

MAY 5 - 1955

AIR POLLUTION FOUNDATION  
704 South Spring St.  
Los Angeles 14, Calif.

May 5, 1955

Gentlemen:

Submitted below for your information is a copy of a letter which Dr. Irving Langmuir handed to me after seeing certain newspaper accounts of a press interview with him at the Third National Air Pollution Symposium at Pasadena, April 20.

In at least one newspaper account, Dr. Langmuir was quoted as saying that "avoiding hydrocarbons would be extremely expensive" and that "avoiding nitrogen oxides would be impossible." You will note that in his letter, he points out that these were not the thoughts he had attempted to convey to reporters.

Sincerely yours,

*L. B. Hitchcock*

L. B. Hitchcock  
President & Managing Director

Dear Dr. Hitchcock:

My attention has been called to certain statements in the newspapers this morning purporting to quote me during a press interview yesterday. Some of these statements are inaccurate, for example, statements with respect to avoiding hydrocarbons and nitrogen oxides as being prohibitively expensive or impossible.

The thought I attempted to express was that since there appeared to be four primary conditions, among others, favorable to the formation of smog, including hydrocarbons, oxides of nitrogen, sunlight, and temperature inversion accompanied by low winds that hold the polluted air for a relatively long time over the city, it should be possible to reduce smog by avoiding or modifying any one of these factors.

I believe that every effort should be made to control and limit the pollution of atmosphere by hydrocarbons.

I believe that far too small a proportion of the total effort has thus far been devoted to the reduction of the effects of  $\text{NO}_2$ , and there are encouraging possibilities of reducing smog by controlling the production of  $\text{NO}_2$  or neutralizing its effects.

As an experiment, but not as a complete solution of the problem, I suggest that experiments be tried to introduce white smoke substantially as described in the newspaper accounts.

Very truly yours,

/s/ Irving Langmuir

WESTERN UNION  
TELEGRAM

WU024 NL PD SX LOS ANGELES CALIF MAY 9 1955

MAY 10 1955

DR LEE A DUBRIDGE PRESIDENT

CAL TECH PASADENA CALIF

SEVERAL TRUSTEES WOULD LIKE TO DISCUSS SOME IMPORTANT  
POLICY MATTERS. WILL HOLD LUNCHEON MEETING EXECUTIVE  
COMMITTEE CALIFORNIA CLUB, ROOM ONE, SECOND FLOOR,  
TUESDAY, MAY SEVENTEENTH, TWELVE NOON. PLEASE ADVISE  
L B HITCHCOCK.

*accept*

MAY 11 1955

# AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET  
LOS ANGELES 14, CALIFORNIA  
Tel.: MADison 6-9441

LAUREN B. HITCHCOCK  
President and Managing Director

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- P. G. WINNETT

- WILLIAM L. FAITH  
Vice President and  
Chief Engineer
- LERoy A. GARRETT  
Secretary of the  
Foundation

May 10, 1955

COPY

**Dr. F. W. Went,**  
**Division of Biology**  
**Earhart Plant Research Laboratory**  
**California Institute of Technology**  
**1201 E. California**  
**Pasadena 4, California**

Dear Dr. Went:

The lack of correlation which we reported in our paper at the Third National Air Pollution Symposium between plant damage and other smog effects was a preliminary report. There are doubtless a number of other correlations which could be tried with the data already available, which we had not tried at the time our report was made.

Dr. Middleton, however, I believe has been working on some of the correlations particularly connected with plants in much greater detail, and I believe is preparing a further report. This should be much more significant than our preliminary report. He may be able to find correlations or otherwise interpret the data in ways in which we, not being plant pathologists, could not do or have not done so far. Our choice of a single plant as a test device during the survey last fall was dictated primarily by reasons of shortage of funds and personnel and we had to do a rush job with the best we could at the time. As I am sure you know, we are using a variety of plants in our current work going on at SRI in Pasadena.

Your suggestion regarding the growing conditions during and previous to smog testing did in fact receive special attention, and we understand that the plants were provided under carefully controlled conditions. We did learn, for example, that as the weather got colder at night, the plants had to be kept artificially warm if they were to show reasonable sensitivity to smog later. This was carefully observed thereafter.



Dr. F. W. Went

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May 10, 1955

Broadly, of course, this test in itself was part of the over-all experiment to see whether or not significant results could be obtained as simply as possible. Until Dr. Middleton has had full opportunity to study the data and report its interpretations, we ourselves are withholding judgement.

We do indeed appreciate your painstaking interest and good advice. With many thanks,

Sincerely yours,

*Original signed by*

*L. B. Hitchcock*  
L. B. Hitchcock

LBH:mek

cc:

Dr. John T. Middleton

Dr. L. A. DuBridge ←

Mr. Gordon P. Larson



MAY 12 1955

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- WILLIAM L. FAITH  
Vice President and  
Chief Engineer
- LEROY A. GARRETT  
Secretary of the  
Foundation

May 11, 1955

**Mr. S. Smith Griswold**  
**Air Pollution Control Officer**  
**Los Angeles County Air Pollution**  
**Control District**  
**434 South San Pedro Street**  
**Los Angeles 13, California**

Dear Mr. Griswold

We wish to propose that the Air Pollution Control District undertake a census of sources of air pollution. This census should be systematic and comprehensive, and result in charts showing the contribution of each square mile of the County to the concentration of each pollutant. It should not be confined to those pollutants presently considered important in the formation of eye-irritating and plant-damaging substances, but should include every contaminant emitted from any source whatsoever.

### The purposes of the census should be:

1. To provide an accurate estimate of the emissions into the atmosphere of those reagents which are known to be deleterious in themselves or to be responsible for the formation of deleterious substances;
2. To show whether other substances are being emitted in dangerous quantities;
3. To provide a basis for the interpretation of trajectory studies of the movement of air samples in which high concentrations of contaminants are measured in the aerometric survey, or the monitoring program; and
4. The source density may provide a basis for planning the zoning of industrial and other activities in the

COPY



Mr. S. Smith Griswold

-2-

May 11, 1955

future, when correlated with the air movement studies presently being carried out by the District.

It is recognized that a square-mile by square-mile census of this sort is an extremely large undertaking. It is recommended that for the present a pilot study be undertaken in which sample areas of various types are studied. Thus, teams could be set up to carry out a census of five different areas, say five square miles each, during the remainder of this year. These areas could be (1) a typical residential and commercial area; (2) a predominantly commercial area; (3) an area devoted largely to light, supposedly "clean" manufacturing; (4) an area devoted to heavy manufacturing; and (5) a refinery area. In each of these areas the attempt would be to make a block by block survey of the emission from every type of source including rubbish incinerators, commercial and industrial operation, and traffic. The results would be summarized in the form of emissions of each pollutant per square mile in each area.

It is suggested that for the remainder of this year, a budget of \$50,000 might be adequate to carry out the pilot project. On the basis of the experience of carrying out the pilot project, the budget required for a complete pollution census of the Los Angeles Basin, and the desirability of conducting such a census would be established.

Sincerely yours,

*Original signed by*

*L. B. Hitchcock*

L. B. Hitchcock

LBH:mek

( in triplicate)

cc:

L. A. DuBridge 

R. B. Allen

A. O. Beckman

F. M. Banks

Team



## AIR POLLUTION FOUNDATION

## REGULATION VII. EMERGENCIES

May 12, 1955

This emergency regulation is designed to prevent a catastrophe caused by extreme concentrations of air contaminants. Past history

indicates that a catastrophe is extremely remote. Attached, hereto, is the latest revision of Regulation VII.

This is now coming fairly close to what the Supervisors may be expected to adopt May 24. The Foundation cannot ignore this very important development in the local air pollution situation, particularly since the original advisory committee of 15, under the chairmanship of Dean Stafford Warren, included Allen, Beckman, Fagg, Hitchcock, and Neiburger. In other words, one third of the committee which drafted the warning levels represent the Foundation, as well as other organizations.

District. The basic premise is that some attempt should be made to define what is meant by an air pollution catastrophe. The attached material is an earnest preliminary attempt in this direction which, in its revised form, has had the benefit of many points of view which were initially quite far apart but are now getting together. shall control the emission of air contaminants during the existence

of any air pollution catastrophe. While the Foundation does not, as a matter of policy, undertake to inject itself in drawing up of regulations, we are and have been called upon to assist in scientific and technical questions which are very much involved.

cer shall maintain at least fourteen (14) permanently-located atmospheric sampling stations equipped. Those sampling stations shall be located at locations designated for next Tuesday, May 17, at lunch in the California Club.

by the Air Pollution Control Officer after consultation with the Advisory Committee. The Air Pollution Control Officer may maintain such additional sampling stations, consisting of such equipment

and in such locations as may be necessary. These additional stations may be permanent, temporary, fixed, or mobile, and activated upon orders of the Air Pollution Control Officer.

RULE 152. CONTINUOUS SAMPLING. The Air Pollution Control Officer shall establish a procedure whereby adequate samplings of air contaminants will be taken at necessary intervals at each of the stations established under RULE 151.

LBH:ma  
Enclosure

Original signed by

L. B. Hitchcock

L.B. Hitchcock

## REGULATION VII. EMERGENCIES

This emergency regulation is designed to prevent a catastrophe caused by extreme concentrations of air contaminants. Past history indicates that the possibility of such a catastrophe is extremely remote. The Air Pollution Control Board deems it desirable to have ready an adequate plan to prevent the possibility of such an occurrence and in case of the happening of this unforeseen event, to insure that all necessary actions can be taken to prevent the injury to the health of the citizens in the Air Pollution Control District.

