Are you Rad-Savvy?

Applying emergency communication principles in a radiological or nuclear disaster

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Outline

- Crisis and Emergency Risk Communication
- Radiation 101
- Dispelling Myths
- Messaging in a Radiation Disaster
- U.S. Government-Prepared Messaging
- Additional Resources

CRISIS AND EMERGENCY RISK COMMUNICATION

Crisis and Emergency Risk Communication

CDC's Crisis and Emergency Risk Communication (CERC) manual was first published in 2002 to provide an approach to health communications during emergencies based on experience and psychological and communication sciences.

Crisis and Emergency Risk Communication (CERC) principles can help you provide the public with information to make the **best decisions** within incredibly **challenging time constraints** and to accept the **imperfect nature of choice**.

Six Principles of CERC

Fully integrated CERC helps ensure that limited resources are managed well and can do the most good at every phase of an emergency response.

RADIATION 101

Radiation Presents Communication Challenges…

- Radiation is
  - Invisible
  - Silent
  - Odorless
  - Detected with specialized equipment

- Radiation concepts, terms, and risks are poorly understood by the public.
- Radiation elicits fear and is associated with unsurvivable disaster or cancer.

…But Effective Communication Saves Lives

- Decreases illness, injury, and death
- Helps response and recovery efforts
- Gives people positive actions to take
- Reduces rumors and misinformation
- Minimizes unnecessary visits to hospitals and other critical facilities
- Reduces stigma

Types of Radiation Emergencies

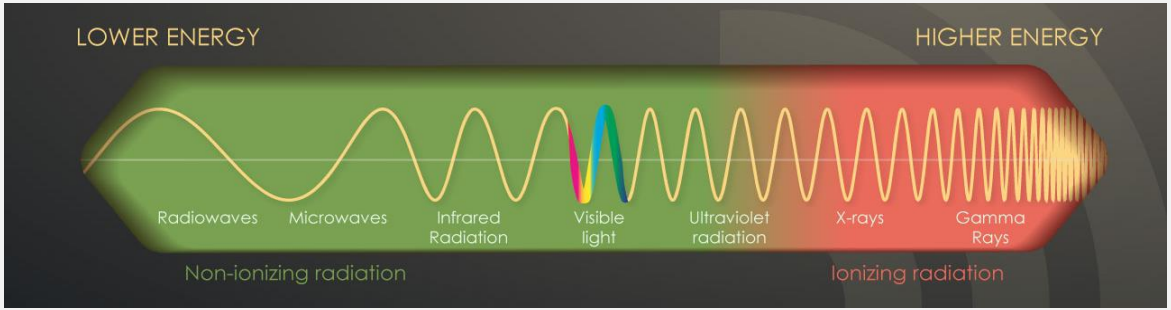
- Loss/misuse of radiation sources
- Accident in radiation industry (nuclear power plant release)
- Terrorism threat – procurement and use of
  - Radiological dispersal device (RDD)
  - Improvised nuclear device (IND)

Where are radiation events on the hazard/outrage scale?

Potentially Misunderstood Radiation Terms

- Background radiation
- Contamination
- Detrimental health effects
- Dose
- Hereditary genetic damage
- In the path/Downwind
- Internal/external contamination
- Low/high radiation levels
- Potassium Iodide
- Protective actions
- Protective measures
- Radiation particles
- Radiation protection standards and practices
- Radioactive material
- Rem/Sievert
- Responders
- Risk of exposure
- Sheltering

Types of Radiation



Ionizing radiation: Can interact with and change atoms and molecules, causing harm to tissue. **This is the type of radiation we are concerned with during a radiation emergency.**

Nonionizing radiation: Can heat substances and tissues, but has less energy to cause damage. It includes radio waves, microwaves and UV radiation from the sun.

Exposure vs. Contamination

- **Exposure** – you are **exposed** to energy from radioactive material that is nearby.

- **Contamination** – you are contaminated if radioactive material is **on you.**
  - **External contamination:** radioactive material, as dust, powder or liquid, comes into contact with skin, hair, or clothing. It can be removed.
  - **Internal contamination:** radioactive material is swallowed, breathed in, or is absorbed in the skin. It can be eliminated in blood, sweat, urine, and feces.

Decontamination: the process of getting radioactive material off of a person through removing contaminated clothing and washing.

