NEGOTIATING RISKS -- PUBLIC ATTITUDES TOWARD RISK-BASED DECISION MAKING

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ABSTRACT

The public policy battles of the 1980's and the growing environmental consciousness of this decade present new challenges for waste management professionals. No matter what the effort, whether site investigations and remediations, developing new waste management facilities, or other controversial projects, it includes some element of risk, and the public often fights us at every step. That presents risks for us as well: delay, cost escalation, image problems, political pressure. Yet, we believe strongly that our objectives are reasonable and well-intentioned, will contribute to overall environmental protection, and need to be accomplished. So we become frustrated.

To resolve this situation, we need to understand how people perceive and address risks. Risk communication is defined more broadly here. It includes not only the terminology and concepts needed to explain health and environmental risk, but also the context in which risks are presented, considered, and incorporated in planning and action. The issue is not only achieving public understanding of risk, but also understanding public attitudes toward dealing with risk-based decisions. Our challenge is to create ways in which the public can participate in those decisions, allowing us to accomplish our objectives while increasing public acceptance of the results.

INTRODUCTION

In the last ten years, waste management professionals have faced more frustration than success in implementing our programs. In response, we are trying hard to understand the reasons and gain public trust and acceptance. Papers on public involvement, risk communication, and other "non-technical" factors proliferate, and all programs attempt to build in an appropriate level of public information and participation. Why then are we still failing? Why are we even more frustrated? When it works, what is the secret?

We must accomplish our objectives. To do so, we must set a new objective for the next decade -- meeting the many segments of our complex society on a middle ground. Many respected researchers are searching for patterns of human response to risk, testing specific alternative communication strategies, and analyzing terminology and attitudes. The authors come instead from over a decade of practical, hands-on, and somewhat battered experience in dealing with public concerns about radioactive and hazardous waste management. We have made many mistakes. We share the blame for many errors in approach, but have sifted through much of that experience to suggest some alternatives. This paper explores those alternatives.

This is not a problem specific to the waste management industry. Risk from society's developments confronts all of us every day. Common controversial decisions are found not only in the areas of radioactive waste and hazardous waste and materials, but in nuclear power production, petroleum transportation, high-voltage electrical transmission systems, municipal solid waste, and other issues. Members of the public can tend to be overwhelmed by the range of issues in which they have an interest or a stake. Even what seem to be less risky projects (shopping centers, secondary sewage treatment, bus barns) still create controversy and opposition, based on perceptions of risk to health, the environment, or the quality of life.

Listing of a site as a priority site for investigation is in itself based on assessment of the site's imminent and long-term risk to health and the environment. Then an investigation proceeds, including airing information on the practices that created the environmental problem. Results are used to postulate potential risks to people and the environment, laying the groundwork for a decision on appropriate cleanup techniques and levels. Various technical and engineering alternatives are typically evaluated in terms of effectiveness, cost, and workability. Finally, a recommended cleanup option is presented for public review before implementation.

Frequently, community reaction to the proposal can include the following:

- You had some hocus-pocus scientist from out of state come in and decide what the risks were, and I don't understand how you did it. You have no basis for making a decision on cleanup until we understand the risk information.
- I don't agree with the assumptions/methodology used in the risk assessment, so the risk numbers are not acceptable. The risk is therefore unknown, so I won't accept the proposed solution.
- Our local physician says that scientific consensus on risk assessment methods does not exist. I do not accept the results of this assessment.
- You are proposing only a partial cleanup to save money and time, while exposing my family to remain-

ing risk. We are not willing to trade human life and health for money and time.

These complaints sound like problems in risk communication, but are really problems with the process. The problem is not whether we express risk in cancer deaths per 1000 or in "cars" or "cigs" (units actually proposed as analogous to the risk from smoking cigarettes or riding in an automobile) (1). Members of the community have probably not participated in the investigation, the risk assessment, or the evaluation of alternatives for remediation. They have not had the opportunity or taken the time to understand the methodology, argue over the assumptions, or observe the results of sensitivity analyses. They therefore don't accept the results and the ensuing recommendation, and are likely to dispute the recommendation no matter what it is. If they insist that there is really a greater risk than the technical team's assessment indicates, that is not just "perceived risk," it is their personal, value-influenced translation of the risk. If told that it is an issue of real versus perceived risk, they will become angry and frustrated. The result will be opposition to what may seem like the most technically-superior decision.

