

EPA Tools and Resources Webinar: One Health

Presented by:

USEPA Office of Research and Development (ORD)

Association of Fish & Wildlife Agencies (AFWA)

Association of State & Territorial Health Officials (ASTHO)

Environmental Council of the States (ECOS)

November 15, 2023



Presentation Outline

- Introduction to One Health + work with partners
- One Health State Case Studies
- One Health highlights at EPA
 - NASEM report
 - EPA One Health webpage
 - One Health connections added to EPA Research Partner Support Stories
 - Smithsonian Outbreak DIY exhibit at EPA RTP campus
- AFWA President's Task Force on One Health Report
- Take home messages

What is One Health?

One Health is a collaborative, multisectoral, and transdisciplinary approach—working at the local, regional, national, and global levels—with the goal of achieving optimal health outcomes recognizing the interconnection between people, animals, plants, and their shared environment.

One Health is the idea that the health of people is connected to the health of animals and our shared environment.



When we protect **one**,
we help protect **all**.

Elements of One Health

1. Multiple and integrated sources of hazards to humans, animals, and plants in their shared environments
2. Multiple exposure pathways that connect humans and animals
3. Combined health impacts across multiple sectors
4. Socio-economic factors that increase exposure to chemical hazards and pathogens that impact disease prevention and mitigation strategies
5. Ecological and evolutionary impacts of climate change that affect health of humans, animals, and plants
6. Population and community health vulnerabilities

One Health Collaboration: AFWA, ASTHO, ECOS & EPA

Goal: To discuss the importance of the One Health approach and the role of different health professionals within the One Health framework, and to identify potential projects to collaborate on at both the state and national levels



ASSOCIATION *of*
FISH & WILDLIFE
AGENCIES

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One Health Collaboration: AFWA, ASTHO, ECOS & EPA

Accomplishments/Activities to Date

One Health Public Webinar Series *(Nov. 2021)*

- **Part 1:** Environmental perspective (EPA and ECOS)
- **Part 2:** Environmental Health (ASTHO) and Natural Resource (AFWA) perspectives

One Health Virtual Workshop *(Dec. 2021)*

- Explored One Health topics of interest to states
- Built and enhanced relationships between state environmental, health, and natural resource/fish and wildlife agencies

One Health Community of Practice *(began in Feb. 2022)*

- Quarterly meeting to focus on environmental pillar of One Health and missions that are relevant to EPA, ECOS, ASTHO, and AFWA
- Open to state, tribal and federal partners

NEW: One Health Case Studies *(published October 2023)*

- 4 case studies on states that have adopted the One Health framework
- [ASTHO link](#), [ECOS link](#)

One Health Case Studies



**RAISE AWARENESS OF
ONE HEALTH APPROACH**



**SHOW WORK ACROSS
STATE AGENCIES**



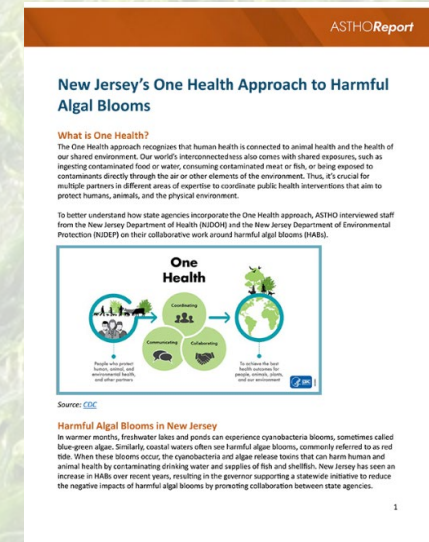
**DEVELOP SOME
WRITTEN EXAMPLES OF
USE OF ONE HEALTH
APPROACH**

New Jersey and Harmful Algal Blooms (HABs): Actions

- Department of Environmental Protection (DEP)
 - Test water samples
 - Develop public notification guidance for beach closures
 - Determine when to recommend beach closures
 - Issue alerts for public recreational waterbodies and fishing
- Department of Health (DOH)
 - Conduct public outreach for state-regulated beaches
 - Work with local government on outreach for other beach closures
- Local Health Agencies
 - Implement beach closures
 - Post signage

New Jersey and HABs: Partners

- Official One Health Task Force established through state legislation
 - State agencies represented
 - Department of Agriculture
 - Department of Environmental Protection
 - Department of Health
- Subject Matter Experts
 - Medical practitioner
 - Veterinarian
 - Medical researcher
 - Zoonotic disease specialist
 - Epidemiologist or biomedical scientist
 - Academic researchers



