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Emergency Incident Risk Communication: The Cantara Loop Spill

Under the best of circumstances, risk communication can be a tricky process. When a community has been angered and traumatized by an emergency event, the process can become trickier still. Such was the case in the Cantara Loop Spill that occurred about 240 miles north of San Francisco. However, the response and long-term followup of the California Department of Health Services (CDHS) won the respect of many residents. What went right? According to CDHS epidemiologist Amy Casey, RN, MPH: "We're the agency that kept coming back. We never abandoned them."

Perhaps no emergency event is typical, but the Cantara Loop Spill had many unique features. On a Sunday evening, July 14, 1991, a train derailed on a bend in the tracks over the Sacramento River, in an area known as the Cantara Loop. One tank car fell into the shallows, spilling a substance first thought to be diesel fuel, but later discovered to be a weedkiller, methyl dithiocarbamate, also known as metam-sodium. The entire contents of the car—19,000 gallons—went into the river. The toxin reached Lake Shasta 2½ days later, causing huge fish kills. The fish were only the most obvious victims of the chemical: all aquatic life was exterminated over a 45-mile stretch of river.

Six miles downstream from the site of the spill is Dunsmuir, California, a small town of 2,129 people. The spill moved past Dunsmuir south to Lake Shasta. Soon the area was in a state of confusion. Emergency workers and residents began reporting symptoms. Many affected people went to local hospital emergency departments. Some local authorities advised residents to evacuate; others were told that evacuation was voluntary and that a temporary shelter was available. Some apparently received no notice of the emergency at all.

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U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
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The herbicide metam-sodium is extremely volatile, so it is transported in an aqueous solution. When mixed with additional water, it breaks down to methylisothiocyanate (MITC) and hydrogen sulfide. MITC is broken down chemically by sunlight, by reaction with oxygen in the air, and by catalytic breakdown in water. As the chemical plume flowed downriver for the next 2½ days, emissions into the air continued and, because of northerly winds in the afternoon, were blown upstream to Dunsmuir and beyond to Mt. Shasta City (see map).

Symptoms continued to be reported many days after the spill. Onset of symptoms generally preceded a visit to a physician by several days. The moving plume and photolysis prolonged the exposure; the substance may also have existed unchanged for several days in small areas of the environment unreached by sunlight.

A Town in Conflict

Health effects were only part of the impact the spill had on the involved communities. The town of Dunsmuir was polarized by the event. Many employees and retirees of Southern Pacific Transportation, the railroad company, live in the town. Some citizens of Dunsmuir accused others of filing lawsuits that fraudulently claimed health effects, merely for profit. Others had been induced to sign waivers against compensation in return for a small payment from the railroad. Residents filed personal and business lawsuits against Southern Pacific.

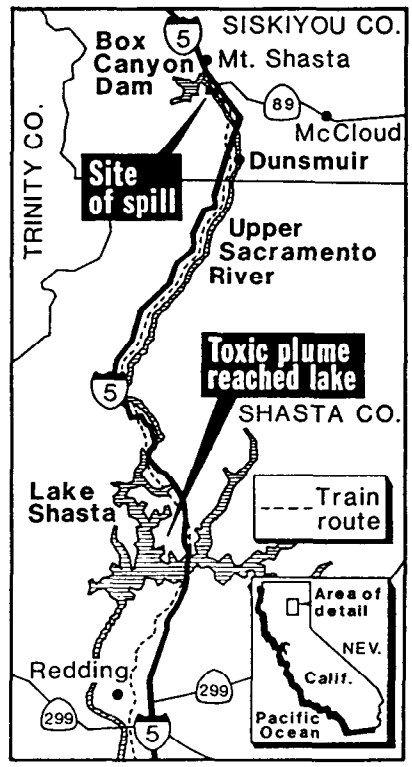
Tourism also suffered from the spill. Belnap Fountain in Dunsmuir is billed as having "the best water on earth." The water was the basis of some businesses; scenic vistas and wild trout fishing brought vacationers to the area. The tourist industry in the town is only now beginning to recover. Some business owners resented those who brought the lawsuits and resultant "bad publicity." By December, town leaders had begun to complain that the continuing turmoil over the spill was preventing the town's economic recovery. Angry citizens responded with efforts to recall the mayor and two city council members.

At a community meeting held in August 1991, investigators and public health workers were "bombarded by anger." Residents charged that they had been uninformed or misinformed about the dangers of exposure to the herbicide. Originally, health officials announced that no long-term health effects were expected, but, a few weeks after the spill, rashes, respiratory complaints, and other symptoms were persisting. By this time, also, some well-publicized claims were being made that the spill had caused at least two miscarriages, and the possibility of birth defects was feared. Both effects have been reported in studies of animals exposed to methyl dithiocarbamate.

Health Effects

Health effects reported by residents soon after the incident were rashes; headaches; dizziness; and eye, respiratory, gastrointestinal, and skin irritation. These symptoms are all consistent with MITC exposure.

State epidemiologists conducted a study of the acute health effects of the spill. Data from emergency departments and from mandatory pesticide illness reports were evaluated. The environmental epidemiologists tried to document the health effects, direct the



environmental sampling, and discover whether unknown health effects existed. More than 705 people sought medical care, including 14% of Dunsmuir's residents (about 500), with decreasing numbers south of the spill. A few complaints came from Mt. Shasta City, north of the spill.

