Joint Meeting of the
Environmental Research Institute of the States (ERIS) Board and
US EPA Office of Research and Development (ORD)
July 11-12, 2017

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LOGISTICAL INFORMATION

MEETING LOCATION

This meeting will be held on Tuesday, July 11 and Wednesday, July 12 in Oklahoma. The first day will be a "field trip" to ORD's Groundwater, Watershed and Ecosystem Restoration Division in Ada, OK, and the second day will be held at Oklahoma DEQ in Oklahoma City. We will coordinate rental cars and transportation to and from Ada on July 11.

Tuesday, July 11, 2017
U.S. Environmental Protection Agency (EPA)
Robert S. Kerr Environmental Research Center
919 Kerr Research Drive
Ada, OK 74820
Please note - If you use Google Maps, please search for Kerr Environmental Research Center, Ada, OK, instead of the street address. If you search for the street address, it will take you past the building by 0.3 mile.

PARKING AND SECURITY AT EPA

When you arrive, park anywhere in front of the building. Please enter the EPA facility using the front lobby and sign in at the security desk to receive a visitor badge. EPA representatives will be available in the lobby to greet and escort you to the room. All visitors must be accompanied by an EPA representative inside EPA's facility. The meeting will be held in the Library Conference Center Meeting Room.

NOTE: It is EPA's policy to make reasonable accommodation to persons with disabilities wishing to participate in EPA's programs, pursuant to the Rehabilitation Act of 1973, 29 U.S.C. 791. Any request for accommodation should be made to Ms. Pat Bush at bush.pat@epa.gov.

HEALTH AND SAFETY AT EPA

There will be a brief laboratory tour. Only people with closed toe shoes will be allowed on the tour.

Wednesday, July 12, 2017
Oklahoma Department of Environmental Quality
707 N. Robinson
2nd Floor Training Room
Oklahoma City, OK 73102

LUNCH

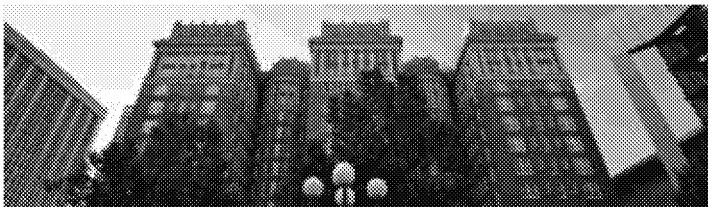
On July 11, lunch will be pre-ordered in from **Heavenly Buns Deli**. Please send wrap/salad selection to Amy Scheuer and Lisa Matthews by July 6. Please bring cash. Small bills appreciated.
On July 12, lunch will be on your own, recommendations include **Nebu** (in Devon Tower).

EVENT CONTACTS

Lisa Matthews, State Liaison, EPA ORD	Personal Matters / Ex. 6	matthews.lisa@epa.gov
Richard Lowrance, EPA ORD Ada lab	Office: 580-436-8518 Personal Matters / Ex. 6	lowrance.richard@epa.gov
Cindy Przekurat, OK DEQ	Office: 405-702-7161	cindy.przekurat@deq.ok.gov

ACCOMMODATIONS

Skirvin Hilton Hotel
One Park Avenue
Oklahoma City, OK 73102
405-272-3040
Federal and state government rate $97/night
http://www.skirvinhilton.com/



We have reserved a block of guest rooms at The Skirvin Hilton Oklahoma City for July 10-13, 2017 for the ERIS Board-EPA Joint Meeting. Please book your room online using the link below or call the hotel directly (405-702-8546) to make your own reservation. Please refer to the group name "**EPA-ERIS Board Meeting**." The government rate is $97/night plus tax for a standard room with one king or two double beds. This special room rate will be available until **June 26th** or until the group block is sold-out, whichever comes first. You must cancel your reservation 3 days prior to arrival to avoid cancellation penalties.

Online reservation link:

Personal Matters / Ex. 6

GROUP DINNER

July 11 at 7:00 pm there will be a group dinner opportunity (self pay) at Flint Restaurant, located in the Colcord Hotel (15 N. Robinson Ave., OKC). http://www.flintokc.com/ Please RSVP to Amy Scheuer and Lisa Matthews of your interest by **July 6th**.

WALKING DIRECTIONS TO OK DEQ

Please allow yourself 15 minutes to arrive at OK DEQ from the Skirvin Hilton the morning of July 12.

1. Start at Skirvin Hilton, 1 Park Ave
2. Head west on Park Ave toward N Broadway Ave (0.1 mi)
3. Turn right onto N Robinson Ave (0.4 mi)
4. OK DEQ will be on the left, 707 N Robinson Ave

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Call-in number for presenters:
Personal Matters / Ex. 6

AGENDA

Tuesday, July 11, 2017
Groundwater, Watershed and Ecosystem Restoration Division (GWERD)
US EPA ORD National Risk Management Research Laboratory
Robert S. Kerr Environmental Research Center
919 Kerr Research Drive
Ada, OK 74820

7:45 am **Meet in Skirvin Hilton Hotel lobby to break into groups to drive to Ada**
1 Park Ave, Oklahoma City, OK 73102

10:00 am **Welcome ERIS members in the lobby of Robert S. Kerr Environmental Research Center**

10:15 am **Welcome and Introductions**
David Paylor, ERIS President and Director, Virginia DEQ
Bob Kavlock, Acting Assistant Administrator for Research and Development and EPA Science Advisor

10:30 am **EPA ORD Perspective/Overview for New Members**
Bob Kavlock
- Administrator's priorities
- Longer term research
- Research on specific environmental challenges
- Technical and emergency support
- Partnering with states

11:00 am **Update on EPA ORD Budget/Implications for States**
Chris Robbins, Acting ORD Deputy Assistant Administrator for Management
- Budget update
- ORD facility economic impacts
- New stories to highlight how EPA research and technical assistance have helped the states
- Active STAR grants by state

Engaging States in EPA Research
David Paylor and Jennifer Orme-Zavaleta, Director, ORD National Exposure Research Laboratory, moderators

11:30 am **Follow-up to 2016 ERIS States' Research Needs Survey**

- Four teleconferences with states organized by media topic to clarify research/science needs for state identified priority areas
- Follow-up calls with states on PFAS and chlorinated solvent plumes
- Plan to continue this dialogue ECOS media committees and ITRC State Engagement POCs
- What role ERIS might play relative to ECOS media committees?
- Opportunity to strengthen alignment of ORD research program with state needs
- Communicating the results
- Lessons learned for 2018 biennial ERIS survey

12:30 pm **Lunch**
Order in from Heavenly Buns Deli *(self pay)*
Please send menu selection to Amy Scheuer and Lisa Matthews by July 6. Please bring cash (small bills appreciated).

