Public Risk Communication

J.F. Ahearne

Vice-President and Senior Fellow, Resources for the Future, *Washington, DC, United States of America*

I. Background

Nearly every day a new debate arises about risks: how real are they, how big a threat to the public has been hidden, why has some event been allowed to happen, what is being done to prevent tragedies, etc. Risk managers are pitted against local citizens, national public interest groups, and, apparently, the media. The general public often concludes from these risk debates that (1) the world is a dangerous place, and (2) risk managers either don't know what they are doing, or don't understand what they are supposed to be doing.

The public, the Congress, state and local officials, and perhaps stockholders, are upset about the behavior of industry and the federal government. Criticism includes charges of not seeing, or of hiding, problems, and of not informing, or misinforming, the public and local governments.

But when representatives of opposing views meet, issues are seldom resolved. Every group involved in public-government-industry risk debates is unhappy with their interactions with the other groups:

-- Technical experts are upset at the disbelief and mistrust they receive from the public.

-- Non-experts are upset by overly technical presentations, and by the condescension with which they are treated by experts.

-- Environmentalists are upset at being required by the government to make their arguments using the language of science, rather than that of values.

All conclude the country needs better communications about risk.

Relations between competing interests have broken down and many technologists, and large numbers of government and industry officials, believe risk communication is the problem. They believe government and industry have failed to communicate to the public the facts or the justification for the agency's or the industry's positions. They also believe risk communication is the solution, and believe effective risk communication will resolve the public's concerns. Both positions are invalid, and harmful to agencies, industry, and the public, and are based on misconceptions.

II. Misconceptions

These are summarized in Table 1.

A. First misconception: providing facts will resolve disputes.

This belief is central to those trained in using the scientific method.[1] Engineers, scientists, and physicians are trained to develop the facts, analyze them carefully, and then reach conclusions based on these facts. Consequently, when public disputes arise over risk management, heads of technical agencies and industry officials ask their staffs to get more facts to buttress the official position, and to help the public "understand."

This approach assumes that the public shares the same values as the agency or industry, and therefore that the disagreement between the public and the agency or industry is over the facts. That often is not correct. Many of the disputes are about values, not facts. Technologists stress quantification; the public is often more interested in qualification. Social scientists have concluded that risk analysis is able to describe increasingly precise answers, to the wrong questions. They are the wrong questions because they are not what the public is asking.

Conflict also can be over the distribution of risks and benefits and stem from different, but not explicit goals. Most people believe they have a right not to be subjected by others to unreasonable risks. In a conflict, the public may be saying that it is not enough to determine whether an activity makes people better or worse off, but that it is also important to address whether it is fair, and whether the agent has the right to affect other people. The public usually believes it is:

-- Unfair to impose costs involuntarily (and risk is a cost),

-- Unfair to impose costs on those who oppose and avoid using the product that is related to the hazard, and

-- Unfair to impose disproportionately large burdens on those who benefit little.

These views are seen in local objections to sites to dispose of hazardous waste generated in other locales, for example, the opposition to nuclear waste disposal sites, and in objections to transporting hazardous materials on routes through states or near communities.

Technical information is important, and technical understanding should be more widespread. Certainly technical illiteracy is a growing affliction in the United States. But we must understand that technical choices are value-laden and many disagreements are really about the underlying value choices. Increasingly, technical choices are seen as moral choices. The public and an agency often disagree about which harms are most worth avoiding and which benefits are most worth seeking.

B. Second misconception: risk comparisons will provide an answer to what is an acceptable level of risk.

Comparison with other risks cannot itself establish acceptability. In particular, comparisons are not helpful when the risks are perceived as being qualitatively different, in such characteristics as

---

[1] For a clear description of the differences in approach between scientists and lawyer-politicians, see the debate between the eminent jurist Harold Green, and the research biologist Philip Handler, then president of the National Academy of Sciences. Green, H. "The Risk-Benefit Calculus in Safety Determinations," 43 George Washington Law Review 791, pp. 796-807 (1975); Handler, P. "A Rebuttal: The Need for a Sufficient Scientific Base for Government Regulation," 43 George Washington Law Review 791, pp. 808-813 (1975).

