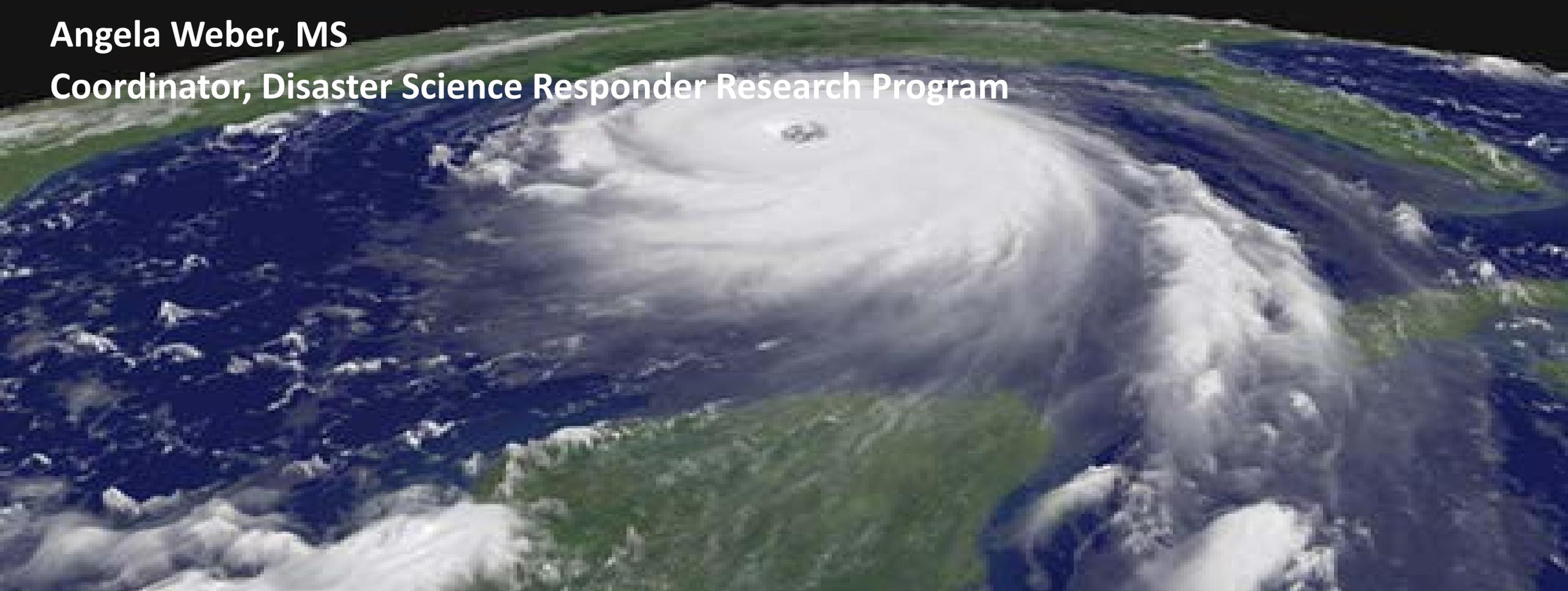


NIOSH Disaster Science Responder Research Program: Updates

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The findings and conclusions in this report are those of the author(s) and do not necessarily represent the views of the National Institute for Occupational Safety and Health.

How Does NIOSH Respond to outbreaks and emergencies?



Emergency Preparedness and Response Office

Mission: To protect the health and safety of emergency response providers and recovery workers

- Created in response to 9/11
- Emergency planning and response coordination for NIOSH
- Provide technical assistance during incidents (onsite or remote)
- Coordinate NIOSH field deployments
- Staff the Worker Safety and Health Team in the CDC Emergency Operations Center when activated
- Coordinate with the OSHA through the National Response Framework Worker Safety and Health Annex
- ***Promote research to protect responders ****

Disaster Science Responder Research (DSRR) Program

- Began Jan 2014 as the Disaster Science Research Initiative
- Presented to the BSC Members in June 2014
- Held external stakeholder workshop in July 2014 in Atlanta
- Invitees (13) represented academia, health departments and the responder community
- RAND developed short paper describing trends and themes of meeting

