Disaster Research Response Program

10th ANNIVERSARY REPORT

MARCH 2025

NIH National Institute of Environmental Health Sciences

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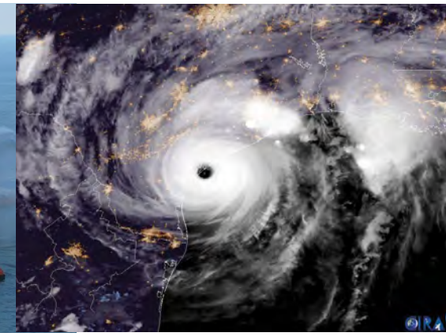
DISASTER RESEARCH RESPONSE PROGRAM | 10th ANNIVERSARY REPORT

Science on the Scene

Cover photo credits, from top: ArtwayPics/iStockphoto; Joe Bradshaw/BLM; NASA Earth Observatory image by Lauren Dauphin, using MODIS data from NASA EOSDIS/LANCE and GIBS/Worldview; andresr/iStockphoto; U.S. Air National Guard Staff Sgt. Daniel J. Martinez

Introduction



From left to right: The 2010 earthquake in Haiti caused billions of dollars' worth of damage. Credit: Nick Guido/iStockphoto**; The offshore oil rig Deepwater Horizon exploded on April 20, 2010.** Credit: U.S. Coast Guard**; Hurricane Harvey made landfall on the Texas coast on August 25, 2017.** Credit: CIRA

Beginning in early 2010, major disasters raised important questions about the health and safety effects from those events, setting the stage for an organized effort to help answer them. These events included an earthquake in Haiti that devastated cities, creating a widespread, environmental public health crisis. The largest oil spill in U.S. history resulted from the explosion of the Deepwater Horizon offshore drilling rig. It affected the health of people and marine life along the coast of many Southern states. In March 2011, the Fukushima Daiichi nuclear power plant in Japan was severely damaged by an earthquake and tsunami, with some radiation effects seen on the west coast of the U.S.

In April 2011, the National Biodefense Science Board **issued a call to action** for the U.S. government to include scientific investigations as an integral component of emergency preparedness and response. In 2013, public health leaders and medical experts echoed the call in The New England Journal of Medicine, **identifying key components of effective research response**.

For the past decade, the National Institutes of Health (NIH) Disaster Research Response Program (DR2) has been striving to heed those calls. Established as a pilot project sponsored by the National Institute of Environmental Health Sciences (NIEHS) and the National Library of Medicine, DR2 is dedicated to building the expertise and infrastructure necessary to support cross-disciplinary public health and medical data collection and research following disasters and public health emergencies. Absent this infrastructure, valuable data is permanently lost, with potential short- and long-term health consequences. Collecting that data is particularly beneficial to communities that face a disproportionate burden of disease after disasters.

> **"The knowledge that is generated through well-designed, effectively executed research in anticipation of, in the midst of, and after an emergency is critical to our future capacity to better achieve the overarching goals of preparedness and response: preventing injury, illness, disability, and death and supporting recovery."**
>
> **—Lurie et al., 2013**

The goals of DR2 align with the strategic plans of NIEHS, NIH, and the U.S. Department of Health and Human Services. Led by NIEHS, DR2 has contributed to global initiatives, including the **Sendai Framework for Disaster Risk Reduction**, the **United Nations 2030 Sustainable Development Goals**, the **Global Health Security Agenda**, and World Health Organization guidance to protect health from natural disasters through adaptation planning.

This report describes the program's evolution over the past decade, with a focus on successful efforts to improve our national capacity to address disasters and public health emergencies.

Key Objectives

1 IDENTIFY RESEARCH QUESTIONS AND PRIORITIES. Often, disasters will expose important knowledge gaps that should be prioritized for future study.

2 IMPROVE ACCESS TO DATA COLLECTION TOOLS. Easily accessible resources can reduce delays in data collection following a disaster.

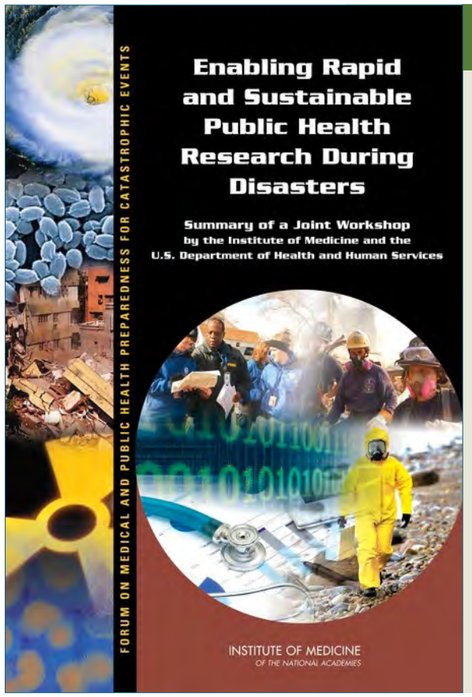
3 SUPPORT PROCESSES THAT ENABLE RAPID DATA COLLECTION. Streamlined procedures for securing funding and receiving approval for conducting research with human subjects can facilitate the research response.