Idaho and Lead Exposure: Actions

- Department of Health and Welfare (DHW)
 - Conducting outreach on exposure at events around the state
 - Providing training for physicians and local health districts
 - Developing fact sheets and educational videos on recreational lead exposure
 - Creating a state lead map
- DHW and Department of Environmental Quality (DEQ) with the Agency for Toxic Substances and Disease Registry (ATSDR) and locals
 - Holding soil testing workshops
- DEQ and ATSDR
 - Assisting with analytical testing of samples

Idaho and One Health: Partnerships

- One Health Consortium started in 2015 to focus on animal, human, and environmental health
- Memorandum of Agreement established between DEQ and DHW on human health risk and environmental contaminants
- Idaho Fish Consumption Advisory Project includes:
 - DEQ
 - DHW
 - ID Fish and Game
 - University of Idaho
 - City of Boise
 - US Geological Survey
 - ATSDR
 - US EPA

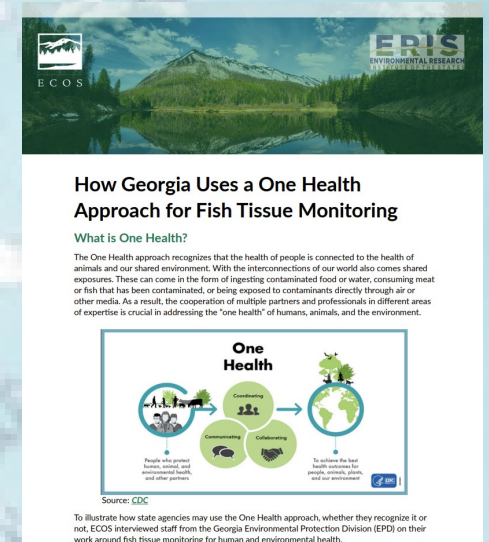


Georgia and Fish Consumption: Actions

- Environmental Protection Division (EPD)
 - Monitoring water quality
 - Testing fish tissue samples
 - Developing fish consumption advisories guidebook
- Wildlife Resources Division (WRD)
 - Collecting fish tissue samples
 - Creating fish consumption fact sheet for recreational fishers
- Department of Health (DOH)
 - Helping reach public with printed copies of guidebook
 - Assisting in developing specific guidelines for pregnant and nursing women

Georgia and Fish Consumption: Partners

- No official One Health initiative
- Original Fish Tissue Advisory Committee
 - Environmental Protection Division
 - Fish and Game Division
 - ATSDR
 - US EPA
 - Academics
- EPD, WRD and DOH could collaborate on HABs



Wisconsin and PFAS: Actions

- Wisconsin PFAS Action Council
 - Developing PFAS Action Plan
- Division of Fish, Wildlife, and Parks
 - Publishing fish consumption advisories based on PFAS
 - Publishing deer consumption advisory based on PFAS
- Environmental Management Division
 - Developing drinking water standards
 - Expanding database of known PFAS sources and contamination
- Department of Health Services (DHS)
 - Sharing information with the public about health effects of PFAS
 - Reviewing scientific literature to recommend groundwater standards

Wisconsin and PFAS: Partners


- No formal One Health initiative
- Wisconsin PFAS Action Council
 - Department of Natural Resources
 - Department of Health Services
 - Department of Agriculture, Trade, and Consumer Protection
 - Department of Administration
 - Department of Military Affairs
 - Public Service Commission
 - And more



How Wisconsin Uses a One Health Approach to Address PFAS

What is One Health?

The One Health approach recognizes that the health of people is connected to the health of animals and our shared environment. With the interconnections of our world also comes shared exposures. These can come in the form of ingesting contaminated food or water, consuming meat or fish that has been contaminated, or being exposed to contaminants directly through air or other media. As a result, the cooperation of multiple partners and professionals in different areas of expertise is crucial in addressing the "one health" of humans, animals, and the environment.



Source: CDC

To illustrate how state agencies may use the One Health approach, ECOS worked with staff from the Wisconsin Department of Natural Resources (DNR) to understand the state's work to address per- and polyfluoroalkyl substances (PFAS).

