Radiological Risk Communication

Message Mapping for Effective Radiological Risk Communications for Nuclear Power Plant Incidents

IRPA 13

May 15, 2012

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Risk Communications

- Preparedness for effective communications is essential.
- Effective radiological risk communications is challenging.
- Communications must be easy-to-understand without reliance on technical jargon.

Risk Communication Goals

- Enhance knowledge and understanding.
- Build trust and credibility.
- Encourage appropriate attitudes, behaviors and beliefs.

Risk Communications

- **Preparedness** for effective communications is essential.
- Effective radiological risk communications is challenging.
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Preparedness

- Elements of preparedness (minimum)
  - Tested and practiced message maps
  - Graphics and visual aids to support messages
  - Identified spokesperson/s
  - Joint Information Center

Message Map

Stakeholder Question or Concern:

Key Message 9 words on average		**Key Message** 9 words on average		**Key Message** 9 words on average	
Support-ing Info. 1.1		**Support-ing Info. 2.1**		**Support-ing Info. 3.1**	
Support-ing Info.. 1.2		**Support-ing Info. 2.2**		**Support-ing Info. 3.2**	
Support-ing Info. 1.3		**Support-ing Info. 2.3**		**: Support-ing Info. 3.3**	

Message Maps in Risk Communications

- NRC published NUREG/CR-7032 "Guidance on Developing Effective Radiological Risk Communication Messages: Effective Message Mapping and Risk Communication with the Public in Nuclear Plant Emergency Planning Zones"

http://pbadupws.nrc.gov/docs/ML1104/ML110490120.pdf

Message Maps in Risk Communications

- For most high stress situations, over 95 percent of stakeholder concerns and questions can be predicted in advance.
- NUREG/CR 7033 identified over 400 most likely questions to be asked in a radiological emergency in the U.S.
- How can message maps help?

Message Maps

- Message maps are a tool that communicators can use to organize and present information in a high stress, high profile environment.
- Message maps are based upon studies that show people in crisis/ high stress situation best receive information in small amounts and in straight forward language.

Case Study
Use of Message Maps

- Indian Point Nuclear Power Station located close to New York City decided to develop answers to the “400” questions using message maps

How was the size of the EPZ determined?

Context	Question asks if the planning zone is large enough to protect the public.		
KEY MESSAGES	Message 1 Approximately 10-mile radius	Message 2 Large enough to not exceed Protective Actions Guidelines	Message 3 Large enough for resources to be available
	The Emergency Planning Zone is the area around Indian Point about a 10-mile radius from the plant. Within the EPZ, the principal exposure sources would be from gamma radiation from deposited material (external) or inhaling radioactivity from the passing plume (internal).	Size of the EPZ takes into account the projected doses of a worst case core melt down and release. A joint working group from both EPA and NRC reviewed the basis for the 10-mile zone and concluded that it is of sufficient size so that action could be taken to substantially reduce radiation risks if a severe accident occurred.	Detailed planning within ten miles provides a substantial base for expansion of response efforts in the event that this is proved necessary.
Key words	EPZ	Plume	Radiation protection
	Protective actions	Emergency Planning	Emergency Planning Zone

QUESTION

What does a GENERAL EMERGENCY mean?

Context	A General Emergency (GE) has been declared at Indian Point. It may or may not result in a radiation release.		
KEY MESSAGES	Message 1 Actual or imminent damage to the reactor core	Message 2 Breach of radiation barriers	Message 3 Radiation release above guidelines likely
ENTERGY	A General Emergency (GE) is the most severe accident classification used by the NRC. It generally signifies damage has occurred or is likely to happen to the fuel in the reactor core. Safety systems at the plant have not been successful in preventing damage.	Damage to the reactor fuel produces fission products that are radioactive. In a GE those fission products are not all trapped by the containment dome, resulting in a release of radiation to the environment.	The EPA sets guidelines, above which, protective actions such as sheltering or evacuation are required. In a General Emergency, those guidelines have been or are likely to be exceeded.
Key words	Emergency Classification	General Emergency	Protective Actions
	Radiation release	Core damage	Fuel damage

QUESTION **Does this release affect water supplies in the area?**			
Context	A radioactive release has occurred and concern has been raised about food and water supplies.		
KEY MESSAGES	Message 1 Drinking water supplies are safe	Message 2 DOH will test water from above ground reservoirs	Message 3 Reservoirs may not have been in the plume path
	The amount of radioactivity that has been released is not enough to threaten public water supplies. Radioactive releases disperse or reduce in concentration rapidly as the plume moves away from the plant.	As part of the recovery/cleanup efforts, the New York State Dept. of Health will test air, water, and soil samples. There is a natural background level of radioactivity in any water supply. No activity above background is expected.	Many of the major reservoirs are outside the 10-mile planning zone such as the Croton Reservoir in Westchester County which serves New York City.
Key words	Radiation release	Public health	Water supplies
	Radioactivity	NYS DOH	Reservoirs

QUESTION

Why are farmers being asked to shelter their livestock?

Context	Radiation release is occurring or is likely and New York State is taking action to protect food supply		
KEY MESSAGES	Message 1 Action being taken to protect food supply	Message 2 Pre-determined precautionary measure	Message 3 Safety is most important aspect
	If milk cows eat grass that has been contaminated by radioactive materials, there is a chance that the milk won't be able to be used. The milk can be protected by keeping the cows indoors and not letting them eat potentially affected grass.	It is important to keep the food supply safe and available to residents. This action is often recommended even if there is only a slight chance of a release of radiation. While it can be added work for farmers, there is no harm in sheltering livestock, even if it isn't necessary.	The milk can be protected by keeping the cows indoors and not letting them eat potentially effected grass. Milk will be tested before it will be allowed into the food supply.
Key words	Radiation release	Precautionary measure	Food supply
	Farmers	Livestock	Precautionary measures

Six Elements of a Message Map

- Stakeholder question or concern
- Context (situation/s where map would be used)
- Key messages- (limit to 3)
- Supporting/supplemental information (additional details, visuals, graphics)
- Key words (1-3 word “highlight” of message)
- Partners (other officials or organizations)

Applications of Message Maps

- Fact sheets
- Press releases
- Website Q & A
- Social media
- Presentations

Message Maps

- An important tool in the risk communications tool box.
- Prepared and tested in advance, they can be used to quickly respond to high concern questions.
- Can help officials be timely and relevant when responding to questions in the fast-moving internet age.

Message Maps

- Message maps:
  - enhance knowledge and understanding
  - build trust and credibility
  - encourage appropriate attitudes, behaviors and beliefs
  - Provide timely and approved responses to urgent questions
  - Most effective if developed and tested in advance of an emergency

Why are message maps not regularly used?

- Speakers think their expertise is sufficient for effective communications
- Speakers think they are naturally gifted
- It takes time

Thank you

Questions?