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THE BENEFICIAL ROLE OF CONFLICT IN RADIOACTIVE WASTE MANAGEMENT PROGRAMS

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ABSTRACT

Of the technical, political, and social problems associated with radioactive waste management, least is known about the latter two. Lay persons tend to generalize negative attitudes about other nuclear activity to radioactive waste management. Thus, conflict appears inevitable between the general public, citizen action groups, and decision-makers on radioactive waste management. The basis of conflict, we believe, can be found in the value orientation of certain groups and in differing perceptions of risk. Research on similar controversial issues reveals that conflict may be beneficial in the long run by contributing to the public's participation level and understanding of the issues, and to the decision-makers' appreciation of the lay perspective.

The paper is in three parts. First, we review the sources of conflict over radioactive waste management issues. The negative attitudes and fears of the public toward different types of projects involving radioactivity, value conflicts, and differential perceptions of risk are cited as sources. Next we discuss the consequences of conflict in terms of sociological theory.

Finally, we discuss how conflict can be directed and managed to produce an informed decision-making process. When the public is sensitized to an issue, when prevailing attitudes on the issue are negative, and when perceived risks are high--all of which are characteristic of waste management issues--specific steps should be taken to establish a legitimate process of communication and interaction between the public and the sponsor agency. When conflict is recognized as inevitable, the goal of a communications program is no longer to avoid it. It is to use the increased awareness to increase knowledge about waste management issues and public participation in decisions so that the final solution is acceptable at some level to all parties. Other benefits, such as increased agency/group cohesion, can also be realized as a consequence of conflict.

INTRODUCTION

Of the technical, political, and social problems associated with radioactive waste management, most is known about the technical problems and the most time, effort, and scientific research have been invested into their solution. Today, we have various alternative solutions for the technical problems, some of which are being used successfully for storage of high-level and low-level wastes. Systematic study and development of solutions to the political and social problems of radioactive waste disposal have been far more limited. But one point cannot be disputed: conflict appears inevitable between the general public, citizen action groups, and decision-makers on radioactive waste management.

The inevitability of conflict (and occasionally hostility) in these situations is a strong incentive for well-meaning decision-makers to seek ways first of reducing it and then of increasing calm and constructive communication with public. Our approach has a slightly different tack. First, our goal is not specifically to reduce conflict, but to take advantage of the public situation it creates (e.g., increased attention to and interest in the waste management issues, as we discuss later). The ultimate goal is a more informed decision-making process that incorporates knowledgeable views of scientists, decision-makers, and the public. In the course of developing this decision-making environment, serendipitously, hostility and even some conflict may be reduced. We focus on siting issues because that is where we have the most experience, but we believe our suggestions would apply more generally.

We will lay out our ideas in this paper first by reviewing the sources of conflict, gathered from our own experience and reviews of the literature. Next we will discuss the consequences of conflict in terms of sociological theory. Here we will identify the beneficial aspects of the conflict to be incorporated into an interaction program between the public and decision-makers. Finally, we will present some techniques to take advantage of a conflict situation in order to inform the public and decision-makers regarding each other's concerns and the facts of radioactive waste management.

SOURCES OF CONFLICT

There are many potential sources of conflict; however, we have narrowed them to three types: (1) the social history of the development of nuclear technology; (2) value orientations; and (3) differential perceptions of accept-

able risk. The social history of the development of nuclear technology is important because of the fear associated with nuclear weapons. This fear was eventually transferred to other forms of nuclear technology such as power plants.[1] Disagreement among technical experts over the safety of nuclear technology and changes in government standards have created credibility problems. Research by Hohenemser et al.[2] shows a perceptual dimension of delayed effects, persistence, and transgenerational effects common to the following nuclear technologies: radiation effects from nuclear waste, radiation effects from nuclear war, fallout from nuclear tests, radiation release from a nuclear reactor, and blast effects of nuclear war. This common dimension is the basis of generalizations by the public from one type of nuclear technology to another. Thus, many of the negative attitudes and fears about other types of nuclear technology are now attached to radioactive waste management as well. Additionally, research shows that people do not readily change these attitudes, especially ones strongly held. Even new information (in this case, on waste management) may be ignored, if it threatens one's attitude or position.[3]

