United States
Environmental Protection
Agency

Policy, Planning,
And Evaluation
(PM-221)

EPA 230-04-90-077
April 1990

EPA

Communicating With The Public About Hazardous Materials: An Examination Of Local Practice

Risk Communication Series

EPA-230-04-90-077

COMMUNICATING WITH THE PUBLIC ABOUT HAZARDOUS MATERIALS:

AN EXAMINATION OF LOCAL PRACTICE

Final Report on Phase Two of

COMMUNITY INTERPRETATION OF HAZARDOUS MATERIALS RISK INFORMATION

Prepared for

U.S. ENVIRONMENTAL PROTECTION AGENCY
OFFICE OF SOLID WASTE AND EMERGENCY RESPONSE
and **OFFICE OF POLICY, PLANNING, AND EVALUATION**

By

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February 1990

ACKNOWLEDGEMENTS

The authors are especially grateful to Ann Fisher and John Gustafson (EPA) for their cooperation and assistance with the project whose results are presented in this report. Also thanked are the many EPA regional personnel, state and local officials, members of LEPCs and other organizations, concerned citizens, and others throughout the United States who participated in the study. Any opinions expressed in the report are those of the authors alone and do not reflect an official view of Virginia Polytechnic Institute & State University or of the U.S. Environmental Protection Agency.

The information in this document has been funded in part by the United States Environmental Protection Agency (EPA) under Cooperative Agreement CR-814921. It has been subjected to the Agency's peer and administrative review, and approved for publication as an EPA document. Mention of trade names or commercial products does not constitute endorsement or recommendation for use.

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EXECUTIVE SUMMARY

The purpose of this study is to improve the ability of public and private sector organizations to communicate with members of the general public about the risks posed by hazardous materials, such as those found in Superfund or RCRA sites, or subject to SARA Title III. The first phase of the project examined selected aspects of the local emergency response planning process mandated by Title III of SARA, as carried out in Virginia.[1]

The second phase, reported here, expanded the focus, including a national survey of Local Emergency Planning Committees (LEPCs) and case studies of selected risk communication efforts.

The survey was designed to assess the risk communication efforts of LEPCs and to gauge their capacity for promoting risk communication in their communities. The survey was conducted in a sample of ten states selected to represent the range of organizational patterns and community conditions across the nation. Packets of questionnaires for the members and an information form on the LEPC were sent in January 1989 to the chairs of all local committees in the states of Alabama, California, Louisiana, Maryland, Missouri, New York, Rhode Island, Utah, Washington, and Wisconsin. Fifty six percent of the LEPCs we were able to contact responded to the survey, sending in 199 information forms and 1,468 member questionnaires. While we are confident that this sample is generally representative of all LEPCs, it is possible that the responses are slightly biased in favor of the more active, better organized committees and the more interested and involved members, and may overstate the quality and activity level of the "average" LEPC.

Among the findings produced from analyses of responses to the survey are the following:

1. The majority of LEPCs have put in place the basic mechanisms for communicating risk and emergency response information to the public, but few have actively advertised the availability of this information.

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[1] Conn, W. D., W. L. Owens, R. C. Rich, and J. B. Manheim, *Processing Hazardous Materials Risk Information at the Local Level*, EPA-230-06-89-063. Washington, D.C.: U.S. Environmental Protection Agency, 1989.

2. Most LEPCs have made little effort to involve the public in the Title III planning process, and those that have done so generally have not actively sought input by, for example, holding public forums or sending representatives to address other local organizations.

3. There was *no* statistical relationship between the number of facilities within an LEPC's jurisdiction and the degree to which the LEPC had been aggressive in its efforts to communicate with the public.

4. The majority of LEPCs had received *no* requests for information under the Community-Right-to-Know provisions of Title III and 88% had received fewer than 10 requests for such information. More requests came from individual citizens than from any other source, with community and environmental groups providing the second largest number of requests.

5. LEPCs that had attempted to make information public had received more requests, suggesting that the level of public interest in hazardous materials issues can be raised by concerted effort.

6. However, most LEPCs plan to *reduce* their level of activity once their emergency plans have been accepted by the state, and show few signs of shifting to a more active role in risk communication.

7. Most LEPCs report few contacts with local environmental groups and little cooperation with them. However, there is a positive correlation between the frequency of contact with such groups and the degree to which LEPC members describe these contacts as cooperative and view the environmental groups as representative of the public.

8. Most LEPC members regard their organizations as quite capable of carrying out the technical aspects of response planning, but they express far less confidence in the committee's capacity for communicating with the public, involving citizens in the planning process, or stimulating public debate on hazardous materials issues.

9. The typical LEPC member devotes less than one hour a month to securing public input for the planning process or to educating the public about hazardous materials issues -- far less time than is given to more technical tasks such as identifying facilities and studying response techniques.

10. Most LEPC members are dissatisfied with both the amount and the quality of the coverage given to their work by local television, radio, and newspapers.

11. LEPC members generally have a narrow concept of risk communication in nonemergency situations. Rather than encouraging public consideration of ways to reduce or manage risks, they tend to focus exclusively on preparing the community to respond to accidents.

12. Most LEPC members said they would use training materials that were designed to improve their ability to communicate with the public and secure citizen input for the planning process, suggesting that the production and distribution of such materials to LEPCs and State Emergency Response Commissions (SERCs) may be beneficial.

Title III of SARA requires that a variety of groups be represented on the LEPCs. We found that all states have a mixture of these groups on their committees, but that there is considerable variation in the degree to which different groups are represented. Some states' LEPCs tend to be dominated numerically by a combination of emergency responders and representatives of business and industry, while others are composed primarily of government officials and emergency responders. In all cases, persons from the media, environmental groups, and community organizations are in the minority. The average LEPC in our sample gave only 10% of its seats to representatives of these groups. However, we found no consistent pattern of differences in the opinions expressed by members of these various groups, which may indicate that the recruitment process has tended to place less critical members of these "watchdog" groups on the LEPCs.

Case studies provided a second source of information for the study. Through consultation with EPA regional offices, SERCs, and other sources, we sought to identify examples of innovative risk communication efforts in specific communities. While few examples were available, we were able to arrange case studies in St James Parish, LA; El Paso County/Colorado Springs, CO; and Contra Costa County, CA, as well as secondary case studies in neighboring areas. The objectives of the case studies were to learn what risk communication techniques had been tried, to secure suggestions for risk communication programs from practitioners, and to assess the level of hazardous materials awareness among a sample of the attentive public in each community. To these ends, in-person and telephone interviews were conducted with local officials, media figures, and community leaders, and a mail questionnaire was sent to a sample of opinion mediators in each community.

The case study risk communication activities fell into four categories: (1) publications, press releases, and video-tapes; (2) public presentations and forums; (3) communicating through

schools and libraries; and (4) public access to information about hazardous materials and response planning. These activities focused mainly on emergency response information such as where to go for instructions in the event of an accident or how to evacuate a given area. There was little information on the nature, source, or extent of actual risks from hazardous materials, and the information that was available was not always in a form that would be useful to average citizens.

Those who had been especially involved with communicating risk information offered the following suggestions:

1. It is important to share risk information with the public to avoid misunderstandings and build trust in the sources of risk information.

2. Risk information should be communicated *before* an emergency.

3. Risk communicators should communicate with and through existing organizations in the community. This can build trust as well as utilizing convenient conduits for information to large segments of the public.

4. Larger issues can be addressed by building on initially small efforts, such as providing information about household hazardous waste.

5. Emergency response drills can be an effective way of attracting community attention to the issue of hazardous materials risks and educating the citizenry on how to protect itself.

The mail survey of local opinion mediators indicated that, although exceptional risk communication efforts took place in the communities, even attentive citizens are generally not well informed about hazardous materials issues. Only a third of the respondents were members of some organization that had sought to learn about these issues, and only 11% felt they knew what to do to protect themselves and their families in an actual emergency. However, most expressed willingness to devote considerable effort to becoming better informed. Most would turn to local government for information in the event of an emergency, and those who had acquired information on this topic had most often received it from local government rather than the LEPC or some other source.

Our work suggests several important questions and recommendations:

Why should a community have a hazardous materials risk communication program? Such a program can (1) improve the technical sufficiency of the emergency response plan by securing additional information from citizens, (2) heighten citizens' understanding of the plan and thereby increase its effectiveness, (3) increase the credibility and legitimacy of the plan, (4) stimulate public discussions that may lead to risk reduction, and (5) reduce the level of citizen "outrage" following a major accident.

What should be the role of the LEPC in a risk communication program? The LEPC should develop a *plan* for a risk communication program, but will usually not be responsible for its implementation. The LEPC should act as an advocate for active risk communication efforts and should coordinate the activities of various agencies, but the actual risk communication should be implemented by other organizations with the staff and resources to carry out an effective long-term, community-wide effort.

How should a risk communication plan be developed and what elements should it contain? The plan should be devised by the LEPC in consultation with response organizations, media, and any community organizations that might have a role in its implementation. It should be made *a component of the emergency response plan*, and the LEPC should seek assistance from communication specialists in developing materials and procedures to be included in the plan. The risk communication plan should provide for:

1. An on-going program of risk communication and education that can accommodate population turnover, changing conditions, and fading memories.

2. A series of *public forums* designed to share risk information with the public in an interactive setting that fosters confidence and promotes efforts to reduce risks.

3. A system by which emergency response plans and information on specific hazardous materials in the community are made readily available to the public on demand and in a form that is understandable.

4. Provisions for giving citizens concrete instructions about how to protect themselves in an emergency.

5. Contact lists of the names and addresses of persons who can be called upon to help disseminate information both prior to and during an emergency.

6. A "press kit" designed to assist the media in covering both emergency and nonemergency hazardous materials stories effectively.

7. Formal provisions for the regular review and up-dating of the risk communication plan to reflect changing conditions.

Who should carry out a hazardous materials risk communication program and how should it relate to other risk communication efforts? The hazardous materials risk communication plan should be implemented by a local public or quasi-public agency that has the confidence of the public. The SERCs should be encouraged to serve as conduits for information about innovative risk communication programs, training opportunities, and other efforts to improve the risk communication capacities of the LEPCs in their states. The SERCs might also organize programs to assist local committees in developing risk communication components for their local emergency response plans.

At the national level, EPA could develop and distribute materials that would assist LEPCs in designing effective risk communication plans. These would include a guidebook for communication planning that could be adapted to the unique situation of each community. A particular community's hazardous materials risk communication plan should be coordinated with other risk communication efforts (such as those concerned with Superfund sites, natural disasters, or nuclear power plants) that may be underway.

INTRODUCTION

The past few years have seen a growing recognition in the United States and elsewhere of the risks posed by the production, storage, transportation, use, and disposal of hazardous materials. Many organizations are struggling with efforts to communicate to the general public information about these risks. In this study we are concerned with a variety of organizations involved in risk communication at the local level.

The overall purpose of this study is to improve the ability of public and private sector organizations to communicate -- to members of the general public -- information relating to the risks posed by hazardous materials. Our primary focus to date has been on the Local Emergency Planning Committees (LEPCs), established under the Emergency Planning and Community Right-to-Know Act of 1986, otherwise known as Title III of the Superfund Amendments and Reauthorization Act (SARA). The LEPCs are required to include elected local officials, police, fire, civil defense, public health professionals, environmental, hospital, and transportation officials, as well as representatives of facilities subject to the emergency planning requirements, community groups, and the media. The LEPC's role includes preparing and subsequently updating local emergency response plans as well as helping to increase the public's knowledge of, and access to, information on the presence of hazardous materials in their communities and the releases of these chemicals into the environment. The problems faced by the LEPCs in communicating risk information to the public are thought to be typical of those faced by other organizations, such as those involved in risk communication at Superfund sites. Our expectation is that the findings for LEPCs can be applied to situations involving Superfund sites and RCRA sites. However we decided to start with LEPCs because public opinion tends to polarize quickly once a Superfund or RCRA site has been identified.

During Phase 1 of the research, the team (1) evaluated a presentation on hazards analysis given by the U.S. Environmental Protection Agency (EPA) to LEPCs and other organizations involved in local hazardous materials emergency planning, and (2) studied the knowledge, perceptions, and expectations of organizations and individuals charged with the task of local hazardous materials emergency planning. Phase 1 was conducted entirely within the Commonwealth of Virginia and is described in Conn et al., 1989.

During Phase 2, in which the focus was expanded to the national level, the team (1) obtained information about the perceptions and practices, with respect to risk communication, of a sample of LEPCs and other organizations in ten states, and (2) studied and evaluated, in a few selected locations, the efforts of these and other community-based organizations to communicate to the public information about hazardous materials risks. This report covers Phase 2, conducted between September 1988 and August 1989.

OBJECTIVES

The objectives of Phase 2 were as follows:

1. To explore the effectiveness of the local emergency planning process (under Title III) and other approaches to providing the public with information about the risks associated with hazardous materials.

2. To secure officials' opinions of the effectiveness of the Title III emergency planning process soon after the deadline for the submission of the plans.

3. To identify and evaluate innovative ways of communicating with the public about (1) the risks from hazardous materials (including those associated with Superfund sites), and (2) elements of emergency response plans.

OVERVIEW OF PHASE 2 ACTIVITIES

The following activities were undertaken in Phase 2:

1. In collaboration with EPA headquarters and regional personnel, we selected ten states (one in each EPA region) for a survey of LEPCs and their members.

2. We developed and pretested two mail survey instruments: an LEPC Information Form and a member questionnaire.

3. With the knowledge of the appropriate EPA regional offices and State Emergency Response Commissions (SERCs), we mailed survey packages to the chairs of all LEPCs in the ten states and asked that they distribute the questionnaires to their members.

4. We sent written reminders to the LEPC chairs as appropriate to encourage a higher response rate. An overall response rate of 55% of the LEPCs was achieved by July 1989.

5. We coded the Information Forms and questionnaires for computer entry and analyzed the responses.

6. We contacted the EPA regional offices, SERCs, and others in an effort to identify communities that were known to have engaged in innovative risk communication activities. With some difficulty we identified a small number of communities whose efforts appeared to be worthy of detailed study.