"dread" and "unknown." Technologists tend to scoff at such characterizations. The public uses them.

Comparisons are often given in terms of fatalities from a variety of causes. However, people's ratings of risks are functions not only of average annual fatalities, but also of attributes and benefits associated with the risks. For most people, all deaths and injuries are not equal. For example, simply giving the numbers of deaths ignores actuarial and psychological differences between deaths:

-- Using reduction in life expectancy values the young over the old.

-- Counting fatalities gives no weight to youth and treats immediate deaths as equivalent to those after long and painful illnesses.

-- Counting the numbers of deaths treats those due to voluntary actions as equal to those caused by involuntary actions, and treats those who benefit from the death-causing activity equal to those who do not.

Another common pitfall is that risk comparisons can give the appearance that the risk communicator is using comparisons to trivialize the risk in question. Many risk ladders have been constructed to lead the observer to the conclusion that the risk in controversy is insignificant in comparison to risks regularly accepted. Unfortunately, all too often the ladder was constructed by those who have a strong incentive to get the public to accept the risk at issue, and consequently these ladders do not compare strictly similar risks.

C. <u>Third misconception</u>: the public wants simple answers.

Assuming simple answers will resolve public concerns represents little progress beyond the discredited argument: "Trust me, I know best." Based on anecdotal observations, risk managers make confident statements about public opinion and on what the public wants and uses. It is a mistake to treat the public as homogeneous. The level of interest in topics varies among people and so does the way they think about issues.

Most people do have difficulty understanding low probabilities and often think in terms of "possible" and "effectively impossible." The public sometimes does want Yes or No answers: is it safe to eat the grapes? But frequently the public wants much more, including proof that the source has listened to the public's concerns and is accurately presenting all the known information, including the uncertainties. So long as the sources of messages have an interest in the outcomes of the decision process, the recipients will want to know how the message content was developed.

D. <u>Fourth misconception</u>: journalists and the media in general are <u>always</u> a major part of the problem.

Journalists are intermediaries. They transmit information to the public. Technologists should be familiar with the necessity to work with a transmission circuit, or a coupling device, and to live with its characteristics. All too often technologists do not believe it worthwhile to make any effort to work with the media, to listen carefully to the journalist's questions, and to try to answer in a way that the public will get accurate and important information. It also seems not to have occurred to many technologists (and government officials) that when journalists ask questions about issues other than the ones the technologist or official wants to discuss, perhaps the journalist understands what the public really wants to know.

Journalists are not educators. They are after news, and often are not technically trained. But they are trying to obtain the best information, quickly, on those issues that are newsworthy in either their or their editor's view. Journalists care about accuracy and objectivity, but often their operational definition of objectivity is balance. They will try for balance, but frequently will obtain balance by looking for the extreme opposing points of view.

I have found some journalists who do not report accurately and some who are only interested in a catchy quote to assist them in getting a by-line story. But these are the exception. The norm is an over-worked person who is trying hard to understand material outside his or her area of education. A person who has little time to read up on the subject because it is only one of many they have to cover. A person who, unless they have special access due to friendship or themselves being well-known, has great difficulty finding people to talk to who know much about the issues. And a person who knows that many of the sources who are ready to provide information are biased and want to give only a one-sided picture. But the journalist is pressed for time and must have something ready for the air, the screen, or the page.

We want the journalist to understand our complex world and the limitations of our work, the uncertainties, the subtleties of our assumptions, the limitations of our models and our data. We should try to understand the complexities of the journalist's world.

E. Fifth misconception: good risk communication always will help resolve disputes.

In this imperfect world, good risk communication clarifies the issues, but does not necessarily resolve them. Risk communication often means that a technical expert develops a message addressed to nonexperts, to enlighten or persuade an uninformed and passive public. For those using this definition, successful risk communication is that which convinces the recipient to agree with the source's position. However, risk communication is more than one-way transmission of expert knowledge to the uninformed. Messages about expert knowledge are necessary for success; they are not sufficient.

