

UNITED STATES OF AMERICA NUCLEAR REGULATORY COMMISSION

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UNITED STATES OF AMERICA
NUCLEAR REGULATORY COMMISSION

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BRIEFING ON RISK COMMUNICATION

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PUBLIC MEETING

Nuclear Regulatory Commission
One White Flint North
Rockville, Maryland

Tuesday, December 19, 1989

The Commission met in open session, pursuant to notice, at 10:00 a.m., Kenneth M. Carr, Chairman, presiding.

COMMISSIONERS PRESENT:

KENNETH M. CARR, Chairman of the Commission
THOMAS M. ROBERTS, Commissioner
KENNETH C. ROGERS, Commissioner
JAMES R. CURTISS, Commissioner
FORREST J. REMICK, Commissioner

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STAFF AND PRESENTERS SEATED AT THE COMMISSION TABLE:

SAMUEL J. CHILK, Secretary

WILLIAM C. PARLER, General Counsel

DOCTOR JOHN AHEARNE, Chairman, Committee on Risk
Perception and Communication, National Research
Council

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P-R-O-C-E-E-D-I-N-G-S

10:00 a.m.

CHAIRMAN CARR: Good morning, ladies and gentlemen.

Most forms of advanced technology involve some degree of societal risk. Those who manage risk-producing activities vary in their ability to communicate those risks to the public. Recently, the National Research Council published a report entitled, "Improving Risk Communication," which offers a number of recommendations.

Today we're pleased to be addressed by the Chairman of the Committee which prepared that report, Doctor John Ahearne. We welcome John back. As most of you are aware, Doctor Ahearne served as an NRC Commissioner and as the Chairman during the TMI and the post-TMI period.

Any of my fellow Commissioners have any opening comments?

If not, John, you may proceed.

DOCTOR AHEARNE: I'll start then by pointing out I was not Chairman during TMI, which in some contexts is an important distinction.

CHAIRMAN CARR: Okay. I'm glad you cleared that up.

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1 DOCTOR AHEARNE: What I want to do is review
2 the report and some of the main points. Obviously,
3 I'm not going to go through the whole report. The
4 report was started by the National Research Council.
5 It was done because there had been an earlier study
6 and this was a follow-on to it. There was an earlier
7 study which was on risk assessment and risk management
8 in the federal government. The results of that study
9 pointed that risk communication was a key element in
10 risk management.

11 Although the earlier study focused upon how
12 do you assess risk and then how do you manage it, it
13 concluded that the communication of the assessment and
14 the communication of the actions oft times were more
15 important to the final accomplishment of, say, an
16 agency's mission than were those earlier steps. In
17 fact, poor communication frequently caused the earlier
18 steps to fail.

19 The result was that the President of the
20 National Academy of Science, Frank Press, and the
21 President of the National Academy of Engineering, Bob
22 White, concluded that a study on risk communication
23 was essential. They attempted to find an agency that
24 would be willing to fund that. The way the Academy
25 does most of its studies is it gets funding from a

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1 government source of one kind or another. They were
2 unable to do that. Finally what they did is they put
3 up half the money themselves, that is the Academies
4 put up half the money and then they got half the money
5 from other sources.

6 In sort of the commercial vein, I will now
7 read the list of the sources just to make sure that
8 people recognize who did it. The Agency for Toxic
9 Substances and Disease Registry of the United States
10 Public Health Service, Allied Signal Corporation,
11 American Cyanamid Company, American Industrial Health
12 Council, American Petroleum Institute, Bristol-Myers
13 Company, the Department of Defense, the Department of
14 Energy, Dow Chemical, Electric Power Research
15 Institute, EPA, Exxon, Hercules, ILSI Risk Science
16 Institute, MOBil, Monsanto, Motor Vehicle Manufactures
17 Association and the National Science Foundation.

18 So, it had a broad spectrum of both industry
19 and government sponsors, but half the money came from
20 the Academies.

21 The Committee was asked to compile the
22 available information on risk communication and then,
23 based on our findings, suggest ways that that could be
24 improved. It's a big committee, 19 members, had
25 representatives from a wide spectrum, engineering,

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1 natural science, social science, journalism, public
2 policy, decision analysis, industry, medicine,
3 government and law. Not the least problem was trying
4 to get this large collection of people to work
5 together successfully. Some of us have had the
6 opportunity to try to get five people to work together
7 successfully. The 19 was a real challenge,
8 particularly since they had different perspectives on
9 most of these issues.

10 But we ended up with -- this is a unanimous
11 document and I will get to one -- as I talk, I'll
12 mention one of the areas that we ended up being unable
13 to reach a resolution on because the way the Academy
14 works is the Academy does not have dissenting
15 opinions. You keep working on a report until you get
16 a consensus. It may take many cycles through that
17 operation, but the whole thrust of the Academy
18 approach is it's to be based upon the logical analysis
19 of sets of problems and then you reach a conclusion.
20 The review process is geared very heavily towards can
21 you support your findings. That's the approach taken.

22 Now, why did they conclude risk
23 communication was so important? Well, one way you can
24 see it is that the interest is growing and you just
25 have to look at the number of conferences, seminars,

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1 articles and books that have risk communication in the
2 title and you recognize that there is a great
3 interest. It reflects increased attention of some
4 agencies of the federal government to the tasks of
5 informing the general public about the nature of
6 health safety and environmental risks associated with
7 both societal choices and personal choices.

8 Now, this concern about communicating with
9 the public has several motivations. Now, these
10 motivations are not all entirely self-consistent.
11 They include a requirement for the government to
12 inform, or in some cases a desire by the government to
13 inform; a desire by government or agency, industry
14 officials to overcome opposition, opposition to
15 decisions in many cases; a desire to share power. In
16 some areas there's a desire by the government or
17 industry to share the power with the public. And then
18 a desire to develop alternatives to regulatory
19 control. Obviously, one can take a regulatory action
20 in some environmental areas or one can try to get a
21 consensus for action to be taken.

22 Nearly everyday there's a new debate about
23 risks, how real are they, how prevalent are they, how
24 big a threat to the public. In some cases, it's how
25 big a threat to the public has been hidden. This

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1 morning's paper, for example, John Glenn's report that
2 he's released about plutonium releases from Hanford
3 has that flavor. Why some event has been allowed to
4 happen, what's being done to prevent a tragedy. Risk
5 managers seem to be pitted against local citizens,
6 national public interest groups and apparently pitted
7 against the media.

8 The general public often concludes,
9 listening to these risk debates, one of two things.
10 Either the world is a very dangerous place or, and
11 sometimes and, risk managers either don't know what
12 they're doing or don't understand what they're
13 supposed to be doing.

14 Now, frequently, and I'm not saying this is
15 now true at the NRC. I know I would say that it
16 reflects some of the interactions that I participated
17 in back in Harrisburg. Groups of citizens opposed to
18 particular technological projects frequently have
19 delayed or stymied those projects with lawsuits, with
20 mobilization of congressional opposition or public
21 demonstrations. When a government or an industry
22 official has the benefit of extensive scientific study
23 and the opposition seems to disregard that evidence,
24 that official can come to see the public as
25 irrational. Government and industry officials who see

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1 the issues that way are likely to define these
2 conflicts as conflicts between the informed and the
3 uninformed or, perhaps even worse, between the
4 rational and the irrational.

5 In those cases, the officials are tempted to
6 look for ways to influence the members of the
7 opposition, either by more actively presenting a
8 straightforward account of the knowledge they have
9 available, or even carefully packaging or distorting
10 the information to get a persuasive effect. The use
11 of information to overcome political opposition makes
12 some notions of risk communication attractive to many
13 proponents of controversial technologies. In fact, to
14 many people that's what risk communication is, it's to
15 overcome opposition.

16 The public, the Congress, from which we
17 recently participated, state and local officials,
18 perhaps stockholders are upset about the behavior of
19 industry and the federal government. The criticism
20 includes charges of not seeing or of hiding problems,
21 of not informing or misinforming the public and local
22 governments. But when the representatives of opposing
23 views meet, issues are seldom resolved. Most every
24 group that's been involved in this public government
25 or industry risk debates is unhappy with their

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1 interactions. The technical experts tend to be upset
2 at the disbelief and the mistrust they receive from
3 the public.

4 Non-experts in the public are upset by
5 overly technical presentations and by the
6 condescension with which they're often treated by
7 experts. Environmentalists get upset at being
8 required by the government to make their arguments
9 using the language of science rather than that of
10 values. Most everyone has concluded that the country
11 needs better communications about risk.

12 So, where we came out is saying in summary,
13 the relations between competing interests seem to have
14 broken down. Many technologists, large numbers of
15 government and industry officials believe risk
16 communication is the problem. They believe government
17 and industry have failed to communicate to the public
18 the facts or the justification for the agency's or the
19 industry's positions. They also believe risk
20 communication is the solution, believe effective risk
21 communication will resolve the public's concerns.