7. We visited three states where we developed in-depth case studies in three communities and examined risk communication activities in several other communities within the same three states.

8. We followed up on the case studies with the mailing of a brief questionnaire to a total of 221 "opinion mediators" in the three communities.

9. We sent written reminders to the opinion mediators as appropriate to encourage a higher response rate, and secured 104 completed questionnaires for an overall response rate of 47%.

10. We analyzed the responses from the opinion leaders.

11. We developed conclusions and recommendations from all of the Phase 2 activities.

The results of these activities are described in the remainder of the report.

T SURVEY OF LEPCs AND THEIR MEMBERS

INTRODUCTION

Implementation of the risk communication objectives of Title III depends in part on the efforts of the individual Local Emergency Planning Committees to develop a plan for informing the public of hazardous materials risks. It is, therefore, important to learn how the committees define their responsibilities and what actions they have taken to fulfill those responsibilities. Recognizing that the perceptions, values, and skills of the LEPC members are crucial to the functioning of these organizations, it is also important to discover how individual LEPC members view their organization and its role under Title III. To answer these and other questions, we conducted a mail survey of all of the LEPCs in ten states. This section of the report presents the results of the survey. We first explain the methods used to conduct the survey, then describe the responses received, and finally examine the patterns discovered

in these responses under three main headings: The LEPCs as Organizations; Mission Definition and Capacities of the LEPCs; and Characteristics and Orientations of LEPC Members.

METHODOLOGY

The objective of the survey was to gather data from a manageable number of local committees in such a way as to allow us to draw conclusions about all LEPCs. The most desirable way to achieve this goal would have been to survey a random sample of the nation's LEPC members. However, the virtual impossibility of obtaining a complete and unbiased list of names and addresses of all LEPC members dictated against this approach. Moreover, we wanted to be able to compare states since there is so much variation in the way individual states have responded to the mandate of Title III. Even if a random sample of LEPC members had been possible, it would have produced results that were representative of the nation as a whole, but may not have been representative of conditions in individual states. Consequently, we elected to take a sample of states judged to be typical (if not representative in a statistical sense) of the nation. We then attempted to survey enough LEPCs in each state to provide a valid basis for conclusions about that state's implementation of Title III.

The following criteria guided our selection of states to be included in the study:

1. We wanted one state from each of the ten regions into which the EPA divides the nation for administrative purposes in order to ensure a truly national sample and to capture the effects of any variation in EPA regional practice with regard to Title III provisions.

2. While recognizing that every state is unique in many respects, we sought to avoid selecting any state that was likely to be atypical of its region due to exceptional conditions or history.

3. We wanted to include states that EPA regional officials and SERC members told us were likely to include LEPCs or other organizations making concerted efforts to involve the public in the Title III planning process or experimenting with creative approaches to risk communication.

4. We sought to obtain a mixture of large and small states with an over-all balance among urban and rural areas and among areas with high and low concentrations of hazardous materials-handling facilities.

5. We wanted the sample to include examples of some of the variety of ways in which states are divided into LEPC districts. As a result, the sample is composed primarily of states that, like most in the nation, organize their LEPCs around counties, cities or other local units but also includes states that rely on larger districts.

Following consultation with EPA headquarters and regional personnel, with state officials, and others, we were led by the interplay of these criteria to select the states of:

Alabama	New York
California	Rhode Island
Louisiana	Utah
Maryland	Washington
Missouri	Wisconsin

Procedure

In an effort to obtain a large enough sample of each state's LEPCs, allowing for an anticipated response rate of no more than 50%, we sent the survey to ***all*** local emergency planning committees in each of the ten states. This produced an initial sample frame of 400 LEPCs. We were unable to secure valid addresses for 4 and another 8 responded that their organization was "inactive" or existed "only on paper," effectively reducing the sample frame to 388.

The procedure for the survey was to send each LEPC chair a packet containing a cover letter explaining the survey, a single-sheet LEPC Information Form (Infoform), a set of questionnaires for the LEPC members, and a prepaid, self-addressed return envelope. The cover letter explained that the chair was to (1) complete the Infoform for the organization, (2) distribute the member questionnaires to the members by whatever means he or she saw fit, (3) collect the completed questionnaires, and (4) mail both the questionnaires and the Infoform back to us in the envelope provided. A sample of all the materials from the packet is contained in Appendix A.

We had no way of determining in advance the number of members of each LEPC without the time-consuming and costly task of contacting each organization. However, our discussions with EPA and state officials led us to assume that few LEPCs would have more than 24 members. Accordingly, we included this number of questionnaires in each packet in an effort to be sure that we provided enough questionnaires for ***most*** local committees. (In fact, we had only two requests for additional questionnaires and only two LEPCs photocopied questionnaires on their own to provide enough for all of their members.) This produced a mailing of 9,672 member questionnaires to the 400 LEPCs on our original mailing list. Each questionnaire was stamped with the identifying number of the LEPC, folded, and inserted into a plain envelope. In an effort to encourage frank answers by ensuring anonymity, the

questionnaire instructed members to return the completed questionnaire to its envelope, seal the envelope, and return it to the LEPC chair without any identifying marks. Judging from the condition in which we received the questionnaires, this strategy worked well in most cases. A few chairs, however, apparently followed procedures which jeopardized anonymity. Some wrote the members' names on the envelopes or opened the sealed envelopes before returning them to us. Some members failed to seal the envelopes so that it would have been possible for someone to examine the questionnaires before returning it to us. Given the fact that the questions pose little threat to leaders or other LEPC members, we feel that none of these actions is likely to have biased responses in any significant way.

Packets were sent to LEPC chairs in January, 1989. Any who had not responded after two months were sent a reminder with a return addressed response card to use in informing us of the status of the survey. Those who had still not responded by the end of April were sent another reminder and a second Infoform with a request that they at least complete and return the Info form if they were unable to have their members fill out questionnaires. We dia not mail out a second full set of questionnaires to LEPCs that did not respond primarily because of the cost of mailing these packets. We also knew that any given chair may be holding the survey until the LEPC's next meeting and we did not want to press them unnecessarily.

Response

The complexity of our survey procedure allowed for several types of responses. Most LEPC chairs who responded complied with our request and returned both an Infoform and member questionnaires. However, some returned only the Infoform and others returned only member questionnaires. Figure 1 shows the responses we received from each of the states in the study. Since this was a judgmental rather than a probability sample, the representativeness of the sample does not depend primarily on the response rate. However,

after dropping LEPCs that were "inactive" or could not be contacted from our potential sample, the overall response rate for LEPCs was 56%. We consider this rate to be quite satisfactory for a survey of this type and feel that it provides an adequate basis for drawing conclusions about Title III implementation at the national level. At the state level, we can have a good deal of confidence in conclusions about those states in which the state-wide response rates were at least 50%, but are less secure in generalizations about states like Missouri and Louisiana which had very low response rates.

Calculating the response rate for individual LEPC members is more complicated. Since we have no way of knowing how many members there were in the ten states at the time of the survey, we cannot say what the overall response rate for individuals was. We ***can*** say that those LEPCs which sent in LEPC Infoforms reported a total of 4,461 membership positions. Since we sought responses from all members but received only 1,468 individual questionnaires, our overall ***nominal*** response rate was 33%. While this seems low, three considerations suggest that we need not be too worried about a low return jeopardizing representativeness. In the first place, our knowledge of the operation of LEPCs indicates that most depend primarily on the efforts of a core of active members and that many nominal members are only marginally involved in the committees. It is the active members who are most likely to understand the functioning of the LEPCs and to influence their operation. Since they are also most likely to be the ones attending a meeting at which the questionnaire was distributed and most likely to have the knowledge and interest to fill out a questionnaire, it may be that we have a far better sample of ***active*** members than of all members. Moreover, we may have a ***more*** accurate picture of the LEPCs from the responses of this active core than we would have gained from a larger sample of less involved members. Second, when one considers that national public opinion polls of the entire adult population of the U.S. are routinely based on samples of no more than 1,500, our base of 1,468 respondents is a very large sample for the relatively small number of persons who are members of the LEPCs. Finally, and most importantly, ***most of the patterns found in the responses we re-***

ceived are so strong that there is little reason to believe that having additional responses would have altered our basic conclusions.

Figure 1

Responses to the Survey by State

STATE	ACTIVE LEPCs	COMPLETE RESPONSES	INFOFORM ONLY	MEMBERS ONLY	RESPONSE RATE
Alabama	65	27	7	2	55%
California	6	5	0	1	100%
Louisiana	64	13	6	0	30%
Maryland	25	10	5	1	68%
Missouri	32	6	3	1	31%
New York	58	32	4	5	71%
Rhode Island	8	7	0	0	88%
Utah	12	5	1	0	50%
Washington	43	9	8	1	42%
Wisconsin	72	40	10	5	76%
TOTAL	385	155	44	16	56%

The data collection procedure we used (like all similar mail surveys) ***may*** have produced one systematic bias in our sample. The responses may have come disproportionately from the more active, better organized local committees since their officers are more likely to be willing to take part in such a survey and to be able to contact their members and persuade them to participate. In addition, we probably got responses primarily from the more involved

and concerned members of these committees since they are more likely both to have been at a meeting where the questionnaire was distributed and to be interested enough to complete it. Together, these effects may have lead to a "creaming" of LEPCs and their members, and ***may*** have produced data which overstates the quality of the LEPCs. ***We have no way of determining if this bias actually exists in our data, but readers should be alert to its possible effects and may want to interpret the results we report in light of it.***

FINDINGS AND ANALYSIS

The LEPCs as Organizations

Information about the LEPCs as organizations can be obtained both from the chairs' responses to the Infoform and by aggregating members' responses to questions about the operation of the local committee. We received completed Infoforms from 199 organizations. Based on the information contained in those forms, as of April 1989, the average LEPC had been in existence for 17 months and had 23 members. Eighty four percent had completed their local emergency response plan and submitted it to their respective SERC for approval, 6% had completed but not submitted their plan, and less than 10% reported that they were still developing their plan.

According to the chairs, the average number of facilities that were supposed to report to each LEPC was 74. This number is slightly inflated by the fact that California uses a system of six regional LEPCs with an average of 500 facilities in each jurisdiction. The second highest average of 157 is in Missouri, followed by Louisiana with an average of 119 facilities per jurisdiction. The lowest averages were reported by Rhode Island with 24 facilities per LEPC and Alabama with 35. Though some committees reported responsibility for over 1,000

facilities, 81% of the LEPCs indicated that there were fewer than 100 facilities in their jurisdictions. The average LEPC reported that 45% of the facilities that had reported had sent in ***lists*** of regulated materials rather than material safety data sheets (MSDSs) on individual chemicals and several volunteered that this was at the request of the LEPC.

Since the danger of a hazardous materials emergency will generally increase with the number of facilities in an area, it is reasonable to expect the number of facilities in a jurisdiction to be related to the degree to which the local committees have attempted to inform the public about chemical hazards or to bring the public into the planning process. However, when we examine data from the states in our sample, there is ***no consistent statistical relationship between the number of facilities in a jurisdiction and the extent of the LEPCs' risk communication efforts.*** LEPCs that are responsible for a large number of facilities are no more likely to have taken steps to communicate with the citizenry than are those responsible for smaller numbers of hazardous materials sites.

Informing the Public Under Community-Right-to-Know Provisions

One of the first things we wanted to know about the operation of the LEPCs is what provisions they had made for informing citizens of the local plan and for making information on hazardous materials in the community available to citizens. We asked if the LEPC had taken each of a series of steps toward these goals. Figure 2 summarizes their answers.

Figure 2

LEPC Efforts to Make Hazardous Materials Information Available to the Public

ACTIVITY	% OF LEPCs REPORTING
Designated an office to disseminate information	92%
Advertised the address and phone of this office	59%
Full-time employee given responsibility for office	77%
Provide photocopying service at the office	78%
Offer citizens assistance interpreting hazardous materials information	67%
Designated a contact for Section 313 information	38%

The majority of committees had put in place the basic structures necessary for making information available to the public. (Alabama and Wisconsin stand out as the most active states in this regard with Rhode Island and Utah being the least active.) Despite this, significant numbers had failed to take steps that could be vital to effective information sharing. For example **41%** had ***not*** actively advertised the existence or location of the office responsible for responding to citizens' requests for hazardous materials information. Without these efforts, there is little reason to expect citizens to know where to go with questions. Without aggressive efforts to advertise the availability of information, even the best equipped office is likely to be ineffective. Similarly, almost a third of all LEPCs did not provide citizens with assistance in interpreting the hazardous materials information made available in their office. Given the complexity and technical nature of much of the information gathered under Title III, such assistance must be regarded as essential if citizens without a hazardous materials background are actually to acquire an understanding of the risks they face (or don't face) by examining the kind of information LEPCs are likely to make available to them.

Perhaps one reason that LEPCs might not make the sharing of Title III information a high priority is that they have received very few requests for such information and do not feel that the public is concerned with hazardous materials issues. In fact, the majority (53%) of LEPCs in our sample reported that they had received ***no*** requests, and 88% had received fewer than ten inquiries. Only five organizations claimed to have received fifty or more requests. The average number of requests reported by all LEPCs was 4.5. We asked the chairs to indicate the most common source of requests for Title III information. Of the 84 organizations that ***had*** received requests and had records from which to answer the question, 38% identified "individual citizens" as the most common source of requests. The second most commonly identified source was "community groups" with 12% naming them as responsible for the most requests. Environmental groups were identified by 7% while the media were identified by 6%. Smaller percentages identified businesses, government agencies and other groups as the source of the most requests.