Nearly 170 years ago, Thomas Jefferson, who understood the basic tenets of our democratic system, wrote:

> "I know of no safe depository of the ultimate powers of society but the people
> themselves; and if we think them not enlightened enough to exercise their control with a
> wholesome discretion, the remedy is not to take it from them but to inform their
> discretion."[2]

In the democratic model, risk communication becomes a two-way process. The transfer of information will improve the understanding of all parties. However, successful risk communication need not result in consensus about controversial issues. It should make for better decisions, but may not lead to fewer disputes, since in the end the decision may be based on a different weighting of the facts, a different set of assumptions, and on different values and goals.

III. Problems

An entire paper could be devoted to the problems faced in risk communication. I will only briefly list what seem to be the most important.

1. Legal considerations may constrain the options that are available for the message content:

   -- Liability concerns are most important for industry. For example, when a plant emits a toxic cloud, the community relations staff will advise saying as much as possible, as soon as possible, and the legal staff will advise saying as little as possible.

   -- Right-to-know provisions may mandate the information to be provided, for example, in doctor-patient relations and in the community right-to-know requirement of Superfund (CERCLA).

---

[2] Thomas Jefferson letter to William Charles Jarvis, 28 September 1820.

2. Sharing of power:

-- Local concerns often are based on NIMBY or LULU, and therefore the local community will want to participate in the decision process in order to halt a project.

-- People want to affect the outcome, and will readily blur the distinctions between risk communication and risk management.

-- Communication can increase the public's desire to participate in making decisions. These demands will change the dynamics of the decision process. However, in a democracy, the government is held accountable. Therefore, openness does not ordinarily imply empowerment of the public to determine the host organization's risk management decisions. Because people may have difficulty differentiating between risk communication and risk management, to avoid misunderstandings, the limits of participation should be made clear from the outset.

3. Fragmentation and dispersal of power in federal law and agencies:

-- Leads to different approaches to similar problems, e.g., EPA/DOE, EPA/NRC, EPA/FDA.

-- Sometimes it is not clear which agency is responsible, for example, for standards for environmental cleanup of nuclear weapons sites: EPA or DOE?

4. Those who have the strongest interest in communicating are often those who have the strongest interest in the outcome, and therefore whose messages face (or should face) the greatest skepticism, e.g., the American Cancer Society and the Tobacco Institute.

5. Messages are created and transmitted in a context, of policy, administration practices, and politics, all of which affect the recipients' understanding of the messages.

6. Recipients' views about the accuracy of a message are adversely affected by:

(a) real or perceived advocacy by the source of a position in the message that is not consistent with a careful assessment of the facts;

(b) a reputation for deceit, misrepresentation, or coercion on the part of the source;

(c) previous statements or positions taken by the source that do not support the current message;

(d) self-serving framing of information in the message;

(e) contradictory messages from other credible sources; and

(f) actual or perceived professional incompetence or impropriety on the part of the source.

7. Lack of understanding by the source of the level of recipients' knowledge:

-- People cannot understand some language that is used.

-- People have difficulty comprehending magnitudes that are very large or very small.

-- Misunderstanding psychological effects, for example, that the first image tends to be kept. If the recipient's mind is made up on the basis of that image, it will be hard to get the person to consider new information.

-- People are unlikely to be interested in risk information they cannot use.

-- People differ; they are not a homogeneous group.

8. Quantitative risk assessments do not include everything people are concerned about. A good communicator must work to find out what is bothering the public. Concerned citizens often are motivated to organize because of the indifference of government and industry officials.

9. It may be hard to capture people's attention, and people who need the information the most often seem to be least likely to pay attention.

10. Mass media are important channels, however:

-- Many journalists treat risk issues differently than do scientists and engineers.

-- Many journalists do not see their job as discovering truth, but as reporting accurately what others claim to be true.

11. Recipients may find it hard to get useful information because

-- Authorities don't give out good information.

-- It is hard to find trusted sources.

Unbalanced access to information may lead recipients of messages to reject information.

IV. Risk Communication

I see risk communication as a smart circuit with feedback loops. In communication terminology, the path would be called a channel. Figure 1 illustrates this process. Figure 1 has the decision-maker on one side, separated from the communication channel by a buffer. At the other end of the channel, there is another buffer. And on the far side of that buffer are recipients -- the media, the public, and the government, which can include Congress, state legislatures, governors, mayors, etc.