The categories of symptoms used in analysis were neurologic, mucous membrane irritation, gastrointestinal, and respiratory. Two weeks after the spill, some cases were still being reported. The smell of sulfur or rotten eggs (from the herbicide's breakdown product hydrogen sulfide) was the most reported indicator of exposure. Neither the detection of odor nor distance from the river were predictors of exposure. Sex, age, and smoking status affected symptom reporting. Analysis of Dunsmuir cases showed the largest number of cases in the 30-39 age group. Females were more likely to report symptoms than males. Smokers had more symptoms and higher rates of illness.

Community Involvement: The State's Response

Within a week of the spill, the state issued fact sheets to medical care providers. Other fact sheets were prepared for the press and the public. Although CDHS officials initially believed no long-term health effects would ensue, they learned of the possibility of neural tube defects and miscarriages through review of animal studies. These findings were reflected in revised fact sheets. Questions asked by residents at community meetings in August and November of 1991 were later answered via fact sheets. CDHS presented early results of the acute health effects study at the November 1991 meeting.

In April 1992, a door-to-door health survey was conducted in Dunsmuir. A CDHS epidemiologist and community relations specialist worked with both formal and informal community leaders to ensure the success of the survey. Presentations were made to local meetings of the Rotary and Lions clubs, the clergy, the city council, and local activists, seeking the public's opinion on how the survey should be conducted. Public service announcements and press releases kept the public informed of the survey dates and times. The result of this careful preparation was a remarkable 81% participation rate; 969 households completed the survey.

The many small-group meetings with the public enabled the CDHS staff to identify additional health concerns to be included in the survey. Many residents were concerned about changes in their vision, development of chemical sensitivities, and chronic fatigue. In June of 1992, CDHS held an open house and released the final report and fact sheet of the acute health effects study. The CDHS Birth Defects Monitoring Program (BDMP) reported its activities. In December 1992, BDMP announced that no increase in birth defects was found and released a Q&A fact sheet on its findings.

Lessons Learned

Not all information released to the community was welcomed. The California Department of Fish and Game aroused public wrath by proposing to use $10 million in cost recovery funds to remediate and study the river. This announcement came just after the CDHS's November 1991 meeting; it was clear that a much lesser amount would be available for health studies. Many community members felt that human health concerns were being discounted in favor of environmental recovery.

A similar reaction befell the California EPA's 200-page scientific report, released in December 1992, on the environmental fate of the substance. Its conclusion—that no long-term human health effects were caused by the spill—enraged the community.

As of November 1993, preliminary results of the door-to-door health survey have been released, and more thorough analysis of the data is continuing. A community advisory group consisting of nine residents has advised CDHS that no further studies are warranted.

In a presentation at the October 1993 meeting of the American Public Health Association, CDHS staffers summarized a key lesson learned from their work with the advisory group. After the preliminary survey results were presented, some CDHS scientists were interested in conducting follow-up studies on specific health problems documented in the survey. Specific study designs were presented to the advisory group, along with information on the limitations of

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epidemiologic studies. The advisory group was particularly concerned about whether any of the studies could provide definitive results, whether they would be helpful for the future, and what the social and economic impact of another study would be on the community. Some advisory group members felt that reviving the issues and emotions surrounding the spill would disrupt the community's healing process. After much consultation, the group refused further study. That response surprised some of the scientists assigned to the project. Throughout the process, the scientists learned about the implications that further studies would have on the community and about the types of concerns that residents have about conducting these studies—concerns that are very different from those of scientific validity.

Superfund Reauthorization: Taking On the "800 lb. Gorilla"

Few in Congress, the Environmental Protection Agency (EPA), the environmental community, or the general public knew in 1980 just how big the nation's hazardous substance problem was. Almost everyone thought that Superfund would be a short-lived program requiring relatively few resources to clean up, at most, a few hundred sites. As EPA set to work finding sites and gauging their potential to harm people and the environment, the number of sites grew; 12 years into the program, almost 36,000 hazardous waste sites had been investigated. According to EPA Administrator Carol Browner, "After 12 years, we've carried out thousands of cleanups, we've spent billions of dollars and gotten billions more dollars committed to the cleanup effort, yet much more remains to be done. There may be thousands more sites that are nearly as serious as [those on] our National Priorities List."

To address the cleanup of these thousands of sites more effectively, sweeping changes are expected in Superfund legislation when it is reauthorized by Congress. Answers to questions such as "What is the risk?" and "What is the cost?" of site cleanup are being reassessed.

"Superfund is an 800 lb. gorilla. It's the most complex, and the most controversial" of all the environmental legislation before Congress in 1994, according to Robert W. Hickmott, Associate Administrator, EPA Office of Congressional and Legislative Affairs, Washington, DC. "Reauthorization is a steep hill to climb because there are 20 to 21 committees with jurisdiction," he says. Issues being considered in reauthorization include "How clean is clean? and deciding future land use versus short-term [benefits]," says Mr. Hickmott.

