
From: /O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=75D1654D45154C2ABB08596A2C9AF282-JAGRZYB [/O=EXCHANGELABS/OU=EXCHANGE ADMINISTRATIVE GROUP (FYDIBOHF23SPDLT)/CN=RECIPIENTS/CN=75D1654D45154C2ABB08596A2C9AF282-JAGRZYB]
Sent: 6/7/2017 1:31:58 PM
To: www.npdes.complex
CC: Jennifer. Busam (jennifer.busam@ncdenr.gov) [jennifer.busam@ncdenr.gov]
Subject: FW: EPA Research: Cleaning up contaminated sites, helping coastal farmers, and more

FYI - Dr. Mark Strynar is one of the co-authors to Dr. Knappe's work (featured below). Dr. Knappe has published papers on 1,4 dioxane in the Cape Fear and recently studied Perfluoroalkyl substances in the lower Cape Fear.

Julie

From: U.S. Environmental Protection Agency [<mailto:usaepa@service.govdelivery.com>]
Sent: Tuesday, June 06, 2017 2:36 PM
To: Brower, Connie <connie.brower@ncdenr.gov>
Subject: EPA Research: Cleaning up contaminated sites, helping coastal farmers, and more

 **science matters**

June 6, 2017

EPA's Science Matters newsletter delivers the latest from EPA's Office of Research and Development straight to your inbox. Keep scrolling to read about recent news and upcoming events.



Terry Burton, Superfund and Technology Liaison for EPA Region 6, stands on land that used to be part of the Longhorn Army Ammunition Plant Superfund Site. This land is now the Caddo Lake National Wildlife Refuge.

Cleaning Up America's Most Contaminated Sites

Every state and inhabited territory in the United States has at least one Superfund site - but some states have dozens. These sites are some of the country's most contaminated land and include radiation waste dumps, toxic chemical release sites, and oil spill locations. EPA's Superfund program cleans up these sites and also responds to environmental emergencies, oil spills, and natural disasters. EPA's researchers are vital to the Superfund program, providing the scientific support and assistance needed to safely clean up the sites and make a visible and lasting difference in communities.

Each year, EPA researchers respond to hundreds of requests for scientific support at contaminated sites. The support the researchers provide helps ensure cost-effective, health protective solutions to waste contamination problems in communities across the country. Here are just two examples of this work:

Cleaning Up Caddo Lake in Texas

EPA researchers helped EPA Region 6 in monitoring site remediation at the Longhorn Army Ammunition Plant Superfund Site in rural eastern Texas. The former plant, occupying roughly 8,400 acres adjacent to Caddo Lake, was established during World War II to manufacture TNT. During the war, the plant produced almost 400 million pounds of TNT. Unfortunately, TNT, its breakdown products, and other materials manufactured at the site are among site environmental concerns. Since 1990, when it was added as a Superfund site, more than 7,000 acres have been cleaned to applicable standards and transferred to the U.S. Fish and Wildlife Service for the establishment of Caddo Lake National Wildlife Refuge.

Analysis of a Crumbling Dam in Jackson, CA

The Eastwood Multiple Arch Dam in Jackson, CA, is holding back over 165,000 tons of tailings from the Argonaut Mine, which closed in 1942. The 100 year-old dam is cracked and crumbling, and local officials are concerned that its instability could result in extensive damage to the town in the event of failure. EPA researchers helped EPA Region 9 quantify the probabilities of damage and likely costs if the dam failed. The results of the analysis indicated there could be extensive damage to and strain on property, infrastructure, the local economy, and emergency services in the event of dam failure. In a wet season scenario, it was estimated the damages and losses could be as high as \$100 million. EPA gave the analysis results to the community of Jackson and shared concerns about the stability of the dam and the need for further investigation. The final modeling results were also presented to top officials at California's Environmental Protection Agency, Office of Emergency Services, Department of Transportation, DTSC, the Department of Water Resources, and other agencies. With EPA's access to researchers with modeling expertise, EPA was able to provide potentially life-saving consultation to key Federal, State, and local agencies.

Recent Research

Helping Farmers in the Atlantic Coastal Plain

Centuries of agricultural practices in the southeastern US have degraded the sandy soil of the Atlantic coastal plain. Poor soil fertility and water storage have contributed to economic challenges in the agricultural producing areas of the region. To improve soil quality, EPA researchers, working with scientists from the USDA's Agricultural Research Service, studied the use of biochar in regional soils.

Biochar, the carbon-rich solid derived by heating biomass, such as wood chips or manure, has the potential to improve the health and fertility of degraded soils. Researchers designed a biochar mixture of pine chip and poultry litter tailored specifically for the sandy soils found in the southeast. When this special biochar mixture was applied to the soil, researchers noticed significant impacts on soil characteristics such as pH, organic carbon content, and microbial composition.

As biochar research continues, farmers in the region are hopeful that this innovative technique will improve the health of the soil and increase crop yields.

Portland Student Wins EPA Sustainability Award for Work on Urban Flooding

Adam Nayak, a junior at Cleveland High School in Portland, OR, was this year's winner of EPA's Patrick H. Hurd Sustainability Award for his project, "Modeling the Effects of Land Use Change on Flooding in Pacific Northwest Streams to Promote Green Practices." The project used historical flood and urban land use data, landscape imagery, geographical information systems (GIS) software, and streamflow modeling developed by the U.S. Geological Survey to project the severity of floods in four Portland urban stream basins if impervious surfaces continue to expand at the same pace as in recent years.

Nayak was inspired at an early age when he wondered why fish weren't coming back to the stream in his neighborhood. As he learned more about streams and what influences their health, he found that many communities don't always have the scientific information they need to fully inform their decisions. As he put it, "A lot of research rarely gets applied in the community."

