiaries. Class B-1 Units are Class B Units which vest based on time and Class B-2 Units are Class B Units which vest based on the achievement of certain performance and market conditions.

Compensation expense resulting from time vesting based awards is recognized in our consolidated statements of operations and comprehensive income (loss), primarily within "Selling, general and administrative expenses," at grant date fair value over the requisite service period (typically five years on a straight-line basis for time vested awards). Compensation expense resulting from performance awards that vest upon satisfaction of a performance condition is recognized at grant date fair value when the performance condition is deemed probable, which may cause volatility in the timing of expense recognition. The calculated compensation expense for performance awards is adjusted based on an estimate of awards ultimately expected to vest. For awards with market conditions, the market condition is taken into account when calculating grant date fair value.

Class B-1 Units vest on a daily basis pro rata over a four or five-year period (25% or 20% per year, respectively), subject to the grantee's continued services on each vesting date. Upon the occurrence of a change of control of the Company, all then outstanding unvested Class B-1 Units held by Unitholders will become vested as of the date of consummation of such change of control, subject to the Unitholder's continued services through the consummation of the change of control. An initial public offering ("IPO") does not constitute a change of control for these purposes.

Class B-2 Units are considered performance vesting units, and are scheduled to vest only upon satisfaction of certain thresholds. These units vest as of the first date on which (i) our Sponsors have received two and one-half times their invested capital in Topco Parent and (ii) the Sponsors' internal rate of return exceeds twenty percent, subject to such grantee's continued services through such date. No compensation expense has been recorded on the Class B-2 Units at this time as the related performance conditions are not considered probable of achievement. The listing and public trading of our common stock, resulting from a successful IPO, would be a change in facts and circumstances that would result in us concluding that the performance condition would be probable of occurring. Accordingly, even though the IPO will not cause the Class B-2 Units to vest, unrecognized compensation expense of $4.9 million related to the Class B-2 Units would be recognized in the period immediately following a successful IPO.

In the event of a change in control of the Company, any outstanding Class B-2 Units that remain unvested immediately following the consummation of such a change in control of the Company shall be immediately canceled and forfeited without compensation. An IPO does not constitute a change of control for these purposes.

Class C Units were issued in June 2016, are considered performance and time vesting units, and were accounted for as liability awards. No compensation expense was recorded on the Class C Units prior to the third quarter of 2019, as the related performance conditions were not considered probable of achievement. In the third quarter of 2019, all Class C Units vested based on the achievement of the aggregate distributions to the Class A Unitholders and approval of the board of managers of Topco Parent for accelerated vesting, and $10.0 million of stock-compensation expense was recognized and paid in accordance with the terms for redemption of outstanding Class C Units. No Class C Units remain outstanding.

Fair value of the Class B-1 time vesting and B-2 performance vesting units is estimated on the date of grant using a simulation-based option valuation model incorporating multiple and variable assumptions over time, including assumptions such as employee forfeitures, unit price volatility and dividend assumptions.

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A summary of the activity for the nine months ended September 30, 2020 related to the Class B-1 and B-2 units issued is presented below:

	B-1 Time Vesting	**B-2 Performance Vesting**
As of December 31, 2019	14,450,263	15,011,256
Granted	11,450,000	—
Forfeited	(84,390)	(407,381)
Vested	(10,201,706)	—
As of September 30, 2020	**15,614,167**	**14,603,875**

The Company recognized $4.0 million and $15.1 million ($10.0 million related to Class C Units and $5.1 million related to Class B-1 Units) of share-based compensation for the nine months ended September 30, 2020 and 2019, respectively.

The following table provides a summary of the weighted average unit grant date fair value, weighted average remaining contractual term, total compensation cost and unrecognized compensation cost:

September 30, 2020 *(dollars in millions, except per award values)*	**B-1 Time Vesting**	**B-2 Performance Vesting**	**All Awards**
Weighted average grant date fair value per unit of unvested units	**$ 0.65**	**$ 0.34**	**$ 0.50**
Weighted average remaining contractual term	**2.6 years**	**N/A**	**N/A**
Total compensation cost recognized in the nine months ended September 30	**$ 4.0**	**$ —**	**$ 4.0**
Unrecognized compensation cost at September 30	**$ 10.2**	**$ 4.9**	**$ 15.1**

N/A – not applicable

16. Supplemental Pro Forma Earnings Per Share (unaudited)

As further discussed in the *Subsequent Events* note, on November 18, 2020, the Company effected a forward stock split to reclassify all 3,000 shares of common stock outstanding as 232,400,200 shares. The unaudited supplemental pro forma earnings per share data for the nine months ended September 30, 2020 is presented below giving effect to the stock split.

Under SEC SAB Topic 1.B.3, a dividend declared in the twelve months preceding an initial public offering would be deemed to be in contemplation of the offering with the intention of repayment out of offering proceeds to the extent that the dividend exceeded earnings during the same period. In December 2019, the Company paid $275.0 million of dividends to Sotera Health Topco Parent L.P. As the Company had a net loss in the twelve months preceding the initial public offering, no amount of the dividend was considered paid out of recent earnings, and as such, the unaudited supplemental pro forma earnings per share and pro forma equivalent shares give effect to the issuance of the number of shares that would be required to generate net proceeds sufficient to pay the dividends of $275.0 million in December 2019. The number of incremental shares that would be required to be issued to pay the dividend is based on the assumed initial public offering price of $21.50 per share, the midpoint of the estimated offering price range set forth on the cover of the Company's prospectus, net of underwriting discount and commissions $1.13 per share. As a result, 13,500,245 shares to be issued in the

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offering (the estimated proceeds from which are greater than the amount of the December 2019 dividends) have been included in the denominator for purposes of pro forma earnings per share calculations for the nine months ended September 30, 2020.

The following table sets forth a computation of unaudited supplemental pro forma basic and diluted earnings per share for the nine months ended September 30, 2020:

	(unaudited) September 30, 2020
Weighted average common shares outstanding—Basic and Diluted	232,400,200
Additional pro forma shares required to be issued in the offering necessary to pay the dividend	13,500,245
Supplemental pro forma weighted average common shares outstanding—Basic and Diluted	245,900,445
Supplemental pro forma net earnings per share—Basic and Diluted	$ 0.02

17. Leases

We lease certain facilities and equipment under various non-cancelable operating leases that expire through October 2034. Most of our real property leases provide for renewal periods and rent escalations and stipulate that we pay taxes, maintenance, and certain other operating expenses applicable to the leased premises. We made an accounting policy election whereby leases with an initial term of 12 months or less are recognized as lease expense on a straight-line basis over the lease term and not recorded on the consolidated balance sheet.