22 So, you have large numbers of people saying
23 risk communication is a problem and also the solution.
24 We concluded that both positions are invalid. They're
25 harmful to agencies, to the industry and the public.

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1 They're based on misconceptions. Hopefully, the first
2 slide will show the list of misconceptions.

3 (Slide) The first misconception is that
4 facts will resolve disputes. That belief is central
5 to those trained in technology or science and
6 medicine. We people, those people, are trained to
7 develop the facts, analyzing them carefully and reach
8 conclusions based on those facts. So, when public
9 disputes arise over risk management, heads of
10 technical agencies, industry officials, often ask the
11 staffs to get more facts to buttress the official
12 position and to help the public understand.

13 Now, the problem with that is that it
14 assumes that the public shares the same values as the
15 agency or industry and that the disagreement between
16 the public and the agency or industry is over the
17 facts. That's often not correct. Many of the
18 disputes are about values. Technologists will stress
19 quantification. The public is often more interested
20 in qualification.

21 For example, conflict can be over the
22 distribution of risks and benefits. It can stem from
23 different, but not explicit, goals. Some people, most
24 people believe they have a right not to be subjected
25 by others to unreasonable risks. In a conflict, the

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1 public may be saying that it's not enough to determine
2 whether an activity makes people better or worse off,
3 but that it is also important to address whether it's
4 fair, whether the agency has the right to affect other
5 people.

6 The public usually believes that it's unfair
7 to impose costs involuntarily and risk is a cost.
8 It's unfair to impose costs on those who oppose and
9 avoid using the product that's related to the hazard
10 and the public often believes it's unfair to impose
11 disproportionately large burdens on those who benefit
12 little.

13 We see these views in local objections to
14 sites to dispose of hazardous waste that's generated
15 in other locales. For example, the conflict that all
16 of us are familiar with, nuclear waste disposal sites.
17 We see it in objections to siting plants which
18 generate electricity, most of the electricity being
19 used far away from the areas at risk from the plants.
20 When acid rain was thought to be a natural result of
21 the way the earth system operated, little could be
22 done about it. When warmer summers were thought to be
23 the result of inexorable processes, such a planetary
24 wobble, little thought was given to affecting the
25 future summers.

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1 But technology has many results. Some of
2 those results are to make it possible to measure the
3 presence of increasingly small amounts of materials in
4 the environment. What was once thought to be pure
5 water and merely dirty air is now found to be filled
6 with measurable amounts of toxic or carcinogenic
7 substances. And other technological advances enable
8 tracing back to the sources of those materials or
9 correlating environmental affects with anthropogenic
10 activity.

11 So, increasingly, technical choices are seen
12 as moral choices. Now, technical information is
13 important. Clearly a report from the National Academy
14 of Science is not going to say that technical
15 information is unimportant. It's clearly important
16 and technical understanding should be more widespread.
17 Certainly technical illiteracy is a growing problem,
18 growing affliction in the U.S. But we have to
19 understand that technical choices are value laden and
20 many disagreements are really about the underlying
21 value choices. The public and an agency often
22 disagree about which harms are most worth avoiding and
23 which benefits are most worth seeking.

24 The second misconception, one I certainly
25 had years ago, is that risk comparisons will provide

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1 an answer to what is an acceptable level of risk.
2 Comparison with other risks, however, cannot itself
3 establish acceptability. Comparisons are not helpful
4 when the risks are perceived as being qualitatively
5 different. In such characteristics, and these are
6 terms that technologists don't often use, but they're
7 seen as qualitatively different in terms such as
8 "dread" and "unknown." Technologists tend to scoff at
9 such characteristics, but the public uses them.
10 Comparisons are often given in terms of fatalities
11 from a variety of causes. Peoples' ratings of risks,
12 however, are functions not only of the average annual
13 fatalities, but also of attributes and benefits
14 associated with the risks.

15 For example, for most people, all deaths and
16 injuries are not equal. Simply giving the numbers of
17 deaths ignores psychological and actuarial
18 differences. I'll give a few examples. If you use a
19 reduction in life expectancy, that's going to value
20 the young over the old. If you count fatalities, that
21 gives no weight to youth and it treats immediate
22 deaths as equivalent to those after long and painful
23 illnesses. Counting the numbers of deaths treats
24 those due to voluntary actions equivalent to those due
25 to involuntary actions and treats those who benefit

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1 from the death-causing activity equal to those who do
2 not. All of these are issues that have to be
3 understood if one is going to do a risk comparison.

4 Another common pitfall is that risk
5 comparisons can give the appearance that the risk
6 communicator is using the comparisons to trivialize
7 the risk in question. Common terminology in risk
8 comparisons is something called a risk ladder which is
9 in the shape of a vertical list of risks. As you go
10 up or go down the column or the ladder, you see
11 various activities listed and it's given a sort of
12 visual as well as a numerical comparison. Now, many
13 of those risk ladders have been constructed to lead
14 the observer to the conclusion that the risk in
15 controversy is insignificant in comparison to risks
16 regularly accepted. Unfortunately, and the public
17 perceives this, all too often the ladder is
18 constructed by those who have a strong incentive to
19 get the public to accept the risk at issue. And
20 frequently, therefore, the ladders don't compare
21 strictly similar risks.

22 A third misconception, the public wants
23 simple answers. Assuming simple answers will resolve
24 the public disputes represents little progress beyond
25 a discredited argument of, "Trust me, I know best."

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1 It's a mistake to treat the public as homogeneous and
2 therefore this one simple answer will meet all the
3 issues.

4 Many times risk managers will use anecdotes,
5 anecdotal information to make confident statements
6 about public opinion and what the public wants and
7 uses. But the level of interest, and therefore the
8 level of desire for information really varies. Now,
9 we agree that most people have difficulty
10 understanding low probabilities. That's a problem
11 that all of us in the nuclear area have constantly
12 wrestled with. Low probabilities -- talking about
13 probabilities themselves is difficult. Most people
14 categorize events as either possible or effectively
15 impossible.

16 The public sometimes does want yes or no
17 answers. You may recall a year or so ago the public
18 simply wanted to know is it safe to eat the grapes.
19 That's a case where a yes or no answer was looked for.
20 But in general, the public wants much more, including
21 proof that the source of the information has listened
22 to the publics' concerns and is accurately presenting
23 all of the known information, including the
24 uncertainties. So long as the sources of the messages
25 have an interest in the outcomes of the decision, the

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1 recipients will want to know, "How is that message
2 developed? How did you get that information? Have
3 you really pulled all the information together? Are
4 we getting all that you know?"

5 A fourth misconception, one that Joe
6 Fouchard might like, journalists and the media in
7 general are always a major part of the problem. This
8 is a common misconception by many people in
9 technology. We spent a lot of time working through
10 this one and concluded journalists are intermediaries.
11 They transmit information to the public.
12 Technologists should be familiar with the necessity.
13 Most -- any of you technologists have worked with
14 transmission circuits and you understand the concept
15 that you have to -- when you work with a coupling
16 device, you have to live with its characteristics,
17 impedance matching and so forth. You have to make
18 sure that when you are transmitting into the circuit,
19 that you are understanding how that circuit works.

20 But all too often, technologists don't
21 believe it worthwhile to make any effort to work with
22 the media, to listen carefully to a journalist's
23 questions and to try to answer in a way that the
24 public will get accurate and important information.

25 It also seems not to have occurred to many

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1 technologists and government officials. But when a
2 journalist asks questions about issues other than the
3 ones that you want to discuss, it could be that the
4 journalist understands what the public wants to know.
5 So, we ought to listen carefully what questions are
6 asked.

7 Journalists aren't educators. We have to
8 accept that. They're after news. They're often not
9 technically trained, but they are trying to obtain the
10 best information quickly on those issues that are
11 newsworthy, newsworthy in either their or their
12 editor's views. Most journalists do care about
13 accuracy and objectivity, but often their operational
14 definition of objectivity is balance and they will try
15 for balance. But frequently the way they do it is
16 getting the two extreme points of view and therefore
17 conclude they have now got balance.

18 In my 20 years here in Washington, I've
19 dealt with journalists on a whole host of issues. I
20 guess Ken has probably done similarly. The NATO
21 Warsaw Pact military force balance, effectiveness of
22 weapon systems, F-14, Aegis, AWACs, Stinger, the
23 usefulness of adding insulation to get higher R values
24 for long-term savings in heating and cooling bills,
25 meaning of PRA, what went wrong at Chernobyl, TMI,

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1 problems with the DOE's reactors, whole hosts of
2 things.

