

Public Participation in Hazard Management: The Use of Citizen Panels in the U.S.

Ortwin Renn, Thomas Webler
and Branden B. Johnson*

Introduction

Americans increasingly question decisions of professional risk managers. This trend is most apparent in the areas of nuclear, hazardous chemical and solid waste management. Professionals and the general public strongly disagree about the seriousness of many risks.¹ The professionals use the expected losses per time unit as the major yardstick to evaluate risks. The public is more concerned about long term effects, inequitable siting, lack of personal control, and the pace of technological diffusion into their cultural environment. Citizens also distrust the ability to monitor and control unintended consequences.²

* Professor Renn teaches in the Environment, Technology and Society Program and is a Senior Researcher at the the Center for Environment, Technology and Society, Clark University. Mr Webler is a doctoral candidate in the ETS program at Clark, and Dr. Johnson is a research scientist with the N.J. Department of Environmental Protection.

¹ Allen, *Towards a Holistic Appreciation of Risk: The Challenge for Communicators and Policymakers*, 12 SCL TECH. AND HUMAN VALUES 138 (1987).

² M. PINSORF, COMMUNICATING WHEN YOUR COMPANY IS UNDER SIEGE (1987); B. FISCHHOFF, S. LICHTENSTEIN, P. SLOVIC, S. DERBY & R. KEENEY, ACCEPTABLE RISK (1981); O. RENN, MAN, TECHNOLOGY, AND RISK (Jülich Nuclear Research Center Research Report Jül-Spez-91, 1981), Renn, *Technology, Risk, and Public Perception*, 4 ANGEWANDTE SYSTEMANALYSE/APPLIED SYSTEMS ANALYSIS 50 (1983); Borcherdig, Rohrmann & Eppel, *A Psychological Study on the Cognitive Structure of Risk Evaluations*, in NEW DIRECTIONS IN RESEARCH ON DECISION MAKING 245 (B. Brehmer, H. Jungermann, P. Lourens & G. Sevon eds. 1986); Kasperon, *Six Propositions for Public Participation and Their Relevance for Risk*

Decision making should assure that risk management is both efficient and sensitive to public concerns. This paper discusses a novel way to meet both needs. The model was developed in West Germany³ and, after some alterations, was first applied in the U.S. in a sludge disposal question in New Jersey.

Problems of Participation in Risk Management

Traditionally, risk managers have regarded public involvement as a mandated, but often unwelcome, intrusion into the planning process. Often, they decide first how to deal with a risk problem and then inform the public. This strategy has not been successful for a variety of reasons. First, citizens feel cheated when asked to participate, only to learn that the decision has already been made. Second, risk managers are often uninformed about the concerns of citizens and experience in the community. Third, the rationale used to make trade-offs between different risk and benefit dimensions is rarely compelling for citizens. Often, decisions evoke conflicts between risk minimization and equity. For example, disposing of externally generated waste may minimize overall public risk, but is unlikely to be accepted by a host community.

Informing the public may help clarify issues, but cannot resolve conflicts caused not by ignorance, but diverging interests among industry, regulators, stakeholders, and the affected public. It has been suggested that communities be compensated for additional risk burdens, but this alone has been unable to win public acceptance.⁴

Communication, 6 RISK ANALYSIS 275 (1986); Fessenden-Raden, Fitchen & Heath, *Providing Risk Information in Communities: Factors Influencing What is Heard and Accepted*, 12 SCI. TECH. AND HUMAN VALUES 94 (1987); Johnson, *Public Concerns and the Public Role in Siting Nuclear and Chemical Waste Facilities*, 11 ENVIL. MGMT. 571 (1987).

³ P. DIENEL, *DIE PLANNUNGSZELLE* (1978).

⁴ Otway, *Perception and Acceptance of Environmental Risk*, 2 ZEITSCHRIFT FÜR UMWELTPOLITIK 593 (1980); Renn, *Risk Analysis: A Need to Communicate*, 4 F.

Inviting the public to participate from the start improves the likelihood that a resulting decision will be accepted. However, this may be resisted because citizens concerned with health risks may recommend expensive programs to achieve relatively small risk reductions. Also, "the public" consists of many groups with different preferences. Without a procedure to reach consensus, the public's position is likely to be unclear.

Levels of Conflict in the Risk Debate

The premise that risk managers have as much to learn from the public as the public has to learn from them has become almost a truism in treatises on risk communication. It is, however, still missing in practice.⁵ Two-way communication is clearly a prerequisite for interactive learning, but it is often difficult to implement. The institution which initiates the action must be flexible, willing to adapt and to explore citizens' concerns.

What are the characteristics of a risk debate? Several classifications have been offered in the literature. The traditional decision analytic view classifies risk conflicts as conflicts about facts, probabilities, values, and procedures.⁶ In a report to the government, the German Academy of Sciences endorsed this classification and found it helpful for designing instruments for conflict resolution.⁷ However, G. Majone

FOR APPLIED RES. PUB. POL'Y 86 (1989) [hereinafter *Risk Analysis*].

⁵ Covello, von Winterfeldt & Slovic, *Risk Communication: A Review of the Literature*, 3 RISK ABSTRACTS 171 (1986); Johnson, *Accounting for the Social Context of Risk Communication*, 5 SCI. AND TECH. STUD. 103 (1987); Renn, *Evaluation of Risk Communication: Concepts, Strategies, and Guidelines*, in *Managing Environmental Risks Air Pollution Control Association International Speciality Conference 99* (APCA ed. 1988); Zimmermann, *A Process Framework for Risk Communication*, 12 SCI., TECH., AND HUMAN VALUES 131 (1987).

⁶ von Winterfeldt, Detlof & Edwards, *Patterns of Conflict About Risky Technologies*, 4 RISK ANALYSIS 55 (1984).

⁷ GERMAN ACADEMY OF SCIENCES, UMWELTSTANDARDS AM BEISPIEL DES

has recently criticized the decision analytic framework and found it unsuitable for a plausible taxonomy of risk conflicts. Instead he proposed to classify risk debates with respect to the type of evidence and arguments used to justify different positions.⁸ He distinguishes between scientific, legal, political, and anecdotal evidence and describes various forms of conflict resulting from incongruities between these forms of evidence. A similar argument is made by N. Luhmann who associates conflicts with the inability of each party (or camp) representing one system of evidence to communicate the inevitable contradictions within this system of evidence to other parties.⁹

Ravetz and Funtowitz have tried to integrate both approaches by developing a taxonomy based on the different types of evidence and argumentation, but still remains within the traditional framework of decision analysis with its distinction between facts and values.¹⁰ S. Rayner and R. Cantor adopted this generic approach and applied it more specifically to conflicts about risks.¹¹ According to this view, risk debates fall into three levels as illustrated in Figure 1, below.

