An Introduction to Risk Communication for International Agricultural and Extension Educators

Michael D. Woods, Assistant Professor
Cathy Pisano, Research Assistant
Agriculture and Natural Resources
Education and Communication Systems
Michigan State University
408 Agriculture Hall
East Lansing, MI 48824-1039

Abstract

Interest in risk communication by Extension has mushroomed in recent years (Hutcheson, 1999). One explanation for this increased interest is the passage of right-to-know laws related to exposures to agricultural and environmental risk agents. Another stems from increased public fear and concern about exposure to agricultural and environmental risk agents and the corresponding demand for risk information. A third reason is the increased number of media reports focused on agricultural and environmental issues. The fourth reason underlies the first three - the loss of trust in government and industry as credible sources of information about agricultural and environmental risks.

The purpose of this report is to review the main findings from literature on risk, risk perceptions, and risk communication. The objective is to provide the agricultural and Extension educator with a general outline of the literature on risk communication and to relate this research to specific techniques and approaches that can be put into practice for building international partnerships for sustainable Extension and rural development.
Introduction

From the environment to our health, from natural disasters to epidemics, wherever we turn, ‘risk’ appears to be at the top of the agriculture and natural resources agenda. Around the world, a number of very recent risk controversies such as pesticide use, product labeling, overuse of antibiotics, BSE or mad cow disease, genetic modification of food, foot-and-mouth disease, and now concerns of food security to threats of agro-terrorism have created a climate of anxiety about the direction and management of our agricultural, environmental, and technological future.

According the Beck (1986/1992), we are now living in a ‘risk society,’ and slowly but surely, society is being asked to take on more risk — by industry, by employers, by governments, by society itself, and even by our environment and food. Few of the risks are new, but all are much more visible than they used to be, and they touch more people — including the agricultural and Extension educator.

While environmental and food risks ultimately impact society at-large, agricultural and Extension educators face new challenges in communicating technical information to inform the general public and other non-technical audiences (Deshler, 1990). Sometimes, the objective will be to deliver technical information to motivate people to take action (i.e., instructing workers about how to properly use equipment and chemicals, teaching low-income families about good nutrition, explaining the importance of water quality). In other instances, it may be telling people that a perceived hazard is not as serious as they may think. Another occasion may be to inform people so that they will be prepared in the event of an emergency. For each of these situations, there are specific strategies to overcome the potential communicative and educational barriers presented. There are also general techniques and approaches that can be used to increase the effectiveness with which technical and complex information can be explained to non-technical audiences.

Purpose and Objectives

Hutcheson (1999) contends that risk communication strategies “can help to increase the effectiveness with which Extension delivers education and information from a variety of subject areas to the general public.” This paper demonstrates how research on risk, risk perceptions, and risk communication can contribute to international agricultural and Extension education. The paper begins by defining risk and the concepts of risk perception. After setting the stage of risk and the theoretical framework of risk perception, the paper outlines what is meant by risk communication and progressively narrows its focus to address specific techniques and approaches that agricultural and Extension educator can harvest from risk communication research.

Defining Risk

Until recently, the idea of risk was relatively uncontroersial. Like other social problems, risks were believed to be the outcome of specifiable conditions and could be identified. Thus, any definition of risk is likely to carry an element of subjectivity, depending upon the nature of the risk and to what it is applied (Slovic, 1997). As such, there is no all
encompassing definition of risk. Chicken and Posner (1998) recognized this, and instead offered their interpretation of what a risk constitutes: Risk = Hazard x Exposure. They define hazard as “…the way in which a thing or situation can cause harm” and exposure as “…the extent to which the likely recipient of the harm can be influenced by the hazard” (Chicken & Posner, 1998).

Smith (1999), on the other hand, maintains that risk is “a decision expressed by a range or possible outcomes with attached probabilities. When there are a range of possible outcomes but no assumed probabilities, there is only uncertainty.” Whereas, Hertz and Thomas (1984) suggest “…risk means uncertainty and the results of uncertainty…risk refers to a lack of predictability about problem structure, outcomes or consequences in a decision or planning situation.” Williams, Smith and Young (1995) declared that risk is a “deviation from the expected…the possible variation in outcomes.”

As indicated by, Kolluru, Bartell, Pitblado, and Stricoff (1996), risk encompasses four discernible elements. The first is frequency. Will an event happen? How often will it occur? Frequency is closely linked with the second component, severity. What are the likely consequences? Can they be described in financial or intangible terms? What will be the effect on reputation or public confidence? These estimates are invariably value judgments, depending on the position of the observer. The third element of risk is the confidence in our estimates. How sure are we in our knowledge? Are the data reliable? Do we really understand them? The final element is public perception. How do the ‘experts’ see the risk? Is the public's perception different? What contributes to the public’s perception? Slovic (1997) concluded “Adequate risk communication is virtually impossible without a thorough insight into the public’s perception of hazards and risks.”