The small number of requests may be interpreted as showing a lack of public interest. However the ***pattern*** of requests suggests that it may be possible to increase the level of interest. First, 57% of the LEPCs said that they were more likely to get requests from citizens (as individuals or as members of community or environmental groups) than from institutional sources. This suggests that the public (as opposed to government, the media, or other institutions) is the main source of requests. There is also reason to believe that citizens can be stimulated to learn more about hazardous materials dangers in their communities. For example, there is a weak but positive correlation between the number of requests received by LEPCs and whether or not the LEPC had (a) advertised the existence of an office to provide Title III information ($r = .16$; $p < .01$); (b) invited the public to attend LEPC meetings ($r = .15$; $p < .02$); and (c) sent representatives to address other organizations ($r = .13$; $p < .05$). In addition, the number of requests received was positively correlated with the number of

facilities reporting to the LEPC ($r = .20$; $p < .005$). All of this suggests that a more aggressive effort to inform the public could result in somewhat higher levels of public interest in acquiring hazardous materials information.

Involving the Public in the Title III Planning Process

We investigated the activities LEPCs had undertaken to involve the public in developing or updating the local response plan by asking chairs to tell us how frequently their organization had used each of several possible techniques for gaining public input and informing the public of LEPC activities. Figure 3 reports their responses. It shows a clear emphasis on less proactive approaches to risk communication in that larger percentages of the organizations report having used the first two methods of disseminating information -- methods which place the burden of action on others. LEPCs report much less reliance on the next three, more outreach-oriented methods.

Figure 4 indicates the variation by state in the degree to which LEPCs have undertaken more active efforts to reach the public. It suggests that the various methods of getting information out are relatively independent of each other since those states with high percentages of LEPCs that have never used any given method generally do not have especially high percentages that have never used other methods. Rhode Island is an exception to this since it has relatively high percentages of committees that report never using ***any*** of the three proactive strategies. One explanation for this may be the degree to which emergency responders are heavily represented on Rhode Island's LEPCs while citizens' groups are less represented. Our observations of emergency responders suggest that, as a group, they tend to focus on the technical side of response planning and see little value in securing the

Figure 3

LEPC Efforts to Involve the Public in Response Planning

ACTIVITY	% OF LEPCs DOING IT: FREQUENTLY	NEVER	MEAN FREQUENCY*
Invited the media to cover LEPC activities	41%	3%	3.9
Placed announcements of LEPC meetings	43%	9%	3.8
Invited public attendance at LEPC meetings	25%	24%	2.9
Sent representatives to other organizations	13%	26%	2.8
Held public hearings or meetings on Title III	12%	35%	2.4
Published the response plan for the public	6%	46%	2.1

*Measured on a five-point scale in which five corresponds to "frequently" and one to "never".

opinions of people who have no chemical emergency training. Moreover, responders often feel that providing the public with information on dangers can unnecessarily complicate their job by creating panic or generating unwarranted requests for action or additional information. If this impression is accurate, it is reasonable to assume that LEPCs that are more heavily influenced by responders will be less aggressive in seeking public input or disseminating risk information.

Figure 4

Failure to Use Proactive Efforts to Inform the Public, by State

% OF LEPCs THAT NEVER:	STATE									
	AL	CA	LA	MD	MO	NY	RI	UT	WA	WI
Invited public to attend LEPC meetings	11%	40%	22%	50%	0%	29%	43%	33%	39%	13%
Sent representatives to other organizations	21%	0%	28%	25%	38%	29%	43%	17%	36%	22%
Held public hearings or meetings	29%	40%	41%	50%	22%	3%	86%	33%	29%	53%

We also asked if the LEPCs had developed a "press kit" to distribute to the local media to provide them with information for use in covering the Title III planning process and the most likely hazardous materials emergencies in their community. Only 4% said they had such a kit while 21% said they were in the process of developing a kit. Three quarters of the LEPCs had not taken this step to facilitate risk communication. Moreover, while there was some variation from state-to-state, in ***no*** state had more than 8% of the LEPCs developed a press kit.

Most local committees have obviously preferred less aggressive approaches to involving the public in response planning. It is reasonable to deduce from this that few citizens are aware of the Title III process or have taken part in it. This conclusion takes on added importance when considered against evidence that most local committees will be cutting back on their activity level when their response plan is approved. We asked how often they met before completing the plan and how often they planned to meet after the plan had been approved. Fifty five percent reported that they had met monthly or more often before submitting the

plan, and only 21% said that they had met quarterly or less frequently. However, only 34% reported that they planned to meet monthly or more often ***after*** the plan was approved, and 41% indicated that they would meet quarterly or less often, while 13% said they would meet "as needed" after the plan was approved. Only 5% of the committees indicated that they planned to increase the frequency with which they met. All this suggests a ***reduced*** level of activity for most LEPCs in the important second stage of local emergency response planning in which citizens must be informed of the plan's content if they are to cooperate in its implementation, and in which there are more opportunities to improve the plan or find ways to reduce risks through securing citizen input.

Mission Definition and Capacities of the LEPCs

Since their members' perceptions of conditions and definition of the local committees' mission will profoundly influence what the LEPCs actually do about risk communication, it is important to examine the aggregated responses of members as indicators of how the LEPCs will perform as organizations. Perhaps the most informative question in this regard is our initial open-ended question about what the members saw as the most important purpose of the LEPC ***after the response plan has been approved.*** Almost two-thirds of the respondents (64%) gave an answer which had to do with maintaining the emergency response plan -- up-dating it; coordinating it with other plans; identifying hazardous materials facilities; monitoring changing conditions; coordinating planning activities of various offices. Only 13% referred to educating the public about hazardous materials issues. Another 10% said that informing the public of hazardous materials risks was the LEPC's key purpose. Seven percent gave the general answer of "ensuring public safety," and the remaining members gave answers that fell into a wide range of "other" categories. This suggests that the members

generally do ***not*** see the role of the LEPCs as shifting to a more broadly based public education function once the plan is in place.

When asked what was the single most important problem their organization would face in fulfilling this mission, the largest single group (38%) agreed that it was inadequate funding or staff support. The next largest group (12%) cited a lack of public interest in the issue. No other single problem was identified by as many as 10% of the respondents and only four other items were cited by as many as 5%. They were: lack of cooperation from local businesses, 8%; lack of government cooperation, 6%; technical problems (like a lack of necessary equipment or inadequate communications technology), 6%; and insufficient time to work on LEPC tasks, 5%. Apparently LEPC members, as a group, do not see any single major barrier to achieving their objectives, though majorities of some individual LEPCs saw funding and staff as the major problem.

We also asked members to evaluate their committee's capacities in several areas using a five-point scale in which 5 represented "excellent" and 1 represented "inadequate". The responses are summarized in Figure 5. They provide a picture of a group of members who are highly confident of their organizations' capacity to handle planning tasks but far less sure of their ability to communicate with the public or environmental groups and quite dissatisfied with the degree to which they have achieved public visibility or confidence.

This pattern is also reflected in responses to several questions that asked members to assess the likelihood that their LEPC could accomplish each of several goals. Figure 6 summarizes the answers by showing the percent of members that said that the LEPC had a ***better than 50/50 chance*** of accomplishing the goal, and the average rating on a five-point scale in which 5 represented "very likely" and 1 corresponded to "not likely." While the majority were confident of their ability to achieve the more technical risk communication goals, less than a majority felt that the LEPC could effectively reach the citizenry or stimulate

debate of environmental issues. Clearly LEPC members are aware of their organizations' tenuous links to the public.

Figure 5

Members' Evaluation of Their LEPC

CHARACTERISTIC	% RATING GOOD OR EXCELLENT	AVERAGE RATING*
Competent and dedicated members	78%	4.0
Capacity for communicating with government	74%	4.0
Capacity for communicating with business	67%	3.8
Information gathering capacity	65%	3.8
Capacity for analyzing information	62%	3.7
Relations with the news media	58%	3.6
Communication with environmental groups	44%	3.4
Communication with the public	42%	3.3
Public confidence in ability to protect the community's interests	32%	3.2
Public visibility	23%	2.8

*On a five-point scale in which 5 represents "excellent" and 1 represents "poor."

Figure 6

Members' Assessment of the Likelihood of Accomplishing Goals

GOAL	PERCENT SAYING BETTER THAN 50/50	AVERAGE ASSESSMENT*
Respond effectively to requests for information	76%	4.0
Improve community understanding of risk information	52%	3.6
Inform citizens of the plan's provisions	40%	3.3
Stimulate discussion of environmental issues	33%	3.1
Secure adequate citizen input for updating plan	34%	3.1

*On a five-point scale where 5 represents "very likely" and 1 represents "not likely."

These linkages were explored further when we asked the members to tell us how they perceived the cooperation their committee received from local businesses. This cooperation can be crucial to obtaining the information needed to develop an effective plan. Fifty four percent of respondents said that their LEPC received good to excellent cooperation from local businesses handling hazardous materials materials. However, there was significant variation among the states. The following data show that the proportion of California's LEPC members who described business cooperation as "excellent" was dramatically lower than the proportion in other states. This may reflect the fact that California's LEPCs are organized on a regional basis which makes it difficult for them to develop a working relationship with locally-based firms. By contrast, Louisiana is the state in which the largest number of LEPC members rate business cooperation as "excellent". This is consistent with the close relationships between business and the LEPCs which we observed in our case study in Louisiana. Businesses in that state have been eager to become involved in the Title III process as a means of influencing it.

Percentage of Members Who See the Cooperation Received from Local Firms as Excellent in:

AL	CA	LA	MD	MO	NY	RI	UT	WA	WI
18%	3%	30%	13%	20%	29%	25%	12%	16%	13%

Relations with Environmentalists and the Media

Two groups of actors who can be a great help to the LEPCs in reaching the public or can create problems for the local committees are local environmental organizations and the media. Accordingly, we sought to assess the relationships between LEPCs and these groups with a series of questions to the members. First, we asked the LEPC members to assess the level of activity by local environmental organizations. Forty one percent described these groups as relatively inactive while 38% saw them as moderately active and 21% said they were relatively active. When asked to rate the ***frequency*** of contacts with environmental groups on a five-point scale, only 14% of the LEPC members said that their committee had relatively frequent contact with such organizations while 57% described contacts as relatively infrequent. In assessing the ***character*** of interactions with environmental groups, 35% of LEPC members described these contacts as closer to cooperation than confrontation while 13% said that the contacts were more nearly confrontational than cooperative, and the majority rated contacts as neutral in character.

Figure 7 shows that there was significant variation among the states in this regard. Perhaps the most obvious point in this figure is the fact that California LEPCs seem to have poor relations with environmental groups. While California members were ***most*** likely to rate local

groups as "active" (as one might expect from a knowledge of the politics of the state), they were ***least*** likely to say that their LEPC had frequent contact with these groups or to say that the contacts were cooperative. Given the strong representation of public interest members on California's LEPCs which we report in Figure 11 below, we can only speculate that the regional organization of California's LEPCs makes it difficult for working relationships to develop. By contrast, Louisiana's members do not see environmentals as especially active, but are the ***most*** likely to describe LEPC contacts with environmental groups as both frequent and cooperative.

Figure 7

Members' Assessment of Contact with Environmental Groups

% OF MEMBERS DESCRIBING:	STATE									
	AL	CA	LA	MD	MO	NY	RI	UT	WA	WI
Local environ. groups as active*	19%	33%	20%	28%	4%	30%	32%	15%	31%	9%
Contacts with environ. gps. as frequent**	19%	3%	24%	8%	4%	16%	11%	12%	7%	12%
Contacts with environ gps. as cooperative***	34%	23%	45%	44%	26%	39%	33%	33%	30%	32%

* Responses 4 and 5 on a five-point scale where 5 represents "very active".
** Responses 4 and 5 on a five-point scale where 5 represents "frequent contact".
*** Responses 4 and 5 on a five-point scale where 5 represents "generally cooperative".

The LEPCs and local environmental organizations potentially share a variety of interests in informing the public about environmental issues and could be "natural allies". However, the

responses of LEPC members to our survey suggest that, in most cases, these two groups have not yet developed a strong relationship. Environmentalists probably have not yet "discovered" the LEPCs and the local committees have apparently made few if any efforts to work with these groups to gather or disseminate information.

There is some evidence that aggressively pursuing contacts between environmental groups and the LEPCs might be beneficial to both parties. In the first place, LEPC members who describe contact as more frequent are more likely to describe those contacts as cooperative rather than confrontational ($r = .51$; $p < .0001$), and those who see contacts as more frequent are also more likely to say that they view local environmental activists as representative of the general public in their community ($r = 21$; $p < .0001$). This suggests that more frequent contact might produce better working relationships, give the LEPCs an additional link to the public, and provide environmental groups with access to information and resources available to the LEPCs.

As an additional effort to assess member perception of their organization's external relations, we asked them to rate the amount and quality of coverage that the LEPC receives from television, radio, and newspapers in their jurisdiction. The responses are summarized in Figure 8. Majorities rated all three types of coverage as insufficient and substantial percentages evaluated the quality of the coverage as less than adequate. Members were most critical of television coverage and least critical of newspapers. Apparently, most LEPC members feel that their organization's work is not given the attention that it deserves from the media. If they are correct, this fact could partially explain the low level of citizen interest in learning about hazardous materials issues suggested by the small number of requests for Title III information reported by the LEPC chairs.

Figure 8

Members' Views of Media Coverage of LEPC Affairs

TYPE OF MEDIA	PERCENT OF MEMBERS WHO: RATE AMOUNT OF COVERAGE AS LESS THAN "ENOUGH"*	RATE QUALITY OF COVERAGE AS LESS THAN "FAIR"**
Newspaper	59%	33%
Radio	67%	45%
Television	81%	58%

* Based on a five-point scale in which 1 represented "too little," 3 represented "enough," and 5 represented "too much".

** Based on a five-point scale in which 1 represented "poor," 3 represented "fair," and 5 represented "good".

LEPC members in different states differ considerably in their assessment of media coverage. Figure 9 shows this by comparing their ratings of the quality and quantity of coverage of the LEPC. To simplify presentation, we averaged the percentages rating the three media referred to in Figure 8 to create an overall media rating. Alabama and Louisiana stand out in Figure 9 for having the ***least*** dissatisfied LEPC members while California and Rhode Island's members were by far the ***most*** dissatisfied with the amount and quality of coverage. Alabama and Louisiana's position may be explained by the fact that they contain so many small towns in which media personnel are personally known to the LEPC members and in which local media are often hungry for stories of local interest to cover. We can speculate that California's situation reflects the regional organization of the LEPCs in that this removal of the committees from the local level discourages local media from considering its actions as part of "their" beat. We cannot explain Rhode Island's situation from what we know about the state, but it may reflect the failure of LEPCs composed so heavily of emergency

responders to effectively encourage press coverage or a general tendency for responders to see the press as hostile.

