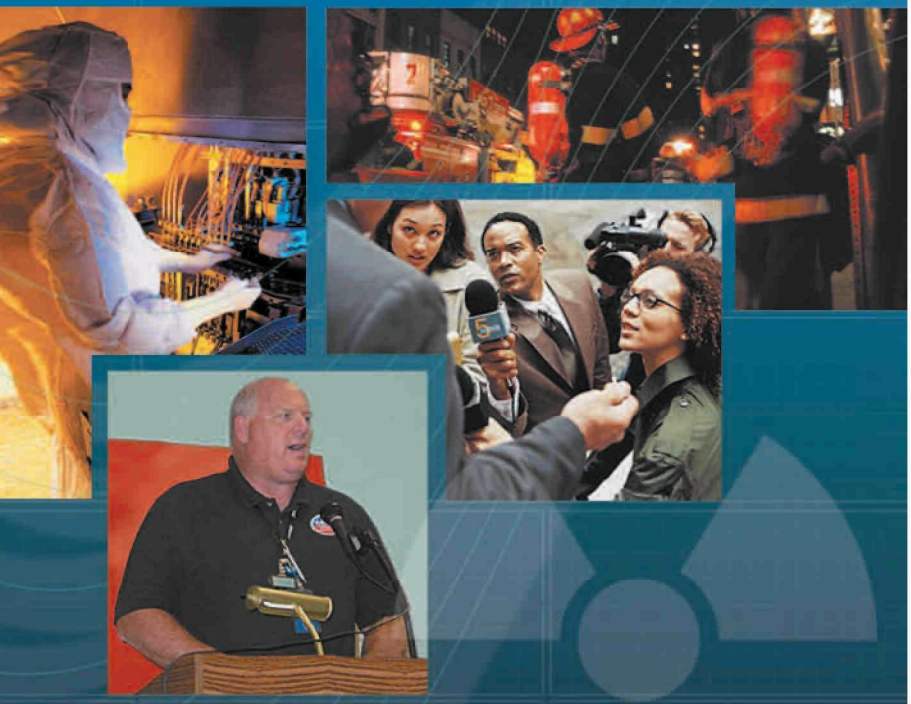
Communicating Radiation Risks



Crisis Communications for Emergency Responders

United States Environmental Protection Agency

Office of Radiation and Indoor Air

EPA-402-F-07-008
September 2007
Reprinted June 2008

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To the Emergency Response Community

WE HAVE PREPARED THIS GUIDE AS A RESOURCE for emergency responders and federal, state, and local officials communicating with the public and the media during a radiological crisis. It provides communications techniques and advice based on proven risk and crisis communications strategies as well as radiological scenarios and messages for use in radiological emergencies.

Two events—the terrorist attacks of September 11, 2001, and the devastation of the Gulf Coast by Hurricanes Katrina and Rita in 2005—emphasized the need for effective communications among federal, state, and local officials, the media, and the public during crises. As public officials, we should convey clear and accurate messages to help the public take actions that will help to protect their health and well-being in the midst of a radiological emergency.

During radiological emergencies, responders and public affairs specialists are called upon—whether in the field, in an emergency operations center, or in a press conference—to talk about radiation risks and safety precautions for the public. This is a challenging and time-sensitive task.

The public must have information quickly about what is happening, what they should do, and what government agencies are doing to help protect them. Effective communications in these moments can make a difference in the outcome of a radiological emergency. Effective communicators can inspire confidence, build credibility and, most importantly, contribute to saving lives and minimizing injury during a radiological emergency.

Crisis communications is a critical and complex undertaking. Remember, every emergency presents it own set of challenges. We hope this guide will contribute in part to the success of your efforts.

Office of Radiation and Indoor Air
U.S. Environmental Protection Agency

Acknowledgements

This communications guide was funded by the United States Environmental Protection Agency Office of Radiation and Indoor Air. The Office of Radiation and Indoor Air would like to thank EPA headquarters and regional staff who helped in the development of this technical document.

The content of this guide is based on the risk communication theory, research and principles developed by Dr. Vincent Covello and the Consortium for Risk and Crisis Communication. Risk communications expertise and technical support was provided under EPA Contract No. 4W-3391-NBLX.

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How to Use this Guide

The guide is divided into five sections; each section is color coded for easy reference.

GOLD: Section I Provides guidance on crisis communications and sample messages that have been approved for use in a radiological emergency.

TEAL: Section II Gives in-depth information on how to be an effective communicator, how to develop messages, and how to get those messages out to the right audiences.

ORANGE: Section III The Quick Response Guide provides information on what to expect in the event of a radiological emergency and the potential questions for each scenario.

PURPLE: Section IV Shows how to monitor your progress during a crisis, recognize strengths and weaknesses, and build on what you learn after an event.

GREEN: Appendices Includes additional information and references to help you build your skills as a risk communicator.

Crisis Communications for Emergency Responders

THIS GUIDE SERVES AS AN INTRODUCTION for emergency responders who have had little training in public speaking or who have had little exposure in working with the media, yet is also a refresher for experienced public information specialists. Along with providing basic information on radiation, the guide contains sample messages recommended for use during radiological emergencies.

Use the Messages Carefully This guide contains a series of messages that can be used during a radiological emergency. Remember, each emergency presents it own challenges. The messages in this guide may need to be adjusted based on the exact situation you are facing.

Rely on Your Situational Awareness Your expert knowledge of the situation should guide you in developing and delivering messages suitable to the emergency. In many situations, you will be acting as part of a larger response. Be aware of what your partners are saying as well as the concerns of your audience.

Update and Revise Messages Throughout an Emergency As your information about the crisis and the response changes, your messages should reflect this information.

Address Public Concerns Make sure to address the current state of the response, actions being taken and concerns of your audiences.

I Communicating in a Radiological Emergency

HOW TO COMMUNICATE EFFECTIVELY IN A CRISIS CAN BE LEARNED. More importantly, you can prepare now to speak effectively during a crisis by thinking through the steps you will take and the messages you will need in an emergency. Your crisis communications efforts will be more successful if you anticipate what may happen, what questions may be asked, who should address various questions, and how to get your messages out to the media and the public effectively.

Spokesperson Considerations. In some cases, there will be an obvious spokesperson, for example, the senior-ranking person in command who is on scene. Experienced public affairs specialists in the role of public information officer also are a logical choice for the designated spokesperson, as are local officials. In addition, both the National Response Plan (NRP) and the Incident Command System (ICS), governmental blueprints for managing emergency responses, suggest appropriate spokespersons. Often there will be a lead spokesperson working along with technical experts to address specific areas of expertise at a media briefing or press conference.

If you are placed in this role, it is important to remember that referring either the public or the media to another spokesperson who is more comfortable with the role is perfectly acceptable and preferable in an emergency, especially if you don't believe that you can convey clear and accurate messages with confidence and credibility.

MYTH VS. TRUTH

Risk Communication Myth: *Crisis and risk communications is not my job.*

Truth: Yes it is. As a public servant, you have a responsibility to the public. Integrate public communication into your job and help others do the same.

QUICK TIP

(Hyer & Covello, 2007)

Spokespersons should be:

Skilled in interpersonal communication.

- Able to convey empathy.
- Effective listener.
- Respectful of people's concerns.

Knowledgeable about the topic area.

- Be able to answer basic questions about the situation.
- Know when to refer the question to a subject matter expert.

Credible.

- A known, respected name.
- Associated with respected agency or institution.