3 I've found some journalists who don't report
4 accurately and some who are only interested in a
5 catchy quote to assist them to get a byline in a
6 story. But they're the exception. The norm, I've
7 found, is an overworked person trying hard to
8 understand material outside his or her area of
9 education; a person who has very little time to read
10 up on the subject because it's only one of many they
11 have to cover; a person who, unless they have special
12 access due to friendship or themselves being well
13 known, has great difficulty finding people to talk to,
14 who know about the issue; a person who knows that many
15 of the sources that are ready to provide information
16 are biased and want to give only a one-sided picture.
17 But the journalist who's pressed for time has to have
18 something ready for the air, the page or the screen.

19 The Committee concluded that we want the
20 journalist to understand our complex world, the
21 limitations of our work, the uncertainties, the
22 subtleties of our assumptions, the limitations of our
23 models and our data and we should try hard to
24 understand the complexities of the journalist's world.

25 Finally, the fifth misconception, that good

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1 risk communication always will help resolve disputes.
2 In this imperfect world, good risk communication will
3 clarify the issues, but it won't necessarily resolve
4 them. It often means in risk communication that a
5 technical expert develops a message addressed to non-
6 experts to enlighten or persuade an uninformed and
7 passive public. If you use that definition, then
8 successful risk communication is that which convinces
9 the recipient to agree with you. But risk
10 communication is more than one way transmission of
11 information. It's more than transmission of expert
12 knowledge to uninformed. You have to have expert
13 knowledge. That's necessary, but it's not sufficient.

14 We endorsed in our report a concept, and we
15 quote Thomas Jefferson. So, I will also quote him
16 because he probably understood the basic tenets of our
17 democratic system reasonably well, since he was one of
18 the writers of it. He said, "I know of no safe
19 depository of the ultimate powers of society but the
20 people themselves, and if we think them not
21 enlightened enough to exercise their control with a
22 wholesome discretion, the remedy is not to take it
23 from them but to inform their discretion."

24 So, we argued that risk communication is
25 successful if it raises the level of understanding.

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1 But if it's raising the level of understanding and the
2 dispute is really about values and not facts, this
3 good risk communication, laying out what you know and
4 the uncertainties, will in many cases solidify the
5 opposition because they will now be confident that
6 they understand the facts. If the heart of the issue
7 is that their values are different than the agency's
8 values, that's not going to resolve the dispute, it's
9 going to solidify it. But in the democratic society
10 in which we live, we conclude that's the right way to
11 go.

12 (Slide) In fact, this next figure shows
13 what we mean by that. What we have there is our model
14 of communication. The wavy line and the asterisks are
15 separating buffers. What we have is the decision
16 makers on one side, and they could be industry or
17 government, and on the other side you have the public,
18 the media, state and local governments. The two
19 arrows indicate what our model is of communication.
20 Frequently, industry and government view it as a one
21 way model.

22 Now, the wavy lines are buffers,
23 transmission devices, public relations people, for
24 example. A standard model is that the decision maker
25 generates the information or the agency, gives it to

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1 the public relations person, who then transmits the
2 information and it's received by the media, the
3 public, other organizations. We see this as a faulty
4 model. Our definitions require a two way interchange
5 of information. It requires listening to what the
6 public or the local governments are concerned about.
7 In the communication system, the Joe Fouchards of the
8 world have to be able to transmit back what the public
9 is concerned about, what are the state and local
10 government people concerned about? This model of an
11 effective risk communication loop is really critical
12 because in the absence of that one is not going to be
13 able to resolve many of the disputes or even move them
14 forward.

15 Now, this isn't very well understood. I
16 will quote a gentleman who didn't understand it. His
17 name is William Reilly. Now, this is not the William
18 Reilly who is the head of EPA. It's the William
19 Reilly who was the President of the Conservation
20 Foundation. Now, that's the same individual. I don't
21 know if he's changed. But in 1986 he said, "In the
22 conflict or confusion over risk questions, often the
23 communication process is at fault or at the least
24 exacerbates the problem. Risk communicators simply do
25 not do a good job of getting their messages across."

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1 He saw it as a one way, as going in one direction.

2 The problems we saw with that one way set of
3 directions are, as I had said earlier, cost and
4 benefits aren't equally distributed, people don't
5 agree about which harms are most worth avoiding or
6 which benefits are most worth seeking and citizens of
7 a democracy expect to participate in the debate.

8 So, we saw this risk communication as an
9 iterative process and we concluded the definition of
10 success, and I will read from our definition, "We
11 consider risk communication in a setting of public
12 debate successful to the extent that it raises the
13 level of understanding of relevant issues or actions
14 among the affected and interested parties and those
15 involved are satisfied that they are adequately
16 informed within the limits of available knowledge."

17 Now, this is a challenge to many people.
18 It's a challenge, for example, to the NRC staff to
19 make sure that you folks get that kind of information.
20 So, we say with respect to a designated decision
21 maker, such as the head of a regulatory agency, "Risk
22 communication is successful only if it adequately
23 informs the decision maker." We emphasize that
24 successful risk communication process is different
25 from a risk message that's successful from the

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1 standpoint of its source.

2 I know in one of Ken's previous
3 incarnations, where I first met him, one of the great
4 difficulties was to make sure that the people down
5 within the bowels of the Defense Department are
6 actually telling the Deputy Secretary what was really
7 happening. It was very easy for the people in the
8 system to decide, "We'll only pass up what we want
9 known in order to have the decision come out the way
10 we want it to come out." That's faulty. That's
11 faulty. The same way in the NRC, if the staff is
12 transmitting information up to make you people come
13 out where the staff wants you to come out and not
14 giving you the whole spectrum.

15 It's the same kind of fault if an agency
16 isn't transmitting the information to the public that
17 they need to make their decisions. This is true both
18 in the societal sense and an individual sense. So, we
19 concluded risk communication in the setting of
20 personal choice is successful only if it adequately
21 informs the individual for making a choice among
22 alternatives.

23 It's a very difficult thing to do. It takes
24 a -- organizations that communicate about risks
25 therefore will have to ensure that there's an

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1 effective dialogue with the potentially affected
2 public. It has to begin early, well before the final
3 decision is made. Risk communication should use
4 language and concepts the recipients already
5 understand. It means that you have to put effort into
6 trying to recognize not only what the local concerns
7 are, but what is the level of understanding that's
8 represented there and your communication has to be
9 done on that basis. It should exhibit a spirit of
10 open exchange and that's why early is important. A
11 communicator has to be a listener. So, rather than
12 this one way transfer of information, it becomes two
13 ways.

14 Now, it places a greater burden on the
15 communicator. If your presenter of information to the
16 public only has to present your information, then that
17 person has to understand what your message is. The
18 person doesn't really have to understand the content
19 or the issues because they're not answering questions.

20
21 But in this two way dialogue, the context
22 is, and I think Harold Denton well represented this
23 model in TMI, the presenter has to be receptive to
24 questions. When the public is questioning, they have
25 to have a comfort that the person who's in front of

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1 them representing the agency understands the question.
2 It is very easy by a sharp public interest group,
3 Environmental Defense Fund is an example or NRDC or
4 UCS, or a sharp reporter, to ask questions that
5 clearly will identify -- if the agency spokesperson
6 doesn't understand, it will clearly identify they
7 don't understand.

8 That process will do two things. It will
9 discredit the message and, secondly, it will
10 antagonize the public. The public will get the
11 impression, it might even be a right impression, that
12 the Agency really doesn't care what the public thinks
13 because if they send someone out to talk to the public
14 who can't evidence that they understand what the
15 public is talking about, then the public recognizes
16 that person as unlikely to be able to go back to the
17 agency and represent the public's views. They see the
18 agency has presented this one way system rather than
19 this two way. So, it's a challenge. It requires
20 educated people and sensitive people.

21 Now, part of the problem is that credibility
22 is at stake. Many of us have lived in situations
23 where credibility didn't seem to be present.
24 Credibility is easily lost. It's almost impossible to
25 recover it by the agency or the individuals who lose

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1 it. One of the ways of maintaining credibility is to
2 be always on the alert to warped messages because when
3 government organizations have been proven to lie, it's
4 not surprising then that people don't trust the
5 agencies. Even the slightest indication of less than
6 complete candor or honesty will probably lead many
7 people to reject whatever position the agency takes.

8 We have to recognize that different
9 standards are applied to government agencies than to
10 non-government agencies. We may get upset by the fact
11 that certain groups with which we are dealing will
12 present information in a way that we think is
13 misleading and we wonder why doesn't the public get as
14 upset about them as they do about the agency. Well,
15 one of the reasons is federal agencies are viewed as
16 representatives of the public and therefore they're
17 held to a higher standard.

18 The toughest problem we wrestled with in our
19 Committee was then what standard should the government
20 use in moving beyond informing? We concluded it was
21 always appropriate for the government to inform, and
22 never appropriate for the government to lie. But
23 there's a whole range in between.