Figure 9

Members' Views of Media Coverage of LEPC Affairs by State

% OF MEMBERS SAYING MEDIA COVERAGE IS:	STATE									
	AL	CA	LA	MD	MO	NY	RI	UT	WA	WI
Less than "enough"*	60%	92%	62%	74%	72%	75%	82%	63%	74%	66%
Less than "fair"**	36%	64%	37%	51%	48%	49%	67%	51%	50%	44%

* Based on a five-point scale in which 1 represented "too little", 3 represented "enough" and 5 represented "too much" coverage from each of three major media.

** Based on a five-point scale in which 1 represented "poor", 3 represented "fair" and 5 represented "good" quality of coverage from each of three major media.

Characteristics and Orientations of LEPC Members

Since the views of their members will profoundly influence the functioning of the LEPCs it is important to examine member opinions, attitudes, and role definitions. We begin by looking at their backgrounds and move on to examine their perceptions and orientations toward the tasks of the LEPC.

Who are the LEPC Members and Whom do they Represent?

SARA Title III mandates that the LEPCs be drawn from several constituent groups in order to provide broad-based representation of the community on the committees and in the hope of improving risk communication by ensuring that the committees have strong links to the community. If LEPC members are sufficiently diverse, there is a greater chance that the plan will reflect community concerns and that there will exist a better set of "built-in" communication lines through which information about the plan can be disseminated to the community. How well have these goals been realized?

Responses from the 1,468 LEPC members who completed our questionnaire indicate that the average member had served on the LEPC for one year, that committee members are 86% male, and that 64% of members are between the ages of 30 and 50. Eighty three percent of them had attended college, 56% had a college degree and 32% had graduate education. Fifty seven percent described their work as being in the public sector (government) while 36% were employed in the private sector (business) and the remainder worked in the volunteer sector for organizations like the American Red Cross, charity hospitals, etc. Occupationally, 26% were in fields that qualified them as emergency responders (law enforcement, fire protection, rescue squad, etc.), 24% were business managers or owners, 13% public administrators, 2% elected officials, 9% were in the health care field, and 3% worked in the media. A wide range of other occupations are also represented in smaller numbers. This profile suggests that LEPC members are a diverse group in some respects, but it also indicates that they are ***not*** a cross section of the general public of their communities. They are far more likely to be male, well educated, professional, and affiliated with government and emergency response organizations than the "average citizen".

Their nominal backgrounds, however, are only a crude indicator of the perspectives and interests they represent in their actions on the LEPC. We asked the members to tell us if they

felt that they had been appointed to the local committee because of their affiliation with any of several groups. Figure 10 summarizes their responses by reducing the groups to five categories. "Watchdog groups" include those that may be expected to define the interests of the community differently than government and business groups -- environmentals, community organizations and the media. Only 2% of our respondents saw their membership on the LEPC as a product of affiliation with an environmental group while less than 4% saw themselves as representatives of the media and less than 4% identified with community organizations. The "independent" group, who did not feel that their appointment was asscciated with membership in any of the types of groups we listed for them, came primarily from business and government and add very little to the total number of actual "watchdog" members.

Figure 10

Group Affiliations of LEPC Members*

GROUP	% OF ALL MEMBERS	% OF CHAIRS ONLY
Emergency responders	29%	16%
Government officials	29%	46%
Business and industry	21%	16%
"Watchdog" groups	10%	6%
Independents	12%	14%

*Based on members' assessment of the reason for their appointment.

Examining the response of LEPC chairs alone to this question shows that chairs are even less likely to have been appointed because of their affiliation with a "watchdog" group while almost half identified their affiliation with government as the source of their appointment.

Again, aggregate analysis of members' responses conceals a good deal of variation among the states. Figure 11 compares representation of the five groups described above among each states' LEPC members. With one exception, it lists the states in order of the percent of members who represent emergency responders. The states are then grouped to reflect the four patterns of membership distribution that are evident.

The first pattern is one in which the largest single group of LEPC members are emergency responders and the second largest group is from business and industry. Rhode Island is the clearest example of this type, as almost half (49%) of that state's LEPC members who responded to our study were responders. At the same time, Rhode Island has a lower percentage of both government officials and watchdog members on their LEPCs than any other state in our sample. Missouri approximates this model of organization with a relatively high number of emergency responders (39%) and the second lowest percentages of both government officials and watchdog groups in the sample. The state of Washington provides a third example of this pattern. Alabama and Louisiana present a second pattern by dividing the bulk of their LEPC positions between responders and government officials.

The next four states in the list divide the majority of their seats between responders and government officials, but give government officials the larger number of positions. California stands out in this group, in that it has the highest percentage of watchdog group members (22%) while having the second highest proportion of public officials (44%) and the lowest representation of business and industry of any state in the sample. This "public interest" model of organization probably reflects the degree to which the "environmental movement" is mobilized and the environment is regarded as a valid political issue in California.

Figure 11

Group Affiliations of LEPC Members, By State*

STATE	EMERGENCY RESPONDERS	GOVT. OFFICIALS	BUSINESS/ INDUSTRY	WATCHDOG GROUPS	INDEPEN-DENTS
RI	49%	7%	19%	4%	19%
WA	41%	22%	26%	8%	3%
MO	39%	17%	24%	5%	12%
AL	34%	22%	18%	8%	17%
LA	30%	30%	21%	7%	13%
NY	25%	30%	25%	10%	10%
CA	25%	44%	6%	22%	3%
WI	23%	33%	20%	13%	12%
MD	19%	47%	18%	6%	8%
UT	20%	36%	32%	8%	4%

*Based on members' assessments of the reason for their appointment.

Wisconsin is also noteworthy in this group for having the most nearly balanced representation of the five groups on its LEPCs. This may be a reflection of the state's progressive traditions.

Utah presents a fourth pattern, in that it has the highest representation of business and industry and the second lowest representation of emergency responders of any of the ten states. One might have predicted this reliance on business and government personnel from knowledge of the active role that business tends to play in Utah politics.

How do LEPC Members Define Their Mission?

Answers to the open-ended question about the major purpose of the LEPC reported above suggest that members see the technical sufficiency of the response plan as the main focus of their organizations. They show little sign of moving to a more active role in risk communication in the wake of having their plans accepted by their states. This impression is reinforced by their responses to our question about how much time they devote to each of several tasks in an average month. Figure 12 presents the patterns. Members report giving significantly less time to outreach efforts (informing the public of hazardous materials issues and seeking public input) than to more narrowly focused planning and capacity building activities. One explanation of this may be that LEPC members see outreach as important, but view it primarily as the responsibility of the committee chair. Examining the time allocation of chairs separately, however, suggests that the chairs do not see it this way. LEPC chairs report giving more time to all tasks than other members, but they also devote significantly less time to outreach than to other functions.

Figure 12

LEPC Members' Allocation of Time

ACTIVITY	AVERAGE HOURS PER MONTH ALLOCATED BY: ALL MEMBERS*	CHAIRS ONLY
Studying hazardous materials issues	4.9	4.5
Gathering information	2.7	3.5
Attending LEPC meetings	2.5	3.4
Hazmat response training	2.0	2.8
Evaluating information	1.7	3.4
Informing the public	.7	.9
Seeking public input for the planning process	.6	1.1

*Including the LEPC chairs.

This pattern of time allocations stands in stark contrast to the members' answers to our question about the value of public input in evaluating and updating the response plan. Forty seven percent indicated that such input was "very important" while 43% rated it as "somewhat important" and only 9% labeled it as "not very important". Perhaps members were only giving what they considered to be the "politically correct" answer to this question and do not actually see citizen participation as crucial. However, it is also possible that members do value citizen input but do not know how to go about securing it in practice. Interestingly, LEPC chairs were ***less*** likely to say that citizen input was valuable to the planning process. Only 38% rated it as "very important" while 48% said it was "somewhat important" and 14% said that citizen involvement was "not very important". Given the crucial role of LEPC chairs in directing the committees' activities and setting the tone of their work,

this relatively low commitment to citizen participation on the part of the committees' leaders may explain why so little effort goes into seeking citizen input.

A state-by-state analysis reveals little geographic variation in time allocation. In no state do members report spending an average of more than one hour a month on seeking public input. Rhode Island is tied with Missouri for the lowest average at .2 of an hour per member, per month. This is noteworthy since these two states are similar in that they have a heavy representation of emergency responders on their LEPCs and the fewest watchdog and public official members. By contrast, California and Maryland are distinctive for their reliance on government officials and significant representation of watchdog groups. However, they do not stand out in their efforts to seek public involvement. In fact, it is in Alabama that we find the ***highest*** percentage of members (65%) saying that citizen involvement in the planning process is "very important", and the largest amount of members' time allocated to both seeking public input (.9 hrs.) and informing the public (1.1 hrs.) each month. Nothing in the group affiliations of Alabama's LEPC members reported in Figure 11 suggests an explanation of this interest in citizen involvement. Since Alabama divides the state into more Title III planning districts than most, its LEPCs function at a very local level. As a result, we can speculate that committee members may feel a stronger personal responsibility for the safety of their districts than in states with larger jurisdictions for the LEPCs. This line of reasoning is consistent with our earlier observation that Alabama is a state in which a fairly high proportion of members saw public education as a major future goal for their LEPC. Moreover, Louisiana is very similar to Alabama in organizing its LEPCs at a very local level, and it is the state in which we find the ***second*** highest allocation of members' time to informing the public and seeking public input.

How do the Members Perceive Risk Communication?

The effectiveness with which the LEPCs communicate hazardous materials dangers to the public will be heavily influenced by how the members understand the process of risk communication. Accordingly, we asked a series of questions that explored their perceptions in this area. First, we asked what the members thought was the most effective means for the LEPC to use in getting ***nonemergency*** information to the public. A solid majority (61%) said they would rely on newspapers for this task. Eighteen percent would turn to television, 15% to radio, and 5% to other media. The preference for newspapers may reflect an awareness of the ability of this medium to communicate detailed information in a nonsensationalist manner. However, this depth of newspaper coverage comes at the expense of breath and speed of coverage. If the LEPCs are to reach large numbers of the public quickly with basic information, they will need to rely on broadcast media to a greater extent than the members seem to realize.

We next asked members to rate the importance of including certain types of information in news stories about ***nonemergency*** hazardous materials situations. The responses reported in Figure 13 indicate that LEPC members have a clear preference for communications that focus on the more immediate and technical aspects of a situation and are less interested in seeing background issues addressed. The problem with this approach is that it reduces the possibility of a proactive stance toward hazardous materials dangers in which the community debates the conditions leading to a risk and may choose to take actions to ***reduce*** the risk rather than just planning to react to an emergency when it arises.

Figure 13

Members' Evaluation of the Priority to be Given to Possible Content of Nonemergency Hazardous Materials News Coverage

SUBJECT	MEAN PRIORITY RATING*	% MEMBERS RATING "HIGH"
Possible health effects of an accident	4.3	48%
Provisions of response plan	4.2	43%
Likelihood of an accident	3.8	31%
Statements of public officials	3.8	27%
Possible causes of an accident	3.7	23%
Statements from the business involved	3.6	20%
Statements of environmental groups	3.2	13%
Political controversy about the hazardous situation	2.7	11%

*Based on a five-point scale in which 5 represents "high" and 1 represents "low."

How Do LEPC Members See Environmental Issues in Their Communities?

LEPC members' attitudes toward risk communication may be heavily influenced by their perceptions of both how much public interest there is in environmental issues and how responsible environmental groups in the area are. Perceptions of public interest in environmental issues may be a double edged sword. Low levels of public interest may be viewed as an excuse for inactivity in the area of risk communication. However, perceived low levels of public interest could be used to justify extraordinary efforts to inform and educate the public and may actually ***facilitate*** outreach by leading members to believe that sharing information with the community will not bring unwanted political controversy. Similarly, if en-

vironmental groups are perceived as responsible and representative, members should be more willing to include concerned citizens in the planning process.

When asked how important an issue environmental concern was in their community, 34% of our respondents said it was a "major issue", 39% said that it was an "important issue" and 27% labeled it as a "minor issue". We also asked if members regarded "those who are most vocal in their concern about environmental issues" in their community as an unrepresentative minority or a cross section of the public. The members were evenly divided in this, with 50% giving each answer. At the state level, the maximum proportion of LEPC members saying that environmental groups are a crossection of the public is 54% in Utah and the minimum level of confidence in environmentalists is found in Missouri with 36% seeing them as representative. Finally, we asked members to gauge the accuracy of their own perceptions of the content and level of public environmental concern and activism. In response, 37% expressed relatively high confidence in the accuracy of their perceptions; 43% expressed moderate confidence and 21% expressed relatively low confidence, indicating that LEPC members feel relatively well-connected to environmental issues in their communities.

These results present a picture of a group of people who are very diverse in their views of environmental issues but are by no means overpowered by the sense that they are entrusted with responsibility for an issue that dominates their community, nor are they overly concerned about opposition or interference from a highly active and irresponsible environmental movement. In this regard, it is instructive to note that Rhode Island is both the state in which the largest proportion of LEPC members see the environment as a major issue for the public and the state in which members are least satisfied with press coverage and most reluctant to actively involve the public in the planning process.

Divisions Within the LEPCs

What difference does it make that different groups are represented on the LEPCs? Do different groups bring different perspectives to LEPC issues? Are they likely to vote differently if issues are put to a vote in the organization? We addressed these questions by comparing the responses of the five groups identified in our earlier discussion of representation. Figure 14 shows how each of the groups responded to a number of the questions examined above. The important point to note about the table is that the groups generally differ very little in their perceptions and judgements on these issues. Each of the figures presented in the table is drawn from a larger analysis in which no consistent pattern of statistically significant differences was found among the five groups' answers to these questions. Especially significant is the fact that the "watchdog" group generally does not stand out from the other groups in its responses to any of the questions in our study. Where there ***are*** differences, the responses of the watchdog group members are often marginally ***more*** optimistic and ***less*** critical than the responses of the other groups. (An exception to this is found in the fact that watchdog members are less likely to feel that the public has confidence in the LEPC's ability to protect its interest.)