RULE 150. GENERAL. Notwithstanding any other provisions of these rules and regulations, the provisions of this regulation shall control the emission of air contaminants during the existence of any "alert" stage as provided herein.

RULE 151. SAMPLING STATIONS. The Air Pollution Control Officer shall maintain at least fourteen (14) permanently-located atmospheric sampling stations adequately equipped. These sampling stations shall be continuously maintained at locations designated by the Air Pollution Control Officer after consultation with the Advisory Committee. The Air Pollution Control Officer may maintain such additional sampling stations, consisting of such equipment and in such locations as may be necessary. These additional stations may be permanent, temporary, fixed, or mobile, and activated upon orders of the Air Pollution Control Officer.

RULE 152. CONTINUOUS SAMPLING. The Air Pollution Control Officer shall establish a procedure whereby adequate samplings of air contaminants will be taken at necessary intervals at each of the stations established under RULE 151.



RULE 153. REPORTS. The Air Pollution Control Officer shall make daily summaries of the readings required by RULE 152. The summaries shall be in such form as to be understood <sup>available</sup> by the public. These summaries shall be public records and immediately after preparation shall be filed at the main office of the Air Pollution Control District and be available to the public, press, radio, television, and other mass media of communication.

RULE 154. DECLARATION OF ALERTS. The Air Pollution Control Officer shall declare the appropriate "alert" whenever the readings of any of the air pollution contaminants have been verified by a confirming test at any atmospheric sampling station and careful evaluation to have reached the amount set forth in the table in RULE 155. The Air Pollution Control Officer shall immediately communicate the declaration of the "alert" to the Los Angeles County Sheriff's Office, and that office shall broadcast the declaration of an "alert" by the Sheriff's teletype and radio system to all the Sheriff's substations and the city police departments. The Sheriff's main office and substations shall take whatever steps are necessary to make known the declaration of the "alert" to recognized mass media of communication. Thereafter, all persons in the Air Pollution Control District shall be presumed to have notice of the declaration of the "alert".

RULE 155. TABLE

ALERT STAGES FOR TOXIC AIR POLLUTANTS OF PRIMARY IMPORTANCE FOR THIS-AREA THE LOS ANGELES BASIN IN PARTS PER MILLION OF AIR

	<i>First</i> (WARNING) ALERT	VOLUNTARY ACTION ALERT	<i>Second</i> (PRELIMINARY HEALTH HAZARD) ALERT	<i>Third</i> (DANGEROUS HEALTH HAZARD) ALERT
CARBON MONOXIDE*	100	<del>125</del>	200	300
NITROGEN OXIDES <i>A</i>	3	<del>3.5</del>	5	10
SULPHUR OXIDES *	3	<del>3.5</del>	5	10
OZONE *	0.5	<del>0.625</del>	1.0	1.5

*First* (WARNING) ALERT: Close approach to maximum allowable concentration for the population at large. Still safe but approaching a point where preventative action is required.

~~VOLUNTARY ACTION ALERT: Concentration increasing and at a point where preventative action should commence.~~

*Second* (PRELIMINARY HEALTH HAZARD) ALERT: Air contamination at a level at which a health menace exists in a preliminary stage.

*Third* (DANGEROUS HEALTH HAZARD) ALERT: Air contamination at a level at which a dangerous health menace exists.

\* How measured: Rubber cracking Bradley Haagen-Smit method. (Reference: Bradley, C. E. and Haagen-Smit, A. J. - "The Application of Rubber in the Quantitative Determination of Ozone," Rubber Chemistry and Technology No. 4, Oct. to Dec., 1951.)

\*\* Defined: Formula: O<sub>3</sub> Ozone is a gas with a sharp penetrating odor with ten times the solubility in water of oxygen and one and one-half times its density. It is unstable and slowly reverts back to oxygen. It is a powerful oxidizing agent. One of the reasons that it is present in the atmosphere in the basin is the result of a chain reaction involving oxides of nitrogen and hydrocarbons in a photo-chemical reaction in the presence of light energy.

*\* measured by procedures recommended by Scientific Committee*



<sup>First</sup>  
RULE 156. (WARNING) ALERT ACTION. The following action shall be taken upon the calling of the Warning Alert. No burning of combustible waste (normally called "rubbish") shall be permitted at any location in the basin. No combustible waste incinerator shall be operated, and no person shall be permitted to light such an incinerator or continue feeding such an incinerator after the declaration of the Warning Alert. Excluded from this prohibition are those incinerators which have permits from the Air Pollution Control District for the destruction of nuisance odors and fumes. Any person who has been granted a variance by the Hearing Board of the Air Pollution Control District and persons owning, operating, or maintaining chemical plants, open hearths, smelters, grey iron foundries, oil refineries, and any other ~~industries~~ industrial, commercial or business establishment other than power plants who emit any degree of any of the pollutants named in the table in RULE 155, including the ~~precursors of~~ <sup>hydrocarbons</sup> ozone, and privately-<sup>non-commercial</sup> owned vehicles, shall, during the Warning Alert period, take the necessary preliminary steps so as to be ready to place into operation the required action in the event of the subsequent declaration of a Preliminary Health Hazard Alert.

or heating plants  
essential to health  
or safety

RULE 156.5. VOLUNTARY ACTION. The following action shall be taken upon the calling of the Alert:

- a. The action set forth in RULE 156, and
- b. All schools in the basin shall be closed and all pupils directed to return to their homes at once.

*Being revised*

Effective 6:00 a.m. following the declaration of this Alert, all privately owned vehicles shall be requested to operate on a pool basis. Each vehicle used for transportation to and from work should contain not less than three (3) occupants including the driver. In the event that such cars are not being operated in a pool, all employers in the basin may require their employees to use the vehicles belonging to such employees in the most efficient possible manner in transporting all such employees to their homes from their places of work by means of the use of car pools or otherwise, and may require that all vehicles belonging to any such employees which are not operated in a car pool be left at the place of registration or at the place of employment. All mass media of communication shall be used to request the public to stop all unessential use of vehicles in the basin (for purposes of recreation, shopping or social activities).

RULE 157. <sup>second</sup> (PRELIMINARY HEALTH HAZARD) ALERT ACTION. The following action shall be taken upon the calling of the Preliminary Health Hazard Alert:

- a. The action set forth in RULE 156, and 156.5, and
- b. In the basin, any person who has been granted a



variance by the Hearing Board of the Air Pollution Control District and persons owning, operating, or maintaining open hearths, smelters, grey iron foundries, oil refineries, chemical plants, and any other industries or sources of air pollution, except power plants, any of which emit any degree of toxic air pollutants, including the precursors of ozone, the concentration of which contributed to the declaration of the alert, shall cease to emit any degree of such toxic air pollutants, and if necessary in order to comply with this rule, shall close down any part or all of its operation which contributes to the Preliminary Health Hazard. Where immediate close-down would actually cause the creation of additional air pollutants, the owner and operator of the sources of the air pollutants shall follow the ~~direction-of~~ time established by the Air Pollution Control Officer in closing down the sources of the pollution. All owners and operators of private non-commercial vehicles shall, upon the declaration of this alert, which declaration is based upon existence of carbon monoxide in the parts per million indicated on the table in RULE 155, do the following:

(1) If the vehicle is immobilized, it shall remain immobilized.

(2) If the vehicle is in use, other than on a freeway, the driver will, immediately after the declaration of the alert, find a place to park and immobilize the vehicle.

(3) If the vehicle is in use on a freeway, the driver of the vehicle will, immediately after the declaration of the alert, leave the freeway at the next exit and shall immobilize the vehicle after finding a suitable place to park.

(4) If the vehicle is not in the basin, it will not be permitted to enter the basin.

During the declaration of this alert, owners and operators of gasoline stations shall not be permitted to sell or deliver gasoline to any private non-commercial vehicle.

All owners and operators of private non-commercial vehicles shall, upon the declaration of this alert, which declaration is based upon existence of ozone in the parts per million indicated on the table in RULE 155, shall immobilize the vehicle within two (2) hours after the declaration of the alert. No vehicle will be immobilized on any freeway. At the end of this two-hour period, no privately owned non-commercial vehicle will be permitted to enter the basin and no owner or operator of a gasoline station shall be permitted to sell or deliver gasoline to any private non-commercial vehicle.

All sources of air pollution shall, during the Preliminary Health Hazard Alert period, take the necessary preliminary steps so as to be ready to place into operation the necessary action in the event of the subsequent declaration of a Dangerous Health Hazard Alert.

RULE 158. REGISTRATION. Within sixty (60) days after



the adoption of this Rule, every person owning, operating, or maintaining open hearths, smelters, grey iron foundries, oil refineries, chemical plants, or any other industrial, commercial or business <sup>except power + heating plants</sup> source of emission of the toxic air pollutants designated in the table in RULE 155, including the precursors of ozone (except private vehicles, trucks, and busses), shall register at the main office of the Air Pollution Control District such information, analyses, plans and specifications as may be required by the Air Pollution Control Officer. The Air Pollution Control Officer shall within a reasonable time thereafter give each registrant a certificate containing

(1) the names of the toxic air pollutants emitted,  
and

(2) the ~~method~~ time of close-down in the event of the declaration of a Preliminary Health Hazard Alert. If the close-down is other than immediate, the certificate shall specify the ~~method~~ time of ~~and-stages-of~~ the close-down.

