Environmental Risk Communication: What Is It and How Can It Work?

Nashville, March 5-6, 2002

Summit Proceedings

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August 2002

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Introduction and Executive Summary

Advances in information technology and recent terrorist events are causing many people to question the way in which environmental risks are communicated. Environmental risks consist of incidents or trends, either man-made or natural in cause, that have potential to inflict harm to human health and/or ecosystems and could include physical assets or the economy (i.e., business and social disruption).

Communication of environmental risks can be divided into two distinct categories, according to the time-sensitivity of the need for sharing information: 1) events that might occur in the future where prevention is the focus, and 2) emergency scenarios where an event has occurred, and there is a need for immediate notification and deployment of mitigation actions. Moreover, the consequences of these events can produce either acute or chronic effects.

Many risk communication stakeholders, both those providing and receiving risk information, are confronted with the overarching challenge of how best to communicate environmental risk. At issue is the question of what constitutes environmental risk communication as well as how risk-related information can be delivered in a meaningful, cost-effective and secure manner.

In an effort to address these concerns, the Vanderbilt Center for Environmental Management Studies (VCEMS) hosted an environmental risk communication summit in March 2002. Summit participants, by invitation only, represented a wide variety of risk stakeholders: local, state and federal government; industry; non-profit environmental groups; emergency responders; media; and academics and scientists. In addition to VCEMS, summit co-sponsors included The Consortium for Risk Evaluation with Stakeholder Participation (CRESP) program

of the U.S. Department of Energy (DOE), U.S. Environmental Protection Agency (EPA) and the Vanderbilt Institute for Environmental Risk and Resources Management.

The summit began with a keynote address delivered by Greer Tidwell, Sr., well-known environmental regulator, academic and consultant, on the topic of environmental risk communication from a multi-stakeholder perspective. He emphasized the importance of frank, candid and constructive interaction among risk stakeholders. Summit attendees then convened in smaller groups for facilitated discussions on: 1) managing prospective and imminent risks, 2) the role of risk communication in each context and 3) strategies for effective risk communication. The summit concluded with a plenary session in which attendees collectively defined a short-term action plan to address identified environmental risk communication needs.

Among important environmental risks that were cited was how risk itself is communicated; that is, the provision of misinformation or withholding of information can lead to increased anxiety and related psychological impacts as well as less informed decision-making. This led to a conclusion that we need to know more about how people form and respond to their "core risk values". Absent this information, it is difficult to establish environmental risk management priorities and, subsequently, environmental risk communication strategies. When emergency scenarios are involved, additional risk management and communication considerations arise.

Discussion also focused on the many types of environmental risk stakeholders, as well as the distinction between those who manage risk and those who are at risk. A common concern voiced by summit participants was that, all too often, key stakeholders are left out of the risk communication network or the dialogue is one-directional with the absence of a feedback loop.

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Summit participants also offered specific views about the essentials for effective risk communication. This discussion was multi-faceted, covering such topics as communication processes, infrastructure and media, as well as message content and delivery. Impediments to effective environmental risk communication were also cited.

The summit concluded with a session on short-term action items that could be undertaken to advance environmental risk communication methods and practices. In forming this agenda, summit participants reached consensus on a single overarching objective: *to better educate risk stakeholders.* A variety of initiatives were identified to meet this objective.

The summit provided an important networking opportunity among risk stakeholders whose paths all too often cross during rather than prior to an emergency situation. Hopefully, it will serve as a catalyst for improved relationships to facilitate significant progress in achieving this agenda.

Important Environmental Risks To Be Managed

A prerequisite to discussing the topic of environmental risk communication is defining the key environmental risks that warrant management attention. The diversity of the stakeholders involved in this discussion provided an opportunity to elicit a broad-based response.

Most participants adopted a holistic approach and recognized a variety of risks, some of which are more acute in nature and others that have longer-term implications. Among the important environmental risks cited were:

1. Persistent pollutants that provide insult to air, water and soil (e.g., vehicle emissions)

2. Infectious diseases (including biological agents)

3. Radiological contaminants (e.g., nuclear power, Cold War legacy)

4. Chemical agents (e.g., toxic exposure)

Somewhat surprising, however, was the addition of the following environmental risk to the list:

5. How risk itself is communicated – provision of misinformation or withholding of information, leading to increased anxiety and related psychological impacts as well as less informed decision-making.