4 TRAIN RESEARCHERS TO CONDUCT POST-DISASTER SCIENTIFIC INVESTIGATIONS. Training researchers on processes for data collection, community engagement, and integration with response agencies, as well as steps to ensure site safety, should occur before deployment.

5 ADDRESS COMMUNITY CONCERNS. Gathering community input can inform studies that address specific vulnerabilities and hazards.

Residents of Hampton, Virginia, look over flooded streets after Hurricane Florence in 2018. Credit: Aileen Devlin, Virginia Sea Grant/CC BY-ND 2.0

6 INTEGRATE RESEARCH INTO EXISTING DISASTER PLANNING. Investigations should align with federal, state, territorial, Tribal, and local emergency preparedness, response, and recovery plans.



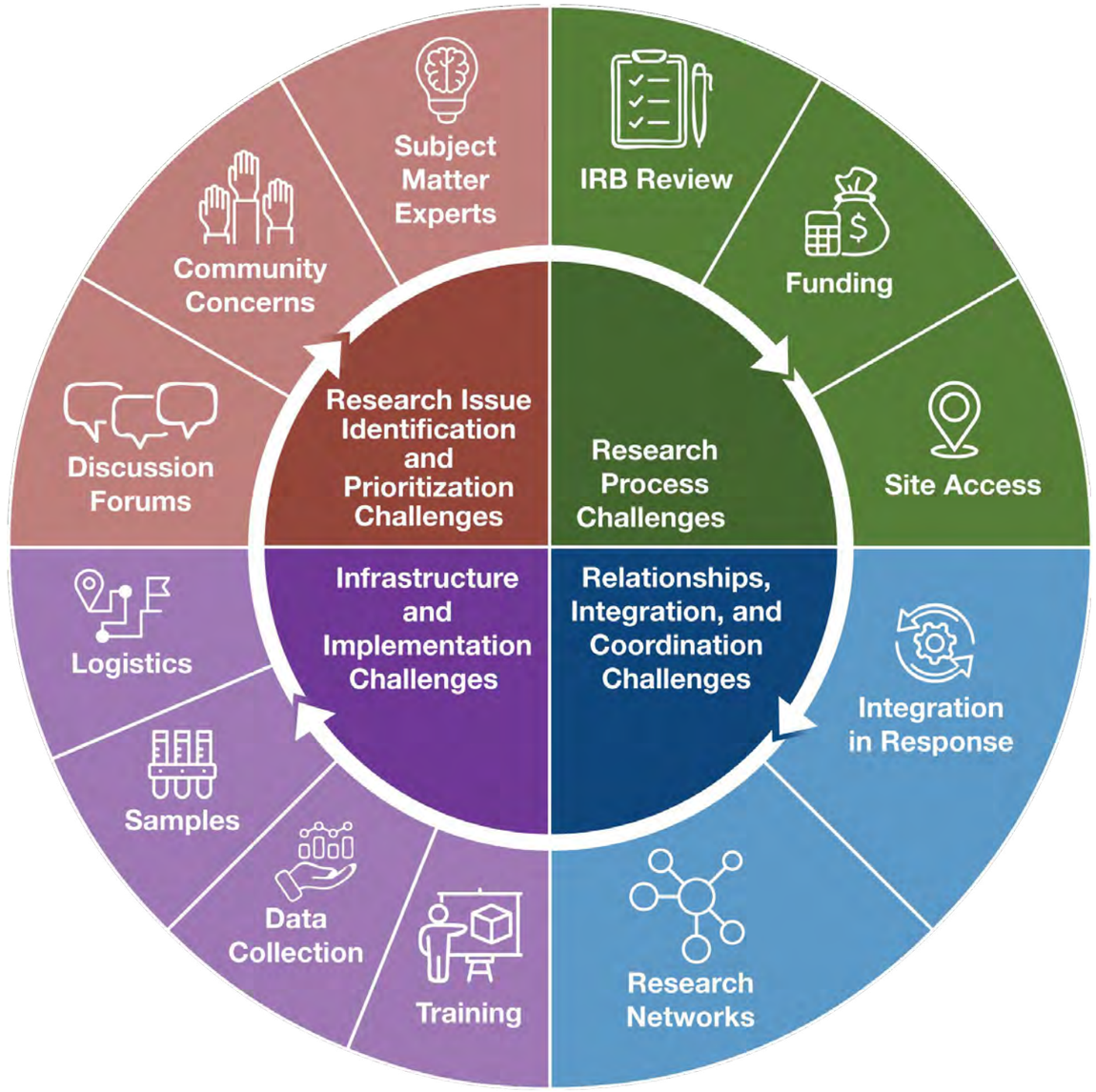
A MEETING OF THE MINDS

In 2014, NIEHS, the Centers for Disease Control and Prevention, the U.S. Department of Health and Human Services Administration for Strategic Preparedness and Response, the Institute of Medicine, and the National Library of Medicine hosted a multi-day workshop focused on ways to improve national and local approaches to disaster research.