RULE 159. <sup>third</sup> (DANGEROUS HEALTH HAZARD) ALERT ACTION. The following action shall be taken upon the calling of the Dangerous Health Hazard Alert:

- a. The action set forth in RULES 156, 156.5 and 157, and
- b. ~~All persons in the basin shall cease emitting any degree of air pollution.~~ There shall be a complete close-down of all sources of any and all air pollution contaminants except power plants. No motor transport of any kind shall operate within or enter the basin. Emergency vehicles will be permitted to operate within and enter the basin. Where immediate

close-down would actually cause the creation of additional air pollutants, the owner and operator of the sources of the air pollutants shall follow the direction of the Air Pollution Control Officer as to the time of ~~in~~ closing down the sources of the pollution.

RULE 160. ENFORCEMENT. When an "alert" has been called by the Air Pollution Control Officer, he and his deputies shall enforce the provisions of this regulation against any person who, having knowledge of the declaration of an "alert", refuses to comply with rules in REGULATION VII by forthwith placing him under arrest.

RULE 161. ROAD BLOCKS. When the Preliminary Health Hazard Alert has been called, the Los Angeles County Sheriff shall immediately, when the alert is called by reason of an excess of carbon monoxide, or within two (2) hours when the alert is called by reason of an excess of ozone, erect such road blocks and barricades as may be necessary to prevent privately-owned and operated non-commercial vehicles from entering the basin and shall prevent all private non-commercial vehicular traffic pursuant to the directions in RULE 157. Upon the declaration of a Dangerous Health Hazard Alert, the Los Angeles County Sheriff shall immediately erect such road blocks and barricades as may be necessary to prevent the movement of any traffic except emergency vehicles.

RULE 162. END OF ALERT. The Air Pollution Control Officer shall declare the termination of the appropriate alert whenever the readings <sup>at all of the atmospheric sampling stations</sup> of any of the air pollution



contaminants ~~which caused the declaration of the particular alert~~ drop below the reading designated in the table in RULE 155. The Air Pollution Control Officer shall immediately communicate the declaration of the termination of the alert to the Los Angeles County Sheriff's Office and that office shall broadcast the declaration of such termination of the alert by the Sheriff's teletype and radio system to all the Sheriff's substations and the city police departments. The Sheriff's main office and substations shall take whatever steps are necessary to make known the declaration of the termination of the alert to recognized mass media of communication.

RULE 163. <sup>Scientific</sup> ADVISORY COMMITTEE. <sup>a Scientific</sup> An Advisory Committee shall be appointed by the Air Pollution Control Board. At least two-thirds of the appointed members shall be licensed physicians, medical scientists, biologists, chemists, engineers, or meteorologists, each of whom has had experience in air pollution control work, or other experts with scientific training or knowledge of value in air pollution control matters.

RULE 164. EX-OFFICIO MEMBERS. The Air Pollution Control Officer and the County Counsel shall be ex-officio members of the <sup>Scientific</sup> Advisory Committee.

RULE 165. TERM OF APPOINTMENT AND METHOD OF ACTION. The

term of appointment of all members except the ex-officio members shall be two (2) years. The <sup>Scientific</sup> Advisory Committee shall act through a majority. There shall be at least fifteen (15) members on the Committee.

RULE 166. DUTIES. The <sup>Scientific</sup> Advisory Committee shall have the following duties:

a. Study and recommend. The Committee shall study and make recommendations to the Air Pollution Control Board on the most accurate methods for measurement and on changes for the parts per million of the toxic air pollutants for each stage set forth in the table in RULE 155.

b. Advisory capacity. The Committee shall serve in a consultant advisory capacity to the Air Pollution Control Officer concerning any air pollution health hazard emergency which might arise that was not anticipated in the present measurements existing in the table set forth in RULE 155. The Committee shall also advise the Air Pollution Control Board on any improvements in this program which improvements will further improve the health of the private citizens within the Air Pollution Control District.

RULE 167. <sup>Advisory</sup> ~~SUB-COMMITTEE.~~ <sup>an</sup> ~~A sub-committee to the Advisory~~ <sup>to the Scientific Committee</sup> Committee shall be appointed by the Air Pollution Control Board. <sup>Advisory</sup> ~~The sub-committee shall consist of seven (7) members and of these~~ members at least one (1) shall be representative of each of the following groups: industry, labor, law enforcement, the transportation industry and citizens anti-smog groups. The County Health Officer shall also be a member. The term of appointment of all members shall be



two (2) years. <sup>Advisory</sup> The duties of the sub-committee shall be those directed by the <sup>Scientific</sup> Advisory Committee.

~~RULE 167.~~ RULE 168. DEFINITIONS.

~~a. -- Basin:--The area included within the perimeter of the following description:~~

~~Bounded on the North by:--The northerly boundary line of the City of Los Angeles from its most northerly intersection with the Ventura County-Los Angeles County line easterly to intersection with the northeast boundary at a point easterly of Sunland; thence along the national forest boundary to its intersection with the San Bernardino County-Los Angeles County line.~~

~~Bounded on the South by:-- The high tide line of the Pacific Ocean.~~

~~Bounded on the West by:--The Ventura County-Los Angeles County line and the high tide line of the Pacific Ocean.~~

~~Bounded on the East by:--The San Bernardino County-Los Angeles County line and the Orange County-Los Angeles County line.~~

North Boundary: The northerly boundary line of the City of Los Angeles from its most northerly intersection with the Ventura County-Los Angeles County line easterly to its intersection with the national forest boundary east of Sunland, thence along the national forest boundary to its intersection with the San Bernardino County-Los Angeles County line.

East Boundary: The San Bernardino County-Los Angeles County line and the Orange County-Los Angeles County line.

South Boundary: The high tide line of the Pacific Ocean and the Orange County-Los Angeles County line to its intersection with the San Bernardino County Line-Los Angeles County line.

West Boundary: The Los Angeles City boundary line from its intersection with the Ventura County line to the Pacific Ocean and the high tide line of the Pacific Ocean.

b. Emergency vehicle. Shall include those vehicles described in Sections 44 through 44.12 of the Vehicle Code of the State of California together with any privately-owned vehicle given a written pass by an authorized peace officer.

c. Precursors of Ozone: Oxides of nitrogens and hydrocarbons.



MAY 20 1955

# AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET  
LOS ANGELES 14, CALIFORNIA  
Tel.: MADison 6-9441

LAUREN B. HITCHCOCK  
President and Managing Director

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•  
LEROY A. GARRETT  
Secretary of the  
Foundation

May 19, 1955

Robinson-Hannagan Associates, Inc.  
6671 Sunset Boulevard  
Hollywood, California

Attention:

Mr. Paul Snell, Vice President

Dear Paul:

Confirming our conversation here today, we have reluctantly come to the conclusion that at least for the time being we should terminate our arrangement with you covering public relations counsel and services. This is a consequence of the 1955 budget situation in which we find ourselves and the necessity of maintaining proper emphasis on the research and technical aspects of our program.

We want to make clear that we appreciate the wholehearted way in which you and your organization have pitched into this pioneering job and believe that you have given much more than the dollar costs involved. You have done a fine job of ground breaking and developing sound public relations activities, including the speakers' bureau, the Kiwanis smog program, the sound film on smog, the preparation of some good stories, and cementing of better relations with the metropolitan press. All of this has been good and important.

We can have words only of praise for the enthusiasm and vigor with which you and your associates have approached this undertaking.

While under our letter of agreement, you are entitled to continue billings up to July 15 (the termination of the six months' firm period), in line with our conversation today, we will appreciate it if you can conveniently work out a termination of June 15, without undue hardship to anyone concerned.

COPY

**AIR POLLUTION FOUNDATION**

**Robinson-Hannagan Associates, Inc.  
Mr. Paul Snell, Vice President**

**- 2 -**


**May 19, 1955**

Again, let me say that it has been a pleasure to work with your organization, and we regret that this termination has become necessary.

With best personal regards,

Sincerely yours,  
*Original signed by*  
*L. B. Hitchcock*  
L. B. Hitchcock

LBH:mek

cc: Executive Committee -- all members 



MAY 21 1955

FORM 402 1-44 300M  
PRINTED IN U. S. A.

IN REPLY GIVE NO.

Union Oil Company of California

COPY

CARBON COPY

May 19, 1955

TO: R. H. Taylor  
FROM: Jerry Luboviski

Mr. Stewart has given me a copy of the proposed revisions in the Statement of Policy of the Air Pollution Foundation and suggested that I write some comments which he and I have discussed.

Taken chronologically, I would take exception to some of the new language proposed on page 2 under "Organization of the Foundation." By stating that "less than half of the trustees represent companies or organizations which are providing financial support, and most of these do not contribute to air pollution" and "few of the donors are or may be contributing to air pollution, and less than half of the total funds are received from all such sources combined," it seems to me that the Foundation prejudices who or what may be contributors to air pollution. This is poor policy for a research organization.

I would suggest too that the last paragraph on page 2 still relating to organization, and having to do with financial contributions, is out of place and should be included in the section on page 5 "How the Work of the Foundation May be Assisted" where the matter of contributions is discussed.

Since there are apparently going to be some revisions in this statement of policy, I would suggest another look at the section on page 3 "What the Foundation Proposed to Do."

