

Effective Risk and Crisis Communication during Water Security Emergencies

Summary Report of EPA Sponsored Message Mapping Workshops

by

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Abstract

This report summarizes results from three water security risk communication message mapping workshops conducted by U.S. EPA's National Homeland Security Research Center during 2005/2006. It provides information about effective message development and delivery that could be useful to water sector organizations as they develop their respective risk communication plans.

Message mapping is a process by which users can predict 95 percent of questions likely to be asked by the media and others following an incident, prepare clear and concise answers to the questions along with supporting information ahead of time, and practice effective message delivery before a crisis occurs.

The workshops were facilitated by Dr. Vincent Covello, internationally known crisis communication expert and Director of the Center for Risk Communication in New York City. Invited workshop participants represented a cross-section of water utilities from various regions of the United States; local, state, and federal government agencies; emergency response organizations; public health officials; law enforcement agencies; and water sector professional associations.

Contents

Acknowledgments	vi
1. Introduction	1-1
EPA Workshops	1-1
Risk Communication Plan	1-1
Workshop Proceedings.....	1-2
Report Organization.....	1-2
2. Guide to Message Mapping (Authors: Vincent T. Covello, Center for Risk Communication, and Scott Minamyer, U.S. Environmental Protection Agency)	2-1
Background	2-1
What Is Risk Communication?	2-1
Mental Noise: Why Risk Communication Matters During a Crisis	2-1
Message Mapping	2-2
Benefits of Using Message Maps	2-2
Uses of Message Maps	2-3
History of Message Maps	2-3
Steps in Developing Message Maps	2-3
Step 1. Identify Potential Stakeholders	2-4
Step 2. Identify Potential Stakeholder Questions	2-4
Step 3. Analyze Questions to Identify Common Sets of Concerns	2-6
Step 4. Develop Key Messages	2-7
Step 5. Develop Supporting Facts	2-8
Step 6. Test and Practice Messages	2-8
Step 7. Deliver Maps Through Appropriate Information Channels	2-8
Other Resources	2-9
3. Message Mapping Workshop Products	3-1
Scenario 1: Hypothetical Credible Threat Involving Chemical Contamination of a Reservoir	3-2
Scenario 2: Hypothetical Physical Attack —Bomb Explosion	3-6
Scenario 3: Hypothetical Credible Threat	3-12
Scenario 4: Hypothetical Power Loss Incident	3-17
Scenario 5: Hypothetical Pesticide Contamination Incident	3-23
Scenario 6: Hypothetical Intentional Biological Contamination Incident.....	3-30
4. Conclusion	4-1
Appendix A: Seven General Rules of Risk Communication	A-1
Appendix B: Water Security Message Mapping Workshop Participants	B-1
Appendix C: References	C-1

List of Figures

2-1. Message Map Template	2-2
2-2. Sample Smallpox Message Map Developed by CDC	2-3
2-3. Sample Matrix of Stakeholders and Their Concerns	2-6

1. Introduction

Risk Communication

The interactive process of exchanging information and opinion among individuals, groups, and institutions involving multiple messages about the nature of risk...

– The National Research Council

EPA Workshops

Risk communication skills are imperative for the successful management of crises. Recent U.S. and global events have resulted in heightened recognition by public officials and others responsible for crisis management of the need to evaluate and refine these skills. Message mapping (described in Section 2) has become widely accepted as a method of preparing ahead of time for crisis communication that will be necessary during various types of potential incidents, including those affecting drinking water and wastewater utilities. For this reason, the U.S. Environmental Protection Agency (EPA) has sponsored message mapping workshops focusing on several categories of water infrastructure crises. These were conducted in the following locations:

Atlanta, GA	March 2-3, 2005
Washington, DC	August 17-19, 2005
Alexandria, VA	February 14-15, 2006

This report presents information from the workshops that could be useful to water sector organizations as they develop or improve their respective risk communication plans.

Risk Communication Plan*

The techniques for developing and delivering effective crisis messages described in this report should be considered within the context of a comprehensive written risk communication plan prepared by the water sector organization in advance. Such plans allow for a proactive, quick, and effective response during an emergency since many of the necessary communication decisions and activities will have already been decided upon. If carefully designed, a risk communication plan can save precious time when an emergency occurs and enable leaders and spokespersons to focus on particulars of the emergency at hand and the quality, accuracy, and speed of their responses.

To show the context of messaging as part of the overall plan, the following describes what a comprehensive risk communication plan should do.

