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The Landscape of Reason: A Scheme for Representing Arguments Concerning Environmental, Health and Safety Effects of Chemical Weapons Disposal in the US

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ABSTRACT

To reduce the risk of environmental contamination and honor an international treaty, chemical weapons stored at eight locales around the US are slated for destruction. Incineration is the main choice of a National Research Council committee directed by Congress to weigh the hazards of alternative destruction technologies, but many citizens' groups remain unconvinced. The US Army, which must dispose of the dangerous chemicals, faces decisions about the choice of destruction technologies, as well as more specific questions concerning protection of environment, safety and public health once the technology choices are made. Based on more than 200 individual interviews and 40 focus groups held in communities near where the weapons are stored, this paper illustrates an "argumentation" scheme for representing the underlying reasons for varying positions in the conflict over technology choices. The "argumentation" scheme is effective in representing qualitative interview data concerning the complex and dynamic environmental perspectives of diverse regional and national constituencies.

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INTRODUCTION

The U.S. Army has been directed by Congress to dispose of the nations' stockpile of chemical weapons. Currently, the Army proposes to build incinerators at the eight installations in the continental United States where chemical weapons are stockpiled (see Figure 1).[2] Public opposition

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[2]The eight stockpile sites include:

Aberdeen Proving Ground, Maryland, located along the northwestern side of the Chesapeake Bay in Harford County, which is part of the Baltimore metropolitan area. It is the most heavily populated of the sites. Nearly 300,000 people live within a 12.4 mile radius of the site. The affected population includes residents in Harford County (most heavily dependent on the proving ground) and Baltimore County — both located on the western side of the Chesapeake Bay — as well as residents in Kent County, across the Bay on the Eastern Shore of Maryland. The stockpile has only mustard agent, representing about 5% of the national stockpile, that is stored in ton containers.

Anniston Army Depot, Alabama, which stores about 7% of the stockpile, including both mustard and nerve agent in a range of forms: rockets, projectiles, mines and ton containers. The depot is surrounded by scattered residences and woodland. A population of over 20,000 lives within 6.2 miles of the site in the nearby city of Anniston and in Calhoun County. The depot and the adjacent Fort McClellan are major contributors to the local economy.

Blue Grass Army Depot, Kentucky, with less than 2% of the stockpile, and a population of over 25,000 within 6.2 miles of the site. The stockpile includes nerve and mustard agent in rockets, ton containers and projectiles. The depot's former economic and social importance to the local area has diminished as the area has grown and diversified.

Newport Army Ammunition Plant, Indiana, which stores about 4% of the stockpile in the form of nerve agent in ton containers. The site is located near the town of Newport, just across from the Illinois State line, and the surrounding area is primarily rural. The plant, which has not been operating since the early 1970s, is in standby status and is not a significant source of employment.

Pine Bluff Arsenal, Arkansas, with 12% of the stockpile, located about 8 miles northwest of the city of Pine Bluff in a less populated area than the Aberdeen, Anniston, or Newport sites. The stockpile stores mustard agent in M55 rockets and nerve agent in M55 rockets and land mines. The arsenal employs many local people and plays an important role in the local area, both socially and economically.

Pueblo Army Depot Activity, Colorado, with 10% of the stockpile, located in a rural area about 15 miles east of the city of Pueblo; several small communities are located nearby. The stockpile stores only mustard agent in projectiles and mortars. The depot was once a major source of employment, providing work to over 8,000 at its peak during the Korean War. However, employment has decreased steadily each year since that time and the depot was scheduled for closure at the end of September 1994. Currently, several cleanup activities are occurring at the site.

Tooele Army Depot, Utah, located in the Great Salt Lake Desert in the northwestern portion of Utah. The site stores the largest proportion of the nation's stockpile — over 42% — in a variety of forms, including mustard and nerve agent in mortars, projectiles, M55 rockets, bombs and ton containers. The area surrounding the site is sparsely populated. The Tooele depot has played a key role in the stockpile disposal program for many years and is the site of the Chemical Agent Munitions Disposal System, a demonstration incinerator and test facility for disposal equipment and processes. The first of the proposed series of full-scale incinerators has been constructed at Tooele. This newly constructed Tooele Chemical Demilitarization Facility (chemical weapons incinerator) is scheduled to begin operations in 1995. Depot activities, along with those at the nearby Dugway Proving Ground,

have provided a major source of employment in the area; however, a recent realignment decision will result in the loss of a major depot mission and about 1,900 jobs.

Umatilla Army Depot Activity, Oregon, located in a relatively sparsely populated area in the northeastern part of the state, about 7 miles from the town of Hermiston. The site stores almost 12% of the stockpile, including both nerve and mustard agent in a variety of forms. These include M55 rockets, mines, spray tanks, bombs, projectiles, and cartridges and ton containers. At one time, the depot played a large role in the area economy, but it has now been realigned and its influence diminished accordingly.

