East Palestine: Needs for Long Term Community-Centered Health and Long-Term Monitoring Program

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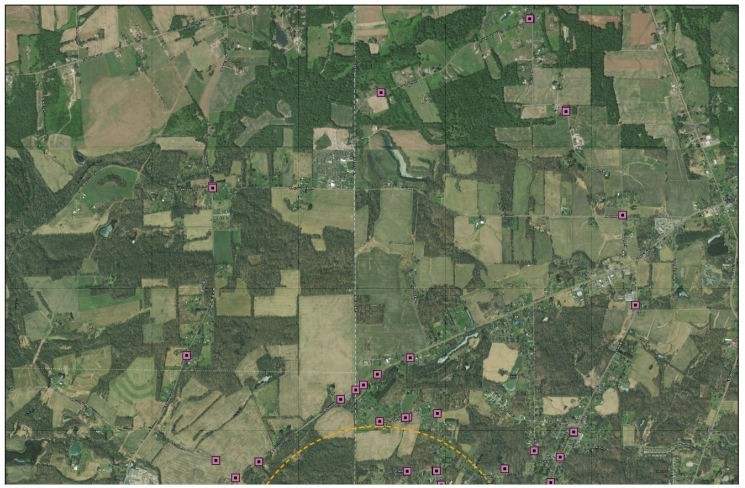
NASEM Workshop – 11/7/23