*Source: Adapted from Hyer RN, Covello VT. *Effective Media Communication during Public Health Emergencies: A WHO Handbook*, WHO/CDS/2005.31, World Health Organization, Geneva, 2005 (www.who.int/csr/resources/publications/WHO_CDS_2005_31/en/)

- Describe and designate staff roles and responsibilities for different emergency scenarios
- Designate who is accountable for leading the response
- Designate who is responsible for implementing various actions
- Designate who needs to be consulted during the process
- Designate who needs to be informed about what is taking place
- Designate who will be the lead spokesperson and backup for different scenarios
- Include procedures for information verification, clearance, and approval
- Include procedures for coordinating with important stakeholders and partners (for example, with other water utilities, health agencies, emergency responders, law enforcement, elected officials, and state and federal government agencies)
- Include procedures to secure the required human, financial, logistical, and physical support and resources (such as people, space, equipment and food) for communication operations during a short, medium and prolonged event (24 hours a day, 7 days a week if needed)
- Include agreements on releasing information and on who releases what, when, and how
- Include policies and procedures regarding employee contacts from the media
- Outline well thought out communication contingency plans for various scenarios
- Include regularly checked and updated media contact lists (including after-hours news desks)

- Include regularly checked and updated partner contact lists (day and night)
- Outline exercises and drills for testing the communication plan as part of larger preparedness and response training
- Identify subject-matter experts (for example, university professors) willing to collaborate during an emergency, and develop and test contact lists (day and night); know their perspectives in advance
- Identify target audiences
- Identify preferred communication channels (for example, telephone hotlines, radio announcements, news conferences, Web site updates, and faxes) to communicate with the public, key stakeholders and partners
- Contain **message maps**, including holding statements, core messages, message templates, and **message maps** with answers to frequently asked questions
- Contain fact sheets, question-and-answer sheets, talking points and other supplementary materials for potential scenarios
- Contain a signed endorsement of the communication plan from the agency's director
- Contain procedures for posting/updating information on a Web site
- Contain task checklists for the first 2, 4, 8, 12, 16, 24, and 48 hours
- Contain procedures for evaluating, revising, and updating the communication plan on a regular basis

Workshop Proceedings

Dr. Vincent Covello, internationally recognized crisis communication expert and Director of the Center for Risk Communication in New York City, facilitated the workshops. Dr. Covello has consulted for several hundred public and private sector organizations over the past 30 years, including the EPA, Centers for Disease Control and Prevention (CDC), Department of Defense, Department of Health and Human Services, and the World Health Organization. He has provided expert consultations related to such threats as bioterrorism, West Nile virus, smallpox, SARS, and pandemic flu, and has authored or edited more than 25 books and 75 articles on crisis communication.

Invited workshop participants (see Appendix B) represented a cross-section of water utilities from various regions of the United States; local, state, and federal government agencies; emergency response organizations; public health officials; law enforcement agencies; and water sector professional associations.

Following an overview of risk communication and message mapping principles by Dr. Covello, participant work groups produced several message maps for each of the following six hypothetical scenarios:

- (1) Possible chemical contamination of a reservoir
- (2) Physical attack—bomb explosion
- (3) Credible threat—unknown agent and location
- (4) Loss of electrical power impacting water delivery systems
- (5) Pesticide contamination
- (6) Biological contamination

Products generated by workshop participants include:

- A list of stakeholders who will need information during a water sector crisis
- A list of anticipated questions or concerns from the public and media for each of the six scenarios
- Message maps for a small subset of anticipated questions for each scenario

Report Organization

This report is organized into four sections. Section 1, *Introduction*, provides a brief overview of workshop locations, proceedings, and scenarios. Section 2, *Guide to Message Mapping*, provides a “how to” guide outlining the background, benefits, and steps to message mapping. Section 3, *Message Mapping Workshop Products*, provides lists of potential questions and a subset of message maps produced for each scenario. Section 4, *Conclusion*, provides a brief discussion of this and other risk communication tools available from EPA. Appendix A presents seven best practices for effective risk communication, Appendix B provides a list of workshop participants, and Appendix C includes a list of references.

2. Guide to Message Mapping

Authors

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“We have only recently come to understand that communications are as critical to outbreak control as laboratory analyses or epidemiology.”

– Dr. Lee Jong-wook, Director-General,
World Health Organization, September 2004

Background

Under normal circumstances, the elaborate infrastructures and mechanisms that protect the nation’s water systems generally go unnoticed. In the middle of a water security crisis, however, such as an attack against a water treatment plant or contamination of the drinking water with a naturally occurring organism like *cryptosporidium*, they will be of intense interest. Risk communication during such emergencies will directly influence events. Poor risk communication can fan emotions and undermine public trust and confidence at best, and at worst, incite high tensions, misinformation, and additional crises that need to be handled. Good risk communication can rally support, calm a nervous public, provide needed information, encourage cooperative behaviors, and potentially help save lives.

Effective risk communication is a key responsibility of water utility officials and public information officers in times of crisis. The public, news media, policy-makers, and other stakeholders will expect timely and quality information from water utilities, regulatory agencies, public health officials, and other authorities about the situation. A spokesperson who communicates badly may be perceived as incompetent, uncaring, or dishonest, thus losing trust. One who communicates well, however, can reach large numbers of people with clear and credible health, safety, and security messages.