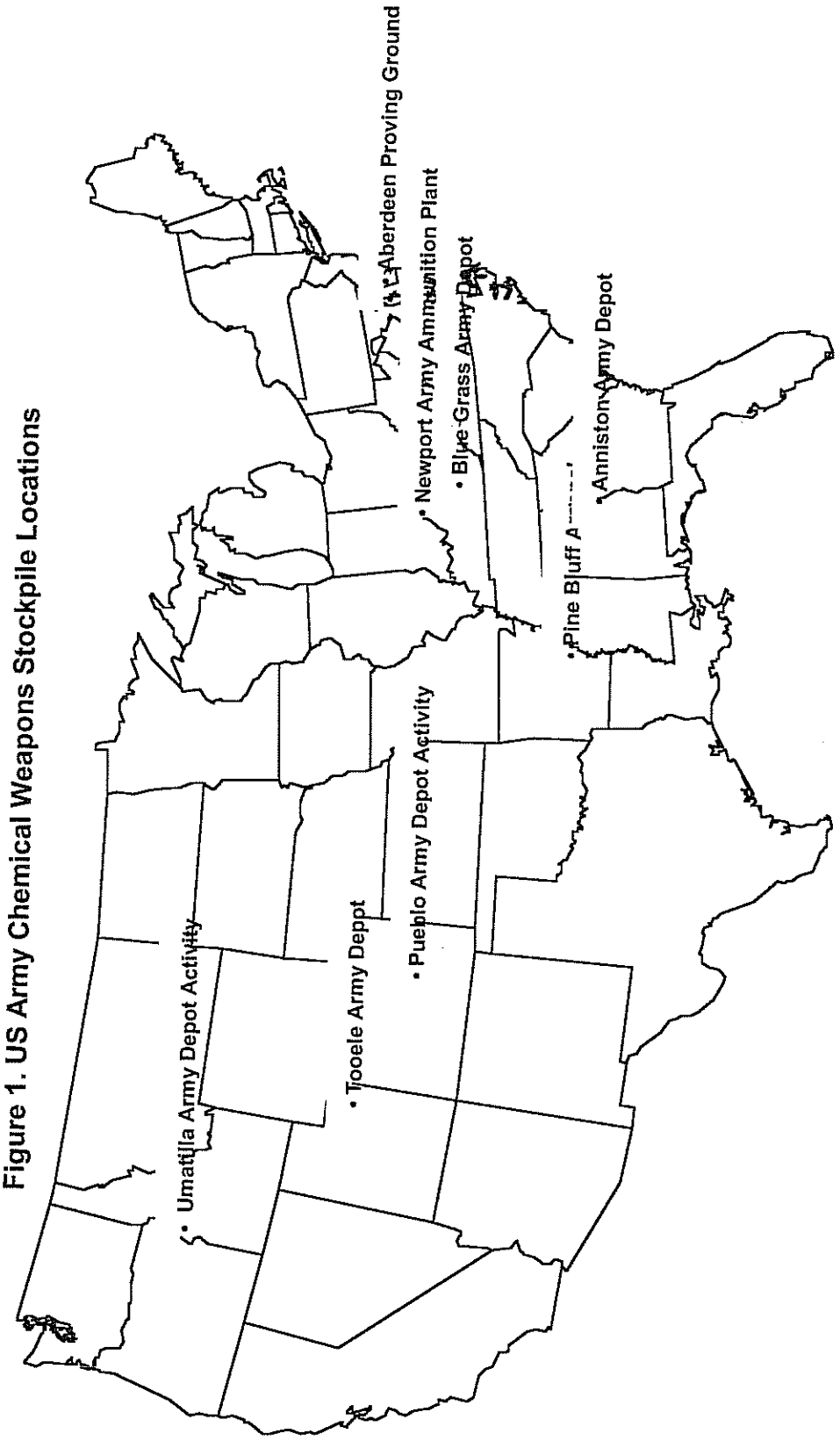

Figure 1. US Army Chemical Weapons Stockpile Locations

has caused delays that threaten the Army's ability to complete the disposal program as planned and to meet the schedule laid down by the international Chemical Weapons Convention. The present study was commissioned to characterize community residents' views on alternatives for dealing with the chemical weapons stockpile. Overall, the study aims to identify the key issues underlying public opposition and to recommend to the Army ways to resolve those issues.

Data collection activities consisted of a series of individual interviews and focus group discussions with residents in communities near these eight stockpile sites between January and August 1994. We analyzed the interview data using a modified form of the Toulmin method of argumentation (Toulmin 1958, Toulmin, Reike, and Janik 1979). It is this method that forms the main focus of the present paper. We suggest here that the "argumentation" scheme provides an effective way to represent qualitative interview data concerning the complex and dynamic environmental perspectives of diverse regional and national constituencies.

THE DATA RECORD

Conflicts about the adoption of complex technological innovations are typically not only about risk or environmental degradation, but also about a number of broader issues that have been hidden by the nearly exclusive focus on risk assessment and communication. As many researchers have shown, attitudes, perceptions, and judgments cannot be divorced from the social setting in which they occur. Thus, when faced with the choice between a deteriorating stockpile of chemical weapons and an incinerator nearby, it is likely that people will draw on the whole range of their life experiences and consider the incinerator's potential impacts more broadly than the statistically estimated risks of that facility. These general conclusions formed the basis for designing our interviews with community residents and Army staffers responsible for disposing of the weapons stockpile.