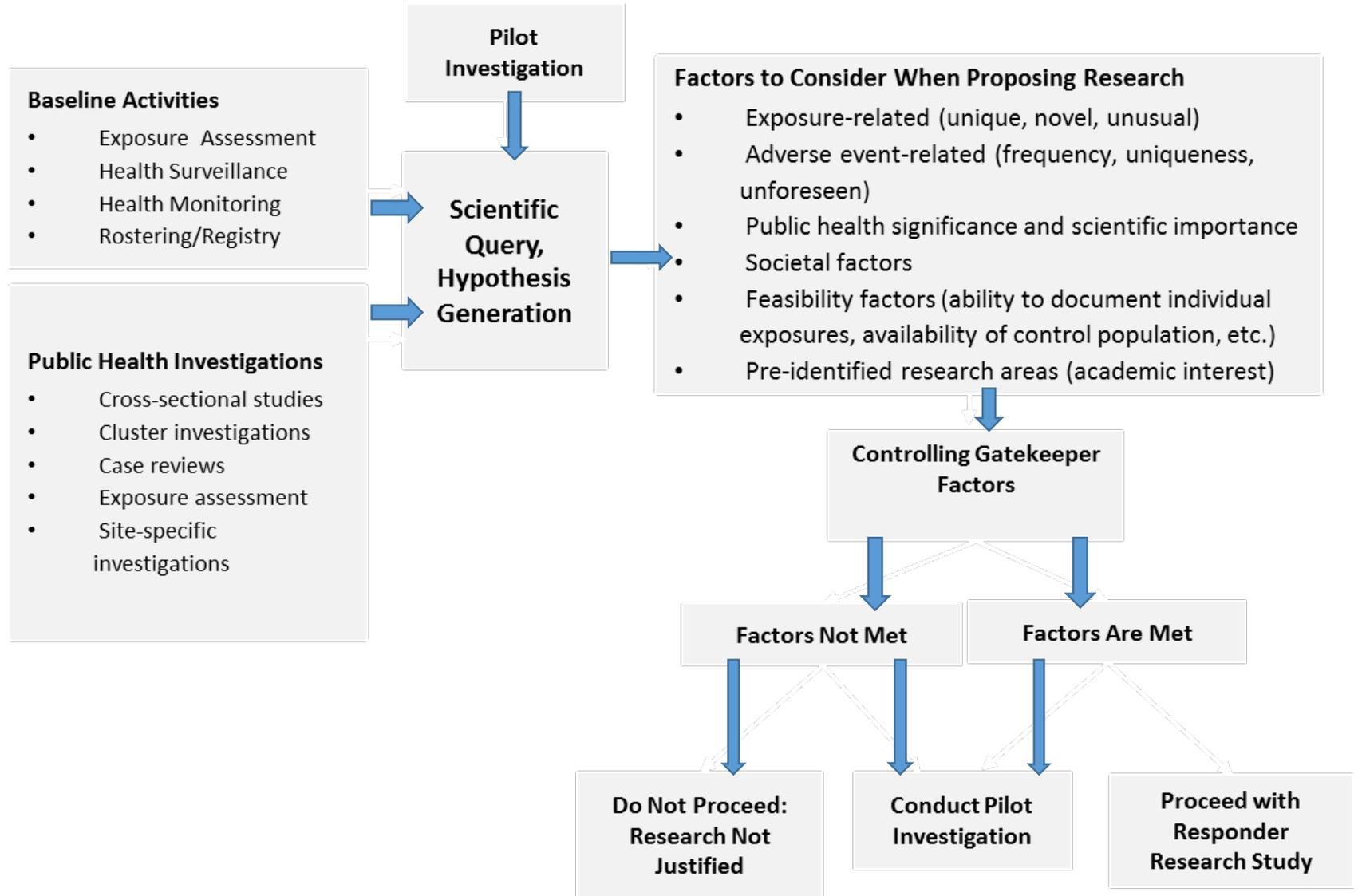
<https://www.cdc.gov/niosh/topics/disasterscience/default.html>

What is Disaster Science Research?