Participants included representatives from federal, state, and local government agencies, academia, and community and worker organizations. They discussed how to integrate research into existing response structures; critical research needs and priorities; obstacles and barriers to research; structures and strategies needed for deployment of a research study; ideas, innovations, and technologies to support research; and data collection tools and data-sharing mechanisms for rapid and long-term research alike.

The discussions and resulting report, titled **Enabling Rapid and Sustainable Public Health Research During Disasters**, helped shape program objectives and focus areas.

Challenges of Disaster Research



10 Years of the NIH Disaster Research Response Program

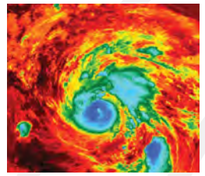
This timeline shows important steps in the evolution of DR2, with several disasters cited for context.

Science on the Scene

DISASTERS

- Ebola epidemic
- Elk River chemical spill in West Virginia
- Drinking water crisis in Flint, Michigan

- Zika virus epidemic
- Refugio oil spill in California



- Hurricane Harvey
- Hurricanes Irma and Maria

- Earthquake in Osaka, Japan
- Camp Fire in California

- COVID-19 pandemic is declared

- Train derailment in East Palestine, Ohio

2014

- NIEHS and National Library of Medicine initiate Disaster Research Response Pilot Project
- Workshop: Enabling Rapid and Sustainable Public Health Research During Disasters
- First DR2 workshop in Los Angeles, California

2015

- Creation of Rapid Acquisition of Pre- and Post-Incident Disaster Data (RAPIDD) protocol
- The Intra-NIH Disaster Interest Group is established
- DR2 workshop in Houston, Texas

2016

- DR2 pilot becomes a program
- National Academies of Sciences, Engineering, and Medicine (NASEM) Action Collaborative on Disaster Research established
- DR2 workshop in Boston, Massachusetts

2017

- NIEHS working group publishes recommendations for disaster preparedness

2018

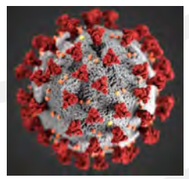
- Creation of NASEM Standing Committee on Medical and Public Health Research During Large-Scale Emergency Events
- Tribal Listening Session in Arizona

2019

- DR2 workshop in Tucson, Arizona

2020

- COVID-19 Collection of Research Tools



2021

- Formation of DR2 Environmental Health Sciences Network

2022

- DR2 workshop in Seattle, Washington

2023

- Climate and Health Outcomes Research Data Systems project begins, supported by Office of the Secretary – Patient-Centered Outcomes Research Trust Fund
- RAPIDD Protocol Designer launches

2024

- NIH and National Science Foundation establish DR2 centers
- Tenth Annual Federal Interagency Disaster Research Meeting
- DR2 workshop in Japan

DR2 EVENTS

Above credits, from left: Britannica; USFWS (top), CDC/James Gathany; from modified Copernicus Sentinel data (2017), processed by ESA; 手塚千夏雄/CC BY-SA 4.0; Pekic/iStockphoto; Ted Auch, FracTracker Alliance/CC BY-NC 2.0. Below credits, from left: AlbertPego/iStockphoto; simonkr/iStockphoto; DenisTangneyJr/iStockphoto; CDC/Alissa Eckert, MSMI; Dan Higgins, MAMS; Elizar Mercado, University of Washington School of Public Health; Marc Bruxelle/iStockphoto; USFS; Ann Liu, contractor/NIEHS

DR2 Milestones

Just as disasters and public health emergencies affect various aspects of health and society, DR2 supports disaster research response in myriad ways. The examples below illustrate the multifaceted nature of the program.

Aerial view in 2014 of the Houston Ship Channel and surrounding industrial areas in Houston, Texas.
Credit: Carol M. Highsmith/CC BY-NC 2.0

Laying the Groundwork

Research responses to successive disasters in Houston drew on DR2 principles and training.

The Houston Ship Channel provides a convenient channel for ocean-going vessels traveling to and from Texas. On its 50-mile path, the waterway passes by petroleum refineries and chemical production facilities bordered by densely populated communities.

In response to concerns about gaps in emergency preparedness involving the channel, the DR2 team partnered with the University of Texas Medical Branch and the Southwest Center for Occupational and Environmental Health at the University of Texas Health Science Center to host a disaster research response **training exercise in Houston in 2015**. Representatives from academia, government, industry, local emergency management, and the Houston community attended the two-session event.