The first level involves factual arguments about risk probabilities and the extent of potential damage. If the problem is a lack of technical knowledge on the part of the public, procedures should focus on informing the public with the consensual expert opinions. In this case, participation is equivalent to successful risk communication. While scientists and risk managers are most comfortable with this type of

STRALHENSCHUTZES (in press).

⁸ G. MAJONE, *EVIDENCE, ARGUMENT, AND PERSUASION IN THE POLICY PROCESS* (1989).

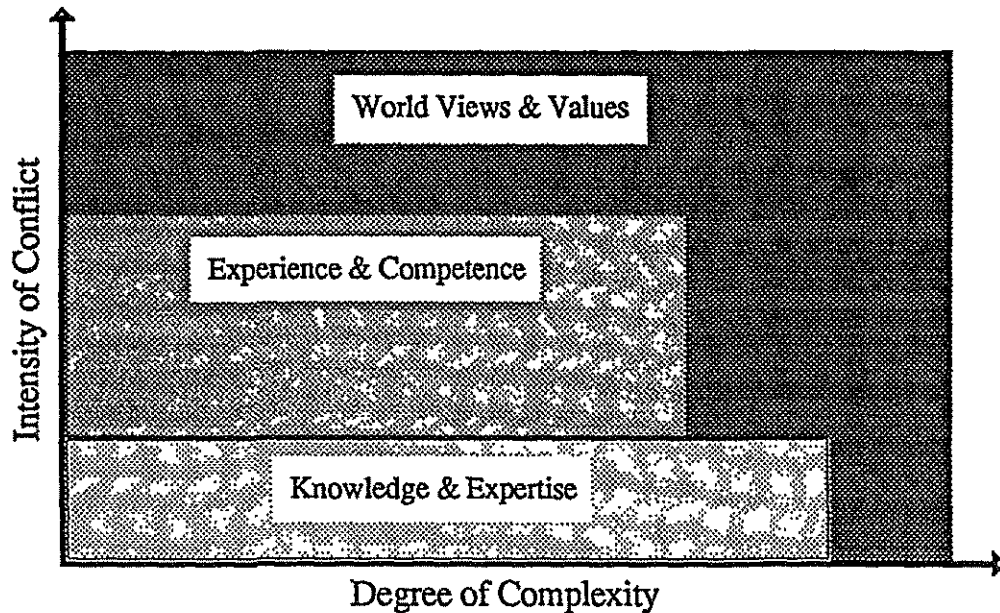
⁹ N. LUHMANN, *ÖKOLOGISCHE KOMMUNIKATION* (1986).

¹⁰ Funtowitz & Ravetz, *Three Types of Risk Assessment: A Methodological Analysis*, in *RISK ANALYSIS IN THE PRIVATE SECTOR* (C. Whipple & V. Covello eds. 1985).

¹¹ Rayner & Cantor, *How Fair is Safe Enough? The Cultural Approach to Societal Technology Choice*, 7 *RISK ANALYSIS* 3 (1987).

debate, it rarely comprises the whole of a conflict.

Figure 1
Three Levels of Conflict in Risk Debates



A second, more intense, level of debate concerns institutional competence to deal with the risks. At this level the focus of the debate is on the distribution of risks and benefits, and the compatibility of the proposed solution with current economic, political, and social conditions. This type of debate does not rely on technical expertise, although reducing scientific uncertainty may help. The emphasis on personal and institutional judgments and experience requires more than risk communication; it needs input from stakeholder groups and affected populations. Approval in this situation is gained by showing that the risk management institution has been competent, effective, and open to public demands.

At the third level, the conflict is defined along different social values, cultural lifestyles, and their impact on risk management. In this

case, neither technical expertise nor institutional competence and openness are adequate conditions for public approval. Decision making here requires a fundamental consensus on the issues that underlie the risk debate. The nuclear debate in the 1970's in Sweden leading to a national referendum is an example of conflict resolution at the third level. It was the culmination of extensive debate about the desired direction of technological development in which nuclear power served as a symbol for large centralized technologies and its impacts on economics and society.¹² The final vote to continue nuclear power for a limited period of time defined the legitimate role that nuclear power should play within the larger technological scenario. The majority evaluated nuclear power plants as undesired but necessary until alternative technologies could replace them. Replacement should be completed by the year 2010, after which all nuclear power plants are scheduled to be phased out. This agreement moved the issue from the third to the second level, where technical and organizational solutions could be discussed without the debate expanding into a conflict over the moral implications of nuclear power and its symbolic meanings.

The form of public participation should vary depending on which level the risk debate takes place. Even the best technical expertise and the most profound competence cannot overcome unresolved social, cultural, and political value conflicts. To resolve conflicts at the third level, neither education nor incorporating stakeholders' interests is sufficient. The affected citizens must be brought into the decision making process.

There is, however, a strong tendency for risk management agencies to reframe higher level conflicts into lower levels ones: third level conflicts are presented as first or second level conflicts, and second level conflicts as first level. This is an attempt to focus the discussion on

¹² Nelkin & Pollak, *The Politics of Participation in the Nuclear Debate in Sweden, the Netherlands, and Austria*, 25 PUB. POLY 333 (1981).

technical evidence, in which the agency is fluent.¹³ Citizens who participate in these distorted discourses are thus forced to use first level (factual) arguments to rationalize their value concerns. Unfortunately, this is often misunderstood by risk managers as “irrationality” on the part of the public. Frustrated, the public retreats to due process and routinization of the process, abscising it of substance, and departs with disillusion and distrust of the system.

Citizen Panels for Policy Evaluation and Recommendation

Many models for public participation that promise to accomplish the integration of different types of evidence and public preferences have been suggested in the literature.¹⁴ This is not the place to discuss these models in detail. In this paper we want to focus on a specific model of citizen participation which was developed by P.C. Diemel of the University of Wuppertal for public participation in planning processes in West Germany.¹⁵ With several modifications, we applied this model in

¹³ Dietz, Stern & Rycroft, *Definitions of Conflict and the Legitimation of Resources: The Case of Environmental Risk*, 4 SOC. F. 47 (1989).