Units of Measurement

To report the radiation dose, we use either:

- the **international** unit for dose, the **Sievert** (Sv) or the Gray (Gy)
- the **United States** unit for dose, the **rem** or the rad
  - It is common to see variations of these units such as: millisievert (mSv) millirem (mrem)

Converting between international units and U.S. units:

- 1 Sv = 100 rem
- 1rem = 10 mSv

Creates **communication challenges** during a radiation disaster

DISPELLING RADIATION MYTHS

Dispelling Common Myths

MYTH: There is nothing you can do to protect yourself from radiation exposure.

https://www.youtube.com/watch?v=oPin_e6Gu9s

Dispelling Common Myths

SOLUTION: Give clear, easy-to-follow protective actions to people. Tailor the actions to the specific audience and geographic area.

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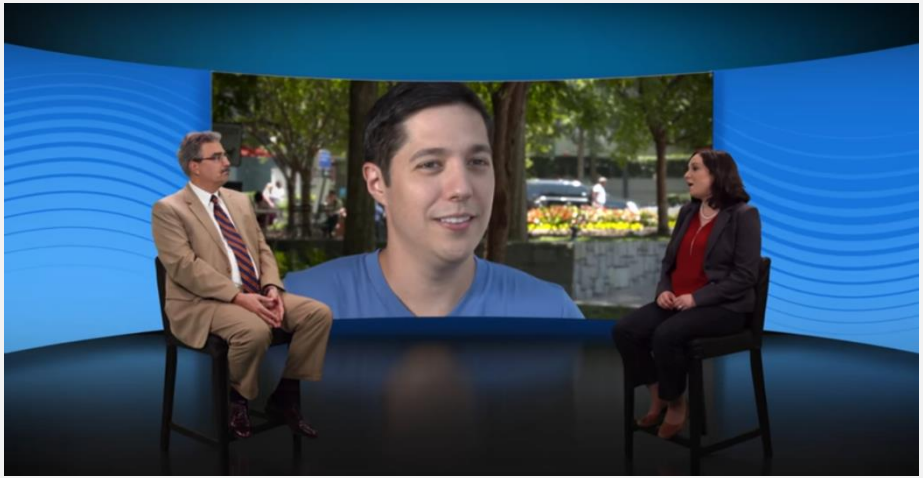
Dispelling Common Myths

MYTH: Even the smallest dose of radiation is not safe and will harm you.

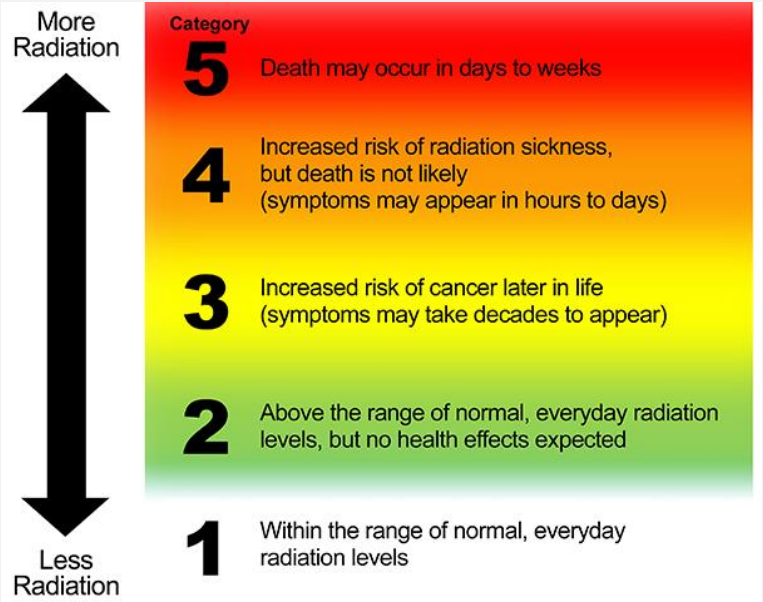


https://www.youtube.com/watch?v=VWakQ1H44kc

Dispelling Common Myths

SOLUTION: Give people context. Use comparisons. Acknowledge when there is uncertainty.

