

# What Do We Already Know About Processes by Which Individuals and Organizations Respond to Hazards?

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# Warning Channels

## I Types

- Print: newspapers, magazines, brochures
- Electronic: commercial radio and television, \*telephone, route alert (broadcast from a moving vehicle), tone alert radio, siren, \*internet
- Face-to-face (\*dyadic conversation or group presentation)  
\*Channels for peer networks

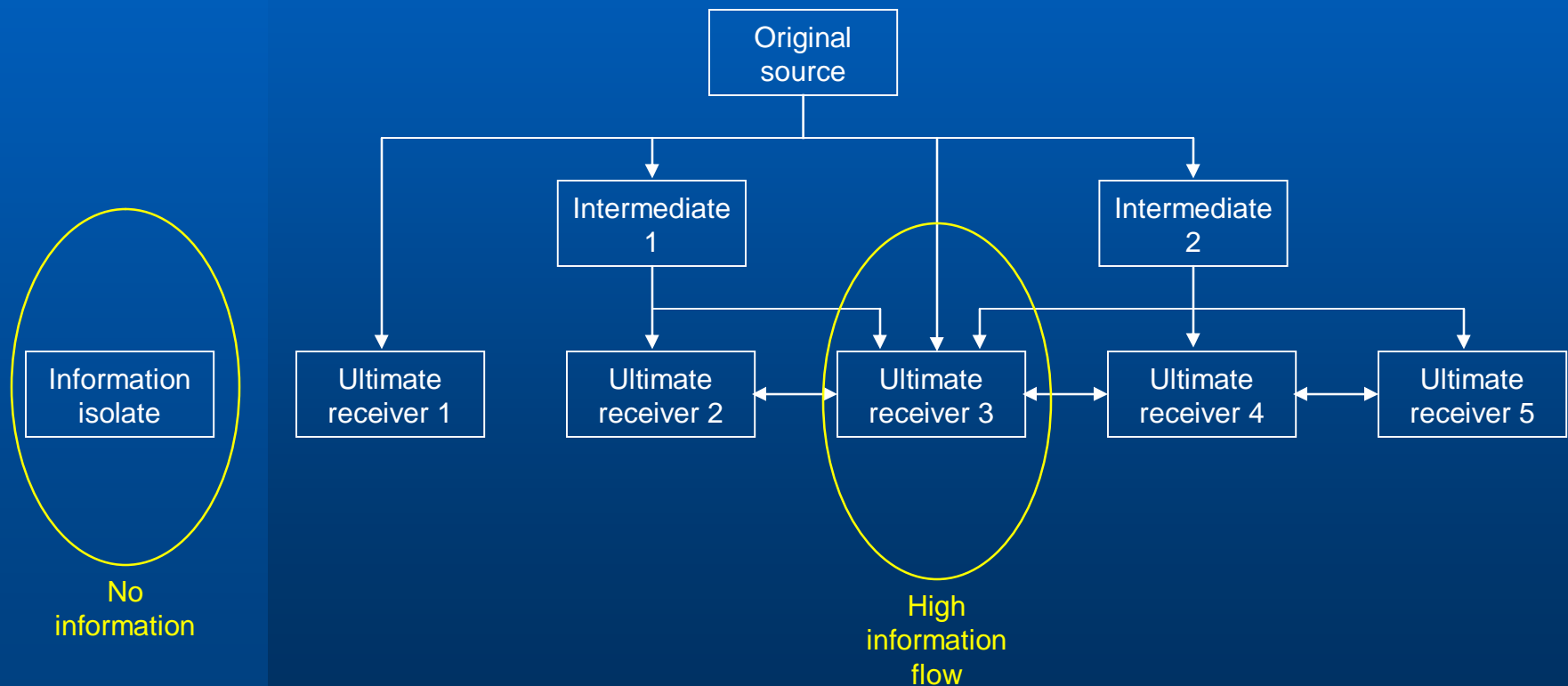
## I Characteristics

- Dissemination rate and precision, penetration of normal activities, message specificity/distortion, sender and receiver requirements, and feedback (receipt verification).