¹⁴ CENTER FOR NEW DEMOCRATIC PROCESSES, FINAL REPORT OF THE CITIZENS PANEL ON AGRICULTURE AND WATER QUALITY (1985); Crosby, Kelly & Schaefer, *Citizens Review Panels: A New Approach to Citizen Participation*, 46 PUB. ADMIN. R. 170 (1986); Kraft, *Evaluating Technology Through Public Participation: The Nuclear Waste Disposal Controversy*, in TECHNOLOGY AND POLITICS 253 (M. Kraft & N. Vig eds. 1988); T. BURNS & R. ÜBERHORST, CREATIVE DEMOCRACY: SYSTEMATIC CONFLICT RESOLUTION AND POLICYMAKING IN A WORLD OF HIGH SCIENCE AND TECHNOLOGY (1988); Chen & Mattes, *Value Oriented Social Decision Analysis: A Communication Tool for Public Decision Making on Technological Projects*, in SOCIAL DECISION METHODOLOGY FOR TECHNOLOGICAL PROJECTS (C. Vlek & G. Cvetkovich eds. 1989); see reviews in Nelkin & Pollak, *The Politics of Participation in the Nuclear Debate in Sweden, the Netherlands, and Austria*, 25 PUB. POLY 333 (1981); Pollak, *Public Participation*, in REGULATING INDUSTRIAL RISK 76 (H. Otway & M. Peltu eds. 1985); Fiorino, *Citizen Participation and Environmental Risk: A Survey of Institutional Mechanisms*, 15 SCI., TECH., AND HUMAN VALUES 226 (1990).

¹⁵ P. DIEMEL, *supra* note 3; Diemel, *Contributing to Social Decision Methodology: Citizen Reports on Technological Projects*, in SOCIAL DECISION

two applications: a study on energy policies in West Germany, and a study on sludge disposal strategies in the U.S. The German case study has been documented elsewhere.¹⁶ We report on the sludge disposal project here.¹⁷ The model is similar to the approach taken by the Center for New Democratic Processes (CNDP) in Minneapolis.¹⁸

Our approach of organizing citizen panels for policy evaluation and recommendation is an attempt to cope with a multivalued, multiactor, multiinterest, decision making. It is essential to incorporate all relevant players in manners appropriate to their interests, knowledge, and rationalities. The goal is to inform panels of randomly selected citizens about various policy options and potential consequences and to have them draft recommendations and evaluations with respect to these policies based on their preferences and values.

Citizen panels in our model consist of a group of about 20 to 25 randomly selected citizens who are given paid leave from their work obligations to serve as "value consultants" in a three to four day process.¹⁹ Their role is to review the testimonies of experts and stakeholders, investigate potential benefits and risks, and assign trade-offs between various options on the basis of their personal values. The

METHODOLOGY FOR TECHNOLOGICAL PROJECTS (C. Vlek & G. Cvetkovich eds. 1989) [hereinafter *Contributing to Social Decision*].

¹⁶ O. RENN ET AL., SOZIALVERTRÄGLICHE ENERGIEPOLITIK: EIN GUTACHTEN FÜR DIE BUNDESREGIERUNG (1985) [hereinafter SOZIALVERTRÄGLICHE ENERGIEPOLITIK]; Renn, *Decision Analytic Tools for Resolving Uncertainty in the Energy Debate*, 93 NUCLEAR ENGINEERING AND DESIGN 167 (1986) [hereinafter *Decision Analytic Tools*].

¹⁷ For further information, see O. RENN ET AL., CITIZEN PARTICIPATION FOR SLUDGE MANAGEMENT. FINAL REPORT TO THE NEW JERSEY DEPARTMENT OF ENVIRONMENTAL PROTECTION (Center for Environment, Technology, and Development 1989).

¹⁸ Crosby, Kelly & Schaefer, *Citizens Review Panels: A New Approach to Citizen Participation*, 46 PUB. ADMIN. R. 170 (1986).

¹⁹ P. DIENEL, *supra* note 3.

output is a recommended solution for the pre-defined problem.²⁰ The process relies heavily upon a clear mandate of the decision making institution to seriously consider implementing the recommendations of the panels, the involvement of randomly selected citizens, and assuring their legitimacy in the eyes of other citizens and stakeholders.

Information Needs of Panelists

Informing participants about options and likely consequences is the vital part of the procedure. Different forms of evidence require different forms of presentation.²¹ In reference to the three levels of conflict, the content of the information material and the structure of its presentation must match the requirements for each conflict level. For a comprehensive understanding of a political issue, the panelists need to be informed about the potential impacts of each policy option (expert judgments), the agency performance records in managing the risk under consideration, and stakeholder values and interests with respect to the risk source. With this in mind, they then must reflect on their own values and interests.

The assessment of potential impacts of each policy option is done prior to the meetings of the panels. Experts in relevant fields are gathered to validate the technical information which will be input to the panel. The method used is Group Delphi, in which a small group of experts convene for one day to review the state of current consensus on technical knowledge relevant to the various options under consideration.²² This is a variation of the conventional Delphi exercise

²⁰ P. DIENEL, NEW OPTIONS FOR PARTICIPATORY DEMOCRACY (1980); *Contributing to Social Decision*, *supra* note 15; P. DIENEL & D. GARBE, ZUKUNFTIGE ENERGIEPOLITIK. EIN BÜRGERGUTACHTEN (1986); Renn, Stegelmann, Albrecht, Kotte & Peters, *An Empirical Investigation of Citizens' Preferences Among Four Energy Scenarios*, 26 TECH. FORECASTING AND SOC. CHANGE 11 (1984); references, *supra* note 16.

²¹ Renn, *supra* note 4.

²² Webler et al., *A Novel Approach to Reducing Uncertainty: The Group Delphi*,

in which series of questionnaires are repetitiously answered by an expert panel. In each subsequent round, the anonymous results of the previous round, along with justifying arguments, are delivered with the new questionnaire. Experts are then able to reassess their original opinions in light of each others' responses and issue a better informed opinion without the hinderance of being committed to an original response.

The group process preserves all of the features of the conventional exercise except anonymity, which is surrendered in exchange for efficiency. Experts are initially brought together in a plenary to meet and receive introductory material. They are then divided into small groups of three to five and given the questionnaire. Each small group works privately and tries to reach consensus on each item. The organizers compile the results of round one and present them to the plenary where groups with diverging opinions are asked to justify their responses. After hearing the arguments, the small group membership is shuffled, and round two is conducted. The results of round two are compiled, and the plenary is reconvened. This process is repeated until it is clear that convergence has been obtained.