While the specifics of water security crises are difficult to predict, risk communication *strategies* for such events can be planned before a crisis occurs. Such planning greatly increases the likelihood that communication will further health and safety interests and contribute positively to emergency response efforts. Well-constructed, practiced, and delivered messages will inform the public, reduce misinformation, and provide a valuable foundation for informed decision making.

What Is Risk Communication?

Risk communication is a science-based approach for communicating effectively and accurately to diverse audiences in situations that are high-concern, high-stress, emotionally charged, and/or highly controversial. Its purpose is to enhance knowledge and understanding, build trust and credibility, encourage constructive dialogue, produce appropriate levels of concern, and provide guidance on appropriate protective

behavior and actions following a crisis incident. Although much about risk communication involves elements of common sense, its principles are supported by a considerable body of scientific research as reflected in more than 8,000 articles in peer-reviewed scientific journals, 2,000 published books, and a number of published literature reviews by major scientific organizations such as the National Academy of Sciences.

Mental Noise: Why Risk Communication Matters During a Crisis

Mental noise theory, one of the main constructs of risk communication, indicates that when people are highly upset, they often have difficulty hearing, understanding, and remembering information. Research shows that mental noise can reduce a person’s ability to process information by more than 80 percent. This is mostly due to trauma and a heightened emotional state during a crisis. Factors that cause the highest levels of worry, anxiety, and mental noise during a crisis include but are not limited to perceptions that:

- The situation is under the control of others, especially those we do not trust
- The situation is involuntary
- The situation is inescapable
- The crisis is of human origin versus nature
- The crisis involves something that is unfamiliar or exotic
- The crisis threatens a form of injury or death that is dreaded
- There is a great deal of uncertainty
- Victims include children, pregnant women, or other vulnerable populations
- There are untrustworthy sources of information

The challenge for risk communicators is to overcome the communication barriers created by mental noise. Solutions include developing a limited number of key messages that are brief, credible, and clearly understandable. One of the most powerful tools available to risk communicators for this purpose is “*message mapping*.”



Message Mapping

Message mapping is a seven-step process by which users can:

- Predict 95 percent of questions likely to be asked by the media and others following an incident
- Prepare clear and concise answers to the questions along with supporting information ahead of time
- Practice effective message delivery before a crisis occurs

Message maps are viable tools for communicating information about terrorist attacks and other manmade or natural emergencies. They ensure that risk information has the optimum chance of being heard, understood, and remembered. Message maps allow organizations to convey timely, accurate, clear, and credible information. They enable audiences to better understand issues, act constructively upon the information provided, recover more quickly from the stress of the event, and gain or regain trust in risk managers.

The process has been used for some time by outstanding risk communicators such as Mayor Rudolph Giuliani; most notably in communicating about the attacks on the World Trade Center in New York City on September 11, 2001. Message maps present concise, detailed, and hierarchically organized responses to anticipated questions or concerns. They are visual aids that can highlight at a glance the organization's messages for key issues of concern.

As shown in the template in Figure 2-1, the top portion of a message map identifies the intended audience, the spokesperson, and the specific question or concern the map is intended to address. The next layer of the message map contains three key messages in response to the question. Key messages are intended to address the information needs of a

wide variety of audiences. The three key messages can also serve singularly or collectively as a media sound bite (a very short comment or phrase suitable for use in a broadcast or print news story). Sound bites are critical to successful media interviews. The bottom tier of the message map contains supporting information, blocked in groups of three under the key messages. Supporting messages amplify the key messages and provide additional facts or details.

Benefits of Using Message Maps

As a strategic tool, a message map affords multiple benefits. It provides a handy reference for water security leaders and spokespersons who must respond swiftly to questions on topics where timeliness and accuracy are critical. Multiple spokespersons can work from the same message map to ensure rapid dissemination of consistent messages across a wide spectrum of communication outlets. Message maps provide a unifying framework for disseminating information about a wide range of water security issues.

When used consistently, message maps promote multiple partners "speaking with one voice." Message maps also minimize chances of "speaker's regret," which includes regretting saying something inappropriate or regretting not saying something that should have been said. A printed copy of the message map enables spokespeople to "check off" the talking points they want to address during interviews, in order of their importance. This helps prevent omissions of key facts or misstatements that could provoke misunderstandings or controversy.

Message mapping permits organizations to develop messages in advance for potential emergencies and crises, such as a terrorist attack. Message maps can be tailored to the specifics of the event when the crisis occurs. Once developed, the effectiveness of message maps can be tested through focus groups and practice.

Message Map	
Audience/Stakeholder: _____	
Spokesperson: _____	
Question or Concern: _____	
Key Message 1	
■ Supporting Information 1-1	
■ Supporting Information 1-2	
■ Supporting Information 1-3	
Key Message 2	
■ Supporting Information 2-1	
■ Supporting Information 2-2	
■ Supporting Information 2-3	
Key Message 3	
■ Supporting Information 3-1	
■ Supporting Information 3-2	
■ Supporting Information 3-3	

Figure 2-1. Message Map Template.