# Warning Channels

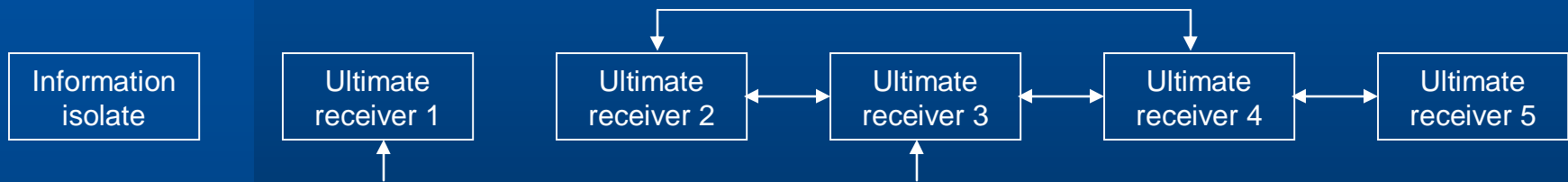
- | Each channel has advantages and disadvantages.
  - Channels that provide the fastest dissemination often provide the least information (e.g., mechanical sirens).
  - | People differ in their channel access and preferences.
- | Public officials typically use *multiple* warning channels in disasters to ensure that all those in the risk area receive a warning.
- | Peers relay information (informal warning systems)

# The Warning Network Model for Remotely Detected Events

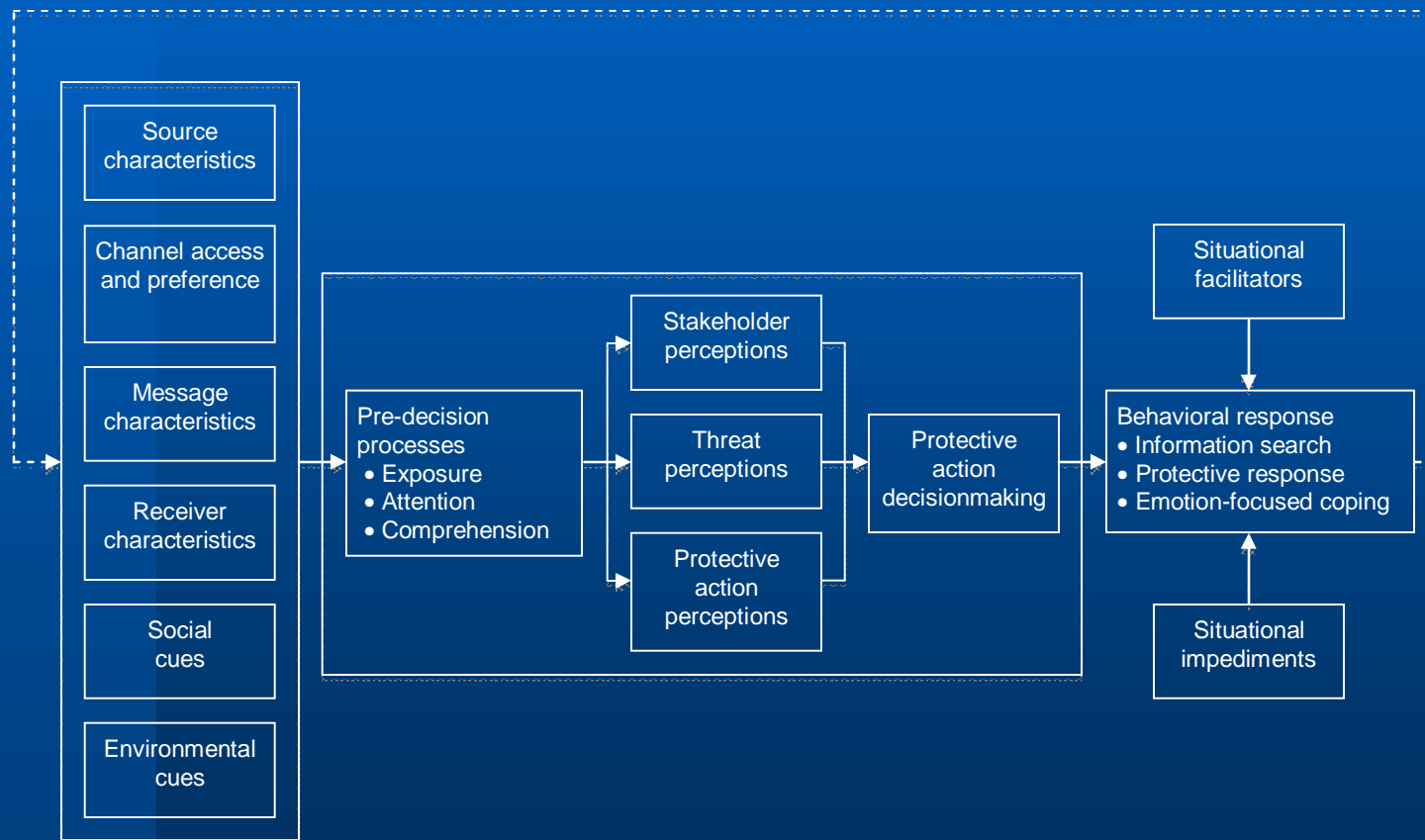


# The Warning Network Model for Locally Detected Events

In some disasters, all warnings come from peers—friends, relatives, neighbors, or coworkers.