Challenges to Implementing One Health

- Coordinating across agencies
 - Understanding why certain decisions were made
 - Making best use of each agency's skills and resources
 - Understanding resource limits even with multiple agencies involved
 - Ensuring a unified risk communication plan
- Using common language
- Educating/engaging environmental agencies on One Health approach



One Health Highlights at EPA

NASEM¹ Report: Transforming EPA Science to Meet Today's and Tomorrow's Challenges

This report calls for EPA ORD to pursue its scientific aims in a new framework—to apply systems thinking to a One Environment – One Health approach in all aspects of ORD work

Scientific advances identified for ORD to take advantage of:

- Monitoring and databases
 - Integrating data from remote sensing and surface monitoring
 - Expanding the use of local-scale and personal monitoring data
 - Developing a water quality data system
 - An integrated database on environmental quality, exposure, and pollutant toxicity
- Biotechnology
- Participatory research
- Big data and machine learning

Three of the largest challenges EPA is facing:

- Holistically assessing human health and ecological risks
 - Examples provided included issues related to PFAS, plastics, neonicotinoids, and nutrient runoff
- Environmental Justice and cumulative risk
- Human health and environmental impacts of climate change



[Read the full report!](#)

EPA One Health Webpage

- **Published in February 2023!**
 - Entire web area devoted to One Health at EPA
 - Expect site to expand in the coming years with more resources



One Health Overview

Learn the basics of One Health, why it's important, and EPA's role in the One Health approach.

[Learn about One Health](#)



One Health in Action

EPA has a variety of research, tools, & resources related to One Health.

[One Health Research, Tools, & Resources](#)



One Health Community of Practice

If you are a state agency official or staff interested in joining the quarterly One Health Community of Practice, please click the below link.

[Join the One Health Community of Practice](#)

EPA Research Partner Support Stories

These stories illustrate how ORD's collaborations with states, tribes and local communities have been successful in protecting public health and the environment

- If states or other partners have a similar environmental challenge, these stories can help them find out what EPA resources are available to assist them

[Access the EPA Research Partner Support Stories](#)

What issues do these stories address?

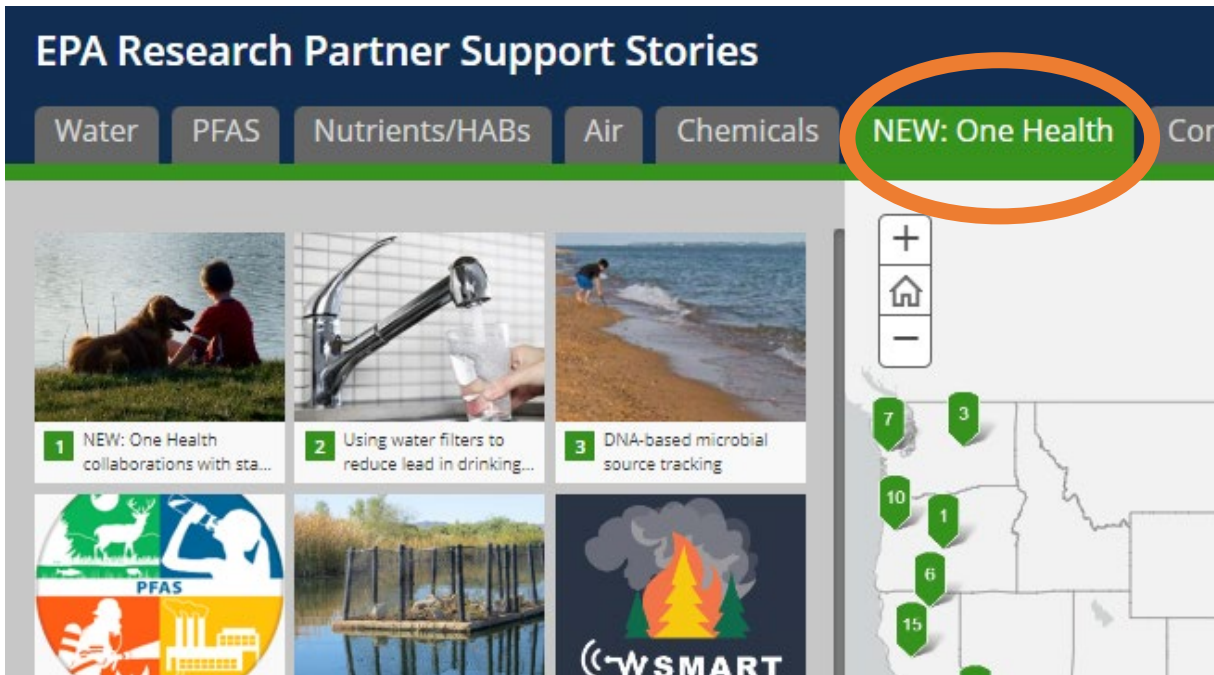
- Water
- PFAS
- Nutrients/HABs
- Air
- Chemicals
- COVID-19
- Homeland Security
- Contaminated Sites
- Habitat, Waste/Materials Management
- Community Resources