Uses of Message Maps

Message maps can be used for effectively sharing information in news conferences, media interviews, stakeholder information exchanges, public meetings, Web sites, telephone hotline scripts, and fact sheets.

History of Message Maps

Message maps were developed by Dr. Vincent Covello in the early 1990s as a specialized tool for communicating effectively in high-stress, high-concern, or emotionally charged situations. Message mapping was first adopted as a public health tool in the aftermath of the U.S. anthrax attacks in the fall of 2001. Early in 2002, the CDC conducted an intensive message mapping session focused on the communication challenges posed by a potential smallpox attack. A product of this workshop was several hundred smallpox message maps. Figure 2-2 (below) provides one example.

Since 2002, agencies at the national, regional, state, and local levels have conducted dozens of message mapping workshops focused on a wide variety of emergency events. For example, emergency events that have already been mapped include bioterrorism, pandemic influenza, exposure to anthrax, smallpox, plague, botulism, viral hemorrhagic fevers, tularemia, and radiation. EPA has conducted message mapping workshops focusing on water sector incidents; crises involving indoor facilities such as buildings, schools, or arenas; and decontamination following an incident.

Several important outcomes have resulted from these mapping efforts. These include identification of key stakeholders early

in the risk communication process, anticipation of stakeholder questions and concerns before they are raised, internal and external partnering in the development of messages, and a vetted central repository of clear, concise, and accurate information for the major types of emergency events.

Steps in Developing Message Maps

There are seven steps involved in the message mapping process. These include: (1) identifying stakeholders, (2) identifying stakeholder questions, (3) analyzing the questions to identify the underlying concerns, (4) developing key messages, (5) developing supporting facts for the key messages, (6) testing and practicing messages, and (7) delivering maps through the appropriate information channels.



Message Map Example

Stakeholder: General Public
Spokesperson: Public Health Official

Question or Concern: How contagious is smallpox?

Key Message 1: Smallpox spreads slowly compared to many other diseases.

- People are infectious only when the rash appears.
- Smallpox typically requires hours of face-to-face contact.
- There are no carriers without symptoms.

Key Message 2: This allows time to trace those who have come in contact with the disease.

- The incubation period for the disease is 10-14 days.
- Resources are available for tracing contacts.
- Finding people who have been exposed and vaccinating them has proved successful in the past.

Key Message 3: Those who have been traced can be vaccinated to prevent illness.

- People who have never been vaccinated are the most important to vaccinate.
- Adults who were vaccinated as children may still have some immunity.
- Adequate vaccine is on hand.

Figure 2-2. Sample Smallpox Message Map Developed by CDC.

Step 1. Identify Potential Stakeholders

The first step in message mapping is to identify potential stakeholders for a selected issue or topic, such as a terrorist attack against a water treatment plant or the discovery of a contaminant in the water system. Stakeholders include the public at large as well as all interested, affected, or influential parties (local, state, and federal; including law enforcement, public health, and elected officials).

Every emergency event involves a distinctive set of stakeholders. Each stakeholder may have a different set of questions and concerns that may be voiced. The following is a list (in alphabetical order) of potential stakeholders for a water security emergency identified by EPA Message Mapping Workshop participants. This list is intended to provide examples of potential stakeholders. Individual water utilities or other water sector organizations may choose to include additional or different stakeholders in their respective risk communication plans than those in this list.

- advisory panels
- business leaders and business community
- consultants
- contractors
- disabled populations
- educational leaders and educational community
- elderly populations
- emergency response personnel
- employees of other responding organizations
- environmental officials
- ethnic populations
- families of emergency responders, law enforcement personnel, hospital personnel, and health agency employees
- fire department personnel
- government agencies
- homebound populations
- homeless people
- hospital personnel
- illiterate populations
- institutionalized populations
- law enforcement personnel
- legal professionals
- local residents who are out of town and their relatives
- media, print and electronic
- military leaders
- minority populations
- non-English speaking groups
- non-governmental organizations
- other water utilities
- physicians, nurses, paramedics, and other healthcare personnel
- politicians/legislators/elected officials
- professional societies
- public-at-large
- public-at-risk
- public health officials
- religious groups
- scientific leaders and scientific community

- security personnel
- service and maintenance personnel
- suppliers/vendors
- tourists or business travelers and their relatives
- union officials and labor advocates
- veterinarians
- victims
- victims' families
- water utility employees

As part of this first step of message mapping, stakeholders can be further distinguished and categorized according to: (1) their potential to affect outcomes; (2) their credibility among other stakeholders; and (3) whether they are likely to be apathetic, neutral, supportive, non-supportive, adversarial, or undecided regarding issues on the table.

It is important to note that maps need not be developed for every stakeholder group on the list. Providing information to the media, for example, will get information to many of the other stakeholders listed. Additionally, the same messages can be used for multiple stakeholders.