EPA-ECOS-ASTHO MOA Pilots: Status Updates
Lisa Matthews, ORD State Liaison, moderator

1:00 pm ***Wildfire Smoke: A Guide for Public Health Officials*** **and EPA's New Wildfire Smoke Communication Research**
Wayne Cascio, Director, Environmental Public Health Division, ORD National Health and Environmental Effects Research Laboratory (via teleconference)

1:15 pm **Community-Focused Exposure and Risk Screening Tool (C-FERST)**
Lee Riddick, ORD National Exposure Research Laboratory (via teleconference)

ORD Groundwater, Watershed and Ecosystem Restoration Division (GWERD)
Alice Gilliland, Acting Deputy Director, National Risk Management Research Laboratory, moderator

1:30 pm **GWERD Overview**
Richard Lowrance, Director, GWERD, National Risk Management Research Laboratory, US EPA ORD

1:45 pm **Research Vignettes** (~15 mins each and a few minutes for questions after each)
- Research and Technical Support for Cleaning up Contaminated Sites – *David Jewett, presenter*
- Innovative Subsurface Remediation Technologies – *Rick Wilkin, presenter*
- Managing Risks from Leaking Underground Storage Tanks – *Jim Weaver, presenter*
- Managing Risks to Watershed Water Quality – *Ken Forshay, presenter*

3:00 pm **Break**

3:10 pm **Kerr Lab Facility Tour**
Richard Lowrance

3:45 pm **Meet in the lobby of Robert S. Kerr Environmental Research Center for drive back to Oklahoma City**

6:10 pm **Meet in Skirvin Hotel Lobby for Optional Visit to Village Green Bench**
Myriad Botanical Gardens in the Children's Garden area (south side of park)
301 W. Reno Ave., Oklahoma City, OK 73102
0.4 miles – 7 minute walk

7:00 pm **Group Dinner – Flint Restaurant** *(self pay – reservation under Matthews)*
15 N. Robinson Ave., Oklahoma City, OK 73102
http://www.flintokc.com/
0.23 miles from Skirvin Hilton

Wednesday, July 12, 2017
Oklahoma Department of Environmental Quality
707 N. Robinson
2nd Floor Training Room
Oklahoma City, OK 73102

8:45 am **Day 2 Kick Off and Recap Day One**
David Paylor and Chris Robbins

9:00 am **Overview of Oklahoma DEQ**
Scott Thompson, Director, Oklahoma DEQ

9:15 am **Environmental Challenges facing Oklahoma and Discussion**
Michael Teague, Oklahoma Secretary of Energy and Environment and Scott Thompson

10:15 am **Break**

10:30 am **Lead and Copper Rule Update**
Eric Burneson, Director, Standards and Risk Management Division, Office of Ground Water and Drinking Water, US EPA Office of Water (via teleconference)

11:00 am **Perfluorinated Chemicals Update**
Bob Kavlock

11:30 am **New MOA Risk Communication Pilots**
Martha Rudolph, Director of Environmental Programs at Colorado Department of Public Health and Environment, Jennifer Orme-Zavaleta

- PFAS
- Harmful algal blooms

12:00 pm **Lunch on your own**
Nebu (in Devon Tower)
333 W. Sheridan Ave., Oklahoma City, OK 73102
http://www.cafenebu.com/
0.7 miles - 13 minute walk

1:15 pm **Regional Perspectives and Discussion**
Jennifer Orme-Zavaleta, moderator

- *Jeaneanne Gettle, Director, Science and Ecosystem Support Division, Athens, GA EPA Region 4 (ORD lead region)*
- *James McDonald, Associate Regional Administrator, EPA Region 6*
- ORD's Regional Science Program, *Fred Hauchman, Director, ORD Office of Science Policy*

2:00 pm **ERIS Strategic Plan Progress Report and where we should focus our efforts**
David Paylor and Carolyn Hanson, ECOS

2:45 pm **Break**

3:00 pm **Planning for ECOS Fall Meeting**
David Paylor, moderator

3:30 pm **Wrap Up and Action Items**
David Paylor and Chris Robbins

4:00 pm **Optional Visit to Oklahoma City National Memorial & Museum/time for ERIS Board to meet on its own**
620 N. Harvey Ave., Oklahoma City, OK 73102 (next door to OK DEQ)
Last tickets to museum sold at 5 pm – Adults $15 - museum closes at 6 pm

Dinner on your own

Agenda Topics

Wildfire Smoke: A Guide for Public Health Officials – *Wayne Cascio*

EPA, with federal and state partners, updated the Wildfire Smoke: A Guide for Public Health Officials (Wildfire Guide) in May 2016. This Guide, which was last revised in 2008, provides readily available 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. The updated Guide provides the most current scientific information, and it provides an opportunity for state environment and health officials to provide consistent guidance to the public over large geographical areas often times involving multiple states. This information also supplements ongoing ASTHO and ECOS efforts to address asthma in children due to environmental exposures. The Wildfire Guide is the product of a collaborative effort by scientists, air quality specialists and public health professionals from federal, state and local agencies, and it has been widely used by state and local agencies in wildland fire situations. EPA's Office of Air and Radiation and ORD have coordinated state input with other federal partners such as the Centers for Disease Control and Prevention and U.S. Forest Service. EPA is currently developing a final Guide based on state feedback, which is expected to be available in the fall of 2017.

Community-Focused Exposure and Risk Screening Tool (C-FERST) – *Lee Riddick*

C-FERST is an online information access and mapping tool, developed by ORD, which offers a suite of resources, including structured community guides, local maps and reports, fact sheets, and links to other public health tools. It provides an easily-accessible opportunity for exploring local-scale

sources of exposure and associated risk reduction options right from your desktop or laptop. You can access C-FERST at www.epa.gov/c-ferst/. As targeted users of C-FERST, input from state environmental and public health agencies is critical to realize its full value. In August 2015, a pre-release version of C-FERST was shared with states for beta testing. In 2016, ECOS and ASTHO worked with state representatives to identify any concerns about the tool and provide feedback to EPA about how C-FERST can best support state programs. The states partnered with ORD to develop an engagement strategy and roll out plan to help make C-FERST a more useful tool for state programs to provide to the public, and also assisted ORD in placing C-FERST in the context of related environmental public health tracking tools. EPA is working with CDC and ASTHO to add health data to future versions of C-FERST. EPA will provide web-based "Train the Trainer" for states on July 26, and EPA and state partner plan to initiate new C-FERST pilot this summer.

Groundwater, Watershed and Ecosystem Restoration Division Overview – *Richard Lowrance*

The Robert S. Kerr Environmental Research Center (RSKERC) was dedicated in 1966 and became one of the original research laboratories in US EPA in 1970. In the 1990s, the Kerr Lab was incorporated into EPA ORD's National Risk Management Research Laboratory (NRMRL) as a research division. Today, the RSKERC is home to the Groundwater, Watersheds and Ecosystems Restoration Division (GWERD), one of four divisions within NRMRL, along with additional personnel from ORD, Region 6 and USGS. As the premier EPA laboratory for risk management research, NRMRL focuses on environmental problem-solving and provides scientific and engineering expertise and capability to support efforts to improve air quality, manage chemical risks, clean up Superfund and other hazardous waste sites, provide safe drinking water, and protect America's water. Current research and technical support areas at GWERD include

water quality investigations, hydrological characterization, monitoring, and sample collection above and below ground; innovative remediation techniques for Superfund sites and other contaminated areas; technical support for required remediation of Superfund and Brownfield sites; evaluation of private drinking water well vulnerability and building susceptibility to contamination from leaking underground storage tanks; tools to estimate contaminant concentrations and flow to improve site cleanup; evaluation of green infrastructure stormwater controls on subsurface and surface water quality; improved guidelines for aquifer exemptions to protect underground sources of drinking water; models to understand sources and sinks of nitrogen enrichment in watersheds; decision support systems and models to understand and quantify final ecosystem goods and services; effects of fertilizer management on nitrate in groundwater; fate and transport of nanomaterials in soils and the subsurface environment; and wetland functions for remediation and protection of coastal communities.