The Group Delphi has proven effective for resolving uncertainty about factual knowledge. It brings a convenience in both time and effort over the conventional Delphi but at the cost of surrendering anonymity and presenting only a "snapshot" of the understanding among panelists during that one day. Because the justification for positions are given face-to-face, its efficiency in resolving uncertainty is very good. Three other benefits are that any intentional or unintentional ambiguities are immediately reconciled, the justifications for dissenting opinions provide secondary insights into the understanding that emerges, and consistency is internally checked.

TECH. FORECASTING AND SOC. CHANGE (May 1991); SOZIALVERTRÄGLICHE ENERGIE-POLITIK, *supra* note 16.

In this manner, differences about factual evidence (first level conflict) can be resolved or contained outside of the citizen panels. It is not expected that the experts will resolve all conflict, but dissent must be clearly defined so that the range of opinion can be conveyed fully to the citizen panel. Furthermore, the major spokespersons of opposing camps may be invited to the citizen panel to express their viewpoint directly to the citizens, and to make themselves available for questioning. As in jury trials, expert witnesses are called before the assemblage to present their perspective and reasoning, and to be cross-examined by the participants. All uncontested actual information can be conveyed by formal lectures and written summary material.

The Group Delphi serves two purposes: it presents the consensual knowledge and areas of dissent within the scientific community, and it shows that every effort has been made to assemble unbiased and accurate information. The results provide the necessary information to clarify and resolve conflicts on the first level of debate without imposing any solution on second and third level debates.

Conflicts about the second level of debate necessitate information from within a managing agency and from outside analysts of the agency's performance. This occurs within the citizen panel structure. Claims of competence or incompetence can best be evaluated by having representatives of the respective agencies or industries and their critics present their arguments to the panel and provide evidence to justify their claims. If the issue itself or the reputation of the managing agency is highly controversial, the adversarial camps are often unable to present their arguments in a face-to-face confrontation (or they may lose the audience by retreating to a special technical jargon). In these cases it is more advisable to use videotaped statements of the major parties in the debate.²³ Videotaping provides each party with the opportunity to structure their arguments in line with the panels' interests and to retape

²³ *Risk Analysis*, *supra* note 4.

their statements as often as they deem necessary to present a persuasive argument. Of course, all camps must be equally represented and allowed to present their own cases.

Debates on the third level require extensive communication about values and lifestyles. These topics are subjects of small group sessions (3–5 participants) and plenary discussions in which the citizens consider values and criteria for assessing the various options. The method of value tree analysis is typically employed to expose values, and thus make value-based argument transparent. To be better informed about the potential value implications, we present to the panels the results of a special survey of the major stakeholder groups. These surveys contain the stakeholders' value trees, i.e. representations of their values and attributes to evaluate policy options in a tree-like, hierarchical structure.²⁴ The panels can also opt to invite spokespersons of stakeholder groups as witnesses in order to clarify value issues and explain claims of potential violation of group interests.

The Decision Making Process within Citizen Panels

Table 1, below, lists the operational sequence of citizen panels. There are three major tasks: (1) presentation of technical information and options through lectures, field tours, videos, and hearings; (2) processing of information in small group discussions, plenary sessions, and hearings; and (3) evaluation of options through discussions, questionnaires, and formal procedures to elicit preferences. Procedures for these three tasks are derived from multiattribute utility (MAU) theory.²⁵

²⁴ R. KEENEY ET AL., *DIE WERTBAUMANALYSE* (1984); D. VON WINTERFELDT & W. EDWARDS, *DECISION ANALYSIS AND BEHAVIORAL RESEARCH* (1986) [hereinafter *DECISION ANALYSIS*].

²⁵ Edwards, *Expert Measurement and Mechanical Combination*, 13 *ORGANIZATIONAL BEHAV. AND HUMAN PERFORMANCE* 171 (1972); *DECISION*

Table 1

Typical Sequence of Events in a Citizen Panel	
<i>Step</i>	<i>Activity</i>
1	Introduce issue through lecture and field tour.
2	Provide background knowledge through lectures, written material, self-educating group sessions, audiovisual information, field tours, etc.
3	Introduce controversial interpretations of information through videos or hearings.
4	Introduce options through lectures (non-controversial) or hearings (controversial).
5	Problem structuring with respect to each option through group sessions and plenary discussions.
6	Elicit values and develop criteria to evaluate each option.
7	Evaluate information and options through individual questionnaires and group discussions (captured in group response forms).
8	Draft rough recommendations through work groups and plenary sessions.
9	Articulate recommendations in a citizens' report after the planning cells by the facilitator.
10	Provide citizens' report to participants (usually in an evening meeting two months after the planning cells).
11	Present the citizens' report to the sponsor, the media, and interested groups.

In contrast to the usual MAU procedure, numerical results of the decision process are not used as the final judgment of the participant; instead, they are only an aid to improve the participant's holistic judgment. The advantage of the MAU model — to break down a complex problem and structure a productive discussion — is used to its fullest extent without accepting the rigid rule of combining the scaled results into a single dimension. Final recommendations are always based on a holistic judgment by the individual participants.