Figure 14

Attitudes and Perceptions of Different Groups of LEPC Members

% OF GROUP WHICH:	RESPONDERS	MEMBERSHIP GROUP BUSINESS	GOVERNMENT	WATCHDOG	INDEPENDENTS
Rates communication with govt. as excellent	26%	23%	35%	32%	31%
Rates communication with the public as excellent	11%	7%	11%	10%	14%
Rates communication with environ. gps. as excellent	10%	8%	10%	14%	16%
Rates relations with the media as excellent	22%	15%	25%	38%	17%
Rates cooperation from business as excellent	16%	25%	20%	18%	20%
Sees contact with environ. gps. as cooperative	11%	10%	11%	13%	11%
Sees LEPCs public visibility as good	21%	21%	21%	25%	28%
Sees public confidence in LEPC as good	31%	26%	31%	22%	36%
Rates citizen input to planning as important	52%	38%	44%	49%	55%
Describes local environmental concern as high	32%	33%	40%	37%	34%
Sees local environmentalists as representative of the public	46%	41%	53%	51%	45%

This generally high level of agreement among LEPC members from different groups may be viewed as a sign of effective groups who waste little time in building consensus and can get things done. However, it may also be viewed as a symptom of a flawed selection process in which only those members of watchdog groups who will not make waves are recruited for

the local planning committees. Selecting watchdog members by this criterion may have facilitated assembling the response plans on time, but it is quite inappropriate for LEPCs that are seeking to enter a more proactive stage of risk communication. Having less critical watchdog members may prevent the committees from developing the public credibility they will need to get citizens' full cooperation during an emergency, and understanding afterwards. It may also prevent consideration within the LEPC of public disclosures which could result in open debate of environmental risks that may produce decisions to reduce those risks rather than simply respond to disasters.

LEPC Members' Use of Training Materials

What training materials have LEPC members used and what do they feel they need to do their job? Figure 15 shows the reported use of selected publications and Figure 16 indicates how likely it was that members would use different types of prospective training and resource materials if they were available.

Figure 15 indicates that only NRT-1 has received wide circulation among the LEPC members who responded to our survey. But it also shows that members who receive useful publications are very likely to read them since there is little difference between the percentage who reported receiving materials and the percentage who claim to have read them.

Figure 15

LEPC Members' Use of Selected Publications

PUBLICATION	% OF ALL MEMBERS WHO HAVE: RECEIVED IT	READ IT
Hazardous Materials Planning Guide (NRT-1)	73%	73%
Tech. Guidance for Hazards Analysis (EPA)	44%	43%
It's Not Over in October (EPA)	36%	36%
Explaining Environmental Risk (EPA)	18%	21%*
Tech. Assist. Bulletin #4 (EPA)	13%	10%

*Perhaps members read others' copies.

In Figure 16 the items are listed in the order of the average interest score given to them by members. This ranking shows no clear preference for any given type of aids since technical and risk communication materials are interspersed in the ordered list. It is noteworthy that the four items on the list involving risk communication rather than technical aspects of planning ranked second, fourth, fifth and sixth out of 12 in members' expressions of interest. This suggests that the members are both aware of their limited knowledge of how to communicate with the public and open to learning more about this task. However, it is also worth noting that less than half of the members said they were likely or very likely to use materials directed at nonemergency risk communication or managing community right-to-know information, even though these were areas in which they had earlier indicated they felt least competent.

The responses shown in Figure 16 should be interpreted in light of the wording of our question. We asked members to evaluate potential materials as if only a few could be produced due to scarcity of resources. The answers, then, should reflect the ***relative***, rather

than the absolute, importance of materials. This means that members may use most or all of the materials mentioned if they are actually provided, but see the first few as deserving a higher priority.

Figure 16

Likelihood That Members Would Use Prospective Materials

SUBJECT OF MATERIAL	AVERAGE RATING*	% SAYING VERY LIKELY TO USE	% SAYING LIKELY TO USE
Catalog of hazardous materials planning resources	3.9	38%	28%
Emergency risk communication with the public	3.8	35%	28%
Evacuation and in-place sheltering information	3.7	31%	28%
How to use planning process to prevent accidents	3.7	33%	29%
How to manage right-to-know information	3.4	23%	22%
Nonemergency risk communication with the public	3.4	20%	24%
Coordinating spill prevention with the plan	3.4	22%	27%
Building DOT route planning into the plan	3.1	18%	21%
Coordinating OSHA requirements with response plan	2.9	13%	20%
Coordinating fed. facilities planning with the plan	2.3	6%	12%
Coordinating nuclear plant plans with the plan	2.1	8%	10%
Coordinating earthquake planning with the plan	2.0	7%	7%

*On a five-point scale in which 5 represents "very likely" and 1 represents "not likely" to use.

CASE STUDIES

INTRODUCTION

We sought to identify and examine risk communication activities being undertaken by innovative LEPCs and other community-based organizations through a series of case studies. The objective was to gather information and suggestions that other communities could use when formulating their risk communication programs. We intend that the results of the case studies be interpreted in conjunction with the results of the more broadly-based information generated by the survey of LEPCs and their members.

METHODOLOGY

Case Study Selection

In keeping with the objective of the case studies, the communities were not selected randomly, but on the basis of preliminary information that the LEPC or some other organization in the community was engaged in innovative risk communication activity. An important source of information for selecting the case studies were the EPA regional offices and the SERCs. Before the distribution of the questionnaire to LEPCs, the investigators contacted the EPA regional offices and SERCs for each of the ten states in which the questionnaires were to be distributed. This contact was made to inform these offices of the forthcoming mailing to all of the LEPCs in each of these states, but also to ask whether our contacts at these offices were aware of any LEPCs or other community-based organizations that were engaged in risk communication directed to the general public. We also spoke with a number of people outside government, including members of citizens' groups.

During the course of these conversations we obtained very few suggestions, although we had the opportunity to discuss our interest with many persons intimately familiar with activities in their area. Our contacts were not certain of the reasons for the apparent lack of risk communication activity, but possible reasons they mentioned included lack of financial resources, a focus by many LEPCs upon the technical aspects of hazards analysis and emergency preparedness, a lack of familiarity with risk communication techniques, and widely varying attitudes regarding the degree to which LEPCs should actively reach out to their community (as compared to being a passive repository of hazardous materials information).

Following our discussions with the EPA regional offices, SERCs, and others, we contacted the organizations that had been suggested to us. In several instances the chair told us that the LEPC was not involved in any significant risk communication efforts. In those instances where our preliminary information regarding risk communication activity proved to be accurate, we requested permission to meet with the key players in the formulation and execution of the risk communication programs so that we could learn the details regarding their efforts.

As a result of these discussions, arrangements were made to conduct full-fledged case studies in the following locations:

- St. James Parish, Louisiana (population about 25,000; a heavily industrialized rural area with 19 large facilities reporting to the LEPC);

- El Paso County, Colorado (population just under 400,000; a rural county incorporating a mid-sized city);[2] and

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[2] Note that we had to resort to a case study location outside the ten states in which our survey was conducted, owing to the extreme difficulty of identifying suitable communities within these ten states.

- Contra Costa County, California (population about 750,000; a largely urbanized county incorporating several cities).

In each of these states, we were also able to develop subsidiary case studies involving other LEPCs or community organizations, specifically the St. Charles Parish LEPC in Louisiana, the City of Colorado Springs LEPC, the Barron Park Association (a community group) in Palo Alto, California, and Citizens for a Better Environment (an environmental group) in San Francisco. In the case of Colorado, the interests and activities of the county and city LEPCs overlapped to the point where they were ultimately treated as a single case study.

Field Research

During April and May, 1989, we visited each of the case study communities. Two team members went to each of the three primary communities, and stayed for two-and-a-half days in each community. Before these visits, we made arrangements to meet with the organizers of the risk communication efforts, as well as with some key opinion mediators in the community and others who were in a position to be familiar with the nature of the community and its concerns with regard to hazardous materials.

We conducted in depth interviews of a total of 30 persons, including three who were interviewed by telephone. The purposes of these discussions were: (1) to obtain detailed information regarding the risk communication programs (along with copies of any materials that had been distributed), (2) to solicit the comments and suggestions of the risk communicators based upon their experiences, (3) to become familiar generally with the communities in which the risk communication efforts were carried out, and (4) to obtain the names and addresses of a sample of opinion leaders in each community, to whom the case study questionnaire could be distributed.

Case Study Questionnaire

A written questionnaire was distributed by mail in each of the case study communities following the research team's visit. The purpose of the questionnaire was to provide information about risk communication issues such as the level of concern in the communities regarding hazardous materials, the level of awareness regarding the hazardous materials emergency plans, and the sources that residents relied on for information on hazardous materials.

The questionnaires were sent to a group of opinion mediators culled from lists of local political officeholders and members of community service groups, neighborhood organizations, environmental groups, parent-teacher organizations, health organizations, and the business community. Opinion mediators were selected as recipients of the questionnaire because it could reasonably be expected that information regarding many of the issues addressed has not yet been widely circulated among the general public. Moreover, we reasoned that since these persons could play a vital role in distributing hazardous materials information to the community their level of knowledge was of interest in itself.

A total of 221 questionnaires were mailed; this was a large enough sample to provide worthwhile information, while staying within the budgetary constraints for this phase of the project. In order to encourage response, a follow-up mailing was sent to non-respondents approximately one month after the original mailing. A copy of the case study questionnaire (which was essentially the same for each community, although with a different cover) is included in Appendix B.

FINDINGS & DISCUSSION

Given the purpose and nature of these case studies, it is neither appropriate nor possible to assess in a definitive way the effectiveness of the particular risk communication activities carried out in each of the case study communities. We can, however, ***describe*** these risk communication efforts, including comments regarding some of the factors that the organizers had to consider, and some of the difficulties they encountered. We can also summarize points made during our interviews that may be of interest to risk communicators in other communities. Finally, we can present a summary of the responses to the case study questionnaires. Although these were distributed to a relatively small number of persons, the responses to many of the questions are so consistent that there is little reason to believe that a larger sample would have produced different conclusions. Our findings arguably shed some light on the current situation in these communities, and - perhaps most important for the future - help us to identify the sources to which citizens may turn for hazardous materials risk information.

Risk Communication Activities

The risk communication activities discussed below were carried out by LEPCs, local public agencies (such as the health department and the department of emergency preparedness), citizen groups, environmental groups, and industry. In most instances the local public agencies worked in collaboration with the LEPC; this is frequently the case because the LEPCs themselves do not generally have an operating budget or paid staff, and therefore often rely on other organizations to execute -- or assist with the execution of -- risk communication efforts. Citizen groups concerned with hazardous materials issues, as well as industry representatives, also conducted some of the activities described below; these efforts, too, were sometimes carried out in collaboration with the LEPC. Since we are interested primarily in the ***techniques used***, rather than the organizations involved, most of these activities are described without regard for whether they were carried out by an LEPC in its own

right, a collaborating public agency, a citizen group, or industry. Most of these activities could be carried out by any LEPC or other community-based organization with the inclination and resources to do so. The communication efforts discussed below fall into four categories: (1) publications, press releases, and videotapes, (2) public presentations and forums, (3) efforts to communicate through schools and libraries, and (4) providing for public access to hazardous materials information.

We will note at the outset that very little of what we saw in the case studies qualifies as risk communication in a strict sense. The information communicated tended to focus on matters such as the existence of the emergency response plan, the procedures for obtaining information, and what to do in an emergency. Topics such as the nature of the risks faced and the probability of harm were not commonly addressed. Given that we chose to examine communities where special communication efforts were being made, we may reasonably assume that even less risk communication is being undertaken in most other communities.

Publications, Press Releases, and Videotapes

These types of materials prepared for distribution in the case study communities may be grouped into two broad categories: those providing general information regarding hazardous materials issues and emergency response, and those focused on the particular community. LEPCs and other organizations interested in circulating the more ***general information*** have used materials prepared by the EPA and the Federal Emergency Management Agency (FEMA). In some cases the materials have been made available to the public in a public office or library, while in other cases they have been distributed at public meetings, speaking engagements, or by mailing to selected audiences. Some communities distributed materials as originally produced; other communities adapted them for local use. In Colorado, the El Paso County LEPC collaborated with the county's Disaster Services Office to adapt a videotape prepared by FEMA, and broadcast it a number of times as part of a local cable tele-

vision station's public service program. They also made copies of pamphlets and brochures prepared by the EPA, sometimes with colorful cover sheets to attract attention.

Efforts also have been made to communicate ***community-specific information*** through publications, and this has been handled in a variety of ways. Press releases about the existence and activities of the LEPC have sometimes been prepared as a starting point. Although this is not risk information *per se*, it may play a role in establishing the LEPC as a credible source of risk information. Two points mentioned with regard to press releases during these case studies are that (1) information about the activities of the LEPC is often not regarded as newsworthy, and (2) detailed press releases should be accompanied by a summary, especially in those areas where the reporters are not likely to be environmental specialists.

Reports, brochures, pamphlets, and videotapes with a local focus have also been produced by LEPCs and other organizations. The St. James Parish LEPC, in cooperation with the parish's Department of Emergency Preparedness, distributed a brochure to every home in the Parish, outlining the nature of the emergency response plans, and defining basic emergency response terms such as "shelter in place." In cooperation with local industry, the LEPC also produced a videotape about local industry, and a series of one-page descriptions of each of the 19 industrial facilities in the Parish.

Public Presentations and Forums

An approach commonly mentioned during the case studies was to make presentations to other organizations, such as local service clubs and neighborhood groups. This was generally seen as an effective way to get information to citizens who are involved in the community, and who can then pass along information to their own contacts in the community. Another effect of these presentations is to establish a relationship between the audience and the speaker. This relationship can be important when organizing public forums dedicated to hazardous materials risk issues because it makes the message more forceful.