Research and Technical Support for Cleaning up Contaminated Sites – *David Jewett*

The Comprehensive Environmental Response, Compensation, and Liability Act and the Resource Conservation and Recovery Act form the foundation for federal and state management of hazardous waste sites and contaminated sites in general. EPA ORD and the Office of Land and Emergency Management are jointly responsible for the Technical Support Project to provide scientific expertise for complex contaminant remediation problems for soils, sediments and the subsurface environment. ORD scientists and technical staff provide technical support activities, including reports and models, to characterize and clean up contaminated sites and provide the scientific foundation and technical knowledge for our federal, state and local partners. Technology transfer products and outputs from research activities support remedial project managers and other site management personnel, who then engage communities. These products and outputs address how contamination, from single or multiple sources, can be effectively characterized and optimally remediated to protect community public health and their resources and beneficial uses, and for revitalization and reuse of these sites. The Technical Support Project provides and explains new and improved techniques and strategies for characterizing and remediating contaminated groundwater, vapors, soils and sediments to improve community public health and facilitate revitalization of land and water resources.

Innovative Subsurface Remediation Technologies – *Rick Wilkin*

Remediation and changing remediation standards were top priorities for states in the 2016 ERIS survey. EPA ORD scientists have developed and tested many of the innovative remediation technologies currently used for groundwater including permeable reactive barriers, monitored natural attenuation, thermal remediation, subsurface barriers, soil vapor extraction, in-situ chemical oxidation, and in-situ chemical reduction. Research conducted in conjunction with federal, state and local remediation authorities provide unique real-world tests of remediation technologies. By working in these real-world situations, researchers can test the efficiency and effectiveness of remediation technologies on appropriate spatial and time scales and for a variety of contaminant types including heavy metals, chlorinated solvents and mixed plumes. ORD undertakes long-term research on contaminant remediation technologies to determine how long a remediation technology will continue to be effective because many of the contamination problems persist over decades. Important results from these real-world studies include new understanding of 1) the effective lifetime of permeable reactive barriers; 2) how to place reactants and energy in the subsurface environment to increase treatment effectiveness; and 3) how to maximize and monitor the use of natural processes for remediation.

Managing Risks from Leaking Underground Storage Tanks – *Jim Weaver*

Leaking underground storage tank sites pose two major risk pathways – the consumption of petroleum contaminated water from private domestic wells and petroleum vapor intrusion into buildings. Private wells are not regulated under the Safe Drinking Water Act and routine testing is not required. Because the locations of these wells are not well-known on a state-wide or national level, ORD scientists have used data from states and the U.S. Census Bureau to estimate areas of the country with high reliance on private domestic wells. These include rural areas without public water, but also expanding cities and suburbs, and pockets of historic private well use in urban areas. With this as a basis, mapping software was developed to relate underground storage tank locations with private domestic wells and indicate sites with the most potential for impact. The risk of petroleum vapor intrusion into building is generally highest if the source is fresh or located just beneath the building. Factors such as degradation above the water-table and several soil and building characteristics are important to understand petroleum vapor intrusion. The PVIScreen model was developed by ORD to integrate these effects and to quantitatively consider uncertainties in the processes governing vapor intrusion. By estimating the impacts of unmeasured or difficult-to-measure parameters, better decisions can be made for either further site sampling or closure.

Managing Risks to Watershed Water Quality – *Ken Forshay*

Watershed based management of water quality is a key component of addressing a top state priority in the 2016 ERIS survey – surface water and groundwater quality. The Clean Water Act establishes the basic structure for regulating discharges of pollutants into the waters of the United States and regulating quality standards for surface waters. Better technical insight into the benefits of enhanced ecosystem services in watersheds, like floodwater protection, runoff retention and nonpoint source pollution control, combined with greater demands for water and maintenance of aged and degraded water infrastructure has led to innovative and potentially sustainable water management solutions that are beginning to develop across the nation. We evaluate some of these innovative solutions like levee setbacks, indirect discharge of municipal effluent, alternative wastewater re-use, innovative stormwater retention, and enhanced aquifer storage to determine the effects on surface and groundwater using cutting edge science and research techniques. N-Sink, a model that allows the user to look at potential nitrogen loadings from locations within a watershed, is one example of tools applied by ORD scientists to help manage risks to watershed water quality.

Kerr Lab Facility Tour – *Richard Lowrance*

Stop 1: General Parameters Laboratory – A water quality research lab that supports the research activities of GWERD scientists and others. Dr. Ken Forshay will discuss analytical procedures related to groundwater and surface water quality research and denitrification.

Stop 2: Metals Research Laboratory – An analytical laboratory that supports water quality and soil process research of GWERD scientists and others. Dr. Rick Wilkin will discuss functions of the lab for both routine water and soil analysis and advanced research.

Stop 3: Rear of building to see field sampling equipment – Drs. David Jewett and Randall Ross will discuss use of the field equipment for subsurface investigations.

Village Green Bench – *Ryan Biggerstaff, Oklahoma DEQ Monitoring Section*

In partnership with the Oklahoma Department of Environmental Quality, a "Village Green" bench is located in the Children's Garden of Myriad Botanical Gardens in downtown Oklahoma City. The EPA ORD Village Green project is a research effort in partnership with local communities to measure and communicate on-the-spot air quality and weather conditions using new technologies built into solar- powered park benches. Sensors inside the bench measure ozone and fine particle pollution, the two most common air pollutants in Oklahoma. Compared to traditional, large, complex air monitoring stations, the Village Green bench is smaller, lower cost, air monitoring designed for public places, delivering relevant "right here, right now" air quality and weather data. The data can be easily accessed here, on a mobile phone, tablet or computer. As computers get smaller and more durable, air pollutant monitoring gets more personal. This new portable equipment may help Oklahoma develop new monitoring strategies, identify more specific air pollution trends, find new solutions to air pollution and provide science education to young people.

ORD Regional Science Program – *Fred Hauchman*

ORD's Regional Science Program (RSP) consists of a number of research and technical support activities that respond to high priority, near-term applied science needs of the EPA regions, states, local governments and tribes. Implemented in partnership with the regions, the RSP supports collaborative research with our partners and helps build a network of scientists for future scientific interactions. Two important research activities administered on an annual basis are the Regional Applied Research Effort (RARE) and the Regional Sustainable Environmental Sciences (RESES) programs. A high percentage of the 25-30 RARE and RESES projects funded each year involve active engagement and/or communication with state partners. Technical support is provided to EPA's regional offices on a range of issues, particularly in the area of hazardous waste management. These activities provide opportunities for ORD to further address the state research needs identified by ERIS.

ERIS Board-EPA ORD Joint Meeting
July 11-12, 2017

ATTENDEES

Chris Armstrong
Director, State Environmental Laboratory Services Division
Oklahoma DEQ

Eric Burneson *(via teleconference)*
Director, Standards and Risk Management Division
Office of Ground Water and Drinking Water
US EPA Office of Water

Wayne Cascio *(via teleconference)*
Director, Environmental Public Health Division
National Health and Environmental Effects Research Laboratory
US EPA Office of Research and Development

Kelly Dixon
Director, Land Protection Division
Oklahoma DEQ

Jeaneanne Gettle
Director, Science and Ecosystem Support Division (representing ORD Lead Region)
US EPA Region 4

Alice Gilliland
Acting Deputy Director
National Risk Management Research Laboratory
US EPA Office of Research and Development

Carolyn Hanson (ERIS staff)
Deputy Director
Environmental Council of the States

Fred Hauchman
Director, Office of Science Policy
US EPA Office of Research and Development

Bill Holman (ERIS Secretary-Treasurer)
NC State Director, The Conservation Fund (former Secretary, North Carolina DENR)

Robert Kavlock
Acting Assistant Administrator
US EPA Office of Research and Development and EPA Science Advisor

Robert King (ERIS Vice President)
(former Deputy Commissioner, South Carolina DHEC)

Sarah Grace Longsworth (ERIS staff)
Project Associate
Environmental Council of the States

Richard Lowrance
Director, Ground Water and Ecosystems Restoration Division
National Risk Management Research Laboratory
US EPA Office of Research and Development