24 Persuasion, for example. Is it legitimate
25 for the government to persuade? Now, there are a

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1 whole host of things you can do with the message. You
2 can frame the message, present certain information
3 first, downplay other information. You can highlight
4 some facts or some issues and just leave out others.
5 All of these are well known techniques in persuasion,
6 marketing techniques used in advertising. Is it
7 appropriate for the government to do that?

8 We debated that for a long time. Could not
9 really reach a consensus view on any -- in the legal
10 term, any bright line that's going to be able to
11 separate them. What we did conclude is that it's
12 always appropriate to inform and as you shift to
13 persuasion it ought to be legitimated by the
14 democratic process.

15 For example, when the Health and Human
16 Service Agency goes out and argues against smoking and
17 tries very hard to convince the public not to smoke,
18 that's legitimate because the Congress has approved
19 their doing that. And that's where we ended up, that
20 if an agency wants to do more than inform, then they
21 ought to have, in some way -- a federal agency, in
22 some way have that legitimated by the democratic
23 process.

24 I recently spoke to the people at Food and
25 Drug Administration. Very hard concept to get across.

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1 Their argument was, "We know what is best for the
2 public. We're interested in the public health. We
3 know what they ought to be doing." My Committee's
4 argument -- we addressed the public health people a
5 lot -- our conclusion is that's not the role of the
6 federal agency. The federal agency's role is to get
7 the best information as possible, inform the public,
8 but if you're going to shift over into trying to
9 persuade the public what to do, then the political
10 process, with all its weaknesses, ought to be the
11 system that legitimates doing that.

12 (Slide) Let me summarize, and the last
13 chart gives that. Many disputes are about values.
14 You have to keep that in mind. The effective risk
15 communication is a two way process. The risk
16 communication is successful based upon adequate
17 information. It's not successful when you convince
18 the people to agree with you. Therefore, if you have
19 a good risk communication system, it's not always
20 going to reduce the conflict.

21 Now, number 5 is a point that Mr.
22 Ruckleshaus learned and the rest of us learned with
23 him. Participation doesn't mean voting rights. Just
24 a sidelight. Some of you may be familiar. It was the
25 case of the ASARCO smelter in Tacoma, Washington some

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1 years ago when Ruckleshaus was in his second tour as
2 head of EPA, when copper smelting releases arsenic.
3 The question then was whether the emissions from the
4 smelter met the EPA standards. It was clear they
5 didn't. EPA was faced then with imposing tight
6 standards on the plant. The plant people said, "If
7 you do that, we'll close the plant. It's not cost
8 effective for us to operate this if we have to do that
9 emission control."

10 EPA decided to involve the local public.
11 "We're going to have them join in with us on this,"
12 and they went through an extensive public hearing
13 process, laying out all the facts. Then there was a
14 big public meeting held in which the regional
15 administrator, who happened to be one of the members
16 of our Committee, went to the public meeting and this
17 was going to be the time when they were going to
18 decide what they're going to do. Should they relax
19 the emission standards, keep the plant open, or should
20 they keep the emissions standards tight and the plant
21 would close? She walked into the public meeting and
22 was met with an audience full of people wearing a big
23 button which said, "Both."

24 The point was the public had concluded,
25 "You're going to let us vote. Okay, what we vote for

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1 is you keep the plant open and reduce the emission
2 standards." The problem with the process was EPA had
3 not clarified in the beginning that having a public
4 dialogue did not mean that we're now all going to vote
5 together. You have to be very careful in this
6 improved risk communication process with the two way
7 interchange right from the beginning to clarify are
8 you empowering the local public to participate in your
9 final decision or are you having them involved so you
10 can fully understand what their concerns are and
11 you're going to fully explain what your information
12 is?

13 In our system of government, at least at the
14 federal level, the final responsibility, as you people
15 all well know, is the federal agencies. The
16 accountability goes to the federal agency.

17 The sixth that I mentioned, when is it
18 allowable for a government official or agency to
19 persuade or worse? Our conclusion was almost never.

20 Finally, that credibility is easily lost and
21 so honesty really is the best policy.

22 That's in some views a long and in other
23 views a short summary of our document. I'd be glad to
24 answer any questions you might have representing the
25 National Research Council.

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1 CHAIRMAN CARR: Fine. Commissioner Remick?

2 COMMISSIONER REMICK: John, you know this
3 Agency quite well. Could you give some specific
4 recommendations how we can be better risk
5 communicators?

6 DOCTOR AHEARNE: Well, I knew the Agency
7 quite well. It's been many years since -- just
8 sitting in this room, I recognize that certainly the
9 physical surroundings are quite different. So, I
10 can't say.

11 What it would seem to me that some of the
12 important messages that are in the report that would
13 refer to a technical agency like the NRC is first,
14 since the NRC is really filled with people with high
15 technical competence, there is an even greater
16 potential for believing that more facts explaining
17 better what we know will resolve the disputes with the
18 public. So, I think that the first caution is to make
19 sure that listening is a very important part of this
20 process and to try to understand that the values are
21 at stake in many cases. That probably is one of the
22 important messages.

23 A second important message, without meaning
24 to in any way reflect negatively upon the Commission,
25 there are many people on the staff who know a lot more

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1 about the technical issues than you do. They have to
2 recognize that they have a responsibility for giving
3 you the good and bad, for really explaining what they
4 don't know. What really are the uncertainties? There
5 sometimes has been a tendency -- I saw it in the NRC
6 and I saw it in other agencies -- for a technical
7 staff to believe that, "If we tell the head of the
8 agency, the head of the department about the
9 uncertainties, they'll think we don't know enough or
10 they won't want to make a decision and a decision has
11 to be made. So, let's eliminate the uncertainties and
12 just give the impression that this is really a solid
13 case." So, that's a second way that I think that the
14 Agency has to concern itself.

15 I think that as far as the media side, my
16 impression is that the NRC does a better job. I
17 assume it still does the meetings periodically with
18 regional journalists. I thought that that was a
19 mechanism that ended up trying to get at this mutual
20 understanding that's necessary between an agency and
21 journalists.

22 COMMISSIONER REMICK: Looking at
23 specifically something like the safety goal, which you
24 had involvement in, can you see things now that you're
25 outside, ways in which the Commission could better

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1 explain what its safety goal is?

2 DOCTOR AHEARNE: Well, safety goal, as we
3 both know, is a -- has several levels of complication.
4 One is what does it mean in the regulatory process and
5 that's a more internal and agency/industry issue. It
6 seems to me that the safety goal -- I still believe
7 it's a good approach and a lot of the issues that I
8 talked about, there's questions of how you look at
9 risk can be found in many of the papers, as you know
10 because you were running that process for us at the
11 time. They're imbedded in that. But it seems to me
12 that there has been a diffusion of, diminution of the
13 clarity of the safety goal over the last six or seven
14 years, sort of a backing away of trying to make it
15 clear.

16 I'm not sure whether it is because of the
17 complexity of the regulatory process we've seen or
18 whether there was a lack of disenchantment with the
19 approach. But I know in this -- I'm on another
20 committee of the Academy. I'm looking at the future
21 of nuclear power. It seems to me from our dealings
22 with a number of the -- not just the U.S. vendors, but
23 foreign vendors, and we've talked to representatives
24 of the industry in many countries, and it seems to me
25 that the overall envelope framework that the safety

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1 goal represented is a lot easier to understand on the
2 part of the public and concerned citizens. Couple
3 that with a credibility of the industry, seems to be a
4 better approach. Now, the key there is, of course,
5 the credibility of the industry. The NRC can work on
6 half of that problem.

7 COMMISSIONER REMICK: Yet I've never--
8 other than when the safety goal was issued, I don't
9 think I've ever seen in the media any explanation of
10 what the Commission's safety goals were.

11 DOCTOR AHEARNE: Okay.

12 COMMISSIONER REMICK: So, it's obvious the
13 public doesn't know.

14 DOCTOR AHEARNE: But, you see, what you've
15 said right there is a key point. The media isn't
16 going to explain. The media is going to transmit what
17 you explain.

18 COMMISSIONER REMICK: But we're not
19 transmitting.

20 DOCTOR AHEARNE: I know at the time, I think
21 we were unable as a Commission to reach agreement on
22 what that safety goal really meant. So, we ended up
23 saying, "Well, here is this document. You read it and
24 then you write about it." As we both know, that's not
25 really going to work.

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1 COMMISSIONER REMICK: Thank you, John.

2 CHAIRMAN CARR: Commissioner Roberts?

3 COMMISSIONER ROBERTS: Do you think
4 specifically with this Agency, the Agency's
5 credibility would be enhanced by a single
6 administrator?

7 DOCTOR AHEARNE: Ah, Tom. Well, again, no
8 criticism of the current group.

9 COMMISSIONER ROBERTS: Oh, listen --

10 DOCTOR AHEARNE: As you all well know, and
11 certainly, Tom, you know very well, I am a fervent
12 believer in the single administrator.