The NEW ENGLAND JOURNAL of MEDICINE

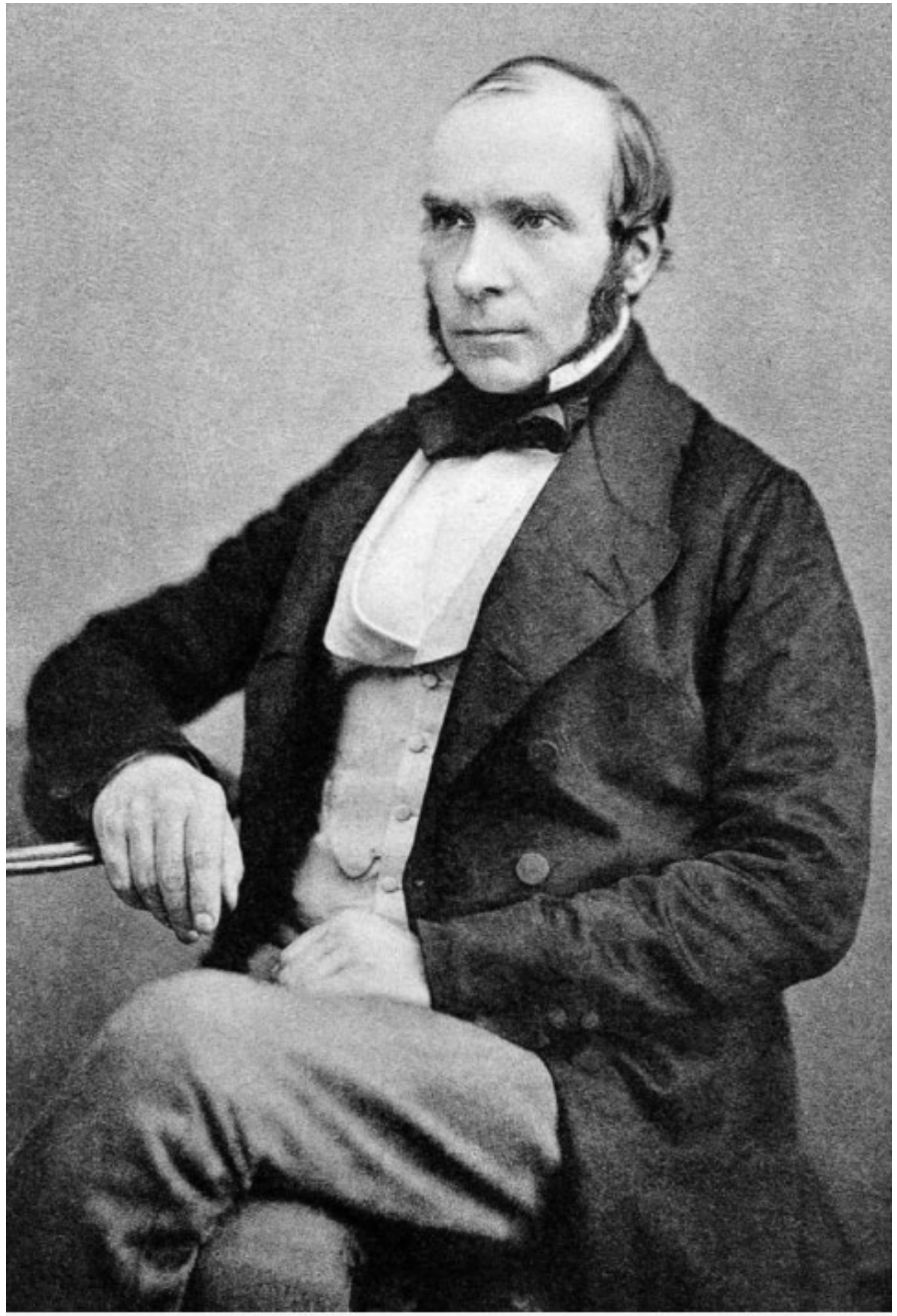
SOUNDING BOARD

Research as a Part of Public Health Emergency Response