Lisa Matthews
Senior Advisor and State Liaison
US EPA Office of Research and Development

James McDonald
Associate Regional Administrator
US EPA Region 6

Paul Mercer (ERIS Board Member)
Commissioner, Maine DEP

Jennifer Orme-Zavaleta
Director, National Exposure Research Laboratory
US EPA Office of Research and Development

David Paylor (ERIS President)
Director, Virginia DEQ

Viktoriya Plotkin
Special Assistant
US EPA Office of Research and Development

Lee Riddick *(via teleconference)*
C-FERST Team
National Exposure Research Laboratory
US EPA Office of Research and Development

Chris Robbins
Acting Deputy Assistant Administrator for Management
US EPA Office of Research and Development

Martha Rudolph (ERIS Board Member)
Director, Environmental Programs
Colorado Department of Public Health & Environment

Michael Teague
Oklahoma Secretary of Energy & Environment

Scott Thompson
Executive Director, Oklahoma DEQ

Ken Wagner
Senior Advisor for Regional and State Affairs
US EPA Office of the Administrator

Joe Williams
Deputy National Program Director, Safe & Sustainable Water Resources Research Program
US EPA Office of Research and Development

Michelle Wynn
Legislative Liaison
Oklahoma DEQ

ERIS Board Members

David Paylor (President)
Director, Virginia DEQ

Robert King (Vice President)
Retired – former Deputy Commissioner, South Carolina DHEC

Bill Holman (Secretary-Treasurer)
NC State Director, The Conservation Fund – former Secretary, North Carolina DENR

Christopher Jones *(unable to attend)*
Senior Counsel, Calfee, Halter & Griswold LLP – former Director, Ohio EPA

Paul Mercer
Commissioner, Maine DEP

John Mitchell *(unable to attend)*
Director, Division of Environment
Kansas Department of Health and Environment

Martha Rudolph
Director, Environmental Programs
Colorado Department of Public Health and Environment

Carolyn Hanson (ERIS staff)
Deputy Director
Environmental Council of the States

Oklahoma

Michael Teague
Secretary of Energy and Environment

Scott Thompson
Executive Director, Oklahoma Department of Environmental Quality

EPA Senior Leadership

Kenneth Wagner
Senior Advisor to the Administrator for Regional and State Affairs

Robert Kavlock
Acting Assistant Administrator for Research and Development and EPA Science Advisor

Chris Robbins
Acting Deputy Assistant Administrator for Management, Office of Research and Development

ERIS Board Members

Background Bios

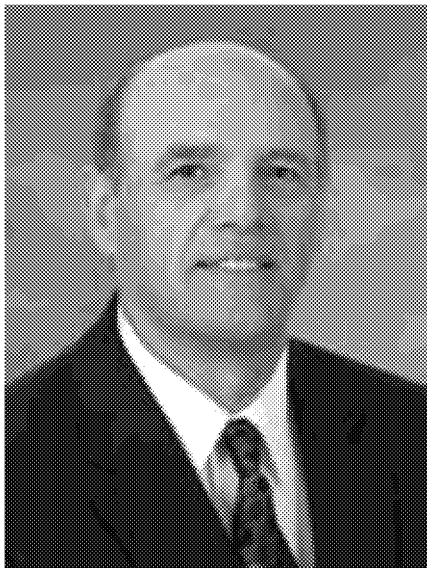
David Paylor, President

Director, Virginia DEQ

David Paylor was appointed Director of the Virginia Department of Environmental Quality (DEQ) by Governor Terry McAuliffe in January 2014 and previously was appointed by Governor Bob McDonnell in 2010. He originally was appointed director by Governor Timothy Kaine in 2006. Paylor began his career in 1973 with the State Water Control Board and continued with Virginia DEQ. He began as a field biologist and later held a variety of positions including aquatic ecologist, water resources manager, director of petroleum programs and director of operations. Paylor is a former President of the Environmental Council of the States. He graduated from Duke University with a Bachelor's degree in Zoology and received his Master's degree from Oregon State University in Fisheries Science.

Robert (Bob) King, Vice President

Retired – former Deputy Commissioner, SC Department of Health and Environmental Control



Robert W. King was the Deputy Commissioner of South Carolina's Department of Health and Environmental Control from 2004 to 2012. While Deputy Commissioner, King served as President of both the Environmental Council of the States and ERIS and as Chair of the ECOS Compliance Committee. He was with the Environmental Quality Control Department (EQC) for more than 40 years, director of EQC's Central Midlands District; director of the Division of Domestic Wastewater; chief of the Bureau of Land and Waste Management; and for 16 years, assistant deputy commissioner of Environmental Quality Control. King is a licensed professional engineer with a BS degree in Engineering from the University of Illinois and a Master's degree in Environmental Engineering from Clemson University.

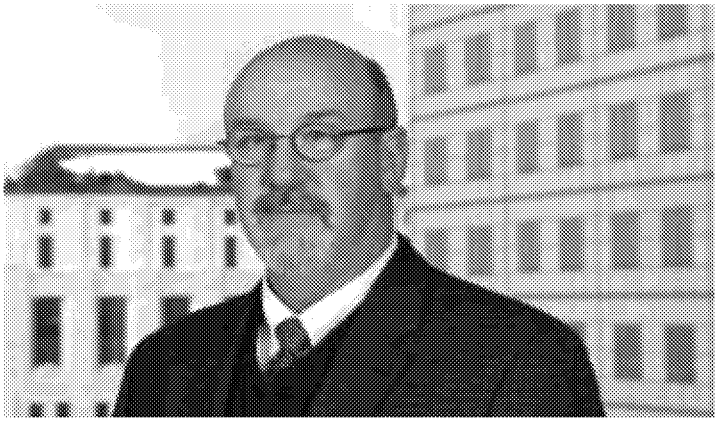
Bill Holman, Secretary – Treasurer

NC State Director, The Conservation Fund – former Secretary, NC DENR

Bill Holman has been North Carolina State Director for The Conservation Fund since January 2013. He joined The Conservation Fund from Duke University's Nicholas Institute for Environmental Policy Solutions, where he was Director of State Policy working on projects such as state water allocation policy, innovative strategies to improve protection of drinking water supplies including Falls Lake and other supplies in the Upper Neuse watershed, and assisting state and local governments in planning for and adapting to climate change and sea level rise. He served as Governor Jim Hunt's Secretary of the NC Department of Environment and Natural Resources from 1999-2000 and as an Assistant Secretary from 1998-1999. He worked as Executive Director of the NC Clean Water Management Trust Fund, a $100 million per year clean water financing program, from 2001-2006. Holman lobbied the NC General Assembly on behalf of the Conservation Council of NC, NC Chapter of the Sierra Club, NC Chapter of the American Planning Association, NC Public Transportation Association, NC Chapter of the Nature Conservancy, and others from 1979-1997. He chairs the NC State Water Infrastructure Commission. Holman graduated magna cum laude with a BS degree in Biology from NC State University.

