

Risk Management REVIEW

Wharton

RISK MANAGEMENT
AND DECISION
PROCESSES CENTER
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Conference on Market-based Regulations

The Wharton School, including the Risk Management and Decision Processes Center, and the Chemical Emergency Preparedness and Prevention Office (CEPPO) of the U.S. Environmental Protection Agency co-sponsored a two-day conference on "Innovative Market-based Approaches to Environmental Policy: Implementing the Major Provisions of the Clean Air Act Amendments." The conference was designated by Wharton as an Impact Conference, a definition reserved for only a few conferences each year, especially those that present valuable opportunities for academic findings to be disseminated to audiences who can apply them to practical situations.

The conference was held on October 13 and 14 at the Steinberg Conference Center at the



James Makris, Chemical Emergency Preparedness and Prevention Office, U.S. Environmental Protection Agency.

University of Pennsylvania and drew more than 70 participants from industry, government, academia, and the general public. The purpose of the conference was to discuss and critique research results from projects

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Conference on Risk Management Planning in Philadelphia

On November 16 and 17, 1995, a diverse group of stakeholders from within the City of Philadelphia and surrounding communities met at the Wharton School to discuss proposed regulations under section 112(r) of the Clean Air Act Amendments. The conference was

sponsored by the Wharton Risk Management and Decision Processes Center, the EPA's Chemical Emergency Preparedness and Prevention Office, and the Wharton Aresty Institute for Executive Education to explore the role the

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Risk Assessment and the Decision-Making Process

Recently there has been increased interest in utilizing risk assessment as part of the decision-making process with respect to natural and technological hazards. In the natural hazards area, there has been considerable activity on the part of the Federal Emergency Management Agency (FEMA), the National Oceanic and Atmospheric Administration (NOAA), the U.S. Geological Survey (USGS), and other government agencies at the federal, state, and local levels in addressing these issues. In the private sector, the Insurance Institute for Property Loss Reduction (IIPLR) has undertaken studies on ways to mitigate losses from wind peril, and works closely with organizations concerned with improving building codes. In all of these efforts, emphasis has been on improving our understanding of the risks from natural hazards by improving our data and determining through techniques such as cost-benefit analysis ways to mitigate future losses, as well as offer protection to those residing in hazard-prone areas.

With respect to technological hazards, there is increased concern by some groups that many of the health, safety, and environmental regulations unduly restrict activities of businesses, states, and local communities, as well as the consumer, and hence cannot be justified if evaluated from the viewpoint of benefit-cost analysis. The Harvard Group on Risk Management Reform recently issued a report that recommended that

Congress should authorize the President's Science Advisor to rank health, safety, and environmental risks in collaboration with federal agencies responsible for risk regulation. At the same time, they felt that Congress should require regulators to achieve a reasonable relationship between costs and benefits when regulating risks, recognizing that there are limits to formal risk analysis given the uncertainties in estimating probabilities and outcomes, as well as the difficulties in quantifying the benefits.

This report and others stress the importance of considering societal values in developing programs for risk management. This point cannot be overemphasized, given that risk assessment and risk management is much more politicized and contentious today than ever before. The public has lost faith in the ability of science to estimate the nature of the risks, and in the ability of industry and government to manage these risks. As Paul Slovic, Baruch Fischhoff, and other psychologists have shown, many of the public's reactions to risk can be attributed to a sensitivity to technical, social, and psychological qualities of hazards that are not well modeled in technical risk assessments (e.g., qualities such as perceived inequity in the distribution of risks and benefits, dread and anxiety, aversion to being exposed to risks not under one's perceived control).



Howard Kunreuther

Since scientific experts frequently disagree on the nature of the risks, each of the interested parties in the risk debate can typically find someone to support their values and agendas.

Risk assessment and cost-benefit analyses are useful analysis tools for dealing with the problems of natural and technological hazards, but they have to be incorporated in a broader framework. Hence, it may be necessary to use a wide variety of risk management strategies to deal with any particular problem.