13 COMMISSIONER ROBERTS: Well then, let me ask
14 a sub-question.

15 DOCTOR AHEARNE: And yes, I believe it
16 would -- the --

17 COMMISSIONER ROBERTS: You do?

18 DOCTOR AHEARNE: For several reasons, just
19 the two principal reasons which you just said to.
20 There's a single voice and a single voice is always
21 much clearer than multiple voices. That goes both
22 inside and outside.

23 I think, second, accountability is a lot
24 clearer. With a single administrator agency, which
25 would therefore be part of the Administration, I think

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1 that it is clear that if there is great distress--
2 and the EPA in the first couple of years of the Reagan
3 Administration is an evidence of that. There was
4 great distress with the way that EPA was going. The
5 administrator was replaced. And so, I think that
6 accountability is strengthened, and accountability is
7 a key element of credibility.

8 But that would stop all questions, Thomas,
9 because I feel so strongly.

10 COMMISSIONER ROBERTS: But to paraphrase
11 what you're saying -- I just want to understand it--
12 you're comfortable with a single administrator that is
13 part of the Executive Branch?

14 DOCTOR AHEARNE: Absolutely.

15 COMMISSIONER ROBERTS: That's all I have.

16 CHAIRMAN CARR: Commissioner Rogers?

17 COMMISSIONER ROGERS: I don't think I'm
18 going to get into the single administrator, because I
19 feel just the opposite about it.

20 But let's go to the risk communication
21 thing, because I think there's so much in your report
22 that's very interesting and challenging that it's hard
23 to know where to begin. But let me just ask you for
24 starters, on your model of communication, which is a
25 two-way street -- there are two arrows, one from the

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1 decision-makers to the public and the other way
2 around-- do you see any significance in the order in
3 which those arrows start flying? Should the decision-
4 makers communicate with the public first? Should they
5 react to an inquiry or a concern from the public as
6 the initiator?

7 DOCTOR AHEARNE: No, I don't see any
8 necessary -- I think it depends upon the particular
9 set of issues. For example, there are sometimes that
10 a local -- whether it's a public or a state
11 government, local government, some group is going to
12 get concerned about an issue before the agency does,
13 in which case then that initial communication is going
14 to flow from those groups to the agency.

15 There are other times when an agency knows
16 that they're going to begin a process that's going to
17 lead to some kind of a decision, and then that initial
18 flow goes from the agency out to the public.

19 The key point is not the direction in which
20 the first arrow goes. The key point is to make sure
21 that they go in both directions.

22 COMMISSIONER ROGERS: Well, I guess that's
23 an issue that I'd really like to explore a little bit
24 more with you, because I don't quite believe that, all
25 right, that it isn't of significance.

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1 One of the -- and in fact, I think, if you
2 read your own report you'll see that once an attitude
3 is put in place it's very difficult to change.

4 DOCTOR AHEARNE: Of course. Of course.

5 COMMISSIONER ROGERS: Therefore, the first
6 communication can be very important.

7 DOCTOR AHEARNE: Sure. The point I was
8 trying to make, Ken, is that there are times when the
9 understanding that something is an issue first comes
10 to the agency. It's the agency who generates the fact
11 that there's going to be an issue. In that case, the
12 communication has to go first from the agency to the
13 public, because it's an alerting. It's saying,
14 "Here's an issue that we're going to be discussing and
15 we think you're going to be interested in it. We want
16 to let you know about it."

17 There are other occasions where the public
18 figures out there's an issue before the agency knows
19 about it, in which case the important thing is for the
20 agency to be receptive to the public raising that
21 question. And that's what I meant by --

22 COMMISSIONER ROGERS: Well, but it's just
23 that I -- it's always been my -- not always, but after
24 many years of hard experience, been my observation
25 that Jonathan Swift had a great deal of wisdom when he

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1 said, "Falsehood flies, while truth comes limping
2 after," and there's something else that goes on that
3 that's also very interesting as well in addition to
4 that. But the first impression is very important.

5 DOCTOR AHEARNE: It is. And that's why, for
6 example, if a local public group has identified an
7 issue, the first impression they're going to have is
8 they contact an agency -- what is the reaction of the
9 agency? Now if the reaction of the agency is, "Go
10 away. Don't bother us," or, "Yes, we know about that,
11 but we've got it all in hand," that's going to be that
12 initial perception. It will be very hard to overcome.

13 On the other hand, if the first reaction of
14 the agency is, "Thank you for raising that issue.
15 Let's sit down and talk about it. We hadn't realized
16 that, but we want to get more understanding of what
17 you know."

18 Converse side. If the agency knows of a
19 problem -- let's say a waste site that has been
20 identified, say, by a state and the agency has figured
21 out that there are some ground water problems with
22 that site -- if the agency, as soon as they know
23 there's a problem, goes out and says publicly, "We are
24 beginning to think there's a problem with the ground
25 water at X site, and we need to start an open dialogue

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1 with the state and with the local communities," that
2 establishes at least an initial neutrality and a
3 possibility of trust.

4 If on the other hand the Agency says, "You
5 know, we think there might be a problem. Let's go and
6 talk to the state. We don't want the-local public to know
7 about this, but let's see if we can work out with the
8 state what the solution is," and then come out two
9 months later and say, "We have reached an agreement
10 with the state on how to handle this trouble with the
11 ground water."

12 What I'm trying to say is that it can start
13 either way. I agree entirely. The point we tried to
14 make -- thank you for pointing it out -- is that the
15 initial impression -- the psychological research
16 indicates initial impressions are very hard to
17 overcome. They're critical. And that's why
18 receptivity for receiving that message coming into the
19 agency can be critical to long-term success.

20 COMMISSIONER ROGERS: That also relates, I
21 think, to how to actually carry out one of your
22 general conclusions. You had three general
23 conclusions. And the third one was that
24 communications efforts should be more systematically
25 oriented to specified audiences, and openness is the

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1 surest policy. That systematic orientation to
2 specified audiences, I don't see how you can do that,
3 unless you're proactive. Reactive, I think, is not a
4 very satisfactory posture to try to address things.

5 DOCTOR AHEARNE: I think we would probably
6 say that the term "proactive" is acceptable if it
7 means trying to -- as soon as you know of an issue,
8 trying to get out and explain what you know, and also
9 try to understand what the local people are concerned
10 about, rather than waiting for them to get
11 increasingly concerned. In that sense, yes.

12 The great danger that we try to identify to
13 federal agencies is the tendency to want to keep an
14 issue to the agency within the agency until they're
15 confident they know what the answer is, and then the
16 approach being taken to go out and tell the public
17 what is the answer. And that just has a long history
18 of failure.

19 COMMISSIONER ROGERS: Well, it's one of the
20 things, of course, that we advise our licensees never
21 to do. Tell us everything first right away.

22 DOCTOR AHEARNE: Yes.

23 COMMISSIONER ROGERS: Don't bottle it up
24 until it's become a mess that you can't handle.

25 DOCTOR AHEARNE: Well, of course, you have

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1 another lever on the licensee to insure that they --

2 COMMISSIONER ROBERTS: Yes.

3 COMMISSIONER ROGERS: Turning to the
4 research areas that are recommended in your report,
5 there were nine of them.

6 DOCTOR AHEARNE: Right.

7 COMMISSIONER ROGERS: Could you see, from
8 your perspective, any that NRC should be particularly
9 concerned about, any that NRC should stay away from,
10 or any priorities that would be of interest to us?

11 DOCTOR AHEARNE: Okay. We did not try to
12 specify which agencies ought to do which in our
13 research. And I think the NRC has a historical
14 problem. That is that, as you know, it was formed
15 because of many people's concern that the AEC was
16 harboring advocates amidst the regulators. And I
17 assume many of you, and I know myself, have been in
18 some heated debates up on the Hill about we are not
19 trying to become advocates of nuclear power. Many
20 people on the Hill have great sensitivity of anything
21 that the NRC does that might carry the flavor of being
22 an advocate.

23 But I would say, for example, in going down
24 through the lists which are at page 180 and on, on
25 risk comparison, I believe that that area, for

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1 example, since underlying -- going back to Forrest's
2 question, safety goal -- safety goal has inherently
3 the idea of a comparison. And so those kinds of
4 questions, that kind of research, is certainly fitting
5 for the NRC, I think.

6 Risk characterization, how to present
7 complex information, that would certainly seem to be
8 appropriate.

9 The role of message intermediaries, I don't
10 think so.

11 The pertinency and sufficiency of risk
12 information, that would seem to be much more in either
13 HHS or NSF. I think there one probably shades into
14 the area where it's not appropriate for the NRC.