During the first session, the DR2 team presented a plausible disaster scenario: a Category 4 hurricane making landfall on Galveston Island and sending a 20-foot storm surge up the channel. Participants spent several hours discussing how they would conduct timely data collection and research to determine the short- and long-term health impacts of the storm. The second workshop session included discussion of the DR2 **Rapid Acquisition of Pre- and Post-Incident Disaster Data (RAPIDD) protocol**, a collection of standardized research methodologies and documents on related topics designed to expedite research with human subjects.

In 2017, DR2 principles were put to the test when Hurricane Harvey struck the Houston area, causing widespread destruction and potential contaminant exposures as wastewater treatment facilities and industrial sites flooded. Notably, researchers were able to quickly deploy into the field, thanks to established academic relationships, rapid collaboration between institutions, participation from community leaders, and access to DR2 data collection tools. Among the responders was a team from the NIEHS-funded Texas A&M University Superfund Research Program Center, which had formed earlier that year to focus exclusively on disaster research in the Houston Ship Channel area.

Lessons learned and relationships forged during Harvey **informed another disaster research response** two years later. In 2019, a fire broke out at a storage facility for petroleum liquids and gases in a Houston suburb. A multidisciplinary team led by the Southwest Center for Occupational and Environmental Health deployed in 48 hours to investigate concerns about air pollutant exposures. Data collected from Hurricane Harvey provided baseline population health information for the community to compare exposures from before and after the fire.

TAKING A CUE FROM DR2

The Texas A&M University (TAMU) Superfund Research Program Center hosts disaster research workshops inspired by the NIEHS DR2 Program. The center was established in 2017 to design, develop, and implement comprehensive tools and models for addressing exposure to mixtures during disasters. Attendees at a 2021 workshop included academics from TAMU, Northeastern University, the Baylor College of Medicine, the University of Rhode Island, the University of Michigan, and the Uniformed Services University of the Health Sciences, as well as representatives from the Texas Division of Emergency Management, the Texas Commission on Environmental Quality, and private energy sector companies.

Damage from Hurricane Harvey. Credit: Ken Hartlein/iStockphoto

Contractors dispose of oily waste from the Deepwater Horizon oil spill disaster. Credit: U.S. Coast Guard Petty Officer 3rd Class Patrick Kelley

Expediting the Review Process

A DR2 tool helps expedite an important process for conducting disaster research with human participants.

Before scientists can collect data from human subjects, their research protocol must receive approval from an Institutional Review Board (IRB). This committee reviews the protocol to ensure that the rights and welfare of participants will be protected.

Typically, IRBs require months to review a submission. However, during that time, ephemeral data may be lost. To address the challenge, in 2015 DR2 developed the **Rapid Acquisition of Pre- and Post-Incident Disaster Data (RAPIDD) protocol**, a collection of standardized methodologies, instruments, surveys, supply lists, and other research-related resources that investigators could adapt and submit for expedited IRB review. In 2023, DR2 took the effort a step farther with the **RAPIDD Protocol Designer**. The online module enables researchers to quickly respond to disaster situations by customizing research protocols for their needs, and selecting specific language and content of interest from the RAPIDD protocol and the DR2 **Resources Portal**.

Over the years, academic institutions including the **University of Texas Medical Branch**, **Oregon State University**, and **Texas A&M University** have adapted the RAPIDD protocol for use in their own research reviews.

The DR2 team has also been exploring how IRBs can enhance the ethical review of disaster research protocols. Because conditions surrounding the aftermath of a disaster can rapidly change, IRBs need to consider several additional factors as part of their review process that may not apply to research unrelated to disasters.

To that end, in 2015, the NIEHS Office of Human Research and Community Engagement (OHRCE) and DR2 formed the NIEHS Best Practices Working Group for Special IRB Considerations in the Review of Disaster Related Research. The group consisted of nominated members from across the U.S., such as academic researchers; bioethicists; disaster responders and survivors; community advocates; local, state, and federal officials; and regulatory experts.

In July 2016, the working group met to develop guidance for IRBs engaged in the review of disaster research protocols. The meeting culminated in **15 recommendations** related to IRB disaster preparedness activities, informed consent, populations of concern, confidentiality, participant burden, disaster research response integration and training, IRB roles and responsibilities, community engagement, and dissemination of disaster research results.

The OHRCE later used those recommendations to home in on several critical factors essential to thorough IRB review of disaster research protocols. Those factors comprise the **Disaster Research Critical IRB Review Factors Model**, designed to aid IRBs in the review and approval of research. The factors include:

1. Disaster location, type, magnitude, and aftermath.
2. Risks and benefits to participants and study team.
3. Time point in the disaster management cycle.
4. Status of potential subjects.
5. Return of research results to participants and the affected community.

The OHRCE developed a disaster research review checklist as a companion to the Review Factors Model that can be used in tandem with an IRB's existing standard review checklist.