Taking the First Steps (Covello, 2003; Hyer & Covello, 2007)

1. Assess the crisis:

- What information do you need? What do you know? What don't you know? What is the extent and degree of the damage?
- What steps are being taken by what government agencies at all levels?
- What steps are being taken by which non-government organizations (NGOs) like the American Red Cross?

- How will you obtain or share information with NGOs or other groups?
- What should the public do?
- When will you get back to the public with more information?

2. Identify and assess your audiences:

- Who are your audiences?
- Is it a local, statewide or national emergency?
- What are each audience's greatest concerns?

3. Determine communication methods:

- Consider the best way to reach your audience: When, where and how will you communicate with them?

- Prepare for possible disruptions or failures in electricity and/or broadcast signals during a radiological crisis.
- Consider what other channels of communications you will need.
- Get your essential messages to the media quickly and at continuing regular intervals. The media will be reporting on the crisis rapidly, so this is important.

4. Develop your three key messages:

Think in terms of limiting your information to three key messages because research shows that three key messages are all the public can process during a high-stress situation.

- Most of the questions that will be asked can be anticipated. (See page 15 for sample messages for the most frequently asked questions about radiation and radiological emergencies.)
- Support your messages with accurate information.
- If available, use radiation experts who are skilled in speaking with the media.

KEEP IN MIND

In an emergency, you should expect that people will want to:

- Be with their loved ones—particularly their children.
- Seek medical services.
- Look for more information.

5. Focus on message integrity:

- Be honest and open about what you know and don't know.
- Be clear about what is being done and when you anticipate having more information.
- Be explicit about what the public can and should do.
- Report only on information that you know with certainty to be credible.

6. Be timely in responding to the public and the media.

Communicating Effectively (Covello et al., 2001)

Overcoming "Mental Noise"

During emotionally charged, high-stress situations, people may experience "mental noise," an emotional block that can make it difficult to hear, understand, or remember information. Research shows that by following the three steps below, your audience will more easily understand your messages.

Keep it simple: Use plain language that avoids jargon and scientifically complex terms.

Keep it brief: Make messages for the public brief, concise and clear.

Keep it to the point: Follow the "27/9/3" rule:

- **27 total words** is all print media usually allow for a quote.
- **9 seconds** is what television and radio media outlets usually allow for a sound bite.
- **3 key messages** is all the public can process during a high-stress situation.

Message Development

Communicating during a crisis can be daunting. If professional communicators and radiation experts are available, work closely with them on what to say and how to say it. They can help you anticipate, prepare and practice until you feel confident in what you are saying.

The following provides additional strategies as you prepare to communicate:

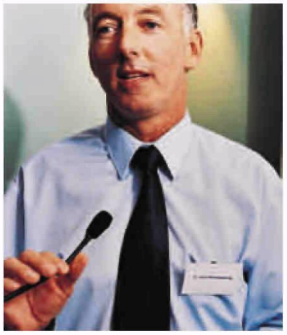
- Choose your words carefully.
  - The right words can achieve your needed impact.
  - The wrong words can lead to public harm.
- Understand each audience's unique concerns.
  - Tailor your messages to their needs.
- Be aware of media coverage on the crisis.
  - Understand what the public is seeing, hearing and reading in the media.

Message Delivery

Delivery is also critical—often how a message is delivered is as important as the message itself. To help build credibility and trust:

- Convey empathy and caring first.
  - Acknowledge the fears and concerns of the public.

- Exhibit commitment and competence. Especially in a crisis:
  - People depend upon the leadership of public officials.
  - People need to be confident of your command of the situation and response.
- Express optimism.
  - People rarely see beyond the crisis at hand and need to be assured, realistically, that the response is designed to improve the situation.



- Be attentive to your body language.
  - A confident, open demeanor will help build credibility and trust.
- Avoid "no comment."
  - "No comment" appears as though you are covering something up or are guilty.
  - Instead of saying "no comment," tell them what you can say—what has been confirmed or known at the time.

Recognizing Traps and Pitfalls

(Covello, 2006; Hyer & Covello, 2007)

Avoid using "I."

- Speak for the organization using its name or saying the pronoun "we."
- Avoid the impression that you, alone, are the authority or the sole decision-maker.

- Never disagree with the organization you represent by saying: "Personally, I don't agree," or "Speaking for myself," or "If it were me … ."

Avoid speculating.

- Stick to the facts of what has, is and will be done.
- Avoid speculating on worst-case scenarios, what could be done, what might happen or possible outcomes.

Avoid making promises you can't keep.

- Promise only what you can deliver.
- State your willingness to explore other options.

Avoid jargon, technical terms or acronyms.

- Limit their use and explain those you must use.

Avoid negative words and phrases.

- Use positive or neutral terms.
- Avoid words like no, never and none.
- Avoid highly-charged analogies, like "This is not Chernobyl."

Don't blame others.

- Accept your fair share of responsibility.
- Don't point fingers at others.
- Focus your communications on how problems can be solved.

Avoid details on how much it costs.

- Focus instead on how the response has supported the health and well-being of those affected.

Avoid humor.

- No exceptions! It is not appropriate in an emergency situation. The audience may be offended and think that you are not taking the event seriously, or you have no compassion for those involved.

Don't repeat negative allegations.

- Refute critical allegations succinctly.
- Draw upon and reinforce your key messages.

Don't become defensive.

- Respond to issues, not personalities.
- End debates, rather than continue them.
- Stay calm and remain collected.

TEMPLATE TOOL

1 Negative = 3 Positives

When breaking bad news, negative messages should be counter-balanced with at least three—and preferably four—positive, constructive, or solution-oriented messages.

(Covello et al., 2001)

Explaining Radiation Issues in an Emergency—Questions and Answers

The following are responses to frequently asked questions during radiological emergencies. These questions address critical health and safety issues likely to be of greatest concern to the public. Of course, the choice of appropriate messages depends on the type and magnitude of the event and the evolving nature of the response.

These messages are written in plain language with the intent of making them understandable to the general public during a crisis. The messages are also written keeping in mind the "27/9/3" rule of crisis communication:

(Hyer & Covello, 2007)

27 total words is all print media usually allow for a quote.

9 seconds is what television and radio media outlets usually allow for a sound bite.

3 key messages are all the public can process during a high-stress situation.

Basic Radiation Information

1. How do I detect radiation?

- You cannot sense radiation.
- Radiation can only be detected using specialized instruments.
  - With the correct instruments, radiation is easily detected.
- Emergency responders are skilled in using these instruments.

2. How can radiation exposure occur?

- Radiation from natural and man-made sources is always around us.
- We cannot eliminate radiation in our environment.
- We can reduce our health risks by controlling our exposure to it.

3. How much radiation is safe?

- There is no known safe amount of radiation.
  - The current body of scientific knowledge tells us this.
- We always assume that less radiation is better.
- There are steps you can take to minimize your exposure.
  - Your local officials can advise you on what steps to take.

4. What are common sources of radiation?

- Low levels of radiation come from a number of sources.
  - These include natural background.
  - They also include sources such as medical x-rays.

5. What should we do about low levels of radiation?

- There may be some risk from low levels of radiation.
- It is reasonable to assume that less radiation exposure is better.
- To be safe, take all reasonable precautions to reduce exposure.
  - It may be difficult to reduce exposure to low-level radiation in our everyday lives.

6. What are the reasonable steps to take in an emergency?

- Follow safety instructions from public officials.
- Minimize the time you spend in areas with elevated radiation levels.
- Avoid areas where radiation levels are elevated.

7. What happens when I am exposed to radiation?

- You may not experience any health effects.
- A very large dose of radiation may cause skin burns, nausea and vomiting.
- If you have these symptoms, seek medical attention immediately.