15 Psychological stress, General Counsel might
16 have some concern about this area. That's one that we
17 all know has been a major issue with respect to
18 questions about public health and safety. It is
19 certainly one I think that our Committee felt strongly
20 ought to be better understood. But where in the
21 federal government that work ought to be done is
22 something that ought to be raised with the Congress.
23 For the NRC to get into it almost sounds like the NRC
24 is attempting to redefine some of the public health
25 and safety restrictions.

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1 Recipients' mental models, how do they think
2 about risk decisions and so forth, that's probably
3 also a little bit outside the NRC.

4 Risk literacy, I think that fits back into
5 how do you understand the safety goal, how do you fit
6 into it.

7 The retrospective cases, that's probably not
8 an NRC side.

9 The contemporaneous assessment, we all hope
10 that you don't have a case where you have to address
11 that. But if there is, I think it's something the NRC
12 ought to help do.

13 One of the big problems we found -- and
14 that's why these last two -- we found it very
15 difficult to go back into the past and treat and get
16 good data explaining how were risk communication
17 issues handled. And we therefore recognize that one
18 of the best things that could happen in the midst of a
19 real accident or something going on is to try to learn
20 from that, keep track of what's going on. That was
21 also quite -- a lot of dispute in some circles.

22 The Academy was a little reluctant about
23 that one, because there's almost a flavor of
24 ghoulishness about it, that something bad is happening
25 and you're now trying to understand, sort of stand

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1 aside. Some people are handling what's happening, but
2 you want to understand how that's being handled. But
3 nevertheless, that might be appropriate.

4 Certainly, I learned probably far more about
5 a federal agency's response to nuclear accidents by
6 spending a day and a half wandering through the
7 control center during TMI than I ever would have
8 learned by reading reports.

9 COMMISSIONER ROGERS: Hopefully that's
10 something, though, that even if we had a problem of
11 that sort, which I hope we never do, the Agency would
12 be in a much different posture to deal with.

13 DOCTOR AHEARNE: Oh, it is.

14 COMMISSIONER ROGERS: Different
15 organization, much different structure. I don't think
16 the same thing could happen.

17 DOCTOR AHEARNE: Right.

18 COMMISSIONER ROGERS: Or would happen in the
19 same way, same thing.

20 On your consumers' guide recommendation,
21 have you gotten any nibbles on that?

22 DOCTOR AHEARNE: Yes, we have. That was an
23 issue that we felt very strongly about. This was the
24 idea that there ought to be put together a very
25 readable document that would be available to the

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1 public or to the press to understand how do you think
2 about these kinds of issues, how do you understand
3 when an agency is talking, and realistically what
4 questions ought to be asked to make sure that the
5 issues are being presented in a forthright manner.

6 The difficulty is to make sure that if
7 something like that is put together, first, it's put
8 together by a group that will be -- not only will be,
9 but will be perceived as being objective. It wouldn't
10 do any good, for example, for the NRC to put together
11 that kind of a document, or for the Energy Department.
12 It might be able to do a very good job, but it just
13 right from the bat wouldn't be believed.

14 The second is to have it put together by
15 people who really understand what they're writing
16 about and who can write clearly. So there's two
17 challenges.

18 Yes. I and the Academy are getting some
19 nibbles on potential interest in doing that, both
20 people who might be interested in running the kind of
21 a program and somebody who might be -- an agency that
22 might be interested in transferring the funds, with a
23 hands-off approach.

24 COMMISSIONER ROGERS: Just one more thing,
25 and then I'll let my colleagues get back to it. With

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1 respect to NRC, as Forrest said, you know the Agency.
2 And certainly you know -- you're close enough to us,
3 even though it's been some time, to know how the
4 Agency is organized and structured and how it carries
5 out its business. Do you think that this area of risk
6 communication is something that should be lodged in a
7 particular place in the NRC or something that should
8 be a guiding principal for the whole organization
9 rather than centralized in some kind of an
10 organizational unit?

11 DOCTOR AHEARNE: Well, the latter, more a
12 guiding principal on what -- the whole -- one of the
13 thrusts of our message is that it's something that the
14 technical people in an agency have to be sensitive to,
15 the leaders of an agency have to be sensitive to, the
16 people who run public meetings, people who deal with
17 the public relations have to be sensitive to. It is
18 very definitely a conceptual approach to the way the
19 process is run as along with the substance of
20 messages. So just having it, "Here is an organization
21 whose responsibility it is," wouldn't do that.

22 COMMISSIONER ROGERS: Thank you.

23 CHAIRMAN CARR: Commissioner Curtiss?

24 COMMISSIONER CURTISS: I'd like to pick up
25 on the point that Forrest raised about how you

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1 translate this most helpful study into day-to-day
2 practice of the Agency. It's been my impression that
3 while we certainly have challenges across the board in
4 communicating on risk, that maybe the special
5 challenges, the most polarizing challenges come at the
6 extremes for us, either in the case of what the risks
7 are associated with severe accidents, large
8 catastrophic events or, at the other end of the
9 extreme, what the effects of ionizing radiation are,
10 low doses of radiation are on the health and safety of
11 the public.

12 In the latter area, it strikes me that
13 that's an area where we've got a lot of information.
14 Radiation has probably been studied more extensively
15 than any other carcinogen. In fact, the Academy today
16 is going to add to that body of information with the
17 release of the Bier Report. In the former, the severe
18 accident extreme, it's an area that --

19 CHAIRMAN CARR: Folks are not hearing you,
20 Jim.

21 COMMISSIONER CURTISS: -- fortunately we
22 don't have a lot of experience with at all, don't have
23 a lot of data in a very real sense that would guide
24 us. Do you have any special thoughts beyond the
25 observations that you have in here, how you deal with

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1 the extremes, the fringes of risk communication, where
2 you either have a lot of information that perhaps
3 doesn't permit you to go get much more additional
4 information to resolve the uncertainties or where
5 you've got perhaps very little information and very
6 little way to glean additional information, in the
7 case of, say, catastrophic accident?

8 DOCTOR AHEARNE: Let me comment on three
9 points, two which you raised and one you didn't.
10 First, on the catastrophic, sort of the large scale, I
11 think there is a situation where the technologist
12 tends to talk in terms that the public doesn't really
13 understand because when one starts talking about the
14 thermo-hydraulics, when they talk about -- in fact, in
15 many cases, what the safety people do is to start
16 using the acronyms for particular accident sequences.
17 That's just meaningless.

18 When the issue then tries to be how unlikely
19 are these sequence of events, that's also not really a
20 very credible approach. It's more credible, I think,
21 to try to focus upon what the review process is, to
22 try to avoid major accidents, what reliance is being
23 placed upon improved equipment, what is the reliance
24 being placed upon improved performance of individuals.
25 The credibility of the process is probably the most

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1 important element on that end of the extreme.

2 In that, the part that you didn't raise, I
3 think that the most discussions -- and I think back to
4 the Indian Point issues that some years ago we were
5 involved
6 in -- there is an inability, unwillingness, reluctance
7 on many people involved in nuclear safety issues to
8 recognize where the public's concerns lie and to grant
9 credibility to those concerns in the sense of the fear
10 of the great accident. The arguments that are made
11 about how low probability of that is isn't really
12 addressing that fear. So, it's this question of
13 trying to understand where the public concern is and
14 then trying to work with that concern as opposed to
15 the straight technical argument that the accident has
16 very little probability.

17 Now, on the other side, we know so much
18 about radiation. I'm not sure if my colleagues in the
19 radiation physics community would really agree with
20 that. I don't know where the latest Bier Report is
21 going to come out. But if you recall the last one, it
22 had a great amount of controversy.

23 On the low radiation, there are two issues
24 that are involved. One is what is the long-term
25 effects of very low levels of radiation, and that is

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1 not well known. There are many genetic models or
2 biological impact models that can be constructed and
3 one can plausibly make arguments and, as you may know,
4 some of the arguments are that a little radiation is
5 good for you. Some of the arguments are that a little
6 radiation is irrelevant, and some of the arguments are
7 that a little radiation -- that there's a plateau
8 level that you don't fall below and that that's a
9 certain amount of harm that's produced.

10 One of the reasons that the various
11 international bodies have been reducing the standard
12 level of maximum exposure is this uneasiness about
13 what is an acceptable level. So, I think that many
14 radiation health physicists would say when you get
15 down into those very low levels where the
16 epidemiological studies are so difficult to interpret
17 and there's a lot of controversy over how good those
18 studies were, what can be drawn from them, that's not
19 obvious.

20 Now, that's the level that gets involved in
21 questions about are there local hot spots that
22 normally occur, how can you dig out the effects of
23 background radiation, including radon levels, from any
24 plant emissions? Those are fraught with uncertainty
25 and I don't think anyone can really say that there's a

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1 body where all the evidence is clear and it's just an
2 inability to communicate it.