CDC Hazard Scale and Risk Thermometer



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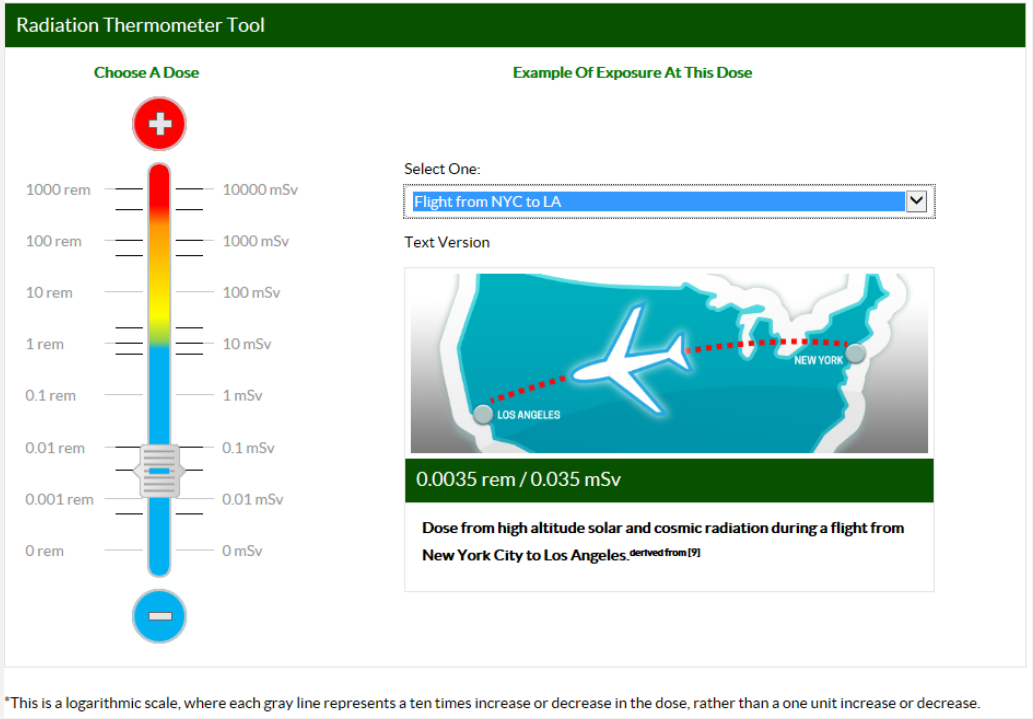


Dispelling Common Myths

MYTH: Clinicians who treat contaminated people are risking their own lives.

SOLUTION: Let clinicians know how to protect themselves and the low level of risk they face. Addressing contamination issues should not delay treatment of life-threatening injuries.

Radiological Terrorism: Tool Kit for Emergency Services Clinicians

A free tool kit for planning and response

- Guidelines for Handling Decedents Contaminated with Radioactive Materials
- Training for Handling Radioactive Decedents
- Medical Countermeasures for Radiation Exposure and Contamination
- Medical Response to Nuclear and Radiological Terrorism
- Psychological First Aid in Radiation Disasters
- Acute Radiation Syndrome (ARS): A Fact Sheet For Physicians
- Cutaneous Radiation Injury (CRI): A Fact Sheet for Physicians
- Radiation and Pregnancy: A Fact Sheet for Physicians

To order copies of this toolkit, please request them through CDC-INFO or call 1-800-CDC-INFO (1-800-232-4636)

RADIATION MESSAGING

2011 CDC Public Focus Group Message Testing

- Participants were shown a brief video depicting an IND scenario.
- Pre-scripted messages were presented to participants by audio only, followed by a written copy.
- Messages were tested for relevance, comprehensibility, credibility, and effectiveness.
- Radiation experts from CDC answered questions from participants at the conclusion of every group.

Lessons Learned from Audience Research

- The public's most persistent concern at each stage of the scenario, even in low-risk situation: What should I do to protect myself and my family?
- Radiation concepts, terms, and risks are poorly understood, even among well-educated people and professionals.
- Participants do not like vague instructions, nor do they like messages that convey uncertainty by having *may*, *might*, or *could* in the message.
- People overestimate risks and resist "reassuring" messages.

Lessons Learned from Audience Research

- People do not believe simple measures work (e.g., decontamination).
- Many people do not understand the term “shelter-in-place.”
- Many people will not shelter-in-place—will seek family and children even when it increases their risk.
- People will be more likely to take protective actions if they understand why.
- Some people expressed a strong sense of fatalism about radiation emergencies.
- Pregnant and nursing women will follow instructions from authorities.

Lessons Learned about Message Development

- **Give prioritized action items in each message.**

"I'm more interested in what I can do now. When there's an accident on the freeway, we're told which route to take to get around it, not how the accident took place..."

- **Create messages for different environments.**

"If you are not at home, if you are at work now or at school here's what you might do."

Tailor messages for audiences and phase of emergency.

"I think there would be two different kinds of messages: One for the affected area, the immediate area; one for the rest of the country."

Lessons Learned about Message Development

- **Messages should be urgent, but provide hope.**

“I personally want to know that…there is some optimism here.”