We determine if an agreement contains a lease and classify our leases as operating or finance at the lease commencement date. Finance leases are those in which we will pay substantially all the underlying asset's fair value or will use the asset for all or a major part of its economic life, including circumstances in which we will ultimately own the asset. Lease assets arising from finance leases are included in "Property, plant and equipment, net" and the liabilities are included in "Finance lease obligations" on the consolidated balance sheets. For finance leases, we recognize interest expense using the effective interest method and we recognize amortization expense on the lease asset over the shorter of the lease term or the useful life of asset. Finance leases are accounted for as if the assets were owned and financed, with associated expense recognized in "Interest expense, net" and "Cost of revenues" or "Selling, general and administrative expenses" within the consolidated statements of operations and comprehensive income (loss) depending on the nature of the underlying asset.

Operating lease assets and liabilities are recognized at the commencement date of the lease based on the present value of lease payments over the lease term. Lease assets represent the right to use an underlying asset for the lease term and lease liabilities represent the obligation to make lease payments arising from the lease. As most leases do not provide an implicit interest rate, we estimate an incremental borrowing rate to determine the present value of lease payments. Our estimated incremental borrowing rate reflects a secured rate based on recent debt issuances, our estimated credit rating, and lease term.

We recognize operating lease costs on a straight-line basis over the term of the lease in "Cost of revenues" or "Selling, general and administrative expenses" on the consolidated statements of operations and comprehensive income (loss) depending on the nature of the underlying asset. Non-lease components are accounted for separately from the lease components for all asset classes.

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The components of lease expense were as follows for the nine months ended September 30, 2020:

(thousands of U.S. dollars)	**Nine Months Ended September 30, 2020**
Operating lease costs *(1)*	**$ 10,610**
Finance lease costs:	
Amortization of right of use assets	1,930
Interest on lease liabilities	1,423
Total finance lease costs	**3,353**
Total lease costs	**$ 13,963**

(1) Includes $0.7 million of short-term lease costs in the nine-months ended September 30, 2020.

Operating lease expense for the nine months ended September 30, 2019 was $10.6 million.

Lease terms and discount rates were as follows:

	Nine Months Ended September 30, 2020
Weighted average remaining lease term:	
Operating leases	6.6 years
Finance leases	16.3 years
Weighted average discount rate:	
Operating leases	6.16%
Finance leases	6.13%

Supplemental cash flow information related to leases was as follows:

(thousands of U.S. dollars)	**Nine Months Ended September 30, 2020**
Cash paid for amounts included in the measurement of lease liabilities:	
Operating cash flows for operating leases	$ 9,048
Operating cash flow for finance leases	1,562
Finance cash flows for finance leases	1,116

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Maturities of lease liabilities as of September 30, 2020 are as follows:

(thousands of U.S. dollars)	**Operating Leases**	**Finance Leases**	**Total**
Remainder of 2020	**$ 3,279**	**$ 788**	**$ 4,067**
2021	**11,789**	**3,134**	**14,923**
2022	**10,642**	**2,979**	**13,621**
2023	**8,629**	**2,995**	**11,624**
2024	**6,019**	**3,047**	**9,066**
2025 and Thereafter	**20,470**	**37,911**	**58,381**
Total lease payments	**60,828**	**50,854**	**111,682**
Less imputed interest	**(11,539)**	**(19,067)**	**(30,606)**
Total lease liabilities	**$ 49,289**	**$ 31,787**	**$ 81,076**

18. Commitments and Contingencies

From time to time, we may be subject to various lawsuits and other claims in the ordinary course of our business. In addition, from time to time, we receive communications from government or regulatory agencies concerning investigations or allegations of noncompliance with laws or regulations in jurisdictions in which we operate.

We establish reserves for specific liabilities in connection with regulatory and legal actions that we determine to be probable and reasonably estimable. No material amounts have been accrued in our consolidated financial statements with respect to any loss contingencies. In certain of the matters described below, we are not able to make a reasonable estimate of any liability because of the uncertainties related to the outcome and/or the amount or range of loss. While it is not possible to determine the ultimate disposition of each of these matters, we do not expect that the ultimate resolution of pending regulatory and legal matters in future periods, including the matters described below, will have a material effect on our financial condition or results of operations. Despite the above, the Company may incur material defense and settlement costs, diversion of management resources and other factors.

FM Global Business Interruption Claim (NRU Outage)

Nordion, due to the shutdown of AECL's NRU reactor in 2009, suffered a cessation of supply of radioisotopes and business interruption loss. Nordion, by Statement of Claim dated October 22, 2010, issued in Ontario Superior Court an action against the insurer, Factory Mutual Insurance Company (FM Global), claiming $25.0 million USD in losses resulting from the shutdown of AECL's reactor and its inability to supply radioisotopes through the specified period of approximately 15 months. FM Global objected to Nordion's claim.

Trial commenced in March 2019 and was completed in September 2019. On March 30, 2020, Nordion received a favorable judgment in the amount of $25.0 million USD, plus pre-judgment interest, for a total judgment value of $39.8 million USD, or $56.4 million CAD based on then prevailing exchange rates should Nordion opt for conversion to Canadian funds. In addition, costs and disbursements have been assessed and awarded by the trial court in favor of Nordion in the approximate amount of $1.1 million CAD ($0.8 million USD) and $161,863 CAD ($0.1 million USD), respectively. On April 27, 2020, FM Global filed notice to appeal the judgment before the Court of Appeal of Ontario. Defendant's appeal brief was received in September 2020 and Nordion is in the process of preparing its response. Hearing before the Court of Appeal is expected in late Spring of 2021. Pending

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a favorable judgment in the appellate court, any final proceeds would be subject to a contingent fee owed to legal counsel and applicable taxes. As the judgment is considered a contingent gain, any favorable outcome will be recognized in a future period when all appeals are exhausted. It is anticipated that the appeal process could take a year or more to complete.

Willowbrook, Illinois – Government Litigation

On October 30, 2018, the Illinois Attorney General and the State's Attorney of DuPage County, Illinois, sued Sterigenics U.S., LLC (the "IAG Action"), alleging that authorized EO air emissions from a commercial sterilization facility Sterigenics formerly operated in Willowbrook, Illinois "cause, threaten, or allow air pollution" in violation of the Illinois Environmental Protection Act. The IAG Action did not assert that Sterigenics violated its permit from the Illinois Environmental Protection Agency ("IEPA") authorizing Sterigenics' release of regulated levels of EO at the Willowbrook facility.