Four basic value orientations are an important source of conflict in radioactive waste management. The values are those placed on participatory democracy, stewardship, environmentalism, and equity. Under the value of participatory democracy, people, groups, and communities desire to maintain control over their own destiny. When people feel excluded from a decision-making process affecting their destiny, conflict may arise. Additionally, communities see that other citizen groups have successfully mobilized and become parties to such decisions in the spirit of participatory democracy. Conflict on this value could arise over any federal project although Department of Energy (DOE) self-regulation in reference to radioactive waste may exacerbate the problem in the mind of the public.

The second value, stewardship, refers to utilizing natural resources in a careful and productive way.[4] Recently, a Secretary of the Department of the Interior antagonized environmentalists because his stewardship was thought to focus solely on the economically productive rather than the careful and efficient use of our natural resources. Taking land out of potential production or keeping it from alternative uses in order to build a waste disposal site can result in land-use conflicts arising over the more general value of stewardship.

The third value orientation is environmentalism. Since the 1960s, the environmental movement has emphasized the idea of conserving/preserving our natural environment and protecting it from harmful additions (pollution) or withdrawals (resource depletion). As part of this movement, environmental groups have protested nuclear power plants and the wastes they produce. A 1975 Harris Poll[5] showed that 63% of the environmentalists questioned viewed nuclear power plants as "not so safe" or as "dangerous" compared to only 18% of the general public. In addition to the safety issues, environmentalists oppose waste management plans because the wastes are viewed as polluted additions to the ecological system. In relation to radioactive wastes in particular, surveys indicate that environmentalists who support nuclear power tend to feel that safe disposal methods exist or can be developed and those who oppose nuclear power feel the technology of disposal does not exist.[6] Gladwin has found that between 1970 and 1978, waste transportation and storage elicited the strongest opposition from national environmental groups.[7] Because of these facts, conflicts is likely with these environmental groups, as well as with the general public which has adopted, to some extent, the values if not the tactics of these organized groups.

The fourth value orientation is equity. The equitable distribution of the benefits and costs of radioactive waste management is clearly problematic. Uses of radioactive materials in energy production, medicine, and research are beneficial to a large population often spread over a vast geographical area. Decision-makers in radioactive waste management may view the costs of management as small relative to the large societal benefit in population and area served. However, the costs of radioactive waste management, as measured in perceived and actual health risks from exposure are concentrated in a small population in a small geographical area around the site and transportation routes. In addition, communities near a management site may not be receiving the benefits of the use of radioactive materials. Thus, their citizens feel they are paying high costs (in perceived risks) for benefits they do not receive in the same proportion.

The distinction between the views of waste management decision-makers, whose decisions are based on what is good for the nation or society, and of the communities close to a production or disposal facility is crucial. Neither the communities nor the decision-makers are wrong or selfishly motivated; they merely judge the fairness of the situation from quite different perspectives.

Differential perceptions of risk are the third source of conflict on radioactive waste management projects. A considerable research effort has been made in the area of hazard or risk perception. Some major general findings relative to our discussion are: lay and "expert" opinions on the risks associated with most hazards differ in content and in how they are measured; the public overestimates the frequency of hazards that are catastrophic and sensational in nature[2] and with which they have little experience

or familiarity; and the public perceives risks "to be higher if the activity is perceived to be involuntary, catastrophic, not personally controllable, inequitable in the distribution of its risks and benefits, unfamiliar, and highly complex".[8] Applying these results to the radioactive waste management situation, we can see that (1) the public perceives the risks as higher from exposure to this situation than, for example, to being injured in an automobile accident; (2) hazardous accidents are more likely to occur; and (3) expert perceptions on the frequency of accidents and the level of the risk will not help in estimating public perceptions.

CONSEQUENCES OF CONFLICT

Conflict as a topic for study has a tradition in 19th century social philosophy and theory. The positive functions of conflict were first explored by a German social theorist Georg Simmel[9] and later expanded by modern theorists.[10,11] Simmel's rich insight into conflict as a positive form of interaction are as applicable today as they were in the 19th century. The reason for this is that Simmel[12] stressed the importance of the form of interaction as separate from the content of interaction. Thus, across time, the form remains constant although the content varies. The form of interaction important for this paper is defined as conflict-cooperation.