Christopher (Chris) Jones

Senior Counsel at Calfee, Halter & Griswold LLP – former Director, Ohio EPA



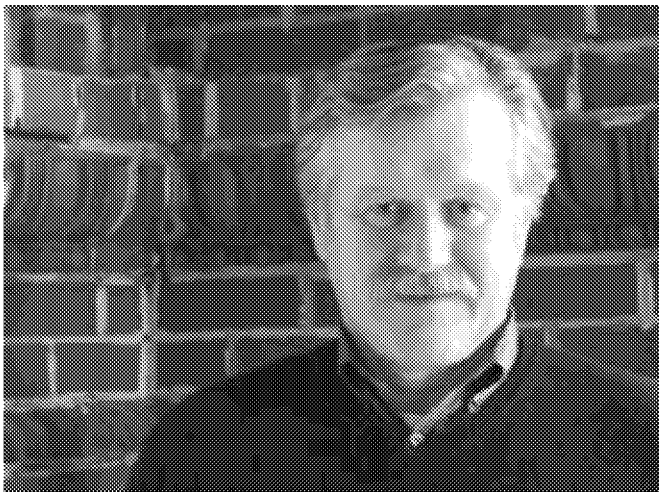
Chris Jones has more than 20 years of experience in the environmental field including six years as Director of the Ohio Environmental Protection Agency and four years as chief of the Ohio Attorney General's Environmental Enforcement Section. While Director of Ohio EPA, he was a two-term elected president of the Environmental Council of the States (ECOS), a national organization of all of the directors of state environmental agencies. In this role, he served as the primary liaison between the U.S. EPA and the states.

This experience gives Jones a unique understanding of both state and federal environmental regulatory agencies, and allows him to provide firm clients with a seasoned perspective on environmental and regulatory matters as well as government relations issues. A problem-solver by nature, he uses his strategic skills to provide guidance and design solutions for businesses trying to comply with environmental regulations and to overcome other legislative challenges. In addition, he has represented clients in prosecutions under the Clean Water Act and the Clean Air Act.

Jones is currently a member of the board of trustees of the Nature Conservancy, Ohio Chapter, and is a member of the board of directors of the Environmental Research Institute of the States (ERIS), and Greater Ohio. In the past he has served as chairman of the Lake Erie Commission, as a governor-appointed member of the Great Lakes Commission, as a member of the Ohio Air Quality Development Authority, the Ohio Water Development Authority, and the State Power Siting Board. Jones has an AV Preeminent Rating from Martindale-Hubbell and is listed in *Corporate Counsel*'s 2012 Top Rated Lawyers Guide to Energy, Environmental & Natural Resources Law. He is also a member of the Ohio and Columbus Bar Associations and has been recognized as one of America's Leading Lawyers in *Chambers USA* and leader in his environmental law by *Best Lawyers in America*.

Paul Mercer

Commissioner, Maine Department of Environmental Protection



Paul Mercer is the Commissioner of the Maine Department of Environmental Protection, combining his professional experience and dedication to protecting Maine's natural resources to promote the needs of the state. Mercer has used his experience as principal of engineering firms in Maine and his expertise in renewables, solid fuels and biomass energy systems to benefit businesses throughout North America. He has achieved major reduction of emissions and life extension at the paper mill in Bucksport, Maine as a lead developer of the Bucksport Energy Project.

A member of the senior management team at Maine Maritime, Mercer held positions as Associate Professor and Department Chair within the Engineering Department, Assistant to the President for Sustainability. He also served as Director of Facilities, Vice President of Advancement and Vice President of Operations. He was instrumental in promoting innovation and environmental initiatives while at the Academy. Mercer is a graduate of Maine Maritime Academy and began his working career traveling the globe as a Marine Engineer aboard US merchant vessels.

John Mitchell

Director, Division of Environment, Kansas Department of Health and Environment

John Mitchell was appointed as Director of the Division of Environment of the Kansas Department of Health and Environment in June 2008. Mitchell directs all environmental program activities for KDHE and oversees a statewide staff of approximately 400 employees. Mitchell has worked for KDHE for over 34 years. During his career Mitchell has directed the department's hazardous waste program, directed compliance and enforcement for the Bureau of Waste Management, served as the Director of the Bureau of Environmental Field Services, where he directed all environmental work in the Department's six regional offices, and served as Acting Secretary of Health and Environment. Mitchell received a Bachelor's degree in Biology and Microbiology from the University of Kansas as well as a MS degree in Environmental Health Science.

Martha Rudolph

Director of Environmental Programs, Colorado Department of Public Health and Environment

Martha Rudolph serves as the director of environmental programs for the department, providing oversight to the Air Pollution Control, Hazardous Materials and Waste Management, Water Quality Control, and Environmental Health and Sustainability divisions.

An experienced environmental attorney, Rudolph served for 14 years in the Colorado attorney general's office, where she represented the Air Pollution Control Division, the Hazardous Waste Commission and the Water Quality Control Commission. She also has been in private practice in Denver.

Rudolph is an active member of the Environmental Council of States, where she serves as past president. She also has served as chair of the ECOS Air Committee and vice chair of the ECOS Planning Committee.

Carolyn Hanson

ECOS Deputy Director

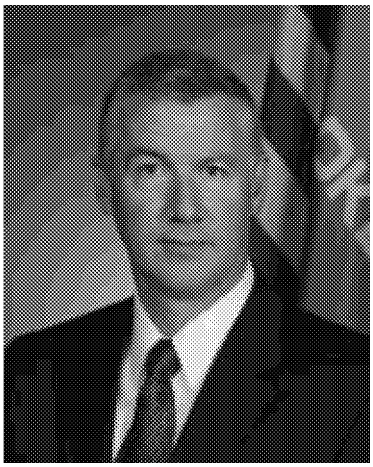
Carolyn Hanson is the Deputy Director at the Environmental Council of the States (ECOS). In addition to her managerial duties, she also supports the Compliance Committee, the Executive Committee and the ERIS Board. Before holding this position, she was a Senior Project Manager at ECOS working with the Waste Committee, the ECOS-DOD Sustainability Work Group, the Federal Facilities Forum, the Quicksilver Caucus, and the Interstate Technology and Regulatory Council. She joined ECOS in September 2002 after working with the National Science Resources Center at the Smithsonian Institution to help develop an inquiry-based science curriculum. Prior to that, she was a high school chemistry teacher in Asheville, NC and Upper Marlboro, MD. Hanson holds a BS degree in Chemistry from Davidson College and a MPA with a concentration in nonprofit management from George Mason University.

Oklahoma

Biographies

Michael Teague

Oklahoma Secretary of Energy and Environment



Michael Teague is serving as Oklahoma's first secretary of Energy and Environment. Prior to his appointment, Teague served in the U.S. Army for nearly 30 years before retiring with the rank of Colonel. Teague served in many capacities during his time in the Army including commander for the Tulsa District of the U.S. Army Corps of Engineers, where he was responsible for a civil works program encompassing all of Oklahoma, a large portion of southern Kansas, and the panhandle of northern Texas. Teague has dealt with power generation and distribution, water desalinization and environmental impact studies. He received a Bachelors in Civil Engineering from Norwich University, and he received Master's degrees in Operations Analysis from the Naval Postgraduate School and in National Security and Strategic Studies from the Naval War College.

Scott Thompson

Executive Director, Oklahoma Department of Environmental Quality

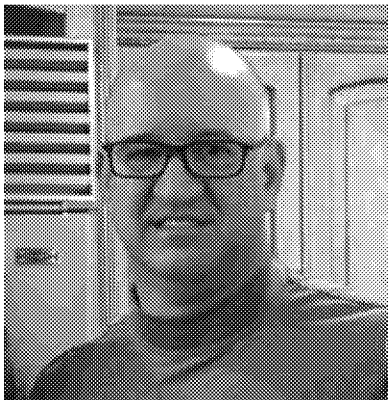
Scott Thompson is Executive Director of the Oklahoma Department of Environmental Quality (DEQ), and he currently serves as Chair of the ECOS Waste Committee and ECOS Region 6 Representative. Prior to his role as Executive Director, Thompson led the Oklahoma DEQ's Land Protection Division, where he managed a diverse set of programs, overseeing and negotiating the cleanup of complex sites, such as Tar Creek. In addition, Thompson negotiated agreements with federal emergency response officials to conduct larger than normal removal actions at some Oklahoma sites. This effort provided an avenue for the cleanup of contaminated sites in more efficient and cost-effective ways. From 1984 to 2000, Thompson served in various state environmental programs. He received his Biology degree from Central State University and his Master's degree in Environmental Science from the University of Oklahoma.