On February 15, 2019, the acting IEPA director, John Kim, issued a "Seal Order" effectively precluding Sterigenics' operations at the Willowbrook facility based on many of the same allegations asserted in the IAG Action. Sterigenics disputed those allegations and opposed the IEPA's Seal Order. The Seal Order was resolved by a Consent Order entered on September 6, 2019. The Consent Order provided that Sterigenics did not admit the allegations of the IAG Action, provided for the removal of the Seal Order and allowed the Willowbrook facility to reopen upon implementation of supplemental emissions control measures consistent with a new law that became effective in Illinois in June 2019 and an IEPA permit, which the IEPA approved in September 2019. Following entry of the Consent Order, the Seal Order was withdrawn.

On September 30, 2019, Sterigenics announced the closure of the Willowbrook facility due to the inability to reach an agreement with its landlord to renew the facility's lease and the unstable legislative and regulatory landscape in Illinois. Sterigenics is in the process of decommissioning the facility and completing the work required by the terms of its lease to return the property to the landlord.

On October 20, 2020 Sterigenics, the Illinois Attorney General and the State's Attorney of DuPage County filed a Joint Motion to Terminate Consent Order, stating that the community projects which Sterigenics voluntarily agreed to fund have been completed and funded as required by the Consent Order, and that Sterigenics has permanently ceased operations and surrendered all permits for its operations in Willowbrook, Illinois. On October 27, 2020 the DuPage County Circuit Court entered the Agreed Order Terminating Consent Order.

Ethylene Oxide Tort Litigation - Illinois

Since September 2018, tort lawsuits on behalf of approximately 835 personal injury plaintiffs (which are further described in the following paragraphs) have been filed in Illinois state courts against Sotera Health LLC, Sterigenics U.S., LLC, GTCR, LLC and other parties related to Sterigenics' Willowbrook, Illinois operations. Specifically, those plaintiffs allege that they suffered personal injuries including cancer and other diseases, or wrongful death, resulting from purported emissions and releases of EO from the Willowbrook facility. Plaintiffs seek damages in an amount to be determined by the trier of fact. Sterigenics denies these allegations and intends to vigorously defend against these claims. Plaintiffs have voluntarily dismissed without prejudice a number of cases since September 2018, including certain individual cases alleging personal injuries and two class actions seeking damages for alleged diminution of property values.

Sterigenics sought consolidation of certain of these cases for pretrial purposes, and in October 2019 obtained an order consolidating the then-pending cases before Judge Lawler in the Cook County Circuit Court, Illinois (the

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"Consolidated Case"). All plaintiffs in the Consolidated Case filed a single Master Complaint on October 24, 2019 by which Sotera Health LLC was added as a co-defendant, followed by a First Amended Master Complaint on January 31, 2020. On April 28, 2020, the defendants filed motions to dismiss the claims in the First Amended Master Complaint. On August 17, 2020, the Court entered an order largely denying the motions to dismiss, and the same day plaintiffs filed a Second Amended Master Complaint.

On August 17, 2020, the plaintiffs sought and received leave of Court to add as defendants Griffith Foods Group, Inc., Griffith Foods, Inc., Griffith Foods International, Inc. and Griffith Foods Worldwide Inc.

On or about August 21, 2020, approximately 768 personal injury plaintiffs filed similar lawsuits against Sotera Health LLC, Sterigenics U.S., LLC, GTCR, LLC and other parties in the Cook County Circuit Court, Illinois (but not in the existing Consolidated Case) and in the DuPage County Circuit Court. Defendants' motions to transfer, reassign and consolidate the newly filed cases with the above described Consolidated Case in the Cook County Circuit Court, Illinois were granted on October 2, 2020 and October 9, 2020.

Having been granted leave of Court on August 17, 2020 to add as defendants Griffith Foods Group, Inc., Griffith Foods, Inc., Griffith Foods International, Inc. and Griffith Foods Worldwide Inc., plaintiffs filed a third amended master complaint, adding those defendants, on October 30, 2020. Defendants' responses to the third amended master complaint will be due on December 1, 2020. The plaintiffs who filed the new lawsuits in August 2020 (whose cases are now included in the Consolidated Case) are required to file individual short form complaints on or before February 1, 2021. Defendants' deadline for responding to each short form complaint will be 90-days after entry of an order setting the individual case for trial.

Written and deposition fact discovery is on-going in the Consolidated Case. Currently, there are no dates set for the close of fact discovery, for expert discovery or for dispositive motion practice. Plaintiffs have not yet made any specific damages claims.

A May 3, 2021 trial date has been set for *Kamuda v. Sterigenics*, the first-filed of the individual cases now included in the Consolidated Case, which is the first scheduled trial in these proceedings. Four additional cases now included in the Consolidated Case are currently scheduled for trials starting in June, August, September and November 2021. We anticipate that additional trials will be scheduled after 2021 in roughly the order in which the individual cases were filed.

Additional personal injury and property devaluation lawsuits may be filed in the future against Sotera Health LLC and Sterigenics U.S., LLC relating to Sterigenics' Willowbrook facility or other EO sterilization facilities. Sotera Health LLC and Sterigenics U.S., LLC intend to defend themselves vigorously in all such EO tort litigation.

The Company carries insurance to cover alleged environmental liabilities with limits of $10.0 million per occurrence and $20.0 million in the aggregate. The per occurrence limit related to the Willowbrook EO tort litigations was fully utilized by June 30, 2020. We have not provided for a contingency reserve in connection with these claims. While we intend to vigorously defend the Willowbrook proceedings, there can be no assurance that we will be successful. We are unable to predict the incidence or outcome of such litigation or to reasonably estimate the possible range of any losses that could be incurred. An adverse outcome in one or more of these proceedings could have a material adverse effect on our business, financial condition and results of operations.

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Ethylene Oxide Tort Litigation – Georgia

On May 19, 2020, a lawsuit against Sotera Health LLC, Sterigenics U.S., LLC and other parties was filed in the State Court of Cobb County, Georgia by 53 employees of a contract sterilization customer of Sterigenics. In the operative complaint, Plaintiffs claim personal injuries resulting from alleged exposure to residual EO while working at the customer's distribution center in Lithia Springs, Georgia, allege they were unaware that they were being exposed to EO in their workplace and seek damages in an amount to be determined by the trier of fact. The deadline for defendants to respond to the operative complaint has not yet been determined. All defendants are being defended and indemnified by Sterigenics' contract sterilization customer (plaintiffs' employer and a co-defendant in the lawsuit).