There is a large body of social science research that provides guidance on which strategies might be useful. In particular, the uncertainty associated with the assessment process, coupled with the limitations of individuals in processing information, may require a combination of private and public sector initiatives that include incentive systems, insurance, and regulations/standards to reduce losses from technological and natural disasters and provide financial protection to victims should there be an untoward event. These factors should be taken into account both in evaluating current proposals in front of the U.S. Congress and in designing new initiatives for using detailed risk assessments and cost-benefit analysis to determine appropriate regulations and standards.

— **Howard Kunreuther**
Co-Director

Restructuring Electric Power Markets

A worldwide restructuring of electric power markets is underway. State-owned enterprises are being privatized, and unbundling of transmission from generation and distribution is being mandated to assure competitive and open access to all comers. With physical and ownership boundaries shifting, we are also seeing new financial and risk management intermediaries enter the market to assist customers with planning their electric power needs and managing the risks associated with these. The Center has played an active role in this restructuring debate, both in the United States and abroad, with recent research focusing on the United States and Asia. The stakes are high, not just in increasing the efficiency of the energy sector, but in assuring that such efficiency increases do not come at the expense of the environment.

While electricity is clean in end-use, the same cannot be said of electricity production. Pollution resulting from electricity generation can be broadly categorized as having local, regional, and global environmental consequences. Regional and global impacts are caused primarily by the emission of atmospheric pollutants that have longer residence times, causing dispersal over larger areas. Most important among these gases are SO₂, which causes acid deposition or "acid rain," and CO₂, which is a "greenhouse gas" that



Paul R. Kleindorfer

contributes to global warming (although the science of this remains unresolved). Purely local impacts of power generation include those caused by fossil-fired power plant emissions to the atmosphere (particu-

lates, leaded compounds, volatile organic compounds, dust) that result in air quality degradation causing damage to crops, structures, and local ecosystems, and posing a health hazard. Effluent disposal from fossil-fired and nuclear plants can also lead to groundwater contamination, with long-term irreversible pollution implications.

Given the very real concerns about environmental impacts of electricity production, we can expect a continuing interest and increased regulatory oversight on these impacts, even as markets for power are being liberalized (e.g., the on-going Federal Energy Regulatory Commission EIA of recent U.S. initiatives). This oversight relates not just to the traditional risks of electricity supply noted above, but to the growing concern about global warming. At the Center, we expect to play a continuing role in this debate in assisting with industry and government initiatives to balance the three critical E's of the next century: Energy, Environment, and the Economy.

— Paul R. Kleindorfer
Co-Director

Forum on Environmental Strategy

The Wharton Forum on Environmental Strategy will meet on March 26, 1996 to review progress on four projects selected by its members:

- Promoting Insurance-Industry Participation for Determining Environmental Risk
- Developing Metrics for Assessing Business Unit Environmental Performance
- Designing Market-Based Regulatory Policies for Eco-Efficiency
- Developing Executive Environmental Educational Programs for Business Managers.

The Forum, whose members consist of a select group of accounting firms, governmental agencies, industrial manufacturing companies, and insurance and reinsurance firms, met on September 19, 1995 to hear task force reports and to critique individual project initiatives. The March meeting will review all developments since September. ■

Advisory Committee Meeting

The Center's Advisory Committee met on December 15 in the Wharton School. The agenda for the meeting included a discussion related to the Center's conference on "Challenges in Using Information Technology for Dealing with Catastrophic Risks." This conference is planned for the 50th anniversary of ENIAC in 1996. ■

Building Public Trust — It Takes Credibility, Persistence and Patience

Ronald Van Mynen

These days, the pace of our lives is fast. We are used to instant oatmeal, fast food, global communications, and 10-minute oil changes. While patience is a virtue, there are not many of us who have time for it as we push ahead to try to accomplish more than is often doable.