8. What is radiation exposure?

- Exposure occurs when radiation energy interacts with the body.
- Exposure can be caused from external or internal sources.
  - Internal exposure happens when radioactive materials are eaten, inhaled, injected or absorbed.

9. What is radioactive contamination?

- Contamination occurs when radioactive material settles on a surface.
  - That surface could be your body or clothing, a structure, or an object.
- Contamination also can be internal when radioactive materials are eaten, inhaled, injected or absorbed.

10. Are there different types of radioactivity?

- There are three major types of radiation:
  - Alpha and beta radiation can be stopped by a layer of clothing, but can be harmful if eaten, inhaled, injected or absorbed.
  - Gamma rays are much more difficult to stop.
    - Several feet of concrete or several inches of lead may stop gamma rays.
    - They can be harmful to the body.
- Health effects from exposure vary depending on the amount of exposure.
  - This relates to the length of time exposed, and the distance from and shielding against the radiation source.

11. What is the difference between contamination and exposure?

- You can be exposed to radiation without contamination, such as during an x-ray.
- You cannot be contaminated without being exposed.

12. How can I tell if I have been exposed?

- If you are near an incident, you may have been exposed to or contaminated by radiation.
- Skin burns, nausea and vomiting can result from large doses of radiation.
  - Seek medical attention immediately if you have these symptoms.

- If you think you have been contaminated, shower and change into clean clothes.
  - Place contaminated clothing in a plastic bag and seal it.
  - Place the bag as far away as possible from humans and animals.
  - Bagged clothing can be examined later to determine if you were contaminated.

13. Am I going to get cancer?

- There are many causes of cancer, both environmental and genetic.
- Radiation is a minor contributor to our overall cancer risk.
- The risk of radiation causing cancer increases with the level of radiation exposure.
- Sheltering-in-place or evacuation can help minimize cancer risk.

Radiological Emergencies

14. What type of emergency is this?

- Our monitors detect radiation, and we are working to identify the source.
- Public safety officials are on the scene.
- Public officials will provide updates with current information.

15. Was this a terrorist event?

- Law enforcement officials are working to determine if this was a terrorist act.
- Public safety and law enforcement officials will provide updates with current information.

16. What is a dirty bomb?

- A dirty bomb is a type of radiation dispersal device (RDD) that spreads radioactive materials with explosives.
- The effects from a dirty bomb depend on a number of factors:
  - The amount of explosive.
  - The atmospheric conditions like wind direction and speed at the time of the explosion and afterwards.
  - The relative type and amount of radioactive material used.
- These devices are designed to cause fear and disruption in our lives.

17. What should I do if I am asked to shelter-in-place?

- Shelter-in-place means get indoors as soon as possible.
  - Buildings provide shielding from radiation.
  - Close all exterior vents and windows.
  - If needed, use air-conditioning (and heat), preferably in recirculation mode.
- If you think you have been contaminated, shower and change into clean clothes.
  - Place clothing in a plastic bag and seal it.
  - Place the bag as far away as possible from humans and animals.
  - Bagged clothing can be examined later to determine if you were contaminated.
- Listen to radio and TV for additional guidance.

18. How can I lessen my exposure?

- Follow the recommendations of your local officials.
- You may be asked to take shelter or evacuate the area.
- These recommendations are based on well-established public safety procedures.

19. What should I do if I think I may have been contaminated?

First, stay informed.

- Listen to your local Emergency Alert System and public safety officials on radio or TV.
- Act promptly on the guidance from local public health officials.
- Visit [Web site address] for continued updates.

Second, remove your clothes.

- Place the clothing in a plastic bag and seal it.
- Place the bag as far away as possible from humans and animals.
- Bagged clothing can be examined later to determine if you were contaminated.

Third, wash yourself and your valuables.

- Take a long shower using lots of soap and water.
  - If you can't shower, clean yourself thoroughly using lots of soap and water.
- Be careful not to scratch or irritate your skin while washing.
- Shampoo your hair.
- Gently blow your nose and wash out your eyes, ears and mouth.
- Put on clean clothing.
- Wash valuables and identification that may have been contaminated; wash your hands again.

20. What should I do if I think I am contaminated and am asked to evacuate?

- Follow the instructions of your local emergency responders.
- Evacuate first, then follow steps for decontamination or go to a monitoring center.

21. My dog or cat is outside and may have been exposed or contaminated. What should I do?

- Follow instructions of your local authorities.
- Wash yourself first if you have been exposed or contaminated.

- If possible, wash your pet outside.
  - This prevents tracking contamination inside your shelter.
- Wash yourself and change your clothing again after cleaning your pet.

22. I need to get my pet inside as soon as possible. What should I do if it has been contaminated?

- Get your pet inside and confine it to a small area.
  - A cage or small room is preferable.
  - Confining the pet limits contamination inside your shelter.
- Wash yourself first if you have been exposed or contaminated.
- Wash your pet thoroughly using soap or pet shampoo and water.
- Wash yourself again after cleaning your pet and change your clothing.
- Continue to provide your pet with food and water.

23. What about livestock?

- Follow instructions from local authorities.
- Shelter your livestock if possible.
- Wash your livestock thoroughly.
- Use stored feed and covered water if possible.

24. Should I take potassium iodide during a radiological emergency?

- Potassium iodide (KI) or iodate is used to decrease the chances of thyroid cancer from radioactive iodine.
- Follow instructions from your local public health officials on how to and whether you should take KI.

25. What are you doing to protect public health and the environment?

- Our primary concern is the health and safety of the public.
- We are working closely with local, state and federal partners to determine the degree and extent of contamination and what we need to do next.
  - We are monitoring the air, water, soil and agricultural products.
- Through this partnership, we will continue to provide updates with the most current information.

26. Are my food and water safe?

- Avoid eating food from your garden if you suspect that radioactive material has settled on it.
  - Local officials can tell you if your neighborhood is in the area of concern.
- You may continue to drink tap water until told otherwise.
- Sealed or frozen foods and liquids may be used.
  - Rinse the outside of packages before opening them.
  - Rinse all plates, pots and eating utensils before use.

27. When can I return to my home?

- Our primary concern is your health and safety.
- Listen to your television and radio for updated information.
- Public officials will inform you when you may return home.

28. Will my home be safe?

- Our primary concern is your health and safety.
- You will be informed about whether your neighborhood is in the area of concern.
- Listen to public health officials for instruction on when to return and how, if necessary, to clean your home properly.

29. What is the role of your agency?

For example, the following is EPA's role in a radiological emergency:

- Working with our federal, state and local partners to protect public health and the environment.
- Monitoring the air, water and soil for radioactive contamination.
  - to help characterize the degree and extent of contamination.
- Providing guidance and advice to policy makers.

II Messengers, Messages and Means

THE "MESSENGERS, MESSAGES AND MEANS" ARE THE KEY ELEMENTS in communicating with the media and the public during radiological emergencies. There are three main types of questions to ask yourself that can affect the perceptions of the media and public.

- **FIRST:** Is the spokesperson empathetic, speaking clearly and calmly?
- **SECOND:** Are the messages concise and clear? Too many messages will make it difficult for the public to determine what is important.
- **THIRD:** Are the messages getting out to the people that need it?

MESSENGERS: Roles and Responsibilities of a Spokesperson (Hyer & Covello, 2007)

The messenger or spokesperson responsible for responding publicly to a radiological emergency can make or break the situation. No matter how important or well-developed the messages are, if the spokesperson that delivers the messages is not a well-spoken, empathetic and credible source, the messages most likely will be lost.