In May 2020, the Cobb County, Georgia Board of Tax Assessors reduced certain residential property value assessments around the Sterigenics Atlanta facility by 10% citing an "Epd-identified environmental issue," without supporting market data. On August 14, 2020, Sterigenics U.S., LLC filed a lawsuit against members of the Cobb County Board of Tax Assessors in the U.S. District Court for the Northern District of Georgia, seeking a declaration that the reduction in property value assessments is arbitrary and unlawful and is causing Sterigenics reputational and imminent economic harm. The court has stayed the action pending its decision concerning Sterigenics' standing to bring the lawsuit. That issue has been fully briefed and was argued on September 29, 2020. Additional briefing by the parties on the issue of the court's discretionary jurisdiction under the Declaratory Judgment Act was filed on October 21, 2020.

Since August 17, 2020, five lawsuits against Sotera Health LLC, Sterigenics U.S., LLC and other parties have been filed by plaintiffs in the State Court of Cobb County, Georgia and the State Court of Gwinnett County, Georgia in which plaintiffs allege that they suffered personal injuries and loss of consortium resulting from emissions and releases of EO from Sterigenics' Atlanta facility. We are also defendants in a lawsuit alleging that our Atlanta facility has devalued and harmed the plaintiffs' use of a real property they own in Smyrna, Georgia. In both instances, plaintiffs seek damages in amounts to be determined by the trier of fact. Current deadlines for defendants' responses to the complaints are in November and December 2020.

Additional personal injury and property devaluation lawsuits may be filed in the future against Sotera Health LLC and Sterigenics U.S., LLC relating to Sterigenics' Atlanta facility or other EO sterilization facilities. Sotera Health LLC and Sterigenics U.S., LLC intend to defend themselves vigorously in all such EO tort litigation. While we intend to vigorously defend these proceedings, there can be no assurance that we will be successful. We are unable to predict the incidence or outcome of such litigation or to reasonably estimate the possible range of any losses that could be incurred. An adverse outcome in one of these proceedings could have a material adverse effect on our business, financial condition and results of operations.

Suspension of Georgia Facility Operations & Related Litigation

On August 7, 2019, Sterigenics U.S., LLC entered into a voluntary Consent Order with the Georgia Environmental Protection Division ("EPD") under which Sterigenics agreed to install emissions reduction enhancements at its Atlanta facility to further reduce the facility's EO emissions below already permitted levels. Sterigenics voluntarily suspended operations at the facility in early September 2019 to expedite completion of the enhancements. Installation of these enhancements is complete, and Sterigenics successfully tested the enhanced emissions controls in cooperation with EPD during the second quarter of 2020 while the facility was in operation.

In October 2019, while Sterigenics had voluntarily suspended the facility's operations, Cobb County, Georgia officials asserted that the facility had an incorrect "certificate of occupancy" and could not resume operations without obtaining a new certificate of occupancy after a third-party code compliance review they required.

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After the Cobb County officials would not allow Sterigenics to resume operations, on March 30, 2020, Sterigenics U.S., LLC filed a lawsuit in the United States District Court for the Northern District of Georgia against Cobb County, Georgia and Cobb County officials Nicholas Dawe and Kevin Gobble. In the lawsuit, Sterigenics sought immediate injunctive relief and permanent declaratory relief to resume normal operations of the Atlanta facility in the interest of public health and on the basis that the positions asserted by Cobb County were unfounded. On April 1, 2020 the Court entered a Temporary Restraining Order prohibiting Cobb County officials from precluding or interfering with the facility's normal operations. On April 8, 2020, the Court entered a Consent Order extending the Temporary Restraining Order and allowing the facility to continue normal operations until entry of a final judgment in the case. On June 24, 2020 Sterigenics filed an amended complaint, and on July 22, 2020 defendants filed a motion to dismiss the claims. On November 9, 2020, the Court held a hearing on the motion to dismiss and indicated, at the conclusion of the hearing, that an opinion and order denying the motion to dismiss would be issued. No trial date has been set.

19. Financial Instruments and Financial Risk

Derivative Instruments

We do not use derivatives for trading or speculative purposes and are not a party to leveraged derivatives.

We have embedded derivatives in certain of our customer and supply contracts as a result of the currency of the contract being different from the functional currency of the parties involved. Changes in the fair value of the embedded derivatives are recognized in "Other income, net" in the consolidated statements of operations and comprehensive income (loss).

In June 2020, SHH entered into two interest rate cap agreements with notional amounts of $1,000.0 million and $500.0 million, respectively, for a total option premium of $0.3 million. These terminate on August 31, 2021 and February 28, 2022, respectively. The interest rate caps limit our cash flow exposure related to the LIBOR base rate under a portion of our variable rate borrowings to 1.0%. In October 2017, SHH entered into two interest rate cap agreements with a total notional amount of $400.0 million for a total option premium of $0.6 million; these agreements terminated on September 30, 2020. The interest rate caps limited the Company's cash flow exposure related to the LIBOR base rate under the variable rate Term Loan borrowings to 3.0%. The interest rate caps were not designated as hedges and were recorded at fair value on the consolidated balance sheets, with any changes in the value being recorded in the consolidated statement of operations and comprehensive income (loss).

During the third quarter of 2019, SHH entered into two interest rate swap agreements with a total notion amount of $1,000 million to hedge our exposure to interest rate movements and to manage interest expense related to our outstanding variable-rate debt. These swaps were designated as hedges against the changes in cash flows attributable to changes in LIBOR, the benchmark interest rate being hedged, and any changes in the fair value of the swap are recorded in other comprehensive income (loss). We received interest at one-month LIBOR and paid a fixed interest rate under the terms of the swap agreement. The swap agreements terminated on August 31, 2020.

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The following table provides the fair values of our derivative instruments:

(thousands of U.S. dollars)	**September 30, 2020**	**December 31, 2019**
Assets		
Interest rate caps	$ 28	$ 1
Interest rate swaps	—	242
Embedded derivatives (a)	131	—
Liabilities		
Embedded derivatives (a)	$ 4,271	$ 3,478

(a) As of September 30, 2020, and December 31, 2019, total notional amounts for certain of the Company's supply and customer contracts for embedded derivatives were approximately $90.4 million and $96.0 million, respectively.

The interest rate caps and embedded derivative assets are included in "Prepaid expenses and other current assets" on our consolidated balance sheets. Embedded derivative liabilities are included in "Accrued liabilities" on the consolidated balance sheets.