EPA Senior Leadership

Biographies

Kenneth Wagner

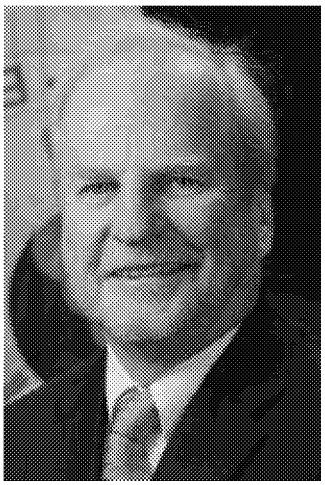
Senior Advisor to the Administrator for Regional and State Affairs



Ken Wagner is Senior Advisor to the Administrator for Regional and State Affairs as well as filling the role of Director of the Office of Regional Operations serving in EPA's Office of the Administrator. Wagner joins the agency from the private sector where he practiced law and held private business interests for nearly 25 years. He was a founding member and managing partner of a successful mid-sized law firm in Tulsa, Oklahoma where he practiced and managed a diverse practice that included energy and environmental matters. In addition to running a successful law firm, he also was involved in successful business and commercial ventures, including being a minority partner in Oklahoma's Triple "A" baseball team based in Oklahoma City. He received his degrees from the University of Oklahoma and the University of Tulsa College of Law.

Robert Kavlock

Acting Assistant Administrator for the Office of Research and Development and EPA Science Advisor



Robert J. Kavlock is the Acting Assistant Administrator for EPA's Office of Research and Development (ORD), and ORD's Deputy Assistant Administrator for Science. He has over 33 years of scientific experience and was previously the Director of ORD's National Center for Computational Toxicology (NCCT), a post he occupied since its founding in 2005. The ToxCast program within the NCCT is on the leading edge of the state of the science in computational toxicology.

Kavlock began his career at EPA in 1977 conducting research on the effects of pesticides on prenatal development and progressed to spending 15 years as the Director of ORD's Reproductive Toxicology Division. He has spent much of his career working on improving the basis for understanding non-cancer health effects, with the most recent efforts focused on computational toxicology. Computational toxicology promises to transform the conduct of toxicological studies through the blending of advances in modern molecular biology with computational sciences.

Kavlock has published more than 200 scientific papers, 16 book chapters, edited three books, including co-editor of the World Health Organization's Global Assessment of the State-of-the-Science of Endocrine Disruptors, and serves on a number of international scientific advisory committees. He is the co-recipient of the U.S. Human Society North American Alternative Award (2008) and ORD's Statesmen of the Year Award (2007) is past president of the Teratology Society and was a finalist for Federal Career Employee (a Sammie award) of the year in 2015. Kavlock also served as a member of the editorial boards of Environmental Health Perspectives, the Journal of Toxicology and Environmental Health, and Birth Defects Research Part B: Developmental and Reproductive Toxicity. Kavlock received his BS degree in Biology and his PhD in Embryology from the University of Miami.

Chris Robbins

Acting Deputy Assistant Administrator for Management, Office of Research and Development

Chris Robbins is currently the acting Deputy Assistant Administrator for Management for EPA's Office of Research and Development (ORD). His position of record is Associate Assistant Administrator for ORD. Robbins has been with the EPA for almost 30 years working in various organizations, primarily in Washington, DC and Research Triangle Park, NC.

Robbins has served in multiple ORD leadership roles including Deputy Director for the National Health and Environmental Effects Research Laboratory, Acting Deputy Director of the Office of Administrative and Research Support, and Deputy Director of the Office of Science Information Management. In addition, Robbins has led many high-profile Agency efforts, including the recent cybersecurity effort and several large-scale enterprise technology projects. He has extensive management and leadership experience focusing primarily on resource management and customer service, especially in the Working Capital Fund. Robbins spent 10 years in the Office of the Chief Financial Officer where he managed the Agency's budget formulation process and worked closely with the Agency's resource management community. He graduated from UNC-Chapel Hill and has a Master's degree in Public Administration from the American University in Washington, DC.

A New Era of State, Local, Tribal, and International Partnerships

FY 2017 Action

July 6, 2017 Update

	100%	75%	50%	25%	0%
Progress Symbols					

Focus	Project	Progress	Key Take-Away
State and Local Partners	Work with ECOS and ASTHO to develop C-FERST communication and training materials, and work with CDC and state partners to incorporate health data into future versions of C-FERST. By summer 2017, ORD, in collaboration with the states, will initiate at least one new pilot of C-FERST working in communities to further develop case studies to share successes and lessons learned.		EPA, in consultation with the states, developed communications materials (Fall 2016) and provided an initial overview/training session for states (Oct 2016). Conduct a "train the trainer" webinar for state environmental and public health staff (July 26, 2017). Working with CDC and state partners to add new health information to future versions of the tool (ongoing). Working with state partner(s) to identify potential new pilot of C-FERST by state and local governments (Summer 2017).
	Engage states, through ECOS/ERIS, to better understand their science priority areas. ORD will coordinate with EPA program offices and regions to develop a response to the 2016 ERIS-ITRC survey and incorporate state input into ORD's research planning. By summer 2017 ORD will host a joint ERIS Board-ORD meeting to discuss these results.		Categorized states' survey results by priority areas including water, emerging contaminants/toxics, waste/remediation and air/ozone (Jan 2017). Coordinated calls with states, ORD, regional and program office representatives to clarify the states' research/science needs in each priority area (Feb/March 2017). Discussed state needs with ITRC State Engagement POCs (March and May 2017). Developed stories highlighting how EPA research and technical assistance helped the states (May and July 2017). Coordinated ERIS Board-EPA Joint Meeting to be held in Oklahoma (July 2017). Working with ORD National Program Directors and labs to strengthen alignment of EPA's research program with state needs (ongoing).

	Work with ECOS/ERIS to further develop a network of state and partner research/science contacts. By summer 2017 ORD will have a working draft contact list.		Updated ORD contact list for ECOS/ERIS to reflect transition (April 2017).
	By September 2017, host meeting with state and federal partners on identifying and developing science-based tools that better integrate public health and environment and communicate on related risks.		Met with State Environmental Health Directors at their annual meeting (June 2017). Engage with ASTHO Environmental Health Policy Committee at their annual meeting (Sept 2017). Continue to work with state partners on MOA pilot projects on Wildfire Smoke and C-FERST and to scope new planned efforts related to risk communication.
	Continue to conduct targeted outreach to state environment and health agencies to raise awareness of EPA research and tools, provide guided analysis for research use, help interpret science, and assist with appropriate application of the science.		Continue EPA Tools and Resources monthly webinar series into 2017 for state and external audiences to address state priorities and facilitate state input on ORD research. Working with ECOS, tapped into states to help develop and validate new tools (C-FERST and Materials Management Wizard, MWiz).
	Host state environment and health agencies visit to at least two ORD facilities in FY 2017 to raise awareness of EPA ORD expertise and capabilities, and share information on ORD research with the states through monthly tool webinars.		Plan environmental science forum with NC DEQ and Region 4 state environmental agency directors at EPA RTP (target late August 2017). Host LA DEQ Secretary visit to ORD's Gulf Ecology Division (August 10, 2017). Host ITRC Summer Board Meeting and Maine DEP Commissioner's visit to ORD's Atlantic Ecology Division (August 15-17, 2017). Plan environmental science forum with Ohio EPA and midwestern states at EPA Cincinnati (likely Fall 2017).
	Continue state and tribal engagement and coordinate on EPA's Hydraulic Fracturing Drinking Water Study and Final Assessment.		In the spirit of no surprises, briefed key oil and gas state and tribal partners on EPA's final assessment prior to release (Dec 2016). Reached out to key state national associations and offered briefings for all states on the final assessment.