You or your technical experts who may be called upon to be spokespersons should be media-savvy and knowledgeable. Spokespersons should be able to:

- Convey empathy and caring.
- Demonstrate competence and expertise.
- Communicate honestly and openly.
- Exhibit commitment and dedication.
- Be sensitive and responsive to public concerns.
- Express optimism.
- Stay calm and collected under pressure.
- Exhibit positive body language.

Securing Public Confidence

One of your main responsibilities as a spokesperson is to show empathy for the feelings of your audience and to assure them that your most important concern is their health and welfare. When people believe you care about them, they are more likely to accept your guidance. This alone is not enough—to build credibility you need to support empathy with facts and actions. Be respectful of public fears and concerns; even if unfounded, they are real to those feeling them.

QUICK TIP

People need to know that you care, before they care what you know. —Will Rogers

Your aim as a spokesperson is to have your audience:

- View you as being credible and competent.
- Believe you have their best interests at heart.
- Hear you addressing their key concerns.

To build trust and credibility as a spokesperson:
(Peters et al., 1997)

- ***Stay "on message."*** Staying on message drives home the messages, keeps you focused on the issues, and reduces the chance of mistakes.
- ***Recognize the public's specific concerns.*** People are dissatisfied when information does not address their needs; in addition, the messenger may lose credibility.
- ***Be open and honest.*** People are more accepting of information when spokespersons display truthfulness, honesty and a willingness to address tough issues.
- ***Coordinate with other credible sources.*** People are dissatisfied when different agencies deliver inconsistent messages.
- ***Meet the media's needs.*** If the media are working on a story, they will report it with or without your help. Tell the media what you want the public to know.

(Covello & Allen, 1988)

Non-Verbal Communication (Hyer & Covello, 2007)

Another important element to establishing credibility is to be mindful of your body language and what it can mean to your audience. In high-stress situations, the public's attention shifts from focusing on verbal to non-verbal communication—that is, a spokesperson is judged primarily by actions or non-verbal communications before audience members ever listen to the message.

Positives

- ***Frequent eye contact:*** honest, open, concerned about your audience.
- ***Well-modulated, confident voice tone:*** honest, knowledgeable, trustworthy.
- ***Keep your hands in sight*** (while keeping hand movements to a minimum): honest, open, caring, confident.
- ***Posture*** (if standing, stand tall and straight, but not rigid; if seated, sit forward in the chair and lean forward slightly toward the audience): honest, open, caring, confident.

- ***Dress appropriately*** (perhaps slightly more casual than your normal business attire): approachable, audience-appropriate, honest, credible.
- ***Well-groomed*** (but not elaborate): knowledgeable, credible.

Negatives

- ***Poor Eye Contact:*** dishonest, closed, unconcerned, nervous, lying.

- ***Constant throat clearing:*** nervous, lacking self-confidence.
- ***Arms crossed on chest:*** arrogant, not interested, uncaring, not listening, impatient, defensive, angry, stubborn, not accepting.
- ***Frequent hand gestures/body movements or fidgeting:*** dishonest, deceitful, nervous, lacking self-confidence.
- ***Hidden hands:*** deceptive, guilty, insincere.
- ***Speaking from behind barriers (podiums, lecterns, tables, desks) or from an elevated position:*** dishonest, deceitful, too formal, withdrawn, distancing oneself, unconcerned, not interested, superior.
- ***Touching and/or rubbing nose or eyes:*** in doubt, disagreeing, nervous, deceitful.
- ***Jingling money/items in pockets:*** nervous, lacking self-confidence, lacking self-control, deceitful. A good tip: empty your pockets before an interview or presentation.
- ***Drumming on table, tapping feet, or twitching:*** nervous, hostile, anxious, impatient, bored.

MYTH VS. TRUTH

Risk Communication Myth: *What you say is more important than how you say it.*

Truth: In a crisis the public and the media will trust the messages they receive if they believe officials have their best interests at heart. It is critical to demonstrate empathy, compassion, and concern when delivering information.

MESSAGES: The Importance of What to Say and How to Say It (Hyer & Covello, 2007)

Having the right messenger is one factor in effective crisis communications. Another critical factor is having clear, concise messages. Messages, especially those about risk, need to be crafted carefully, keeping the principles of risk communications in mind.

Prepare your messages before a radiological emergency, and update them to reflect the facts of the emergency. Messages that are developed and rehearsed in advance are one of your most important tools in a crisis. The developed messages help you to:

- Avoid negatives, scientifically complex terms, and false assurances or guarantees.
- Be prepared for a variety of questions and follow-up questions.
- Be concise and consistent.
- Stay on message.

MYTH VS. TRUTH

Risk Communication Myth: *You can't anticipate what people will ask.*

Truth: 95 percent of all questions and concerns of all stakeholders for all controversies are predictable and can be anticipated in advance.

How the Public Perceives Risk

(Slovic et al., 2001; Covello & Sandman, 2001)

During an emergency it is important to understand how the audience thinks, what concerns them, and what is important to them. People do not like to be "put" at risk in any situation. While they may engage willingly in "risky behaviors," they reject being forced into risky situations they did not choose.

Research shows that "situations involving radioactive materials have a remarkable capacity to produce widespread fear, a profound sense of vulnerability, and a continuing sense of alarm and dread" among people (Becker, 2004).

In light of this deep-rooted fear, communications about risk must go beyond simply providing information. Remember:

- Facts alone cannot overcome strong emotions, and
- When confronting fear, who gives the information and how it is perceived overpowers what is being said.

Perceptions of the seriousness of risk are affected by factors unrelated to data or actual risk (Fischhoff et al., 1981). Understanding how the public's perceptions of risks are influenced will help you understand and effectively address the public's reactions to risk.

For example, statistics show that a familiar and voluntary act like driving a car is a very high risk activity. Flying in a commercial aircraft is considered more risky by many, because it is controlled by others and accidents can be catastrophic, but it is far safer than driving when examined statistically.

Risks viewed as…	…are more accepted than risks viewed as…
voluntary	being imposed.
under an individual's control	controlled by others.
having clear benefits	having little or no benefit.
distributed fairly	unfairly distributed.
natural	man-made.
statistical	catastrophic.
generated by a trusted source	generated by an untrusted source.
familiar	exotic.
affecting adults	affecting children.

(Covello et al., 2001; Covello, 2005)

MYTH VS. TRUTH

Risk Communication Myth: *Communicating risk is more likely to alarm than calm people.*

Truth: Not if done properly. Educate and inform, don't simply alert and alarm. Give people the chance to voice their concerns, ask questions, and process the answers.

KEEP IN MIND

The public often personalizes risk with the same conviction that scientists strive to depersonalize it! A one-in-a-million comparison could be viewed by the health or scientific community as low; the general public will personalize risk and recognize that the one likely could be themselves or a loved one.

Message Development

When preparing to respond to radiological emergencies, it is important to think about what questions might be asked, develop messages to respond, and practice them so that what you say is clear, concise, brief and free of negative words.

Preparing Different Types of Messages (Covello, 2006)
There are three main types of messages that you will need to prepare:

(1) Overarching—Messages that address questions about what is critical to the situation, i.e., what you want the audience to know regardless of the questions that are asked.

- What is the government doing to respond?
- What actions should the public take?
- What is the most important thing people should know about what has happened?

(2) Informational—Messages that respond to questions about the *who, what, when, where* and *how* of the situation. These are usually questions that either ask specifics about types of emergencies or request event-specific information.

- What has happened—when and where?
- Who is involved?
- Where should the public go to get more information?

(3) Challenge—Messages that address or bridge away from questions that are antagonistic, make allegations, question credibility, or ask for guarantees.