- Health Studies During a Disaster
 - Non-research activities
 - Public health investigations
 - Pilot investigations
 - Responder health research



Process for Determining When to Conduct Research



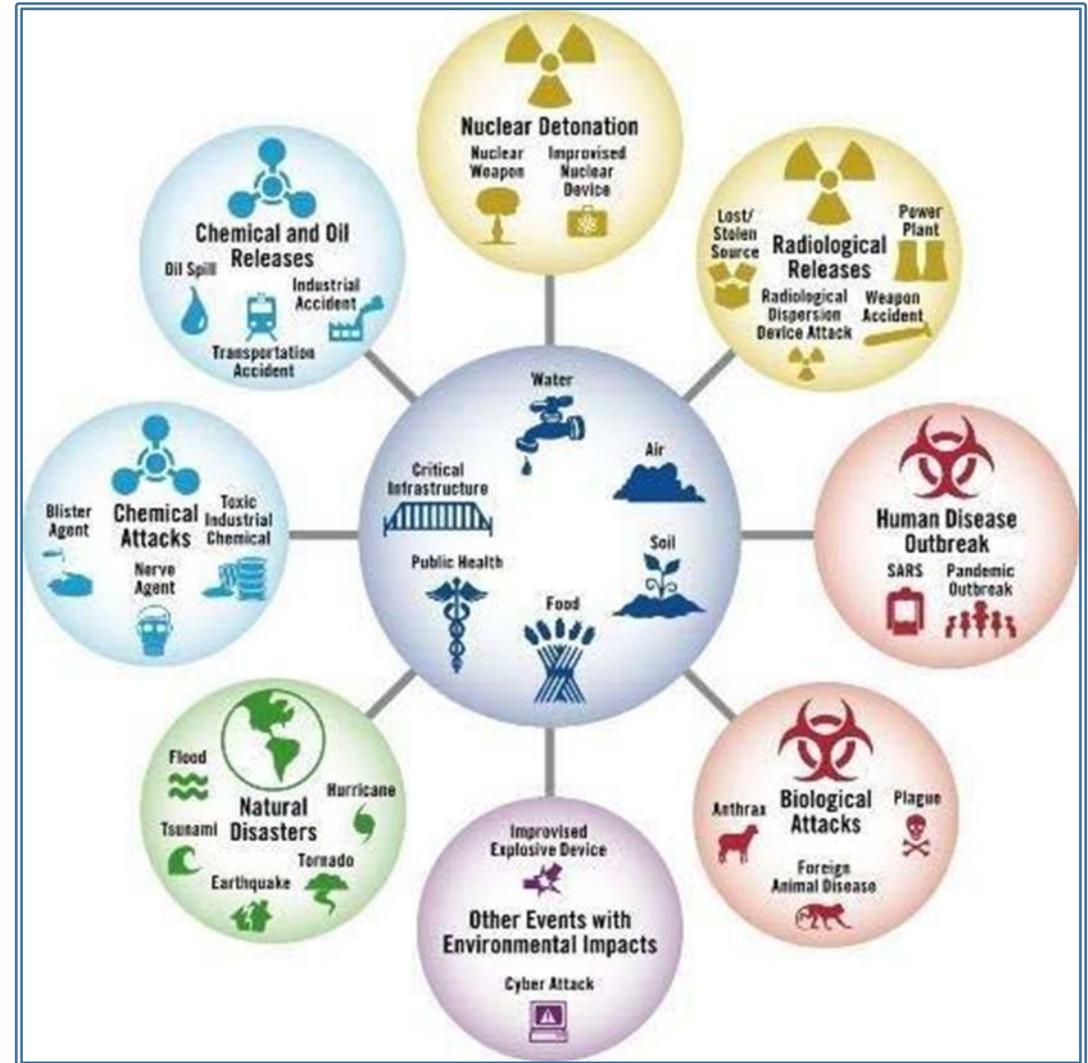
Emergency Response and Recovery Worker Research *Examples*