Seven years ago in New Orleans, the 180 members of the U.S. Chemical Manufacturers Association (CMA) adopted Responsible Care®. Back then, we believed this voluntary thrust to improve the chemical industry safety, health and environmental performance was necessary if industry were to maintain its franchise to operate. Nobody knew then that there would be 106 management practices in six major areas that would take most companies eight to ten years to implement fully at all of their facilities in the United States and around the world. Responsible Care started in Canada but chemical associations in 36 countries now embrace it. Who would have thought it a decade ago? It is safe to say that not many of the industry's senior executives had this as a part of their company's long-range plan in the early 1980s. Time and events change things.

One of the six major areas in Responsible Care involves Community Awareness and Emergency Response. Community Awareness requires ongoing dialogue with local citizens (plant neighbors) and a policy of openness: convenient ways for interested people to learn about facility operations, products,

HSE efforts, and risks. Most large facilities carry out these requirements by regular dialogue with local Community Advisory Panels (CAPs).

The Clean Air Act Amendments of 1990 will require sharing of "worst case" scenarios (the potential release of toxic materials or fire or explosion) with the community later this decade. However, two locales where my company has large plants have already done this: Kanawha Valley, West Virginia (in the summer of 1994), and Victoria, Texas (in the fall of 1995). Both efforts involved six or more companies.

Plant managers discussed their hypothetical "worst case" and "more likely" accident scenarios and accidental release history associated with their operations. They stressed the many safety systems and emergency response plans that are in place to diminish the likelihood that these types of scenarios would occur. In follow-up discussions, plant managers addressed residents' concerns and questions about having chemical operations near their homes. Community leaders, concerned citizens, local emergency responders, and an independent consultant helped develop the technical criteria and format for the programs and took part in the discussions.

Plant neighbors said they know chemical plants can harm them. Their interest in this dialogue was to learn what chemical companies



Ronald Van Mynen

are doing to prevent accidents and minimize the impact of those that do occur. The dialogue by all parties was open and constructive. The media provided a fair representation of the facts; their efforts were

judged an excellent first step in talking about real issues required to build future mutual cooperation.

Thrusts for future efforts are being defined. Chemical companies will continue their efforts to reduce their hazards and risks, and to improve emergency response actions. Inherent safety and pollution prevention concepts will be designed into facilities. Management system audits that include third parties (CAP members) are being piloted by the CMA in the United States. Initial results are positive. The CMA will decide a course of action on these management system audits in 1996. Debate continues on third-party involvement in assessment of performance and compliance.

All this bodes well for continued community-company partnerships to effectively understand and manage risks. Future efforts will not be easy. Real progress on many tough issues will require credibility, trust, and continuing constructive dialogue. Helpful behavior norms for all of the participating parties are being established and tested. Things won't change overnight, but with patience and persistence, continued progress to build bridges

between chemical operators and their neighbors will pay off handsomely. Safety and emergency preparedness will continue to improve. Concerns due to lack of knowledge and trust will diminish.

One of the rewarding aspects of participating in the activities of the Wharton Risk Management and Decision Processes Center is that the Center is actively involved in many of the issues that I have mentioned: third-parties inspec-

tions, risk communications as a way of building trust, and information standards as risk management tools. The Center's recent conferences reflect these interests.

Ronald Van Mynen is Vice President of Health, Safety & Environment for Union Carbide Corporation. In his 36-year career at Carbide, Ron spent the first 19 years in manufacturing and the last 17 in health, safety and environment. Presently, he is responsible for all elements of

corporate HS&E within Carbide. Ron is Chairman of the Board of Directors of the American Industrial Health Council and a member of the board of the Chemical Industry Institute of Toxicology. He is a member of the American Institute of Chemical Engineers, the American Society of Safety Engineers, and Phi Lambda Upsilon. He has been a member of the Wharton Risk Management Center's Advisory Committee since 1992. ■

Conference on Market-based Regulations

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sponsored under the Center's cooperative agreement with CEPPO. Jim Makris of CEPPO delivered the keynote address and discussed the challenges and concerns that confront the agency in its mission to protect the environment.