- You have failed before, how can we trust you?
- Aren't you really responsible for this situation?
- Can you guarantee that my family is safe?

KEEP IN MIND (Covello, 2003; Hyer & Covello, 2007)

Research shows that effective messages are developed when the following are kept in mind:

- **KEEP IT SIMPLE:** Develop messages at a 6th grade reading level—target your message to an average 12-year-old child, avoiding jargon and scientifically complex terms.
- **KEEP IT BRIEF:** Make messages for the public brief, concise and clear.
- **KEEP IT TO THE POINT:** Follow the 27/9/3 rule.

  27 WORDS total is all print media usually allow for a quote.

  9 SECONDS is what television and radio media outlets usually allow for a sound bite.

  3 KEY MESSAGES is all the public can process during a high stress situation.

Creating Your Messages (Covello, 2006; Hyer & Covello, 2007)

During crises, people cannot process large amounts of information. To assist your audience in understanding what is happening, develop your messages following these guidelines:

- **Length:** No more than 3 key messages. No more than a total of 27 written words or 9 seconds of speech.
- **Language:** Put messages in plain, simple-to-understand language.
- **Sequence:** When people are highly stressed, they usually only remember what they hear first and last. Put the most important piece of information first, the second most important last, and the least important in the middle.

Structuring Your Messages (Covello et al., 2007)

Keeping messages organized and to the point is very important during crises. Remember, people are more likely to recall the first and last messages, so put the least important message in the middle. The following is an easy-to-use structure that allows messages to be clear and concise.

Key Message 1 *(most important)*	**Key Message 2** *(least important)*	**Key Message 3** *(second-most important)*
Supporting Message 1	Supporting Message 1	Supporting Message 1
Supporting Message 2	Supporting Message 2	Supporting Message 2
Supporting Message 3	Supporting Message 3	Supporting Message 3

MESSAGE MAP TEMPLATE EXAMPLE

Scenario: Radiological Emergency

Stakeholder: Public

Question or Concern: What should I do if I think I may have been contaminated?

Key Message 1 Stay informed.	**Key Message 2** Remove your clothes.	**Key Message 3** Wash yourself and your valuables.
Supporting Fact 1-1 Listen to your local Emergency Alert System and public safety officials on radio or TV.	**Supporting Fact 2-1** Place the clothing in a plastic bag and seal it.	**Supporting Fact 3-1** Take a long shower or clean yourself thoroughly using lots of soap and water. Be careful not to scratch or irritate your skin while washing.
Supporting Fact 1-2 Act promptly on the guidance from local public health officials.	**Supporting Fact 2-2** Place the bag as far away as possible from humans and animals.	**Supporting Fact 3-2** Gently blow your nose and wash out your eyes, ears and mouth.
Supporting Fact 1-3 Visit [Web site address] for continued updates.	**Supporting Fact 2-3** Bagged clothing can be examined later to determine if you were contaminated.	**Supporting Fact 3-3** Wash valuables and identification that may have been contaminated; wash your hands again.

MEANS: Working With the Media

(Hyer & Covello, 2007)

The media greatly influence what people think about and the opinions they form during emergencies. In times of crises, the public turn to the media—television, newspaper, Web sites, and radio—for information about what has happened, what they should do, and what will happen.

In emergencies, taking advantage of existing communication methods and channels is critical. Learn what appropriate channels are likely to be used and communicate the messages through these channels. Plan in advance to achieve the best mix of:

- Media: print, television, radio, Web sites, e-mail.
- Face-to-face forums: town hall meetings, public gatherings.
- Community groups: outlets for special population groups.

Understanding the forces that drive the media:
When working with the media, it is important to consider their needs and concerns:

Short deadlines

- Reporters must meet tight deadlines.
- Reporters need follow-up information and updates in a timely manner.
- Reporters appreciate it if you ask when their deadline is, then meet it.

Space limitations

- Reporters cannot always include the background information you provide.
- Reporters prefer succinct responses. Keep information to no more than three points.
- Reporters love concise sound bites. Provide your message in 27 total words.

Competition

- Reporters are competitive.
- Reporters should be given information equally. Avoid "exclusive" interviews that favor specific media outlets.

KEEP IN MIND

Retention of Information

- After three hours: Radio – 70 percent
  Newspaper – 72 percent
  Television – 85 percent
- After three days: Radio – 10 percent
  Newspaper – 20 percent
  Television – 60 percent

Be prepared to provide the media:

Information in a timely manner.
Prevent information vacuums where speculation and rumor can grow and have a serious impact on the situation.

Facts, sources, and relevant materials.
Have easy-to-read materials with important information ready for distribution.

Readily available points of contact.
Identify people who can speak with the media directly or arrange interviews with subject matter experts. Provide 24-hour contact information.

TEMPLATE TOOL

IDK (I Don't Know)

When you don't know, can't answer, or are not the best source for information:

- Repeat the question (trying to avoid negative words or allegations).
- Say "I wish I could answer … ;" or "My ability to answer is limited … ;" or "We are still looking into the situation …"
- Say why you can't answer. Don't say "No comment!"
- Give a follow-up (what appropriate contact person will call) with a deadline.
- Bridge to what can be said (convey your prepared messages).

(Covello, 2006)

Interacting with the media:

There are a number of methods to get your messages out to the public through media interaction.

Live interviews

- Conducted on television or radio by invitation.
- Before accepting the invitation ask yourself:
  - Am I the right person?
  - Do I have the answers to the questions that will be asked?
  - Is this interview needed or the right venue?

News conferences

- Conducted onsite or at a pre-designated location.
- Media from all outlets should be invited.
- Format should provide time for your message and a limited number of questions.
- A short agenda of the briefing and time for questions helps structure the event.

Public meetings

- Conducted as a town hall or public gathering.
- Media from newspaper and television are the most likely to attend.
- Media usually record public's questions and representatives' responses.
- Media will ask questions, especially before and after a session.

On-the-spot, impromptu, or "ambush" interviews

- Conducted wherever you are.
- Before answering any questions, ask yourself:
  - Am I the right person?
  - Do I have the appropriate answers?
  - Is this the right time or place?

KEEP IN MIND

(Hyer & Covello, 2007)

When responding to reporting errors and rumors, remember to:

- **Squelch rumors.** Be clear and unequivocal. Don't leave comments open to interpretation.
- **Never overreact!** Usually mistakes are just that: mistakes.
- **Fix substantive inaccuracies.** Calmly and privately contact the reporter to set the facts straight. Follow up to ensure corrections are publicized.
- **Correct inconsequential or isolated mistakes.** Emphasize the facts whenever possible. If a small mistake is made before a limited audience, correct the mistake within that group only.
- **Don't make it a big deal.** Bringing up rumors and mistakes only reemphasizes them. Fight back with facts!

- Decide if you go or stay. If you decide to go:
  - Be sure to explain politely why you are choosing not to respond.
  - Avoid using the words "no comment."
  - Provide the time for the next media briefing, if one is scheduled.

Being at your best for an interview.

To be at your best during an interview, it is important to anticipate questions, prepare messages, and practice your delivery.

Before the interview:

- Do your homework on issues.
- Decide if the issue is causing high concern locally, statewide or nationally, and tailor your messages accordingly.

- Develop a list of questions the media are likely to ask.
- Develop and practice key messages and responses to anticipated questions.
- Practice speaking without jargon or acronyms.
- Be familiar with all related current events.

- Last-minute details:
  - Check dress and grooming.
  - Remember that everything you say can be reported.
  - There is no such thing as "off the record" replies or commentary.