- **Work in all 50 states and territories across the nation**
- **More than 150 active stories**
- **The stories are in an interactive story map!**



EPA Research Partner Support Stories: One Health Connections

NEW One Health Connections added to see how some of these stories relate to the One Health Framework



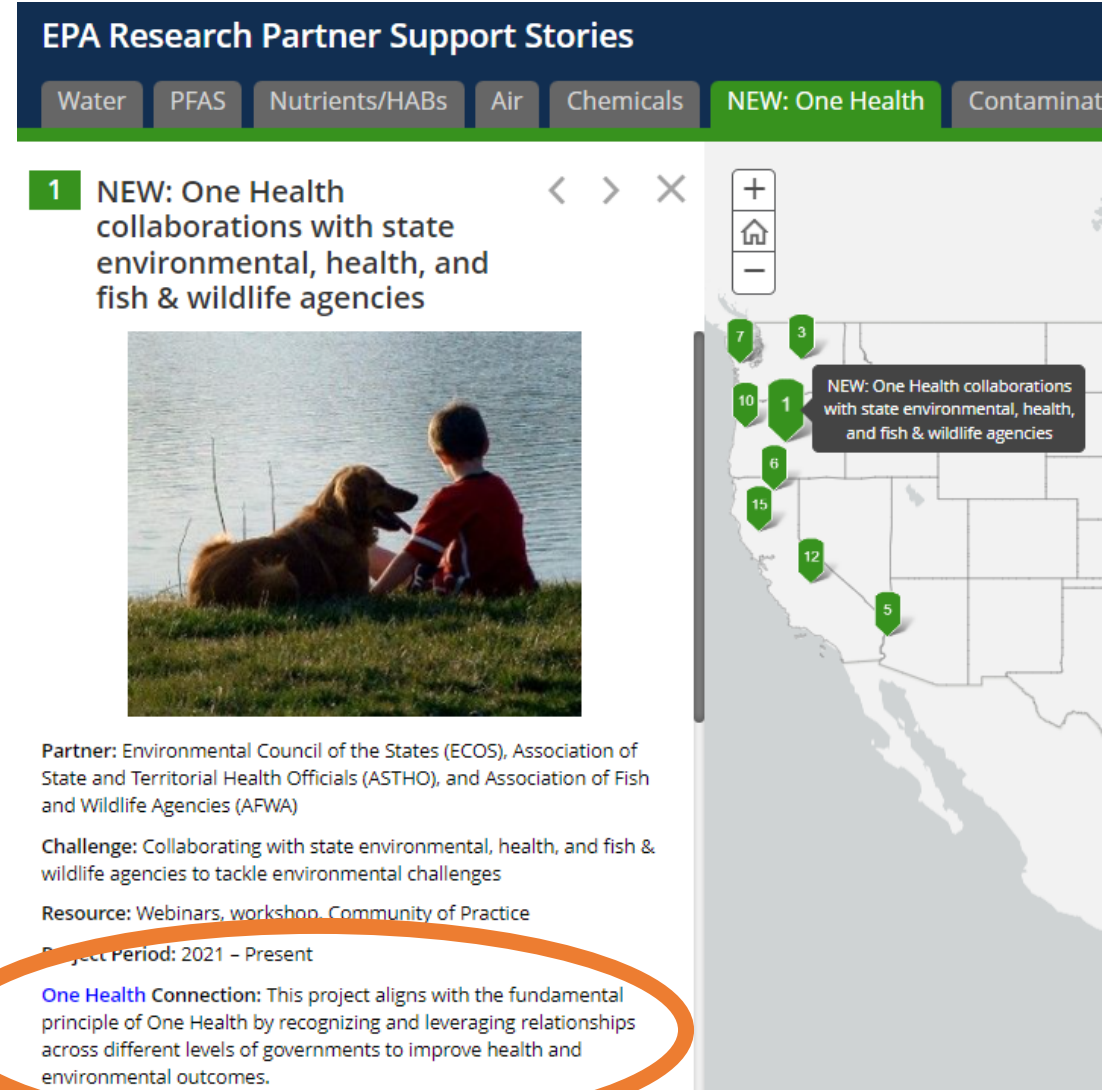
EPA Research Partner Support Stories

Water PFAS Nutrients/HABs Air Chemicals **NEW: One Health** Contaminants

1 NEW: One Health collaborations with sta...
2 Using water filters to reduce lead in drinking...
3 DNA-based microbial source tracking