The following tables summarize the activities of our derivative instruments for the periods presented, and the line item where the activity is included in the consolidated statements of operations and comprehensive income (loss):

	Nine months ended September 30,	
(thousands of U.S. dollars)	**2020**	**2019**
Unrealized loss / (gain) on interest rate caps recorded in Interest expense, net	$ 230	$ 333
Unrealized loss / (gain) on embedded derivatives recorded in Other income, net	(1,464)	(153)
Realized loss on interest rate swap recorded in Interest expense, net	5,055	—

Credit Risk

Certain of our financial assets, including cash and cash equivalents, are exposed to credit risk.

We are also exposed, in our normal course of business, to credit risk from our customers. As of September 30, 2020, and December 31, 2019, accounts receivable was net of an allowance for uncollectible accounts of $0.8 million.

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Credit risk on financial instruments arises from the potential for counterparties to default on their contractual obligations to the Company. We are exposed to credit risk in the event of non-performance, but do not anticipate non-performance by any of the counterparties to our financial instruments. We limit our credit risk by dealing with counterparties that are considered to be of high credit quality. In the event of non-performance by counterparties, the carrying value of our financial instruments represents the maximum amount of loss that would be incurred.

Fair Value Hierarchy

The fair value of our financial instruments is the price that would be received to sell an asset or paid to transfer a liability in an orderly transaction between market participants at the measurement date. The valuation techniques we would use to determine such fair values are described as follows: Level 1—fair values determined by inputs utilizing quoted prices in active markets for identical assets or liabilities; Level 2—fair values based on observable inputs other than quoted prices included in Level 1, such as quoted prices for similar assets and liabilities in active markets, quoted prices for identical or similar assets and liabilities in markets that are not active, or other inputs that are observable; Level 3—fair values determined by unobservable inputs reflecting our own assumptions, consistent with reasonably available assumptions made by other market participants.

The following table discloses our financial assets and liabilities measured at fair value on a recurring basis:

As of September 30, 2020 *(thousands of U.S. dollars)*	**Level 1**	**Level 2**	**Level 3**	**Total**
Interest rate caps	**$ —**	**$ 28**	**$ —**	**$ 28**
Embedded derivative assets		**131**		**131**
Embedded derivative liabilities	**—**	**(4,271)**	**—**	**(4,271)**

As of December 31, 2019 *(thousands of U.S. dollars)*	**Level 1**	**Level 2**	**Level 3**	**Total**
Interest rate caps	$ —	$ 1	$ —	$ 1
Interest rate swaps	—	242	—	242
Embedded derivative liabilities	—	(3,478)	—	(3,478)

The fair value of our Term Loan, First Lien Notes, and Second Lien Notes was $2,104.1 million, $97.6 million, and $712.6 million, respectively as of September 30, 2020. The fair value of our Term Loan and the Second Lien Notes was $2,130.6 million and $770.0 million, respectively as of December 31, 2019. The fair values were calculated using external pricing information, which is considered a Level 2 input as described above.

20. Segment Information

We identify our operating segments based on the way we manage, evaluate and internally report our business activities for purposes of allocating resources and assessing performance. We have three reportable segments: Sterigenics, Nordion and Nelson Labs. We have determined our reportable segments based upon an assessment of organizational structure, service types, and internally prepared financial statements. Our chief operating decision maker evaluates performance and allocates resources based on net revenues and segment income after the elimination of intercompany activities.

Sterigenics

The Sterigenics segment provides outsourced terminal sterilization and irradiation services for the medical device, pharmaceutical, food safety and advanced applications markets.

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Nordion

Nordion is a global provider of Co-60 and gamma irradiators, which are key components to the gamma sterilization process.

Nelson Labs

Nelson Labs provides outsourced microbiological and analytical chemistry testing and advisory services for the medical device and biopharmaceutical industries.

For nine months ended September 30, 2020, five customers reported within the Nordion segment individually represented 10% or more of the segment's total net revenues. These customers represented 15.5%, 14.5%, 11.4%, 11.2% and 10.3% of the segment's external net revenues for the nine months ended September 30, 2020.

Financial information for each of our segments is presented in the following table:

	Nine Months Ended September 30, 2020			
(thousands of U.S. dollars)	**Sterigenics**	**Nordion**	**Nelson Labs**	**Consolidated**
Net revenues (1)	$ 363,954	$ 86,034	$ 151,325	$ 601,313
Segment income (2)	192,803	50,692	63,302	306,797
Capital expenditures	29,090	1,809	2,741	33,640

	Nine Months Ended September 30, 2019			
(thousands of U.S. dollars)	**Sterigenics**	**Nordion**	**Nelson Labs**	**Consolidated**
Net revenues (1)	$ 350,387	$ 91,869	$ 142,586	$ 584,842
Segment income (2)	180,362	49,698	55,397	285,457
Capital expenditures	32,240	1,472	2,924	36,636

(1) Revenues are reported net of intersegment sales. Our Nordion segment recognized $22.9 million and $35.0 million in revenues from sales to our Sterigenics segment for the nine months ended September 30, 2020 and 2019, respectively, that is not reflected in net revenues in the table above. Intersegment sales for Sterigenics and Nelson Labs are immaterial for both periods.

(2) Segment income is only provided on a net basis to the chief operating decision maker and is reported net of intersegment profits.

Corporate operating expenses for executive management, accounting, information technology, legal, human resources, treasury, corporate development, tax, purchasing, and marketing are allocated to the segments based on total net revenue.

Total assets and depreciation and amortization expense by segment are not readily available and are not reported separately to the chief operating decision maker.

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A reconciliation of segment income to consolidated income (loss) before taxes is as follows:

	Nine Months Ended September 30,	
(thousands of U.S. dollars)	**2020**	**2019**
Segment income	**$ 306,797**	$ 285,457
Less adjustments:		
Interest expense, net	**167,142**	114,478
Depreciation and amortization (a)	**107,158**	110,128
Share-based compensation (b)	**4,019**	15,120
One time bonuses (c)	—	530
(Gain) loss on foreign currency and embedded derivatives (d)	**(4,791)**	8,298
Acquisition and divestiture related charges, net (e)	**2,970**	(704)
Impairment of long-lived assets and intangible assets (f)	—	5,781
Business optimization project expenses (g)	**2,484**	1,485
Plant closure expenses (h)	**2,388**	1,145
Professional services relating to Willowbrook and Atlanta facilities (i)	**25,370**	7,788
Accretion of asset retirement obligation (j)	**1,476**	1,457
COVID-19 expenses (k)	**2,363**	—
Consolidated income (loss) before taxes	**$ (3,782)**	$ 19,951

(a) Includes depreciation of Co-60 held at gamma irradiation sites.