Step 2. Identify Potential Stakeholder Questions

The second step is to identify as complete a list of potential questions and concerns for each stakeholder group as possible. Questions and concerns typically fall into three categories:

- **Overarching Questions:** for example, “What do people need to know?”
- **Informational Questions:** for example, “When will the water be safe to use?”
- **Challenging Questions:** for example, “Why should we trust what you are telling us?”

The questions can be further refined by grouping them according to themes (for example, whether the incident involves chemical, biological, physical, or radiological agents; the likely organization responsible for answering the questions; certainty or uncertainty that the event has occurred; and the level of protective actions).

How to Develop Lists of Questions

Lists of specific stakeholder questions and concerns can be generated through research, including:

- Media content analysis (print and broadcast)
- Analysis of web site material
- Document review, including public meeting records, public hearing records, and legislative transcripts
- Reviews of complaint logs, hotline logs, toll-free number logs, and media logs
- Focused interviews with subject matter experts
- Facilitated workshops or discussion sessions with individuals intimately familiar with the issues
- Focus groups
- Surveys

The 77 Most Frequently Asked Questions by Media Following Crisis Incidents

Recent research conducted by the Center for Risk Communication and other groups indicates that questions and concerns raised by stakeholders in emergency situations can be identified in advance using the techniques described above. For example, the following is a list of the 77 most frequently asked questions by journalists during a crisis. The list was generated by researching a large database of questions posed by journalists at news conferences immediately following a disaster and distilling the larger list into 77 questions. This is an excellent resource for identifying potential questions for which message maps should be developed.

What is your name and title?
What are your job responsibilities?
What are your qualifications?
Can you tell us what happened?
When did it happen?
Where did it happen?
Who was harmed?
How many people were harmed?
Are those that were harmed getting help?
How certain are you about this information?
How are those who were harmed getting help?
Is the situation under control?
How certain are you that the situation is under control?
Is there any immediate danger?
What is being done in response to what happened?
Who is in charge?
What can we expect next?
What are you advising people to do? What can people do to protect themselves and their families – now and in the future – from harm?
How long will it be before the situation returns to normal?
What help has been requested or offered from others?
What responses have you received?
Can you be specific about the types of harm that occurred?
What are the names of those that were harmed?
Can we talk to them?
How much damage occurred?
What other damage may have occurred?
How certain are you about damages?
How much damage do you expect?
What are you doing now?

Who else is involved in the response?
Why did this happen?
What was the cause?
Did you have any forewarning that this might happen?
Why wasn't this prevented from happening? Could this have been avoided?
How could this have been avoided?
What else can go wrong?
If you are not sure of the cause, what is your best guess?
Who caused this to happen?
Who is to blame?
Do you think those involved handled the situation well enough? What more could/should those who handled the situation have done?
When did your response to this begin?
When were you notified that something had happened?
Did you and other organizations disclose information promptly? Have you and other organizations been transparent?
Who is conducting the investigation? Will the outcome be reported to the public?
What are you going to do after the investigation?
What have you found out so far?
Why was more not done to prevent this from happening?
What is your personal opinion?
What are you telling your own family?
Are all those involved in agreement?
Are people over-reacting?
Which laws are applicable?
Has anyone broken the law?
How certain are you about whether laws have been broken?
Has anyone made mistakes?
How certain are you that mistakes have not been made?
Have you told us everything you know?
What are you not telling us?
What effects will this have on the people involved?
What precautionary measures were taken?
Do you accept responsibility for what happened?
Has this ever happened before?
Can this happen elsewhere?
What is the worst-case scenario?

What lessons were learned?
Were those lessons implemented? Are they being implemented now?
What can be done now to prevent this from happening again? What steps need to be taken to avoid a similar event?
What would you like to say to those who have been harmed and to their families?
Is there any continuing danger?
Are people out of danger? Are people safe? Will there be inconvenience to employees or to the public?
How much will all this cost?
Are you able and willing to pay the costs?
Who else will pay the costs?
When will we find out more?
Have these steps already been taken? If not, why not?
Why should we trust you?
What does this all mean?

Step 3. Analyze Questions to Identify Common Sets of Concerns

The third step in message map construction is to analyze the lists of questions to identify common sets of concerns in order to focus on the most salient issues. Case studies indicate that questions can typically be categorized into 15 to 25 overarching areas of concern. The following is a sample list, in alphabetical order, of categories of concern that could be considered for a water security event. This list is intended to provide examples of potential categories of concern. Individual organizations may choose to use additional or different categories than contained in this listing.

