Risk Communication in Emerging Contaminants

NGWA PFAS Guidance

Mel Harclerode, PhD, BCES, ENVSP
Edward Emmett, MD
Linda Hall, PhD

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CDM Smith

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Perelman School of Medicine University of Pennsylvania

GSI Environmental

NGWA The Groundwater Association

Risk Communication:
PFAS-Impacted Stakeholders

- What makes these potentially harmful compounds unique?
- How do we talk about these contaminants with public stakeholders?
- What does the road ahead look like?

What makes these potentially harmful compounds unique?

Risk Communication Challenges

- High sense of uncertainty
  - potential health effects of exposure
  - low health advisory with evolving regulatory policy
  - sampling and analytical procures being developed
  - interpretation of PFAS blood levels
  - effectiveness of treatment technologies is not fully understood
- Multiple point and non-point sources across market sectors
  - regional groundwater contamination
  - drinking water supply impacts

How do we talk about these contaminants with public stakeholders?

Risk Communication:

3 Dimensions

- *"…to assist affected communities [to]*
  - ***understand*** *the processes of risk assessment and management,*
  - *form scientifically valid* ***perceptions*** *of the likely hazards, and*
  - ***participate*** *in making decisions about how risk should be managed"*

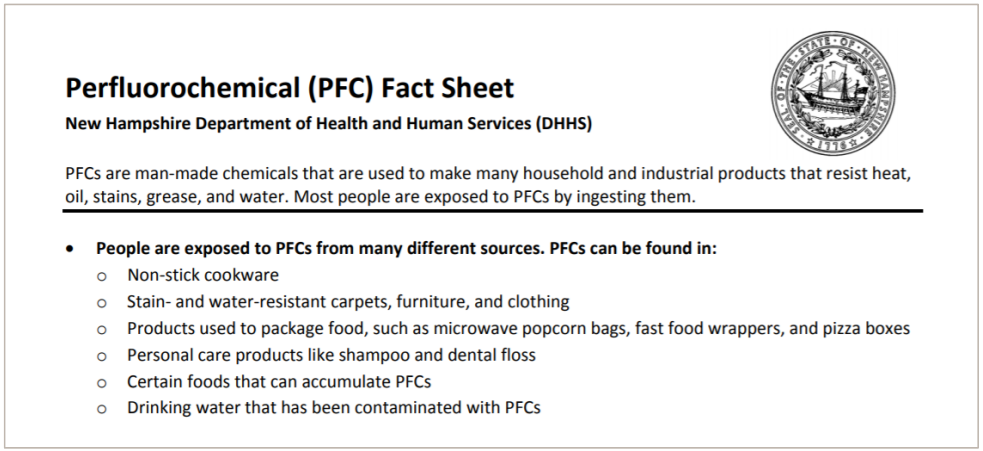
(USEPA, 2007)

3 Dimensions of Risk Communication

Fact Sheets & Frequently Asked Questions

Understand

- **Table compilation** in National Groundwater Association (NGWA) *Groundwater and PFAS: State of Knowledge and Practice, 2018*



Perfluorochemical (PFC) Fact Sheet

New Hampshire Department of Health and Human Services (DHHS)