Some decision-makers and some communications people see the channel and the buffers as one-way transmission devices, to transfer information from decision-maker to communications channel, and from communications channel to recipients. I see the buffers as two-way, and the smart channel as providing information back to the decision-maker. This information feedback can improve decisions, by letting the decision-maker know what the recipients think about proposed actions, what they are angry about, what their concerns are, and what information they want.

Risk communication today often must address complex science and engineering issues. Unfortunately, to be a smart channel, the communicator must understand the technology. If the channel is a dumb channel, a one-way transfer of anything put into it, two problems will arise:

(1) A smart buffer -- a knowledgeable media person, a skilled public interest group -- will reject the transmission. Some environmental groups have knowledgeable staff, who understand the issues and the science. When these people meet a communicator who does not understand what he or she is talking about, these organizations easily are able to demonstrate, or at least make it appear, that this communication is not worth much attention.

(2) The concerned public will attempt to communicate via the channel, but become frustrated because a dumb channel cannot become a two-way smart channel. For example, in public meetings, frustration arises when some of the public start asking questions of

13

the communicator in which they are trying to say: "This is our concern. Will you let decision-maker X know that?" The communicator tries to respond by reflecting the question that was asked. Many times the communicators bungle because they do not understand the substance of the issues.

My model assumes the decision-maker understands the science or engineering involved. I recognize this is not always true. However, the problem of incompetent decision-makers is not what I am addressing today, although a smart channel, a knowledgeable communicator, may be able to force a lazy decision-maker to work to understand the technology.

V. Successful Risk Communications

There is no simple way of making risk communication successful. Many events in daily life compete with risk messages for attention, and it is often difficult to get the intended recipients to concentrate on the issues the communicator thinks are important. Officials who want to deal effectively with the public on risk issues must devote continuing effort to three critical areas. To be successful at risk communication requires understanding the recipients, maintaining credibility, and competence behind the messages.

A. Understanding

Organizations which communicate about risks should ensure effective dialogue with the potentially affected public. Effective risk communication begins early, well before the final decision is made. Risk information should use language and concepts the recipients already understand. The process should exhibit a spirit of open exchange and should use early and sustained interchange. The communicator must be a listener. Rather than a one-way transfer of information, risk communication becomes a dialogue. The characteristics of the intended audience are important to the effect of a message. The communicator must be able to understand the recipients' issues and perspectives and relay those accurately back to the agency.

However, the dialogue must not be a charade. If the recipient believes the risk communications source is not considering the recipient's concerns, the recipient may reject the information.

B. Credibility

Often a message that is precise and completely accurate must be so complex that only an expert can understand it. Preparing risk messages can involve choosing between messages that only experts can understand and ones that are understandable but selective. However, frequently in discussing technical issues, industry and government officials are less than candid. Or, as a recent speaker in a public hearing said about some federal officials: they are economic with the truth.

Public faith in government, business, and labor has not been high in recent years. Even science and technology are in question. Scientific disputes have become public and science is now involved in regulatory proceedings and court suits. Many in the public believe technical experts can be found to support nearly any position, and the growing parade of "expert-witnesses" through the courts supports that belief.

This skepticism affects the way the public responds to technical messages from government agencies and industry. When a technologist communicates on behalf of the federal government or an industry, recipients tend to judge the messenger as well as the message.

Credibility is not a renewable resource. When it is used up, it basically cannot be replenished. Virtue lost is lost forever. This simple aphorism, so common it has become a platitude, seems never to sink in to many senior officials. Or else they do not value credibility. If dealing with public policy issues were a poker game, or some leveraged buy-out strategy being maneuvered by a corporate raider, then credibility would need be preserved only for a short time, while the game

was being played out. But the issues we deal with are for the long-term, and we must maintain that precious credibility through many disputes and over many years. You should guard your credibility as though it were your life; in a professional sense, it may be.