- Ebola
- Deep Water Horizon
- Anthrax
- SARS Outbreak
- Hurricane Sandy
- Hurricane Katrina
- World Trade Center



Definitions

- **Responder:** Response and recovery workers, traditional first responders, contractors, volunteer organizations, healthcare workers, public health personnel, construction and utility workers
- **Disaster Types:** All hazards, intentional & naturally occurring, small & large-scale incidents, all phases of a response



An Inventory of EPA's Tools for Enhancing Community Resilience to Disasters (2016)

DSRR Program: Internal Steering Committee

- Began March 2015
- Developed an internal strategic roadmap in FY15
- Identified priority research topics in FY16
- Participating on federal interagency working groups
 - HHS/ASPR Science Preparedness Research Interagency Team
 - HHS/ASPR Recovery Coordination Committee
- Meeting with stakeholders and partners



DSRR Program Strategic Goals

- **# 1: Identify critical topic areas for responder research**
- **# 2: Address major challenges associated with conducting research during disasters**
- #3: Identify data collection capabilities and information resources to be utilized for research purposes
- #4: Ensure research findings and lessons learned are translated into practice



Research Activities *(Beginning FY17)*

Strategic Goal # 1: Identify critical topic areas for responder research

Reviewed research gaps previously identified during responses

Reviewed internal AARs from responses and exercises

Prepared one-page research project summaries for priority topics with cost estimates

Identified potential funding sources

1. Risk Assessment Tool for PPE Selection and Prioritization During Infectious Disease Outbreaks



- **Problem:**

- Novel hazards present challenges to recommend, select, procure, and prioritize use of PPE
- Demand for PPE in the US is often larger than the available supply

- **Solution:**

- Use “control banding” to guide selection using available data, observations, and assumptions based on past experience and decision logic.

- **Output:**

- Develop mobile app tools to assist in the selection and prioritization of control options covering a wide range of exposures, and jobs or tasks.

