

## 4. Risk Communication

Protecting public health, coastal communities, and coastal and linked economies requires promoting behaviors that reduce vulnerabilities and promote recovery from impacts of HABs. Such “risk-wise” behaviors include participating in volunteer phytoplankton monitoring efforts, complying with beach closures and fish consumption advisories, and reporting and treating HAB-related illnesses. HARRNESS affirms the importance of education and outreach, especially communications focused on susceptible populations such as those subsistent on local seafood, “to ensure accurate knowledge, attitudes, and perceptions” fundamental to such “risk-wise” behaviors (HARRNESS 2005, 65). Risk communication is a field of social science that promotes effective communication by scientists, resource managers, educators, community leaders, and others toward this end.

**Research Need: Risk communication research assisting scientists, resource managers, educators, community leaders, and others in focusing communications to promote public behaviors that reduce vulnerability and respond to impacts of HABs.**

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**HARRNESS Recommendation:** While HARRNESS does not explicitly recommend risk communication research, the insights of this field are critical to achieve one of its goals – focusing outreach and educational communications to promote “risk-wise” public behaviors, thereby protecting public health, coastal communities, and coastal and linked economies.

A growing and major challenge faced by resource management, public health, and other agencies is the communication of increasingly complex science to publics who may be disinterested until they are negatively impacted. In a technologically advanced democracy, citizens risk becoming disenfranchised on an increasing number of issues characterized by complex scientific and technical information. The fact is, there is a general lack of understanding in the public sector regarding the mathematical probabilities that are inherent in scientific and technical information such as HAB forecasting models. Consequently, as the information revolution continues to accelerate, it becomes increasingly clear that more information does not result in better informed citizens empowered to prevent and respond to the impacts of extreme natural events such as HABs. Conversely, providing the public with too much information can lead to “information overload,” which can be as ineffective as not providing enough.

### Areas of Risk Communication Research

Risk communication is a field of social science that focuses on six needs critical to improve the effectiveness of organizations at communicating complex science to policy makers, stakeholders and interested citizens: building organizational trust, understanding risk perceptions, understanding social amplification of risk, improving mass media communications, developing communication

messages, and developing communication strategies. These needs cut across organizations charged with protecting societal objectives such as public health and ecosystem function. They also cut across natural resource and hazard management issues facing such organizations. To

prevent and respond to impacts of any hazard, both internal and external audiences need appropriate, timely and clear information about actual and probable impacts, and appropriate responses. Organizations

#### Areas of Risk Communication Research

- Organizational Trust
- Risk Perceptions
- Social Amplification of Risk
- Mass Media
- Message Development and Design
- Communication Strategies

need detailed information about how their interested audiences understand, perceive, react to, behave and use information related to science, warnings, forecasts, and hazards. Ineffective communication about risk situations can increase harm to citizens, increase concern or fear needlessly, lead to inappropriate behaviors, and decrease trust in agencies, which can further decrease agency effectiveness.

*1. Building Organizational Trust.* Building trust is the fundamental focus of risk communication. Trust is characterized by a number of features, including perceived competence, objectivity, fairness, consistency, and goodwill. Risk information sources, such as government agencies, need to understand that trust is a very important factor in the acceptance and effectiveness of risk-based messages to the public. Most research confirms that government agencies are in fact considered by the public to be a less-than-trusted source of risk information. The public tends to view government risk-based information as distorted, biased and probably incorrect. The effectiveness of government agencies as sources of information and risk communicators suffers from the lack of trust in its messages and is further aggravated by the public's increased worry about risk (Foster 2000).

For example, along the US West Coast, state agencies do a good job of protecting the health of those who wish to harvest shellfish species prone to marine toxin exposure, especially domoic acid. Extensive toxin testing is conducted prior to and during any shellfishery opening. Testing has limited the incidence of human illness to only a few minor cases and prevented any deaths associated with this dangerous toxin. This testing and the states' strict adherence to federally established action levels have also resulted in numerous fishery closures that have in some cases lasted more than a year. Frustration over these closures and the fact that there have been very minor, if any health impacts has led to a general level of disbelief and distrust of the agencies. From the perspective of coastal resource managers, this lack of confidence is a

Risk communication research is critical to help scientists, coastal resource managers, water utility managers, public health authorities, and others communicate forecasting and other information so that the public understands the probability of a HAB event, trusts the message, and responds in ways that reduce vulnerabilities and promote recovery from impacts.

puzzling result of the successful protection of the very people who don't believe they need protection. Such lack of confidence illustrates that maintenance of trust must be a priority in the design of any risk communication strategy. Agencies face several challenges in the area of trust and credibility, not only because they are already perceived to be a less trusted source, but also because they sometimes discourage public participation in decision making processes (Renn 1998).