# Protective Action Decision Model



# Warning Source Characteristics

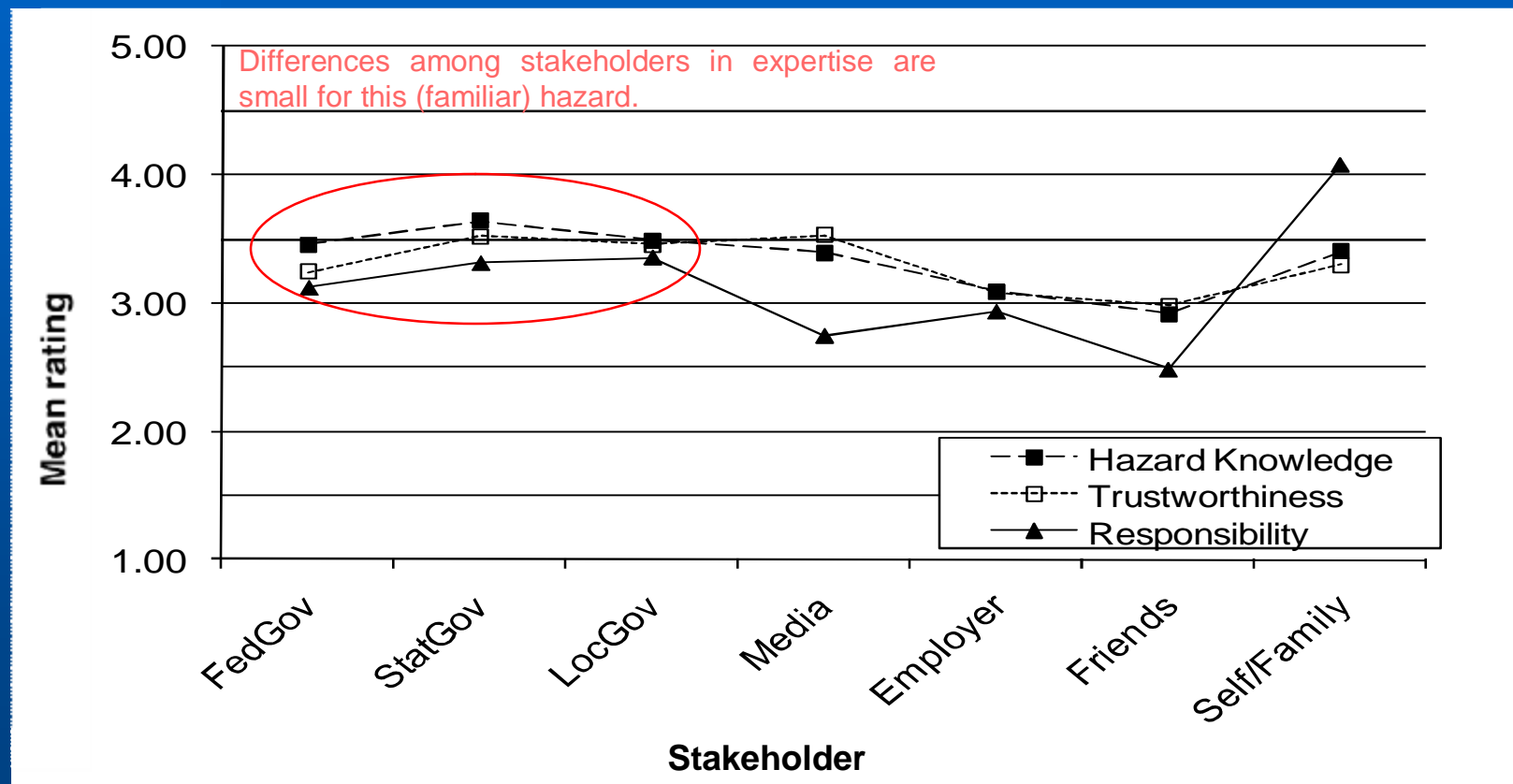
## I Types

- Authorities (government, scientists, industry)
- News media (print, broadcast, internet)
- Peers (friends, relatives, neighbors, coworkers)