The sixth point in that category brings the Foundation within the area of enforcement and I do not think that is a proper place for it. I would suggest that the phrase "enforcement methods, or other matters," be eliminated so there can be no misunderstanding that the Foundation is limited in its operations to research.

Merely as a matter of editing and since the matter of the Foundation is of a national rather than a regional nature I think the language on page 6 under "A Word of Caution - And an Invitation" should eliminate the reference to the earlier days of California and substitute metropolitan or urban area or some other more general phrase.

cc - Dr. Raymond B. Allen  
Mr. Asa Call  
Dr. Lee A. DuBridge  
Dr. Fred D. Fagg, Jr.  
Dr. Lauren B. Hitchcock

JUN 7 1955

# AIR POLLUTION FOUNDATION

1955 HESMAN 704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MADison 6-9441

## TRUSTEES

W. L. FAITH  
Deputy Director and Chief Engineer

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REESE H. TAYLOR

P. G. WINNETT

LAUREN B. HITCHCOCK  
President and  
Managing Director

LEROY A. GARRETT  
Secretary of the  
Foundation

**Dr. Raymond B. Allen**  
**Chancellor, University of California**

at Los Angeles  
**405 Hilgard Avenue**  
**Los Angeles 24, California**

**Dear Dr. Allen:**

**The attached list includes the important**  
**air pollution research projects currently being carried**  
**out by the Foundation.**  
**I hope that this will be satisfactory for**  
**your purposes.**

**Sincerely yours,**

**W. L. Faith**  
**Vice President & Chief Engineer**

**WLF:ig**

**cc: Dr. Lee A. DuBridge**



1955 RESEARCH PROGRAM - AIR POLLUTION FOUNDATION**Continuous Measurement of Atmospheric Ozone by Spectrographic Method:**

A prototype of an ozone-measuring instrument which measures ozone by ultraviolet absorption had been built by Borman Engineering Company. It will be checked out this summer at the Air Pollution Control District's monitoring station in Pasadena. Reaction parameters will be obtained. The chief difference between this study and that of Prof. Hansen-Smit will be a better control of experimental conditions and the use of recently developed techniques.

**Air Tracer Survey:**

This project, which had as its purpose a determination of the reliability of present methods of computing wind trajectories, was carried out in the summer of 1954. The final report will be published in the near future. This project at Midwest Research Institute will determine the particular constituents of automobile exhaust which are responsible for plant damage and eye irritation. Results so far are only preliminary.

**Trend in Visibility, 1933-1954:**

Weather Bureau records for the years 1933-54 have been studied to determine variations in visibility as measured by them. A report on this project will be available shortly. This project at Midwest Research Institute will determine the actual chemical and physical composition of the gases and aerosols emitted from a typical back-yard burner burning various types of wastes and rubbish. Only available.

**Smog-Forming Reactions:**

This project at Stanford Research Institute in Pasadena is concerned with a determination of smog manifestations resulting from the irradiation of polluted air. It has been found that polluted Pasadena night air upon irradiation produces eye irritation and plant damage, depending upon the level of pollutants in the air. Preliminary results indicate that when small amounts of automobile exhaust gases are added to the polluted air and irradiated both eye irritation and plant damage increase. This project will probably be interrupted in the near future, but we expect to continue it beginning about January 1, 1956. This report will be published in December.

**Review of Literature on Photochemical Reactions in Polluted Atmosphere:**

This literature survey is being made by Professors Leighton and Perkins at Stanford University and will be completed by January 1, 1956. A ready catalytic converter has been tested on cars using leaded gasoline. It has been found that in its present stage of development it is not ready to be recommended as

**Application of Long Path Gas Absorption Cell:**

A method has been devised by which a long path infrared gas analyzer can be used to determine hydrocarbons in the atmosphere directly, without concentration by freeze-out techniques. The instrument will be checked out in Pasadena this summer.



**Photochemical Studies:**

This project at Armour Research Foundation has as its purpose a study of the mechanism of reaction between synthetic atmospheres under the influence of controlled radiation. This is an extension of Prof. Haagen-Smit's well-known work. The important reaction parameters will be determined. The chief difference between this study and that of Prof. Haagen-Smit will be a better control of experimental conditions and the use of recently developed analytical techniques.

**Relation of Automobile Exhaust Composition to Smog Manifestations:**

This project at Midwest Research Institute will determine the particular constituents of automobile exhaust which are responsible for plant damage and eye irritation. Results so far are only preliminary.

**Composition of Incinerator Gases:**

This project at Battelle Memorial Institute will determine the actual chemical and physical composition of the gases and aerosols emitted from a typical back-yard burner burning various types of wastes and rubbish. Only preliminary results are available.

**Feasibility Study of Solutions to Automobile Exhaust Contribution to Air Pollution:**

Personnel of the Southwest Research Institute, San Antonio, Texas, are studying the economic problems involved in furnishing the following fuels in the Los Angeles Basin: white gasoline, LP gas, and alcohol-gasoline mixtures. Each of these has previously been suggested as non-smog-forming fuels, particularly when used in conjunction with added mechanical devices on automobiles. The report will be published in September.

**Evaluation of Exhaust Control Devices:**

At Southwest Research Institute in San Antonio, Texas, the Houdry catalytic converter has been tested on cars using leaded gasoline. It has been found that in its present stage of development it is not ready to be recommended as a solution to the Los Angeles smog problem. The report will be published in July.



**Aerometric Survey, 1954:**

The data secured in this extensive project are still being correlated with the 1,000 wind trajectories calculated for important smog days in 1954. The most important preliminary conclusions are that atmospheric oxidant increases all over the Los Angeles Basin at about the same time, and that the influence of human activity on its concentration is even greater than that of sunlight. This was dramatically shown at several stations when the peak oxidant concentration shifted by one hour when the community shifted from Pacific Daylight Time to Pacific Standard Time last fall. Preliminary results also show a good correlation between oxidant concentration in the air and eye irritation, and also between oxidant concentration and frequency of plant damage. Furthermore, the particulate matter in the Los Angeles atmosphere appears to be much higher in its nitrate and sulfate concentration than other urban communities. All of these results taken together tend to indicate the importance of the automobile in producing smog.

**Paramagnetic Resonance Studies:**

A preliminary study is under way to develop the paramagnetic resonance spectrometer for the measure of certain atmospheric pollutants, particularly hydrocarbons.

**Studies of Infrared Solar Radiation Absorption by Smog:**

This study, which was completed last year and reported before the Third National Air Pollution Symposium in April, indicates that the major difference between smoggy air and normal air is a higher concentration of hydrocarbons. A similar study using an ultraviolet spectrometer also showed that the oxides of nitrogen concentrations were much higher in smoggy air than in normal urban air.

**Particle Counter for Aerosol Research:**

An aerosol particle counter is being built for the Foundation and will be used at one of the Air Pollution Control District's monitoring stations during this coming summer and fall.

**Measurement of C<sub>13</sub>-C<sub>12</sub> Ratios in Atmospheric Carbon-Containing Compounds:**

It is hoped that this study at the California Institute of Technology will lead to a means of determining the relative significance of gasoline combustion products and the products of the burning of rubbish.

WLFaith:g  
June 6, 1955



JUL 7 - 1955

# AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET  
LOS ANGELES 14, CALIFORNIA  
Tel.: MADison 6-9441

LAUREN B. HITCHCOCK  
President and Managing Director

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- JAMES C. ZEDER

W. L. FAITH  
Vice President and  
Chief Engineer

GERALD G. KELLY  
Secretary of the  
Foundation

July 5, 1955

Dear Dr. Kyropoulos:

**Dr. Peter Kyropoulos**  
Associate Professor, Mechanical Engineering  
California Institute of Technology  
1201 E. California Street  
Pasadena 4, California

Dear Dr. Kyropoulos:

On behalf of the Research Committee of the Board of Trustees, I am authorized to invite you to serve on the newly constituted Technical Advisory Committee for this Foundation. The creation of this committee was recently recommended by the Board of Trustees, to advise the staff in connection with its research program.

We would like to have the benefit of your opinion, based on your broad scientific experience and knowledge of air pollution problems, in the selection of our research projects. These are supported by the community, and must be carefully budgeted in order to be as productive as possible within our resources.

It is our hope to keep our committee small in number, and limited to those in the best position to advise us. This will be a most important service to the community and one which I am sure will be duly recognized by all concerned.

While the amount of time that this committee will need to devote to the Foundation's research program is one of the matters for the committee to decide, as a guess I would suggest a meeting of the committee perhaps quarterly on the average. Your time would be conserved to the utmost by providing you with reports of our present



Dr. Peter Kyropoulos

-2-

July 5, 1955

and proposed research activities. I would like to add my own personal plea to the invitation of the trustees that you will be willing to help us in this way.

Upon receipt of your acceptance, we would try to arrange a first meeting of the committee within the next four to six weeks, but of course, at your convenience.