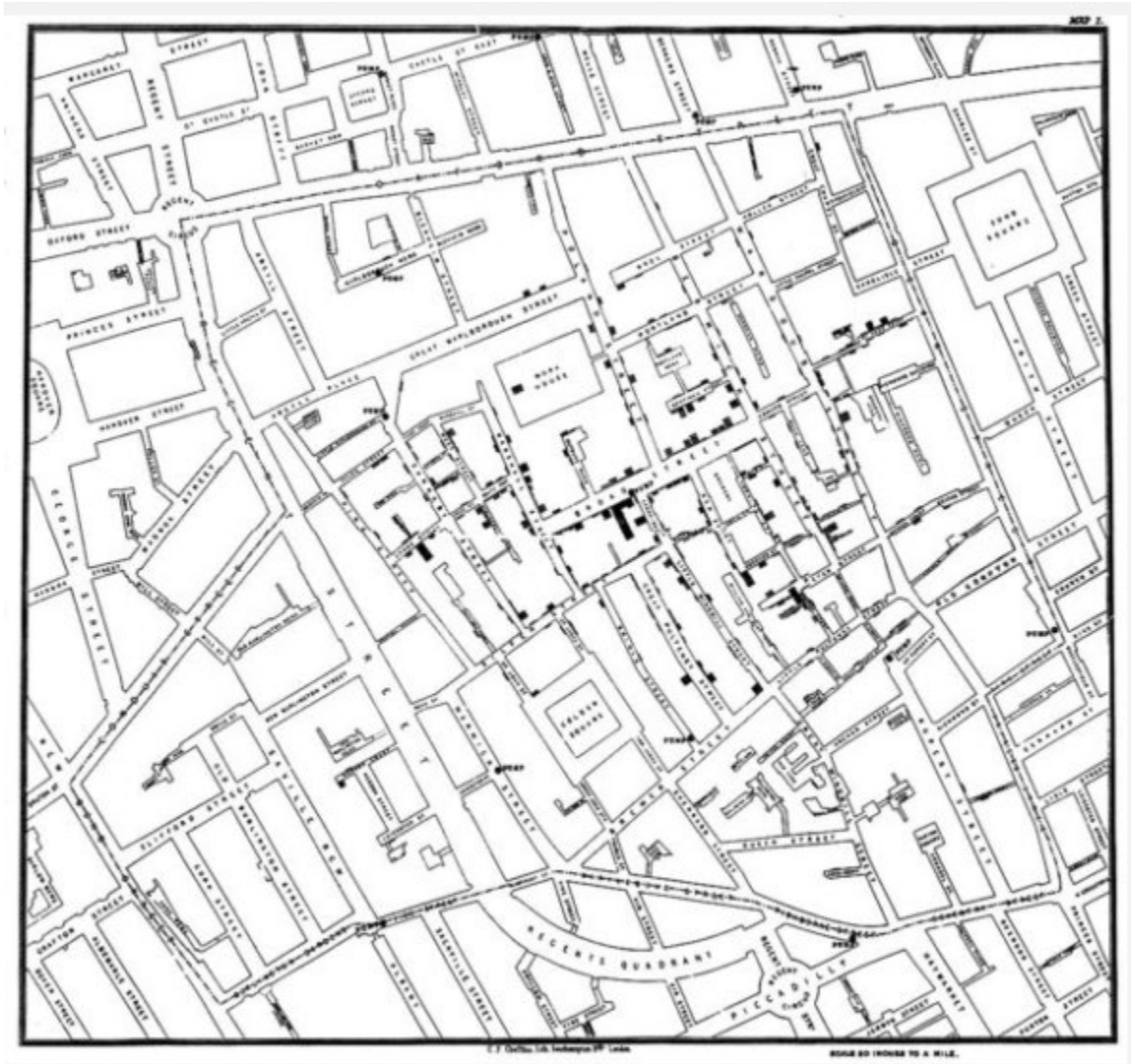
Nicole Lurie, M.D., M.S.P.H., Teri Manolio, M.D., Ph.D., Amy P. Patterson, M.D., Francis Collins, M.D., Ph.D., and Thomas Frieden, M.D., M.P.H.