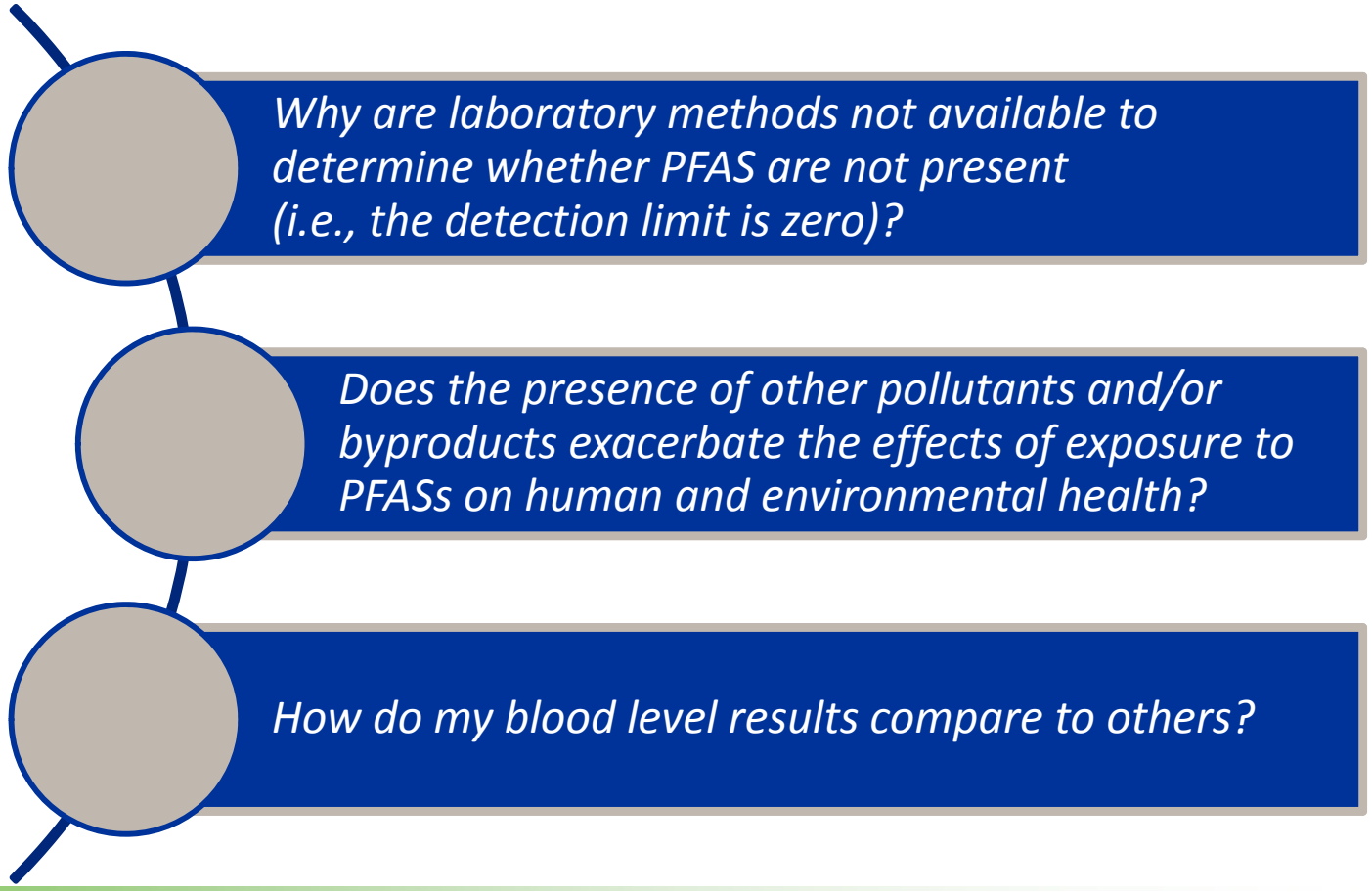
PFCs are man-made chemicals that are used to make many household and industrial products that resist heat, oil, stains, grease, and water. Most people are exposed to PFCs by ingesting them.

- **People are exposed to PFCs from many different sources. PFCs can be found in:**
  - Non-stick cookware
  - Stain- and water-resistant carpets, furniture, and clothing
  - Products used to package food, such as microwave popcorn bags, fast food wrappers, and pizza boxes
  - Personal care products like shampoo and dental floss
  - Certain foods that can accumulate PFCs
  - Drinking water that has been contaminated with PFCs

https://www.dhhs.nh.gov/dphs/pfcs/documents/pfc-fact-sheet.pdf

- Include various modes of distribution

NGWA Guidance *FAQs*



3 Dimensions of Risk Communication

Risk Perception

- *Risk:* relationship between the probability of harm associated with an activity and vulnerability of exposed elements

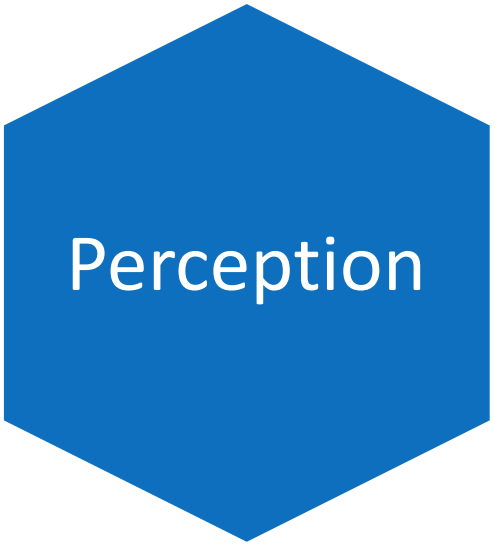
  (Slovic 1987, 2003; UN-ISDR, 2002)

- *Risk perception:* "people's beliefs, attitudes, judgements and feelings, as well as the wider cultural and social dispositions they adopt toward hazards and their benefits"

  (Royal Society, Pidgeon et al., 1992, p. 89)