Sincerely yours,  
*Original signed by*

*L. B. Hitchcock*  
L. B. Hitchcock

LBH:mek  
cc:

L. A. DuBridge ←

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JUL 7 - 1955

AIR POLLUTION FOUNDATION

**AIR POLLUTION FOUNDATION**

Dr. A. J. Haagen-Smit 704 SOUTH SPRING STREET

LOS ANGELES 14, CALIFORNIA

Tel.: MADison 6-9441

July 5, 1955

**TRUSTEES**

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- FORD J. TWAITS
- P. G. WINNETT
- JAMES C. ZEDER

- W. L. FAITH  
*Vice President and  
Chief Engineer*
- GERALD G. KELLY  
*Secretary of the  
Foundation*

and proposed research work July 5, 1955. I would like to add my own personal  
 plea to the invitation of the trustees that you will be willing to help us  
 in this way. After all, you have been doing this for us in an unofficial  
 and individual capacity whenever called on in the past, for which we  
 are deeply grateful.

COPY

Upon receipt of your acceptance, we would try to arrange  
 a first meeting of the committee within the next four to six weeks, but  
 please advise us of your decision.

**Dr. A. J. Haagen-Smit**  
**Department of Biology**  
**California Institute of Technology**  
**1201 E. California Street**  
**Pasadena, California**

Dear Dr. Haagen-Smit:

On behalf of the Research Committee of the Board  
 of Trustees, I am authorized to invite you to serve on the newly  
 constituted Technical Advisory Committee for this Foundation.  
 The creation of this committee was recently recommended by the  
 Board of Trustees, to advise the staff in connection with its re-  
 search program.

We would like to have the benefit of your opinion,  
 based on your broad scientific experience and knowledge of air  
 pollution problems, in the selection of our research projects. These  
 are supported by the community, and must be carefully budgeted in  
 order to be as productive as possible within our resources.

It is our hope to keep our committee small in number,  
 and limited to those in the best position to advise us. This will be  
 a most important service to the community and one which I am sure  
 will be duly recognized by all concerned.

While the amount of time that this committee will need  
 to devote to the Foundation's research program is one of the matters  
 for the committee to decide, as a guess I would suggest a meeting of  
 the committee perhaps quarterly on the average. Your time would be  
 conserved to the utmost by providing you with reports of our present



Dr. A. J. Haagen-Smit

July 5, 1955

and proposed research activities. I would like to add my own personal plea to the invitation of the trustees that you will be willing to help us in this way. After all, you have been doing this for us in an unofficial and individual capacity whenever called on in the past, for which we are deeply grateful.

Upon receipt of your acceptance, we would try to arrange a first meeting of the committee within the next four to six weeks, but of course, at your convenience.

Sincerely yours,

*Original signed by*

*L. B. Hitchcock*  
L. B. Hitchcock

LBH:mek

cc:

L. A. DuBridge ←

C  
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Y

JUL 11 1955

CALIFORNIA INSTITUTE OF TECHNOLOGY  
PASADENA

KERCKHOFF LABORATORIES OF BIOLOGY

July 11, 1955.

Dr. L. B. Hitchcock  
Air Pollution Foundation  
704 South Spring Street  
Los Angeles 14, Calif.

Dear Dr. Hitchcock:

I accept the invitation of the Research Committee of the Board of Trustees of the Air Pollution Foundation to serve on their Technical Advisory Committee, and I look forward to receiving the Foundation's reports on present and proposed research activities before the first meeting of the Committee.

Sincerely yours,

A. J. Haagen-Smit

AJHS:mmf

cc: L. A. DuBridge



JUL 21 1955

AIR POLLUTION FOUNDATION  
704 South Spring Street  
Los Angeles 14, California

July 20, 1955

Dr. Raymond B. Allen, Chairman  
Board of Trustees  
Air Pollution Foundation  
c/o University of California at Los Angeles  
405 Hilgard Avenue  
Los Angeles 24, California

Subject: Formation of Technical Advisory Committee

Dear Dr. Allen:

Pursuant to a resolution of the Board of Trustees, its Research Committee headed by Dr. L. A. DuBridge recommended that the following individuals be invited to serve as a Technical Advisory Committee to the Board:

Francis E. Blacet	Chairman, Department of Chemistry University of California at Los Angeles
William H. Claussen	Executive Secretary, Smoke & Fumes Committee, American Petroleum Institute
Arie J. Haagen-Smit	Professor of Bio-Organic Chemistry California Institute of Technology
Charles M. Heinen	Vice Chairman, Vehicle Combustion Products Subcommittee, Automobile Manufacturers Association
Peter Kyropoulos	Associate Professor of Mechanical Engineering, California Institute of Technology
John T. Middleton	Professor of Plant Pathology University of California at Riverside
Lawrence M. Richards	Richfield Oil Corporation (formerly Assistant Director, Division of Physical Sciences, Stanford Research Institute)

AIR POLLUTION FOUNDATION

Dr. Raymond B, Allen

-2-

July 20, 1955

I am very happy to report that all have accepted our invitation. In response to the suggestion of the Research Committee, Dr. Blacet has kindly consented also to serve as chairman.

This response should be a matter of great satisfaction to the Foundation and gives further evidence, if any were needed, of the willingness of these persons to assist in this community endeavor.

The purpose of this committee is to advise the Board of Trustees through its Research Committee, from time to time, with respect to the Foundation's research program. The experience and knowledge of the committee members will be invaluable to the Foundation, and we on the staff look forward to the exchange of ideas which will occur during meetings of the committee and the staff.

The committee will meet on call from its chairman as often as the committee considers necessary. Its recommendations and findings will be made from time to time to the Board of Trustees through the Research Committee. Dr. Blacet has already taken steps looking toward the first meeting early in August.

Very truly yours,



L. B. Hitchcock

LBH:mek

cc: Board of Trustees  
Technical Advisory Committee  
APF Scientific Staff



JUL 25 1955

AIR POLLUTION FOUNDATION  
704 South Spring Street  
Los Angeles 14, California

July 22, 1955

To: The Technical Advisory Committee

Francis E. Blacet, Chairman

William H. Claussen  
Arie J. Haagen-Smit  
Charles M. Heinen

Peter Kyropoulos  
John T. Middleton  
Lawrence M. Richards

Gentlemen:

At the request of your chairman and after finding that the date is convenient for the majority, the first meeting of the Technical Advisory Committee has been called at 9:30 a.m., August 10, 1955, in the Foundation offices. We plan to have lunch together.

It is hoped that members will find an opportunity to read the matter sent to them on July 20, in the meantime.

For those who will be driving, if you care to park at the lot, 644 South Main Street, your parking ticket will be validated.

We greatly appreciate the willingness of each of you to serve on the committee and to attend this meeting at this time, as we know it involves some personal inconvenience. We will do all we can to conserve your time and are looking forward to this conference.

Sincerely yours,

*L. B. Hitchcock*

L. B. Hitchcock

LBH:mek

cc: APF Scientific Team  
W. L. Faith  
M. Neiburger  
N. A. Renzetti  
L. H. Rogers

APF Research Committee  
R. B. Allen  
F. M. Banks  
A. O. Beckman  
L. A. DuBridge

AUG 8 1955

*Greetings Lee -  
This is probably  
not so helpful; it may  
be a start! if may  
Gerry V.*

August 5, 1955

Dr. Lauren B. Hitchcock:  
704 South Spring Street  
Los Angeles 14, California

Dear Dr. Hitchcock:

Dr. L. A. DuBridge wrote to Dr. Leland J. Haworth, Director of Brookhaven National Laboratory, asking that we forward to you such information as we might have which, in our opinion, could be of use to the Air Pollution Foundation in Los Angeles. Dr. Haworth is in Geneva and has asked that I forward the information in his absence.

We can be of little help, I'm afraid, on your smog problem in the Los Angeles area. Nature has been kind to Brookhaven by providing an unusually clear atmosphere in this part of Long Island. As a result, we have made only a few engineering studies to make sure that the Laboratory is not building up any undesirable accumulation of radioactive contamination.

In 1949, our Meteorology Group ran continuous tests over a period of six months, from March to September, to determine the dust loading. Fiberglass No. 25 and 50 and Chemical Warfare Service-6 paper filters were used with flow rates of 0.75 cfm and 0.375 cfm, respectively. A total of 200,000 cu. ft. passed through the fiberglass, and 100,000 through the paper. The total weight of material collected on the fiberglass was only 0.2114 grams and on the CWS paper 0.1300 grams. Analysis showed the particulate material to be quartz grains, pollens, spores, a few salt crystals, and considerable unidentifiable material, probably clay and humus.

This light loading of the atmospheric dust gives filters an extraordinarily long life. The cooling air intake filters at our nuclear reactor, for example, were used for over three years before the dust loading became excessive. Other laboratory hood filters have been in use for more than five years.

The Laboratory policy at Brookhaven states that there shall be no undesirable accumulation of contamination. The discharge of radioactive particulate contamination is to be avoided by the use of appropriate filters or suitable experimental techniques. For operations likely to involve serious air contamination, such as machining active metals or chemical processing of highly active materials, the use of dry boxes with very fine filters is very small particulate in the sub-micron range.



suitable filters and ventilating blowers is required. As a result, most lab hoods in places where there is a chance of radioactive particulates being generated, are equipped with the GWS-6 type filters, or the newer AEC substitutes. These areas include Chemistry, Biology, Medicine, Cyclotron Target Lab, Hot Labs, Hot Machine Shop, Metallurgy Labs, Nuclear Engineering Labs and Reactor Labs. About 200 of this type of filter are presently in use at BNL. Air conditioning installations at the Reactor, Hot Lab, etc., are presently using American Air Filter Company, "Air Mat" material.