A set of key informant interviews (the number ranged from 25-40) at each site were followed, several weeks later, by a series of four to six focus group interviews. Key informants were selected by a "snowball" technique, based on their formal position in the community, or their informal reputation as someone who would be "good to talk to." These people included elected officials, people holding positions in key community organizations, and people who had expressed an interest in the stockpile

disposal program by attending public meetings, writing letters, or speaking about the program to the media. We sought interviews with people who would give us as wide a range of viewpoints and perspectives as possible, and who could tell us about important community organizations and activities.

To develop a parallel understanding of the viewpoints of Army managers and decision-makers, we conducted interviews with six Army officers or civilians who had responsibility for decisions and management of the stockpile disposal program. Each of the six had spent much of his or her career in the military and with the chemical weapons program. Several had been involved in the demilitarization program since its inception.

Data from key informant and focus group interviews were recorded in the form of field notes and, for the focus groups, audio tape transcriptions. These records were reviewed for frequently expressed and strongly held position statements, which were taken as major themes at each site and among Army staff.

THE "ARGUMENTATION" METHOD

We then began to structure the data according to the Toulmin method (Toulmin 1958; Toulmin, Reike, and Janik 1979). The Toulmin method structures data in the form of an "argument," providing a systematic way to portray the process, or train of reasoning used to support claims being made by persons with differing viewpoints. By making explicit the grounds and constituent elements of arguments, it displays the underlying reasons for views on the Army's proposed plans.

Table 1 illustrates how one argument from one site could be represented. The argument consists of the following elements:

- A **claim** (e.g., about the course of action the Army should pursue).
- **Reasons** (data or personal experience that support the claim). These are shown in the left-hand column of the graphic display, under the word "*Since*."
- **Backing** (statements that provide more detailed support for the reasons). These are the "*Because*" statements in the main body of the graphic display.
- **Rebuttals** (acknowledged arguments against the claim). These are shown as outliers from the main reasons or backing statements by indentation, arrows, and words such as "*Except*," "*Unless*" and "*But*."

- **Qualifiers** (additional information that modifies, or narrows the scope of elements of the claim). These, too, are shown as outliers, set off by arrows, indentation and the word "*Although*."

The argument described here represents a synthesis of many persons' viewpoints, not the viewpoint of either a single person or one discrete focus group discussion.

(Table 1 About Here)

To develop the claims, we reviewed the focus group transcripts and interview notes to identify common themes and viewpoints. We found a number of different viewpoints at each site, ranging from totally opposed to totally supportive, with many falling into uncertain or undecided positions along the continuum. By comparing viewpoints across sites, we grouped them into three basic categories: *supporters*; *opponents*; and people who were *uncertain*, unconvinced or who had mixed feelings about the Army's plans for incineration. This step allowed us to distinguish the primary perspectives at each site before the arguments were actually constructed. We then sorted the information in the transcripts and interview notes by viewpoint, and assembled it according to the common themes identified in the initial, overall review (e.g., emergency preparedness, feelings about the Army, relationships with the depot personnel). Review of this information provided the basis for formulating the claims put forth as major position statements. In some cases the claims' actual wording was taken from verbatim from one of the transcripts; in other cases the claims were constructed from multiple statements.

Once the viewpoints and claims were identified, we constructed the specific arguments, like the one presented in Table 1 above. Where possible, we used the words of the focus group participants or the people being interviewed to capture the reasons, qualifiers and rebuttals.

Although Toulmin developed the argumentation model to analyze individual claims, we applied it to group perspectives. Using the Toulmin model for group — rather than individual — arguments required several adaptations, including the need to pay particular attention to reliability.[3]

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[3]For example, the rebuttals and qualifiers frequently were made by different people within the group who subscribed to the overall claim and not by the person who expressed the original reason, as would be the case in an individual argument. In our detailed site reports, we have tried to show where rebuttals are made by only one or only a few individuals. In other cases, we have made the differences of opinion within the overall claim explicit in the argument — for example, for those uncertain about the Army's plans in northeastern Oregon, where there are

Once the arguments were constructed for each site, the study team held several meetings to compare claims and reasons across arguments and to make sure that we were applying the model consistently across sites. Based on the initial constructions, we standardized the wording of the reasons to make it easier to compare and contrast arguments across sites.[4] Tooele is an exception here; since the incinerator is already built and undergoing operations tests, the arguments are different at this site. In many cases, this required rechecking the transcripts to make certain that the statements — rebuttals and qualifiers in particular — were attributed to the correct viewpoint.

We chose Toulmin's model as our analytical guide with one eye on its prospects for helping to resolve environmental conflicts (Sellnow 1993, Follert 1981), and another on its effectiveness as a policy tool. The members of our multidisciplinary team are rather familiar with the potential for conflict over differing concepts of "environmental risk" (e.g., Bradbury 1989, Liebow 1993, Liebow et al. 1993). As Hilpinen-Risto (1991) suggests, argumentation is an activity involving two or more participants in which at least one participant is trying to change or modify the view of some other participant on some question or issue. In the current circumstances, the outcomes are uncertain, and differences of opinion exists regarding appropriate courses of action. Also, the circumstances may call for a reassessment of decisions already made or positions already taken (Lipshitz 1993: 180). Toulmin's model allowed us to highlight the areas of agreement and disagreement among the groups, and the nature of the reasons and evidence used to support particular claims.