Both high-level and low-level radioactive waste present similar issues of siting and remediation in this country and elsewhere. State and public opposition plagues the Yucca Mountain repository program, hampering technical investigations. Many states now have low-level waste siting experience, with vivid accompanying public reaction in many cases. A protestor of a proposed low-level waste disposal facility in New York said "I haven't felt this way about an issue since Vietnam." (7) We members of the waste management community know that the health risks from a low-level waste facility are comparably tiny compared to risk of death in wartime. Yet it is impossible to argue with someone who sincerely believes that the scope of the issue is comparable. Understanding why that person really opposes the project with such vehemence is the challenge.

UNDERSTANDING PUBLIC PERCEPTIONS OF RISK

Based on a review of many types of controversial projects, one basic point emerges. It is not so important what we do, but how we do it. We suggest that we all step back to basics in considering this issue, and clear our heads of our technical experience and objectives. The old Native American concept of "walking a mile in his moccasins" may help us understand why we get the reactions that we do to our well-conceived, technically-appropriate proposals. It may help us achieve our ultimate objectives, from which we are often blocked.

SETTING THE SCENE

Try to forget for a time that you are responsible for investigating and cleaning up a contaminated site, or that you must site and develop a disposal facility. Imagine yourself as a typical aware and interested citizen, busy with some other 50-hour-a-week career, your family, your home. You concern yourself with planning issues in your community. You volunteer to coach your daughter's basketball team, and you participate in school, church, and civic activities. You have a passable lawn, a few hobbies, and an active social life. You try hard to read widely, and you are concerned about the new world order, global warming, national energy policy, and the leaking municipal landfill in your town. You feel reasonably well educated, but you are not a scientist by training. You feel like a responsible citizen, but you are continually frustrated by how decisions seem to be made at the local, state, and federal levels. You feel that you have a long-term stake in the environment, and in the issues that you believe are important.

When a new environmental issue arises that affects you as our hypothetical citizen, a classic process often begins. The bureaucrats or developers, bolstered by reams of scientific and technical justification, roll into town. Assume that the project is the investigation and potential cleanup of a site contaminated with radiologic and hazardous materials, or the siting of a disposal facility to handle dangerous waste materials produced by industries statewide. The team members have been planning their project for months or years; they have funded background research, design, and analyses; they have experts involved to address every conceivable technical issue. They have a public information program that tells you their proposed approach, presents the environmental advantages, and asks for your comments. Especially if the contaminated site or the waste disposal need has already been perceived as a problem by the community, the technical team may feel that they can't help but be received with open arms.

You decide to take time from your busy schedule to participate in the process. You attend a public meeting, read a few brochures, and review the technical work plan. You call the technical team once or twice to ask questions and express your concerns about the technical approach, the assumptions used in the risk assessment, the routing of trucks, or some other aspect of their plan.

Often, your experience is fine. Sometimes, however, you find that you are shunted to a technically-inexperienced public information specialist or to an engineer who doesn't want to take time to answer your questions in understandable terms. Or you may offer ideas that you believe are technically appropriate, only to be told that the project is too far along to consider new approaches. The project approach, results of risk analyses, and environmental im-

pacts are all presented as complete, and you are not sure why your comments are being solicited if they are not going to change anything in response to them. On occasion, you may be treated in a condescending fashion, avoided, or lumped into a group of "opposition" with which no rational, technical dialogue is possible.

Within weeks or months, you have decided to take even more time from your busy life to actively oppose the proposed solution. You apply your significant intelligence, community network, media contacts, and stubbornness to fighting the proposal, fighting the proposing organization, and generally digging in your heels. Why?

CHARACTERIZING THE MISTAKES

People get mad when they feel behind on the learning curve, when a project is well along before they become aware of it. People get mad when they believe that they have been or will be needlessly exposed to risk. They want a risk-laden situation cleaned up to absolutely clean levels, or demonstrated to present no new risk. They get mad when they perceive that government or industry is reluctant to expend the necessary resources, or has concealed information, broken environmental laws, or made decisions without public knowledge or input. They get really mad when a technical expert speaks to them of risk in either highly technical terms or in over-simplified terminology.