PFAS WSMART


[Access the EPA Research Partner Support Stories](#)



EPA Research Partner Support Stories

Water PFAS Nutrients/HABs Air Chemicals **NEW: One Health** Contaminants

1 NEW: One Health collaborations with state environmental, health, and fish & wildlife agencies



Partner: Environmental Council of the States (ECOS), Association of State and Territorial Health Officials (ASTHO), and Association of Fish and Wildlife Agencies (AFWA)

Challenge: Collaborating with state environmental, health, and fish & wildlife agencies to tackle environmental challenges

Resource: Webinars, workshop, Community of Practice

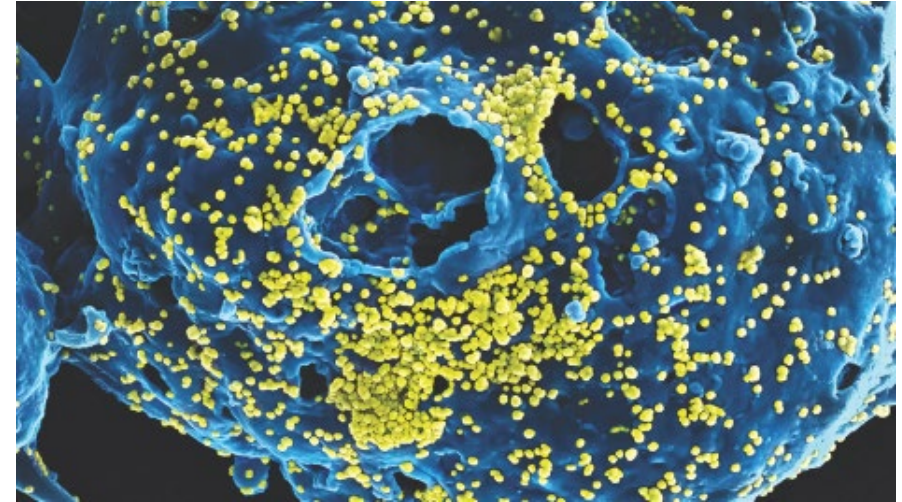
Project Period: 2021 – Present

One Health Connection: This project aligns with the fundamental principle of One Health by recognizing and leveraging relationships across different levels of governments to improve health and environmental outcomes.

Outbreak: Epidemics in a Connected World

Smithsonian Do-It-Yourself Exhibit

- Explore the **connections between human, animal, and environmental health**, and discover how people around the world track down and respond to disease outbreaks
- **Free**, print-on-demand **do-it-yourself (DiY) exhibit** consists of:
 - Graphic panels
 - Interactive media
 - Files for printing 3-D viruses
- Can be adapted to a variety of venues, including community centers, libraries, coffee shops, hospitals, transit hubs, museums, and science centers



[Learn more and apply to
access Outbreak DiY!](#)

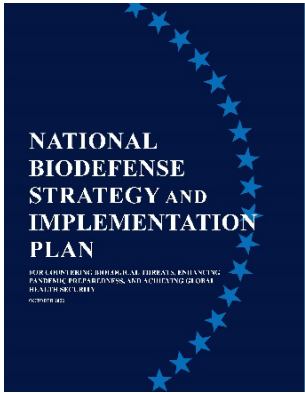
Outbreak: Epidemics in a Connected World

Smithsonian Do-It-Yourself Exhibit

The DiY Exhibit is being displayed at EPA's Research Triangle Park campus from November 2023 to January 2024 in honor of One Health Day (November 3rd) and One Health Awareness Month (January)