Conflict Resolution and the Argumentation Method

One of our main goals in undertaking this work has been to organize the knowledge base that may help resolve these conflicts over environmental health and safety. We are convinced that the richness of the ethnographic data record could contribute to conflict resolution. However, we expected some resistance to a "qualitative" analysis on the grounds that it lacks precision, is incomplete,

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differences of opinion about what should be done instead of incineration (neutralization; shipment for off-site disposal; or waiting for development of a better alternative).

[4]The reasons were used basically as categories under which the more extensive backing statements were organized. However, as described here, the reasons were not *imposed* on the data; rather, they *emerged* from the data, thus representing the content of the community residents' views.

inaccurate, unrepresentative, or otherwise fails to capture adequately the knowledge, attitudes, and behavior patterns that inform local community perspectives regarding the Army's incineration plans. Indeed, at introductory visits with local Army personnel, before beginning interviews with other community residents, we were almost always asked why we were not conducting a sample opinion survey, and what we hoped to gain from our work if its findings were not generalizable, in a statistical sense, to the larger population.

Resolving complex conflicts — and expecting them to remain resolved — cannot be accomplished by referendum, especially when at least some parties to the conflict are convinced that more is at stake than judging whose chemical residue predictions are more realistic. As we set out, we were concerned that if our efforts resembled an opinion survey, the results would appear to grant approval to the Army's plans by the principle of "plurality rules," yet resistance would escalate. With public approval apparent, the Army might further discount or ignore altogether those opposing its plans, who for their part would make good on their threat to appeal directly to Congress, the courts, and state regulatory authorities. Rather than helping to reach a productive and stable resolution to this conflict, a series of local attitude/opinion surveys easily could have the opposite effect.

In general, the successful resolution of conflicts may depend on how the parties to the conflicts view the issues at stake (Mitchell 1981). At the simplest level, a conflict may be classified as either a "resource" or a "survival" conflict, the former dealing with the issues of winning or losing resources and the latter dealing with a question of whether one of the parties will still exist at the end of the conflict. More realistically, a conflict may concern issues involving "use, or ownership of resources" or "the exclusive right to resources, or the control of both existing resources and potential resources" (Mitchell 1981: 43). Mitchell also suggests that conflicts may revolve around issues of "status, prestige and precedence" (1981: 44). Mitchell's fifth category encompasses those issues "concerned with the beliefs, attitudes, behavior and (often) socio-economic organization of another entity, with efforts to make that entity conform to desired and 'desirable' standards" (1981: 44). To Mitchell's five categories of issues a sixth may be added, issues involving precedent — at least when dealing with conflicts submitted for resolution to a legal system that makes its decisions based largely on precedent. The presence of this type of issue has the potential to both tie the outcome in a given conflict to the outcomes of prior

conflicts and to shape the outcomes of future conflicts. This raises the stakes for parties, who may have an interest in seeing past outcomes validated and/or ensuring the continuation of such outcomes in the future, or conversely, may be seeking a repudiation of past outcomes and/or the establishment of a new trend in outcomes in future conflicts.

The status of issues is just one of several elements contributing to the likelihood of successfully resolving a conflict. Also of interest here is the impact of interlocking conflicts on a focal conflict (Kreisberg 1980). An inter-related series of conflicts can either impede or assist settlement of a conflict. Kriesberg indicates that such concurrent conflicts generally tend to limit the focal conflict. However, predicted outcomes may be confounded, if a focal conflict is submitted to some form of third party intervention, and if there are possible conflicts within that third party. These additional conflicts may confound predictions about the impact of the third party on the focal conflict.

Taking a prospective view, then, Toulmin's model provides one way to productively characterize several key elements to this environmental dispute. First, the model allows us to build an understanding of what kinds of social categories or institutionalized entities hold distinct positions. Are the viewpoints local? Or is the same pattern evident across some or all of the places neighboring the Army's stockpile sites? The ability to compare local and national views is important because the Army's program, however organizationally segmented it might be, is still a national one. Its response to expressions of the public interest, therefore, will necessarily emerge at the national level. The extent to which the Army acknowledges a need to tailor its resource protection and emergency preparedness procedures to local concerns depends, in part, on how much variability is found in the local circumstances. Further, if the concerns publicly expressed at each locale are more or less similar, it is important to know something of the origins of these similarities; does this convergence result from an effective national educational campaign undertaken by groups actively opposed to the Army's incineration plans, or is there something else about the way the stockpile disposal program has unfolded at work here?

Second, under certain circumstances the model could help the analyst to rank systematically the relative importance of different reasons offered in support of a particular claim. In this project's interviews, we did not probe specifically for this sort of ranking. We did conduct a "free listing" exercise

(e.g., Weller and Romney 1988: 9-16) at the start of the focus group discussions, and a frequency distribution of the participants' word associations could be used to map the domain of public concerns about the Army's plans. However, this exercise was intended more as a discussion moderating device, and one would want to validate any interpretation of rankings derived from the participants' responses.