"Most everyone agrees it's failed," says Morton L. Mullins, Vice President for Regulatory Affairs, Chemical Manufacturers Association, Washington, DC. "Superfund is a four-legged stool with four broken legs: (1) remedy, (2) liability, (3) management, and (4) public participation," according to Mr. Mullins, who led CMA's task groups on Superfund and the Resource Conservation and Recovery Act (RCRA) when he was with the Monsanto Company. "We need to focus resources on those sites that are affected and less on other sites...to prioritize risk to allocate resources on a worst-first basis," he says.

Although EPA is responsible for determining how dangerous a site is and how best to clean it up, it relies on citizen input as it makes these decisions. EPA is continuing to involve Superfund stakeholders as it focuses on reauthorization issues; early in 1993, EPA convened an advisory council of state and local government representatives, private industry, environmental groups, community representatives, and university experts. The group has discussed what was working, what wasn't working, and what about Superfund needs to be changed.

Three major recommendations that will be presented to Congress by EPA were discussed by Administrator Browner at the Third National Conference of the Society of Environmental Journalists on October 23, 1993:

(1) Limit liability of small businesses. "Put fair procedures in place so we [at EPA] can focus on cleaning up sites, not haggling about who owes what. Small business owners are coming in and telling us they've been driven almost to bankruptcy by the legal costs associated with Superfund. We can stop that. I want to put strict limits on the liability of people who have contributed only small amounts to these toxic sites—

both to streamline the settlement process and also as a simple matter of fairness."

(2) Increase efficiency and consistency of remedial measures. "We need to make the cleanup process more efficient and more consistent. Since Superfund was passed 13 years ago, we've learned a great deal about which remedies make sense in a given situation. Yet from place to place, the goals, the remedies, and the costs are not consistent. I want to develop national standards and presumptive remedies to help companies and communities spend less time studying how to clean up these sites, so they can be cleaned up as quickly as possible."

(3) Return remediated sites to productive use. "We need to return these sites to productive community use as quickly as possible. I've met with people who have lived with a contaminated site in the middle of their community for years. Even after the immediate danger has been removed, the problem isn't over. That land sits there, unused, while the neighborhood loses jobs, loses its tax base, loses hope. And meanwhile, development goes on outside the city, in places never developed before—forests, fields—which leads to more driving and more pollution out in the suburbs and the countryside."

Expert and Public Views of Risk: The Communication Gap

When experts talk to the public about the risk of exposure to hazardous waste, any number of things can and often do go wrong. Some of the problems can be attributed to the so-called *communication gap* between experts and the public. When technical and scientific experts on hazardous waste confront an angry public, the experts complain that the public just doesn't seem to get it; members of the public say that the experts talk above their heads and use confusing jargon. Such miscommunication leads to mutual mistrust. Scientists are frustrated by their inability to get their message across; the public is wary and confused by all the dry, technical talk.

Social Barriers to Good Communication

What are some of the barriers that prevent easy communication between scientists and the public? The first questions to ask are these: *Which experts and which public?* Ability to easily understand another has been shown to depend on specifics such as age, sex, ethnicity, cultural and social background, and educational level. Each communication gap will be different depending on who is involved.

Many Superfund sites are located near communities of color. Residents of these communities vary tremendously in ethnicity and culture. Asian-Americans, Native Americans, Hispanic Americans, and African-Americans all bring different norms and perceptions about risk to the issue of hazardous substances. And, even within each group, such as Hispanic Americans, there may be different sub-groupings: Mexican Americans, Puerto Ricans, and Latin Americans. One approach will not reach all audiences.

Technical Barriers to Communication

Scientific experts may also need to be reminded that a good grasp of subject matter may not automatically translate into the ability to communicate that knowledge to others. Communication is a separate skill from technical competence. Many scientists, well versed in their field, may not realize that a complicated technical message can be decoded to make it more understandable.

Participants at public meetings often have different educational levels. Not everyone in the audience will know the meaning of scientific terms; not everyone will be familiar with the units of measurement mentioned. Technical experts who fail to realize this will lose their audience.

Technical experts must learn to speak at a more comprehensible level. Part of the art of speaking to a broad audience and being understood is avoiding technical terms and jargon. Such terminology may seem precise in meaning to experts, but an audience that doesn't understand it won't absorb or process the message. In addition, scientists at Superfund sites must realize they are like health care providers: they are communi-

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cating messages about risk to people's health. Unlike a presentation at a scientific meeting, such messages have emotional meaning for listeners who are worried about the personal impact of the substance. Scientists are often uncomfortable dealing with the emotional content of audience reaction, but they must realize and acknowledge the legitimacy of these feelings. They must also guard against interpreting public disagreement as failure to understand their message.

Sharon M. Friedman, Iacocca Professor and chairperson of the Department of Journalism and Communication, Lehigh University, warns experts against too much reliance on strictly technical information. In the past, many experts felt that evaluating risk was a technical matter and that once they had this information, they could simplify it and present it to people and the people would accept it. But this did not work because the experts ignored many factors that affected how people respond to risks. These factors are not based on data but on social values, political beliefs, and differential perceptions of risk.

Differing Perspectives

Different interests motivate those involved in risk communication. For example, government scientists and the general public have very different interests.

Government experts feel they have the best interest of the public at heart and are there to help. Their view of risk is technical, mathematical, and abstract. They are trained as objective observers. In addition, they may be constrained by lack of resources and may not be able to render all the help they would like. No wonder their view of what needs to be done at a site may not agree with that of the community.