The significance of this last entry is the emergence of improper risk communication as an environmental risk in and of itself. It represents explicit acknowledgement that decisions that adversely impact human health, ecosystems, physical assets and the economy may be made when risk is improperly communicated. This underscores the importance of effective risk communication.

Considerable discussion was devoted to how an individual forms a perception of a specific environmental risk. Among the factors identified were:

1. degree of familiarity with the concept of risk assessment

2. comfort level with uncertainty and low probability/high consequence events

3. the context in which risk is experienced (e.g., acute vs. chronic; voluntary vs. involuntary; existing exposure vs. potential exposure)

4. environmental quality as a societal concern (often tied to the state of the economy)

5. media attention that heavily favors the reporting of sensationalized risks, as opposed to the risk of day-to-day situations.

6. lack of a sense of urgency associated with foreseeable environmental problems whose effects are more long-term in nature

7. scenarios with the potential to affect large numbers of people that are not well understood (e.g., effects of pollution, science of immunology)

This led to a conclusion that we need to know more about how people form and respond to their "core risk values". In fact, this knowledge is fundamental to establishing environmental risk management priorities and, subsequently, environmental risk communication strategies.

Of particular note is that the discussion focused almost exclusively on man-made risks, both accidental and intentional, the latter presumably motivated by sensitivities to the terrorist events of September 11, 2001. In contrast, natural environmental disasters, such as earthquakes, floods, tornadoes, hurricanes and forest fires, were hardly mentioned. This suggests that a type of "tunnel vision" may be forming in which the topic of environmental risk is becoming centered on man-made disasters. This may be due in large part to public perception that unlike "acts of God", humans are accountable for man-made disasters and that preventive measures could have been taken.

Real-Time Perspectives

Additional risk management considerations arise when emergency scenarios are involved. These are characterized by:

1. time sensitivity of information sharing and decision-making

2. situations that are volatile and uncertain

3. a dual focus of mitigating incident consequences as well as controlling public hysteria (i.e., managing the media)

4. facilitating communication among responders while simultaneously communicating to receptors (e.g., public at large)

5. jurisdictional issues over who is in charge

6. tension that can occur between responders and emergency planners

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7. an acute need to rely on existing response plans and access to risk gathering and communication tools

8. difficulties in documenting and recording activities during incident evolution

Environmental Risk Stakeholders

Environmental risk stakeholders generally fall into two categories, those who manage risk and those who are at risk (receptors). Situations where an individual or group is concurrently both a risk manager and receptor are also common (e.g., emergency responders). Collectively, these stakeholders form the basis for risk communication that impacts prevention and emergency scenarios. All too often, key stakeholders are left out of these interactions or the dialogue is one-directional with the absence of a feedback loop.

Summit participants identified a variety of risk stakeholders (see Table 1). In assembling this list, it was recognized that the role of particular risk managers and the impacts on specific risk receptors will vary depending on the nature of the risk (e.g., type of environmental risk, need for emergency response).

Table 1 – Environmental Risk Stakeholders	
Risk Managers	**Risk Receptors**
individuals	individuals
elected officials	communities
businesses	employees
regulators (federal, state, local)	emergency responders
environmental conservation groups	ecosystems
emergency responders	businesses
media	shareholders
academics, scientists	future generations
banking/real estate developers	infrastructure
insurers	

Characteristics of Effective Environmental Risk Communication

Summit participants identified key ingredients for effective environmental risk communication. This discussion was multi-faceted, covering such topics as communication processes, infrastructure and media, as well as message content and delivery. Participants acknowledged that some forms of risk communication are better suited for dealing with prevention situations, others are more appropriate in handling emergency scenarios, and some can be effective in either case.