Ranking the relative importance of public concerns was never a priority in this investigation, as such ranking might lead the Army's decision-makers falsely to the conclusion that they could discount some concerns while attending to others. On the contrary, one of our key findings is that the Army has constructed the weapons disposal problem rather narrowly, while the communities' perspectives framed the problem as inextricably linked to more encompassing issues of authority, equity, and trust. Had we pressed our respondents to rank the importance of their concerns, the interwoven quality of their perspectives would have been lost, and negotiations would be reduced to the purely technical debate in which the Army was best prepared to engage.

Third, the Toulmin argumentation scheme permits one form of analysis that is absolutely key to resolving conflicts: it organizes data in a way that allows us to classify issues requiring resolution as "resource allocation" or "survival issues." As already noted, accurately classifying such issues is very important in seeking stable resolutions. If one party to the dispute regards an issue in "life and death" terms, while the other sees the same issue as simply one of weighing costs and benefits, the likelihood of reaching agreement on how to resolve it is poor. The explication available through mapping reasons/rebuttals/qualifiers enriches our classification of claims, leading, in turn, to recommendations for addressing these claims.

And fourth, the presentation format developed here allows one to characterize community perspectives in a way that helps people to gauge whether they have been represented accurately. A key issue in the dispute over the Army's chemical stockpile disposal plans has been that people don't feel their viewpoints have been heard and understood.

SUBSTANTIVE FINDINGS

This work resulted in three key findings: (1) across all sites, community residents' concerns were broader than issues related solely to the selection of a particular technology; (2) Army managers' views

were strikingly different from those of many residents; and (3) in the absence of a process initiated by the Army to address their concerns, community residents had sought — and were continuing to seek — to influence program decisions through their Congressional and state representatives, the state permitting process, and the courts.

The Nature of Community Concerns

Although the study was initially focused on community residents' perceptions of the risks of alternatives for dealing with the chemical weapons stockpile, responses revealed that residents do not think about technology or risk in isolation. Indeed, we found that very few persons mentioned *risk* using this term. Our study confirmed the claims of the social science literature on risk that conflict over these types of issues is not only about risk but about a number of broader sociocultural and scientific issues that have been hidden by the nearly exclusive focus on risk assessment and communication.

At each site, we found differing views on the Army's plans to incinerate. Some residents were supportive; others revealed varying degrees of uncertainty; and some were strongly (and often vocally) opposed. However, despite these differing views, residents' arguments were strikingly similar in structure — in the broad scope of concerns and the basic reasoning used to support, oppose, or express uncertainty about the Army's plans. Throughout, concerns about technology choice and performance were inextricably linked with three other categories of concern. Specifically, citizens expressed concern about:

- Technology selection, schedule, and program design.
- The decision-making process — Who is making the decision? Is it fair? Has the public been given an opportunity for involvement?
- The way people feel that the Army has treated them — Has the Army demonstrated in previous actions that the well-being of the community is a factor in its decisions or that it will be a factor influencing future decisions?
- Institutional safeguards and protection — Can the public trust the organizations, including regulatory agencies, that have responsibility for assuring their safety?

The research thus showed that the issues raised in the communities were both technical and non-technical. It highlighted the impossibility of trying to address issues of technology acceptability

without also addressing issues of Army credibility and past and anticipated Army treatment of communities, issues of the fairness and appropriateness of the decision-making process, and concerns about the adequacy of institutional safeguards and protection. In the public's eyes, these aspects of the chemical stockpile program are inextricably linked together.

Differences in Army and Community Viewpoints

A second striking feature of the research was the marked difference between Army managers and their community supporters, and those who opposed or were uncertain about the Army's plans to incinerate. Differences between the Army and those who were opposed or uncertain varied consistently in terms of the four dimensions of the substantive decision, decision process, manner of treatment, and institutional safeguards.

Substantive Decision. Several clear-cut differences are apparent in Army and community views of incineration and the proposed program schedule. Army personnel and their community supporters emphasized the need for early disposal and expressed concern for the continued risks and costs of continued storage. They similarly emphasized their thorough analyses and the solid technical data they had accumulated to demonstrate that incineration is safe, proven, and effective for disposing of all weapons components. Opponents and those who were uncertain, in contrast, challenged the Army's conclusions about the relative risk of storage and incineration. They believed that the technology is not safe or proven and that interim measures could be taken to ensure safety; were concerned about the health, environmental, and economic consequences of incineration; and believed that, once built, an incinerator would become permanent.

A comparison of Army views with those of the opposed and uncertain residents, however, revealed a basic difference not only in preferences for incineration over other technologies but also in the relative emphasis placed on substantive over other program elements. Essentially, the parties to the controversy hold differing views of the scope and definition of the problem. As a result, a cycle of mutual distrust and miscommunication has prevented a constructive dialogue between them. As discussed above, community residents considered a broad range of factors in assessing the acceptability of

incineration; issues related to treatment, the decision process, and institutional safeguards were interwoven throughout their views about the choice of technology and the schedule for stockpile disposal. Army personnel, in contrast, focused very narrowly--and almost exclusively--on technical aspects of the decision.