WORKING WITH TRIBAL COMMUNITIES

When disaster strikes, affected communities should be engaged in determining what data will be collected and how it will be used. This approach is particularly important when working in areas of Tribal sovereignty, where pre-existing relationships and trust are required before a researcher steps onto Tribal land.

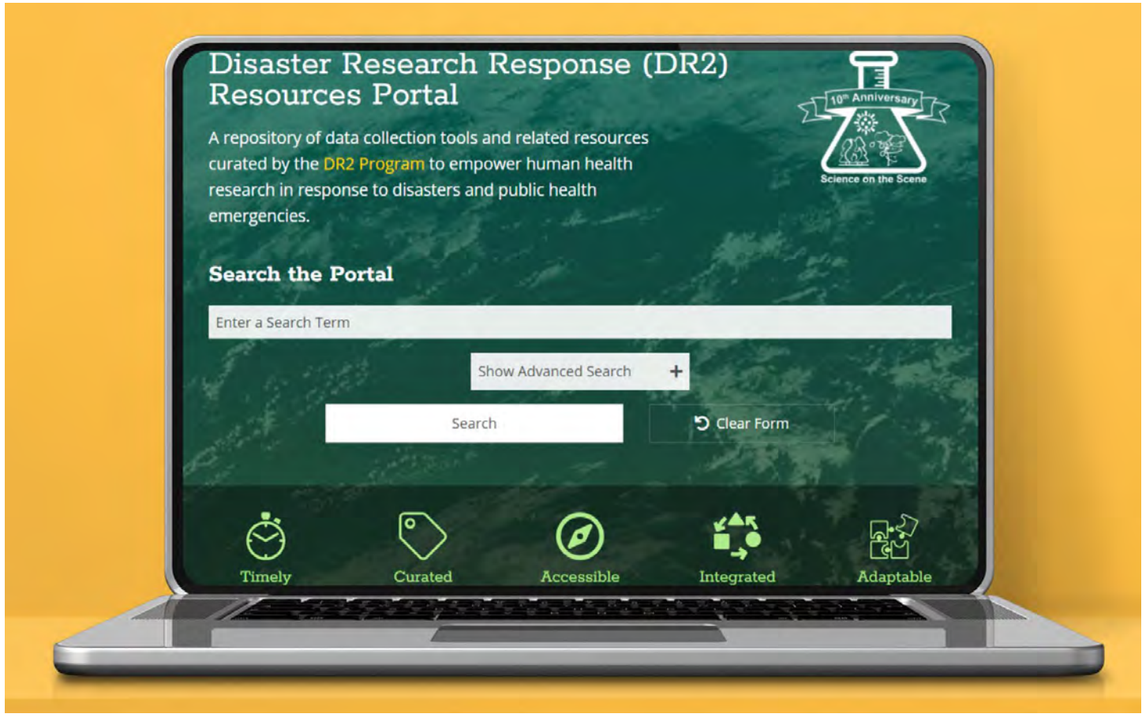
The entity reviewing research protocol must be familiar with Tribal systems, culture, traditions, and values. Some Tribes have their own IRB or another regulatory authority, such as a Tribal council or regulatory board. Others may use the national or regional Indian Health Service or defer to the university IRB.

Establishing Tribal IRBs or enhancing the function of existing ones through additional support staff, systems, and training can help reduce delays in the IRB approval process, diminish reliance on external IRBs, and give Tribes greater autonomy over the research process.

Recognizing the need to build relationships and trust, and to enhance the functions of existing IRBs related to disaster research, DR2 hosted a series of listening sessions with Native Americans/Alaska Natives to ensure that IRB recommendations for review of proposed research in these communities are responsive to Tribal concerns.

In 2018, the OHRCE hosted a two-day Tribal listening session in Phoenix that brought together leaders from 19 of the 22 recognized Tribes in Arizona.

In 2019, the University of Arizona hosted a full-day listening session about disaster research in Indigenous communities. The event preceded a DR2 training exercise involving a **mock train derailment** in Tucson. Native American students and leaders joined both events.



The DR2 Resources Portal is a searchable repository of data collection tools. Credit: Created through Canva

Providing a Trove of Resources

The DR2 Resources Portal offers easy-to-access tools to support disaster-related human health research.

A hallmark of the NIH DR2 Program is the Resources Portal. Launched in 2014, this online, searchable repository contains surveys, protocols, and other data collection tools created by scientists involved in disaster research.