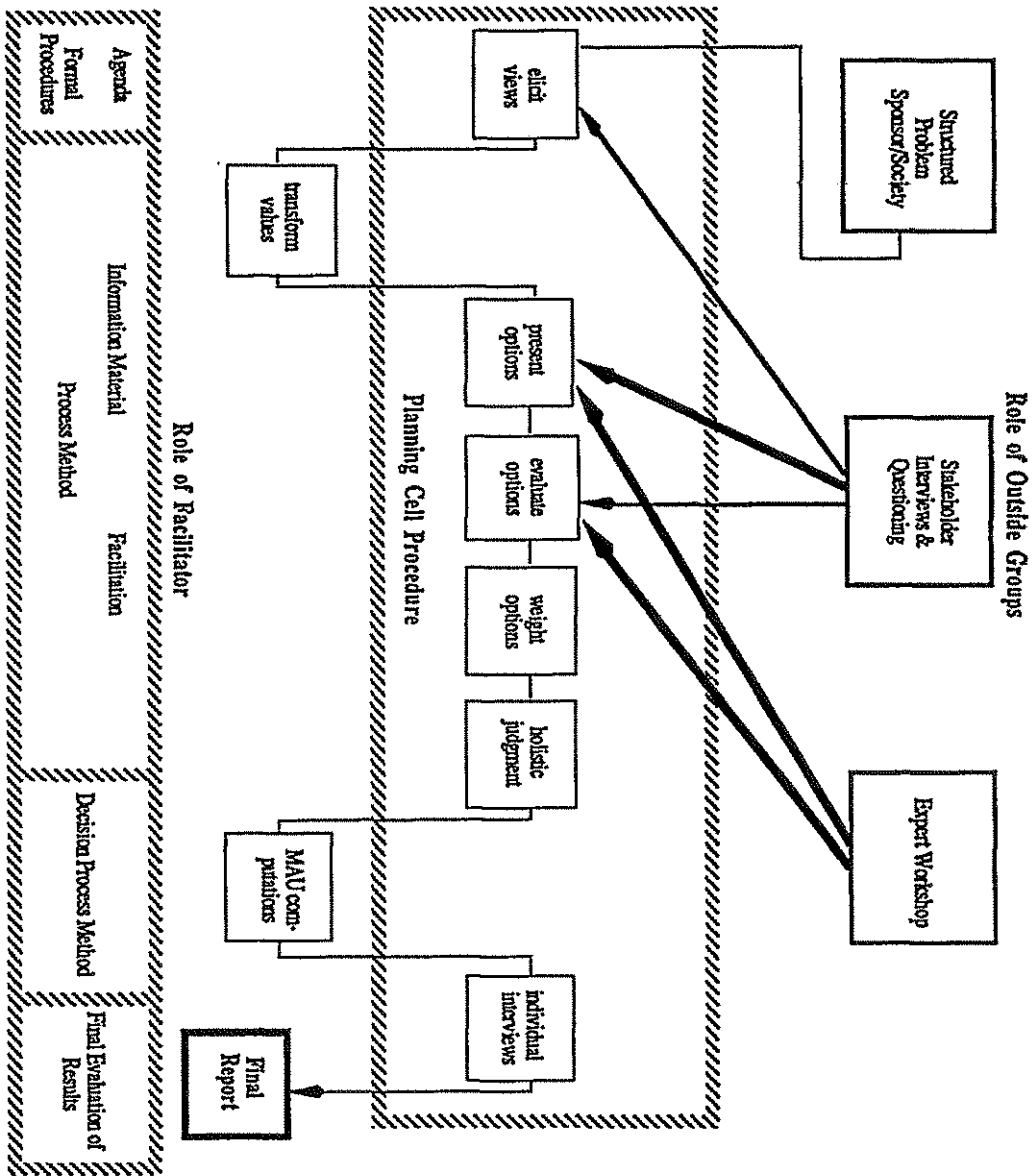
ANALYSIS, *supra* note 24.

Table 2

Phases of Decision Making by Citizen Panels		
<i>Step</i>	<i>Phase</i>	<i>Explanation</i>
1	Structure problem	Identify problems with present solution; describe options and decision procedure
2	Elicit values	Identify personal values affected by the decision; structure values in tree format
3	Validate values	Transpose values into evaluative criteria and dimensions; amalgamate personal value trees into a joint value tree
4	Present or generate options	Introduce options and explain experts' judgments on the potential advantages and disadvantages of each option
5	Evaluate options	Assess each option on each dimension according to personal utilities (identify assessment ranges for all participants)
6	Weight dimensions	Assign cardinal weights to each dimension (using one of the usual calibration techniques)
7	Request holistic judgment	Individual and group judgment on prioritizing options
8	Feedback of calculated judgment	Calculate numerical priorities derived from the MAU model and inform participants of the results
9	Discuss potential discrepancies	Interview each participant about differences between holistic and calculated results; search for explanations of these differences
10	Final holistic judgment	Individual decision and plenary vote for each option; write narrative vote for summarizing one's arguments for the choice made

The structure of the decision making process is summarized in Table 2 and schematically represented in Figure 2.

Figure 2
Schematic of Citizen Panel Process



Outside groups (sponsor, experts, and stakeholders) have limited access to the citizen panel procedure. Their role is (i) to reveal their values to enable citizens to evaluate future testimony; (ii) to present

options to help define choices for the panelists, and (iii) argue for their adoption based upon the consistency of the decision option with the explicitly expressed values. The facilitator performs the technical aspects of the utility analysis and inserts these back into the process, while also organizing and moderating the actual panel meetings.

Distinct Characteristics of Citizen Panels

A random selection process is preferable to a stratified sample of relevant social groups. Randomly selected citizens are uncommitted to a position, and thus can take advantage of new information and adjust their preferences accordingly. Moreover, other affected citizens can identify with randomly selected participants because of the equal chance to be drawn into the sample. This adds to the legitimacy of the panels. Random selection is inspired by the goal of equal representation of all values and preferences. Even if many citizens elect to not participate, attempting to acquire a representative sample of the pertinent population is democratic and furthers the legitimacy of the procedure.

The random selection process has another advantage. Since the participants convene for only a limited time, and do not depend on each other, they are not concerned about the social status and power of each individual member outside the panel. The panel represents a working group of equal influence and power. Personal ambitions to dominate the process are not tolerated by the group members; nobody has anything to lose by speaking up. Thus, the process itself comes close to the ideal of a discourse as Habermas and others have postulated for policy making.²⁶

In contrast to voting by elected bodies, members of citizen panels work on only one issue and do not need support from voters or interest

²⁶ J. HABERMAS, *COMMUNICATION AND THE EVOLUTION OF SOCIETY* (1979); Kemp, *Planning, Public Hearings, and the Politics of Discourse*, in *CRITICAL THEORY AND PUBLIC LIFE* (J. Forester ed. 1985).

groups. They represent their own preferences and do not link their work on the panel with political career ambitions. The limited participation period prevents the citizens from becoming alienated from their usual social roles: they only change their perspectives for a brief period. Participants in Germany received an honorarium and a working contract. The purpose of the contract was to convey the perception of seriousness on the part of the sponsor, indicate that the person was serving a purpose (being a “value consultant”), and assure an atmosphere of work ethics and responsibility.

Citizen panels differ from other forms of participation by disallowing organized stakeholders or officials to contribute directly to the output recommendations. This could present a problem if stakeholders and public officials disapprove strongly with the final recommendations, however, the model does allow them to testify during the process. Stakeholders and public officials would tend to control the discussions and limit the agenda to first and second level conflict items. Their taking part would violate the principle of creating an environment where social status and political power do not matter. Moreover, decision makers — unlike most citizens — have usually made up their minds about the issues and would try to use the process to influence other members rather than to reconsider information and engage in a learning experience.