- **Avoid messages that contain contradictions.**

“It’s contradictory. At the very least, it’s misleading... if I’m confused, I’m not going to do it.”

Lessons Learned about Message Development

- **Use plain, non-technical language.**

"When you have a disaster happen, you don't want to have to read the dictionary. You want point blank this is what's happening. This is what you should do."

- **Make messages concise. Use visuals and pictures.**

"Time is valuable to deliver your message so you've got to make sure that you're conveying as much helpful information as possible."

Lessons Learned about Message Delivery

- Radiation scientists are trusted sources of information.
- Message consistency across agencies and communication channels is critical.

Messaging Phases of a Radiation Disaster

Adapted from U.S. national messaging plan for IND

Before	First 12 hours	After 12 hours	Long term
• Education • Preparation – make a plan • Rehearsal	• How can I protect myself and my family? • Is the air safe to breathe? • Is the water safe to drink? • How are those in schools, hospitals and nursing homes being protected? • Do I need to evacuate? • Are there shelters?	• What are effects on infrastructure? • When can I return home? • Do you have a map of the affected area? • What do I do about crops and livestock? • Who is in charge?	• Economic impact • Effects on international travel • Spread to other countries • Long term health concerns, including mental health

Lessons Learned from Fukushima

- Importance of message repetition
- Importance of consistent messaging
- Perception and expectation management
- Benefits and challenges of risk comparisons
- Importance of long-term communication planning

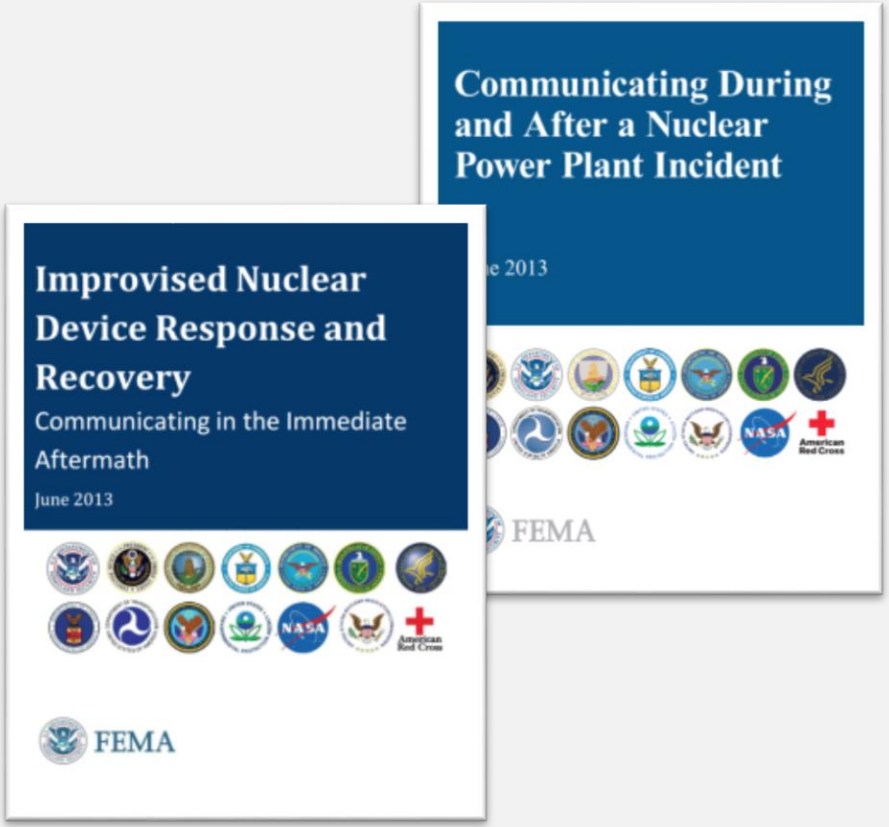
Other Considerations for Radiation Risk Communication

- Pre-event education is important, but challenging.
- Some radiation concepts (e.g., contamination and exposure) have different meanings for radiation than for infectious diseases.
- A nuclear detonation could reduce available communication channels.

U.S. GOVERNMENT-PREPARED MESSAGING

U.S. Government-Prepared Radiation Messaging

- **Question:** How do we coordinate incident messages across all levels of government during a large-scale radiological incident?
- **Answer:**
  - Agree on messages in advance.
  - Put the messages in writing.
  - Practice.