Figure 1

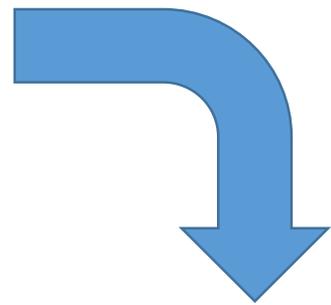
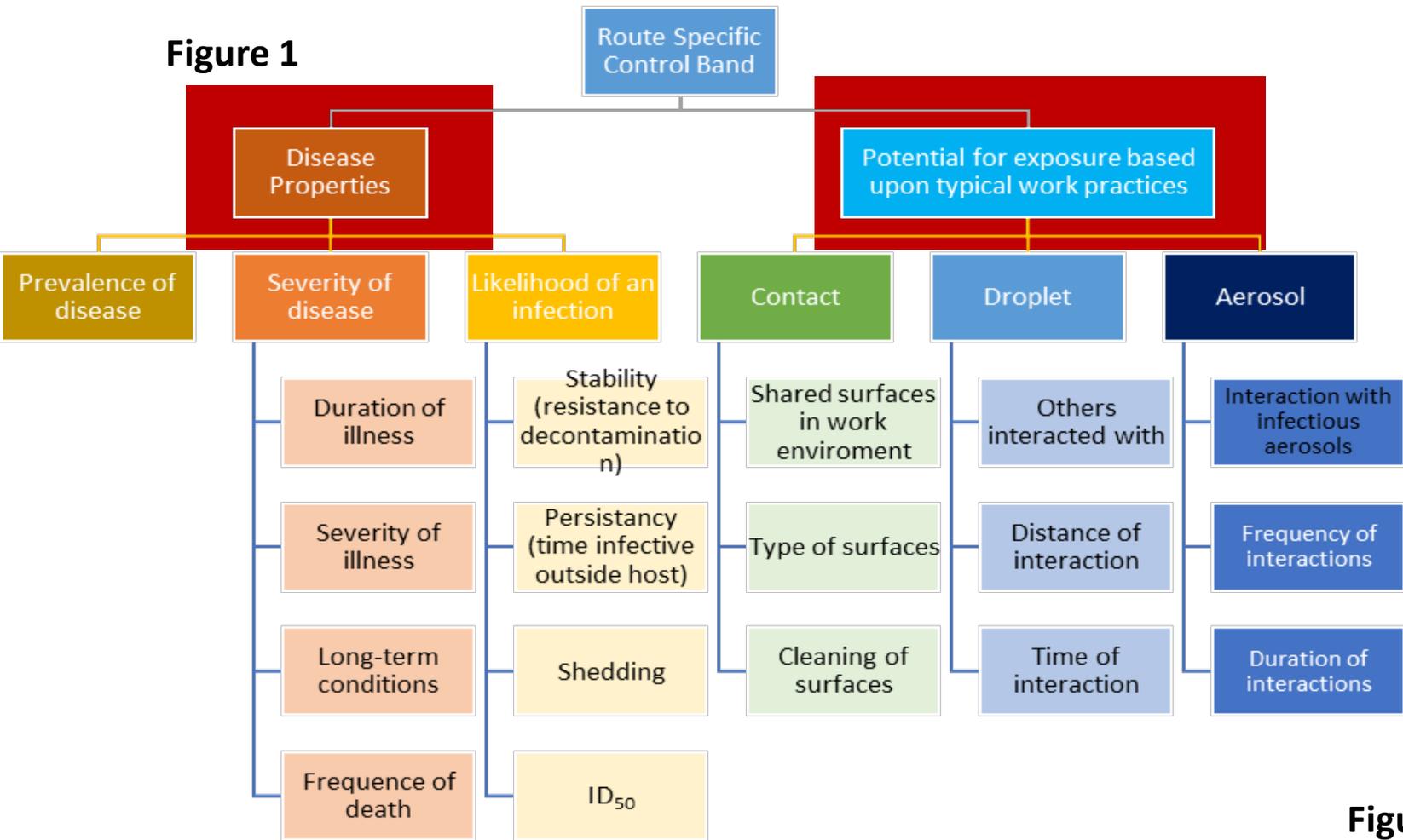
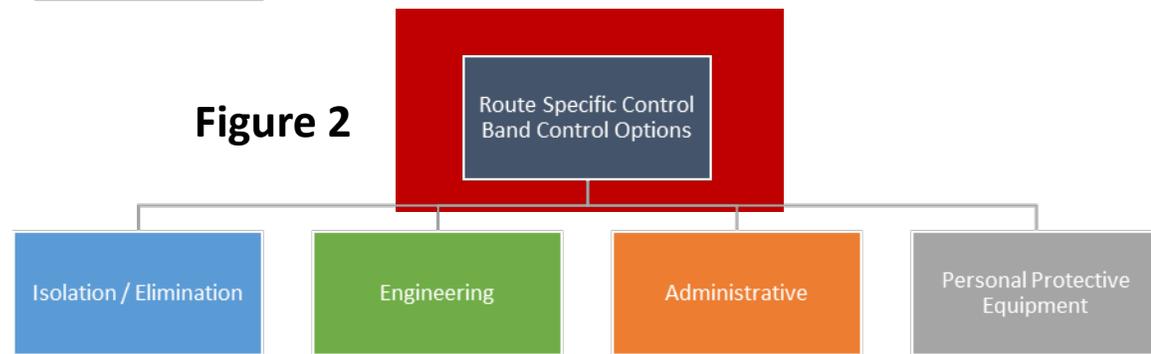
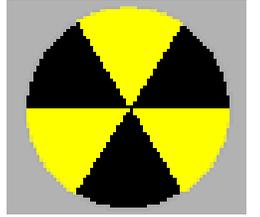


Figure 2



2. Modeling Radiation Exposure of First Receivers in Shelters, Reception Centers, and Hospitals from Contaminated Evacuees



- ***Problem:***

- Evacuees exposed to dangerous levels of external ionizing radiation pose a health hazard to first receivers

- ***Solution:***

- In the absence of monitoring data during early hours of response, model potential radiation exposure to first receivers and volunteers performing triage in public shelters after a nuclear detonation.