Public forums were conducted in both the primary and some of the secondary case study communities, with widely varying levels of attendance. Organizers and attendees of these forums offered several observations. First, as mentioned above with respect to speaking engagements, it is important to build a base of trust ***before*** the forum is held, in order to encourage participation at the forum. One approach that may be effective is to have the forum sponsored by a number of different organizations. Theoretically, of course, LEPCs are made up of representatives of many different segments of the community; but it may be important in any given case for those various segments to be directly involved in the forum, at least to the point where the leaders of other organizations enthusiastically encourage their members to participate. In this way there is a chance to avoid an "us-them" attitude that may keep members of the community away.

As for the forum itself, a point made by organizers and attendees is that there should be a minimum of technical information and a maximum of opportunity for attendees to ask questions. An attendee of one forum said that the information provided consisted largely of the names of chemicals and the quantities present at facilities, which meant nothing to him. Questions from attendees permit the forum to focus on issues that concern the community, rather than information that the organizers think is important.

Schools and Libraries

Efforts have been made in all three of the primary case study communities to work with schools and libraries to assist with the dissemination of risk information. One approach has been to make annual presentations at school assemblies, although these have tended to focus more on evacuation plans than on the nature of hazardous materials risk. Another approach has been to make presentations, particularly in science classes, regarding hazardous materials and the risks associated with them.

Efforts have also been made to place hazardous materials risk information in the libraries in these communities. The volume of information varies widely, although the local emergency response plan has generally been included. Common problems with putting this material in the library include keeping the information current, making it easy for interested persons to find, and making the materials easy to understand. Library visits in the case study communities showed that the materials, while useful in some cases, were quite difficult to find. If such material is included in a library, it should be cross-referenced to a variety of terms - such as hazardous materials, chemicals, risk, pollution, environment, right-to-know, SARA, Title III, and local emergency planning committee. The availability of the information might also be advertised on bulletin boards, newsletters, or circulars utilized by the library. In order to make the information easy to understand, it may be necessary to include, for example, a lay person's guide to the information contained on an MSDS, and a straightforward explanation of the potential health effects of the hazardous materials actually present in the community.

Public Access to Hazardous Materials Information

A variety of approaches have been taken by the case study communities to the organization and availability of the hazardous materials information obtained by the LEPC. In some cases it is computerized, in others it is on hard copy. It is stored in a variety of public offices, most commonly the fire department or the emergency planning office. The existence and availability of this information have not been advertised widely, and there have typically been few, if any, requests for access to the information.

Recommendations of Risk Communicators

In the course of the interviews with the persons most directly involved with organizing and implementing risk communication activities in the case study communities, several points were raised repeatedly. Not all of these ideas were applied in all of the communities, but

there was substantial agreement as to many of these points, even among risk communicators operating in significantly different communities. We have consolidated these points under the four headings below, and include them in this report for consideration by LEPCs and other organizations faced with deciding whether and how to develop a risk communication program. Although we cannot comment definitively, we think they make sense, based on our research so far.

Communicate Risk Information

We found that there is by no means agreement among the possessors of hazardous materials risk information as to whether they should communicate this risk information to citizens.[3] Many persons apparently believe that it is best not to let citizens know about the risks to which they are exposed because such information will only cause counterproductive panic. However, others we interviewed felt strongly that anxieties are not calmed by covering up the existence of hazardous materials risk, and that we create a much more frightening and difficult situation by withholding information than by telling the truth. As one group actively involved in risk communication told us, it is important to overcome the attitude among many officials that the community is to be manipulated, and that people should not be kept informed about hazardous materials risk.

Communicate Risk Information Early

A point made with regard to relations between risk communicators and the public is that it

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[3] To the extent that this project is focused specifically on LEPCs, we are really concerned with two preliminary risk communication issues: (1) do members believe, as a general proposition, that risk communication is important and should be undertaken; (2) do members believe that LEPCs should take on risk communication responsibilities. Our research so far indicates there is substantial disagreement on *both* of these questions.

is important to open the lines of communication as early as possible.[4] Regardless of the communicator's expertise or intentions, waiting for an emergency to occur puts the communicator at a tremendous disadvantage. Knowing the community and establishing relations with various segments of it ***before*** an accident occurs builds a base of trust that can assist one in becoming a more effective risk communicator. It may also secure public input to the planning process, which may provide good ideas on how to improve the response plan.

Communicate With and Through Existing Organizations

A recurring theme during our discussions in the case study communities was the importance of meeting with a variety of organizations in the community in order to build trust, and to utilize those organizations as a conduit for information to their members. This approach may be more cumbersome and time consuming than announcements in the newspaper or direct mail, but it was generally regarded as more effective.

Build Awareness by Starting Small

Organizations that have tried to communicate risk information to the public, or to involve citizens in the discussion of hazardous materials issues, have often been disappointed with the level of public response. This has happened even in communities where the level of awareness regarding environmental issues is high. Some of the persons we spoke with suggested that the reason for this difficulty might be that many citizens are intimidated by the complexity of hazardous materials issues, and that a way to involve more citizens is to start small. One group suggested that getting citizens involved with household hazardous waste issues may create a situation in which it is then possible to discuss other hazardous

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[4] A similar point is made in manuals prepared by the New Jersey Department of Environmental Protection (undated) and by the University of Texas (1989).

materials issues. This approach starts with something citizens are directly involved with, and builds on that. Another approach is to use a recycling and source reduction program as a way to raise environmental awareness and to build a base for further education regarding risks associated with hazardous materials. Similarly, by contacting small businesses regarding hazardous materials issues, risk communicators may be creating a conduit for the dissemination of risk information to the general public, since many small businesses are family owned.

Another way to involve the public, suggested during our case studies, is to conduct a hazardous materials emergency response drill. Such a drill attracts media attention, educates citizens as to what to do in an emergency, and focuses participants' attention on hazardous materials issues in a personal and direct way. A drill can also help citizens and emergency planners to evaluate the response plan. For example, during an evacuation drill in Palo Alto, California, officials discovered that citizens had no intention of leaving domestic animals behind. Whether there are enough vehicles and time to evacuate large dogs and ponies is a good example of an issue that should be debated and resolved before, rather than during, a hazardous materials emergency.

Case Study Questionnaire Results

We received responses from 104 of the individuals to whom questionnaires were mailed in the Louisiana, Colorado, and California case study communities for an overall response rate of 47 percent. While this number of respondents does not permit us to make definitive generalizations, there are several reasons to think the results are of some value. In response to most of the questions there are very strong patterns, which are consistent with the

information we obtained while in the communities. Moreover, with the exception of questions 1 and 2,[5] the responses in all three communities clearly follow the same pattern.

Most of the information provided by the responses falls into two categories: (1) the level of respondents' familiarity with hazardous materials issues, and (2) the sources of hazardous materials information upon which they rely. Because of the similarity in the responses from the three communities, we have elected to analyze the respondents from all three communities as a single group that may be regarded as typical of opinion mediators in communities like those we studied.

Familiarity with Hazardous Materials Issues

One-third of the respondents reported that they are members of an organization that has done something in the past two years to learn about hazardous materials risks in their community; these organizations include environmental groups, neighborhood groups, and service clubs (Question # 6). Approximately the same number (28 percent) feel that they are personally well-informed about what types of hazardous materials emergencies are most likely to occur in their community (# 3); yet ***only 11 percent feel that they now know what to***

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[5] Responses to questions 1 and 2 (which inquired about the level of concern regarding hazardous materials issues) varied notably among the three communities. In St. James Parish, respondents indicated they felt there was a very serious potential in their community for a variety of environmental problems related to hazardous materials. In Colorado Springs/El Paso County, respondents differed widely in their opinions, with a slight majority of the view that there was a "somewhat serious" potential for problems. In Contra Costa County, respondents considered the potential for environmental problems relating to hazardous materials to be somewhat to very serious. The only consistency among the three communities is that in each case the respondents thought other residents of their community were concerned about these issues to roughly the same degree as the respondents themselves.

do to protect themselves and their families if a major hazardous materials emergency occurred in their community (# 8).

A clear majority (64 percent) said that citizens have a legally established right to information about hazardous materials in their community (# 4); but only 30 percent are aware that an organization in their community has conducted a hazards analysis and developed an emergency response plan (# 10). When asked to identify the organization that developed the plan, most of the respondents mentioned an organization such as the fire department, the local emergency preparedness department, or, in the Contra Costa case study, the county's Hazardous Waste Commission (# 10). The LEPC was mentioned by name only twice in all the responses.[6]

Given the makeup of the group to which the questionnaire was sent, it would be reasonable to expect that the general population is even **less** familiar with these issues.[7] That is consistent with the respondents' perception of the level of awareness, on the part of the other residents, regarding the emergency response plan: one-third of respondents think that other residents are "not aware" of the plan's existence (i.e., score of 1 on a scale of 1-5, with 5 representing "highly aware") (# 10).

Not surprisingly, given their own level of awareness, nearly one-third of the respondents said they can't judge how confident they are that the emergency response plan is adequate

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[6] Both references to the LEPC were in the Colorado case. The absence of reference to the LEPC is particularly understandable in the case of California, where the LEPCs serve large regions, and local agencies serve as "administering agencies."

[7] It may also be reasonable to expect, since these case studies were conducted in communities where special risk communication efforts have been made, that the overall level of awareness is lower in many other communities.

to protect the community in most hazardous materials emergencies. Of those who did express an opinion about the plan, 24 percent said they were ***not*** confident it was adequate; only 7 percent of those expressing an opinion felt highly confident (# 10).

There is no indication that the respondents now know how to learn more about hazardous materials issues in their community through any mechanism associated with Title III; only 16 percent have seen an explanation of the process by which citizens can learn about hazardous materials risks in their area under Title III's community right-to-know provisions (# 12). Two factors suggest, however, that there may be some chance that this level of awareness can increase. First, 72 percent of the respondents who have seen an explanation of the process for obtaining hazardous materials information under Title III have made some effort to share that information with others (# 12). Second, 76 percent of the respondents said they would spend two hours studying the hazards analysis and emergency response plan for their community; 71 percent said they would attend a two-hour public meeting to address these issues; and 81 percent said they would spend 30 minutes a week reading news articles or other materials to keep up-to-date on these issues. While these responses may be overly optimistic, they suggest that there may indeed be an audience willing to invest time in increasing their understanding of hazardous materials risks in their community.

Sources of Hazardous Materials Information

In all three case study communities respondents said they rely primarily on public agencies for information about hazardous materials. In the Louisiana and Colorado communities, respondents ranked public agencies first, and personal contact with public officials second, when asked where they would most likely turn for hazardous materials information; LEPCs, the media, environmental groups, and community organizations were popular third choices (#7). In California, environmental groups were the first choice, but the relative position of the other sources of information was the same as in Louisiana and Colorado. When asked an open-ended question about where they would turn for information about hazardous materials

handled by a given firm in their community, respondents most frequently mentioned a local public agency such as the health, fire, or police department (#5). Only four responses mentioned the LEPC by name. Even in a hazardous materials emergency, nearly 50 percent of the respondents indicated they would contact or await instructions from local agencies, such as fire, police, or health departments, while one-third indicated they would rely on the electronic media (#9).

These results also indicate that respondents are ***in fact*** receiving hazardous materials information from local government agencies. These agencies were identified as the source of information more often than any other source by those respondents who (a) feel well-informed regarding the types of hazardous materials emergencies most likely to occur in their communities, (b) know what to do in a hazardous materials emergency, (c) have seen an explanation of how to get information under Title III, (d) are aware that an emergency response plan has been developed (# 3, 8, 10, 12).

SUMMARY OF FINDINGS

LEPC SURVEY

This section summarizes our findings from the survey of LEPCs and their members. The caveats discussed earlier in the text should be borne in mind.

- Most LEPCs have made some provision for communicating risk information to the public (e.g., designating an office to disseminate information and a person to take responsibility for this office), but they have not aggressively tried to inform citizens of the availability of this information.

- Very few requests for Title III information have been received, with most coming from individual citizens and from community groups.

- LEPCs typically have not been very aggressive in encouraging public participation in the planning process, with less than a majority undertaking on a frequent basis ***any*** of the procedures about which we asked.

- LEPCs generally show no sign of shifting to a stance of greater public participation and more risk communication after the acceptance of their initial plans; to the contrary, most seem to be cutting back on the frequency of their meetings.

- Most LEPC members (about two-thirds) view the maintenance of the plan as the primary purpose of their committee, once their initial plan has been approved; only a minority view risk communication to the public as the main purpose.

- Most commonly cited as a major problem is the lack of funding or staff support, although a majority of members do not agree on any single barrier to success.

- In general, the LEPC members have a very positive view of the capacity of their organization to achieve planning goals; however, they are significantly less confident of their organization's capacity to communicate with the public, to secure public input, and to win public confidence.

- Most members feel that their organization has a good chance of responding effectively to requests for information and of improving community understanding of risk information; however, they are less confident that their organization will adequately inform the public of the plan's provisions, secure adequate citizen input for updating the plan, or stimulate public discussion of environmental issues.

- Most members feel that their organization fails to attract adequate coverage from the local media, and a significant number are dissatisfied with the quality of that coverage.

- LEPC members are not demographically representative of their communities: in general, they are more likely to be male, well-educated, and professional than the "average citizen." They are also more likely to work in the public sector.

- The membership is roughly evenly divided among the categories of emergency responders, government officials, and business/industry representatives, with "watchdog groups" (e.g., the media, citizens' organizations, etc.) significantly less well represented.

- LEPC chairs are more likely to be government officials than to be members of other groups.

- While the vast majority (nine out of ten) of the members said that they feel citizen involvement in the planning process is important to the development of a good plan, LEPC chairs are somewhat less convinced of the importance of citizen input.

- LEPC members are more likely to spend time on the technical aspects of planning than on informing the public or seeking public input to the planning process; the average member reports spending less than an hour per month on each of the latter activities.

- Most members say that newspapers are likely to provide the most effective means of communicating non-emergency hazardous materials risk information.