Real-Time Research Framework Using a One Health Approach



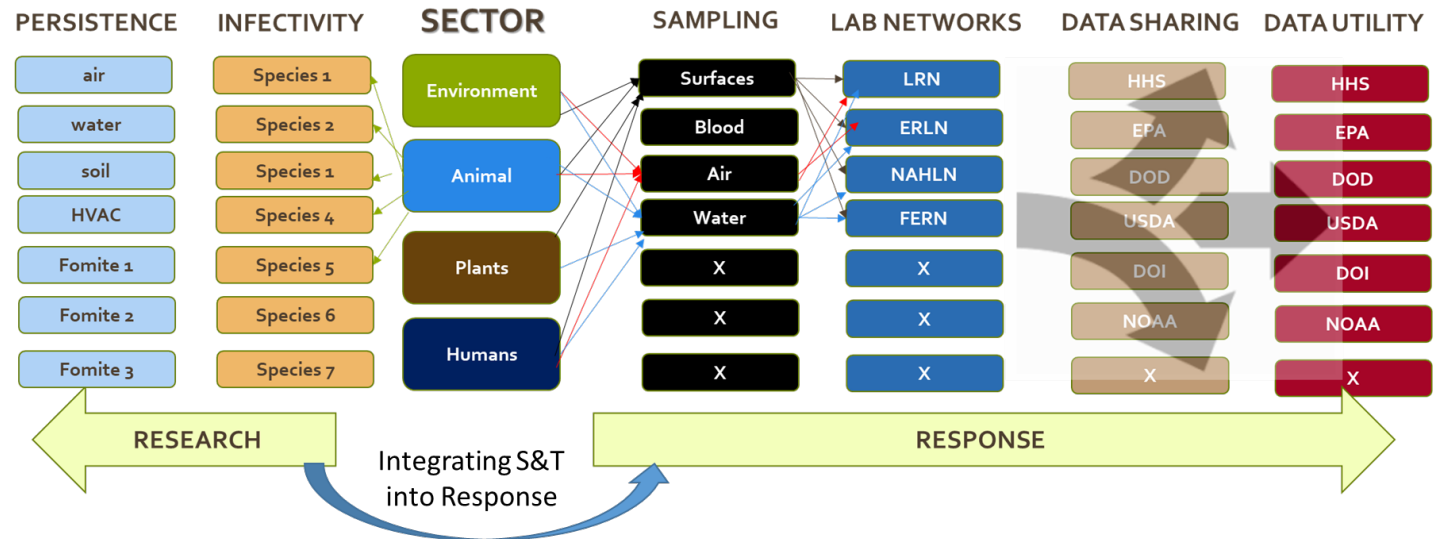
One Health Implementation for Response Research

leveraging expertise and resources to provide timely data and solutions for response decisions

National Biodefense Strategy

Goal 4.1.3. Coordinate Real-Time Research for Response

Develop and implement an integrated, adaptive, and flexible federal One Health research agenda that coordinates real-time federal and public and private sector research to support rapid domestic response and mitigation, within fourteen days of the determination of a nationally or internationally significant biological incident

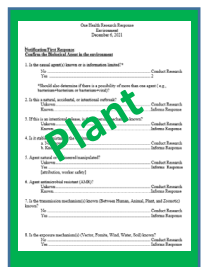
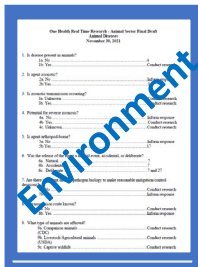
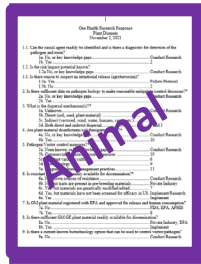


What are the response-limiting data gaps? (This is not research for research sake)

(NBS Goal 4.1.3)

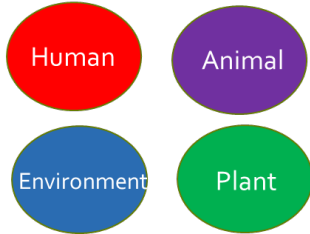
Overall Process to Develop a Research Agenda to an Emerging Bioincident

Research Decision Trees to identify response-limiting data gaps

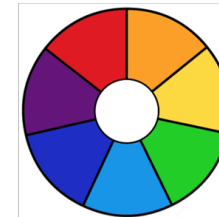


Scenario-driven Exercises/TTXs to identify response-limiting data gaps

Sector - Focused



One Health-Focused



Integrated One Health Research Agenda based on Scenario

Tailored Process for Developing One Health Research Agendas

- Agent Identification and Characterization
- Disease Pathology
- Diagnostics
- Countermeasures
 - Therapeutics
 - Vaccines
 - Non-pharmaceutical interventions
 - Environmental countermeasures
 - Community mitigation measures
- Agent Transmission/Exposure Science
- Biosurveillance and Modeling
- Waste Management
- Regulatory Science
- Social and Behavioral Sciences

Requirements
 Workforce
 Research Infrastructure
 Data Sharing Networks
 Supply Chain Requirements

AFWA President's Task Force on One Health Report



ASSOCIATION *of* FISH & WILDLIFE AGENCIES

**PRESIDENT'S
TASK FORCE ON
ONE HEALTH**



FINAL REPORT SEPTEMBER 2023

PRESIDENT'S TASK FORCE ON ONE HEALTH

**Final Report
September 2023**





Task Force Members and Contributors

Task Force Co-Chairs

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Chief, West Virginia Wildlife Resources Section