The research topics discussed during the first day of the meeting included:

- Communities and Worst-Case Risk Communications
- Risk Management Planning in Philadelphia
- Informational Regulations of Environmental Risk
- Third-Party Inspections: Environmental Regulations and Insurance
- The Impact of Regulations on Small Firms
- Performance-Based Regulations of Chemical Accident Risks



*Gregory D. Lehman,
Sun Company, Inc.*

The second day of the meeting was devoted to working groups exploring policy options and implementation issues associated with environmental regulations. Lyse Helsing of CEPPO closed the conference with comments on the agency's hopes and priorities.

Attendees of the conference found many of the discussions useful, especially: operation of market forces in the environmental area;

incentives and disincentives associated with risk communications; special challenges associated with small firms; and Europe's experiences with environmental regulations. Several new research efforts were identified as a result of the conference.

The Center will publish a summary of the findings next year. A monograph of the conference papers is also planned. ■

Conference on Risk Management Planning in Philadelphia

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community wishes to play in implementing the EPA's proposed regulations for preventing accidental chemical releases.

Martha A. Anderson, Philadelphia Local Emergency Planning Committee, opened the program with an overview of current activity within the City of Philadelphia for preventing major chemical releases; Robert F. Broyles, Pennsylvania Emergency Management Agency, discussed regulations at the State level aimed at preventing chemical accidents; Paul Orum, Working Group on Community Right-to-Know, reviewed existing federal regulations designed to protect against chemical exposures; and David P. Wright, EPA-Region III, outlined the provisions of the proposed rule under section 112(r).

Paul L. Hill, Jr., National Institute of Chemical Studies, and Richard N. Knowles, DuPont, presented information on community cooperative programs conducted in several localities across

the United States, including the Kanawha Valley, W. Va., Victoria, Texas, East Harris County, Texas, and Indianapolis, Ind.

The conferees spent the afternoon in breakout groups discussing three questions posed by Irv Rosenthal, Wharton Risk Management and Decision Processes Center, coordinator of the conference:

1. Are there accident prevention issues whose resolution would benefit from additional stakeholder input?
2. Are present routes for obtaining such input adequate?
3. If the present routes are not adequate, what would you recommend for obtaining improved stakeholder inputs?

Conference attendees concluded that additional systems for citizen participation, over and above those that exist, would be beneficial. The exact structure for achieving such participation is not clear, but a number of conferees recommended the creation of



Paul L. Hill, Jr., National Institute for Chemical Studies.

neighborhood committees, containing both industry and community representatives, under the umbrella of a city-wide or region-wide coordinating committee. The nature of the coordinating committee was not defined, but approximately half the breakout groups thought it should be the Local Emergency Planning Committee.

The steering committee responsible for the conference intends to meet with City officials to determine if the City, given other demands being made on its resources, will explore the recommendations made by the conference. The Risk Center will continue to participate in this process to identify the factors that help or hinder dialogue, and the reasons for or against being proactive. This information should assist the EPA in the development of guidelines for implementing the proposed rule. ■

Martha A. Anderson, Philadelphia Local Emergency Committee; Robert F. Broyles, Pennsylvania Emergency Management Agency; Paul Orum, Working Group on Community Right-to-Know.



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Roundtable on Chemical Accident Databases

On September 12, 1995, the Risk Center convened a Roundtable to discuss databases for accidental chemical release, a subject related to proposed regulations under section 112(r) of the Clean Air Act Amendments. Representatives from EPA, OSHA, the National Safety Council, the National Institute for Chemical Studies, Chemical Manufacturers Association, the State of Delaware, individual firms, public citizens and a variety of academic disciplines from the University participated in the meeting. The purpose of the Roundtable was to exchange thinking on the present use of current databases, the information different stakeholders would like to obtain from the accident history data to be collected under the EPA's

proposed rule, and how accident history data collected under the proposed rule might be arranged to satisfy stakeholder needs.

Participants were broadly supportive of efforts to define requirements for an accident history data base to be used for epidemiologic and other statistical studies. While there was diversity of opinion concerning database content, there was agreement in the need to have the database identify predictive risk factors that drive accidental release.

The nature and implementation of the EPA's final rule will determine the nature of future Roundtables. Issues related to access, confidentiality and linking to other databases are also important issues in future work. ■

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Submissions are welcome.

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