(b) Includes non-cash share-based compensation expense. In 2019, also includes $10.0 million of one-time cash share-based compensation expense related to the Class C Performance and Time Vesting Units, which vested in the third quarter of 2019 based on the achievement of the aggregate distributions to the Class A unitholders and the approval of the board of Topco Parent for accelerated vesting.

(c) Represents one-time cash bonuses for members of management relating to capital markets activity in 2019.

(d) Represents the effects of (i) fluctuations in foreign currency exchange rates, primarily related to remeasurement of intercompany loans denominated in currencies other than subsidiaries' functional currencies, and (ii) non-cash mark-to-fair value of embedded derivatives relating to certain customer and supply contracts at Nordion.

(e) Represents (i) certain direct and incremental costs related to the acquisition of Iotron Industries Canada, Inc. in July 2020, and certain related integration efforts as a result of acquisitions, (ii) the earnings impact of fair value adjustments (excluding those recognized within amortization expense) resulting from the businesses acquired, and (iii) transition services income and non-cash deferred lease income associated with the terms of the divestiture of the Medical Isotopes business in 2018.

(f) Represents impairment charges related to the decision to not reopen the Willowbrook, Illinois facility in September 2019.

(g) Represents professional fees, contract termination and exit costs, severance and other payroll costs, and other costs associated with business optimization and cost savings projects relating to the integrations of Nordion and Nelson Labs, including the divestiture of the Medical

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Isotopes business, the Sotera Health rebranding, operating structure realignment and other process enhancement projects.

(h) Represents professional fees, severance and other payroll costs, and other costs including ongoing lease and utility expenses associated with the closure of the Willowbrook, Illinois facility.

(i) Represents professional fees related to litigation associated with our EO sterilization facilities in Willowbrook, Illinois and Atlanta, Georgia and other related professional fees. See *Commitments and Contingencies* note.

(j) Represents the non-cash accretion of asset retirement obligations related to Co-60 and gamma processing facilities, which are based on estimated site remediation costs for any future decommissioning of these facilities (without regard for whether the decommissioning services would be performed by employees of Nordion, instead of by a third party) and are accreted over the life of the asset.

(k) Represents non-recurring costs associated with the COVID-19 pandemic, including donations to related charitable causes and special bonuses for front-line personnel working on-site during lockdown periods.

21. Subsequent Events

We have evaluated events occurring subsequent to September 30, 2020 through November 18, 2020, which is the date the consolidated financial statements were available to be issued.

On November 18, 2020, the Company filed an amendment to its certificate of incorporation, effecting a forward stock split to reclassify all 3,000 shares of its common stock outstanding as 232,400,200 shares, which was approved by the Company's board of directors and sole stockholder on November 10, 2020. The accompanying financial statements and related notes and schedules to the financial statements give retroactive effect to the stock split for all periods presented.

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46,600,000 Shares

Sotera Health

Common Stock

Prospectus

, 2020

J.P. Morgan
Credit Suisse
Goldman Sachs & Co. LLC
Jefferies

Barclays
Citigroup
RBC Capital Markets
BNP PARIBAS
KeyBanc Capital Markets
Citizens Capital Markets
ING
Academy Securities
Loop Capital Markets
Penserra Securities LLC
Siebert Williams Shank
Tigress Financial Partners

Through and including , 2020 (the 25th day after the date of this prospectus), all dealers effecting transactions in these securities, whether or not participating in this offering, may be required to deliver a prospectus. This is in addition to each dealer's obligation to deliver a prospectus when acting as an underwriter and with respect to unsold allotments or subscriptions.

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PART II
INFORMATION NOT REQUIRED IN PROSPECTUS

Item 13. Other Expenses of Issuance and Distribution.

Estimated expenses payable in connection with the sale of the common stock in this offering are as follows:

SEC registration fee	$ 134,470
FINRA filing fee	185,390
Stock exchange listing fee	295,000
Printing and engraving expenses	400,000
Legal fees and expenses	4,500,000
Accounting fees and expenses	1,500,000
Transfer agent and registrar fees and expenses	10,000
Miscellaneous	500,000
Total	$ 7,524,860

We will bear all of the expenses shown above.

Item 14. Indemnification of Directors and Officers.

Section 145 of the DGCL provides that a corporation may indemnify directors and officers as well as other employees and individuals against expenses, including attorneys' fees, judgments, fines and amounts paid in settlement in connection with specified actions, suits and proceedings whether civil, criminal, administrative or investigative, other than a derivative action by or in the right of the corporation, if they acted in good faith and in a manner they reasonably believed to be in or not opposed to the best interests of the corporation and, with respect to any criminal action or proceeding, had no reasonable cause to believe their conduct was unlawful. A similar standard is applicable in the case of derivative actions, except that indemnification extends only to expenses, including attorneys' fees, incurred in connection with the defense or settlement of such action and the statute requires court approval before there can be any indemnification where the person seeking indemnification has been found liable to the corporation. The statute provides that it is not exclusive of other indemnification that may be granted by a corporation's certificate of incorporation, bylaws, disinterested director vote, stockholder vote, agreement or otherwise.

Our amended and restated certificate of incorporation will provide for indemnification of directors and officers to the fullest extent permitted by law, including payment of expenses in advance of resolution of any such matter. Our amended and restated certificate of incorporation will eliminate the potential personal monetary liability of our directors to us or our stockholders for breaches of their duties as directors except as otherwise required under the DGCL. Any amendment to, or repeal of, these provisions will not eliminate or reduce the effect of these provisions in respect of any act, omission or claim that occurred or arose prior to that amendment or repeal. If the DGCL is amended to provide for further limitations on the personal liability of directors of corporations, then the personal liability of our directors will be further limited to the greatest extent permitted by the DGCL.

We have entered into or will enter into separate indemnification agreements with our directors and officers that may be broader than the specific indemnification provisions contained in the DGCL. Each indemnification agreement provides, among other things, for indemnification to the fullest extent permitted by law and our amended and restated certificate of incorporation and amended and restated bylaws against any and all expenses, judgments, fines and amounts paid in settlement of any claim. The indemnification agreements provide for the advancement or payment of all expenses to the indemnitee and for reimbursement to us if it is found that such indemnitee is not entitled to such indemnification under applicable law and our amended and restated certificate

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of incorporation and amended and restated bylaws. We believe that these agreements are necessary to attract and retain qualified individuals to serve as directors and officers.

The limitation of liability and indemnification provisions expected to be included in our amended and restated certificate of incorporation and the indemnification agreements that we have entered into or will enter into with our directors and officers may discourage stockholders from bringing a lawsuit against our directors and officers for breach of their fiduciary duties. They may also reduce the likelihood of derivative litigation against our directors and officers, even though an action, if successful, might benefit us and other stockholders. Further, a stockholder's investment may be adversely affected to the extent that we pay the costs of settlement and damage awards against directors and executive officers as required by these indemnification provisions.