Of course, our greatest air cleaning operation is in connection with the cooling air at the Reactor itself. To cut down on particulates entering the Reactor via the cooling air, two banks of deep pocket FG-25 and FG-50 filters are provided for precleaning. Each bank has 4350 sq. ft. of effective surface, to handle a design load of 140,000 cfm which results in a face velocity of 32 ft/min. This face velocity gives an initial resistance of one inch of water. The efficiency of these filters is widely known.

The exit air from the Reactor contains only those particles passed by the intake filters, and undoubtedly a small amount of graphite dust and other impurities picked up by the scrubbing action of the air stream within the reactor. Radioactive argon gas is the chief radioactive constituent. As many as five 1500 H.P. fans pull the exit air through two ducts, 10 ft. by 14 ft. each, to the exit filters. These filters are made of glass fiber cloth known by the trade name "Glastex", manufactured by the Dollinger Corporation. They were selected mainly because of low resistance and ability to withstand temperatures to 500°F. A cloth was chosen to avoid the risk that bonded material would fail under prolonged high temperatures and cause voids. The filters are of the deep pocket type, 10 ft. high, 4 ft wide and 4" thick. Each panel weighs 450 lbs. in its frame, and there are 32 panels in each duct to satisfy 750,000 lbs. of air per hour at about 350°F. Compared to the intake filters, the filtering efficiency is rather low.

Air samples are taken continuously wherever radioactive contamination is possible. If levels are higher than those Laboratory policy allows, the situation is corrected by adding of better filters, or by other methods of operation.

You can see, therefore, that our problems are really only engineering ones and rather easy to manage.

The Department of Industrial Hygiene of the Harvard School of Public Health has a contract with the AEC to study the air cleaning problems of AEC laboratories. This group, headed by Dr. Leslie Silverman has done an excellent job. They have run numerous tests on commercial air cleaning equipment and have compiled their findings in several different publications, including in 1952, a "Handbook on Air Cleaning" which is for sale by the Superintendent of Document. The 75 references listed may be of some help to your Board. H. F. Johnstone and his group at the University of Illinois have also done a great deal of research in this field. Also, very extensive studies of radioactive particulates, and methods of removing them, have been made at Oak Ridge National Laboratory and at Hanford, but we do not know how much interest they have taken in very small particles in the sub-micron range.



Dr. Lauren B. Hitchcock

-3-

August 4, 1955

I hope that the above information may be of some help in your program.  
Please give our best regards to Lee DuBridge when you see him again.

Yours very truly,

G. F. Tape  
Acting Director

cc: J. B. H. Kuper  
L. A. DuBridge

← THIS COPY FOR



AUG 17 1955

AIR POLLUTION FOUNDATION  
704 South Spring Street  
Los Angeles 14, California

TO THE MEMBERS OF THE BOARD OF TRUSTEES

The attached list of suggestions for improving our financing campaign has been compiled from individual conferences held with a majority of our trustees during the past month. Some of these proposals were made independently by several different trustees.

At the suggestion of Mr. Gock, chairman of the Finance Committee, this list was submitted to the last meeting of the Executive Committee held on August 4, 1955. The committee requested that this list of suggestions be sent to all members of the board for consideration prior to the meeting of the board scheduled for Thursday, September 8, with a view to discussion and appropriate action at that time.

*L. B. Hitchcock*

L. B. Hitchcock

LBH:mek  
Attachment  
August 12, 1955

AIR POLLUTION FOUNDATION  
704 South Spring Street  
Los Angeles 14, California

Suggestions from Individual Trustees for Finance Campaign

1. Fund-raising plans need very careful review and concrete action involving every member of the Board. We need to "re-appraise our potential"; our financial picture needs a "whole new look."
2. We should definitely get regular County support; and possibly a grant under any available federal funds.
3. Aviation group needs help of parts manufacturers; this might come through leadership of a few key aviation heads.
4. We need better top-level organization and contacts, more personal approach to more companies, not limited to Los Angeles area.
5. AID plan deserves consideration.
6. List of prospects should be reviewed by the Board, brought fully up-to-date. Then:
  - (a) Carefully prepared one-page letter to each, suggesting quota, and signed by five or six leaders; and/or
  - (b) Each trustee take three (or five) names he will "be responsible for."
7. L. A. Chamber of Commerce and All-Year Club funds should be diverted to help APF.
8. Finance Committee secretary as permanent part of Foundation staff, housed there, about \$500/month.
9. Finance activities should be more centralized, in APF office, with LBH taking more active part in helping trustees on financing.
10. We must concentrate on the few large sources; seek 50 per cent increases from present principal donors.
11. Brief progress report of APF activities, if encouraging, would help fund raising; include statement of needed work waiting for funds.
12. Equable formula should be developed for arriving at quotas.

mek

August 4, 1955



SEP 1 - 1955

AIR POLLUTION FOUNDATION

September 9, 1955

14, CALIFORNIA  
6-9441

31, 1955

LAUREN B. HITCHCOCK  
President and Managing Director

LAD:

Dr. Hitchcock's office called this morning to ask when Dr. Hitchcock could see you - "the first half hour he has available after his return". I told them Monday, the 12th, is Board of Trustees' day - and they understand.

I thought it would be better for you to choose the time. Dr. Hitchcock will come over here.

EB

9:30 AM  
Tuesday

resident  
nology

the Finance Committee yesterday, aviation industry situation and the their fuller financial support of the that we would ask you if you would a small luncheon meeting to which

the following four aviation heads might be invited:

- Donald Douglas, President, Douglas Aircraft Company, Inc.
- Robert Gross, President, Lockheed Aircraft Corporation
- Lee Atwood, President, North American Aviation, Inc.
- Whitley Collins, President, Northrop Aircraft, Inc.

For reasons for which I shall be glad to explain, we feel this approach is most likely to be productive. Each of these companies has already contributed to the Foundation, and we are seeking their leadership and influence with other companies in the aviation group. We have a few recommendations we would like to put before them and believe that your sponsorship of this meeting is very important.

We feel that the letter of invitation should make it clear that we have no idea of seeking increased contributions from them, but rather to seek their influence with their associates in other companies. The basis for this approach is at least twofold:

- H. C. McCLELLAN
- JOHN A. McCONE
- STANDISH L. MITCHELL
- WILLIAM C. MULLENDORE
- KENNETH T. NORRIS
- FRED B. ORTMAN
- ALDEN G. ROACH
- STEPHEN W. ROYCE
- D. J. RUSSELL
- J. PHILIP SAMPSON
- REESE H. TAYLOR
- FORD J. TWAITS
- P. G. WINNETT
- JAMES C. ZEDER
- W. L. FAITH  
Vice President and  
Chief Engineer
- GERALD G. KELLY  
Secretary of the  
Foundation

Call by Chappell  
Lock we date.

SEP 1 - 1955

## AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET  
LOS ANGELES 14, CALIFORNIA  
Tel.: MAdison 6-9441

LAUREN B. HITCHCOCK  
President and Managing Director

### TRUSTEES

August 31, 1955

RAYMOND B. ALLEN  
*Chairman*

ARNOLD O. BECKMAN  
*Vice-Chairman*

JAMES E. SHELTON  
*Treasurer*

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ASA V. CALL

EDWARD W. CARTER

LEE A. DuBRIDGE

J. HOWARD EDGERTON

FRED D. FAGG, JR.

LEONARD K. FIRESTONE

Y. FRANK FREEMAN

A. J. GOCK

BEN P. GRIFFITH

ROY M. HAGEN

CHARLES F. KETTERING

H. C. McCLELLAN

JOHN A. McCONE

STANDISH L. MITCHELL

WILLIAM C. MULLENDORE

KENNETH T. NORRIS

FRED B. ORTMAN

ALDEN G. ROACH

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J. PHILIP SAMPSON

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P. G. WINNETT

JAMES C. ZEDER

W. L. FAITH  
*Vice President and  
Chief Engineer*

GERALD G. KELLY  
*Secretary of the  
Foundation*

Dr. Lee A. DuBridge, President  
California Institute of Technology  
1201 East California Street  
Pasadena 4, California

Dear Dr. DuBridge:

In a meeting of the Finance Committee yesterday, after careful study of the aviation industry situation and the best approach to enlisting their fuller financial support of the Foundation, consensus was that we would ask you if you would be willing to act as host for a small luncheon meeting to which the following four aviation heads might be invited:

Donald Douglas, President, Douglas Aircraft Company, Inc.  
Robert Gross, President, Lockheed Aircraft Corporation  
Lee Atwood, President, North American Aviation, Inc.  
Whitley Collins, President, Northrop Aircraft, Inc.

For reasons for which I shall be glad to explain, we feel this approach is most likely to be productive. Each of these companies has already contributed to the Foundation, and we are seeking their leadership and influence with other companies in the aviation group. We have a few recommendations we would like to put before them and believe that your sponsorship of this meeting is very important.

We feel that the letter of invitation should make it clear that we have no idea of seeking increased contributions from them, but rather to seek their influence with their associates in other companies. The basis for this approach is at least twofold:

*Call by Chappellet  
Look re date.*



AIR POLLUTION FOUNDATION

Dr. Lee A. DuBridge

-2-

August 31, 1955

1. Smog abatement is of great business importance to their many thousands of employees who live in this area; labor supply is already a problem and smog is a deterrent which may require greater pay inducements in the future; hence, smog abatement can be a financial saving to them.
2. Smog abatement is a civic necessity in which the help of the Foundation is essential; the big four aviation companies having led off, others in the group should follow suit.