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Director, Indiana Division of Fish and Wildlife





Four Focal Areas for the Team's Work



Legislative Affairs, Policy, and Governance



Coordination, Collaboration, and Engagement



Training



Science and Indigenous Knowledge





Focal Area 1: Legislative Affairs, Policy, and Governance



- Establish an AFWA One Health Committee
- Explore the establishment of a Center of Excellence for Wildlife and Ecosystem Health
- Build capacity and sustainable funding to engage in One Health
- Shape the development of wildlife governance and create the collaborative space for a successful One Health approach





Focal Area 2: Coordination, Collaboration, and Engagement



- Participate in development of a National One Health Framework
- Develop a communication strategy about the role of state fish and wildlife agencies in One Health
- Develop and maintain a sustained outreach on One Health





Focal Area 3: Training



- Conduct a gap analysis
- Develop One Health training materials
- Develop and implement One Health workshops





Focal Area 4: Science and Indigenous Knowledge



- Develop stronger working relationships and encourage dialogue with tribal fish and wildlife agencies on One Health.
- Develop an annotated bibliography and engagement opportunities to highlight the role of fish & wildlife in One Health.
- Identify tools that quantify the role ecosystems and wildlife health plays in supporting human health.





AFWA's Success in One Health Engagement

“Ultimately, when we see Aldo Leopold’s vision of a land ethic that intertwines the health of people and land become fully adopted, we will have achieved success.”



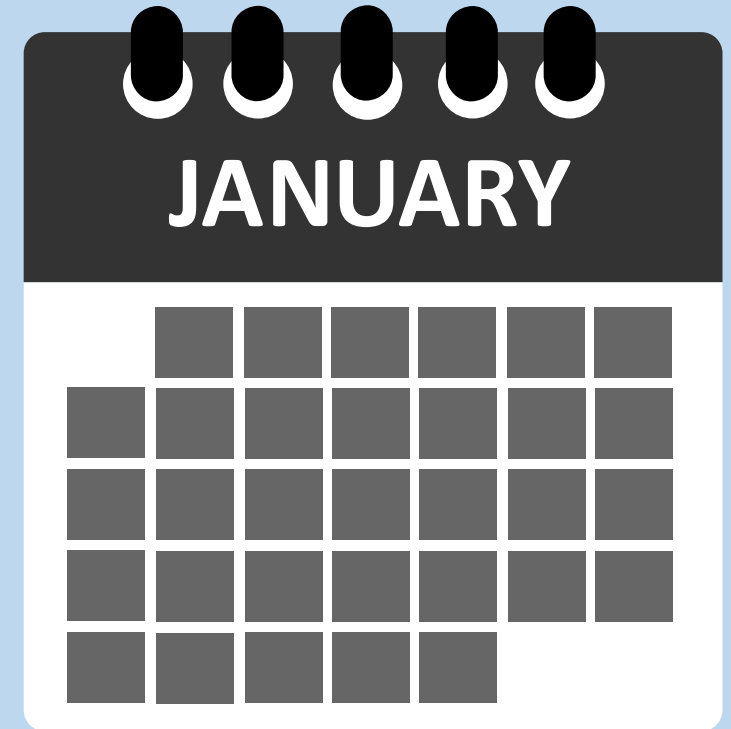
Take Home Messages

- One Health recognizes the interconnectivity between human, animal and environmental health and the need for a collaborative, transdisciplinary approach to achieve optimal health outcomes.
- EPA has long recognized that the health of people is closely connected to the health of animals and our shared environment.
- The One Health approach requires a culture of collaboration between professionals in different fields of expertise.
- EPA is developing ways to embrace the One Health concept. We are working with our partners in the states, tribes, local communities, and public health organizations to use the One Health concept as a guide to meet our shared missions.
- One Health to all!

Celebrate One Health



One Health Day



One Health Awareness Month

Additional Resources

Watch a short [Centers for Disease Control video](#) explaining the One Health concept.

Read about examples of One Health work at EPA on our [One Health webpage](#).

Learn more about One Health and initiatives being led by our federal partners:

- [Centers for Disease Control One Health](#)
- [United States Department of Agriculture One Health](#)
- [National Institutes of Health One Health](#)
- [National Oceanic and Atmospheric Administration One Health](#)
- [United States Geological Survey One Health](#)
- [National Aeronautics and Space Administration One Health](#)

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Check Out the Case Studies!