- Accountability (who is responsible)
- Basic Informational – Who, What, Where, When, Why, How
- Changes in the Status Quo
- Control (who is in charge)
- Duration/Recovery/Decontamination
- Ecological/Environmental
- Economic
- Effects on Children/Future Generations/Elderly
- Equity/Fairness
- Ethics/Morality
- Expertise
- Honesty

- Human Health Concerns
 - one’s own
 - children
 - parents
 - friends and family
 - elderly persons
 - expectant mothers
 - special populations
 - others
- Irreversibility
- Legal/Regulatory
- Listening/Caring/Empathy
- Openness/Transparency/Access to Information
- Options/Alternatives
- Organizational (for example, who’s in charge)
- Quality of Life
- Safety
- Trust
- Unfamiliarity
- Voluntariness

Once common concerns are listed and analyzed, a useful next step is to construct a matrix (Figure 2-3) that contains a list of stakeholders on one axis and a list of stakeholder questions and concerns on the other axis. Within the boxes of the matrix, stakeholder questions and concerns can be designated as: (1) high concern; (2) medium concern; (3) low concern; (4) not applicable. One of the most important uses of the resulting matrix is as a resource allocation guide. Boxes that have the highest number of entries or are of the highest concern should be the first addressed.

Stakeholders	Concerns													
	Human health	Trust	Safety	Basic Information	Organizational	Quality of Life	Accountability	Duration/Recovery	Control	Listening/Caring	Unfamiliarity	Economic	Equity/Fairness	Other
Public-At-Large														
Public-At-Risk														
Victims														
Victims' Families														
Media														
Water Utility Personnel														
Public Health Personnel														
Emergency Response Personnel														
Law Enforcement Personnel														
Government Agencies														
Special Needs Population														
Other														

Figure 2-3. Sample Matrix of Stakeholders and Their Concerns.

Step 4. Develop Key Messages

The fourth step in message mapping is to develop key messages in response to each stakeholder question or concern. Key messages should be based on what the target audience most needs to know or most wants to know.

Key messages can most effectively be developed through brainstorming sessions with a message mapping team. The message mapping team typically consists of subject matter experts, communication specialists, policy/legal/management experts, and a facilitator. The brainstorming sessions produce message narratives, usually in the form of complete sentences. These sentences are then entered as key messages onto the message map template.

Construction of the message map key messages should be guided by theories and principles of risk communication, including mental noise discussed previously. Studies recently conducted by the Center for Risk Communication, for example, indicate that it is crucial for key messages to be concisely stated if they are offered to the news media as sound bites or quotes. Based on an analysis of 10 years of print and media coverage of emergencies and crises in the United States:

- The average length of a sound bite in the print media is 27 words
- The average duration of a sound bite in the broadcast media is nine seconds
- The average number of messages reported in both the print and broadcast media is three
- Quotes most likely to be used as sound bites contained compassion, conviction, and optimism.

With this in mind, the key messages should be organized into sound bites with a total of three bullets containing a maximum of 27 words (combined) that can be spoken in nine seconds. Each of the three bullets should be supported by three additional supporting facts, as described in Step Five. Avoid long explanations. Adherence to the 27 words/9 second/3 message limitation, or 27/9/3 template, helps ensure that spokespersons are quoted accurately and completely in media interviews.

It is often appropriate to provide a brief preamble to the message map or key messages that indicates authentic empathy and compassion, which are crucial factors in establishing trust in high-concern, high-stress situations. The greater the extent to which individuals and organizations are perceived to be genuinely empathic, the less likely it is that mental noise will interfere with the audience's ability to comprehend messages. This is referred to as the **Compassion, Conviction, and Optimism (CCO)** template in risk communication. This preamble does not count in the 27/9/3 message.

An example of the CCO template was the response offered by Mayor Giuliani in New York City following the terrorist attacks on the World Trade Center on September 11, 2001. At the first news conference following the collapse of the second Tower, the Mayor said: "The number of casualties is more than any of us can bear ultimately." He delivered his messages with the perfect balance of compassion, conviction, and optimism.

Additional Key Message Templates and Principles

Professional risk communicators have developed several additional templates for developing effective messages, including the following:

Rule of 3: In high-stress situations, people can process only three messages at a time instead of the seven they could normally process. This is why message maps have three key messages.

Primacy/Recency: Spokespersons should state the most important messages first and last. In high-stress situations, listeners tend to remember that which they hear first and last. Messages in the middle of a list are often not heard or remembered.

Average Grade Level Minus 4 (AGL- 4): During crises, messages should be at the average grade level of the intended audience, minus four. For example, message maps produced for populations in industrialized nations during crises are typically constructed to be easily understood by an adult with a 6th to 8th grade education, instead of the normal 10th to 12th grade level.

Triple T Model: When time permits, present the full message map using the repetitive structure found in the "Tell me, Tell me more, Tell me again model," or "Triple T Model": (1) Tell people what you are going to tell them in summary form, i.e., the three key messages; (2) Tell them more, i.e., the supporting information; (3) Tell people again what you told them in summary form, i.e., repeat the three key messages. The greater the extent to which messages are repeated and heard through various channels, the less likely it is that mental noise will interfere with the ability to comprehend messages.

Negative Dominance (1N = 3P): According to risk communication theory, people tend to focus more on the negative than on the positive in emotionally charged situations. For this reason, it is important to balance negative key messages with positive, constructive, or solution-oriented key messages; offering three positive messages for every one negative. Also, it is important to avoid unnecessary, indefensible, or non-productive uses of absolutes and of the words "no," "not," "never," "nothing," or "none."