Communications Processes

The communication process is at the heart of effective environmental risk communication because it establishes the policies and procedures under which individuals and organizations will operate. Summit participants viewed exemplary risk communication processes as having the following characteristics:

1. the organization has a single point of contact for communicating risk (e.g., communications officer) and a designated place to host media interaction

2. effort is made to engage risk stakeholders early in the process

3. emphasis is placed on fostering and maintaining relationships between risk managers within an organization and between different stakeholder organizations

4. effort is made to build a relationship with local community – "invest in being known", including the establishment of feedback mechanism

5. frequent communication is maintained in non-crisis times with the media and community (e.g., media days)

6. educational programs are offered to younger age groups to help prepare them to become an effective communication conduit in the future

7. the public is involved in preparedness exercises

8. post-incident debriefings are held on a regular basis

Communications Infrastructure

Another requirement for effective communication is the ability to disseminate risk information in a timely, reliable and targeted manner. Summit participants felt that this is aided considerably by the existence of:

1. a clearinghouse (control center) where risk information is collected, assessed and distributed

2. redundancy in the communication system design, so that information can continue to be disseminated in the event of a systems failure

3. innovative communication technologies (e.g., visual representation of risks using geo-spatial tools) that enable information to be more effectively gathered and disseminated

Communications Media

Risk information should be disseminated through a variety of media. A multi-media approach increases the likelihood that risk stakeholders are properly informed, taking into consideration such factors as time-of-day, immediacy of information need and ready access to various media channels. The following communications media were identified as having relevance to effective environmental risk communication:

1. word-of-mouth

2. informing prominent community leaders, who in turn disseminate the information to their constituents

3. public speaking engagements and involvement at community meetings

4. interactions with focus and advocacy groups

5. radio, television, telephone (cell & stationary) and fax

6. broadcast via bullhorn and house-to-house personal contact

7. Internet dissemination (e.g., web, e-mail, chat rooms)

8. data transmission technologies (e.g., global positioning systems)

9. experiential contact (e.g., field trips)

10. print media (e.g., newspaper, flyers, signs/posters)

11. other channels (e.g., license plates, bumper stickers, billboards)

Message Content

Reaching the proper audience through the proper means at the proper time is a prerequisite to effective environmental risk communication. However, the content of the message also plays a key role in a successful communication outcome. Summit participants associated the following qualities with exemplary message content:

1. message is consistent, complete and understandable

2. emphasis is placed on promoting knowledge and awareness

3. communication is in an active (here is what we are doing) voice

4. information is provided with honesty, humility and compassion

5. what is known and not known is explicitly stated

6. focus is put on keeping the story simple and emphasizing the big picture

7. relevant details and appropriate analogies/tradeoffs are provided commensurate with the type and significance of the risk involved to portray the proper risk perspective

8. information presented is customized according to audience age, language, culture, experience, education level and attention span

Personal Message Delivery

When the communication media involves a spokesperson that is being interviewed or is interacting directly with an audience, the credentials of the messenger and the context of the message become critical to communication success. Summit participants acknowledged that the spokesperson should:

1. have credibility and an established reputation with the audience

2. anticipate the needs of the audience and be an effective listener

3. stay calm and unflappable

4. promote healthy discussion and mutual respect for opposing views

5. acknowledge stakeholder ownership and right to know

6. be responsive and accessible

In reviewing the previous discussion, it is important to recognize that what is characterized as "effective" may depend on the perspective of the risk stakeholder. At the summit, no attempt was made to associate characteristics of effectiveness with stakeholder type, although an increased understanding of these associations might allow risk managers to practice more effective communication.

Impediments

As expected, summit participants viewed impediments to effective environmental risk communication as being the inability to attain the characteristics presented in the previous section. In general, these impediments were associated with:

1. lack of valid data to support claims made about risks

2. differing perceptions among risk managers about what is important to communicate

3. the use of "techno speak" and other jargon that results in the provision of confusing and distorted information

4. jurisdictional disputes that inhibit information gathering and dissemination efforts

5. questionable credibility of the message and/or messenger

6. information not provided in a timely manner

7. limited access to communication technology and/or lack of technology integration

In addition, impediments were identified that can be attributed to external factors which influence the ability to communicate risk effectively. Among these factors are:

1. the continually changing political climate

2. lack of incentives to perform long-term risk planning studies, negatively impacting the communication of risks that may be important but not urgent

3. non-disclosure of risk-related information due to anti-terrorism, business confidentiality and legal considerations

Short-Term Action Items

In forming an agenda for enhancing environmental risk communication methods and practices, summit participants reached consensus on a single overarching objective: *to better educate risk stakeholders.*

Participants identified the following short-term (i.e., 2002-2004) initiatives to promote risk knowledge and awareness:

1. **conduct an environmental risk communication "market research" study -** to identify the environmental risk stakeholders, what they want to know and who they want to hear from (initial study plus ongoing mechanism)

2. **prepare environmental risk communication case studies -** document prevention and emergency situations where risk communication succeeded and failed, including a discussion of lessons learned

3. **convene a focus group of news media editors and reporters** – discover and document how editors assign reporters to stories, what registers with reporters when covering an environmental risk-related story, and what distinctions are made when assigned a "breaking" story as opposed to an "enterprise" story

4. **evaluate how environmental risk communication effectiveness is impacted by national security constraints on information disclosure** – assess how the absence or availability of different types of risk information influences the ability of risk stakeholders to protect human health, ecosystems, physical assets and the economy

5. **develop case studies to evaluate environmental risk communication management linkages –** review the institutional arrangements among risk stakeholders in case study areas to determine what risk communication linkages exist, what communication strategies are being used and their degree of effectiveness, and where risk communication management linkages need to be established and/or strengthened

6. **develop and publish environmental risk communication guidelines** - prepare guidelines for effective risk communication among risk managers and between risk managers and receptors

7. **introduce environmental risk assessment, communication and management into the educational curriculum** - for secondary schools, universities and executive management training, develop teaching materials that can serve as stand-alone offerings and as part of a cross-training program (e.g., combined with topics such as technology, management, law and public policy)

8. **encourage formation of environmental risk communication advisory committees** – invite environmental risk communication stakeholders within the community to collaborate in identifying key environmental risks, communication roles and responsibilities, and strategies for effective risk communication for both prevention and emergency scenarios (e.g., through local emergency planning committees)

9. **organize symposia to promote knowledge and awareness of environmental risk communication methods and practices** - convene regional and national workshops, seminars and conferences in which exemplary risk communication methods and practices are disseminated and future needs are discussed; separate events could be established for communication among risk managers and communication between risk managers and risk receptors.

10. **develop a national "risk" dialogue –** introduce regularly scheduled programs in which contemporary environmental risk issues are presented and discussed (e.g., television documentary on risk cases, public forum/talk show on risk (i.e., "This Week In Risk"), gifted storytellers explaining risk to audiences)

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11. **promote the importance of risk communication in emergency response planning and training exercises** – encourage communities and agencies to include risk communication as an explicit element in emergency response plans and response training exercises (perhaps using EPCRA as a vehicle)

12. **encourage greater use and integration of information technology –** promote the value in utilizing and integrating innovative information technologies to collect and transmit risk information

13. **develop and promote risk assessment methods at the macro level to support effective environmental risk communication –** as risk communication is linked to providing information that is easy to understand and focuses on the big picture, develop a set of scientifically-credible, macro level risk assessment protocols that provide results which are more conducive to communicating with a non-technical audience

While seemingly worthwhile initiatives that are practical and achievable, the success of any of these activities will hinge on finding the appropriate individual to champion the cause as well as a sponsoring agency. Time did not permit summit attendees to address these considerations nor to discuss measures of success that could be used to evaluate the outcome of each initiative.

Concluding Remarks

The environmental risk communication summit provided an important forum for a diverse set of risk stakeholders to benchmark what is currently known about environmental risk communication, achieve consensus on critical needs and define a short-term action plan to begin to address these needs. Although a meaningful experience, absent post-summit follow-through to better define proposed initiatives, metrics for success and sources of funding, little of lasting value will have been achieved. Therefore, it is incumbent on summit participants and the risk stakeholder groups they represent to work proactively and collaboratively for these initiatives to be realized.

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Acknowledgements

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