U.S. Government-Prepared Radiation Messaging

- Nuc/Rad Communication Workgroup convened by FEMA
- Includes all relevant federal agencies and American Red Cross with input from state/local agencies and NGOs
  - Current messaging published in 2013
- Includes prepared messages and other resources
  - Questions and answers covering a variety of health, safety, and security topics
  - Radio and social media templates
  - Guidance for spokespeople

U.S. Government-Prepared Radiation Messaging

Example: Nationwide repeated informational message

This message can be used to instruct people on what they can do to protect themselves in case of another attack and to provide people with specific actions to take.

Suggested for national spokesperson: *President of the United States, Department of Homeland Security Secretary*

- All levels of government are responding to this explosion and are taking all possible precautions to protect against a future attack.
- If you are in the area, take the following steps as quickly as possible: Get inside, stay inside and stay tuned for more information.

Source: Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath, June 2013

U.S. Government-Prepared Radiation Messaging

Example: Situation-specific informational message

What Happened?

- A nuclear explosion occurred at [LOCATION] in [CITY]. If you are in [define AREA], get inside and stay inside.
- Emergency responders and radiation experts are working to identify the path of the radioactive material.
- Weather conditions, like rain, snow or wind, will affect the spread of radiation.
- Even if your location appears normal, radiation outside may still be a danger.
- Staying inside, away from the radioactive material outside, can save your life.
- Radiation experts are gathering information and will provide updates as we learn more.

Source: Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath, June 2013

CDC radiation emergency messaging

- **https://emergency.cdc.gov/radiation/emergencyfaq.asp**
- **https://emergency.cdc.gov/radiation/glossary.asp**

Frequently Asked Questions (FAQ) about Radiation Emergencies

For more information on radiation, go to the **Radiation Dictionary**.

Get Inside:

- Why should I get inside during a radiation emergency?
- How can I protect myself and family if there is a radiation emergency?
- How can I help my children or other family members if they are not at home?
- What if I am in my car during a radiation emergency?
- Will a mask protect me from radiation exposure and contamination?

Stay Inside:

- Why should I stay inside during a radiation emergency?
- What steps should I take to decontaminate myself and family?
- What does it mean to shelter-in-place during a radiation emergency?

Radiation Dictionary

A

Absolute risk: the proportion of a population expected to get a disease over a specified time period. *See also* risk, relative risk.

Absorbed dose: the amount of energy deposited by ionizing radiation in a unit mass of tissue. It is expressed in units of joule per kilogram (J/kg), and called "gray" (Gy). For more information, see "Primer on Radiation Measurement" at the end of this document.

Activity (radioactivity): the rate of decay of radioactive material expressed as the number of atoms breaking down per second measured in units called becquerels or curies.

Acute exposure: an exposure to radiation that occurred in a matter of minutes rather than in longer, continuing exposure over a period of time. *See also* chronic exposure, exposure, fractionated exposure.

ADDITIONAL RESOURCES

CDC Risk Communication Training for Radiation Emergencies

Online FREE Training

- Myths of Radiation: Communicating in Radiation Emergencies
  https://emergency.cdc.gov/radiation/radiationmyths.asp
- Radiation Basics Made Simple
  https://emergency.cdc.gov/radiation/radbasics.asp
- Training for Poison Control Centers on Radiation Risk Communication
  https://www.cdc.gov/radiationtraining/RAD-ToolKit/Training/#/module5/page1
- Crisis and Emergency Risk Communication
  https://emergency.cdc.gov/cerc/training/basic/index.asp

CDC Radiation Communication Tools

- Radiation Hazard Scale
  https://emergency.cdc.gov/radiation/radiationhazardscale.asp
- Radiation Thermometer
  https://emergency.cdc.gov/radiation/radiationthermometer.asp
- Infographics
  https://emergency.cdc.gov/radiation/resourcelibrary/infographics.asp
- Protective action and educational videos
  https://emergency.cdc.gov/radiation/protectiveactions.asp
- Radiation Dictionary
  https://emergency.cdc.gov/radiation/glossary.asp

USG Messaging Resources

- CDC Radiation Emergency Communications Research
  http://www.emergency.cdc.gov/radiation/audience.asp
- Improvised Nuclear Device Response and Recovery: Communicating in the Immediate Aftermath
  http://www.fema.gov/national-preparedness-resource-library
- Communicating During and After a Nuclear Power Plant Incident
  https://www.fema.gov/media-library-data/20130726-1919-25045-1433/communicating_during_and_after__npp_incident___june_2013__secure_.pdf

Thank you!

Emergency.cdc.gov/radiation

For more information, contact NCEH
1-800-CDC-INFO (232-4636)
TTY: 1-888-232-6348 www.cdc.gov
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