Simmel's view is that imbalances in the integration of a social system can lead to conflict within the system, which leads to system adjustment to the imbalance. Conflict has a positive consequence for a social system because such adjustments lead to the increased ability of the system to handle future imbalances.[11] Such adaptability in a social system is viewed in positive terms because it enhances the system's ability to survive.

Simmel[9] made propositional statements about the consequences of conflict for groups. The propositions relative to this paper are as follows:

(1) Individuals tend to band together in groups with those on the same side of the issue.

(2) Conflict makes groups more cohesive. This occurs through eliminating members from the group that might blur the distinctness of its boundary and by attracting new members and groups with the same common interests.

(3) Aggressive groups acquire more allies than nonagressive groups, and groups that are more diverse are likely to emerge in alliances under conflict conditions.

(4) Competition leads to reinforcement of the established rules of the situation (e.g., conformity to NEPA and the scientific method) when the competing groups are after the same goal.

(5) Cohesion brought on by conflict maintains itself beyond the period of struggle, so the organized groups will tend to outlast the controversy.

Simmel views conflict on a continuum with competition on one end and fighting on the other. The variable properties of conflict include the degree of regulation, the degree of direct confrontation, and the degree of violence between conflict parties. Conflicts characterized by competition are regulated,

with little direct confrontation and no violence. In general, we can say that conflict of the competitive type will be easier to deal with than unregulated, confrontational, and violent conflict. We believe that most conflict in reference to waste management is competitive in nature.

There are several possible ways to end conflict situations. These are summarized by Simmel[9] as follows:

(1) Exhaustion of the strength of either party;

(2) Deflection of the interests of at least one party from the conflict to a higher or more pressing object or goal;

(3) Disappearance of the object of the conflict;

(4) Victory through the resignation of one party;

(5) Conciliation;

(6) Compromise; or

(7) Irreconcilability.

Any of the above are possible outcomes in waste management conflicts. Each is not, however, equally probable. Only the last three (conciliation, compromise, or irreconcilability) appear to be probable outcomes of waste management conflicts and only two of these (conciliation and compromise) would be defined

as desirable outcomes. We will address these two possible outcomes in the next section of this paper.

DIRECTING AND MANAGING CONFLICT

Both conciliation and compromise require some common knowledge base on which to begin communication ard reduce the likelihood of other less desirable consequences. The conflict situation itself can be used to develop this base. Conflict and controversy on major issues attract attention from media, thus publicizing the issues. Publicity means that more of the public will have been exposed to the major issues and plans and the nature of discussions on these topics. When information is presented in media coverage, e.g., on expert estimates of health risks, or on federal standards for exposure levels, the public may learn more about the issues before making a decision on a position. Calm discussions or issues that are uncontroversial receive less media coverage, or at least do not generate headlines or feature articles.

Once attention is attracted and a wider public becomes involved, some citizens will formalize their involvement by forming organizations through which they can express their concerns and acquire resources to gather their own experts on the topics. The formation of citizen action organizations contributes beneficially to discussions in such conflict situations. As indicated by Simmel, an organized group is easier to deal with than diffuse opposition. Organizations focus on the points of contention. Through organizations, priorities in conflict issues are made, the knowledge of experts may be used to express citizen complaints in terms common to those used by the decision-makers and their staffs, leaders of the groups gain experience in presenting

the concerns of their membership and in communicating with decision-makers, and decision-makers can identify and learn to communicate with a small number of organization leaders who represent the larger community on the issues. In addition, a focal group is created with which issues can be resolved, technicalities explained, and compromises made (one of the desirable and probable outcomes of conflict).

Attention to the issues will also motivate some citizens to learn more about radioactive waste, its safe management, and its hazards and risks. As citizens become more informed, the common knowledge base shared with decision-makers will provide a start on constructive discussions, thereby reducing hostility and use of confrontation, although not necessarily conflict itself. Attitudes are persistent and extremely difficult to change, especially in the face of conflicting data.[3]

Both parties to the conflict benefit in terms of increased group solidarity. Therefore, teams working on waste management experience greater cohesiveness in response to conflict. Increased cohesiveness within the waste management team would likely lead to better communication among the government officials active in the program.