Baruch Fischhoff of Carnegie-Mellon University, one of the earliest risk researchers, said that "When people are mad, they'll fight on whatever issues they can fight most effectively...and risk is the Achilles heel of technology." Considering the difficult time that the technical community has in quantifying and agreeing on project risk, it should be no surprise that the public zeros in on it.

Risk can also be a surrogate for other issues. People may claim unacceptable risk, but their real concerns may be with fairness and equity ("Why do we have to take the whole county's waste?), stigma ("Tourists will never come here, and nobody will buy our vegetables."), or tradition ("No state agency has ever come in here and told us what to do, and they won't start now."). Faced with government or big business initiatives, regular people often feel powerless. That makes them mad. Risk is often the tool they use to stymie our efforts, because it is hard to quantify. Not even scientists agree on definitions of risk, and the perceived uncertainty means that risk becomes our Achilles heel.

When we talk of risk, we mean the possibility of damage or harm to something or someone that we value. A thought-provoking statement about values was made by Bill Freudenberg at a waste management conference last year (2). He characterized the attitude problem of the waste management industry as being "We do science. They have values." As he pointed out, the battle is clearly not science versus values, nor should it be. We all have values, strongly held values. We would not be in the waste management business unless we hold strong environmental values, and we all cherish our health, families, freedoms, and all of the other values held in common with the "public." Those shared values color our scientific efforts, our policy decisions, the entire fabric of our careers. Public perception of the basis for our actions does not reflect that understanding, however. Clearly, we need to present projects in terms of these values rather than "need," "risk," etc.

The arrogance represented in our efforts to accomplish our objectives is often cited by the public as key to their opposition. We believe that a documented risk assessment, or a piece of authorizing legislation, the power of eminent domain, or a Ph.D., give us the right to carry out our responsibilities. We are happy to tell the public what we are doing, and maybe even to ask for their comments, but we are the experts who will decide that the risk is acceptable and implement the project. Our attempts at effective risk communication often focus on explaining our risk analysis results in understandable terms, but not on incorporating public values and ideas into the analyses themselves.

Work done on risk communication by Peter Sandman and his colleagues of Rutgers University (3) emphasizes that we must "begin by recognizing that communities are quite capable of understanding the scientific aspects of risk assessment. The public includes doctors, chemists, and teachers, as well as persons with less scientific background, who understand many of the technical intricacies of risk...too often government assumes that because communities don't agree with an (agency) action, they don't understand it." Resulting arrogance can alienate members of a community at any point in the process. People who may have been neutral or supportive move to the opposition if they feel that their concerns about risk or other issues are being treated with arrogance. People will feel most comfortable with a decision in which they have had the opportunity to be involved. We have to make difficult decisions. What level of health risk is acceptable? How clean is clean? Which engineered alternative will offer the greatest containment? To what degree will cost and schedule affect decisions? Making those decisions in a public arena is hard, but making them outside the public arena leads inevitably to misunderstanding, opposition, and anger.

In risk communication patience is more than a virtue, it is essential to success. Kathryn Visocki surveyed many controversial siting projects several years ago (4), and one of her basic conclusions was that it takes years to succeed, sometimes over ten years. But we are driven by legislated schedules, contract milestones, resource constraints, and political agendas. Public concerns over risk or process are never alleviated by the argument that we must proceed in response to a schedule. In fact, schedule-driven actions or decisions can anger the public further. The ultimate sched-

ule-buster is public opposition, which often engenders political opposition, which often delays or stops our projects.

PROPOSALS FOR SUCCESS

In spite of the difficulties experienced in the last decade, we need to move forward to accomplish our waste management objectives. The authors suggest that we must imagine, and achieve, a new way of solving waste management problems. Many of our public involvement techniques have backfired, and many members of the public are highly suspicious of any process, any technical work. We members of the radioactive waste management industry are in this business for the long term, and must recognize the risk-based barriers to achieving our objectives. Not merely lip service, but real commitment to addressing public concerns, is required. We can try the following:

- We need to integrate the public outreach elements with the technical elements of our programs, focusing our best resources and cleverest ideas on solving both sides of the equation. No program can succeed if it becomes the technical solution versus the public concerns and interest, but must create a win-win solution in both arenas. Equal effort should be given to planning the public outreach and participation aspects of a project as is spent on the technical elements. It is often possible to anticipate the issues and the opposition groups that will arise, keeping them from roadblocking the project should be a top team priority.
- Our public outreach programs require more than a collection of techniques. They need to be driven by our objectives. Learning from the hazardous waste site investigation protocol (5), it is helpful to conduct community interviews as a starting point for planning other public participation activities. Really listening to people is the element that often wins their trust, and certainly is the most accurate basis for designing a program. We must not assume that we know people's fears, ideas, or values, but must undertake honest efforts to hear them from the source. People are both smarter and more cooperative than they often get credit for, but they are also easily offended if they are treated in ways they perceive as discourteous or arrogant.
- We need to deal with detractors and those that wield a potential veto power, in an honest and straightforward way. We are all most comfortable talking to the people who support us, understand us, and act like us but this doesn't help us move past the roadblocks. Creative ways of reaching a middle ground can include mechanisms such as public review and monitoring groups; citizen representation on working groups; and local control mechanisms such as monitoring stations, independent data review, and local inspectors. One striking example of a public process that directly addressed public fears and anger comes from the management of the Alaska Pipeline Terminal in Valdez, Alaska (6). Following the horror of the Exxon Valdez spill on Bligh Reef in 1989, the oil company consortium that operates the terminal responded quickly in the public arena. A new president of the company took personal responsibility for forming a regional citizens advisory committee with unprecedented powers to influence the terminal operation. The committee's authority included binding agreements on the consortium's response to their comments, independent funding for technical expertise and research, and public visibility and autonomy. The committee participated actively in review of new emergency response planning, equipment purchase, and other actions designed to avoid future problems. Within a year of its formation, community reaction to the operation of the facility had gone from openly hostile to accepting, and citizens were acting as ongoing watchdogs for the terminal operations. We need to understand and profile our diverse publics, and address head-on what may seem to us to be reactive, emotional, and crisis-oriented public reaction.
- Communicating risk calls for plain talking. This in turn requires sufficient time, personal commitment, and background information (including literature that we may not want to recognize as legitimate technical input). By using understandable scenarios to explain alternatives, being careful about terminology without using insulting alternatives, and generally empowering citizens to participate actively in risk assessment activities, we can change the balance of knowledge and power and make it possible for citizens to play on a level field. The results may not be what we would have produced on our own, but they will represent acceptable results to both us and the involved community. That will go a long way to ensuring success as those results are applied to the project objectives.
- There is always something to negotiate. Compromise can often mean a solution that gives both sides what they need. We are the ones with the objectives of accomplishing safe waste management, and we therefore have the responsibility for changing our attitudes about accommodating public values, and for working to draw those members of the public into that middle ground. The opportunity to negotiate in good faith about those elements of a project or program that can reasonably be negotiated can go a long way to gaining credibility and acceptance. Some solid waste incineration and resource recovery facilities have addressed community concerns with local involvement in the health risk assessment, local control of environmental

monitoring capability and, in some cases, local shutdown authority in the event of a problem. Local involvement in siting, design, and operating approaches also helps to reduce opposition.

- Recognizing the need for long-term investment in solving environmental problems, we can create educational programs for both youth and adults, using school systems, the media, and other resources to build a base of knowledge of comparable risks, risk management tools, and technical solutions to environmental problems. France uses its educational system to increase understanding of comparable risks from an early age. Public information campaigns are under way in most countries, with varied results. Effective risk communication is clearly not only a problem of our current time, but will continue unless we address it at the source.

CONCLUSION

When we started down this road, we thought that providing public information about our processes and solutions was enough. We moved on to design processes where people could participate more actively, at least commenting on decisions and products. Dialogue was established in ways it had not been in the past. We still face opposition, and must admit that sometimes our commitment to actual public involvement has been less than sincere.

The waste management industry is made up of a lot of experts in many things. People become project managers and program directors because they are especially good at technical work. We are realizing that there is not necessarily anything wrong with our technical work, but most of the roadblocks we face cannot be surmounted by more and better technical work. There is no reason that our best technical, management, and policy minds cannot also excel at human relations, helping all of us achieve important environmental goals. As we struggle with how to communicate with "non-technical people" about risk, let us also struggle with simply how to communicate with people. It is necessary to achieve our goals, and we must accord it the importance and priority it deserves if we are to reach our overall environmental objectives.

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