At our luncheon meeting we can consider ways in which they can most simply and effectively enlist the help of the others.

I recall that you did not expect to return until about the middle of September. I am writing this to you in order to obtain your early consideration of this request, and in the hope that you will call me as soon as you can.

With best personal regards,

Sincerely yours,



L. B. Hitchcock

LBH:mek

cc: A. J. Gock  
Cyril Chappellet

P. S. General McNarney, President of Convair, should also be invited if it can be considered that Convair has sufficient interest in the Los Angeles metropolitan area; or in the San Diego air pollution problem toward which our findings could help.

AIR POLLUTION FOUNDATION  
704 South Spring Street  
Los Angeles 14, California

August 31, 1955

To: The Technical Advisory Committee  
Francis E. Blacet, Chairman  
William G. Young, Acting Chairman  
William H. Claussen Peter Kyropoulos  
Arie J. Haagen-Smit John T. Middleton  
Charles M. Heinen Lawrence M. Richards

Subject: Appointment of Acting Chairman

Gentlemen:

We are all very sorry to learn of Dr. Blacet's ill health, which, we are informed, may require him to convalesce at home for a couple of months. By that time the experts tell us he should be "fit as a fiddle."

In order that the important work of the Technical Advisory Committee may continue, Dr. Raymond B. Allen, serving in his capacities as Chairman of our Board of Trustees and also as a member of our Research Committee, has persuaded Dr. William G. Young, Associate Dean of Letters and Sciences and former Chairman of the Department of Chemistry at UCLA, to serve as acting chairman of your committee. Dr. Richards, Secretary of your committee, will undertake to bring Dr. Young up to date with respect to committee activities, so that the plans for your next meeting may go forward unchanged.

We feel most fortunate in this emergency in being able to secure Dr. Young's help. In the meantime communications concerning committee activities might be sent directly to Dr. Richards, with a copy to Dr. William G. Young, Associate Dean of Letters and Sciences, University of California at Los Angeles, 405 Hilgard Avenue, Los Angeles 24, California. We will await word from the committee through Dr. Richards with respect to any arrangements you may wish to have made for your next meeting, which I understand you intend to hold on or about October 1.

Sincerely yours,

*L. B. Hitchcock*  
L. B. Hitchcock

LBH:mek

cc: APF Scientific Team  
W. L. Faith  
M. Neiburger  
N. A. Renzetti  
L. H. Rogers

APF Research Committee

R. B. Allen  
F. M. Banks  
A. C. Beckman  
L. A. DuBridge





AIR POLLUTION FOUNDATION

September 16, 1955

MEMORANDUM

To: The Members of the Research Committee

L. A. DuBridge, Chairman

R. B. Allen

F. M. Banks

A. O. Beckman

Gentlemen:

I am enclosing copies of the results of the first meeting of the Technical Advisory Committee. We think their suggestions are good and reflect their earnest, practical, and forthright approach.

Their first recommendation, I am sure, is not intended to limit future research to "areas of disagreement." Investigation of presently unknown areas is equally important.

We should try to develop a simple but adequate form for describing research projects. Some forms used by government agencies are very involved. We plan to submit the form we would recommend to the Technical Advisory Committee at their next meeting to secure their approval before undertaking the considerable amount of work involved in re-writing our projects in this way.

We will do our best to respond fully to the recommendations, and I am sure there is no particular problem for us in these.

In order that we may have your comments, consolidate them, and send them to Dr. DuBridge, so that he in turn may convey the consensus of the Research Committee to the Technical Advisory Committee, will you please send me your comments on the attached list of five recommendations?

Sincerely yours,



L. B. Hitchcock

LBH:mek  
Enclosures

# R I C H F I E L D   O I L   C O R P O R A T I O N

R I C H F I E L D   B U I L D I N G   •   L O S   A N G E L E S   1 7   •   C A L I F O R N I A

September 8, 1955

A-a 4.12

Chairman, Research Committee  
Air Pollution Foundation  
704 South Spring Street  
Los Angeles 14, California

Dear Sir:

At the first meeting of the Technical Advisory Committee to the Air Pollution Foundation the Committee arrived at five recommendations concerning items relating to its responsibility. These items are being officially transferred to the Research Committee for action with an appropriate copy to Dr. Hitchcock. The Technical Advisory Committee will be glad to amplify any of the five suggestions if this is desirable.

The Committee hopes that the Air Pollution Foundation can take action on its five recommendations prior to its next meeting which has been tentatively scheduled for Friday, October 14th.

This letter is being signed by the secretary during the absence of the new chairman, Dr. Wm. G. Young. The form of the recommendations has been approved by Dr. Francis Blacet, the previous chairman.

Very truly yours,

*L. M. Richards*

L. M. Richards, Secretary  
Technical Advisory Committee

LMR:r

Attach.

cc: Dr. L. B. Hitchcock  
Members Tech. Adv. Comm.



RECOMMENDATIONS TO THE RESEARCH COMMITTEE FROM  
THE TECHNICAL ADVISORY COMMITTEE  
ARISING OUT OF THE FIRST MEETING OF  
THE TECHNICAL ADVISORY COMMITTEE  
ON AUGUST 10, 1955

1. The staff of the Air Pollution Foundation should prepare a short, concise summary of the Los Angeles smog problem, listing specifically the areas of agreement and disagreement. The purpose of this summary, or survey, would be to define the areas where additional research is required from a technical point of view.
2. Following the preparation of the summary of the Los Angeles smog problem, the areas where research is required should be specifically laid out as the basis for preparing the research program for 1956.
3. A form for describing suggested research projects should be adopted by the Air Pollution Foundation and this form should be uniformly applied to the research projects suggested in the program for 1956.
4. A study should be made of the feasibility of Operation Big Chamber in the light of the revised research program for 1956.
5. Members of The Technical Advisory Committee to the Research Committee of the Air Pollution Foundation should receive the reports from the active projects supported by the Air Pollution Foundation.

SEP 24 1955

## AIR POLLUTION FOUNDATION

704 SOUTH SPRING STREET  
LOS ANGELES 14, CALIFORNIA  
Tel.: MADison 6-9441

### TRUSTEES

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STEPHEN W. ROYCE

D. J. RUSSELL

J. PHILIP SAMPSON

REESE H. TAYLOR

P. G. WINNETT

•  
LEROY A. GARRETT  
Secretary of the  
Foundation

LAUREN B. HITCHCOCK  
President and Managing Director

September 23, 1955

### TO OUR TRUSTEES AND CONTRIBUTORS:

Gentlemen;

Please note the attached copy of a "joint proclamation" outlining helpful and precautionary measures which should be followed by this entire community when heavy smog is forecast. We take great satisfaction in the fact that the Supervisors, the Mayor, and the Los Angeles City Council unanimously support this movement. This Foundation has joined in this concerted appeal because of the evidence that a whole-hearted response by our metropolitan area would significantly reduce sources of pollution believed to be active in the formation of smog and high ozone values.

Obviously, this call for voluntary action can have no effect unless all of us make a real effort to respond. The Air Pollution Control District and the Air Pollution Foundation have set up "share-the-ride plans" for their own staffs. Our employees are doing everything possible to discontinue burning of rubbish.

The purpose of this letter is to urge you to take prompt and realistic action in your own organization to set up "share-the-ride" plans and to encourage cessation of burning. Some of you already have car-pooling plans in operation. Unfortunately, these appear to be in the minority so far. The County Government and certain companies have found that preferred parking facilities can be used as an inducement to car-pooling groups.

The public example of the Foundation's official family and its trustee and contributor companies will exert a powerful influence. We bespeak your whole-hearted cooperation. Please let me know when such a program is set up in your own company.

Sincerely yours,

*L. B. Hitchcock*

LBH:mek  
Attachment

L. B. Hitchcock



September 22, 1955

JOINT PROCLAMATION

TO ALL CITIZENS IN THE LOS ANGELES BASIN:

Smog is a community problem.

It arises from the activities of each of us -- 5,000,000 people and their more than 15,000 industries, 2,500,000 motor vehicles and more than 1,500,000 incinerators.

Each of us helps to make smog and each of us can fight smog.

Each evening the local press, radio, and television will be given forecasts of smog conditions. One of two conditions will be forecast:

SMOG GREEN: No emergency action is expected.

SMOG RED: Heavy smog forecast. (Your help needed.)

When SMOG RED is forecast, every civic-minded resident is asked to take these four steps:

1. Share your automobile with your neighbors or co-workers, (four persons per car will reduce automobile exhaust pollution by 75 per cent!) -- or use public transportation when available. DON'T BE A LONE DRIVER.
2. Do not use your automobiles for errands which can be postponed. Every automobile which can be kept off our highways each day means one less pound of pollution in our overcrowded air.
3. Do not burn refuse until favorable conditions are forecast. (SMOG GREEN.)
4. Business, industry, and municipal organizations are requested to reduce the use of their motor vehicles to a minimum, to limit their air-polluting operation in every way possible, and to encourage their employees to participate fully in the steps outlined above.

Until effective controls are developed for automobile exhaust and until collection systems for refuse can be established, the steps stated above will definitely reduce smog-forming pollutants before they can become acute.

To be effective, these emergency measures must be accepted by all of us. When more permanent remedies are available, you will be promptly informed.