Anticipate, Prepare, Practice (APP): Spokespersons should anticipate questions, prepare answers, and practice delivery ahead of time (never wing it).

Cite Third Parties: Spokespersons should cite third parties or sources that would be perceived as credible by the receiving audience. The greater the extent to which messages are supported and corroborated by credible third party sources, the greater the trust and the less likely it is that mental noise will interfere with the ability to comprehend messages.

Address Risk Perceptions: Key messages and supporting information should address emotionally charged factors that influence the way people perceive risks, such as lack of control, dread, unfamiliarity, uncertainty, and effects on children. Research indicates that the greater the extent to which risk perception factors are addressed in messaging, the less likely that mental noise will interfere with the ability to comprehend messages.

Use Graphics and Other Visual Aids: The use of graphics, visual aids, analogies, and narratives (e.g., personal stories) can increase an individual’s ability to hear, understand, and recall a message by more than 50 percent. Moreover, because visual aids are processed by a different part of the brain than word messages, they present the opportunity to provide information that can be processed in addition to the 27/9/3 messages.

Step 5. Develop Supporting Facts

The fifth step in message map construction is to develop three supporting facts, information, or proofs for each of the three bullets in the 27/9/3 key message. The same principles that guide key message construction guide the development of supporting information.

Step 6. Test and Practice Messages

The sixth step is to conduct systematic message testing using standardized testing procedures. Message testing should begin by asking subject matter experts who are not directly involved in the original message mapping process to validate the accuracy of information contained in the message maps. Message testing should then be done with individuals or groups who have the characteristics to serve as surrogates for key internal and external target audiences and with partner organizations. Sharing and testing messages with partners promotes message consistency and coordination across organizations.

Step 7. Deliver Maps Through Appropriate Information Channels

The seventh and final step is to plan for the delivery of the prepared message maps through: (1) trained spokespersons, (2) trusted individuals or organizations, and (3) chosen communication channels.

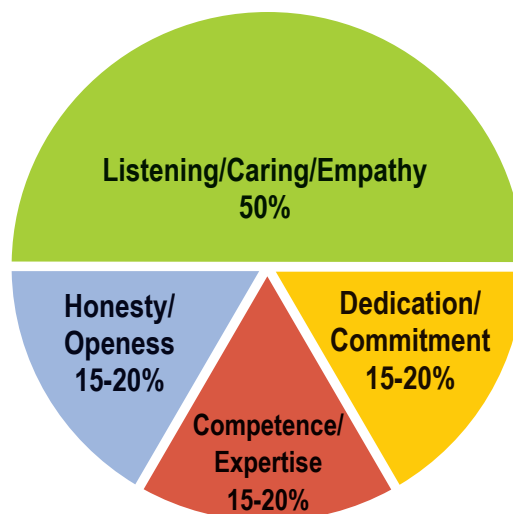
In the event of a significant threat or water security incident, the water utility will work collaboratively with other responsible agencies in managing the response and communicating risk. Depending on the type of incident, this may include local government officials; state and local public health departments; the state water primacy agency; emergency responders; law enforcement; and pertinent federal agencies. Coordination among the partner agencies in selecting the appropriate spokespersons and delivering clear and consistent messages across organizations will enhance communication effectiveness. Having experts available from the various organizations to verify information or answer questions pertaining to their areas of responsibilities will also increase credibility when delivering messages.

As mentioned previously, once developed, message maps can be used to structure news conferences, media interviews, information forums and exchanges, public meetings, web sites, telephone hotline scripts, and fact sheets or brochures focused on frequently asked questions.

Trust Factors for Effective Delivery

Trust factors are extremely critical for effectively delivering messages during a crisis incident. Under non-stressful circumstances, people base opinions regarding the trustworthiness of a spokesperson largely on competence and expertise. During a crisis, however, factors that most influence whether or not people trust the speaker change primarily to perceptions of empathy and trust. Will Rogers, the famous American humorist of the 1930s, put it well when he said “When people are stressed and upset, they want to know that you care before they care about what you know.”

Research indicates that during a crisis, listeners will base their opinion of the trustworthiness of a speaker on the following:



It is important to note that during crises, people judge the messenger before the message and they base their judgment in terms of trust, forming their impressions within the first 9 to 30 seconds. Trust is judged primarily through actions, body language, and verbal communication. In Western culture, non-verbal cues that communicate when a speaker is attentive and empathetic include maintaining eye contact, keeping hands above the waist and visible, and maintaining body posture that signals that the speaker is listening such as standing straight or leaning slightly toward the audience while sitting. Other non-verbal factors that have an influence include dress, appearance, and voice inflection.

Crisis Message Delivery Templates

The following five templates will assist in effective message delivery during crisis situations.