We maintain standard policies of insurance under which, subject to the limitations of the policies, coverage is provided to our directors and officers against loss rising from claims made by reason of breach of duty or other wrongful acts as a director or officer, including claims relating to public securities matters.

Certain of our non-employee directors may, through their relationships with their employers, be insured and/or indemnified against certain liabilities incurred in their capacity as members of our board of directors. Although directors designated for election to our board of directors by investment funds and entities affiliated with either Warburg Pincus or GTCR may have certain rights to indemnification, advancement of expenses or insurance provided or obtained by investment funds and entities affiliated with either Warburg Pincus or GTCR, respectively, we have agreed in our Stockholders' Agreement that we will be the indemnitor of first resort, will advance the full amount of expenses incurred by each such director and, to the extent that investment funds and entities affiliated with either Warburg Pincus or GTCR or their insurers make any payment to, or advance any expenses to, any such director, we will reimburse those investment funds and entities and their insurers for such amounts.

The underwriting agreement, filed as Exhibit 1.1 to this registration statement, will provide for indemnification, under certain circumstances, by the underwriters of us and our officers and directors for certain liabilities arising under the Securities Act or otherwise.

Item 15. Recent Sales of Unregistered Securities.

In the three years preceding the filing of this registration statement, we have issued the following securities that were not registered under the Securities Act:

On November 18, 2020, we effected a forward stock split to reclassify all 3,000 shares of our common stock outstanding as 232,400,200 shares.

PIK Toggle Notes

On November 24, 2017, Sotera Health Company (formerly known as Sotera Health Topco, Inc.) issued an aggregate principal amount of $75.0 million of 8.125%/8.875% Senior PIK Toggle Notes due 2021 (the "PIK Toggle Notes"), which was used to pay a cash distribution to Topco Parent, which, in turn, used such proceeds for distributions, equity repurchases and other payments to its equity holders. The initial purchasers for the PIK Toggle Notes were Jefferies LLC and Goldman Sachs & Co. LLC.

The PIK Toggle Notes were offered and sold to qualified institutional buyers pursuant to Rule 144A under the Securities Act or to non-U.S. investors outside the United States in compliance with Regulation S of the Securities Act.

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Item 16. Exhibits and Financial Statement Schedules.

(a) Exhibits: The list of exhibits is set forth in beginning on page II-4 of this Registration Statement and is incorporated herein by reference.

(b) Financial Statement Schedules: No financial statement schedules are provided because the information called for is not applicable or is shown in the financial statements or notes thereto.

Item 17. Undertakings.

* (h) Insofar as indemnification for liabilities arising under the Securities Act of 1933 may be permitted to directors, officers, and controlling persons of the registrant pursuant to the foregoing provisions, or otherwise, the registrant has been advised that in the opinion of the Securities and Exchange Commission such indemnification is against public policy as expressed in the Act and is, therefore, unenforceable. In the event that a claim for indemnification against such liabilities (other than the payment by the registrant of expenses incurred or paid by a director, officer, or controlling person of the registrant in the successful defense of any action, suit or proceeding) is asserted by such director, officer, or controlling person in connection with the securities being registered, the registrant will, unless in the opinion of its counsel the matter has been settled by controlling precedent, submit to a court of appropriate jurisdiction the question whether such indemnification by it is against public policy as expressed in the Act and will be governed by the final adjudication of such issue.

* (i) The undersigned registrant hereby undertakes that:

- For purposes of determining any liability under the Securities Act of 1933, the information omitted from the form of prospectus filed as part of this registration statement in reliance upon Rule 430A and contained in a form of prospectus filed by us pursuant to Rule 424(b)(1) or (4) or 497(h) under the Securities Act shall be deemed to be part of this registration statement as of the time it was declared effective.
- For the purpose of determining any liability under the Securities Act of 1933, each post-effective amendment that contains a form of prospectus shall be deemed to be a new registration statement relating to the securities offered therein, and the offering of such securities at that time shall be deemed to be the initial bona fide offering thereof.

* Paragraph references correspond to those of Regulation S-K, Item 512.

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EXHIBIT INDEX

Exhibit No	Description of Exhibits
1.1**	Form of Underwriting Agreement
3.1**	Form of Certificate of Incorporation of the Registrant
3.2**	Form of Bylaws of the Registrant
4.1	[Reserved]
4.2**	Form of Amended and Restated Registration Rights Agreement
4.3**	Indenture, dated as of December 13, 2019, among Sotera Health Holdings, LLC, the Registrant, the intermediate parents and subsidiary note parties thereto and Wilmington Trust, National Association, as second lien notes collateral agent, calculation agent and trustee
4.4**	Indenture, dated as of July 31, 2020, among Sotera Health Holdings, LLC, the Registrant, the intermediate parents and subsidiary note parties thereto and Wilmington Trust, National Association, as first lien notes collateral agent, calculation agent and trustee
4.5**	Form of Senior Secured Second Lien Floating Rate Note due 2027 (included in Exhibit 4.3)
4.6**	Form of Senior Secured First Lien Floating Rate Note due 2026 (included in Exhibit 4.4)
4.7**	First Supplemental Indenture, dated as of July 31, 2020, among Sotera Health Holdings, LLC, the additional guarantors party thereto and Wilmington Trust, National Association, as trustee and second lien notes collateral agent
4.8**	Second Supplemental Indenture, dated as of October 9, 2020, among Sotera Health Holdings, LLC and Wilmington Trust, National Association, as trustee and second lien notes collateral agent
5.1**	Opinion of Cleary Gottlieb Steen & Hamilton LLP
10.1+**	Employment Agreement by and between Sotera Health Company and Michael B. Petras, Jr., dated as of November 10, 2020
10.2+**	Employment Agreement by and between Sotera Health Company and Scott J. Leffler, dated as of November 10, 2020
10.3+**	Employment Agreement by and between Sotera Health Company and Matthew J. Klaben, dated as of November 10, 2020
10.4+**	Sotera Health Company Supplemental Retirement Benefit Plan, effective as of January 1, 2018
10.5+**	Sotera Health Company 2020 Omnibus Incentive Plan
10.6+**	Form of Sotera Health Company 2020 Omnibus Incentive Plan Restricted Stock Unit Grant Notice and Agreement
10.7+**	Form of Sotera Health Company 2020 Omnibus Incentive Plan Stock Option Grant Notice and Agreement
10.8**	Form of Indemnification Agreement entered into between the Registrant and each director and executive officer
10.9**	Form of Stockholders' Agreement
10.10**	Credit Agreement, dated as of December 13, 2019, among the Registrant, Sotera Health Holdings, LLC, the lenders and issuing banks party thereto and Jefferies Finance LLC, as first lien administrative agent and first lien collateral agent
10.11**	Guarantee Agreement, dated as of December 13, 2019, among the Registrant, Sotera Health Holdings, LLC, the other guarantors party thereto and Jefferies Finance LLC, as first lien collateral agent