3 Dimensions of Risk Communication

Heightened Sense of Risk to PFAS



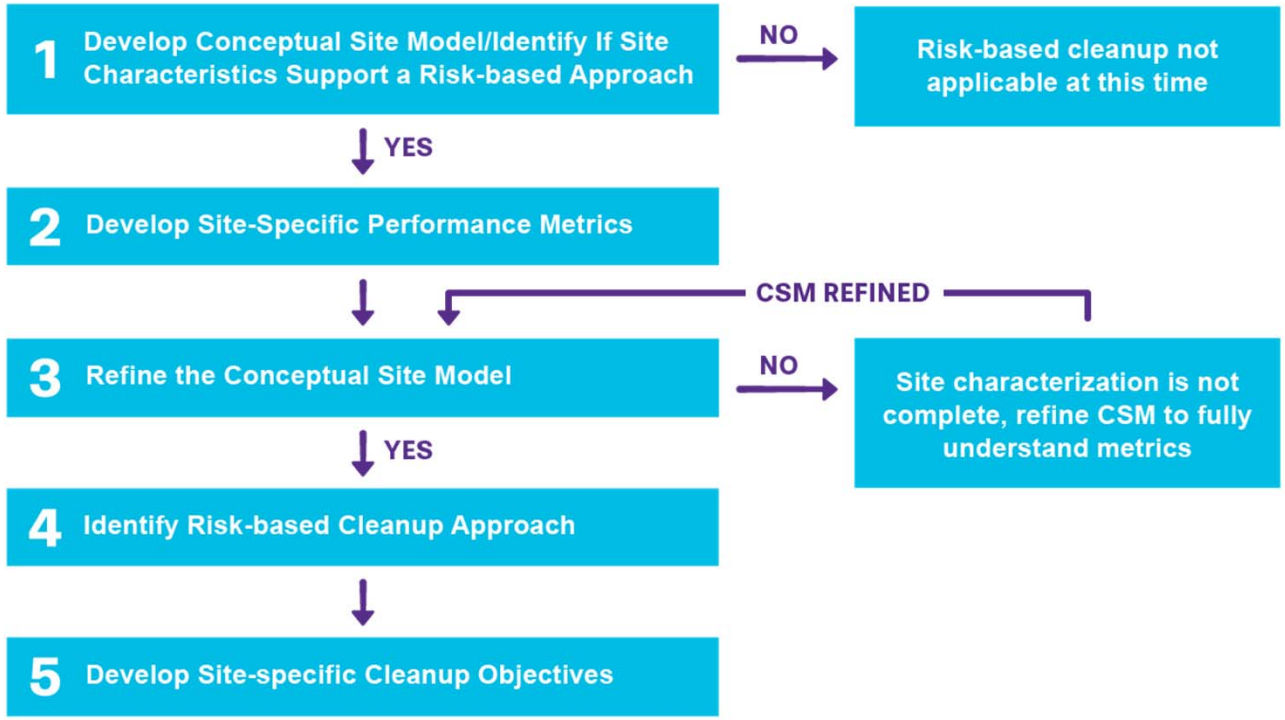
Risk Perception	**Amplification: Heightened sense of risk** due to emerging characteristics and physical, social, psychological, demographic factors
Challenge	Achieve **stakeholder acceptance** of your approach to managing the risk
Solutions	1. Communicate **Transparent CSM**, include uncertainties 2. Secondary risk management **performance metrics** • Source control/ removal • Reduction in contaminant bioavailability/loading • Mitigation of exposure pathways

3 Dimensions of Risk Communication

Overcome Risk Perception Barriers:

Sustainable Risk Management Framework

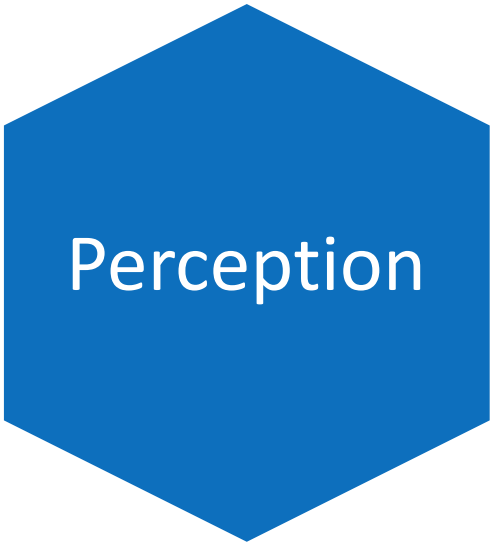
Perception



Source: Harclerode et al., J Environ Manag, 2016.