- Most members feel that, in a non-emergency situation, it is most important to communicate information on health hazards and the provisions of the emergency response plan; few feel that it is important to communicate the statements of businesses and en-

vironmental groups, or information regarding the political controversy associated with a hazardous situation.

- Few members view environmental issues as being of major concern in their communities, and even fewer see environmental groups as especially active.

- Members are evenly divided in their assessment of the degree to which local environmental activists are representative of the general public.

- A comparison of the responses of LEPC members who perceive themselves to represent different groups (i.e., emergency responders, business, government, watchdog, and independents) shows essentially no statistically significant differences between them.

- Watchdog group members are generally ***at least*** as positive about the LEPC as are members of other groups.

CASE STUDIES

This section summarizes our findings from the case studies.

The risk communication efforts in the case study communities were carried out by a variety of organizations, including LEPCs, local public agencies, citizen groups, environmental groups and industry. It appeared to us that these activities could be carried out by any LEPC or other community-based organization with the inclination and resources to do so. In these communities, however, the LEPCs did not have an operating budget or staff specifically for that organization, so collaboration with other local agencies or organizations was essential.

Very little of what we saw in the case studies qualifies as risk communication in a strict sense; communications tended to focus on matters such as the existence of the emergency

response plan, the procedures for obtaining information, and what to do in an emergency. Communication efforts in the case study communities involved the following mechanisms:

- **Publications, Press Releases, and Videotapes:** In some instances, communicators presented general information regarding hazardous materials, using materials prepared at the national level by the EPA and FEMA. Community-specific information was also circulated via press releases, brochures, and videotapes with a local focus. While these materials sometimes provided important factual information relevant to the communities, they rarely touched upon *risk* issues, such as the nature and extent of the hazardous materials risk to which residents in the communities are exposed.

- **Public Presentations and Forums:** Presentations to other organizations, such as local service clubs and neighborhood groups, were seen as a good way to get information to involved citizens, who may in turn pass that information to their contacts in the community. Public forums were also held, with widely varying levels of attendance. Some organizers emphasized the importance of building a base of trust before the forum is held, and to have the forum sponsored by a number of different organizations in the community.

- **Schools and Libraries:** Presentations have been made in school assemblies (although these tended to focus more on evacuation plans than on the nature of hazardous materials risk) and some classes, particularly science classes. The threefold challenge of making information available in libraries appears to be: (1) keeping the information current, (2) making it easy to find, and (3) making the materials easy to understand.

- **Public Access to Hazardous Materials Information:** Information about hazardous materials in the case study communities is sometimes on hardcopy and sometimes computerized, and is most commonly stored in the fire department or the emergency

preparedness office. Its availability has not been widely advertised, and, consistent with the results of our larger survey, there have been few requests for access to it.

Risk communicators in the case study communities offered a number of recommendations, which we think make sense:

- **Communicate Risk Information:** Several of the persons we spoke with felt strongly that anxieties are not calmed by covering up hazardous materials risk, and that it is important to overcome the attitude that the community should be manipulated by withholding risk information.

- **Communicate Risk Information Early:** The importance of establishing credibility and trust in the community as early as possible was stressed.

- **Communicate With and Through Existing Organizations:** Direct contact with a variety of organizations in the community was suggested as a way to build trust and to establish lines of communications with the members of those organizations.

- **Build Awareness by Starting Small:** To overcome citizens' intimidation by the complexity of hazardous materials issues, it was suggested that it may be helpful to encourage citizen involvement in issues such as household hazardous waste and recycling; that involvement may build a base for further education regarding risks associated with hazardous materials. Similarly, a hazardous materials emergency response drill may be a good way to involve and educate citizens regarding hazardous materials risks.

The responses to the case study questionnaire may be summarized as follows:

- **Respondents' Familiarity with Hazardous Materials Issues**

  - One-third of the respondents are members of an organization that has made some effort in the past two years to learn about hazardous materials risks in their community.

  - Nearly one-third feel that they are personally well-informed about what types of hazardous materials emergencies are most likely to occur in their community, but only 11 percent feel that they know what to do to protect themselves if an emergency occurs.

  - 64 percent are aware they have a legal right to hazardous materials information, but only 30 percent are aware that an organization in their community has conducted a hazards analysis and developed an emergency response plan.

  - Nearly one-third said they can't judge how confident they are that the emergency response plan in their community is adequate. Of those who did express an opinion, 24 percent said they were not confident it was adequate, and only 7 percent felt highly confident it was adequate.

  - Although the level of awareness regarding hazardous materials issues was not generally high, most respondents indicated they would be willing to invest their time in learning more.

- **Sources of Hazardous Materials Information**

  - Local government agencies were most frequently selected as a potential *and* actual source of information about hazardous materials. Environmental groups, particularly

in California, were also frequently chosen. LEPCs, the media, and community organizations were popular third choices. Overall, however, these respondents appear to rely largely on local government agencies for hazardous materials information.

CONCLUDING DISCUSSION AND RECOMMENDATIONS

The data we gathered and the analyses we conducted during the first and second phases of this project have, in addition to providing important facts about actual practice, provided information relevant to a number of important questions, including:

- Why should a community have a hazardous materials risk communication program?
- What should be the role of the LEPC with regard to a hazardous materials risk communication program?
- What approach should be taken to develop a hazardous materials risk communication program and what elements should it contain?
- Who should carry out a hazardous materials risk communication program?
- What should be the relationship between a hazardous materials risk communication program and other risk communication programs already in existence in a community (such as those concerned with communicating risk information about nuclear power plants or natural disasters)?

Decisions with regard to any of these questions need to be made largely on a community-by-community basis. While our comments below are intended to be of some use in those discussions, we recognize that final decisions in any given community will depend on many

factors unique to that community. The recommendations that follow are based only in part on the results of our research in this study. They go beyond the specific research findings to draw on more general observations conducted during the research process, and to reflect our larger understanding of the dynamics surrounding hazardous material issues and risk communication. As such, these recommendations have not been validated by practice and can not be defended by specific data in all cases. Even so, we feel that they will stand up to test by implementation and hope that they will be taken seriously. While readers should recognize these limitations on our recommendations, it is also important to keep in mind that they address issues that are relevant to many communities; that these issues are not now being widely addressed (or, where they are being addressed, that there is no clear consensus on how they should be resolved); and, finally, that it is important for communities to address these issues, if they are to design an effective response to chemical hazards.

Why Should a Community Have a Hazardous Materials Risk Communication Program?

It is tempting in answering this question to point out that Title III is called The Emergency Planning and ***Community Right to Know*** Act, and to couch discussion of hazardous materials risk communication programs in terms of the requirements and spirit of Title III. But the requirements of Title III regarding the provision of hazardous materials information to the public can be fulfilled in a largely passive fashion. As for the spirit of the law, we have found that local policymakers responsible for managing limited resources typically look for more reason to create and fund a program than simply to fulfill legislative spirit or to show respect for abstract rights. These policymakers want to know specifically what benefits and risks are associated with a hazardous materials risk communication program, and they are most likely to be impressed by benefits that can be stated in practical terms. We suggest that the following are among the benefits that could flow from a hazardous materials risk communication program.

- **Improve the technical content of the emergency response plan.**

  By communicating with the public and involving citizens in the emergency planning process (in a manner more direct than having a "representative" committee undertake planning ***in private***), the technical content of the plan may be strengthened. Citizens other than those on the LEPC may identify problems, as well as providing information and ideas, which the committee might otherwise fail to take into account.

- **Heighten citizen awareness and understanding of the plan.**

  By communicating with the public about the nature and extent of the hazardous materials risks in their community (including the existence and provisions of the emergency response plan) ***before*** an emergency, there is a greater chance that citizens will be able to respond appropriately in the event of an emergency. For example, citizens will have been told where to turn for reliable emergency information, what to do if they hear warning sirens, where to go and what routes to use if they are told to evacuate, how to respond to exposures that do occur, and how to conduct themselves if they are told to shelter in place. Even more fundamentally, perhaps, citizens will have been told that there are circumstances under which sheltering in place is the best thing to do. Without pre-emergency education on this point, it may be difficult for citizens to accept that leaving an area is more dangerous than staying. The effectiveness of the emergency response plan depends in part on resolving beforehand matters that cannot be debated at the time of an emergency.

- **Increase the credibility and legitimacy of the plan.**

  The idea behind the present structure of the LEPCs is, in part, that a diverse, locally-based committee should be in a strong position to create a plan that will be responsive to local needs and well-received by the community. By communicating information about

the planning process to a broader group of citizens, it might be expected that the plan would gain even greater legitimacy in their eyes. Furthermore, the plan's credibility is likely to depend heavily on the degree to which it addresses the concerns of the wider public, which may not be identical to those of LEPC members.

Risk communication may also increase the public's sense of the legitimacy and importance of the services provided by hazardous materials emergency planners and emergency responders. In that sense it could be helpful to build the political support necessary to obtain adequate financial support for these activities and to fully implement the response plan.

- **Stimulate discussion leading to risk reduction.**

If a risk communication program informs a substantial portion of the citizens in a community regarding the nature and extent of hazardous materials risks, this heightened awareness may lead to greater efforts to ***reduce*** risks.

- **Reduce the level of citizen "outrage" following an emergency.**

Although this is a defensive point, it may be important nonetheless. Providing citizens ***before an emergency*** with information regarding the likelihood and nature of an accident may reduce the level of "outrage" (i.e., the dismay and anger that often follows an accident), should it occur.[8]

Any discussion of the advantages of having an aggressive risk communication program should recognize the likely arguments against such an effort, since most public officials and

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[8] Note that Peter Sandman uses the term "outrage" in attempting to explain the difference between *perceived* and *measured* risk.

industry representatives are acutely aware of what we might call the "risks of risk communication." Any organization advocating active risk communication may encounter one or more of the following counter-arguments.

- **It could cause panic.** Some public and private officials fear that citizens will overreact to information about the actual health risks they face from hazardous materials.

- **It could cause a political backlash.** Public officials sometimes fear that learning of a hazardous situation will lead citizens to demand action that could cost a community a business or to blame political figures for letting the situation develop.

- **It could bring pressure on local businesses.** Some people fear that, once citizens know about a hazard, they will ask businesses to take steps to eliminate it or they will lose their trust in the firms involved; the result may be competitive disadvantages for local businesses and possibly even plant closings.

While we cannot argue that there are no risks involved in communicating risk information, we can make two observations that are relevant to these concerns. First, those people to whom we spoke in the course of our research who have had experience communicating risks to the public indicated that the public is generally able to understand the complexities of hazardous materials situations and to make intelligent choices. Second, it is important to distinguish between the interests of a community and the interests of individuals within that community. The benefit to the community of being better able to reduce risks or more adequately to react to emergencies as a result of the distribution of risk information will generally outweigh any disadvantage that may come to individual officials or firms. Even in very extreme cases, where large numbers of persons may be adversely affected by business cutbacks that result from efforts to reduce chemical risks, it is the ***citizenry*** who must have the right to choose between health risks and economic costs.

What Should Be the Role of the LEPC With Regard to a Hazardous Materials Risk Communication Program?

In discussing this question, we think it is worthwhile to emphasize a very important basic point: LEPC is an abbreviation for local emergency ***planning*** committee. Consistent with their name and the duties imposed upon them by Title III, LEPCs are expected to plan for emergency response, but not actually to serve as emergency responders. (Although many LEPC members are also emergency responders, when they serve in that capacity, they are not acting as LEPC members *per se*.) The LEPC, ***as an organization***, has no response capability or authority. We suggest that it makes sense for LEPCs to play a similar role with regard to hazardous materials risk communication: to plan for - but not necessarily to implement - a program of risk communication in their communities.[9] Such a risk communication program might be a component of the emergency response plan and -- as suggested above -- a vehicle for improving the technical content, credibility, legitimacy, and effectiveness of the plan. In this sense, the involvement of LEPCs in planning a risk communication program is compatible with their explicit duties as set forth in Title III.

In the role of risk communication program planners, LEPCs can capitalize on their access to hazardous materials information and their familiarity with their communities, without committing themselves to carry out an ongoing program that they do not have the resources to support.[10] Of course, if a given LEPC chooses to become actively involved in the risk com-

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[9] However, as mentioned in the 1988 publication *It's Not Over in October! A Guide for Local Emergency Planning Committees*, the LEPCs may be used as a focal point for public discussion to help reach a common understanding of the risks in a community and to help communicate this information to the general public.

[10] It seems clear that an effective risk communication program requires an ongoing effort, as discussed below.

munication process, we s ›o disadvantage to it doing so; but we think a more realistic role in many communities is f ..EPCs to serve as risk communication program planners, and as advocates for the proposition that risk communication is sufficiently important to warrant a commitment of resources.[11] Indeed, in those communities that have engaged in risk communication efforts associated with the LEPCs, the actual work on and financial support for the program has been provided by a local government agency, or by an industry or citizen group, working in collaboration with the LEPC.

Whether the LEPCs' role is limited to planning risk communication programs or includes actual implementation, their membership should be broadened to include more representatives of the media and more members with skills in community participation. These might include members of community and environmental groups as well as public officials with the requisite skills.

How Should a Hazardous Materials Risk Communication Program Be Developed and What Elements Should It Contain?

Given the complexity of this issue and the wealth of literature that addresses how risk communication should be carried out, we will not attempt even to outline a complete hazardous materials risk communication program. We will, however, examine a variety of issues that were raised during the course of our case studies and appear to be relevant to ***most*** risk communication situations.

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[11] The *source* of these resources is an important issue. One possibility currently being explored by a number of localities and states is to levy filing fees on facilities that report under Title III. This raises many important questions, including whether these filing fee programs should be created at all and, if so, whether they should be created and administered on the local, state, or federal level.

In designing a risk communication plan, it is important to recognize the distinction between actual ***risk*** communication and more general emergency response communication. Much of the information exchanged under the heading of "risk communication" is actually not about risk ***per se***, but about emergency response. Information about which agencies will respond to events in given geographic areas, where citizens should go for emergency instructions, or what evacuation routes to use are examples of emergency response communications. Actual risk communication involves informing citizens of the nature and source of risks to their welfare, the likelihood and possible causes of exposure, and/or the probable health effects of exposure.