2016 ERIS State Research Needs Survey

The state identified priority areas and related research/science issues identified in the follow-on calls with states:

- **Water** (states who participated MA, OH, UT and VA)
  - Water/surface water/groundwater quality
  - Nutrients and nonpoint source pollution/Ag vs Groundwater/HABs
  - Municipal Separate Storm Sewer System (MS4) compliance and stormwater
  - Water quantity and reuse
  - Water and wastewater infrastructure
  - Small system drinking water and wastewater treatment
  - Ensuring safe drinking water/disinfection byproducts
  - Issues with altered hydrology

- **Emerging Contaminants/Toxics** (states who participated CO, NE, NH, VT and WA)
  - Manage new chemicals of emerging concern and existing chemicals
  - Improve and understand process
  - Adapt and respond to emergencies
  - More info for PFAS, surface water standards, fish consumption and biosolids advisory levels

- **Waste/Remediation (**states who participated MI, OK and UT)
  - Remediation and changing standards: soil, groundwater, surface water and sediment
  - Vapor intrusion
  - Chlorinated solvent groundwater plumes and cost-effective remediation technologies
  - Remediation of legacy contaminants ranging from PBTs to nutrients
  - Emerging contaminants (e.g. PFAS)
  - Beneficial uses of solid waste
  - Solid waste landfills post-closure stability

- **Air and Ozone** (states who participated AZ, KS, MD and TX)
  - Achieve compliance with the newly lowered ozone standard (2015 NAAQS), ozone modeling and monitoring issues
  - Interstate and cross-border transport
  - Emissions from grassland burning, wildfires and forest fires (atmospheric and air quality models)
  - Advanced monitoring and sensors

STATUS REPORT: Wildfire Smoke: A Guide for Public Health Officials

EPA, along with the assistance and expertise of federal and state partners, updated the *Wildfire Smoke: A Guide for Public Health Officials* (Wildfire Guide) in May 2016. This draft Guide, which was last revised in 2008, provides readily available 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 effort aims to educate personal and community actions as well as decision-making in response to wildfire smoke emissions.

The Guide has been revised because there is now a stronger evidence base available. Information within the Guide includes the characteristics of wildfire smoke, particulate matter level estimates, health effects of smoke and at-risk populations, strategies to reduce smoke exposure (indoor and outdoor), and recommended public health actions (based on NowCast). Appendices include information on protecting indoor workers from smoke, respirator use, clean up, cleaner air shelters, and smoke alert examples. Upgrades include better defined health effects and information on children's health. The updated Guide, apart from having up-to-date information and guidance, provides an opportunity for state environment and health officials to provide consistent guidance to the public over large geographical areas often times involving multiple states. This information also supplements ongoing ASTHO and ECOS efforts to address public health issues caused by environmental exposures.

In order to ensure the relevance and usefulness of the Wildfire Guide for state programs, EPA partnered with ECOS and ASTHO to provide comments for revising the document prior to the 2016 fire season, to coordinate state and local agencies to "test drive" this version during the 2016 wildfire season, and to provide EPA feedback to use in developing a final Guide by fall of 2017.

The overall product of this work will be a final Wildfire Guide that reflects state input, addresses state needs, and is useful to states. To achieve this, ECOS worked with state environmental agencies and the state air associations (the Association of Air Pollution Control Agencies (AAPCA) and the National Association of Clean Air Agencies (NACAA)), and ASTHO worked with the state health agencies and the state environmental health directors to review and provide comments on the initial proposed revisions; pilot the draft revised Guide during the 2016 fire season; and provide additional comments and feedback to EPA based on the pilots.

The Wildfire Guide is the product of a collaborative effort by scientists, air quality specialists and public health professionals from federal, state and local agencies, and it has been widely used by state and local agencies in wildland fire situations. EPA's Office of Air and Radiation and Office of Research and Development have coordinated state input with other federal partners such as the Centers for Disease Control and Prevention and U.S. Forest Service. EPA is currently developing a final Guide based on state feedback, which is expected to be available in the fall of 2017.

Deliverables

- States reviewed and provided feedback to EPA on initial revisions to Guide (April-May 2016)
- States piloted the revised Guide during the 2016 fire season (June-September 2016)
  States provided comments on draft revised version, based on use during 2016 fire season (September-October 2016)

Next Steps

- EPA and federal partners will use state feedback to create a final Guide, which is expected by fall 2017
- In consultation with EPA and other federal partners, states will help develop and implement outreach and communications strategies to promote the Guide's use by state programs and their partners by fall 2017

For more information, find the Wildfire Guide (Revised Draft May 2016):
https://www3.epa.gov/airnow/wildfire_may2016.pdf

STATUS REPORT: Community-Focused Exposure and Risk Screening Tool (C-FERST)

The Community-Focused Exposure and Risk Screening Tool (C-FERST) is an online information access and mapping tool that communities can use to learn more about their environmental issues and exposures. The tool includes local maps, reports, fact sheets and links to other environmental and public health tools, and structured guides to help communities assess local environmental conditions. It provides step-by-step guidance for community-based assessments, as well as a means to communicate and translate relevant science to communities. C-FERST is intended to provide screening-level information to help users learn about community environmental and public health issues; however, it does not quantify risk values, and it is not intended to be the sole basis for any public health decision.

C-FERST empowers communities with online resources to help them identify and learn more about their environmental issues, and explore exposure and risk reduction options. C-FERST, developed by EPA's Office of Research and Development (ORD) in collaboration with stakeholders, is intended to serve the needs of a broad range of users, including the general public, environmental and public health professionals, state and local risk assessors, EPA community involvement coordinators and environmental justice coordinators working on local-scale issues, and academic institutions serving local communities. It may be mutually beneficial for community members and groups to work with regional, state or local environmental experts, as well as local academic institutions to identify and learn about issues, and interpret C-FERST data and results.

As targeted users of C-FERST, input from state environmental and public health agencies with their buy-in on the tool are critical to realize its full value. In August 2015, a pre-release version of C-FERST was shared with states for beta testing through the Environmental Council of the States (ECOS). In 2016, EPA ORD partnered with states through ECOS and the Association of State and Territorial Health Officials (ASTHO) to bring together a group of state representatives to identify any concerns about the tool and to provide feedback to EPA regarding how C-FERST can best support state programs. The states partnered with EPA ORD to develop an engagement strategy and roll out plan to help make C-FERST a more useful tool for state programs to provide to the public, and also assisted EPA ORD in placing C-FERST in the context of related environmental public health tracking tools.

The initial version of C-FERST was released at the ECOS Fall Meeting in September 2016. The tool will be periodically refined and populated with improved and updated information based on user feedback and needs.

Deliverables

- States reviewed and provided feedback on draft communications materials and proposed training approach (June/July/August 2016)
- States/ECOS/ASTHO engagement in planning for roll out and initial messaging of C-FERST (September 2016)
- C-FERST briefing for states (October 2016)
- Work with states and CDC to provide links to state resources and data related to health outcomes and non-chemical stressors for future updates to C-FERST (ongoing)

Next steps

- EPA is developing training materials and plans to hold web-based training for the states in summer 2017.
- EPA plans to work with ECOS and ASTHO and other partners to identify a few early specific cases to apply
  C-FERST to, in order to develop some case studies that illustrate potential uses of the tool that can be repeated in other places to improve environmental and health outcomes.