The other side of the trust issue pertains to resource management and other experts, who are also prone to the same biases as the general public. For example, experts sometimes view the public as: 1) incapable of grasping complex issues, 2) incapable of forming relevant views, 3) believing anything they read in newspapers, 4) holding opinions shaped by narrow, selfish concerns, 5) apathetic, and, 6) unwilling to take the time or trouble to consider anything that does not affect them directly. In short, the public is often perceived by agencies as gullible, selfish, and irresponsible.

It is vital, therefore, for agencies to incorporate information on audience perceptions of science and risk in their programs and activities as they relate to the development, management and communication of scientific and technical information. Recognizing trust as an important aspect of risk communication is only one step toward establishing the practical operational aspects of what an institution must do to increase the public's trust and confidence in it. More often than not, governments are called upon to inform and reassure individuals about risks that are unknowable, unpredictable and about which the experts disagree. Some suggest that scientific uncertainty has a tendency to politicize risk, changing the nature of the engagement between experts, politicians and the public to one in which trust becomes a pivotal element (Coote and Franklin 1999). A correlation between trust and credibility and risk perceptions has suggested that when trust or credibility is lacking, people perceive greater risks. Public meetings, used in many risk situations, can be critical in setting the stage for understanding and believing hazards. Research can address how



Bob McCausland, *The Daily World*, Aberdeen, WA

dialogue and consideration of alternatives can promote more informed decisions about risk behaviors.

**2. Understanding Risk Perceptions.** Research in this area is primarily designed to help agencies better understand how stakeholders and other audiences understand, perceive, and behave toward specific sociocultural, public health, economic, or environmental hazards. Information from these studies is particularly useful in organizational decision making about how to better address concerns of affected audiences. In some cases, audiences may misunderstand complex scientific and technical information. In others, stakeholders may need additional or different information in helping them make rational choices. Information on risk perceptions can help agencies determine agency needs for research, audience needs for information, and appropriate methods of delivering complex information to meet target audience needs.

For example, public meetings called to discuss a marine toxin related fishery closure are often characterized by polar perceptions of risk. Some insist that HABs are “not a real problem” and express a strong preference for fishery and health managers to let them “take their chances” by engaging in risk-prone harvesting and recreational activities. Others express extreme fear of exposure to toxins and seek government reassurance that there is no risk before they are willing to participate in any harvest or recreational activities.

Agencies also face pressures emergent with the evolution of the “information society.” For example, people

are better educated and have greater access to information through vehicles such as the internet and 24-hour news. A better informed and educated public is far less likely to accept direction from authority without question when it affects their day-to-day lives. For example, the public is becoming increasingly aware of risks to the food supply and is demanding more information.

**3. Social Amplification of Risk.** Risk events pertaining to hazards interact with psychological, social, institutional, and cultural processes in ways that can heighten or attenuate perceptions of risk and shape risk behaviors. Behavioral responses, in turn, generate secondary sociocultural and economic consequences. Consequences of HABs and other coastal hazards extend beyond human health to include impacts such as liability, insurance costs, loss of confidence in institutions, stigmatization, cultural loss, and alienation from community affairs. Individuals, groups, the media, and institutions become amplification stations. Agencies need to understand how their activities and communications amplify hazards (Kasperson 1992).

**4. Mass Media.** How messages are formulated and delivered to the mass media by coastal resource managers, public health authorities, and others can influence how the media cover a HAB event or other hazard. The media, in turn, play an important role in risk communication and the formation of public concerns, beliefs and behaviors. Despite its importance in shaping public risk perceptions and behaviors, the extent of the media’s impact on public perception and management of risk remains somewhat of a mystery and is the subject of much ongoing research. Research in this area may involve analysis of how the media are covering hazard events, and how agencies and organizations are providing messages to the media. Risk communication researchers also provide training for agency personnel on effective communication of risks to the mass media.