N ENGL J MED 368;13 NEJM.ORG MARCH 28, 2013

"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."

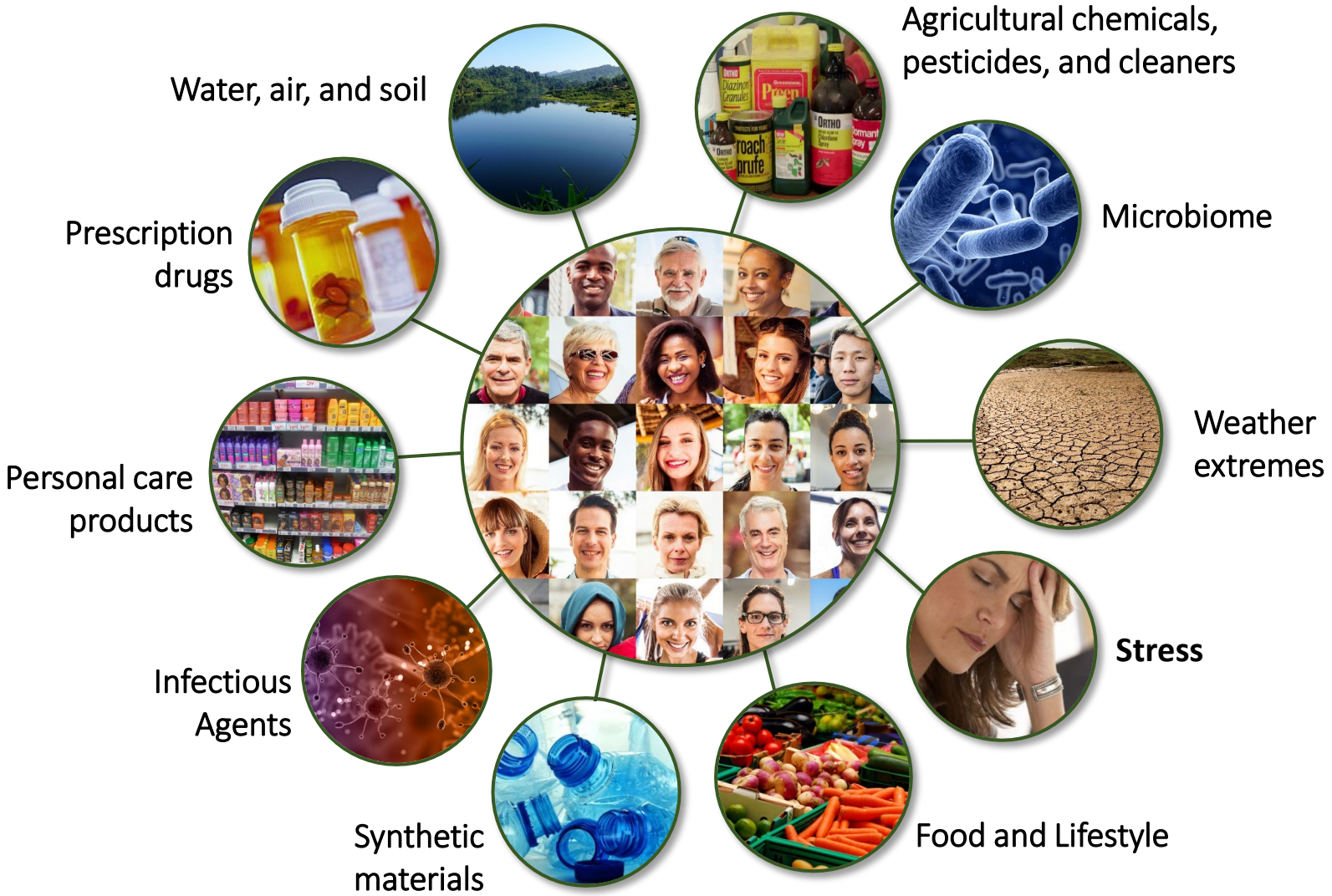


John Snow in 1856, image adapted from Wikipedia
Courtesy of Renato Sabbatini CC BY-SA 4.0



Original map by John Snow showing the clusters of cholera cases in the Broad Street outbreak, drawn and lithographed by Charles Cheffins

What is our “Environment”?



Key Exposure Questions

- Timing
  - Acute vs. Chronic
  - Critical Developmental Windows
  - Ongoing vs Past History
- Mixtures are the Reality
  - Additive at Environmental Levels
- What do we Measure?
  - Analytical Issues
  - Responses, rather than Chemicals
    - E.g., E-screen

Real World Exposure: It's always Mixtures

- To do mixtures, must know dose/responses – can't simply add up effects
- Effect evaluation at realistic exposure levels
- Multiple sources, multiple chemicals, multiple stressors
- Can accumulated low dose (background) exposure to multiple stressors cause harm?
- What about sequential rather than simultaneous exposures?
- For regulatory system, better to assume dose additivity than nothing
  - At low doses, likely to be additive
- Do you cumulate common downstream effect of common upstream target?
  - Must be predictive of adverse outcome!
- Need statistical models for complex mixtures that include multiple pathways, account for potential compensatory mechanisms or antagonism, include species differences, include kinetic interactions, models of sufficient similarity

Exposomics

Engaging communities in environmental health

NIEHS recognizes that communities across the country have concerns about environmental hazards in their neighborhoods, and how those hazards affect their health and the health of their children. For these reasons, NIEHS has had a long history of making sure communities play an integral part in the research process.