Competition, which according to Simmel leads to reinforcement of the rules of the game, would lead both the opposition and waste management team to carefully follow the permitting processes, the EIS process, local legislation, and rules of scientific method. The violation of what is publicly viewed as legitimate processes would lead to greater conflict.

Cohesion brought on by conflict maintains itself after the period of struggle. Thus, the waste management team will be better organized and more cohesive for the next conflict, and the local opposition group will be vigilant and available for watching over monitoring, testing of waste storage integrity, maintenance, and other operational or post-closure activities.

CONCLUSIONS

Waste managers and decision-makers should not become discouraged when opposition arises in relation to a specific waste management project. By understanding that conflict is a normal part of social system adaptation, waste managers can keep such conflict in perspective. By realizing the causes and consequences of conflict, waste managers will be able to take advantage of the positive functions of conflict to produce better-informed citizen participants and to make publically legitimated decisions.

This paper has been prefaced by the underlying assumption that waste managers and local groups are both interested in the same goal, i.e., safe and long-lasting waste management systems. Because of this, rules of the game (primarily legal regulations and scientific methods) can be specified and defined as legitimate by all concerned parties. Because waste managers have legal responsibility for the waste they are managing, the burden is on them to verify their legal obligations and the rigor of their application of the scientific method.

Legal obligations are variously defined under the National Environmental Policy Act (NEPA); the Resource Conservation and Recovery Act; the Clean Water

Act; the Clean Air Act; the Comprehensive Environmental Response, Compensation, and Liability Act; the Nuclear Waste Policy Act; and so forth. In addition to the above are various guidelines, orders, and internal regulations such as 10 CFR 61 and 10 CFR 960. The public needs to be made fully aware of how the rules and regulations protect public health and safety, how the public can become involved under each regulation, and how waste managers intend to comply with each regulation, guideline, or order. Waste management decision-makers can accomplish this most easily through a series of information programs designed to pass on relevant information and data directed specifically to the different parties involved in the conflict. The data and information need to be presented in a manner that is thorough, free of excess jargon, and does not underestimate the knowledge of the recipients. In this process, much care should be taken to ensure that the scientific method is carefully followed in any analytical work performed. If these legitimate processes are used, the final solutions will be viewed as better solutions because they will have been hammered out between conflicting parties using processes that protect the interest of all parties concerned.

The current NEPA process requires public input during the scoping of issues to be included in an environmental impact statement. With some modification to this process, scoping could include an information program prior to requests for public input so that more informed judgments, opinions, and concerns could be obtained. As stated earlier, conflict over waste management would ensure that people would be interested in the information disseminated. In one carefully executed study of a citizen information and involvement program on a project that was the center of considerable conflict,[14] it was found that only a very intensive information program requiring commitment of substantial resources, time, and effort provides the hope of even limited success.

In a modified scoping process, all potentially affected opposition groups would be sought out for inclusion in the process. (Conflict would have provided the impetus for individuals to organize in groups.) The decision-making process would be carefully defined beforehand to ensure that all parties felt their interests would be equally protected. Modifications to any processes could be instituted at this point to make sure that all parties would view the approach taken as legitimate. Conflict necessitates close adherence to the "rules of the game".

The NEPA process also requires development of mitigation and monitoring plans. Development of these plans should also be done with interest groups. Because the groups have been well informed on the issues at early stages in the process and may have participated in decisions all along, they are likely to be well-equipped to participate in planning to reduce negative impacts. They could also serve a role in the actual implementation of these plans, e.g., by carrying out some of the monitoring activities on the waste mangement site.

Given the inevitability of conflict, this paper has sought to explore the benefits that such conflict could have for waste management planning and decision-making. We have presented ideas on how conflict over waste management can be beneficial to the decision-making process. The presence of conflict does not mean enduring hostility. It can be used to produce a more well-informed public and more acceptable waste management practices that are publically legitimated.

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