It is widely accepted that the media are not only an important source of risk information to the public, but also play a role in bringing issues to their attention, fueling a sense of public urgency. Journalists are not educators or, at least, this is not their primary role. From this perspective, it is not surprising that media coverage seldom results in more than cursory coverage of an issue, contributing little if anything to the more

complicated process of working through the problems. News coverage that presents positions as adversarial often actually retards progress towards dealing meaningfully with issues. The adversarial position rarely corresponds to the real views of most people. This is a style of communication which rarely comes close to true risk communication. The media tend to highlight existing concerns, uncertainties and conflicts, rarely questioning the legitimacy of any source, and presenting all sources on a rather equal footing. In this sense, the media's role might be considered to be "non-judgmental." Information is provided to the public with little or no analysis of its technical accuracy (Friedman 1986).

*5. Message Development and Design.* The presentation of a risk message can significantly influence the public's understanding of risks associated with HABs or other extreme natural events. For example, different ways of framing messages can lead to vastly different public perceptions and behaviors. People will use their own frames of reference to define issues, often resulting in completely different understanding. Providing scientific and technical information, for example, has been found to not always change target audience knowledge, attitudes or behavior.

One important purpose of message construction, for example, is enhancing efficacy beliefs to promote risk reduction behaviors. Fear appeals can result in target audiences denying risk rather than taking protective behaviors. One of the more important factors in improving the effectiveness of messages is that of source trust and credibility. Agencies are particularly vulnerable when warnings and forecasts are issued. If warnings are not issued and a risk event occurs, agencies can lose credibility because the public views them as not "on top" of the hazard. However, issuing a warning in cases when nothing happens tends to decrease credibility because the agency was obviously wrong. The next forecast is then less credible. Risk communication research studies how such messages can be constructed to better communicate the nature of a warning or a forecast so audiences more clearly understand probabilities and likelihoods of a negative event and respond in ways that reduce vulnerability and respond to impacts.

Another important areas of message development and design relates to the formatting and presentation of

the message. These factors have been found to significantly influence an audience's understanding of information, their perceptions of the sending agency, their disposition to think about the relevance of the information, and their decision to seek additional, supporting or contradictory opinions or facts (Scherer et al. 1999). For agencies which routinely send risk-based messages, it may be critical to understand how such messages are received by the audience, audience trust, message believability, and behavioral intentions.

Studies that analyze the characteristics of a risk on a range of known important dimensions can help in developing accurate and understandable messages. Dimensions include whether the risk exposure is voluntary or involuntary, whether the hazard is natural or man-made, whether it is familiar or unfamiliar, dreaded or not dreaded, chronic or catastrophic, knowable or unknowable, whether the information comes from a trustworthy or an untrustworthy source, and whether the process is responsive to individual or community needs or unresponsive.

*6. Development of Communication Strategies.* How messages are communicated (e.g., media channels), the objectives of the communication, and the assumptions of change all contribute to the likely effectiveness of the communication effort. Development and implementation of communication strategies, in order to be effective, must be more than a creative activity. Communication strategies need to be based on sound social science research, audience analysis, theories of change, how audiences receive information, how social linkages influence beliefs and perceptions, the level of organizational trust, and the relevance of the information to the intended audience. Theories of change, or even assumptions of how groups, communities or individuals change as a result of information, determine the type of communication strategy developed. For example, if the assumption is that more information will result in risk-protective behaviors of a population at risk, one type of communication strategy will be developed. If the assumption is that change is most likely to result when messages building organization trust are used, a different type of strategy may be developed. Reducing the likelihood of ineffective communication and improving the quality of communication require both formative and evaluative research. Formative research can prevent major communication errors, and summative research can help

provide guidelines for more effective and efficient future communication.

### Research Methods

A broad range of research methods are appropriate for studying risk communication. These include traditional focus groups, interviews, and surveys, as well as fast-cycle surveys which compress the time needed for conducting the survey from months to weeks. Other techniques include the use of a mental models approach which constructs “mental maps” of how an agency and interested publics conceptualize a risk situation, and use that information to design communication strategies to meet the needs of both parties. Another method, co-orientation studies, compare perceptions between impacted parties to better understand how communication can be improved. All these methods can be applied to studies enhancing the effectiveness of communications about risks associated with HABs.