The public's perspective is less technically oriented; it is broader and focused on everyday consequences. That is, lay perceptions of risk are not objective or statistical, they are personal. After all, citizens are personally affected by the chemicals next door to them. They smell the odors, they taste that metallic tang in the water, they watch the enamel on the sink erode. Surely it is not unreasonable for them to expect clear answers to such questions as, *Will exposure to hazardous substances hurt my family? Will our possible exposure cause cancer? What can I do to avoid exposure?*

David Holtgrave, an expert in risk communication with the Centers for Disease Control and Prevention, suggests that one step to bridging the communication gap is for scientists to see themselves as partners with the public in the risk communication process. "An interactive approach," he says, "recognizes that the persons discussing a specific risky situation might have very different perceptions of risk, different methods for making decisions under risky conditions, and different value structures—all of which lead to different choices regarding risk management."

Scientific Uncertainty

Unfortunately for both risk communicators and their audiences, clear and precise answers about individual risks from exposure to hazardous substances are rare. The knowledge in the field is not complete. The newness of the science of risk assessment and lack of complete data make it impossible to give precise answers at all times. It is not possible to tell whether a particular person will get cancer from a substance.

The impossibility of exactly predicting effects on one person from a certain exposure may need to be the first point the expert makes. Honesty and openness about the newness of the science and the impossibility of exact prediction are essential. A frank admission of the limits of knowledge may help prevent false expectations.

Some experts have suggested that a great need exists for public education regarding the scientific process itself. The public, they say, needs to know that science is an uncertain endeavor by which answers to questions are found. At times, the scientific process yields more questions than answers. Science also gives answers more often as probabilities than as certainties. Greater public understanding of what science can and cannot do might reduce some of this misunderstanding.

However, the uncertainty of the scientific process cuts both ways. The newly formed science of risk assessment contains instances where the public was right, the experts wrong. A farmer in England proved to be correct when he insisted that cows' milk should not be sold for 24 hours after application of a pesticide to the cows' hide, rather than the 6 hours recommended by state authorities. He went to court for the right to use different treatment methods for warbler flies on his

cows. The court case forced review of the scientists' data. They were found to be insufficient, and the experts changed their recommendations.

The Realm of Values

The case of the English farmer and his cows also raises the questions posed earlier. *What experts? What public?* Some experts on hazardous substances work for government agencies, but other experts can be hired by chemical companies, environmental groups, or a specific community. Conflicts of interest abound, bringing the technical debate over risk squarely into the realm of values.

How are we, expert and layperson, to discuss risk? Who will have the authority to decide what is acceptable risk? These are questions that all members of our society, expert and lay, must solve. Bridging the communication gap will take more than the correct language; it will take the correct decisions about protecting all people from hazardous substance exposure. And these decisions must involve everyone.

Toward Evaluation of Effective Risk Communication

by Ann Bostrom

Technical experts sometimes think of risk communication as a one-way process, in which laypeople are told how to think and what to do about a risk. Most risk communicators define risk communication as a two-way process in which risk communicators listen and respond to their target audiences. Alternatively, risk communication strategies can be based on broad democratic processes. Democratically based risk communication not only seeks feedback from the target audience, but shares decision-making with it. Such participative strategies aim to involve and empower those at risk and to establish shared values between communicators and communication recipients.

Evaluation as a Tool for Better Risk Communication

Although communicators generally agree on the need to evaluate risk communications, they may not see evaluation as an integral part of the communications process. However, evaluation is a key tool for risk communicators. It not only measures the impact of risk communications on the audience, but also provides the feedback necessary to define and understand a target audience before communications are produced.

When incorporated into a risk management strategy, evaluation can influence even the earliest part of the communication process: selection of specific goals and objectives. Risk communication is most likely to succeed if managers and communicators clearly define goals and objectives. The goal can comprise one or more objectives, such as reducing individual or population risk, providing information necessary for decision-making, or encouraging interaction between all interested parties to improve overall risk management.

Evaluation can help establish goals and objectives that reflect the needs of the target audience. When those at risk participate in the process, preliminary risk communications are reviewed and evaluated, then revised and re-evaluated. This iteration is necessary because the communications must not only meet the standards of experts and professionals, but also must include the information the target audience wants and needs to make decisions regarding risks.

Methods of Evaluation

Methods of evaluation fall into two general categories: (1) those based on the message and (2) those based on audience reactions to the message. Message-based evaluation methods include analyzing the content or structure of a text. For example, readability tests give a measure of the reading level required to read a text. Audience-based methods evaluate the reactions of the risk communication recipients. Surveys are perhaps the most common audience-based method of evaluation, followed by focus groups. A less common but very informative technique is the use of think-aloud protocols. Participants are asked to say aloud everything they think while reading a risk communication or making a risk-related decision.

Whether the content of a communication is appropriate can be determined by studying how people are

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exposed to and can be affected by risks and by studying the target audience's mental models of the risk. A person's mental model of a risk is the set of concepts and beliefs that person uses to describe and draw inferences about the risk, that is, the personal understanding of the risk.

Mental models can be assessed using mental-models interviews, or, more efficiently, by using questionnaires developed from those interviews. Only audience misconceptions captured in the design phase of the interviews are likely to be represented in subsequent research results. Experts and nonexperts tend to think about hazardous processes quite differently. For example, experts are likely to consider both dose and dose rate when they assess risk; on the other hand, laypeople may not distinguish between single exposure events and cumulative exposure.