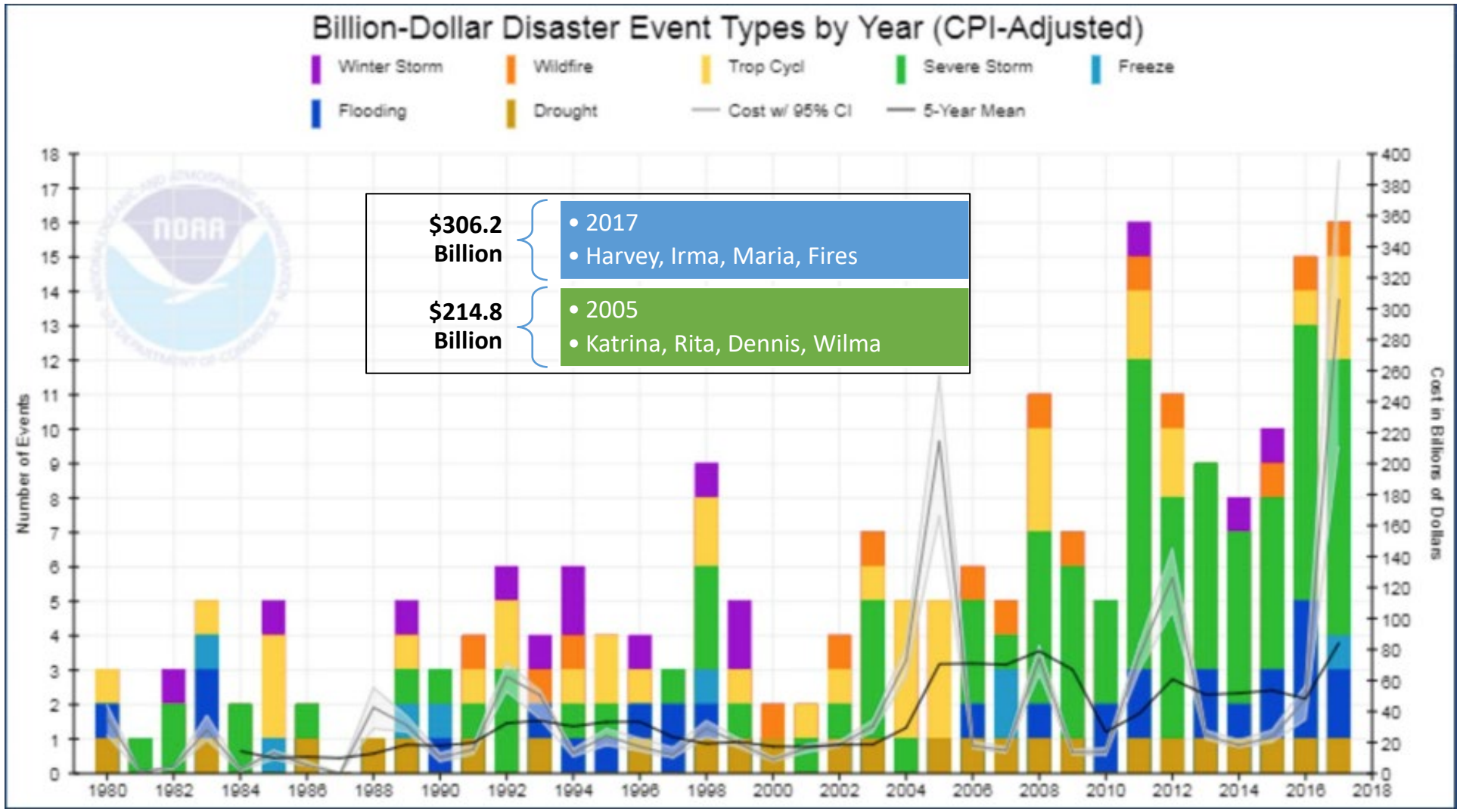
A community-based approach allows residents to share their knowledge on local environmental health issues.

There are many examples that illustrate the NIEHS commitment to supporting this collaborative approach, from the community forums held across the country, to efforts encouraging communities and scientists to work together on environmental public health research. The Partnerships for Environmental Public Health (PEPH) program, which began in 2008, provides opportunities for scientists, community members, educators, health care providers, public health officials, and policymakers to work together in all stages of research, including evaluation of research discoveries and dissemination of information to the public.

Community-engaged research

- Advances the research agenda
  - Values local knowledge
  - Traditional Ecological Knowledge
- Builds the capacity all partners
  - Fosters empowerment
- Increase diversity of EHS researchers
- Raises the environmental health literacy
- Bolsters youth engagement
  - Develop next generation of EHS researchers
- Strengthens commitment to partnerships

Photo courtesy of Urban Environment Program, Cornell University Cooperative Extension-New York City

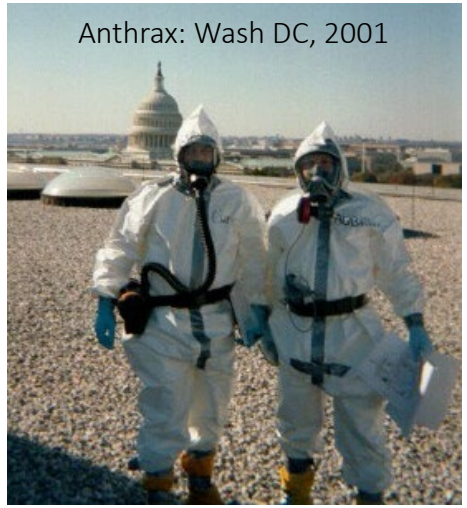


NOAA National Centers for Environmental Information (NCEI)
U.S. Billion-Dollar Weather and Climate Disasters (2018).
https://www.ncdc.noaa.gov/billions/

Improving the science base for protecting health during and after disasters

Need for Time Critical Research

- Physical & mental health impacts (acute & chronic)
- Safety & efficacy of medical treatments
- Risks of exposures & contamination
- Efficacy of decontamination/clean-up
- Risk factors for recovery and resiliency
  - **<u>Including vulnerable populations</u>**:
    - Pregnancy, children, lactating mothers
    - Elderly & those with pre-existing conditions
    - Communities with higher exposures



Disaster Research Response

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.