### Example Project 1

#### Improving Fishery Closure Communication

**Description:** Risk perception studies prior to fishery closures can help determine the range of concerns, trust levels, and information needs of stakeholders – information that is critical for fishery managers and public health authorities to develop communication messages and strategies effective at promoting risk-wise public behaviors. For example, for those who insist that HAB events are not a real problem, research can reveal why they believe this and what information will increase their confidence in and compliance with closures. For those at the other extreme who are uncertain whether unaffected fisheries are safe, awareness of their perceptions and concerns can help agencies design messages that increase trust and promote understanding of the relevant science.

**Methods:** Focus groups and fast-cycle surveys can assess the range of concerns, perceptions, and needs of the various stakeholder audiences.

**Outcomes:** More effective messages and communication strategies that improve agency credibility, develop social network linkages supporting agency decisions,

facilitate efficiency of communication with stakeholders, and ultimately promote public behaviors that prevent and respond to impacts of HABs.

**Challenges:** Because social situations may change rapidly (e.g., economic conditions in the community, risk events such as fishery-induced illness or death, or media coverage of an event), any social survey must be regarded as a “snapshot” of a community.

#### Expertise Needed:

- Risk Communication
- Statistician
- Field interviewers, including focus group facilitators

**Timeline:** Three months to one year.

**Estimated Cost:** Depending on geographic target area and study population, projects may range from \$65,000 to \$200,000.

### Example Project 2

#### Effectiveness of Agency Messages Delivered to the Media and/or Public

**Description:** The purpose of this project is to assess the effectiveness of agency information releases to the media (or directly to the public in the form of web information, leaflets, etc.) at meeting agency objectives such as building trust and credibility, communicating important and relevant science, and addressing public concerns related to health, sociocultural, and economic interests. The study would examine agency communications and analyze their themes, follow how the media used the materials (e.g., modified or edited), and test the perceptions of a sample of intended stakeholders to determine efficacy of communications for agency objectives.

**Methods:** Content analysis of communication materials, analysis of media published stories, and an experimental design testing with a sample of appropriate stakeholders.

**Outcomes:** Improved understanding of how agency information is being understood and used by media and stakeholders to inform development of more effective communication messages and strategies.

**Challenges:** Because not all agency communication materials can be included in such a study, a major challenge will be to select an appropriate sample of materials which will represent the range of messages being sent to the media and the public.

**Expertise Needed:** Researchers experienced in content analysis and field researchers experienced in quasi-experimental field research.

**Timeline:** One to two years.

**Estimated Cost:** \$90,000 to \$240,000, depending on quantity and type of materials analyzed, geographic target area, and study population.

### Example Project 3

#### Improving Agency Understanding of Target Audiences

**Description:** One of the difficulties of risk communication is that stakeholder and scientists/regulators generally have very different and often conflicting views of the nature of an environmental or health hazard. Research highlighting these differences can often dramatically improve communication for both stakeholders and the agency. Questions to be addressed include: What information does the target population currently have? How believable is it? Do they see the information as relevant? Do they trust agency communication? How well do they understand the goals of the agency? Do they perceive any risk (related to agency activities such as fisheries or beaches)? Specific problems may relate to topics such as: (a) Closure of fishing areas where there have been no health problems (because of successful closures), but local communities, visitors and other stakeholders believe that closures are unnecessary. (b) Effective delivery of forecasting information and warnings, recognizing that agency credibility can easily decline with the likelihood of false warnings or forecasts. (c) Situations in which stakeholders are unaware of hazards that have been identified, but community cooperation and participation is needed for monitoring and/or response.

**Methods:** Focus groups and fast-cycle surveys can assess the range of concerns, perceptions, and needs of the various stakeholder audiences. This research would also include scientists, regulators, and educators

charged with communicating with and working with the community. The research could utilize a co-orientational approach or a mental models focus (described above).

**Outcomes:** Greatly improved understanding of the needs, perceptions and roles of stakeholders, regulators, scientists and educators. Sharing this information among all parties can result in greatly increased communication opportunities.

**Challenges:** Such studies involve intense periods of data collection, followed by a need for opportunities to involve the various involved parties in discussion.

**Expertise:**

- Risk communication
- Statistician
- Field interviewers

**Timeline:** One to two years

**Estimated Cost:** Depending on geographic target area and study population, projects may range from \$100,000 to \$200,000.