Los Angeles County Board of Supervisors  
Herbert C. Legg, Chairman  
Kenneth Hahn  
John Anson Ford  
Burton W. Chace  
Roger W. Jessup

Los Angeles County Air Pollution Control District  
Smith Griswold  
Air Pollution Control Officer

City of Los Angeles  
Norris Poulson, Mayor

Air Pollution Foundation  
L. B. Hitchcock  
President & Managing Director

BY-LAWS\*  
of the  
AIR POLLUTION FOUNDATION  
A California Nonprofit Corporation

Article I  
MEMBERS OF THE FOUNDATION

The Foundation shall have no members other than the persons constituting its Board of Trustees, who shall exercise all the rights and powers of members.

Article II  
BOARD OF TRUSTEES

1. Powers and Number. The powers of the Foundation shall be exercised, its property controlled, and its affairs conducted by a Board of Trustees, consisting of 35 Trustees.

2. Qualification. Any adult person may be elected a Trustee. Upon his election each Trustee shall give to the Secretary for the records of the Foundation, his address and a telephone number at which he can normally be reached during business hours, and thereafter he shall notify the Secretary of any changes in such address and telephone number.

3. Election and Term of Office. As soon as practicable the Trustees shall elect a full Board which shall be divided into one group of eleven, whose terms shall expire at the annual meeting of 1955, and two groups of twelve, whose terms shall expire, respectively, at the annual meetings of 1956 and 1957. The terms of newly created offices shall be determined by lot. At each annual meeting, commencing in 1955, the Board shall elect a number of Trustees equal to the number whose terms are expiring, and each Trustee so elected shall serve until the annual meeting of the third succeeding year, and thereafter until the election of his successor.

4. Vacancies. Any vacancy in the Board may be filled by the Board or by a majority of the remaining Trustees, though less than a quorum. A vacancy may be filled only for the unexpired portion of the term of the previous incumbent.

5. Compensation. Each Trustee shall serve without compensation for his services as such, but may be reimbursed for expenses incurred on behalf of the Foundation.

6. Officers of the Board. The officers of the Board shall be a Chairman, a Vice Chairman, and a Treasurer, who shall be chosen by the Board from among the Trustees to serve at the pleasure of the Board. The Treasurer shall also serve as the Treasurer of the Foundation.

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\* Incorporating all amendments through September 8, 1955.



7. Chairman of the Board. The Chairman of the Board shall preside at all meetings and shall have the usual powers of a presiding officer.

8. Vice Chairman. The Vice Chairman, in the absence or disability of the Chairman, shall perform the duties of the Chairman.

9. Treasurer. The Treasurer shall be the principal fiscal officer of the Foundation. He shall supervise and study its financial activities and affairs and shall make recommendations to the Board and to the Chairman of the Board.

10. Executive Committee. The Board shall create an Executive Committee, which shall be composed of nine Trustees. The Board shall fill vacancies in the Executive Committee and may remove and replace members of the Executive Committee at any time. The Chairman of the Board shall have the authority to appoint any Trustee to serve as an alternate member of the Executive Committee in the place of a member who is not present at a meeting. A quorum of the Executive Committee shall consist of five of its members or their alternates appointed by the Chairman of the Board. The Board may by resolution delegate to the Executive Committee any and all of the powers and authority of the Board in the management of the business and affairs of the Foundation except the power to adopt, amend, or repeal By-Laws. The Executive Committee may appoint its own Chairman and may from time to time designate by resolution the time and place for regular meetings. The provisions of these By-Laws concerning notice of meetings of the Board shall apply also to meetings of the Executive Committee.

### Article III MEETINGS OF THE BOARD

1. Annual Meeting. Commencing in 1955, the Annual Meeting of the Board shall be held on such date in the month of October, November, or December and at such place as may be fixed each year by resolution of the Board or by written consent of all members of the Board.

2. Regular Meetings. The regular meetings of the Board shall be held at such time and place as may be fixed from time to time by resolution of the Board.

3. Special Meetings. Special meetings of the Board may be held at any time and place at the direction of the Board, or of the Chairman of the Board, or of the President, or of any three Trustees.

4. Notices. No notice of a regular meeting shall be required. Notice of the time and place of a special meeting and of the Annual Meeting shall be mailed, telegraphed, or otherwise transmitted in writing to each Trustee at his address appearing on the records of the Foundation,

not less than 96 hours prior to the time of the meeting if mailed, and not less than 48 hours prior to the time of the meeting if telegraphed or personally delivered. Notices need not specify the matters to be placed on the agenda for the meeting. Notice to any Trustee whose address does not appear on the records of the Foundation shall be effective if directed to General Delivery, Los Angeles, California.

5. Quorum. Twelve Trustees shall constitute a quorum for the transaction of business at any meeting of the Board. If a quorum is once present, business may continue to be transacted by a majority of those present at a meeting notwithstanding the withdrawal of enough members to leave less than a quorum.

6. Voting. Each Trustee present shall be entitled to one vote on each matter placed before the meeting and no Trustee may vote by proxy. At an annual meeting the Trustees whose terms are expiring may be re-elected and until the election of their successors shall be entitled to vote upon all matters, including the election of their successors.

7. Waiver, Consent, or Approval. The transactions of any meeting of the Board, however called or noticed and wherever held, shall be valid as though at a meeting duly held after regular call and notice if a quorum is present, and if, either before or after the meeting, each of the Trustees not present signs a written waiver of notice, or a consent to the holding of such meeting, or an approval of the minutes thereof.

#### Article IV OFFICERS, EMPLOYEES, AND AGENTS

1. Appointment and Removal. The Board shall have the power to appoint and remove at its pleasure all officers, employees, and agents of the Board and of the Foundation, to prescribe their duties, to fix their compensation, and to require any of them to furnish a satisfactory surety bond.

2. Officers. In addition to the Treasurer of the Foundation, whose duties are prescribed in Section 9 of Article II, the officers of the Foundation shall be a President, a Vice President, a Secretary, an Assistant Secretary, an Assistant Treasurer, and such other officers as the Board may appoint.

3. Qualifications. One person may hold two or more offices except that the offices of President and Secretary may not be held by the same person.

4. President. The President shall be the chief executive officer



of the Foundation. He shall carry out the orders and resolutions of the Board, and report directly to the Board. Subject to the control of the Board, he shall have general charge of all matters of administration and supervision of all arrangements for research or other work undertaken by the Foundation or with its funds. He shall submit to the Board plans and suggestions for the work of the Foundation and shall conduct its general correspondence, including correspondence with applicants for grants. Subject to the approval of the Board, he may appoint and supervise all employees and agents of the Foundation, fix their compensation and duties, and require any of them to furnish a satisfactory surety bond.

5. Vice President. The Vice President shall assist the President and shall act as President in the absence or disability of the President.

6. Secretary. The Secretary shall record the transactions of the Board and shall, at the direction of the Board, or of the Chairman of the Board, or of the President, or of any three Trustees, send to the Trustees notices of special meetings of the Board. He shall have custody of the corporate seal and of all correspondence, documents, and other papers relating to the affairs of the Foundation, except those in the custody of the President or of the Treasurer or Assistant Treasurer. The Secretary shall record the Articles of Incorporation and the By-Laws in a book which shall be kept in the principal office of the Foundation.

7. Assistant Secretary. The Assistant Secretary shall assist the Secretary and shall act as Secretary in the absence or disability of the Secretary.

8. Assistant Treasurer. The Assistant Treasurer shall assist the Treasurer. Under the supervision of the Treasurer, the Assistant Treasurer shall:

(i) keep accurate books and records of all the business transactions of the Foundation, including accounts of its assets, liabilities, receipts, and disbursements;

(ii) receive and deposit in the name of the Foundation, with such depositories as may be designated by the Board, all money, securities, and other valuables held by the Foundation.

(iii) disburse funds as ordered by the Board; and

(iv) render to the Trustees annually and upon request at any time a full accounting of the financial transactions of the Foundation.

9. Other Officers. Other Officers shall have such titles, powers, and duties as may be prescribed by the Board.

Article V  
MISCELLANEOUS

1. Office. The principal office of the Foundation shall be at Suite 1300, 621 South Hope Street, Los Angeles 17, California. The Board at any time may change the principal office or establish additional offices.

2. Seal. The seal of the Foundation shall be circular and shall contain the following:

"Air Pollution Foundation - California - Incorporated  
November 18, 1953."

3. Amendments. These By-Laws may be amended or repealed or new By-Laws adopted by the vote or written assent of a majority of the Trustees or by the vote of a majority of a quorum at a meeting of Trustees duly held.



September 20, 1955

Dr. L. M. Richards, Secretary  
Technical Advisory Committee  
c/o Richfield Oil Corporation  
555 South Flower Street  
Los Angeles 17, California

Dear Sir:

On behalf of the Research Committee of the Air Pollution Foundation, I wish to acknowledge receipt of the list of five recommendations from the Technical Advisory Committee. I have asked the Foundation's staff to give these their prompt attention.

Copies have been sent to the other members of the Research Committee so that it may take action upon these recommendations as soon as possible.

On behalf of the Board of Trustees, I would like to ask you to convey to Dr. Young and the other members of the Technical Advisory Committee our deep appreciation for the manner in which your committee has approached its problem, and for your willingness to join with us in this civic undertaking. I know that Dr. Hitchcock and the Foundation's staff will do all they can in the meantime to respond to your recommendations before your next meeting.

Very truly yours,

Cc: Dr. L. B. Hitchcock

L. A. DuBridge