## I Characteristics

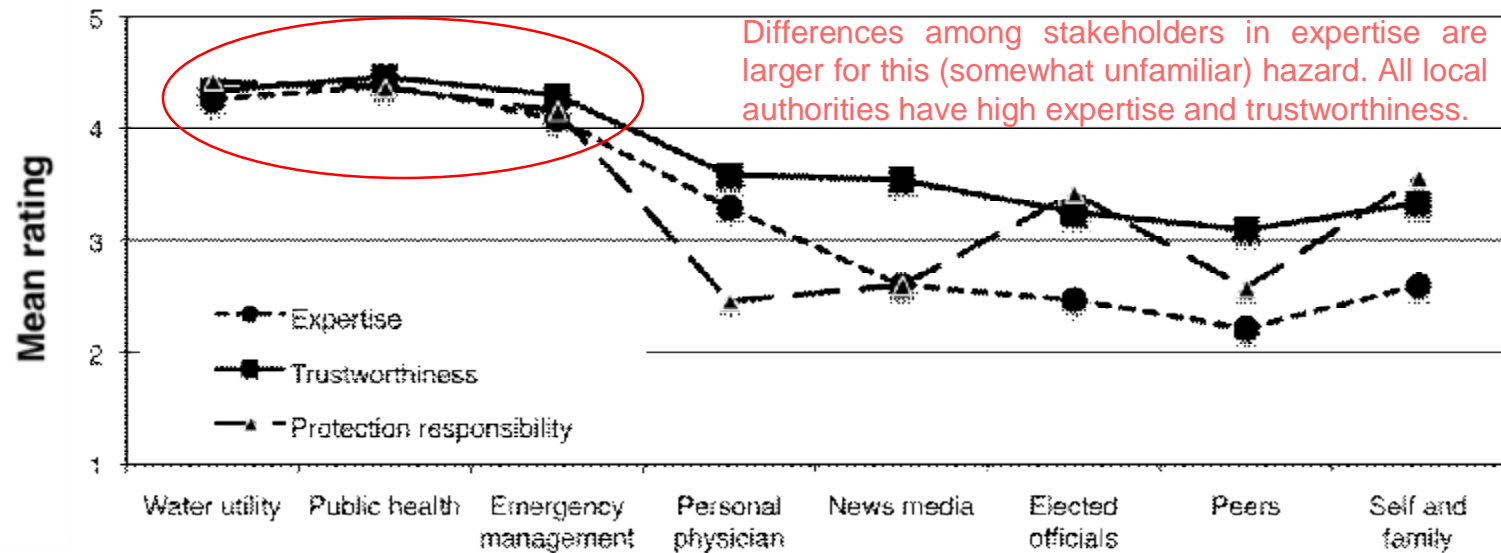
- Expertise
- Trustworthiness/honesty
- Protection responsibility

