INTRODUCTION TO PUBLIC WARNINGS AND RESPONSE
SOCIAL SCIENCE RESEARCH FINDINGS & APPLICATIONS FOR PRACTICE

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  - Opinions, findings & conclusions are the author's and do not necessarily reflect the views of the U.S. Department of Homeland Security

RESEARCH AREA IS KNOWN BY MANY NAMES

- **Research knowledge & applications exist in silos called:**
  - Risk communication, warning research, evacuation research, crisis communication, egress research, human factors research & many more

- **Research knowledge synthesized across some silos, but not all of them**

COMMUNICATION EMPHASIS ACROSS A TIME CONTINUUM

- **Warnings = one end of the continuum:**
  - Specific detected event about to impact a population
  - Rapid public protective action response warranted

- **Education = other end of the continuum:**
  - Risk of events that could occur in the distant future
  - Public household readiness actions warranted

- **And everything in-between:**
  - Focus here is on warnings

PURPOSE

- **Synthesize findings from research:**
  - In the social sciences
  - To bridge the gap between research & applications

- **By presenting:**
  - Evidence-based applications for practitioners based on research findings regarding…..

THE BASIC QUESTION

How do you help people in danger:

-STOP….

-HEAR…. &

-TAKE PROTECTIVE ACTION for…..

TERRORIST ATTACKS

TECHNOLOGICAL EVENTS

NATURAL DISASTERS

BUILDING FIRES

BIOLOGICAL HAZARDS

HAZARDOUS MATERIALS AND MORE···.

INCLUDING PUBLIC PROTECTIVE ACTIONS SUCH AS....

VEHICLE EVACUATION
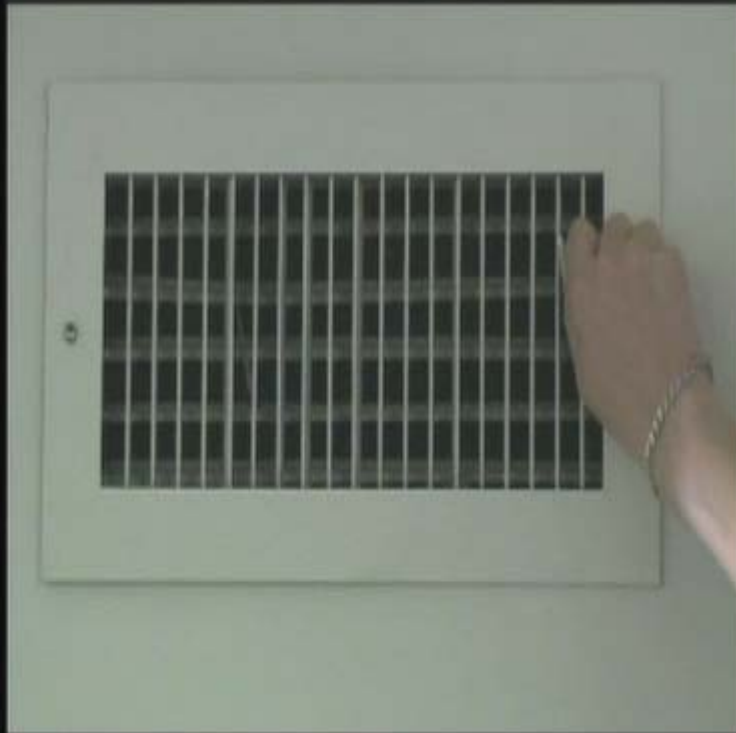
PEDESTRIAN & OCCUPANT EVACUATION

SHELTERING IN PLACE

Turn Off Fans, Heating & Air Conditioning Systems That Bring In Air From Outside

BREATHING PROTECTION

Helps Keep Radioactive Dust or Smoke From Entering Your Body

ABOUT THE RESEARCH BASIS FOR WHAT WE'LL COVER

KNOWLEDGE PATHWAYS

- **Four bases for human knowledge**:
  - <u>Experience</u>: events in our lives *("lessons learned")*
  - <u>Revelation</u>: someone told you *("best practices")*
  - <u>Intuition</u>: it seems right *(an "idea")*
  - <u>Science</u>: scientific method *("a" predicts "b")*

- **Presentation basis is knowledge gained using the scientific method:**
  - May/may not conform to what you "know" based on experience, revelation or intuition

THE RESEARCH BASE

- **Half-century of research:**
  - Hazards & disaster research literature
  - U.S. emphasis (but not exclusively)

- **Hazards & events researched include:**
  - <u>Natural</u>: Hurricane Camille, Mt. St. Helens
  - <u>Terrorism</u>: World Trade Center 1993 & 9/11
  - <u>Hazardous Materials</u>: Mississauga, Nanticoke
  - <u>Technology</u>: Three Mile Island
  - <u>Building Fire</u>: MGM Grand, Cook County Hospital

- **We know a lot about:**
  - What works & doesn't, why & how to apply it

RESEARCH ON PEOPLE IN COMMUNITY DISASTERS

- □ 350 page annotated bibliography (findings listed) available at:
- □ *http://www.colorado.edu/hazards/publications/informer/infrmr2/pub hazbibann.pdf*

KNOWLEDGE SYNTHESIS: COMMUNITY DISASTERS

Mileti, Dennis S., and John H. Sorensen. 1990. Communication of Emergency Public Warnings: A Social Science Perspective and State-of-the-Art Assessment. Oak Ridge, TN: Report #ORNL-6609 for the Federal Emergency Management Agency. (Note: A good synthesis but somewhat out-of-date)

Available at: http://emc.ornl.gov/EMCWeb/EMC/PDF/CommunicationFinal.pdf

RESEARCH ON PEOPLE IN BUILDING DISASTERS

- ▫ 150 entry bibliography available at:
- ▫ *http://www.colorado.edu/hazards/library/BuildingsEvacBib2007.doc*

GENERAL CONCLUSIONS

- **People knowledge transcends hazards:**
  - It's about human beings (not hazards)

- **Same factors determine public warning response across hazards & events:**
  - Mathematically modeled
  - Same equations apply

- **Behavior "outcomes" vary across events:**
  - Because of different quantities in the variables that determine public response occur across events

CROSS-HAZARD KNOWLEDGE NOT INTEGRATED

- **Public warning & response research:**
  - Exists in silos

- **Silos tend to be hazard-specific:**
  - Determined by physical sciences or federal agency's hazard-specific missions vs. the "people sciences"

- **Consequence:**
  - Much human behavior warning knowledge that transcends hazards isn't transferred

KNOWLEDGE SYNTHESIS AREAS

- **1. Research basis:**
  - What we've just gone over
- **2. Warning delivery & preparedness:**
  - Warning systems: what's highly reliable & what isn't
- **3. Warning messages:**
  - Factors that influence public warning response
- **4. Public warning response processes:**
  - Diffusion of warnings, mobilization, destinations & more
- **5. Occupant warning response:**
  - Warning issues & applications inside buildings
- **6. Social media & warnings:**
  - Cutting edge in warnings: issues & questions
- **7. Pre-event public education:**
  - How to best reach, teach & motivate the public to get ready

QUESTIONS?

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