The study showed that Army policy makers and managers define the scope of decision making very narrowly and view their role as one of ensuring that appropriate technical work has been done to fulfill the mission set by Congress. With few exceptions, they do not see it to be *their* job to gain public acceptance of the program, although they would certainly like the program to achieve such acceptance. They tended to compartmentalize community concerns into two categories--a technical category and a personal/political category. They consider the technical category legitimate and are prepared to address technical issues through studies, analyses, or demonstrations. Issues classified as political or personal category are viewed as illegitimate, i.e., the program is not able and should not try to address these types of issue. Thus, in their view, legitimate problems are technical problems and legitimate solutions are technical solutions. They define their task as that of implementing the best technical program and then communicating the results of their technical analyses to the public.

This orientation to technical problems and technical solutions was so firmly established that they believe the only thing that they can do to respond to community concerns is to conduct additional research to demonstrate that their technical analyses are thorough and correct. They believe that they have been very thorough in responding with studies and independent reviews to the technical issues raised by the communities and are frustrated that the communities regard them as unresponsive. Community residents, for their part, expressed frustration that the Army appeared to believe that providing volumes of technical analyses would resolve community concerns.

The Decision Process. Army and community members similarly disagreed about the way program decisions are, and should be, made. The Army personnel with whom we spoke did not view themselves as decision makers but as implementers of congressional decisions. They view themselves as having only limited ability to respond and deal directly with community concerns without specific authorization from Congress. They are committed to established procedures, believe that the program

has implemented all of the prescribed steps correctly, and think that their compliance with procedures should confer legitimacy on the decisions that have been made. They emphasized that they had followed all of the regulations regarding public meetings and had given the public appropriate opportunity to review and comment on program activities and decisions. Indeed, they believed that the program had gone beyond what is required in funding community studies, in establishing Intergovernmental Consultation and Coordination Boards, in providing funding for the Chemical Stockpile Emergency Preparedness Program, and in requesting and following advice provided by the National Research Council. In particular, they believe that the Record of Decision that was issued following the Programmatic Environmental Impact Statement has standing and that it constitutes a binding agreement for the Army.

Community opponents and those who were uncertain, however, criticized the decision-making process as flawed. They believe that the Army selected incineration as the preferred disposal alternative without consultation with the public. In their view, the public was not involved in, or generally even informed about the early steps in the decision-making process that defined the problem, identified possible alternatives, and established evaluation criteria for selecting among alternatives. They criticized the Programmatic Environmental Impact Statement (EIS) because it focused on the siting decision and barely considered alternative technologies. In addition, they believed that, although the Army had commissioned several community studies following publication of the EIS, the study findings had not been incorporated into decisions. In particular, they expressed frustration that they were not consulted on decisions affecting their lives and that the Army failed to recognize the need for consultation, consensus-building, and negotiation with citizens on peace-time issues.

Manner of Treatment. Not surprisingly, given the current gridlock, none of the parties in the controversy felt well-treated by those with opposing views. Army personnel expressed frustration that community residents failed to understand "the facts," and/or ignored the Army's extensive studies and experience. They pointed out that opponents did not honor established policies and procedures such as the conclusions of the Environmental Impact Statement, even while insisting that the Army follow procedures to the letter, and were skeptical about the value of attempting to work with people who, they

believed, were intent on killing the program. Community residents, in contrast, provided extensive backing for their belief that the Army cannot be trusted to act in the interests of the community. A major underlying concern is that the Army refuses to accept liability for harm and that if anything were to go wrong, they would never know until many years later. They expressed outrage that in the decision-making process the Army has allegedly treated them as "the enemy," has viewed them as lacking in intelligence, and has totally ignored their concerns.

Institutional Safeguards. A key belief of the Army personnel whom we interviewed is that the system is responsible for providing safeguards and protection and that these procedures and safeguards are already in place. In their view, the program can respond further only if clearly mandated by law or regulation and they therefore are unwilling to negotiate with community residents on some of the issues that the latter view as critical for acceptance. These include the provision of independent monitoring of incinerator operations and negotiation on compensation in the event of an accident. Community residents--especially those who are opposed and uncertain--feel very strongly that additional safeguards are needed. Their reasoning about institutional safeguards is closely linked to lack of trust and concerns about treatment. For example, expressions of support for independent monitoring are typically mentioned in conjunction with statements about lack of trust in the Army--or any governmental institution--to protect community safety. Concern that the army has failed to admit liability for past mistakes is related to concerns about the availability of compensation. The Army's lack of willingness to negotiate or make concessions on these issues were seen as evidence that the Army is unwilling to stand behind its claims about the safety of incineration.

The Process for Influencing the Decision

The research documented very clearly the frustration of community residents with the current process for incorporating their views into the decision-making process. Their frustration stemmed from a variety of inter-related factors, including the Army's limited problem scope and definition, criticism of the NEPA process, the lack of program information, and the separation of Army missions and organizational responsibilities. Faced with an inability to have their concerns addressed through regular program

channels, some residents have sought alternative channels such as Congress to affect the course of the program. Opposition which has spread from the original three sites in Kentucky, Indiana and Maryland, is present, in some form, in all communities and is nationally linked through the Chemical Weapons Working group in Kentucky.