In short, the citizen panel format deals with several of the challenges in designing public participatory processes. It ensures that citizen values are highlighted to avoid emphasizing technical issues, while providing technical information resources to citizens. The use of a neutral facilitator reduces the potential for perceived bias in the organization of the panels, and random selection meets the requirement that each citizen have an equal chance to participate.

Citizen panels work best when a problem can be resolved in a short

time, no major inequities occur, and several solutions (not narrowly technical or political) are available. The approach does not work well for issues that pose major inequities for different regions or social groups, since randomly selected citizens are not seen as legitimate negotiators for these groups. Yes/no issues, such as siting facilities, are also inappropriate since participants may feel obliged to select the no-action option. Decisions which need to be adapted over time also cannot be handled with this approach, since the panel relies on its temporary nature for optimal functionality. In addition, some decision issues may require more time than is practically available to citizen panels.

Despite these limitations, citizen panels seem especially suited for issues of risk management. Risk issues often involve many different types of conflict. A holistic understanding of the impacts of a proposed project must be based on scientific and technical conventions, beliefs of organizational competency, and personal preferences. In the end, it is the citizens' estimation and interpretation of impacts that will govern their decision to contribute. Because the citizen panel approach is explicitly designed to fit this type of problem structure, it offers a unique alternative to the routine forms of public participation.

A Case Study of Citizen Panels in the U.S.

In 1988 the New Jersey Department of Environmental Protection (NJDEP) awarded a research grant to the Center for Environment, Technology, and Development (CENTED) at Clark University to test the method of citizen panels in the area of sewage sludge management. A research project had been proposed by Rutgers University to apply sludge to their experimental farm in Hunterdon County and a permit from NJDEP was required. The objective of the contract with Clark University was to involve the local public in a discussion about the potential risks and benefits of the proposed project. The NJDEP hoped

the citizen panel would issue conditions for a draft permit, which would then be subject to the usual permitting process (public hearings).

As a option for sewage sludge management, land application has become more prominent as new laws prohibit ocean dumping and landfill disposal, and lead times for the construction of incinerators lengthen.²⁷ An advantage of land application is that the sludge is recycled, serving as fertilizer for crops, and reducing the amount of chemical fertilizer needed.²⁸ Possible risks involve contamination of soil, crops, or water by organic and inorganic components of the sludge, and transport and storage of the sludge. Additionally, there are potential problems with odor, and secondary economic, social, or aesthetic impacts.

Despite the fact that the New Jersey regulations for land application of sludge are widely considered to be among the strictest in the country, draft permits have encountered fierce public opposition and community protests. In addition to health and odor concerns, citizens living near proposed sites have worried about the long term impacts, the role of the regulatory agency, and the permitting process.²⁹ The NJDEP expected that citizen involvement would offer opportunity for the affected public to suggest conditions under which research into land application could ensue without opposition. If these conditions were adopted into the permit, citizen trust of the agency and acceptance of land application might increase.

The first stage of the project was to review transcripts from public hearings held in New Jersey and New York on land application permitting. The research team also spent several days in Hunterdon

²⁷ Marshall, *The Sludge Factor*, 242 SCIENCE 507 (1988).

²⁸ A. PAGE, T. LOGAN & J. RYAN, LAND APPLICATION OF SLUDGE (1987); PENNSYLVANIA AGRICULTURAL EXPERIMENT STATION, CRITERIA AND RECOMMENDATIONS FOR LAND APPLICATION OF SLUDGES IN THE NORTHEAST, BULLETIN 851 (1985).

²⁹ CITIZEN PARTICIPATION, *supra* note 17.

County interviewing local officials, potential stakeholders, and local opinion leaders. These data were used to design measures by which citizens could evaluate the performance of the various options on the different value dimensions.

The second step was to ask experts in land application of sewage sludge to evaluate the risks involved with this proposed sludge research project, and judge the effectiveness of the New Jersey regulations at mitigating these risks. For this purpose, a Group Delphi was held in October of 1988, in which nine national experts participated.

Figure 3³⁰
Expert Assessments of the Relative Risks of Heavy Metals
in Land Applied Sewage Sludge

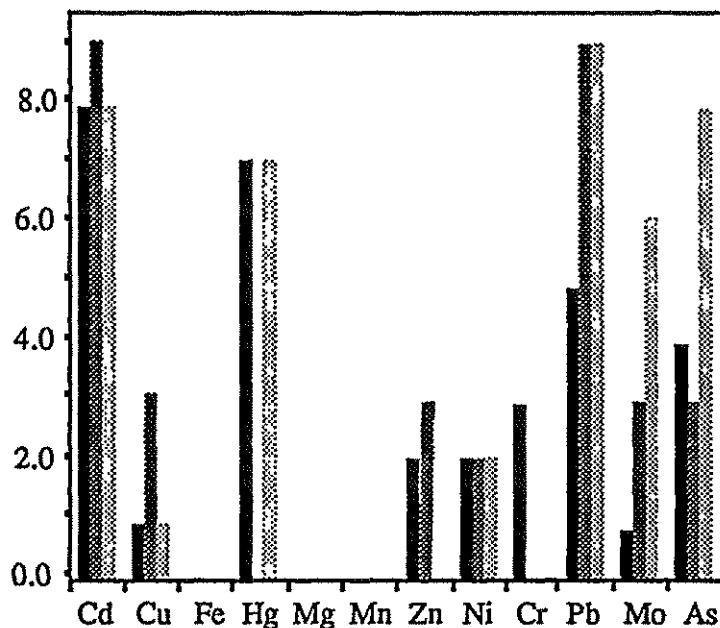


Figure 3 is an example of the results of the Group Delphi. It shows the expert assessments (three groups) of the relative risks of heavy

³⁰ The confidence level for Group 1 (solid black) is 95%, for Group 2 (dark) is 90% and for Group 3 (light) is 80%.

metals typically found in municipal sewage sludge (assuming the sludge were to be applied without the state regulations in place). With state regulations in place, the risks were assessed to be negligible, with the exception of lead. The Group Delphi clearly revealed a consensus that the New Jersey regulations did not adequately restrict lead contamination; but were more than adequate in regulating all other contaminants, as well as all aspects of the application process.