Highly specific keyword filters enable visitors to tailor their search results. The portal also provides curated resource collections on important topics in disaster research, including:

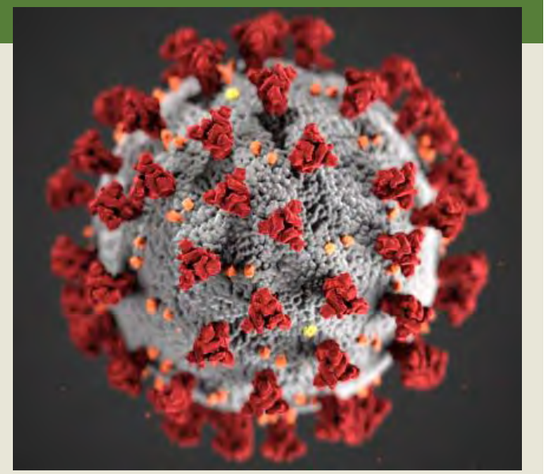
- Behavioral health
- COVID-19 impacts
- Flooding impacts
- Hurricane impacts
- Reproductive health
- Respiratory impacts of wildfires
- Social support and resiliency

Researchers may also submit resources to the portal for consideration. Since its inception, the portal has grown from storing several dozen resources to housing over 550.

SUPPORTING PANDEMIC RESEARCH

During the coronavirus pandemic, NIH relied on the DR2 Resources Portal to collect and make available surveys, questionnaires, and protocols to support U.S. and global research response efforts. The portal now contains more than 145 data collection tools related to COVID-19 research.

For example, scientists examining the effects of COVID-19 on pregnant women can find guidance on common data elements, or CDEs, for use in their research. A common data element is a defined field (e.g., “highest educational attainment”) paired with standardized permissible values for the answer (e.g., “high school graduate”; “bachelor’s degree”). By using CDEs, multiple studies can collect data in the same way, enabling easier data sharing and harmonization.



A rendering of the coronavirus that causes COVID-19.
Credit: CDC/Alissa Eckert, MSMI; Dan Higgins, MAMS

The DR2 Resources Portal provides curated materials for studying the human health impacts of flooding. Credit: Public domain

An aerial view of the aftermath of the East Palestine train derailment. Credit: Ted Auch, FracTracker Alliance/CC BY-NC 2.0

Supporting East Palestine

The DR2 Environmental Health Sciences Network stepped up to respond to the Ohio train derailment disaster.

On the evening of February 3, 2023, a freight train carrying hazardous materials derailed in the village of East Palestine, Ohio, located near the Pennsylvania border. Some train cars caught fire, resulting in the release of a toxic plume over the surrounding area. Some rail cars also spilled their loads onto the ground, where the chemical contaminants traveled into local waterways that eventually feed into the Ohio River.

In the early days of the disaster, NIEHS and the DR2 team made efforts to understand potential health impacts and identify opportunities for research. For example, shortly after the event, members of the DR2 Environmental Health Sciences Network — a national group of environmental health and disaster research scientists — held regular research coordination calls to learn about community concerns and on-the-ground data collection efforts to help inform ongoing investigations and future research that could help to support community needs.

On November 6-7, 2023, the National Academies of Sciences, Engineering, and Medicine convened a two-day virtual workshop to discuss short- and long-term human health impacts from the train derailment incident, with the goal of identifying research questions specific to affected communities in East Palestine and surrounding areas.

The workshop brought together representatives from government, nongovernmental organizations, private sector organizations, and affected communities. The DR2 team led the efforts to organize and support this workshop along with other institutes and agencies, including the *Eunice Kennedy Shriver* National Institute of Child Health and Human Development, the National Cancer Institute, the National Institute of Neurological Disorders and Stroke, the National Institute on Aging, the National Institute of Mental Health, and the Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Registry.

Through these invaluable DR2 efforts, in February 2024 six academic research programs received funding through the NIEHS Time-Sensitive Research Grants Program to study health impacts from the disaster in close engagement with the community. Notably, many of the scientists affiliated with the programs that received funding were already initiating studies in the area and had established rapport with the community. The grant recipients include:

- **CASE WESTERN RESERVE UNIVERSITY:** Healthy Futures Research Study: Linking Somatic Mutation Rate With Baseline Exposure in East Palestine
  Objectives: Engage community partners and talk with East Palestine residents to better understand their experiences and concerns during and after the disaster; initiate a long-term follow-up study to better understand the effects of chemical exposures on DNA and associated health consequences.

- **TEXAS A&M UNIVERSITY:** Responding to Air Pollution in Disasters (RAPID) Air Sampling and Symptom Monitoring in East Palestine, OH
  Objective: Apply a mobile air sampling strategy to rapidly characterize potential health risks from hazardous volatile organic compound exposure in the aftermath and recovery phases of the train derailment disaster.

- **UNIVERSITY OF CALIFORNIA, SAN DIEGO:** Uncovering the Short-Term Public Health Impact of Toxin Release in East Palestine, Ohio: Outcomes and Effect Modifiers
  Objective: Use previously established relationships with the East Palestine community to recruit a cohort of residents to assess the short-term health impacts of exposure to toxic mixtures.

- **UNIVERSITY OF KENTUCKY:** East Palestine Train Derailment Health Tracking Study
  Objectives: Collect longitudinal measures of health symptoms, stress, and well-being of East Palestine residents; establish a research network to help successfully share research findings with the community.