As discussed above, the Army's limited view of the policy problem was a basic reason for community frustration. The single-minded focus on technical issues ignored several of the issues that were critical to community acceptance. Frequently, the intensity of public feelings documented in the research reflected an underlying belief that the Army was denying that concerns about other aspects were legitimate issues for discussion. The general belief about the Army's approach to decision making was expressed succinctly by a member of the public at one site, "We're gonna burn, and you're gonna learn to like it."

In addition, many residents viewed the environmental assessment process required by the National Environmental Policy Act (NEPA) as flawed. In their view, the Army had made a classic Decide-Announce-Defend decision in which the public was involved only in the last phase of the process, i.e., limited to the role of ratifying a decision already made, rather than influencing the problem definition and selection and evaluation of alternatives. In sum, they believed that the Army had adhered to the letter rather than the spirit of the required environmental assessment process.

Community residents also criticized the lack of readily available information in a format that they could understand. Many commented that, in the absence of such information, the agenda had effectively been set by the opponents and that the Army had placed itself in a reactive, rather than a proactive mode. Unbiased, readily comprehensible information was especially needed, given the general unease about incineration that the research identified among many undecided community residents and the strong opposition of prominent environmental groups towards incineration in general. While criticizing the dearth of information, however, a number of community residents emphasized that they did not want to receive information designed to convince them that the Army's decisions are correct. Rather, they saw the role of information as enabling them to reach their own decisions about the problem and potential solutions.

A final factor affecting community residents' ability to have their concerns addressed was the separation of the depot/installation mission from the stockpile disposal mission. Two primary communication problems arise as a result of this organizational separation of responsibilities under the military installation system,. First, the installation commander who normally serves as the Army spokesperson to the communities, is not responsible to speak for the disposal program. As a result there is no local representative with responsibility for communicating with the public about the program. Second, the stockpile disposal staff are not authorized to address many of the activities that community residents reported to us as problems affecting their response to chemical disposal (e.g., past practices such as weapons detonation or contamination) because these activities are the responsibility of the installation, or other tenant activities at the installation. This separation of missions and responsibilities thus resulted in several communication gaps that exacerbated community residents' concerns about stockpile disposal. In addition, the Army represents one entity to the community, and separate missions were frequently interpreted as attempts by the Army to deny responsibility and as evidence that the Army cannot be trusted.

The factors outlined above contributed to an overwhelming sense among many community residents of the futility of trying to deal with the Army about issues related to the stockpile disposal program. People felt that there was no mechanism for direct discussion and interaction and therefore no opportunity, through Army channels, to influence the decision process. Some were overwhelmed with a sense of powerlessness and alienated from the political process. Others attempted to influence the process and have their concerns addressed through alternative channels--Congressional and State representatives, State agencies who are responsible for issuing the incinerator permit, and the courts. To date, they have been effective in influencing Congress and the State permitting process, as witnessed by the pattern of delay and escalating costs that is a hallmark of the program.

CONCLUSION

Following from these substantive findings, our recommendations to the Army suggest program-wide changes needed to attend more effectively to concerns seen by community residents as relevant to chemical weapons disposal. These program-wide changes would ultimately lead to a series of site-

specific changes in communicating with the public, providing financial and technical assistance for public participation in environmental planning, and establishing mechanisms for negotiating environmental monitoring and mitigation measures.

Of more immediate relevance to the present discussion, however, is an assessment of the Toulmin model's value as a policy tool in avoiding potential environmental degradation. The model provides a systematic way to understand why and how people form their judgments about possible threats to environment, safety and health, which is at least as relevant in resolving environmental conflicts as defining the distribution of beliefs in a population. The Toulmin model also provides a systematic way of elaborating the arguments in a controversy. It shows clearly the differences between Army decision makers and community residents. The model reflects the way in which policy debates are typically conducted allows us to build an understanding of what kinds of social categories or institutionalized entities hold distinct positions. In circumstances where the credibility of the research and researchers is subject to question, the arguments constructed with this model provide a way to demonstrate to community residents that their viewpoints have been understood, and that they are considered legitimate. The graphic presentation of arguments ideally provides a way to check back with people who shared their insights with us, which, in turn, provides the basis for ongoing dialogue among the parties to this environmental controversy. And finally, this model helps organize data in a way that allows us to classify issues requiring resolution as "resource allocation" or "survival issues." Any recipe for a stable outcome to conflict resolution efforts will depend for its success on a combination of these ingredients.