How Wisconsin Uses a One Health Approach to Address PFAS

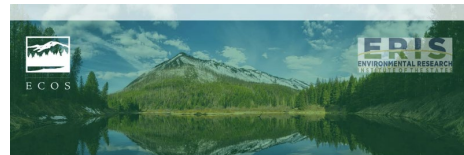
What is One Health?

The One Health approach recognizes that the health of people is connected to the health of animals and our shared environment. With the interconnections of our world also comes shared exposures. These can come in the form of ingesting contaminated food or water, consuming meat or fish that has been contaminated, or being exposed to contaminants directly through air or other media. As a result, the cooperation of multiple partners and professionals in different areas of expertise is crucial in addressing the "one health" of humans, animals, and the environment.



Source: CDC

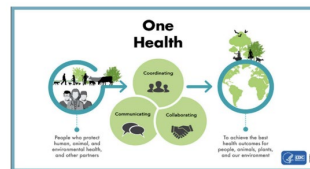
To illustrate how state agencies may use the One Health approach, ECOS worked with staff from the Wisconsin Department of Natural Resources (DNR) to understand the state's work to address per- and polyfluoroalkyl substances (PFAS).



How Georgia Uses a One Health Approach for Fish Tissue Monitoring

What is One Health?

The One Health approach recognizes that the health of people is connected to the health of animals and our shared environment. With the interconnections of our world also comes shared exposures. These can come in the form of ingesting contaminated food or water, consuming meat or fish that has been contaminated, or being exposed to contaminants directly through air or other media. As a result, the cooperation of multiple partners and professionals in different areas of expertise is crucial in addressing the "one health" of humans, animals, and the environment.



Source: CDC

To illustrate how state agencies may use the One Health approach, whether they recognize it or not, ECOS interviewed staff from the Georgia Environmental Protection Division (EPD) on their work around fish tissue monitoring for human and environmental health.

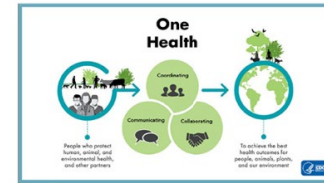


How Idaho Uses the One Health Approach to Combat Recreational Lead

What is One Health?

The One Health approach recognizes that human health is connected to animal health and the health of our shared environment. Our world's interconnectedness also comes with shared exposures. These can come in the form of ingesting contaminated food or water, consuming contaminated meat or fish, or being exposed to contaminants directly through air or other elements of the environment. Thus, it's crucial for multiple partners and professionals with many different areas of expertise to cooperate to successfully plan public health interventions.

To better understand how state agencies incorporate the One Health approach, ASTHO interviewed environmental health staff from the Idaho Department of Health and Welfare (IDHW) on their work around recreational lead exposure and how it fits in with the One Health paradigm.



Source: CDC

Recreational Sources of Lead from Hunted Meat and Fish

People and animals can be exposed to lead through many channels. **Snacks are potentially exposed to lead** when handling fishing tackle or making weights, jigs, sinkers, or spinnerbaits from lead. **Wild game meat harvested with lead ammunition** can be contaminated with lead fragments or lead dust, creating health risks for people who eat the meat. Most lead particles in wild game meat are too small to see, feel, or sense when chewing. Lead is especially harmful to children and pregnant women and can

1



New Jersey's One Health Approach to Harmful Algal Blooms

What is One Health?

The One Health approach recognizes that human health is connected to animal health and the health of our shared environment. Our world's interconnectedness also comes with shared exposures, such as ingesting contaminated food or water, consuming contaminated meat or fish, or being exposed to contaminants directly through the air or other elements of the environment. Thus, it's crucial for multiple partners in different areas of expertise to coordinate public health interventions that aim to protect humans, animals, and the physical environment.

To better understand how state agencies incorporate the One Health approach, ASTHO interviewed staff from the New Jersey Department of Health (NJDOH) and the New Jersey Department of Environmental Protection (NJDEP) on their collaborative work around harmful algal blooms (HABs).



Source: CDC

Harmful Algal Blooms in New Jersey

In warmer months, freshwater lakes and ponds can experience cyanobacteria blooms, sometimes called blue-green algae. Similarly, coastal waters often see harmful algal blooms, commonly referred to as red tide. When these blooms occur, the cyanobacteria and algal release toxins that can harm human and animal health by contaminating drinking water and supplies of fish and shellfish. New Jersey has seen an increase in HABs over recent years, resulting in the governor supporting a statewide initiative to reduce the negative impacts of harmful algal blooms by promoting collaboration between state agencies.

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