- ***Output:***

- A manuscript will be submitted for publication by the end of this FY

3. Development of Exposure Assessment Plans for the First 72 hours Following a Disaster

- ***Problem:***

- Exposures during first 72 hours often most intense, unique, and most poorly characterized
- Exposure monitoring during this period presents many challenges, given immediate emphasis on critical response activities

- ***Solution:***

- Provide responders the tools needed to assess worker exposures from start of response to identify immediate remedial actions

- ***Output:***

- Model exposure assessment plans to be piloted in actual disasters to improve responder safety and health

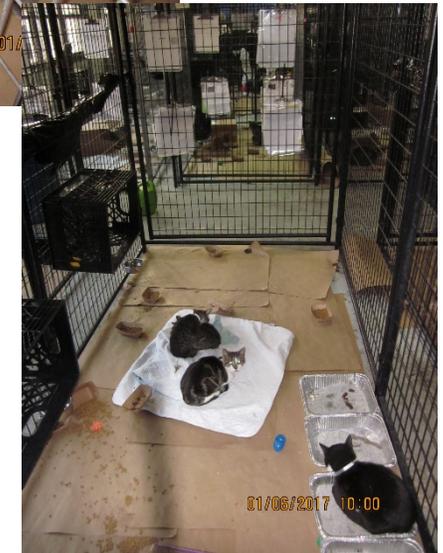
4. Potential for Aerosol Transmission During the Care of Cats Infected with H7N2

- In Dec 2016, H7N2 identified as source of an ongoing outbreak among cats in an animal shelter in NYC
- Spread to multiple shelters in NYC and PA
- One shelter employee became infected
- On Dec 29th, the entire feline population in NYC's shelter system was transported to a temporary quarantine facility.



Potential for Aerosol Transmission During the Care of Cats Infected with H7N2

- Risk of inhalation exposure unknown
- Utilized rented warehouse space so no ventilation controls in place
- Involved over 300 emergency response ASPCA volunteers, from 33 different states
- Air and surface samples collected throughout the facility for viable and nonviable agent



5. HHS Ignite Award: Rapid Fit-Testing Methods for N95s During a Disaster Response

- Consist of a 3-month program; assigned innovation mentors
- Long-standing problem related to fit-testing during responses leading to use of respirators without fit-testing
- Goal is to address challenging policies and procedures to identify practical, rapid methods for field use
- Identify best evidence-based solutions for implementation



6. Developing Rapid Methods to Detect Mental Health Risk Among Law Enforcement Officers

- ***Problem:***

- Increase rates of PTSD, depression and suicide among LEOs
- Health outcomes not detected early enough

- ***Solution:***

- Identify exposures that may likely lead to health outcomes so that medical interventions can be applied

- ***Output:***

- Development of a mobile app that will serve as a self-triage tool for LEOs that will document exposures on a daily basis and indicate when medical intervention may be needed

Strategic Goal # 2: Address major challenges associated with conducting research during disasters

Develop rapid IRB protocols

Explore rapid funding options

Evaluate rapid peer review protocols

Acknowledgements

DSRR Steering Committee Members

Co-Chairs: Beth Whelan (DSHEFS), Angela Weber (OD)

John Snawder (DART)

Ron Shaffer (NPPTL)

Bruce Bernard (DSHEFS)

John Myers (DSR)

Steve Martin (RHD)

David Caruso (OD)

Ann Hubbs (HELD)

Questions for BSC Members to consider...

- Q1: Considering limited resources, are there novel approaches NIOSH could consider in order to collect occupational surveillance data during a response?
- Q2: How might NIOSH prioritize research topics considering the numerous disaster types and emerging issues?
- Q3: Because we are in the middle of hurricane season, what research topics might NIOSH pursue?

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DSRR Homepage

<https://www.cdc.gov/niosh/topics/disasterscience/default.html>