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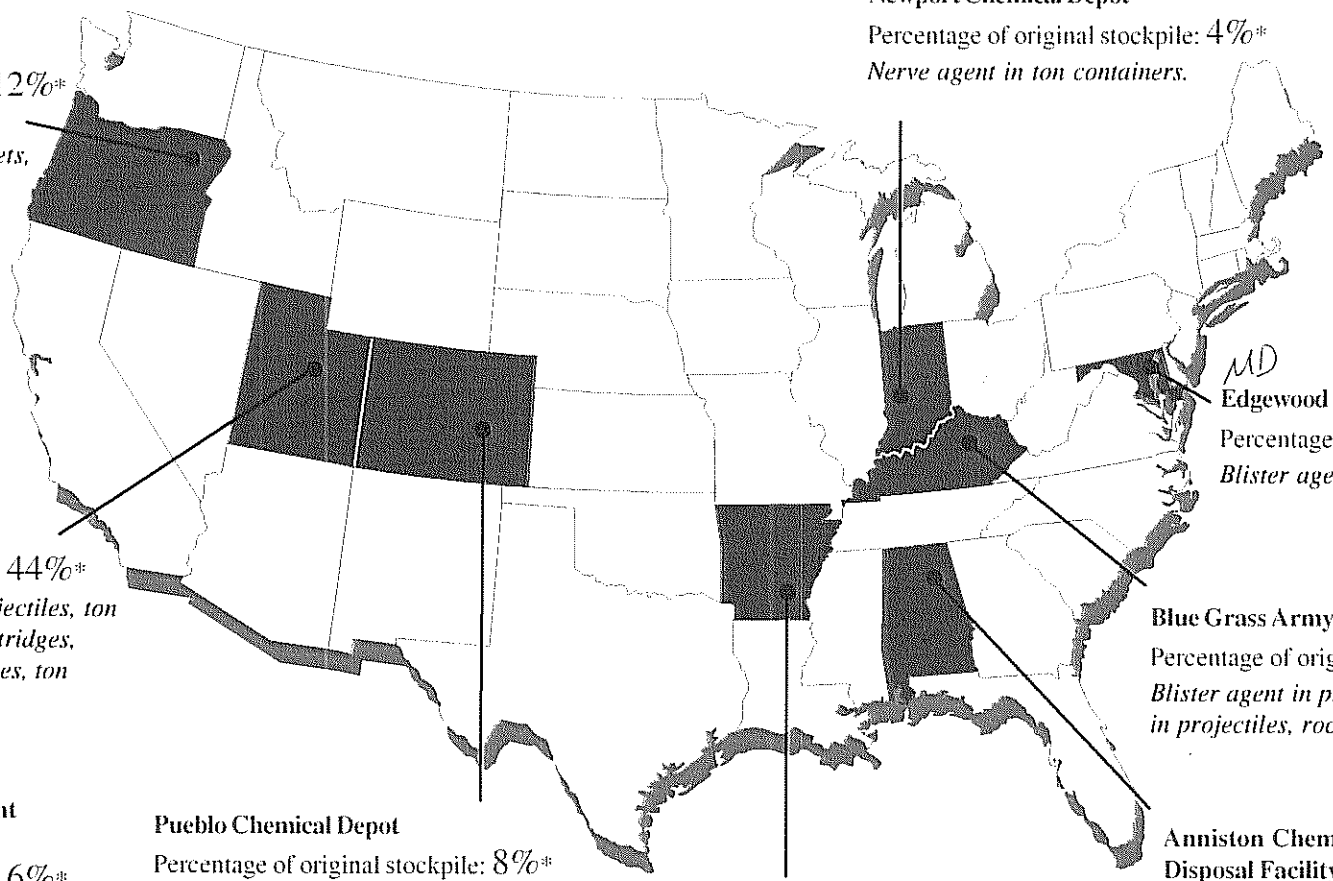
PMCD
Program Manager for Chemical Demilitarization

Umatilla Chemical Agent Disposal Facility
Percentage of original stockpile: 12%*
Blister agent in ton containers. Nerve agent in projectiles, rockets, bombs, mines, spray tanks.

Newport Chemical Depot
Percentage of original stockpile: 4%*
Nerve agent in ton containers.



MD

Edgewood Chemical Activity
Percentage of original stockpile: 5%*
Blister agent in ton containers.

Tooele Chemical Agent Disposal Facility
Percentage of original stockpile: 44%*
Blister agent in cartridges, projectiles, ton containers. Nerve agent in cartridges, projectiles, rockets, bombs, mines, ton containers, spray tanks.

Blue Grass Army Depot
Percentage of original stockpile: 2%*
Blister agent in projectiles. Nerve agent in projectiles, rockets.

Johnston Atoll Chemical Agent Disposal System
Percentage of original stockpile: 6%*
Blister agent in projectiles, mortars, ton containers, cartridges. Nerve agent in projectiles, rockets, ton containers, mines, bombs.

Pueblo Chemical Depot
Percentage of original stockpile: 8%*
Blister agent in cartridges, projectiles.

Pine Bluff Chemical Agent Disposal Facility
Percentage of original stockpile: 12%*
Blister agent in ton containers. Nerve agent in rockets, mines.

Anniston Chemical Agent Disposal Facility
Percentage of original stockpile: 7%*
Blister agent in cartridges, projectiles, ton containers. Nerve agent in cartridges, projectiles, rockets and mines.

* Percentages are approximate.

U.S. Chemical Agent and Munitions Stockpiles

Chemical agent is currently stored on Johnston Island in the Pacific Ocean and at eight sites in the Continental United States.