During an interview:

- Direct the interview toward your three key messages.
- Stay "on message."
- Be confident, but not arrogant.
- Listen carefully and repeat questions if necessary to clarify.

- Avoid hypothetical questions.
- Avoid referring to the interviewer as "Sir" or "Ma'am."
- Never lie or knowingly mislead.
- Correct any information errors upon discovery. Do not delay!
- Never comment on issues outside your area of expertise.
- Never speculate on what has happened or could.

- Treat all questions as serious.
- Look at the interviewer rather than the camera or monitor.
- Keep your cool, even if the interviewer becomes hostile.

KEEP IN MIND (Covello, 2006; Hyer & Covello, 2007)

Supporting your message

Use the following to reinforce your message with the media and public.

- **Visuals**
  - Photos
  - Maps
  - Graphs
- **Facts**
  - Event specific information
  - Percentages or figures
- **Experience**
  - *"Our extensive research confirms that …"*
  - *"Through past experience we have seen …"*

III Quick Response Guide for Radiological Emergencies

THE QUICK RESPONSE GUIDE WILL HELP YOU prepare for and respond to radiological emergencies.

This quick response guide provides:

- Quick suggestions for speaking with the media.
- Three radiological scenarios.
  - Radioactive Materials Transportation Incident.
  - Radiological Dispersal Device.
  - Improvised Nuclear Device.

Each scenario includes:

- Messages that may be appropriate to use during radiological emergencies.
- Information on what you can expect to find during these types of radiological incidents.
  - The scene.
  - The hazards.
  - The communications challenges.

Use the messages carefully.

Your messages should be clear, concise and accurate. The scenario messages may not be suitable to respond to the specific incident you are facing. For additional messages, see Section I, Explaining Radiation Issues in an Emergency.

The scenarios also provide a template that can be used to practice for other emergencies by developing an emergency scenario, messages for that scenario, and expectations for that type of scenario.

Remember to:

Consider the needs of special populations.

Be sure to have plans in place to communicate with special populations such as:

- Schools.
- Health care institutions.
- Non-English speaking groups.
- Home-bound and disabled individuals.
- Homeless people.

Be aware that standard communications channels may not be working.

Provide the public and media with the most current information available and remind them that the situation may change.

For example:

- We are continuing to monitor the situation.
- We are providing you with information based on our current knowledge of the situation.
- We will keep you informed of the status of the situation as we learn more.

Work with the other local, state and federal agencies responding to the incident.

It is important to have a consistent message coming from responders. Work through any disagreements out of the public eye and emphasize the coordinated response efforts.

Quick Suggestions for Speaking with the Media

(Hyer & Covello, 2007)

BEFORE

Be prepared

- Develop three key messages.
- Anticipate questions.
- Develop short, concise responses.
- Make sure you are dressed appropriately.

DURING

Take control

- Deliver your messages: not a debate, educational exchange or a friendly chat.
- Use each question as an opportunity to "bridge" to key messages.
- Demonstrate conviction and confidence.
- Keep your language clear and simple—no jargon.

Do's

- Show empathy for concerns if appropriate.
- Use negative questions as an opportunity to deliver positive messages.
- Answer the easiest question when asked multiple questions.
- Finish your answer even if interrupted.
- Correct misinformation in a question.
- Ask the reporter to restate or clarify the question if you don't understand it.
- Say you are not familiar with facts or figures presented by reporter if you are not.
- Remember everything is on the record and the microphone is always on.

TEMPLATE TOOL

Bridging

It is important to stay on message. Use these types of sample statements when you want to return to your key points or redirect the interview.

"That is a good question …

… however, the reason we are here …"

… however, what is most important to look at is …"

… however, the real issue is …"

NEVER

- Raise negatives yourself or repeat negative language.
- Speculate or respond to "what if" questions.
- Say "no comment."
- Let reporters intentionally or accidentally put words in your mouth.
- Get angry or emotional if the reporter is annoying or even belligerent.

QUICK TIP

Alternatives to "No comment"

- "We are assessing that situation right now, and will share information with you as soon as we have it."
- "Right now we don't have the full answer on that, as we are still focusing our efforts on the priority of …"
- "I'd rather have you speak with an authority on the subject who can give you more thorough information. I'll have [name] call you back."
- "We are just finishing up preparing that information for you and will have it to you in [time frame]."

SCENARIO 1:

Radioactive Materials Transportation Incident

What: A properly marked and licensed truck carrying "yellow cake," the raw material used to make nuclear power plant fuel, was hit by a train at a railroad crossing on the outskirts of a large East Coast city.

Barrels of yellow cake were bumped off of the truck and opened due to the force of the impact. The accident has forced closure of a major commuter route during the afternoon rush hour and the media is out in full force. The area is contained and local hazmat teams are at the scene. Although radiation experts have determined the threat to the public is low, the media attention is extremely high.

When: These messages are designed for use after the area is contained and the media are on the scene.

What to Expect During a Radiological Hazmat Scenario:

- The communications challenge for most hazmat scenarios is to assure both the media and the public that, other than the accident itself, there is no threat to human health or the environment.
- There may be intense media interest in a situation which poses little threat of harmful health effects.

- In an intense media scenario, you can expect:
  - The media to arrive with trucks equipped for live feed at the scene of the accident.
  - The media will want on-scene interviews about the response and the potential threats.
  - The media will want information on what is anticipated to happen in the future.

Messages:

- This is a spill of hazardous material that is radioactive.
- Radioactive material is a hazardous material; local response teams are trained to respond to a variety of hazardous materials including radioactive materials.
- Emergency responders are on scene and following well-established procedures to protect the public.
- The extent of the problem is limited to the immediate area of the accident.
- The radioactive material has been contained.
- Responders will make recommendations for protective actions if they are needed.
- We are working to detour traffic around the accident.
- We continue to monitor the situation and will provide updates.
- We expect cleanup to proceed rapidly.

SCENARIO 2:

Radiological Dispersal Device (RDD)—Dirty Bomb

What: An explosion in an inner city has killed two people and injured four. Readings by local emergency responders have determined that the explosive device contained radioactive materials. A portion of the inner city area has been evacuated and blocked off as a crime scene, and state and federal officials are also on the scene.

When: These messages are designed for use immediately following the explosion when it is likely that dispersal is still occurring. The area where the explosion occurred has been contained. The spokesperson is receiving information from the highest ranking federal official.

What to Expect During a Dirty Bomb Incident:

- A dirty bomb is a type of RDD that spreads radioactive materials with explosives.
  - First responders will cordon off the area for safety and for investigative purposes.
  - The area may be evacuated as a safety precaution.

- The effects from a dirty bomb depend on a number of factors:
  - The amount of explosive.
  - Weather conditions like wind speed and direction during and after the explosion.
  - The relative quantity and type of radioactive material used.
- In some cases, radioactivity may attach to fine dust or other material and be distributed by winds for several miles.
- Because of the limited amount of radioactive material anticipated in RDDs, measurable health effects are unlikely. *[Note: This is incident specific; recent training exercises have considered the possibility of fairly large radiological sources.]*
  - The more significant effects of an RDD are fear and disruption of everyday life.
  - Casualties and injuries are likely to be limited to the area affected by the explosion.

Messages:

- This was an explosion that spread radioactive material.
  - It was not a nuclear bomb.
  - Because of the limited amount of radioactive material anticipated in a dirty bomb, measurable health effects are unlikely.