The Theory of Risk Perception

Important contributions to our current understanding of risk perception have come from geography, sociology, political science, anthropology, and psychology. Geographical research focused originally on understanding human behavior in the face of natural hazards, but it has since broadened to include technological hazards as well (Burton, Kates, & White, 1978). Sociological (Short, 1984) and anthropological studies (Douglas & Wildavsky, 1982) have shown that perception and acceptance of risk have their roots in social and cultural factors. Short (1984) argues “response to hazards is mediated by social influences transmitted by friends, family, fellow workers, and respected public officials.” Douglas and Wildavsky (1982) assert that people, acting within social groups, downplay certain risk and emphasize others as a means of maintaining and controlling the group.

A major development in the area of psychological research has been the discovery of a set of mental strategies that people employ in order to make sense out of an uncertain world (Kahneman, Slovic & Tversky, 1982). In particular, laboratory research on basic perceptions and cognitions has shown that difficulties in understanding probabilistic processes, biased media coverage, misleading personal experience, and the anxieties generated by life’s gambles cause uncertainty to be denied, risks to be misjudged (sometimes over estimated and sometimes underestimated), and judgments of fact to be held with unwarranted confidence. Expert’s judgments appear to be prone to many of the same biases as those of the general
public, particularly when experts are forced to go beyond the limits of available data and relay on intuition (Kahneman, Slovic & Tversky, 1982; Henrion & Fischhoff, 1986).

Research further indicates that disagreements about risk should not be expected to evaporate in the presence of evidence. Strong initial views are resistant to change because they influence the way that subsequent information is interpreted. New evidence appears reliable and informative if it is consistent with one’s initial belief; contrary evidence tends to be dismissed as unreliable, erroneous or unrepresentative (Nisbett & Ross, 1980). When people lack strong prior opinions, the opposite situation exits — they are at the mercy of the problem formulation. Presenting the same information about risk in different ways (e.g., mortality rates as opposed to survival rates) alters people’s perspectives and actions (Tversky & Kahneman, 1981).

Slovic (1997) concludes that the paradox for those who study risk perception is that, “as people have become healthier and safer on average, they have become more — rather than less — concerned about risk, and they feel more and more vulnerable to the risks of modern life.” This paradox underscores the importance of effective risk communication as an essential prerequisite to public decision-making and indeed public perceptions of risks related to agriculture and the environment.

Risk Communication

As agricultural and Extension educators, we are continually being challenged to present issues of risk in terms that can be readily understood by both professionals and the general public. In this light, risk communication is seen to provide a means for bridging the gap between experts’ and lay persons’ views of risk.

Risk communication is a science-based approach for effectively communicating in high concern, low-trust, sensitive or controversial situations (Covello, 1992). According to a U.S. National Research Council committee on risk perception and communication (1989), risk communication is now defined as, “An interactive process of exchange of information and opinion among individuals, groups and institutions. It involves multiple messages about the nature of risk and other messages, not strictly about risk, that express concerns, opinions, or reactions to risk messages or to legal and institutional arrangements for risk management.”

According to Chess, Hance and Sandman (1988), Covello and Allen (1988), and Covello (1992), risk communication offers a set of principles, tools and techniques for helping interested parties or stakeholders to:

- provide knowledge needed for informed decision-making in high-concern situations;
- build or re-build trust among stakeholders; and,
- engage stakeholders in dialogue aimed at resolving disputes and reaching consensus.

There are no easy prescriptions for successful risk communication. However, those who have studied and participated in recent debates about risk generally agree on seven cardinal rules (Covello & Allen, 1988). These rules apply equally well to the public and private sectors. Although many of the rules may seem obvious, they are continually and consistently violated in practice.
Rule 1 - Accept And Involve The Public as a Legitimate Partner. A basic tenet of risk communication in a democracy is that people and communities have a right to participate in decisions that affect their lives, their property and the things they value.

Rule 2 - Plan Careful And Evaluate Your Efforts. Risk communication will be successful only if carefully planned.

Rule 3 - Listen to The Public’s Specific Concerns. If you do not listen to people, you cannot expect them to listen to you. Communication is a two-way activity.

Rule 4 - Be Honest, Frank, And Open. In communicating risk information, trust and credibility are your most precious assets.

Rule 5 - Coordinate And Collaborate With Other Credible Sources. Allies can be effective in helping you communicate risk information.

Rule 6 - Meet The Needs of The Media. The media are a prime transmitter of information on risks; they play a critical role in setting agendas and in determining outcomes.

Rule 7 - Speak Clearly And With Compassion. Technical language and jargon are useful as professional shorthand. But they are barriers to successful communication with the public.

As outlined in Table 1, research that supports risk communication includes how people assess trust and credibility (trust determination theory), what factors increase or decrease a person's anxiety (risk perception theory), how people process information when they are upset (mental noise theory), as well as the impact of using negative words when talking with an anxious/agitated person (negative dominance theory).