Deviations from the West German Model

This was the first attempt to use the German-derived model of citizen panels in the U.S. The major question for the application of the panel model in the U.S. was: What kind of modifications are necessary to adjust the model to the U.S. political culture? The West German political context in which the model was developed differs in some key areas from the U.S.:

- Americans have more capacity to influence government decision making than Germans.³¹ Americans expect to be involved in political decision making (at least on decisions affecting their own livelihood or community) while Germans feel honored when asked to participate. However, this difference between the two political cultures is fading. In Germany, a participatory orientation is emerging,³² and the typical U.S. citizen feels more and more alienated from the political decision making process.

- Americans believe twice as often as do Germans that they can help to change unjust regulation.³³ Americans tend to rate the efficacy of

³¹ G. ALMOND & S. VERBA, *THE CIVIC CULTURE: POLITICAL ATTITUDES AND DEMOCRACY IN FIVE NATIONS* (1961) [hereinafter *THE CIVIC CULTURE*]; Abramovitz, *The United States: Political Culture under Stress*, in *THE CIVIC CULTURE REVISITED* (G. Almond & S. Verba eds. 1980); Conradt, *Changing German Political Culture*, in *THE CIVIC CULTURE REVISITED* (G. Almond & S. Verba eds. 1980) [hereinafter *Changing German Political Culture*].

³² *Changing German Political Culture*, *supra* note 31.

protest behavior higher than do Germans.³⁴ Germans are likely to use unconventional forms of participation if they are dissatisfied with the government since they believe that conventional forms would not be effective. The U.S. system provides citizens with more possibilities for influencing the political decision making process so that unconventional means are only selected if all other means appear to fail.

- Civil servants in Germany emphasize the role elements of “broker” and “legalist” more than their American colleagues and confine their role to interpretation of laws. U.S. civil servants on the other hand concentrate on the functions of “advocate” or “facilitator”. German civil servants are usually appointed for life and serve under changing governments; they perceive themselves as “non-partisan executioners” of the common good.³⁵ Civil servants in the U.S. feel attached to the administration that brought them into office and tend to adjust their actions in accordance with the political program or philosophy. As a result, the German public perceives its civil servants as impartial functionaries, whereas Americans tend to associate special interests with different civil service sectors. However, the impartial image of German civil servants has been changing during the last decade and is increasingly challenged by new social movements.³⁶

- In Germany, regulations and standards are designed by a selected “club” of national elites, including well-known scientists, professional societies, the unions, and industry.³⁷ Outside interest groups have

³³ THE CIVIC CULTURE, *supra* note 31.

³⁴ S. BARNES & M. KAASE, POLITICAL ACTION: MASS PARTICIPATION IN FIVE WESTERN DEMOCRACIES (1979).

³⁵ E. BAUMAN & O. RENN, AIR QUALITY STANDARDS AND REGULATORY STYLES IN WEST GERMANY AND THE UNITED STATES (Center for Environment, Technology and Development Research Report No. 4, 1989).

³⁶ Kitschelt, *New Social Movements in West-Germany and the United States*, 5 POLITICAL POWER AND SOC. THEORY 286 (1986).

³⁷ Renn, *Risk Communication at the Community Level: European Lessons from*

been only marginally involved in the regulatory process, except when it has been in the interest of the ministry to mobilize public support for a proposal that might not have been approved by the club.³⁸ After the club reaches an agreement, the public is informed but not consulted. The U.S. system has adopted a more adversarial style that is characterized by more open conflicts and often litigation. The regulatory agencies are obliged to make the intent to promulgate new regulations public and to invite all interests to become involved in the decision making process.³⁹

In essence, German citizens have less opportunities to participate in regulatory policy making and to make their preferences known to the administrators. As long as they feel that the club is doing a good job and their interests are represented, they feel comfortable with the system. Once they have lost trust in the administration, they are more likely to use unconventional means of political expression. The rise of the Green Party and the popularity of direct citizen action groups indicate that the trust in the conventional forms of conflict resolution is fading in particular in the area of environmental regulation. U.S. citizens, on the other hand, do not expect that the political or administrative decision makers will act in their best interests. They believe that checks and balances must be in place to assure mutual control.⁴⁰ Control includes the right of citizens to be at least consulted, if not asked for their approval regarding changes that might affect their well being.

In order to adjust our citizen panel model to the U.S. political culture and context, several changes from the original concept were made and

the Seveso Directive, 39 J. AIR POLLUTION CONTROL A. 1301 (1989).

³⁸ E. MÜLLER, *INNENWELT DER UMWELTPOLITIK* (1986).

³⁹ O'Riordan & Wynne, *Regulating Environmental Risks: A Comparative Perspective*, in *INSURING AND MANAGING HAZARDOUS RISKS: FROM SEVESO TO BHOPAL AND BEYOND* 389 (P. Kleindorfer & H. Kunreuther eds. 1987).

⁴⁰ Renn & Levine, *Trust and Credibility in Risk Communication*, in *RISK COMMUNICATION* 51 (H. Jungermann, R. Kasperson & P. Wiedemann eds. 1988).

implemented. Among them were:

- Incorporation of official stakeholders as participants of the planning cells (as a means to accommodate the expectation of local stakeholders to be included in the planning process).
- Invitation to all abutters of the proposed site (in order to accommodate the common expectation that all affected citizens should have the opportunity to participate).
- Abandonment of all honoraria (in order to emphasize the civic duty of public involvement and to avoid impression of bribery).
- Division of the meeting time into two consecutive weekends (in order to make the meetings more attractive and to avoid paying compensation for workdays lost).

Due to time and money constraints, a local coordinator was not appointed; the research team conducted all organizational and logistical actions. An attempt was made to have the citizens sign "contracts", as was done in Germany. The purpose of the contracts was to underline the seriousness of their role as value consultants; but the citizens objected to these contracts as legalistic, so they were dropped.

Process and Results

With these modifications, we organized two parallel panels to take place on two consecutive weekends in mid-November, 1988. One panel consisted of randomly selected citizens and affected citizens living very near the farm. The other panel was made up of local and regional stakeholders who had been identified through local officials, our interviews, and the NJDEP. It was intended that these two parallel panels would merge during the second weekend and issue one set of recommendations.

The envisioned program was radically altered after the participants, especially the abutters, made it clear they rejected the proposed research

project and felt more comfortable organizing their own meeting without the help of a third party. During the first weekend, the two panels were combined and the agenda altered to address the risks of land application. During the first session of the second weekend, amidst much greater attendance, the citizens decided to organize themselves and promised to submit a set of recommendations within a two month period. These were clearly geared toward the rejection of the proposed research.