When government organizations have been proven to lie, it is not surprising that people want independent verification. Even the slightest indication of less than complete candor and honesty will probably lead many people to reject whatever position the agency takes. Somewhat different standards are applied to non-government sources because people expect industry and advocacy groups to use influence techniques.

Is it acceptable for the government to do other than inform? Methods for presenting information range from pure information transfer at one end to lying at the other. In between are various grades of persuasion, deceiving, and manipulating. All messages require deciding what information to use and what not to use; what items to stress; and in what order to present the information. These techniques of highlighting and framing can be used to make the information more understandable. They also can be used to sell a position, to mask unpleasant facts, to manipulate data, and to bury professional disagreement.

There is no consensus on this issue. For me, I believe it is hardly ever permissible for the government to do other than inform. I believe that the political process must legitimate such tactics before it is permissible for a government agency to move beyond informing to persuading.

C. Competence

Agencies must value competence. It is becoming increasingly difficult to find competent people willing to remain in or to join government service -- understandably. It is even more unusual to find agency heads who understand the technical issues in dispute. And there is a creeping fungus spreading down from the top: similar nontechnical people are assigned to middle management positions. Nontechnical people should recognize the absolute necessity for getting the unqualified opinions of their technical people, not muted by what is deemed to be in the agency's or the administration's best interests. The best risk communication will not solve problems created by agency technical incompetence or by decisions which have allowed ideology to override science.

VI. Summary

Table 2 summarizes the following points.

1. Many of the disputes are about values, not facts. The public and the agency or industry often disagree on the distribution of risks and benefits, about the claimed similarity of voluntary and involuntary hazards, and about which harms are most worth avoiding or which benefits are most worth seeking. Technical information is important, and technical understanding should be more widespread. However, technical choices are value-laden.

2. Effective risk communication is two-way: the agency (or industry) must learn what issues are troubling the local community or the affected groups. Dialogue, a real listening, is necessary, and this must take place early, before decisions are made.

3. In a democracy, risk communication (for the government, and recommended for industry) is successful when interested parties are adequately informed. This includes informing decision makers.

The risk communication process, usually with many messages from many sources, can be considered successful only to the extent that it:

(1) improves or increases the base of accurate information that decision-makers use, be they government officials, industry managers, or individual citizens, and

(2) satisfies those involved that they are adequately informed within the limits of available knowledge.

4. Poor risk communication nearly always will make a situation worse. However, it is mistaken to expect improved risk communication always to reduce conflict and smooth risk management. Better understanding may not lead to consensus about controversial issues. People do not all share common interests and values, and so better understanding will not necessarily lead them all to the same conclusion.

5. Decision makers and managers of risk communication must be alert to a potential major problem in two-way communication: offering participation early does not mean offering voting rights on making the decision. Usually a government official can not abrogate his or her responsibility for the final decision.

6. The most difficult issue in developing guidelines for risk communication is to identify when it is permissible to use influence techniques, such as framing, highlighting, and selective use of information. When is it allowable for a government official or agency to persuade? My conclusion: hardly ever, and only then when legitimated by the political process (for example, when Congress authorized the Public Health Service to oppose smoking).

7. Credibility is easily lost. To retain credibility requires honesty and competence. Both are hard to maintain, and competence is in increasingly short supply in the government. Suppression of relevant information is not only wrong, but usually, over the longer term, ineffective and counterproductive. Honesty is the best policy.

TABLE 1

Misconceptions

1. Facts will resolve disputes.

2. Risk comparisons will provide an answer to what is an acceptable level of risk.

3. The public wants simple answers.

4. Journalists and the media in general are always a major part of the problem.

5. Good risk communication always will help resolve disputes.

TABLE 2

Summary

1. Many disputes are about values, not facts.

2. Effective risk communication is two-way.

3. Risk communication is successful when interested parties are adequately informed.

4. Improved risk communication will not always reduce conflict.

5. Participation does not mean voting rights.

6. When is it allowable for a government official or agency to persuade (or worse)?

7. Credibility is easily lost. Honesty is the best policy.

FIGURE 1

DECISION MAKERS

PUBLIC

MEDIA

GOVERNMENTS

A model of communication.