Lay mental models tend to share certain traits. For example, laypeople share the general notion that radon causes cancer but they may not realize that radon causes lung cancer specifically. For this reason, small mental-models studies with participants from the target audience may provide a reasonable, empirical basis for questionnaire design. When possible, a mental-models survey of the target audience should be used after the interviews, both for preliminary and later evaluations.

Analyzing Data

In addition to choosing a set of methods, the evaluator must also choose what aspects of a communication to measure and analyze. The effectiveness of a given risk communication will depend not only on the communication itself, but on a number of other factors. These include the characteristics of the risk the communication addresses, how and by whom that risk is addressed, the context in which the communication occurs, the size of the target audience(s), the diversity of interested parties, and the degree to which the parties share values about risk-related behaviors and outcomes.

By involving members of the target audience in risk communication design and evaluation, the risk communicator is likely to improve both the communication process and the final communication. For this reason, evaluations of pilot communication projects are likely to have more immediate benefit than evaluations of full-fledged risk communications or communication programs. They are also likely to cost less.

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Environmental Pollution and Risk Communication

by Tim Connor

Along the arterial that connects my neighborhood with the rest of the city is a green and white sign about the size of a church door. *Traffic Fatalities 1993* it reads. Periodically, someone from the city public safety office comes by and changes the number. Today the number is *5*.

The sign on Sunset Boulevard is, I think, a clever and sobering public service. Change the topic and the method would probably work well for a number of other subjects related to public safety and health: Burglaries reported to the city police department. Drownings. Food poisonings. Although not precise statements of risk, the statistics are fairly straightforward reminders that bad but preventable things happen close to home.

But what if the billboard offered numbers on, say, *Leukemias Induced by Man-made Ionizing Radiation.* Or, *Breast Cancers Caused by Exposure to Pesticides.* Or, *Neurologic Disorders Caused by Ingestion of Heavy Metals*?

If your community is anything like mine, these messages would bewilder many and provoke more than a few. Although there is general acceptance that environmental pollution can cause or contribute to human illness and death, the public debates over pollution and health risk can be contentious, especially when the health of residents seems pitted against local industries and the jobs these industries provide.

Not surprisingly, professionals in industry, government, and academia are looking to improved risk communication as a means of taking some of the wind out of these tempests. The power of communication to change and shape perceptions in our society is self-evident, and it would seem to make perfect sense to apply it to such difficult problems. Yet few subjects demand such scrupulous care as that of informing and alerting people about their health and the health of their families. Although sincere, reasoned efforts to communicate the facts and circumstances about risk may hold promise, poorly conceived initiatives can (and often do) backfire to make matters worse.

On the subject of environmental health risks, it is important to acknowledge that *risk communication* is a loaded term. Simply put, the demands of communication compete directly with the reality of environmental risk assessment. Clarity is the key ingredient in successful communication; however, the messages science provides in the way of risk estimates on toxic and carcinogenic substances typically involve multiples and even orders of magnitude of uncertainty. Although there is no easy way around this obstacle to clear and thorough communication, a conscientious messenger would try to avoid the following traps.

Oversimplifying risks. Perhaps the most common technique in risk communication is to compare the risk at issue with more familiar or more quantifiable risks. Deaths from accidents, electrocution, and heart attacks are very identifiable, and the risk per 100,000 per year is a straightforward calculation that can be refined on the basis of age, sex, race, and even locality. On the other hand, research suggesting or establishing a connection between exposure to one or more widely used chemicals and the incidence of cancer and other diseases (i.e., those brought on by weakened immune systems) is not nearly so precise. Disputes between scientists and even groups of scientists over the degree of danger posed by certain chemicals and radionuclides are common.

Nevertheless, there seems to be an irresistible temptation among industry spokespersons and even supposedly neutral health officials to compare risks that are well documented to those that are not well documented, and to do so without qualification. The simplicity of the comparisons makes for good newspaper quotes or pamphlet texts. But if these comparisons work at all, they may not work for long. An anxious public is often a curious and self-educating public, and nothing fuels anxiety more than finding out that the people putting you at risk—or, worse, responsible for protecting you—are not being completely honest.

Discounting atypical lifestyles. In assessing health risks to environmental exposures, it is common to use

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standard assumptions about personal behavior and diet (i.e., consumption of affected agricultural products, ingestion of water downstream from an effluent discharge) to calculate individual and population risks. Although this approach may be a credible method for approximating exposures and risk to large populations, it does have weaknesses that must be acknowledged in the communication process.

Not only will many individuals have behavior patterns that put them at greater risk than the "standard" person, but, within a large population, there are likely to be subpopulations (ethnic, cultural, recreational) whose behavior and consumption patterns show important variations.

Dismissing individual values and beliefs. A person's perception of any risk depends on his or her own experience, philosophy, values, and economic dependence. To many, high-risk activities are actually a form of recreation. Others accept, rationalize, or downplay risks because of the economic benefits and stability they associate with the activity. Still others will discount the benefits of the same activities and insist the risk is unacceptable regardless of any technical justification that the risk in question is minuscule.