3 I don't think the evidence is that clear.
4 I guess there's too much uncertainty.

5 COMMISSIONER CURTISS: I guess what I was
6 alluding to is that it's a carcinogenic -- probably
7 had been studied more extensively than any other
8 carcinogen and may mean that we need more on some of
9 the other carcinogens.

10 DOCTOR AHEARNE: Well, but extensive study
11 does not necessarily lead to conclusions. My field of
12 physics, which is controlled fusion, has been studied
13 very extensively with a lot of money poured into it
14 for many, many years and we're still a long way from
15 understanding how to contain material and so on.

16 COMMISSIONER CURTISS: Let me pick up on a
17 related point because I was intrigued by your
18 discussion of the notion of comparing risks, which is
19 something that we do around here in certain contexts.
20 In fact, below regulatory concern is one that we're
21 grappling with right now where we've toyed with the
22 idea of saying this ought to be a policy that can be
23 explained to the general public and in the context of
24 other risks that they normally encounter, such as
25 flying from here to Denver or living in Denver or

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1 living in a brick rather than a frame house.

2 You, in your discussion, referred to the
3 latter risks that I think we've all seen at least in
4 the radiation area.

5 Is that in the context of the BRC issue as
6 you know it, and in view of the other -- you pointed
7 to the risks of driving to someplace versus flying
8 there as a means of comparing comparable risks.

9 DOCTOR AHEARNE: Right.

10 COMMISSIONER CURTISS: Is the notion that
11 I've described of comparing comparable risks in BRC a
12 misguided one or is it -- are we comparing the wrong
13 things?

14 DOCTOR AHEARNE: Well, what you're
15 comparing -- I'm not familiar in detail with what
16 you're comparing. Certainly what I would do, I would
17 recommend you get someone like Baruch Fishoff or Paul
18 Slovic, who are people who have spent many, many years
19 trying to study what the public views as comparable
20 and what they don't view as comparable.

21 The arguments that we have made in the
22 report, for example on the -- the point was that a
23 comparable risk could be viewed if you go from point A
24 to point B, you want to travel from A to B, it's your
25 decision to travel and now obviously there are other

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1 constraints that might be imposed, but you could drive
2 that distance or you could fly that distance. Now,
3 there are risks involved in both. That's a comparable
4 risk comparison.

5 What is not a comparable risk comparison is
6 to go to a person and say, "I'm going to build a
7 nuclear power plant three miles from you and that is
8 no more hazardous than if you were to fly to Denver."
9 A person's reaction is, "If I fly to Denver, that's my
10 decision. It's your decision to put that nuclear
11 power plant next to me." Those aren't comparable.

12 COMMISSIONER CURTISS: Okay.

13 CHAIRMAN CARR: John, in your risk message,
14 ensuring completeness looks to me like it was the key
15 to the whole message. If you can get that across to
16 the public that you've got a complete information
17 base, it seems like most of your problem goes away.

18 DOCTOR AHEARNE: Not really, Ken.

19 CHAIRMAN CARR: At least they're informed
20 and you've communicated.

21 DOCTOR AHEARNE: Ensuring a complete
22 information base, the point we were trying to make
23 there was that an agency or an industry that knows
24 they're going to be involved in an issue ought to work
25 very hard to collect as much information as they can,

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1 and we try to give sort of a list of, "Here's the kind
2 of information you ought to have available to you."

3 The reason for laying all that out is to try
4 to demonstrate that completeness is very difficult.
5 Then, when you are going into a discussion with the
6 public or whether you're trying to put together a
7 message, you can then make sure that you explain what
8 you really know and what you don't know. But it
9 shouldn't be viewed as, "And that will solve your
10 problem," because, going back to that first
11 misconception, if the differences that are underlying
12 the dispute are because of fundamentally different
13 assessment of values, the complete information base is
14 going to make sure that you have explained as best you
15 can what you know. But that may not lead the public
16 to agree with you.

17 CHAIRMAN CARR: No, but it's important that
18 everybody agrees on what's known and what's not known.

19 DOCTOR AHEARNE: Right. Right.

20 CHAIRMAN CARR: Okay. The part about the
21 credibility, how about giving me a few words on
22 establishing credibility in the face of, shall we say,
23 congressional posturing. I mean we can --

24 DOCTOR AHEARNE: Well, it depends on with
25 whom you're trying to establish the credibility.

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1 CHAIRMAN CARR: Well, you're trying to --

2 DOCTOR AHEARNE: We've dealt in --

3 CHAIRMAN CARR: Let's just say we're trying
4 to maintain credibility and suddenly you're
5 attacked --

6 DOCTOR AHEARNE: Sure. Well, you've been
7 there, I've been there.

8 The best way -- I think the only way to have
9 a chance at maintaining credibility is to constantly
10 be completely honest. You say what you know and you
11 say what you don't know and you stick to that.

12 Now, you're going to find people who will
13 vehemently criticize you because they don't like where
14 that leads you. But my experience, and having had a
15 lot of those debates in front of a variety of
16 congressmen ranging from the right to the left, was
17 that at least I always felt that I knew I was sticking
18 to my honest opinion in what I knew and didn't know.
19 And over the long haul, I think that my impression is
20 that the public and the general press ended up viewing
21 that as credible.

22 There will be people, sometimes in your own
23 agency, sometimes in the press, sometimes in industry,
24 sometimes in the media, other media, sometimes in the
25 Congress, who will accuse you of distortion or of

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1 trying to go in a direction that the facts aren't
2 there, but you're just trying to go with the wind.
3 That will always happen. That's part of living in
4 sort of the public arena.

5 CHAIRMAN CARR: Okay. I might comment on
6 your honesty is the best policy, with a little
7 anecdote. That same deputy secretary that you and I
8 worked for, I mentioned that to him one day and he
9 looked me in the eye and he said, "Honesty is the only
10 policy." It made a tremendous impression on me. I
11 think you're absolutely right.

12 DOCTOR AHEARNE: He's a very good man.

13 CHAIRMAN CARR: Well, if there are no
14 further comments from my fellow Commissioners, John,
15 we certainly appreciate your being here. As usual,
16 when you talk, I listen and learn. We thank you for
17 an excellent and informative presentation.

18 We obviously have got to consider risk
19 communication in what we do and you've given us a lot
20 to think about. I understood you to say you're
21 working on the future of nuclear power, so we'll look
22 forward to getting you back for a further report.

23 DOCTOR AHEARNE: Okay, Ken. On behalf of
24 the other NRC, the National Research Council, thank
25 you for inviting me.

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1 CHAIRMAN CARR: Yes. Well, it's a real
2 pleasure to have you here and thanks very much for
3 coming.

4 DOCTOR AHEARNE: You're welcome.

5 (Whereupon, at 11:20 a.m., the above-
6 entitled matter was concluded.)
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CERTIFICATE OF TRANSCRIBER

This is to certify that the attached events of a meeting
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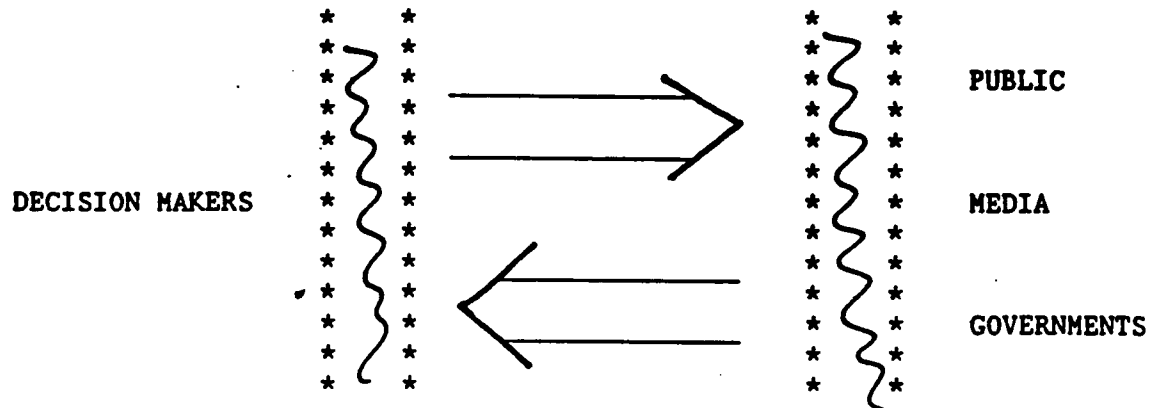
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FIGURE 1



A model of communication.

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.

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.

SUMMARY

1. MANY DISPUTES ARE ABOUT VALUES, NOT FACTS.
2. EFFECTIVE RISK COMMUNICATION IS TWO-WAY.
3. RISK COMMUNICATION 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.

news from the NATIONAL RESEARCH COUNCIL

The National Research Council was organized by the National Academy of Sciences in 1916 in order to provide for a broad participation by American scientists and engineers in the work of the Academy. The Academy was chartered by the U.S. Congress in 1863 as a private organization with a responsibility for examining questions of science and technology at the request of the Federal Government. The National Academy of Engineering was organized in 1964 under the original NAS charter. The National Research Council now serves as the agent of both Academies in the conduct of studies and investigations in the public interest.