- **UNIVERSITY OF PITTSBURGH:** Profiling the Post-Accident Exposome in East Palestine
  Objectives: Collect soil, water, and sediment samples to assess the extent of chemical contamination; document the ongoing impact on the region's local environment and highly connected waterways.

- **UNIVERSITY OF PITTSBURGH:** East Palestine Community-Engaged Environmental Exposure, Health Data, and Biospecimen Bank
  Objectives: Engage community members in research to collect water and air samples in their homes; collect blood samples and other health data to assess and reduce the immediate and long-term impacts of exposure to vinyl chloride and other chemicals on the liver.

Lightning ignited the Pine Gulch fire in Colorado in 2020. Credit: Kyle Miller, Wyoming Hotshots/USFS

Improving Wildfire Research

A DR2 team identified opportunities to enhance data collection on wildfire exposures and associated health outcomes.

Extreme weather events, such as more frequent and severe wildfires, pose potentially significant consequences for human health. Exposure to wildfire smoke — which contains particulate matter and hazardous pollutants, such as polycyclic aromatic hydrocarbons — has been linked to asthma, cardiovascular events, and adverse birth outcomes, among other health problems. Fires occurring at the wildland-urban interface, where homes and other structures meet vegetation, are potentially more hazardous because they can emit a broad range of chemicals and pollutants.

In March 2024, DR2 staff published a scoping review of studies linking wildfire exposures and health outcomes. The goal was to identify and describe the available data used in these studies to ultimately better understand wildfire-related health effects and identify opportunities to advance research in the field.

To perform the review, DR2 staff gathered 83 relevant papers and analyzed the kinds of data typically collected and any potential data gaps. They found that smoke from wildfires was the most common exposure studied, with a focus on particulate matter in the smoke.

Meanwhile, hospital admission data was the most common health data source, followed by government databases and health surveys.

Notably, the studies frequently lacked relevant health data for examining the various health outcomes in many at-risk populations (e.g., pregnant women, children, elderly people, individuals with preexisting health conditions), especially regarding diseases that develop over long time periods, like cancer. Although air exposure data was frequently available in real time and covered larger regions, it did not capture the information needed to understand the health effects of exposures to complex mixtures in wildfire smoke or through pathways besides air, such as household dust or soil.

> **Understanding and building upon the current state of geoscience and health data systems will enhance our ability to better characterize exposures to wildfires and associated health outcomes, implement prevention strategies, and respond effectively to wildfire impacts on human health.**
>
> **—Barkoski et al., 2024**

The Dixie Fire of 2021 destroyed most of Greenville, California. Credit: JasonDoiy/iStockphoto

Training Workshops

Over the years, DR2 has offered **training workshops** (formerly known as tabletop exercises) to academic partners and their municipalities interested in improving research response to disasters. Each workshop presented a realistic disaster scenario relevant to the locale and challenged attendees to discuss their roles in emergency response. Participants typically included experts in public health and safety, medicine, and emergency management, as well academics, community advocates, and representatives from private industry and businesses. Since 2014, DR2 has conducted six training workshops.

In 2017, DR2 **assessed the impact** of its training workshops on federal, state, and local stakeholders. Results showed the workshops helped build awareness and networks, improved capacity for disaster research, and inspired new disaster research activities.

MULTIPLE HAZARDS
Seattle, WA (2022)

Partner: University of Washington Department of Environmental and Occupational Health Sciences

NOR'EASTER
Boston, MA (2016)

Partners: U.S. Department of Health and Human Services Regional Office; University of Massachusetts Lowell; Boston University School of Public Health; City of Chelsea Board of Health; Harvard T.H. Chan School of Public Health Department of Environmental Health

Workshop report

TSUNAMI
Kawasaki, Kanagawa, Japan (2024)

Partner: National Institute for Environmental Studies, Japan

TSUNAMI
Los Angeles, CA (2014)

Partner: University of California, Los Angeles Labor Occupational Safety and Health Program

Workshop report

TRAIN DERAILMENT
Tucson, AZ (2019)

Partners: University of Arizona College of Medicine – Tucson; Mel and Enid Zuckerman College of Public Health; University of Arizona College of Pharmacy; Bio5 Institute

Workshop report

HURRICANE
Houston, TX (2015)

Partners: University of Texas Medical Branch; Southwest Center for Occupational and Environmental Health at the University of Texas Health Science Center

Workshop report

Looking Ahead

During an evacuation drill, a volunteer role-plays the part of an evacuee registering at a shelter. Credit: Eric Adams/FEMA

Over the past decade, DR2 has evolved into a multifaceted program. By supporting in-person trainings, a robust online repository of data collection tools, and a burgeoning community of practice, DR2 continues to build and support a coordinated network of disaster research centers in the U.S. Through ongoing efforts to hold workshops and other forums, coordinate response efforts, and engage with various stakeholders, DR2 continues to facilitate national capacity for vital disaster research that will work in collaboration with the federal, state, and local response efforts to address all types of natural and human-caused disasters and public health emergencies.