NIH Disaster Research Response (DR2) Program

Improving Disaster Responses, Reducing Health Impacts, and Preventing future harm through:

1. Ability to rapidly identify data gaps and research priorities
2. Improved processes to support data collection (IRB, funding)
3. Access to data collection tools and training for researchers
4. Engagement agencies, academia, workers, and communities
5. Integration into planning and emergency response system

Miller, et. al. Int.J, Env. Research & Public Health. 2016; 13:276.

DR2 Repository

- Increase speed and quality of epidemiologic & clinical research
- Promote standard measures, replication, & cross comparisons

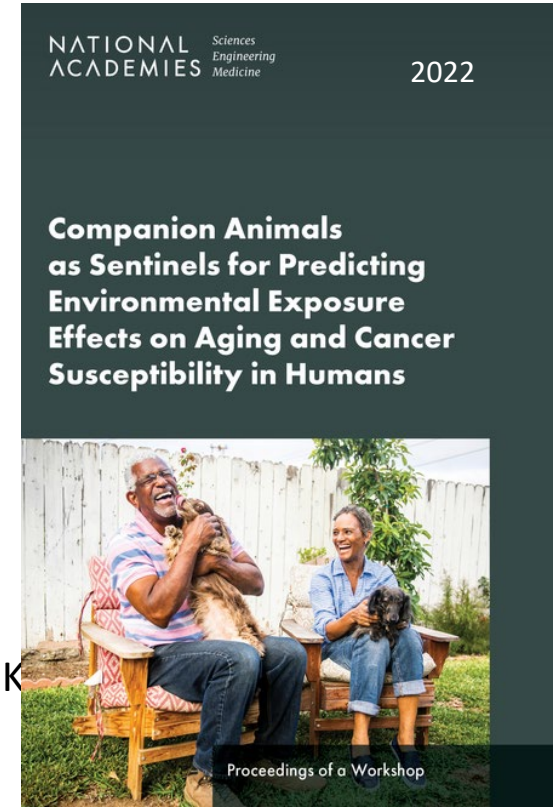
- **>350 Readily Available Data Collection Tools, Protocols, etc.**
  - ***Enrollment & consent, participant tracking, health history & symptoms, mental health, exposure & diet, social support & resiliency, etc.***
  - ***Tools and Resources; Research Protocols; Training and Exercises; Funding Opportunities***

Rapid Acquisition of Pre/Post Incident Disaster Data *(RAPIDD) Protocol*

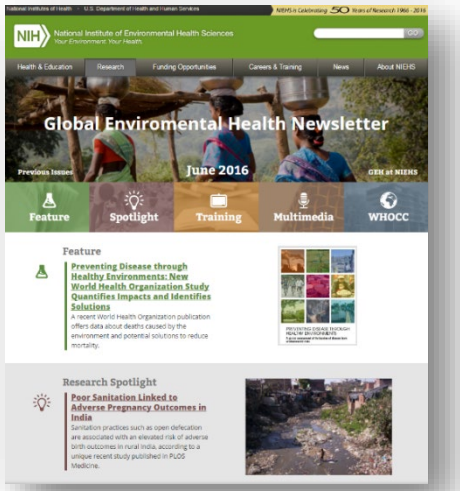
- Pre-reviewed by IRB *(NIEHS IRB provisional approval granted May 2015)*
- Menu of standardized study instruments (select to fit the situation)
- Contact & health information, medical testing, biospecimens, etc.
- *NIEHS Centers, Intramural NIEHS have RAPIDD in place*
  - **Specifics of the situation submitted to IRB before starting**
    - Research setting, sample size, accrual duration, procedures, questionnaires, outcomes of interest

Going Forward

- Holistic approach
- Exposure – Acute vs. Chronic
  - Chronic Exposure leading to Ongoing Effects
  - Acute Exposure leading to Long Term Effects
- Health
  - Respiratory, Neurological, Immune, Reproductive/Developmental, Liver, K
  - Mental Health
- Establish Both Exposure & Disease Registries
  - Better late than never
  - Periodic Assessments
  - Involve special populations as appropriate
- Educate Clinicians
  - Establish Federally Funded Clinic
- *Listen* to Community



Thank you!



Questions???