1. Bridging Templates: Spokespersons should use statements such as the following to return to the key points or to redirect the communication when the discussion moves off course:

- “However, what is more important to look at is ...”
- “However, the real issue here is ...”
- “And what’s most important to remember is ...”
- “With this in mind, if we take a look back ...”
- “If we take a broader perspective, ...”
- “Let me put all this in perspective by saying ...”
- “Before we continue, let me take a step back and repeat that ...”
- “This is an important point because ...”
- “What this all boils down to is ...”
- “What matters most in this situation is ...”
- “Let me just add to this that ...”
- “I think it would be more correct to say ...”
- “In this context, it is essential that I note ...”
- “Another thing to remember is ...”
- “Before we leave the subject, let me add that ...”
- “And that reminds me ...”
- “While...is important, it is also important to remember ...”
- “It’s true that...but it is also true that ...”

2. IDK (I Don’t Know) Template: Spokespersons should use this approach when they do not know the answer to a question, cannot answer, or are not the best source for the answer:

Steps

- Repeat the question (without negatives)
- Say “I wish I could answer;” or “My ability to answer is limited;” or “I don’t know” (less preferred)
- Say why you cannot answer
- Give a followup with a deadline (for media question)
- Bridge to what you can say

Example: (1) “You’ve asked me about...; (2) I wish I could answer; (3) We’re still looking into it; (4) I expect to be able to tell you more by ...; (5) What I can tell you is...”

3. Guarantee Template: Spokespersons should use this template when asked to guarantee an event or outcome:

Steps

- Indicate that the question is about the future
- Indicate that the past/present predict the future
- Bridge to known facts, processes or actions

Example: (1) “You’ve asked me for a guarantee, to promise something about the future; (2) The best way I know to talk about the future is to talk about what we know from the past and the present; (3) And what we know is ...” OR
“What I can guarantee [assure; promise; tell you] is ...”

4. “What If” Template: Spokespersons should use this when asked a “what if, what might happen” question:

Steps:

- Repeat the question (without negatives)
- Bridge to “what is”
- State what is known factually

Example: (1) “You’ve asked me what might happen if ...; (2) I believe there is value to talk about what is, what we know now; (3) And what we know is ...”

5. False Allegation Template: Spokespersons should use this when responding to a hostile question, false allegation, or criticism.

Steps

- Repeat/paraphrase the question without repeating the negative; repeat instead the opposite; the underlying value, or use more neutral language
- Indicate that the issue is important
- Indicate what has been done or will be done to address the issue

Example: (1) “You’ve raised a serious question about “x;” (2) “x” is important to me; (3) We have done the following to address “x.”

Other Resources

Appendix A presents seven best practices for effective risk communication. Other resources are available in the literature and on the web. Appendix C lists a selection of references used in developing this report.



3. Message Mapping Workshop Products

As mentioned in Section 1, six hypothetical scenarios dealing with water infrastructure crisis incidents were developed for the EPA Message Mapping Workshops and presented to participants. These include incidents involving the following:

1. Potential chemical contamination of a reservoir
2. Physical attack/bomb explosion
3. A credible threat involving an unknown agent and location
4. The loss of electrical power impacting water delivery systems
5. Pesticide contamination
6. Biological contamination

For each of the scenarios, work groups brainstormed to develop lists of anticipated questions and example message maps for a selected subset of the anticipated questions. Work groups included five to seven subject matter experts representing various sized water utilities, public health, emergency response, law enforcement, water sector professional organizations, and local/state/federal water agencies; public information officers and other communication specialists; and policy and management experts.

Stage of Crisis Designation

Work group members recognized that the focus of risk communication may change as a given crisis situation unfolds. The various stages of an incident, as defined in EPA's Response Protocol Toolbox (<http://www.epa.gov/safewater/>), include the following:

Possible: An incident is considered feasible under the circumstances

Credible: Evidence is available indicating that an incident could have occurred

Confirmed: Analysis and other evidence verifies that an incident has occurred

Remediation and Recovery: Stage begins after an incident has been contained.

The message maps included in this section list the stage of the incident at which workshop participants intended the maps to be delivered.

Scenarios, Questions, and Message Maps

Descriptions of the six individual scenarios, along with lists of potential questions and a set of message maps developed for each, are provided below. The summaries of the scenarios presented are intentionally brief and general in nature for security purposes. They are intended to provide the broad context under which the questions and maps were developed.



Workshop Subject Matter Experts Collaborate to Develop Message Maps.

NOTE

Because of the limited time available during the workshops, the groups focused on developing a small subset of message maps for potential questions that may be asked by the media. The maps have been reviewed by technical experts but not tested as indicated in Step 6 of the message mapping process.

IMPORTANT

Questions and message maps included in this report are intended to serve as examples water sector organizations can refer to while developing questions and maps as part of their own crisis communication planning.

Organizations should use the message mapping process described in Section 2 to identify their own respective key stakeholders, compile lists of pertinent anticipated questions, and develop messages they would most likely need to deliver under various crisis situations they may confront.