> **"Improving disaster research response is urgent, especially with the occurrence of larger and increasingly costly natural disasters. We need to not only have timely information to save lives, but also the vital research that supports our improvement of preparedness, resiliency, and recovery in communities."**
>
> **—Aubrey Miller, NIH DR2 Program director**

Key Partners

This list includes networks, groups, agencies, and centers that continue to make important contributions to DR2 initiatives.

DR2 ENVIRONMENTAL HEALTH SCIENCES NETWORK

In 2020, NIEHS launched the DR2 Environmental Health Sciences (EHS) Network. The network was launched to provide an active forum for environmental health researchers and others to share their work and collaborate on various efforts to improve disaster research response. These efforts include identifying scientific knowledge gaps and proposing solutions for implementation of disaster research, such as methods development, Institutional Review Board approval, and stakeholder engagement.

One key outcome of the DR2 EHS Network was a **study using the Delphi method** to identify and prioritize environmental health research questions related to COVID-19. Another outcome was the 2021 symposium and webinar series Compounding Environmental Health Crises: COVID-19 Research Response. The four-part series provided a space for participants to share more about mental health, risks due to socioeconomic status, and other topics pertaining to the impact of COVID-19 on communities.

INTRA-NIH DISASTER INTEREST GROUP

NIEHS coordinates the Intra-NIH Disaster Interest Group (IDIG) of scientists and staff across 15 NIH Institutes, Centers, and Offices. NIEHS partners with the *Eunice Kennedy Shriver* National Institute of Child Health and Development to coordinate the IDIG. Since 2016, the IDIG has met regularly to discuss issues related to improving NIH's capacity to coordinate, design, and implement timely research to address the health impacts associated with public health emergencies and disasters.

NIH INSTITUTES, CENTERS, AND OFFICES PARTICIPATING IN DR2 EFFORTS

- Center for Information Technology
- NIH Clinical Center
- Fogarty International Center
- National Cancer Institute
- National Center for Advancing Translational Sciences
- National Center for Complementary and Integrative Health
- National Heart, Lung, and Blood Institute
- National Institute on Aging
- National Institute on Alcohol Abuse and Alcoholism
- National Institute of Allergy and Infectious Diseases
- *Eunice Kennedy Shriver* National Institute of Child Health and Human Development
- National Institute of Environmental Health Sciences
- National Institute of Mental Health
- National Institute on Minority Health and Health Disparities
- National Institute of Neurological Disorders and Stroke
- National Institute of Nursing Research
- National Library of Medicine
- Office of Behavioral and Social Sciences

NASEM ACTION COLLABORATIVE ON DISASTER RESEARCH

NIEHS partners with other NIH institutes, federal agencies, the academic community, and public sector representatives to lead the **Action Collaborative on Disaster Research**. The Action Collaborative evolved from the former **National Academies of Sciences, Engineering, and Medicine (NASEM) Standing Committee on Medical and Public Health Research During Large-Scale Emergency Events**, which identified the needs for improved involvement and coordination between government, academia, and the community to facilitate the research infrastructure for disaster response. The Action Collaborative facilitates expert discussion by hosting workshops, webinars, and symposia that address important topics within the U.S. disaster research enterprise.

In 2020 and 2021, the Action Collaborative held two webinars with the goal of advancing understanding of challenges, needs, and value of disaster research in supporting communities across the nation. The Action Collaborative has also hosted rapid response workshops to assess research needs in health emergencies, such as the Deepwater Horizon Gulf Oil Spill, Superstorm Sandy, and the Zika and Ebola outbreaks. In 2024, the Action Collaborative hosted symposia on disaster data science and pediatric disaster science.

NIH-NSF DR2 CENTERS

NIH has established an agreement with the U.S. National Science Foundation (NSF) that supports two centers, one at the University of Colorado Boulder and the other at the University of Washington, both institutions known for their disaster response expertise. The University of Colorado Boulder Natural Hazards Center **provides rapid awards** to eligible grantees to quickly deploy into the field following an extreme weather event to work with communities on health-related research. The University of Washington Natural Hazards Reconnaissance (RAPID) Facility **will soon offer technical instrumentation, training, and resources** to researchers collecting perishable exposure and health data.

FOSTERING GLOBAL PARTNERSHIPS TO ADVANCE DISASTER RESEARCH

The DR2 Program continues to work with partners across the globe to share information, lessons learned, and resources to advance capabilities for improved post-disaster data collection and research.

Of note, NIEHS and Japan's National Institute for Environmental Studies signed a Memorandum of Understanding with the goals of improving chemical safety and disaster research; facilitating joint efforts to develop and improve DR2 tools; improving disaster research expertise and relationships; and facilitating development of integrated platforms to improve public access to training materials, data collection instruments, data management strategies, and other resources for timely disaster research.

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