# Perceptions of Stakeholder Characteristics for Earthquakes

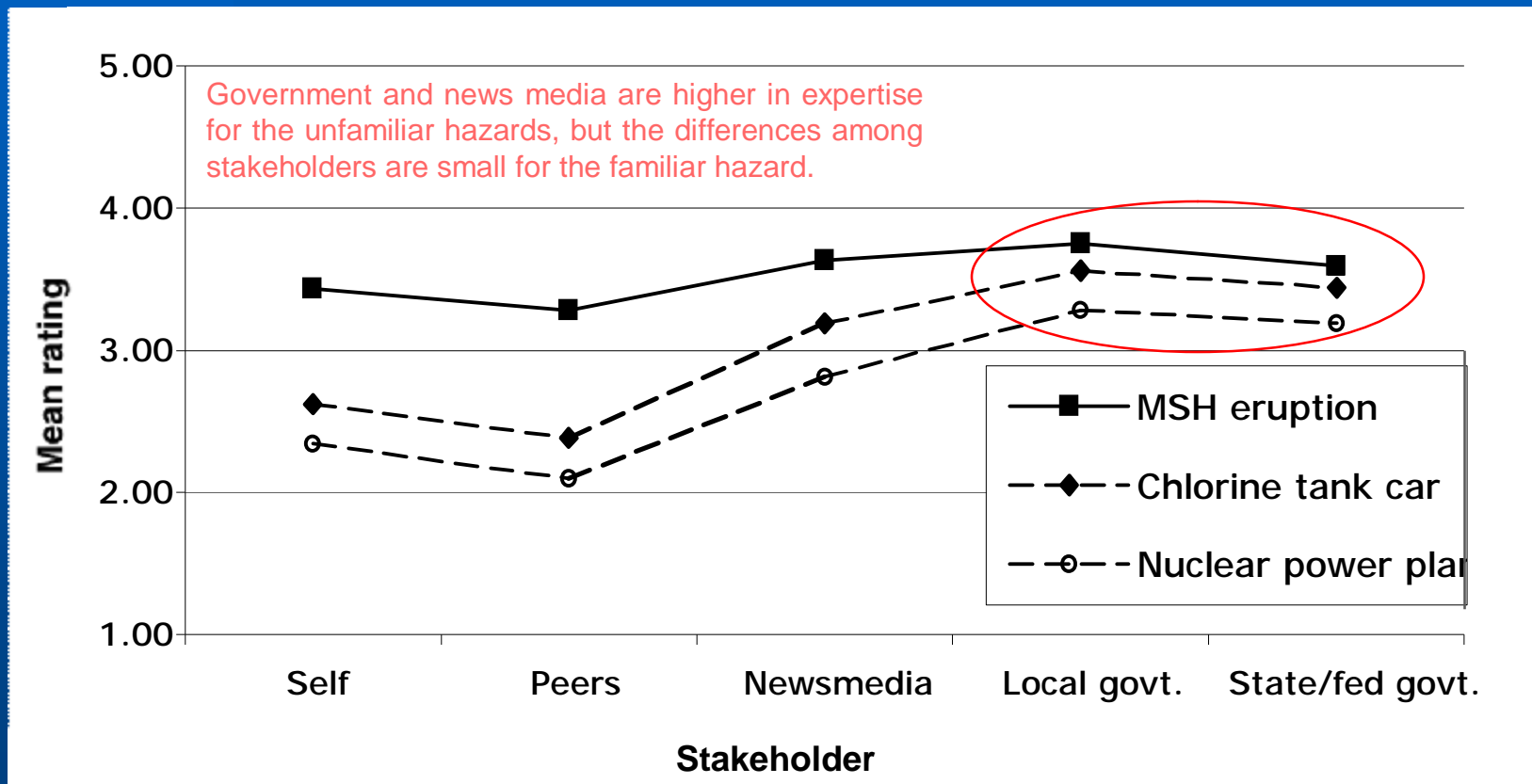




# Perceptions of Stakeholder Characteristics for Water Contamination



# Perceptions of Stakeholder Expertise for Multiple Hazards



# Warning Message Content (Recommended)

- I Source (if not otherwise identified)
- I Threat
  - Hazard agent (type, specific threats, and potential impacts)
  - Affected population (personal risk)
- I Recommended household response actions
- I Official response actions
  - Agency/organizational response actions completed, in progress, and planned
  - Sources of official assistance
  - Sources of further official information

# PADM

## Decision Heuristics

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### I Threat

- Risk identification: “Is there a real threat?”
- Risk assessment: “Do I need to take protective action?”

### I Protective action

- Protective action search: “What can be done to achieve protection?”
- Protective action assessment/selection: “What is the best method of protection?”
- Protective action implementation: “Does protective action need to be taken now?”

# PADM

## Decision Heuristics

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### I Information search

- Information needs assessment: “What additional information do I need?”
- Communication action assessment/selection: “Where and how can I obtain the needed information?”
- Communication action implementation: “Do I need the information now?”

# Behavioral Response

## I Information seeking

- Contact the original source or an alternate
  - Confirm/contradict existing information
  - Obtain additional information
  - Relay current information
  - Discuss information implications

## I Protective response

- Type of action (e.g., evacuation, shelter in-place)
- Timing of action (immediate or delayed)

## I Emotion-focused coping

- Distraction, denial, self-medication

# A Few Relevant Principles of Warning

- I Warning systems are sociotechnical systems that require a *thorough* understanding of the interactions of the
  - Detection system,
  - Dissemination system, and
  - Response system.

# A Few Relevant Principles of Warning

- I CMAS is a useful addition to existing warning mechanisms that appears to be
  - High in dissemination precision, penetration of normal activities, message specificity and low in message distortion,
  - Moderately high in dissemination rate and
  - But also high in receiver requirements (which limits coverage of the risk area population), and low in feedback (which limits receipt verification).
- I It can be a useful supplement to other warning mechanisms that provides diversity and redundancy in the warning system.



# A Few Relevant Principles of Warning

- I Diverse and redundant communication devices can minimize the number of information isolates.
- I However, they also can produce confusing and apparently conflicting messages unless the timing of message dissemination is carefully coordinated.

# A Few Relevant Principles of Warning

- I Informal warning networks
  - Supplement official warning networks, but
  - Introduce systematic and random errors into the dissemination process.
- I People's perceptions of information validity are substantially affected by the
  - Identity of the information source, and
  - Familiarity of the hazard.

# A Few Relevant Principles of Warning

## I The *minimum* message content

- Identifies a credible source of authoritative information, and
- Provides the *recommended* warning message content (threat, protective action recommendations, and official actions).



Questions?

# Public Perceptions of Protective Actions for Hazardous Materials Incidents