Although a political entity may sanction an activity (through licensing or issuance of a permit) as an acceptable risk, it is common for any number of individuals to oppose such decisions. When public relations or public "education" efforts are initiated in such cases, it is not unusual when one element of the effort (i.e., press releases, letters to the editor in a local newspaper) is at least a subtle attempt to portray opponents as irrational. The purpose of these attempts is not to persuade dissenters but to isolate them.

It is important that earnest communication efforts not take on a paternalistic *you're wrong and here's why* tone. Although it may be unpopular and uncommon at times, there is nothing wrong with a person's decision to oppose a risk—no matter how small—if he or she sees little or no benefit to the activity imposing the risk.

Impugning Mother Nature

It is still common in risk communication for risks from a controversial industrial or waste disposal activity to be compared to a similar health risk attributable to Mother Nature. For example, radiation from nuclear energy facilities is almost always presented as being a mere fraction of the radiation people already receive from natural sources (e.g., radon gas, cosmic rays).

The problem with such comparisons is that they distract—often purposefully—from the moral circumstances under which the risk at issue is being imposed. Mother Nature, dangerous as she can be at times, is incapable of moral acts in the ways that people, corporations, and governments are. The natural world may be violent at times, but it is also guileless; incapable of the ineptitude and misconduct which occasionally, and regrettably, human beings are. People, on the other hand, ought clearly to be responsible and accountable for the risks they impose on others.

Finally, any respectable effort at risk communication ought not to presume that people are comfortable with the natural and man-made risks they already accept in their lives. For most people, the world is a dangerous place, not because they live on the lip of an active volcano but because of the accumulation of elements such as crime, pollution, and traffic. The anxiety caused by the physical risks themselves can no doubt be amplified by the sense that the forces responsible for the risks are beyond an individual's ability to control. The empathy and honesty required to communicate effectively with such an audience can be difficult to muster. But that's what it takes.

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From the Tribes ...

The United South and Eastern Tribes, the Environmental Protection Agency (EPA) Region IV, and the Eastern Band of Cherokee Indians convened the first Eastern Tribal Intergovernmental Water Management Conference June 22-24, 1993, in Cherokee, North Carolina. Participants at the conference included

tribal leaders and staff, as well as staff from the Indian Health Service, the Bureau of Indian Affairs, the US Department of Housing and Urban Development, the Forest Service, the Fish and Wildlife Service, and EPA.

Water management is a key concern facing most tribes. Jonathan L. Taylor, principal chief of the Eastern Band of Cherokees, said, "One of the most dramatic of environmental issues facing tribes today is rapid growth within reservation communities due to economic and community development. Increased demands and the cost of safe drinking water and waste water treatment are of major significance; thus, a balance between economic development and environmental protection is of utmost importance to Indian people today."

The goals of the conference were to foster joint environmental initiatives, eliminate duplication of effort, and allow tribes and federal agencies to share ideas on governmental policy, assistance, and regulation.

Gayle Miller, DVM, MPH, of the Centers for Disease Control and Prevention (CDC), spoke about past and ongoing environmental health activities at CDC and the Agency for Toxic Substances and Disease Registry that involve American Indian tribes.

Cherokee was also the site of the first National Tribal Conference on Environmental Management, which was held in May 1992 and attended by more than 300 tribal leaders and federal government officials. The Second National Tribal Conference on Environmental Health will be held in Cherokee, May 23-26, 1994. For more information, please contact David Redman, P.O. Box 460, Cherokee, North Carolina 28719.

ANNOUNCEMENTS

Building a Lead-Safe Future: Conference To Be Held in Washington, DC, May 1994

The Alliance To End Childhood Lead Poisoning announces its Second Comprehensive National Conference, *Building A Lead-Safe Future,* May 16-18, 1994, in Washington, DC. Lead poisoning is the number one environmental health threat to America's children. The Alliance's mission is to frame the national agenda, formulate innovative approaches, and to bring together critical resources — scientific and technical knowledge, public policy, economic forces, other organizations, and community leaders — to prevent childhood lead poisoning. Immediately following the national conference, the Alliance is convening an international conference (May 19-20) to examine the international dimensions of childhood lead poisoning and catalyze the development of solutions at the international, regional, and local levels.

BUILDING A LEAD-SAFE FUTURE
MAY 16-18, 1994
WASHINGTON, DC

Alliance to End Childhood Lead Poisoning

For more information, contact the Alliance To End Childhood Lead Poisoning, 227 Massachusetts Avenue NE, Suite 200, Washington, DC 20002; telephone (202) 543-1147; fax (202) 543-4466.

David Satcher Named New Administrator of ATSDR and Director of CDC

David Satcher, MD, PhD, president of Meharry Medical College, has been selected by US Department of Health and Human Services Secretary Donna E. Shalala to serve as administrator of the Agency for Toxic Substances and Disease Registry (ATSDR) and director of the Centers for Disease Control and Prevention (CDC).

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"David Satcher brings world-class professional stature, management skills, integrity, and preventive health care experience to his new role," said Secretary Shalala. "President Clinton has directed this administration to place special emphasis on disease prevention, and we can think of no better person to lead our prevention efforts than Dr. Satcher."

Assistant Secretary for Health Philip R. Lee, MD, head of the Public Health Service, also expressed his pleasure at Dr. Satcher's appointment to the public health team. "Dr. Satcher is a world leader in medicine and public health. His vision of public health for the 21st century will enhance the 'health' in health care reform."