"I feel so incredibly honored to have been selected for this award and cannot fully express my gratitude towards the EPA and all they do for our country," said Nayak. "For the past five years, my work has been centered around my passion for empowering communities and applying research in order to promote conservation locally. I'd like to thank all of those who have offered me guidance, especially Ronda Royal, Kate Fickas, Andy Bryant, and Katie Songer and the Johnson Creek Watershed Council for all of their support."

Nayak was selected from among 1,778 student scientists and engineers competing in the Intel Science and Engineering Fair in Los Angeles, California, and went on to win "Best of Category" and "First Award" in Earth & Environmental Sciences during the Grand Award Ceremony on May 19th. [Hear from Adam about his project.](#)

Examining the Links Between Chemical Exposures and Health

EPA scientists are filling in missing pieces of the puzzle on chemical exposure. One approach is the development of [Adverse Outcome Pathways \(AOPs\)](#). AOPs are a way of assembling all the existing knowledge about small biological changes – to a cell, tissue, or organ– resulting from exposure to a chemical, and their connection to more serious harmful health effects detected in people and ecosystems. These powerful organizational tools use available biological data and information to predict potential effects caused by exposure to chemicals that have limited available safety data.

Findings from newly developed AOPs are exciting. However, like all science, they must be tested to determine how they can best assist regulators in their efforts to protect people and the environment from unhealthy exposures to toxic chemicals.

In a [new paper](#) published in Environmental Science & Technology, EPA scientists developed a computer model of an AOP, called a quantitative AOP (qAOP). They tested whether the qAOP, working with the data they had about a specific estrogen disruption triggered in the fathead minnow after exposure to a chemical at a certain dose, over a specific period of time, could be used to predict a decrease in the minnow population over time.

The paper shows that the qAOP is, in-fact, able to provide regulatory decision-makers with data-based information about the amount of the chemical the fish would need to be exposed to over a specified period of time in order to eventually see the population decrease. This is an important step in providing regulators with the tools and data they need to justify regulations when traditional safety data is limited.

BOSC Nominations Now Open

EPA is seeking nominations for technical experts to serve on its [Board of Scientific Counselors \(BOSC\)](#), a federal advisory committee to the Office of Research and Development. The BOSC provides independent scientific and technical peer review, consultation, advice, and recommendations for each of its research programs. Individuals and organizations can nominate themselves or others by using the [nomination form](#) on the BOSC website. The nomination period is open until June 30, 2017. Details regarding areas of expertise sought, process for submitting nominations, and selection criteria can also be found in the [Federal Register](#).

Researchers@Work

Meet EPA Economist Dr. Marisa Mazzotta

Dr. Mazzotta has over 20 years of experience as an analyst, researcher, writer, and educator in the field of environmental & natural resource economics. Her research focuses on the public's valuation and prioritization of natural resources, the evaluation of ecosystem services, and the relationship between ecological changes and economic benefits. [Learn more about her work.](#)



Meet EPA Physical Scientist Dr. Mark Strynar

Dr. Strynar's research interests include developing methods to measure and analyze the movement and fate of perfluorinated compounds (PFCs) and other xenobiotic compounds (chemicals found in organisms that are not normally expected to be present) in biological and environmental media. [Learn more about his research.](#)

Events

Water Research Webinar Series: Nonpotable Water Reuse in Urban Environments

Wednesday, June 21, 2017 | 2:00-3:30 pm ET

This month's water research webinar will focus on the reuse of water for non-drinking water purposes. The presenters will provide information on EPA's research efforts to support decentralized nonpotable water systems, and how San Francisco is streamlining the regulatory process for buildings to install onsite nonpotable water systems for the reuse of water for toilet flushing and irrigation. [Register here.](#)

EPA Tools and Resources Webinar: Public Health Impact of Wildfire Smoke Emissions

Wednesday, June 21, 2017 | 3:00 - 4:00 PM ET

As the start of the summer wildfire season approaches, public officials, communities and individuals need up-to-date wildfire smoke health guidance to protect against related health risks. The 2016 (2017 final version available this fall) Wildfire Smoke: Guide for Public Health Officials serves as an easy-to-use source of information that outlines whose health is most affected by wildfire smoke, how to reduce exposure to smoke, what public health actions are recommended, and how to communicate air quality to the public. This webinar presented by Wayne Cascio, M.D., will highlight updates to the Wildfire Smoke Guide, as well as the Smoke Sense app, which is a mobile application that gets air quality information to people impacted by wildfire smoke, and helps those affected learn ways to protect their health from smoke exposure. [Register here.](#)

Small Water Systems Webinar Series: Harmful Algal Blooms—Treatment, Risk Communications Toolbox, and Management Plans

Tuesday, June 27, 2017 | 2:00-3:30 pm ET

This month's small systems webinar will focus on harmful algal blooms and associated cyanotoxins. The presenters will focus on how drinking water systems can manage exposure risks, including management and communications tools and current treatment processes for algal cell and toxin removal. [Register here.](#)

National Environmental Health Association Conference

Monday, July 10 - Thursday, July 13, 2017

EPA researchers will be presenting sessions and exhibiting at the National Environmental Health Association conference in Grand Rapids, Michigan, from July 10 – 13, 2017. For those attending the conference, please stop by booth 307 from 6:00 PM to 8:00 PM on July 10 and 9:30 AM to 4:30 PM on July 11 to pick up informational materials and see demos of EPA's online tools. [Learn more here.](#)

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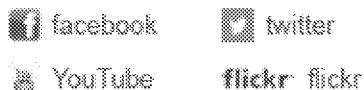
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