- Special equipment and response methods may be needed.
  - There are well-established protective actions designed to minimize public risk.
- Avoid the immediate vicinity of the explosion.
- If you have been injured, seek medical attention.
- If you think you have been contaminated, shower and change into clean clothes.
  - Place clothing in a plastic bag and seal it.
  - Bagged clothing can be examined later to determine if you were contaminated.
- Listen for detailed recommendations from public safety professionals.
  - Indoors may be the safest place for now.
- We are continuing to monitor the situation and will alert you to any actions you should take to protect yourself.

SCENARIO 3:

Improvised Nuclear Device (IND)

What: In a large metropolitan area, an Improvised Nuclear Device (IND) has exploded in the city's center. Local emergency responders and state and federal officials are beginning to organize a response.

When: These messages are designed for use immediately following the explosion when it is likely that dispersal (fallout) is still occurring. The spokesperson is receiving information from a radiation expert who is responding to the emergency, and is to communicate with the public via radio and television from outside the affected area.

What to expect from an IND:

- An Improvised Nuclear Device is a weapon made from stolen or illegally produced nuclear material capable of creating a nuclear explosion.
  - The blast, heat, and radiation from an IND detonation can cause massive casualties and significant damage to infrastructure.
  - There is likely to be significant radiation sickness and death.
- In-place communications, electricity and transportation will be disrupted or totally disabled by the blast or fire associated with the IND.
  - Bridges and buildings are likely to be severely damaged.
  - Highways are likely to be blocked with debris and stalled vehicles.
  - Rescue attempts and treatment of casualties may be severely hindered by contamination and fallout.
- The blast zone is large and will present areas of lethal radiation.
  - The blast creates winds several hundred miles per hour.
  - Within a one-mile radius of the explosion, there are few survivors, and homes and buildings are destroyed. (Note: This is based on a 10 kiloton weapon; higher yield weapons will create larger blast zones.)
  - Beyond a mile, people will be injured by flying glass and debris, and, if unprotected, will sustain potentially lethal doses of radiation.
  - There will be many casualties and wounded victims.
  - Dust and debris will limit visibility within a few miles of the blast and fire will break out.
- Depending on proximity to the explosion, temporary blindness from the flash will result in numerous car and truck accidents, and may cause aviation accidents.
- People may be asked to evacuate within a 10-mile radius of the explosion.

- The highest concentrations of fallout will fall closest to the detonation. The concentration of fallout left behind lessens as the radioactive cloud spreads. [Note: This is weather dependent.]
- If electricity and normal communications channels are out, you will have to be resourceful.
  - Use what may be at hand, such as bullhorns, loud speakers, spray paint and flyers.
  - Going door-to-door may be effective.
- Keep in mind that phones—including cell phones—may not work.
- Because this incident may require evacuation, be sure to have plans in place to communicate with special populations such as:
  - Schools.
  - Health care institutions.
  - Non-English speaking groups.
  - Home-bound and disabled individuals.
  - Homeless people.

Messages:

- There has been a nuclear explosion with significant destruction and loss of life.
- The cloud from the explosion is radioactive.
  - The fallout from the cloud is dangerous.
  - Areas downwind from the explosion are especially susceptible to fallout.
  - You should be concerned about fallout in the vicinity of the explosion even if your location is undamaged.

- Follow instructions from local officials.
  - They are following well-established public health procedures.
- If you have been asked to evacuate:
  - As practical, cover yourself to keep the fallout off your skin.
  - Move away from the fallout, not in front of it; move away from the path of the cloud.
  - Take water with you, if possible.
- If you cannot evacuate, seek shelter inside.
- If you think you have been exposed or contaminated, shower and change into clean clothes.
  - Place contaminated clothing in a plastic bag and seal it.
  - Bagged clothing can be examined later to determine if you were contaminated.

IV Building on Lessons Learned

THE PREVIOUS SECTIONS OF THIS GUIDE HELP THE EMERGENCY RESPONSE COMMUNITY to establish successful communications within the first 24 to 48 hours after a radiological emergency. Within 72 hours, government agencies at all levels should have a comprehensive and well-defined communication system in place to respond to inquiries and interact with the media and the public.

Knowing that there can always be a "next time," it is essential following an emergency to analyze what worked and what didn't work in communicating with the media and the public. The list of questions below help to assess the "lessons learned," and can help those involved be better prepared in the future.

After a Radiological Emergency

Gather feedback from the organizations and key actors involved, the public, and the media on the communications' effectiveness.

- What do members of the team think worked? What didn't?

- What challenges did they face?
- Were they prepared?
- How did they respond?
- What criticisms have been received?
- What ideas does the team have for improvement?

Review messages and delivery methods.

- Which messages were effective with the media and the public?
- Which messages caused confusion or anxiety?
- Was the spokesperson empathetic and credible with good delivery?
- Were processes for disseminating information effective?
- How did the public respond to messages?
- Did the public follow guidance?

Gather and analyze available data.

- How well were protective action guidelines followed?
- How well coordinated were your actions with those of other responding agencies?
- How effective were your efforts with the media?
  - How many media outlets reported on the incident?
  - Were your messages clearly and accurately reported?
  - Were your messages timely?

Add up results—both communications and real-world results.

- Which messages and methods worked?
- What didn't work?
- Are there patterns from which to learn?

Develop or revise crisis communications plan.

- Apply new knowledge to make the communications plan more effective.
- Note weaknesses, challenges or pitfalls.
- Determine steps for improvement, then carry out these changes.

APPENDIX A:

Emergency Communications "Top 10" Planning Checklist

(Hyer & Covello, 2007)

The success of communications during an emergency depends on anticipating and preparing for situations yet to be encountered. What information needs to be developed and conveyed to whom, by whom and through what effective channels? It is important to begin thinking about these questions before a crisis occurs. Here are 10 steps you can take to help prepare for an emergency:

1. Form a crisis communications team.

- Keep it as small as practical.
- Select experts from all critical areas of a radiological emergency:
  - Radiation.
  - Communication.
  - Public health and safety.
  - Legal.
- Make the team responsible for developing action steps for an emergency.

2. Develop communications goals.

- Inform the public of the problem and specific dangers.
- Provide guidance on appropriate responses.
- Ease the public's concerns by being prepared to answer their questions or refer them to the most appropriate source of information.

3. Develop a list of anticipated questions and messages.

- Develop messages for the full range of radiological emergency scenarios.
- Anticipate questions for each scenario.
- Prepare messages in all appropriate languages.

4. Prepare fact sheets and background materials.

- CLEAR—Simplify technical language for easy understanding.
- CONCISE—Limit each item to three key messages with supporting information.
- BRIEF—Recognize that attention spans are limited during an emergency.

5. Develop precise logistics, roles and functions.

- Determine roles for each member of the team.
- Create a backup communications plan of what to do if technology fails or those who are designated to be in charge are not available.
- Create a 24-hour contact list for your emergency response team members and decide who will contact each person and in what order.

6. Coordinate communications procedures with other relevant agencies and organizations.

- Determine who speaks to the media and public on particular subjects.
- Determine who are primary and secondary contacts and experts for key offices and issues.

7. Identify and provide media training for lead and secondary spokespersons.

- Include all relevant agencies and emergency responders.
- Select spokespersons who:
  - Remain calm and controlled when addressing the public.
  - Can communicate in non-technical, ordinary language.
  - Can retain and deliver key messages.
  - Can convey empathy and concern with sincerity.
  - Are knowledgeable.
- Use a good spokesperson trainer if necessary.

8. Determine how to get your message out.

- Identify normal best channels.
- Develop alternatives if normal communications channels break down.

9. Develop and maintain media lists.

- Include the names, phone numbers and e-mail addresses for media contacts.
- Keep this list up-to-date and readily available in and outside the office.
- Keep an electronic and printed version.