At Meharry, Dr. Satcher led fund-raising efforts for the historically black medical college and formed links with Vanderbilt Medical School in Nashville, Tennessee. He recently carried forward the merger of Meharry's Hubbard Hospital in 1989 with the Nashville General Hospital. Under his leadership, Meharry established an Institute on Health Care for the Poor and Underserved.

Dr. Satcher was born in Anniston, Alabama. He received the bachelor of science degree from Morehouse College in Atlanta, Georgia, in 1963, and advanced degrees in cytogenetics from Case Western Reserve University in Cleveland, Ohio, in 1970. He performed his residency work in the joint medicine-pediatric program at Strong Memorial Hospital of the University of Rochester in New York. At Morehouse, he was elected to Phi Beta Kappa and at Case Western Reserve to the Alpha Omega Honor Medical Society.

Dr. Satcher assumed his duties at ATSDR and CDC in November.

Public Health Statements Available to Libraries

Libraries can receive a complimentary copy of ATSDR's "Public Health Statements." The public health statements are in loose-leaf notebooks compiled from the first chapters of ATSDR's *Toxicological Profiles*, a peer-reviewed series of documents that describe a hazardous substance's toxicologic properties.

The statements contain information about the toxicologic and adverse health effects of the 80 hazardous substances most frequently found at hazardous waste sites throughout the United States.

Each public health statement provides, in nontechnical language, a general overview of a single substance, such as lead, cadmium, or arsenic. The statements answer the following questions about hazardous substances: how exposure to a substance occurs, how to prevent exposure, what medical tests are used to determine exposure, what the substance may be used for, any possible health effects the substance may cause, and where to go for further information.

For more information about the public health statement notebook, please contact Gayle Alston, ATSDR, Division of Health Education, 1600 Clifton Road NE, mailstop E-33, Atlanta, Georgia 30333; telephone (404) 639-6205; fax (404) 639-6207.

For more information about ATSDR's *Toxicological Profiles*, please call the 24-hour information hotline (404) 639-6000.

Neurobehavioral Symposium to be Held in Cairo, Egypt, December 1994

The Egyptian Society of Pesticides Hazards and Cairo University are hosting the Fifth International Symposium on Neurobehavioral Methods and Effects in Occupational and Environmental Health, in Cairo, Egypt, December 3-7, 1994. The symposium is being organized with the cooperation of the Scientific Committee on Neurotoxicology and Psychophysiology of the International Commission on Occupational Health. Submission deadlines are as follows: for abstracts, February 28, 1994; for full papers, October 31, 1994. For more information, please contact the regional secretariat for the Americas: Barry L. Johnson, PhD, Office of the Assistant Administrator, Agency for Toxic Substances and Disease Registry, 1600 Clifton Road NE, Atlanta, GA 30333 USA; telephone (404) 639-0700; fax (404) 639-0744.

NAS Lead Report

The National Academy of Sciences (NAS) announces the publication of a new report, *Measuring Lead Exposure in Infants, Children, and Other Sensitive Populations.* The NAS report, which includes the most up-to-date review of the science on the health effects of lead, reaffirms evidence that low-level lead poisoning causes lasting damage. The Academy concurs with the threshold of concern of 10 µg/dL set forth by the Centers for Disease Control and Prevention (CDC) in *Preventing Lead Poisoning in Young Children—1991* and raises the possibility that there may be no threshold for some of lead's adverse effects. The NAS report also summarizes a reanalysis by Joel Schwartz, PhD, of a 1979 study of the long-term effects of lead on children's IQs.

Copies of the report may be ordered from the National Academy Press by calling 1 (800) 624-6242.

Building Better Programs in Lead Education

The National Childhood Lead Poisoning Prevention Education Conference will be held March 9-11, 1994, in Atlanta, Georgia, at the Atlanta Renaissance Hotel. Sponsored by CDC and ATSDR, the conference will provide a forum for information exchange and training for federal, state, and local agencies to develop education programs in childhood lead poisoning prevention. For more information, contact Deb Shapiro at (404) 768-3091.

CLARIFICATION

In the article "Health and Hazardous Waste Sites" (**Hazardous Substances and Public Health**, volume 3, supplement 1, page 1), Maureen Lichtveld, MD, MPH, was quoted as saying, "Forty-one million people live within a 4-mile radius of a hazardous waste site, and about 3,325 people live within a 1-mile radius."

The sentence should have read "... an average of about 3,325 people live within a 1-mile radius, based on figures for 1,134 sites on the National Priorities List."

We regret any confusion. For more information, see National Research Council, **Environmental Epidemiology: Public Health and Hazardous Wastes**, Washington, DC: National Academy Press, 1991, p. 114.

SUPPLEMENT AVAILABLE

Hazardous Substances and Public Health, volume 3, supplement 1, was distributed to attendees of the American Public Health Association meeting in October 1993. Copies are available upon request. Write or call Susan Coatsworth, 1600 Clifton Road NE, Mailstop E33, Atlanta, Georgia 30333; telephone (404) 639-6206.

Courses

University of North Carolina

The North Carolina Occupational Safety and Health Educational Resource Center in Chapel Hill, North Carolina, is offering the following training opportunities.