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Exhibit No	Description of Exhibits
10.12**	Collateral Agreement, dated as of December 13, 2019, among the Registrant, Sotera Health Holdings, LLC, the other guarantors party thereto and Jefferies Finance LLC, as first lien collateral agent
10.13**	Patent Security Agreement, dated as of December 13, 2019, between Sterigenics U.S., LLC and Jefferies Finance LLC, as collateral agent
10.14**	Trademark Security Agreement, dated as of December 13, 2019, between Sterigenics U.S., LLC and Jefferies Finance LLC, as collateral agent
10.15**	Trademark Security Agreement, dated as of December 13, 2019, between Nelson Laboratories, LLC and Jefferies Finance LLC, as collateral agent
10.16**	Trademark Security Agreement, dated as of December 13, 2019, between Sotera Health LLC and Jefferies Finance LLC, as collateral agent
10.17**	Copyright Security Agreement, dated as of December 13, 2019, among Jefferies Finance LLC and Nelson Laboratories, LLC, as collateral agent
10.18**	Second Lien Collateral Agreement, dated as of December 13, 2019, among the Registrant, Sotera Health Holdings, LLC, the other grantors party thereto and Wilmington Trust, National Association, as second lien notes collateral agent
10.19**	Patent Security Agreement, dated as of December 13, 2019, between Sterigenics U.S., LLC and Wilmington Trust, National Association, as second lien notes collateral agent
10.20**	Trademark Security Agreement, dated as of December 13, 2019, between Sterigenics U.S., LLC and Wilmington Trust, National Association, as second lien notes collateral agent
10.21**	Trademark Security Agreement, dated as of December 13, 2019, between Nelson Laboratories, LLC and Wilmington Trust, National Association, as second lien notes collateral agent
10.22**	Trademark Security Agreement, dated as of December 13, 2019, between Sotera Health LLC and Wilmington Trust, National Association, as second lien notes collateral agent
10.23**	Copyright Security Agreement, dated as of December 13, 2019, between Nelson Laboratories, LLC and Wilmington Trust, National Association, as second lien notes collateral agent
10.24**	First/Second Lien Intercreditor Agreement, dated as of December 13, 2019, among the Registrant, Sotera Health Holdings, LLC, the other grantors party thereto, Jefferies Finance LLC, as first lien collateral agent and Wilmington Trust, National Association, as initial second priority representative
10.25**	First Lien Pari Passu Intercreditor Agreement, dated as of July 31, 2020, among Sotera Health Holdings, LLC, the Registrant, Jefferies Finance LLC as Collateral Agent and Authorized Representative, and Wilmington Trust, National Association as Additional First Lien Collateral Agent and Initial Authorized Representative
10.26**	First Lien Collateral Agreement, dated as of July 31, 2020, among the Registrant, Sotera Health Holdings, LLC, the other grantors party thereto and Wilmington Trust, National Association, as first lien notes collateral agent
10.27**	Patent Security Agreement, dated as of July 31, 2020, between Sterigenics U.S., LLC and Wilmington Trust, National Association, as first lien notes collateral agent
10.28**	Trademark Security Agreement, dated as of July 31, 2020, between Sotera Health Holdings LLC and Wilmington Trust, National Association, as first lien notes collateral agent
10.29**	Copyright Security Agreement, dated as of July 31, 2020, between Nelson Laboratories, LLC and Wilmington Trust, National Association, as first lien notes collateral agent

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Exhibit No	Description of Exhibits
10.30†	Restated Supply Agreement, dated as of October 6, 2020, between Balchem Corporation and Sterigenics U.S., LLC, Sterigenics S. De R.L. De C.V., Sterigenics Costa Rica S.R.L. and Sterigenics EO Canada, Inc.
10.31+**	Form of Restricted Stock Agreement and Acknowledgement
10.32+**	Non-Employee Director Compensation Policy
21.1**	List of Subsidiaries
23.1**	Consent of Cleary Gottlieb Steen & Hamilton LLP (included in Exhibit 5.1)
23.2	Consent of Ernst & Young LLP, Independent Registered Public Accounting Firm
24.1**	Powers of Attorney (included on signature page to Registration Statement on Form S-1 filed on October 23, 2020)
24.2**	Powers of Attorney (included on signature page to Registration Statement on Form S-1 filed on November 12, 2020)

\+ Denotes management contract or compensatory plan or arrangement.
** Previously filed.
† Certain confidential portions of this exhibit have been redacted pursuant to Item 601(b)(10)(iv) of Regulation S-K. The omitted information is (i) not material and (ii) would likely cause us competitive harm if publicly disclosed. We agree to furnish supplementally an unredacted copy of the exhibit to the Securities and Exchange Commission on its request.

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SIGNATURES

Pursuant to the requirements of the Securities Act of 1933, the registrant has duly caused this registration statement to be signed on its behalf by the undersigned, thereunto duly authorized, in the city of Broadview Heights, State of Ohio on November 18, 2020.

SOTERA HEALTH COMPANY

By: /s/ Michael B. Petras, Jr.
Name: Michael B. Petras, Jr.
Title: Chairman and Chief Executive Officer

Pursuant to the requirements of the Securities Act of 1933, as amended, this registration statement has been signed below by the following persons in the capacities and on the dates indicated.

Name	Title	Date
/s/ Michael B. Petras, Jr. Michael B. Petras, Jr.	Chairman and Chief Executive Officer (Principal Executive Officer)	November 18, 2020
/s/ Scott J. Leffler Scott J. Leffler	Chief Financial Officer and Treasurer (Principal Financial and Accounting Officer)	November 18, 2020
* Ruoxi Chen	Director	November 18, 2020
* Sean L. Cunningham	Director	November 18, 2020
* David A. Donnini	Director	November 18, 2020
* Stephanie Geveda	Director	November 18, 2020
* Ann R. Klee	Director	November 18, 2020
* Constantine S. Mihas	Director	November 18, 2020
* James C. Neary	Director	November 18, 2020
* Vincent K. Petrella	Director	November 18, 2020

*By: /s/ Michael B. Petras, Jr.
Attorney-in-Fact