For more information, find C-FERST online at:
http://www.epa.gov/c-ferst/

EPA-ECOS-ASTHO MOA Pilot Project Proposals
July 2017

Background: State agencies work on the front lines of protecting public health and the environment and rely on EPA's science tools, approaches, methods and training. EPA's Office of Research and Development (ORD) is a vital scientific and technical resource for the states, and through our state partners, we also learn about the environmental problems states face and how to best translate our science to inform good decisions for communities. Through a Memorandum of Agreement (MOA) with the Environmental Council of States (ECOS) and the Association of State and Territorial Health Officials (ASTHO), ORD works to advance cooperative initiatives pertaining to public and environmental health.

Expected Outputs

- Risk communication toolkits
- Risk communication case studies
- Comparison of the risk communication approaches

Outcomes

- Pilots will help create new links between EPA and CDC as federal partners.
- Increased accessibility of risk communication strategies for states and communities.
- Establish and maintain diverse public health and environmental partnerships.

ORD has decided to fund two additional pilot projects with state partners for the project period September 1, 2017-June 30, 2018. These two projects are described below.

Project 1: Communicating the Risks of PFAS: Case Studies and Toolkit

Project Description:

Per- and Polyfluoroalkyl Substances (PFAS) found in water continue to pose problems for state health and environmental agencies. While EPA supports state and public water systems in their efforts to reduce exposure to PFOA and PFOS in drinking water, including issuing the health advisory level of 70 parts per trillion, states still issue their own health advisories related to these chemicals. State and territorial health agencies and their environmental counterparts have oversight of the water systems and are responsible for implementing mitigation measures to reduce chemical exposure, as well as communicating these risks. EPA's November 2016 Fact Sheet provides helpful background information and recommendations for state, local and tribal health officials and water system operators, but states still struggle with the risk communication piece for their health advisories. Proper risk communication is needed to inform the public of the issue(s) without alarming them. The type of communication style used for one audience may be different from another, so communication materials need to be tailored to the target audience. There is also the balance of communicating what health departments and water systems operators can and cannot do to address the problems. Information uncertainty also surfaces as an obstacle. What information is picked up by a newspaper and what information is left out? How do you respond to a community that demands biomonitoring? All of these issues need to be considered when communicating an issue and health advisory to the public.

In 2016, both PFAS and the larger group of PFCs arose as a priority issue for state environmental and health agencies. Through this project, state partners will collect state examples of how state health and environmental agencies have been addressing PFAS in their jurisdictions, including the wording of the accompanying health

advisories and the methods used to communicate them to the public. State partners, including ECOS, will use these to develop a risk communication toolkit that focuses on PFCs, including PFAS. How are states developing the wording for their advisories? How are they rolling them out to the public? What types of written and social media are being used? What types of STHA personnel are needed to support this type of communication effort, as well as the response from the public? State partners may also consult with risk communication consultant when developing the risk communication toolkit. At the end of this work plan, EPA and state partners will host a webinar showcasing at least three state examples, as well as the new risk communication toolkit.

Project 2: Communicating the Risks of Harmful Algal Blooms: Case Studies and Toolkit

Project Description:

As harmful algal blooms (HABs) are a nation-wide issue, it would be helpful for states to have risk communication materials (similar to the PFAS proposal above) developed for HABs. In addition to this being a public health issue, agriculture can also be impacted by HABs, concerning irrigation as well livestock's consumption of polluted waters. This proposal would follow a format similar to the PFAS risk communication proposal above.

Project 1 and 2 Objectives and Activities:

Objective 1: Better understand how state health and environmental agencies are developing and communicating their health advisories regarding PFCs, including PFAS, and HABs.

Activity 1.1: Field formal request to state environmental health officials and their environmental counterparts to participate in case study interviews regarding PFC health advisories. Develop short list and interview protocol.

Activity 1.2: Interview state health and environmental personnel from up to 5 states regarding their experiences with developing the advisories (including the use of EPA materials), rolling them out, and responding to requests from the public concerning the messages.

Activity 1.3: Compile case study interviews and findings in fact sheet format.

Objective 2: Develop a risk communication toolkit aimed at supporting state health and environmental agencies in relaying information related to PFCs and HABs to the public.

Activity 2.1: Using case studies and related materials (e.g., EPA, CDC resources), consult state risk communication workgroups regarding key themes for messaging about PFCs and HABs and best formats to roll out health advisories. Discuss all aspects of risk communication related to these health advisories and gather information for toolkits. State partners may bring in their risk communication specialist to participate/facilitate dialogues.

Activity 2.2: Develop a risk communication toolkit using all of the information gathered throughout the project. The toolkit will include such items as key messages and talking points, tips for working with the media, how to engage in conversations with the public around PFCs and HABs, social media guide, and links to external resources (such as EPA and CDC materials and example state health advisories).

Activity 2.3: Host webinars showcasing at least 3 state case studies and the new risk communication toolkits.

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REGIONAL SCIENCE PROGRAM

Program Background
EPA's Regional Science Program plays a vital role in linking ORD with EPA's regional offices. The program, managed by ORD's Office of Science Policy, is implemented by a small headquarters staff and two teams of scientists and engineers located in each EPA region: Regional Science Liaisons (RSL) and Superfund and Technology Liaisons (STL). The Regional Science Program builds networks and partnerships between regional and ORD scientists, supports regionally-focused research, and provides technical assistance to help solve challenging environmental problems throughout the U.S.

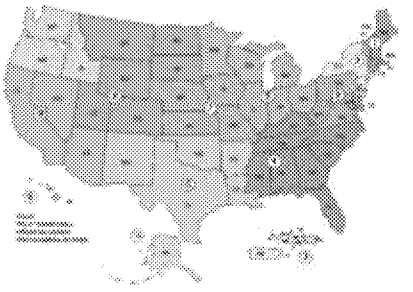
The Regional Science Program addresses high priority regional science needs through collaborative research activities and technical support, as described below.

Regional Applied Research Effort (RARE) Program
The RARE program provides a mechanism for ORD and the regions to collaborate on near-term regional research priorities. RARE research addresses a wide range of environmental issues, from human health concerns to ecological effects of various pollutants. The RSLs coordinate RARE activities and ensure that research results are effectively communicated and used within the regions..

Regional Research Partnership Program (R2P2)
R2P2 provides short-term training opportunities for regional technical staff to work directly with ORD scientists in ORD laboratories, centers, and offices. The program builds technical capacity in the regions, enhances the skills and knowledge of regional and ORD staff, and promotes the development of stronger ties between ORD and the regions. The RSLs and headquarters staff facilitate the process of soliciting applicants and helping candidates establish the necessary contacts throughout ORD.

Regional – ORD Community of Science Networking (ROCS-Net) Program
ROCS-Net is an ORD orientation and networking program for regional scientists and engineers. It provides an opportunity for regional staff who have limited familiarity with ORD to visit an EPA research facility and discuss collaborative research opportunities, regional priorities and cross-cutting issues with ORD scientists. ROCS-Net builds ties between ORD and the regions and helps develop emerging regional science leaders.

Note: Another research partnership program, administered by ORD's Sustainable and Healthy Communities Research Program, is the Regional Sustainable Environmental Science (RESES) program. RESES supports community efforts to assign value to ecosystem goods and services through the use of the best available scientific tools and information.



Regional Technical Support
The STLs help regional hazardous waste program managers make scientifically defensible decisions by providing direct technical support or coordinating assistance through ORD's five Technical Support Centers. Technical support may involve site assessments, remedial investigations, document review, remedial design, environmental cleanup technology demonstrations, optimization, five-year reviews, and aerial photo interpretation. Regional staff can access this support by calling their regional STL.

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