Table 1: Theoretical Foundation of Risk Communication

<table>
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<tr>
<th>Theory</th>
<th>Main Claim</th>
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<tr>
<td>Trust determination theory</td>
<td>Upset people tend to be highly distrustful</td>
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<tr>
<td>Risk perception theory</td>
<td>Perception equals reality. What is perceived as real is real in its consequences</td>
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<tr>
<td>Mental noise theory</td>
<td>Upset people have difficulty processing information. Processing (hearing, understanding remembering) can be reduced by 80%</td>
</tr>
<tr>
<td>Negative dominance theory</td>
<td>Upset people tend to assume the worst</td>
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Currently, three approaches exist within which risk communication strategies can be developed: technical, public relations and multi-disciplinary.

Technical Approach: relies heavily upon the dissemination of technical information about the situation under discussion. Often, the risk communication materials are prepared by engineers and technical staff. The approach focuses on presenting the facts about the
technological capability to protect human health and the environment and the level of risk actually posed to the community. Too often, this approach ignores the need to discuss appropriate interpretations of risks and options for enhancing safety and health issues.

**Public Relations Approach:** focuses principally upon the messages to be conveyed to the public. The aim is to ensure communicators have the proper training and good communication skills. Little attention is given to community understanding of complex scientific and medical issues. Too often, designing, and disseminating the ‘right’ message predominates (National Academy of Science, 1989). The intent is to present facts and information in non-technical terms and often within the context of sound bites.

**Multi-disciplinary Approach:** integrates information representing, a number of different disciplines. Because several factors can contribute to the public’s perception of risk, information from all relevant areas must be included in the communication strategy. These could include technical aspects of the activity, scientific and medical information about potential harm from the activity, economic and societal benefits to be derived, etc. The public relations component focuses on presenting this range of information within those contexts diverse audiences can readily understand.

For most agricultural and Extension education situations requiring effective risk communication, the multi-disciplinary approach is preferred. An effective communication strategy integrates information about a particular problem or new activity with an understanding of agricultural, environmental and/or public health realities and an awareness of community concerns. This approach provides the best possible arena for scientific and public interaction. It emphasizes the integration of different sources of information. This approach facilitates the development of a strategy to address the concerns of a diverse range of citizens: residents, media, business, organizations, educational institutions, activists, and governmental officials. However, regardless of which models forms the foundation of a risk communication strategy, maintaining trust and credibility during the exchange of information among the various stakeholders is critical.

**Risk Communication Myths**

According to Chess, Hance and Sandman (1988) there common myths that often interfere with the development of an effective risk communication program. Table 2, provides an overview of these myths and provides suggested actions that agricultural or Extension educator can take to advance a risk communication program.
Table 2: Risk Communication Myths and Action

<table>
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<tr>
<th>Myth</th>
<th>Action</th>
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<tr>
<td>We don't have enough time and resources to have a risk communication program.</td>
<td>Train all your staff to communicate more effectively. Plan projects to include time to involve the public.</td>
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<tr>
<td>Telling the public about a risk is more likely to unduly alarm people than keeping quiet.</td>
<td>Decrease potential for alarm by giving people a chance to express their concerns.</td>
</tr>
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<td>Communication is less important than education. If people knew the true risks, they would accept them.</td>
<td>Pay as much attention to your process for dealing with people as you do to explaining the data.</td>
</tr>
<tr>
<td>We shouldn't go to the public until we have solutions to environmental health problems.</td>
<td>Release and discuss information about risk management options and involve communities in strategies in which they have a stake.</td>
</tr>
<tr>
<td>These issues are too difficult for the public to understand.</td>
<td>Separate public disagreement with your policies from misunderstanding of the highly technical issues.</td>
</tr>
<tr>
<td>Technical decisions should be left in the hands of technical people.</td>
<td>Provide the public with information. Listen to community concerns. Involve staff with diverse backgrounds in developing policy.</td>
</tr>
<tr>
<td>Risk communication is not my job.</td>
<td>As a public servant, you have a responsibility to the public. Learn to integrate communication into your job and help others do the same.</td>
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<tr>
<td>If we give them an inch, they'll take a mile.</td>
<td>If you listen to people when they are asking for inches, they are less likely to demand miles. Avoid the battleground. Involve people early and often.</td>
</tr>
<tr>
<td>If we listen to the public, we will devote scarce resources to issues that are not a great threat to public health.</td>
<td>Listen early to avoid controversy and the potential for disproportionate attention to lesser issues.</td>
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<tr>
<td>Activist groups are responsible for stirring up unwarranted concerns.</td>
<td>Activists help to focus public anger. Many environmental groups are reasonable and responsible. Work with groups rather than against them.</td>
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**Conclusion**

Few would disagree that agricultural and Extension educators will be called upon to communicate about a variety of risk related issues. As this paper points out, good risk communication will facilitate an exchange between agricultural and Extension educators and the public by helping: 1) to define the nature of the problem, 2) to establish an identity of those concerned, and 3) to provide the basis for a possible resolution. Thus, the task of an agricultural or Extension educator is not to choose between competing options, but instead to learn how to use the best of all perspectives.

As we look to the future, refinements in risk communication practice are likely to evolve through continued interaction between those skilled in communication theory and those with expertise in agricultural and Extension education. These developments will be of value to those responsible for risk communication in practice, and will help meet the global...
challenges of establishing “Approaches and Partnerships for Sustainable Extension and Rural Development” in the years ahead.

References