3 Dimensions of Risk Communication

Diminished Sense of Risk to PFAS



Risk Perception	**Attenuation: Diminished sense of risk** due to physical, social, psychological, demographic factors
Challenge	**Inaction** in risk reduction measures o Blood testing o Installation of water treatment system o Use of an alternate water source
Solutions	1. Identify site-specific **risk perception factors** and integrate into the community engagement plan* **2. Facilitate communications** that allow options to be used in **personal** risk reduction **decisions*** **Little Hocking Site, Ohio Case Study*

3 Dimensions of Risk Communication

Participate

Surveys

Focused groups and interactive meetings

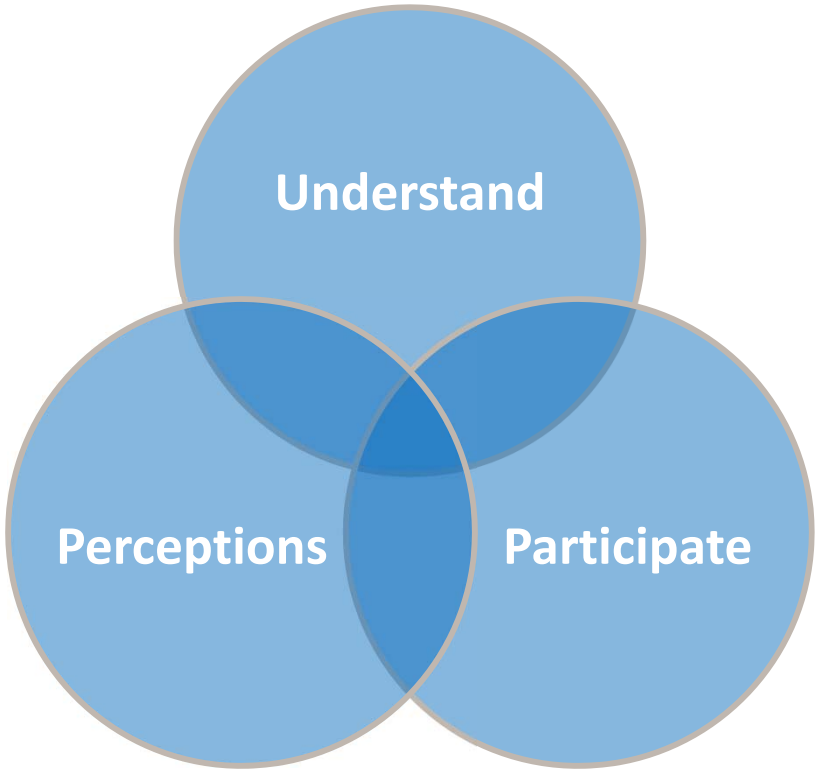
- Risk perception factors
- Quality of life impacts indicators, perceived local economic benefits, and community well-being

Multi-criteria decision analysis

- Evaluate stakeholder values in the context of risk reduction measures and performance metrics