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COMMITTEE FINDS THAT COMMON MISCONCEPTIONS HAMPER RISK COMMUNICATIONS

FOR IMMEDIATE RELEASE

WASHINGTON --

- o The news media always exaggerate public health risks.
- o The public always wants simple, cut-and-dried answers when dealing with risks.
- o As long as messages about risks are clearly communicated, people believe them.

According to a new National Research Council report* on risk communication, all three of these statements are false. These and other misconceptions, said the authoring committee, seriously hamper communication about health and environmental hazards among government, industry, the public, and others.

Concerns about the quality of risk communication have been building for many years following major events at Three Mile Island, Love Canal, and Bhopal, India.

"Everyone is frustrated," said committee chair John Ahearne, executive director of Sigma Xi, a scientific research society. "Government officials and industrial managers who are responsible for managing health and environmental risks think the public doesn't understand. The public is tired of failed promises and of being treated in a condescending manner. Scientists are distressed because the media and the public misinterpret their complex research."

(OVER)

* The committee's report, Improving Risk Communication, is available for \$29.95 from the National Academy Press at the mailing address in the letterhead or by calling (202) 334-3313. Reporters may obtain copies of the report from the Office of News and Public Information, also at the letterhead address.

TWO-WAY COMMUNICATION

Daily the public learns from news reports and other sources about hazards such as pollutants in the air and drinking water; pesticide residues in food; and threats from radiation, toxic chemicals, and new diseases such as AIDS.

Communication about such risks is often believed to be a one-way process -- delivered from experts to non-experts. But risk communication should be a two-way street, the committee said. Effective risk communication should be an "interactive process of exchange of information and opinion among individuals, groups, and institutions."

The committee suggested that risk managers open the process in the early phases of managing risks to ensure dialogue with people who may be affected by a potential risk. Also, these discussions should not be restricted to technical, non-emotional issues.

"Risk managers need to consider risk communication as an important and integral aspect of risk management," the report said; they cannot afford to treat risk communication as an afterthought. To reach this goal, the report suggests that government administrators and managers need a balance between two distinct types of expertise -- technical expertise and risk-communications skills.

MORE THAN COMMUNICATION

However, good communication alone can't solve the risk-management problem, the report points out. Many people have unrealistic expectations about what can be accomplished; good risk communication can't always reduce public anxiety, especially when the conflict involves differences in goals and underlying preferences.

There is, unfortunately, no shortcut to improving the nation's risk-communications efforts, but "poor risk communication will nearly always make [the situation] worse," the report notes. To help government officials, journalists, and others avoid some of the most common pitfalls associated with risk communication, the committee prepared a checklist of issues to consider in designing such messages.

(MORE)

In addition, the committee concluded that improving risk communication is more than merely crafting "better messages"; solutions to the problems of risk communication often entail changes in risk management and risk analysis.

MEDIA'S ROLE

"It is mistaken to view journalists and the media as significant independent causes of problems in risk communication," the committee emphasized. "Scientists and risk managers should recognize the importance of the part journalists play in identifying disputes and maintaining the flow of information during resolution of conflicts," it said. Equally, "journalists need to understand how to frame the technical and social dimensions of risk issues."

There are instances in which media coverage has favored an extreme position, but there is also some evidence that the news media seek balance, the committee said. For example, an extensive content analysis of media coverage of the nuclear accident at Three Mile Island found the balance between supportive and negative statements to be more reassuring than alarming, the committee found.

PUBLIC'S NEEDS

In many cases, people do prefer simple messages to complex ones in areas outside their knowledge, the report notes. At least for some issues, however, people prefer to have the complicated options laid out and detailed. This is true, for example, in using seat belts, choosing among medical treatments, and changing sexual practices to curb the spread of contagious diseases. Communications efforts should be more systematically targeted to specific audiences, considering their attitudes and preferences, it said.

A CONSUMER'S GUIDE

To strengthen the two-way communication process, the report suggests that groups should jointly fund a consumer's guide to risk and risk communication that would articulate key terms, concepts, and trade-offs in risk communication and management.

It would also offer advice to the public for evaluating risk messages and participating effectively in the process.

The National Research Council is the principal operating agency of the National Academies of Sciences and Engineering.

The committee was chaired by John F. Ahearne, executive director of Sigma Xi, past vice president of Resources for the Future Inc., and former chair of the Nuclear Regulatory Commission, Washington, D.C. Major funding was provided by the National Research Council Fund; additional funds were provided by the Agency for Toxic Substances and Disease Registry of the U.S. Public Health Service, Allied-Signal Corp., American Cyanamid Co., American Industrial Health Council, American Petroleum Institute, Bristol-Myers Co., U.S. Department of Defense, U.S. Department of Energy, Dow Chemical USA, Electric Power Research Institute, U.S. Environmental Protection Agency (EPA), Exxon Corp., Hercules Inc., ILSI Risk Science Institute, Mobil Oil Corp., Monsanto Co., Motor Vehicle Manufacturers Association, and the National Science Foundation.

Other committee members were: Ernesta Ballard, consultant on toxic substance management, and former regional administrator for EPA, Mercer Island, Wash.; Ruth Faden, professor of health policy and management, The Johns Hopkins University, Baltimore, Md.; James A. Fay, professor of mechanical engineering, Massachusetts Institute of Technology, Cambridge, Mass.; Baruch Fischhoff, professor of engineering and public policy and social and decision sciences, Carnegie Mellon University, Pittsburgh, Pa.; Thomas P. Grumbly, president, Clean Sites Inc., Alexandria, Va.; Peter Barton Hutt, partner, Covington & Burling, Washington, D.C.; Bruce W. Karrh, vice president, safety, health, and environmental affairs, E.I. du Pont de Nemours & Co., Wilmington, Del.; D. Warner North, principal, Decision Focus Inc., Los Altos, Calif.; Joann E. Rodgers, deputy director of public affairs and director of media relations, The Johns Hopkins Medical Institutions, Baltimore, Md.; Milton Russell, professor of economics, University of Tennessee, Knoxville, and senior economist, Oak Ridge National Laboratory, Oak Ridge, Tenn.; Robert SanGeorge, vice president for public affairs, National Audubon Society, New York City; Harvey M. Sapolsky, professor of public policy and organization, Massachusetts Institute of Technology; Jurgen Schmandt, professor, LBJ School of Public Affairs, University of Texas, Austin, and director, Center for Growth Studies, Houston Area Research Center; Michael Schudson, chair, department of communication, and professor of sociology, University of California, San Diego; Percy H. Tannenbaum, professor of public policy, and director of the Survey Research Center, University of California, Berkeley; Detlof von Winterfeldt, director, Risk Communication Laboratory and professor, department of systems science, Institute of Safety and Systems Management, University of Southern California, Los Angeles; Chris Whipple, technical manager, risk and health science department, Electric Power Research Institute, Palo Alto, Calif.; and Susan D. Wiltshire, senior associate, JK Associates, Hamilton, Mass.

Rob Coppock of the Research Council's Committee on Science, Engineering, and Public Policy served as the principal staff officer for the committee.

* * *

WHAT IS RISK?

Key Terminology and Concepts

Hazard, exposure, probability, sensitivity, individual risk,
population risk, distribution of risk, unattainability of zero risk

Qualitative Attributes

Voluntariness, catastrophic potential, dreadedness, lethality,
controllability, familiarity, latency

WHAT DOES RISK ASSESSMENT CONTRIBUTE?

Quantification

Quality, completeness, uncertainty, confidence

Scientific and Policy Inferences

Assumptions, assessment of benefits, risk management choices

WHAT IS THE ROLE OF THE RISK COMMUNICATION PROCESS?

Setting

Public debate about decisions, informing or influencing personal action

Purpose

Messages can inform, influence, or deceive

Interaction Among Participants

Contending conclusions, justifications, credibility, and records

HOW CAN YOU FIND OUT WHAT YOU NEED TO KNOW?

Technical Content

Demystifying jargon, comparing relevant risks, finding trusted interpreters

Independent Sources

Information clearinghouses, academic or public service sources

HOW CAN YOU PARTICIPATE EFFECTIVELY?

Finding the Right Arena

Identifying the responsible decision maker, getting on the agenda

Intervention

Identifying points and times for intervention, marshalling support

HOW CAN YOU EVALUATE THE MESSAGES AND THE COMMUNICATORS?

Accuracy

Factual base, track record, consistency, self-serving framing, use of
influence techniques, misleading risk comparisons

Legitimacy

Standing, access, review, due process justification

Interpreting Advocacy

Comparing competing arguments, seeing where information has been omitted,
questioning message sources