During the first weekend, the citizens were able to generate a full list of values and concerns, and perform preliminary evaluations of the regulatory options (see Table 3). The information material from the Group Delphi was appreciated and the merits of land application research in general were supported. The greatest concerns of the citizens were not the health consequences or odor, as the experts had envisioned; rather, they were most concerned about the long term impact that sludge application would have on the viability of farming and the rural landscape of the town. In particular, they were concerned that the research project might become a large scale application program. Neither the county nor Rutgers had such plans, but the prospect of such expansion was unsettling.

Table 3

Concerns and Priorities of Panelists			
<i>Concerns</i>	<i>Priority Group</i>		
	<i>I</i>	<i>II</i>	<i>III</i>
Pre-treatment of sludge (strict parameters and industry specific)			
Education of local residents (avoid emotional responses)			
Basic distrust of DEP and other authorities	3		
Monitoring wells on site			
Prevention of groundwater contamination		3	
Soil testing			
Future monitoring of soil and groundwater after application ceases			1
Transportation of sludge material			5
Honesty towards the citizens (not just positive information, loss of credibility)			
Removal of industrial chemicals from sludge			
Removal of household chemicals			
Uptake of chemicals in the food chain			
Effective regulation (independent testing)			
Odor			
Decline of property values	1		
Health effects from pathogens			
Limitation of applied quantity			
Limitation of time period for application		1	
Image of Rutgers	2		
Frequency of testing		2	
"Foot in the door" problem (gradually extending the sludge application program)		4	
Responsibility and liability for cleanup			2
Runoff water			3
Containment of the experimental area			
Timing between testing and application			4

Transferability of the Citizen Panel Model to the U.S.

Is the citizen panel approach to public participation as it has been used in planning problems in West Germany applicable to risk management in the U.S.? This case study did not obtain citizen recommendations for a draft permit (and the proposed research project did not proceed); nor did it entirely resolve conflicts about values, institutional competence, or scientific facts. However, under difficult conditions, the process did successfully foster a degree of interactive understanding between government officials, stakeholders, citizens, and technical experts. This is uncharacteristic of most siting efforts. Citizens did receive the educational component and interview scientific experts and public officials; they did discuss and express their personal concerns, values, and preferences; and some options were evaluated. Although they were not pleased with the choice of options available, the citizens did indicate a desire to participate early on in the policy formation process.

Based on our experiences in West Germany and New Jersey, it appears that some conditions for citizen panels are demanded:

- *variability of options*: the issue must have several feasible options, each with advantages and disadvantages;
- *equity of exposure*: there should be a roughly equal exposure to the disadvantages of these options among the local population;
- *participation of randomly selected citizens*: even controversial issues can be dealt with if attitudes are not already polarized and if the majority of participants are randomly selected;⁴¹
- *personal experience*: citizens should have enough experience with the issue that they feel confident about learning and discussing options;
- *openness of sponsor*: the sponsor must be willing to seriously

⁴¹ Dienel & Garbe, *supra* note 20; *Sozialverträgliche Energiepolitik*, *supra* note 16.

consider the recommendations of the panel.

It is still unclear whether an honorarium should be offered to the participants. The advantage of showing respect for people's effort and time must be weighed against the potential for misperceiving it as bribery.

Our experiment with citizen panels taught us that the process of public involvement is as much an issue of controversy for Americans as is the subject matter itself. German citizens seem more willing to accept given agendas and adhere to a specified time frame. By contrast, U.S. experts, politicians, stakeholders, and citizens all felt comfortable questioning the agenda and spending more time on items they felt were unfinished.

The experience of participants' dissatisfaction with the process and the agenda underlines the importance of having a local coordinator. Such a person might have identified community traits and preceding events which could possibly inhibit the panels. A few weeks earlier, county officials had decided to site the county solid waste landfill near the research farm, and local residents were in no mood to trust the state DEP or another research project team with whom they had no affiliations. A local coordinator could have alerted the research team to this condition. In addition, early communication among the local coordinator, potential participants, and members of the research team might have eased the tensions that were built up as a result of the citizens' unfamiliarity with the process and its objectives.

The success of public involvement will depend on securing approval of the process by the affected constituencies. The social climate of distrust of government agencies and their contractors is partly expressed as skepticism toward new procedures. Citizens must be involved in the design of the procedure and the agenda, despite that this may evoke conflicts that displace the actual conflict. We agree with Crosby [CNDP, 1985], that it is advisable to hold a meeting with the participants at least

two weeks before the citizen panels are convened to discuss the process, agenda, and informational material; and to give the citizens a chance to alter the time frame or agenda.

Conclusions

A potential conflict exists between the rights of citizens to take part in discussions on risk-related issues, and the responsibility of government agencies to manage hazards in a cost-effective manner. The philosophy behind citizen panels is that citizens, experts, and stakeholders can resolve this dilemma through their respective expertise. Stakeholders are valuable sources for concerns and criteria to evaluate options, since their interests are at stake. Experts are needed to provide technical data and point out relations between options and impacts. Citizens must live with the consequences, and are therefore the best judges to evaluate the options. Citizen panels are intended to bring these three perspectives together in a productive fashion.

Any public participation must be perceived as fair and legitimate. The experience with citizen panels shows that the structure of the process is capable of providing an arena for addressing conflicts at the factual, managerial, and value levels of the debate. The acceptability of the process depends on the right of the participants to be involved in setting the agenda and defining the policy options wherever feasible. A fair procedure, however, does not insure citizens will select the best technical solution or the option favored by the risk management agency. Citizens may understand the technical dimensions, but choose another option more consistent with their values.

The authors believe the public is capable of comprehending complex issues and making decisions beyond those which maximize their own personal gain. Most people take the responsibility of community involvement extremely seriously. Successful public involvement

depends on there being a procedure which supports discourse and full consideration of evidence, rationales, and options. With such a tool, citizens will articulate well-considered policy recommendations. A procedure that allows citizens to demonstrate their potential, and includes technical and political knowledge needed for holistic analysis, would enhance society's ability to manage risks. The proof of this assertion will lie in further experimentation with innovative procedures.

Citizen panels are one way, but certainly not the only way, to accomplish the goal of bringing rationality and democratic involvement into decision making and policy formation. Through participation, rationality is enhanced; and through rationality, participation is facilitated. We hope to be able to prove this claim by adding additional case studies to the body of knowledge on participation and to further contribute to the design and implementation of new participatory techniques.