10. Practice

- Put your planning to practice with scenario-based exercises or drills.
- Evaluate the outcomes of the exercises to identify strengths and areas for improvement.

APPENDIX B:

Answering Difficult Questions (Covello, 2006; Hyer & Covello, 2007)

You may be asked questions that, if answered inappropriately, could create mistaken impressions and fuel unwarranted concerns. Here are some typical difficult questions with tips for handling them:

Allegation Questions

Sample question:
It's EPA's negligence towards radiation containment that caused this mess; how are you going to fix it?

- Rephrase the question without repeating the allegations or saying negative words.
- Acknowledge that effective response is important and drives our actions.
- State three examples of what has been done and/or what EPA is doing or will do to address the issue.

Sample response:
I think you are asking about what EPA's next steps are to contain the radiation. Here are the steps that we have taken …

Guarantee Questions

Sample question:
Can you guarantee that the radiation won't affect my family?

- Avoid a "yes" or "no" response.
- Point out that the question is about the future.
- Acknowledge what has worked in the past/present.
- Go back to known facts, processes or actions: "What we are doing is … ."
- Focus on processes, rather than results.

Sample response:
We are now doing X and Y to protect families in the surrounding community.

Worst-Case Questions

Sample question:
What are the worst effects this radiation leak could have?

- Mention that this is a "what if" question.
- Indicate that it is more useful to talk about "what is."
- Go back to known facts.

Sample response:
I don't want to speculate about what might happen. What I do want to comment on is what we are doing now to protect the public.

QUICK TIP

Avoid saying "there are no guarantees in life" or guaranteeing something you can't control or don't know.

APPENDIX C:

Important Terms and Frequently Used Acronyms

IMPORTANT TERMS

Alpha particle A type of ionizing radiation that can be stopped by thin layers of light materials, such as a sheet of paper. These particles pose no direct or external radiation threat. However, they can pose a serious health threat if eaten, inhaled, injected or absorbed.

Background radiation Ionizing radiation from natural, long-lived sources, such as radioactive elements in the soil or cosmic radiation originating in outer space.

Beta particle A type of ionizing radiation that can be stopped by something like thin aluminum. These particles can pose a serious direct or external radiation threat and can be lethal depending on the exposure. They also pose a serious internal radiation threat if eaten, inhaled, injected or absorbed.

Contamination The deposition of radioactive material on the surfaces of structures, areas, objects or people. Contamination also can be airborne, external or internal (i.e., inside components or people).

Decontamination The reduction or removal of contaminated radioactive material from a structure, object or person.

Dose, or radiation dose Radiation absorbed by a person's body. Several different terms describe radiation dose.

- Absorbed dose: the amount of energy deposited per unit of mass.
- Equivalent dose: the absorbed dose adjusted for the relative biological effect of the type of radiation being measured.
- Committed dose: a dose that accounts for continuing exposure to internal contamination over long periods of time (such as 30 or more years).

Exposure or radiation exposure A term relating to the amount of ionizing radiation that strikes living beings and inanimate material. (This is a general definition. In the field of health physics, exposure is specifically defined as a measure of ionization in air caused by x-ray or gamma radiation only.)

Fallout or nuclear fallout The slow descent of minute particles of radioactive debris in the atmosphere following a nuclear explosion.

Gamma rays High-energy electromagnetic radiation emitted by certain radioactive elements. Gamma rays penetrate into tissue farther than alpha or beta particles. Very dense materials, such as lead, are commonly used as shielding to block this type of radiation. Gamma rays are very similar to x-rays.

Half-life The time any radioactive substance takes to decay down to half of its original amount.

Ionizing radiation Any radiation capable of chemically altering atoms. High doses of ionizing radiation will produce severe skin or tissue damage.

Non-ionizing radiation Radiation that has enough energy to move atoms but not enough to alter them chemically.

Pathway(s) The ways in which people are exposed to radiation or other contaminants. The three basic pathways are *inhalation* (contaminants are taken into the lungs), *ingestion* (contaminants are swallowed), and *direct* (or *external*) *exposure* (contaminants cause damage from outside the body). Exposure can also occur through absorption or injection.

Plume Material spreading from a particular source and traveling through environmental media, such as air or ground water.

Radionuclide An unstable and therefore radioactive form of an element.

Roentgen equivalent man (rem), or Röntgen equivalent man (rem) A unit that relates the absorbed dose in human tissue to the effective biological damage of the radiation. One one-thousandth (1/1000) of a rem is called a millirem.

FREQUENTLY USED ACRONYMS

Federal Radiological Monitoring and Assessment Center (FRMAC) A federally led operations center comprised of federal agencies and usually established near the scene of a radiological emergency from which federal field monitoring and assessment assistance is directed and coordinated.

Interagency Modeling and Atmospheric Assessment Center (IMAAC) A center that produces, coordinates, and disseminates predictions for the movement of hazardous materials carried through the air. The IMAAC is composed of resources from a variety of federal agencies and generates one single federal prediction of atmospheric dispersions and their public health impacts using the best available resources from the federal government.

Improvised Nuclear Device (IND) A nuclear weapon made from illegally obtained fissile materials or a nuclear weapon obtained illicitly. An improvised nuclear devise is designed to inflict maximum destruction by fissioning atoms of uranium, or plutonium, releasing vast amounts of energy in the forms of blast, heat and radiation. Fissile materials are capable of being made into nuclear bombs.

Radiological Dispersal Device (RDD) A device that spreads radioactive materials in the atmosphere using a conventional explosive or other mechanical means, such as a spray. A dirty bomb is an RDD that can kill or injure people through the initial blast of the conventional explosive and spreads radioactive contamination, possibly over a large area. Such bombs could be miniature devices or large truck bombs. A dirty bomb is much simpler to make than a true nuclear weapon.

Protective Action Guide (PAG) Protective Action Guides are designed to protect public health. They help state and local authorities make radiation protection decisions during emergencies by providing guidance keyed to potential conditions during an emergency. The guidance recommends actions that the government can take to protect the public as well as actions the public can take to protect themselves.

APPENDIX D: Suggested Readings

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A Note on Message Development

EPA developed the radiation messages in this guide using an intensive process involving EPA radiation experts, policy makers and communications specialists. Over a two-year period, numerous steps were taken, including:

- EPA emergency responders and communicators identified the questions during a series of focus groups.
- Dr. Vincent Covello, Ph.D., a renowned risk communications expert, led a series of sessions with EPA emergency responders, communicators, radiation technical experts and policy makers to develop the responses.
- The messages were tested in focus groups with the general public.
- The responses were also influenced by communications work done within EPA Region 9 and by several other organizations, including:
  - Department of Homeland Security
  - Centers for Disease Control and Prevention
  - The State of California
  - National Council on Radiation Protection and Measurements

NOTES:

Top 10 Ways
to Avoid Communications Mistakes

1. Your words have consequences—make sure they are the right ones.
2. Don't appear uncertain. Know what you want to say, then say it. Then say it again as appropriate.
3. If you don't know what you're talking about, stop talking.
4. Focus on informing people, not impressing them. Use everyday language.
5. Never say anything you don't want to see printed on tomorrow's front page.
6. NEVER LIE!
7. Avoid making promises, false assurances or guarantees.
8. Don't say "No comment." You'll look as if you are hiding something.
9. Don't get angry. When you argue with the media, you always lose—and you lose publicly.
10. Don't speculate, guess or assume. When you don't know something, say so.

(Covello, 2003; Covello, 2005; Hyer & Covello, 2007)