Managing Hazardous Materials-Contaminated Patients in Health Care, January 12-14, 1994. This course is designed for health care workers in the emergency department, EMTs, and first responders. Participants will learn various techniques needed to contain exposure and prevent contamination of facilities and themselves while providing chemically contaminated patients with life-saving services.

Comprehensive Industrial Hygiene Review, January 16-21, 1994. This course is designed for the practicing industrial hygienist seeking a review of the field or preparing to take the American Board of Industrial Hygiene (ABIH) comprehensive examination.

Occupational Health Nursing Certification Review, January 19-21, and January 26-28, 1994. This course is designed to provide an intensive review for experienced occupational health nurses preparing for the American Board of Occupational Health Nurses Certi-

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fication exam. Nurses interested in an intensive review of general principles of occupational health nursing will also find this course beneficial. The 3-day course covers the major components of the certification exam, including direct care, management, health education, counseling, toxicology, industrial hygiene, environmental relationships, and legal and ethical issues.

Safety and Health Training for Hazardous Waste Site Personnel (HST 24-HST 40), February 14-16, 1994. These courses will provide 24 and 40 hours of intensive classroom instruction and hands-on training, fulfilling OSHA requirements (29 1910.120) as mandated under the Superfund Amendments and Reauthorization Act (SARA) of 1986. Students may register for either of the 24- or 40-hour options. The 24-hour training consists of 3 days of lectures, discussion, classroom demonstrations, and small group exercises. The 40-hour training consists of the 24-hour course plus an additional 16 hours of lectures, demonstrations, and hands-on training.

For more information about these and other available courses, contact the Occupational Safety and Health Educational Resource Center, University of North Carolina, 109 Conner Drive, Suite 1101, Chapel Hill, North Carolina 27514; telephone (919) 962-2101; fax (919) 966-7579.

University of Utah

The Rocky Mountain Center for Occupational and Environmental Health, University of Utah, Salt Lake City, is offering the following training opportunities.

Lead Abatement Training for Inspectors, January 12-14, 1994. This is a 3-day course for inspectors of abatement projects involving lead-containing materials.

Fundamentals of Industrial Hygiene, January 17-21, 1994. This 4½-day course is for people who desire structured training in fundamentals of industrial hygiene or who support industrial hygienists desiring an understanding of the field.

Air Sampling for Toxic Substances, February 1-4, 1994. Part I of this course provides a general introduction to industrial hygiene air sampling. Part II provides thorough training in asbestos air sampling, including unique technical considerations. Both parts are 2 days long and are offered consecutively to allow participants to attend either or both sessions according to their needs.

Introduction to Industrial Toxicology, February 14-18, 1994. This 4½ day course is for health, safety, and environmental professionals who desire a basic understanding of toxicologic principles and their application to the industrial environment.

For more information about these and other available courses, contact the Rocky Mountain Center for Occupational and Environmental Health, Building 512, University of Utah, Salt Lake City, Utah 84113; telephone (801) 581-5710.

CALENDAR

FEBRUARY

***February 16-18, 1994*: HAZMAT South 94,** Orlando, Florida. *Contact:* Advanstar Exposition, 800 Roosevelt Road, Building E, Suite 408, Glen Ellyn, Illinois 60137-5835; telephone (708) 469-3373; fax (708) 469-7477.

***February 27-March 2, 1994:* The Third National Symposium on Biosafety,** Atlanta, Georgia. *Contact:* Third National Symposium on Biosafety, Professional and Scientific Associates Inc., 2635 Century Parkway, Suite 990, Atlanta, Georgia 30345-3112; telephone (404) 633-6869 or (800) 772-8232; fax (404) 633-6477.

MARCH

***March 9-11, 1994*: National Childhood Poisoning Prevention Education Conference: Building Better Programs in Lead Education,** Atlanta, Georgia. *Contact:* Visions USA Inc., Deb Shapiro, 3485 Desert Drive, Building 2, Suite 102, Atlanta, Georgia 30344; telephone (404) 768-3091; fax (404) 768-3594.

***March 16-19, 1994:* Learning Disabilities Association of America Annual Conference,** Washington,

DC. *Contact:* LDA, 4156 Library Road, Pittsburgh, Pennsylvania 15234; telephone (412) 341-1515; (412) 341-8077.

March 19-22, 1994: **Prevention 94, Atlanta, Georgia.** *Contact:* Prevention 94, 1015 15th Street NW, Suite 403, Washington, DC 20005-2605; telephone (202) 789-0006; fax (202) 289-8274.

March 21-25, 1994: **Thirteenth Annual Joint Services Symposium in Emergency Medicine for Military and Civilian Emergency Physicians, PAs, Nurses, and EMTs,** San Antonio, Texas. *Contact:* Cindy Collins, Government Services Chapter, American College of Emergency Physicians, 2183 Buckingham #288, Richardson, Texas 75081; telephone (214) 530-0707; fax (214) 530-0516.

APRIL

April 23-27, 1994: **American Academy of Pediatrics,** Denver, Colorado. *Contact:* American Academy of Pediatrics, 141 Northwest Point Boulevard, P.O. Box 927, Elk Grove Village, Illinois 60009-0927; telephone (708) 228-5005, ext. 7885; fax (708) 228-5088.

hazardous substances & Public Health

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