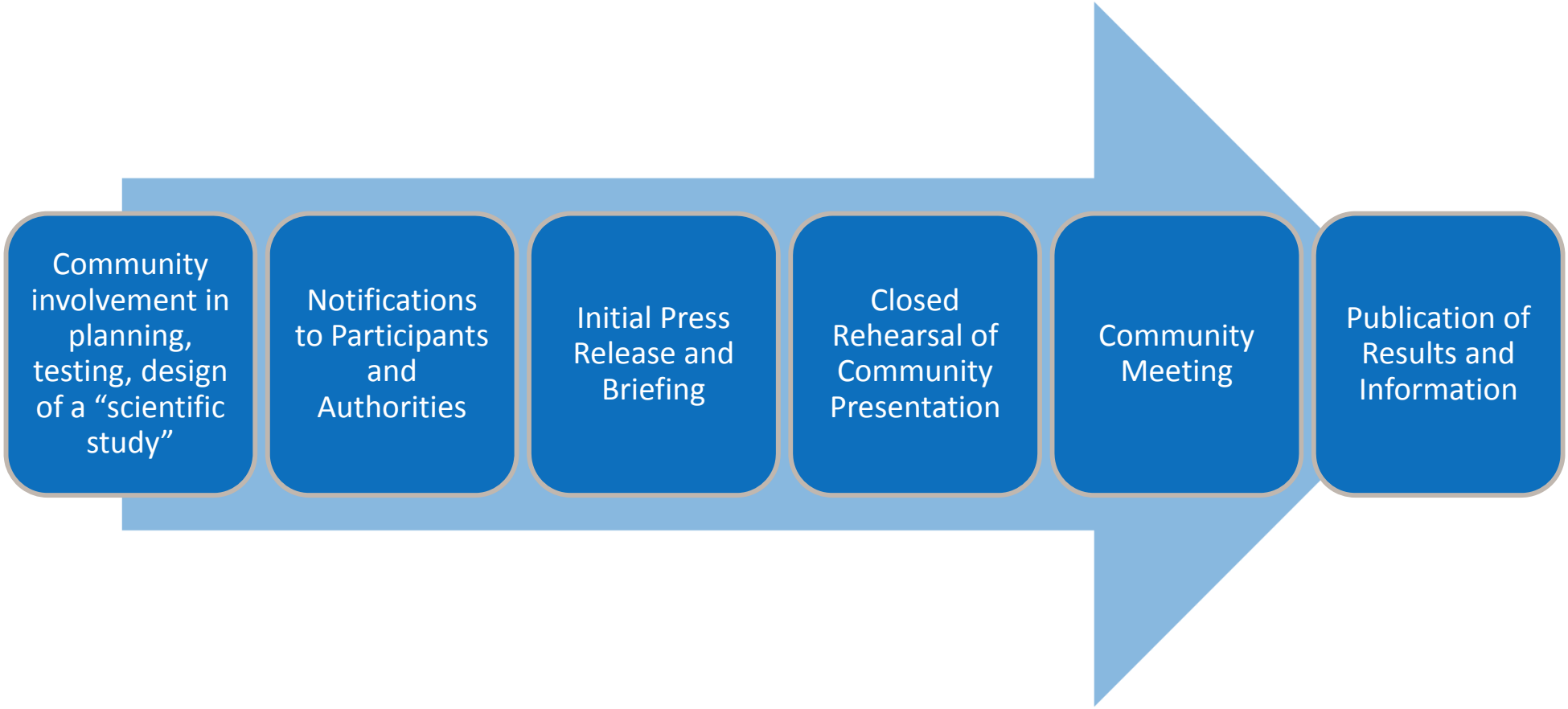
Community Engagement Plan

- Continuous exchange of ideas
- Promotes trust and capacity building
- Identifies vulnerable sub-populations and stakeholder context
- Multiple modes and mediums of engagement
- Community acceptance and ownership of the process



Little Hocking Site, Ohio Case Study

Community Engagement Plan Milestones



Emmet et al., 2009 Journal of occupational and environmental medicine

Little Hocking Site, Ohio Case Study

Ascertain and Address Community Expectations

- General Principles of Communication Established by CAG
  1. Results should be released promptly, but not before the investigators are comfortable in doing so;
  2. Individual participants should receive their results first; to avoid participants first learning study results from the press, neighbors or friends;
  3. The press should be informed in a manner that is both timely and allowed the investigators to control the message as much as possible;
  4. The study must remain a credible source of information;
  5. Communications should maximize constructive responses to the findings; and
  6. Communications should minimize pointless concern.

Emmet et al., 2009 Journal of occupational and environmental medicine

3 Dimensions of Risk Communication

Case Study: Little Hocking Site, Ohio

Role of Risk Perception

Participate

Risk Perception Factors

- Resident's knowledge and associated illnesses
- Ability to access a physician
- Presence of vulnerable sub-populations
- Proximity of individual residences to study

Outcome

- Approximately 95% of the study participants had made a change in their water source
- A median reduction of 26-percent in blood serum PFOA levels
- Reestablished trust with authorities

Emmet et al., 2009 Journal of occupational and environmental medicine

What does the road ahead look like?

Road Ahead

- Early and multi-modal stakeholder engagement
- Integration of secondary performance metrics and risk perception factors
- Collaborate with academia, public health professionals, and community groups to maximize public outreach and education

ITRC PFAS Guidance

INTERSTATE TECHNOLOGY & REGULATORY COUNCIL
Advancing Environmental Solutions

- Build upon NGWA Guidance
- Include partnering with academia, as third neutral party
  - Bennington College, VT “Understanding PFOA” Class
- Showcase stakeholder engagement case studies
  - Little Hocking Site, Ohio
  - Environmental Council of the States (ECOS) compilation

Thank You & Questions

- Melissa Harclerode, PhD, BCES
  - Phone: 732-590-4616
  - E-mail: harclerodema@cdmsmith.com

- Co-Authors:
  - Edward Emmett, MD
    - Phone:
    - E-mail: emmetted@pennmedicine.upenn.edu
  - Linda Hall, PhD
    - Phone:
    - E-mail: lhall@gsi-net.com