While emergency response information is a vital part of any risk communication plan, it is also highly important that communication about actual risks not be overlooked. This is true because it is only when citizens understand the risks they face that they can make intelligent choices about how much to invest in preparing for emergencies or undertaking efforts to reduce risks. It is important to make a special effort to include genuine risk information in the risk communication plan since such information may otherwise be avoided for three main reasons: (1) it is often more likely to spark controversy, (2) necessary information is often difficult even for officials to obtain, and (3) responders are generally better prepared to provide response information than actual risk information. The suggestions that follow relate to effective strategies for both risk communication and emergency response communication.

- **A risk communication program should be ongoing.**

  It seems clear that a single flurry of brochures or public meetings will not have a significant impact on the level of public understanding of hazardous materials risks. Even if the initial effort were able to reach a substantial portion of the population (which seems unlikely), population turnover, changes in the nature of the hazardous materials risks present, and fading memories would all conspire to dilute the relevance and impact of

this information. If a risk communication program is to be effective, it will almost certainly have to be an ongoing, long-term program.[12]

- **The organization that develops a risk communication program should solicit assistance in preparing risk communication materials**

In developing and distributing risk communication materials, an effort should be made to get assistance from persons who have experience with conducting truly interactive discussions. For example, in preparing a flyer or brochure announcing a public meeting, or determining how the meeting should be organized, it is important to draw on the expertise of persons who know how to involve the general public in discussions. For communities that do not have this kind of expertise readily available, and that cannot afford to hire outside assistance, help might be available from local universities or local industries with expertise in this area.

One form of outside assistance is simply to learn about innovative risk communication activities in other communities. In the Title III context, SERCs can be particularly helpful in this regard, by acting as a clearinghouse for information exchange between LEPCs. One particularly important service the SERC can perform to assist with risk communication is to identify good examples of risk communication within its jurisdiction, and let their LEPCs know the details of those activities.

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[12] Long-term strategies to increase public understanding of risk issues are also recommended by McCallum *et al*, 1990.

- **Communication efforts must be tailored to the unique characteristics of the communities they serve.**

In developing a community's risk communication program, it is important to ask what is unique about the community. Some of the risk communication activities that are unsuccessful in certain areas because of a tradition of lack of concern for environmental issues, could very well be successful in communities that have high levels of concern for these issues and a tradition of environmental activism. By the same token, risk communication activities proven to be successful in one community might prove to be less than successful in another.

One of the factors that should be considered is the nature of community organizations. It is important to know not only what organizations are there and how extensive their membership is, but also what their traditions are in terms of becoming involved with controversial matters in the community, and especially matters of environmental concern. Other factors to consider are the customary level of citizen participation in the community and the level of trust citizens generally feel toward local government and industry.

In considering the characteristics that make the community unique, it may be determined that there are particular avenues of communication that must be used in order to reach the community. For example, it may be important to use local doctors in order to communicate certain types of health effects information (as compared to using public officials or doctors from outside the community), or to avoid spokespersons from local industry in favor of experts who might be regarded as more objective.[13]

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[13] McCallum *et al* (1990) recommend that health professionals be encouraged and supported "to become

Risk communication program planners should identify the patterns of activity and communication in the community. For example, if many of the people in the community tend to frequent a certain commercial area on Saturdays, it will be important to focus some of that community's risk communication efforts at that location. If churches are an important part of the community's life, risk communicators should be careful to work with churches and church groups. Similarly, understanding which newspapers, radio stations, or TV stations are most commonly read or viewed by the general public is important in determining where to place effective advertisements or announcements. If, for example, there is a community-service cable TV station, that may be a good way to communicate announcements of meetings and other hazardous materials risk information to the general public.

- **The risk communication plan should be developed in consultation with community organizations that might have a role in its implementation.**

The developers of a community's risk communication program should confer with leaders of civic and community organizations about the practicality of the plan for their community ***before*** the plan is adopted.

- **Information on *what to do* in a hazardous materials emergency should be included in a risk communication program.**

A brief and informative brochure to let the public know where to go and what to do in a hazardous materials emergency could be a valuable component of a risk communication

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involved in disseminating environmental information so that personal health factors can be addressed." (p. ii)

program.[14] This could be circulated to the community through direct mail, by being posted on community bulletin boards, and distributed in public meeting places, churches, shopping centers and the like. This material should be designed in a way that will attract attention and inspire interest on the part of the recipient. It should be appropriate to the most likely types of emergencies in the individual community. Police and fire agencies have an interest in helping to develop and distribute such materials and their aid should be sought.

The problems of communicating this kind of information in a pre-emergency situation should not be underestimated, however. Research suggests that efforts by utilities to inform people who live close to nuclear power plants about the actions to be taken in the event of a nuclear emergency have been largely unsuccessful, despite (or maybe because of) their use of materials such as calendars with eye-catching art-work.[15] It is not certain whether this lack of success has been due largely to certain peculiar characteristics of the nuclear power industry, or whether it would be likely to apply equally in the field of non-nuclear hazardous materials.

- **The emergency response plan, chemical lists, MSDSs, and other hazardous materials information should be made readily available to the public, and this availability should be advertised.**

The availability of hazardous materials information should be advertised to the general public. This should be done through ongoing efforts, and should not be limited to small

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[14] A recent *Report to Congress* by EPA (1988) pointed out that "Public education is a key part of the public alert and notification process because it prepares people to understand what to do when a warning occurs." (p. 38)

[15] Gwin, 1989

announcements in the public notice section of the paper. Other good possibilities include notices on community bulletin boards and other sources of public information (such as a public cable TV station).

At least the emergency response plan and the lists of chemicals should be available at multiple locations within the community, together with simple explanatory materials. In this way access will be kept as convenient as possible for citizens, and they will be permitted to choose the location with which they are most comfortable. School and public libraries can successfully be used as places to make this information available. Organizers of this component of the risk communication efforts should work closely with a skilled librarian in order to assure that the information can be located easily.

- **Public forums are an important part of a risk communication program.**

Advertisements for these types of meetings should make it clear to members of the community that they will obtain information at the meeting which: (a) is directly relevant to them, (b) will assist them in understanding the nature of the hazardous materials risks to which they are exposed, and (c) will assist them in understanding exactly what they should do in the event of an emergency. Direct mail may well be an effective strategy for this, but it can be very expensive and time consuming. Other possibilities include working through community organizations such as the Parent Teachers Association, civic organizations, the Chamber of Commerce, and the League of Women Voters.

There are a number of important points regarding the way these meetings should be organized and conducted. It may be necessary to set up a ***series*** of meetings since a fairly large volume of sometimes complicated information may have to be covered. Any given meeting should present only that amount of information which a citizen can absorb well in a reasonable amount of time, and still allow enough time for discussion. In practice this may mean holding one meeting that includes the details of the Emergency

Response Plan while addressing in other meetings topics such as the likelihood and nature of accidents and the nature of the health effects that they could cause. Other meetings could address long term concerns and strategies for addressing those concerns.

In designing these meetings it is important to take into consideration well established practices for making this type of meeting as effective as possible. The meetings normally should be scheduled for early evening during the week, or a Saturday morning, and should not take longer than two hours (at the very most). They should be held in convenient locations, and should be physically organized to make attendees as comfortable as possible so that they will be confident that the meeting organizers are interested in hearing their questions and comments as well as providing information. It is essential that these meetings be organized in a way that permits two-way communication. That is, there should be provisions for meaningful question and answer sessions.

Information about the presence of environmental risks often evokes significant emotional reactions (Wandersman *et al.*, 1989). People may feel fear, frustration, concern about what to do, and even anger that they and their families have been exposed to some danger. For this reason information about actual risks is usually best delivered in a forum format rather than through the media, in flyers, in speeches or in any other format that involves only one-way communication.[16] In a forum, there are opportunities (1) to quiet fears based on misunderstandings, by answering questions, (2) to put a human face on the problem by giving the messenger a chance to express empathy and to show understanding, (3) for members of the community to offer each other social support as

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[16] The advantages of conducting forums are addressed also in a manual prepared for the New Jersey Department of Environmental Protection (undated), especially pp. 37-40.

they face difficult choices, and (4) for the community to begin the process of problem-solving as participants think collectively of ways to respond to the dangers rather than facing these risks in isolation.

Those who present the information should be persons skilled in ***communication*** and ***not*** merely technical experts. It is important to reduce information to terms that lay persons will understand, and to present it in a manner that stresses its relevance to citizens. Highly technical discussions will transmit little useful information and will not hold citizens' interest.

- **A contact list should be developed as part of a risk communication program.**

A contact list can be an important tool for risk communicators. This list should include the names and addresses of individuals who are interested in hazardous materials issues, as well as organizations in the community that can provide assistance in sharing information with their members. Likely organizations on the list include those such as the Chamber of Commerce, the Kiwanis or Lions Club, and the League of Women Voters. This list should be updated on a regular basis; it can provide a standard mailing list for any flyers or announcements. If appropriate arrangements are made, the risk communicators may be able in some cases to send packages of flyers or brochures or other announcements to some organizations and have the organizations then distribute these announcements to their members. In this way risk communicators get the benefit of the other organizations' logistical assistance as well as the benefit of those organizations' relationship of trust with their members.

Developing and maintaining this list will be a considerable task. To make that task go more smoothly, risk communicators should learn what lists already exist. It may be that the city planning office, Chamber of Commerce, or some other organization in the community already has a standard contact list for disseminating information. Such a list

could provide a good starting point for a hazardous materials risk communication contact list.

Volunteer assistance might be available from community service organizations to help develop and revise such a list. The League of Women Voters, for example, might be willing to provide that kind of assistance. Risk communicators could also turn to a local university for assistance in this regard - in particular from students who might be interested in an internship program for which they receive academic credit while the community receives the benefit of their assistance. Students interested in such a project could come from departments in, for example, communications studies, sociology, psychology, political science, urban affairs and planning, or social work.

- **A "press kit" should be developed as part of a risk communication program.**

A "press kit" would provide pre-emergency information to the local media to let them know about the nature of hazardous materials risks in the area, the existence and responsibilities of the LEPC, the nature of the work the LEPC has undertaken so far, and the major provisions of the Emergency Response Plan. This kit would also include general information on Title III, with a particular emphasis on the Community Right To Know aspect, and appropriate offices to contact for more detailed information.

A specific explanation of the manner in which risk information will be communicated ***to the media*** during an emergency should be included in the kit. The press should know before an emergency, not only the technical details of the emergency plan, but exactly who should be contacted (including addresses and phone numbers) for risk information during an emergency.

Local public relations departments or university programs might provide professional assistance in developing an effective press kit.[17]

- **The community-wide risk communication plan should be updated regularly and coordinated with plans developed by other agencies.**

Coordination with other agencies' plans is discussed in greater detail below.

Who Should Carry Out a Hazardous Materials Risk Communication Program?

As indicated earlier, an LEPC may be willing and able to play an active role as a communicator of risk information to the public, but a more realistic role for many LEPCs may be that of risk communication planner and advocate. The actual risk communication activity -- as is the case with emergency response -- will require an ongoing effort involving many logistical details. Whether it is a matter of developing and maintaining contact lists or press kits, developing and distributing brochures, or organizing and conducting public meetings, some reasonable level of staff support will be necessary; and that staff will need the financial resources to meet the expenses associated with these activities.

Who, then, should carry out this program? One point that seems clear to us is that, like most LEPCs, an organization communicating hazardous materials risk information should be ***local***. (Indeed, in our case study communities this was the case, although the particular organization varied from one community to the next.) Secondly, since the information is of concern to the entire community, a public agency or quasi-public organization should be involved. Possible public agencies include the community's emergency planning office, health

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[17] At least part of the function of a press kit may be provided by a guidebook for journalists, recently issued by the Environmental Health Center (1989). This guidebook, however, should be supplemented by community-specific information.

department, fire department, or public information office. It may also be possible to support with public funds the risk communication efforts of quasi-public not-for-profit organizations. In any event, the entity responsible for this day-to-day work of hazardous materials risk communication should be provided with resources adequate to support an ongoing effort and will need close cooperation from emergency response organizations and local industry.

What Should be the Relationship Between a Hazardous Materials Risk Communication Program and Other Risk Communication Programs in a Community?

Developers of a hazardous materials risk communication program in a given community may benefit from examining -- and perhaps collaborating with -- other programs concerned with communicating risk and emergency response information. In an area, for example, with a nuclear power plant, significant efforts may already have been made to engage in some form of risk communication. Organizers of a program concerned with non-nuclear risk issues may be able to learn from those efforts. It may also be possible to use some of the same resources, or combine efforts for public forums. Similarly, areas accustomed to natural disasters such as hurricanes, flash floods, or earthquakes, may already have in place significant programs designed to inform the public about the nature and scope of these risks, and the proper course of action in an emergency. Here, too, it may be possible to collaborate. Similarly, a community with a Superfund site may have a different group communicating about Superfund risks than those communicating about Title III risks or RCRA risks.

In short, a community needs to ask itself whether it makes sense to have one group communicating risk information relating to hazardous materials as defined in Title III, while another group is concerned with nuclear risks, and another with natural disasters. The question needs to be explored whether the best approach from the standpoint of public

understanding is to develop a comprehensive program to provide the risk and emergency response information that the community needs.

What Materials and Services Might Assist Local Organizations in Planning an Effective Risk Communication Program?

Our survey of LEPCs found that most members were quite confident of their ability to manage the technical aspects of response planning, but that few felt well prepared to communicate risks to the public or to secure public input for the planning process.

For this reason, as well as others discussed elsewhere in this report, we recommend that the EPA continue to produce and distribute materials that will assist communities with their risk communication efforts,[18] including a guidebook to assist LEPC members and others in planning a risk communication program appropriate for their own community.

Our case studies and general inquiries also revealed that few LEPCs are aware of what other organizations are doing in the risk communication area. SERCs can play an important role in solving this problem because they are well situated to actively gather information on the risk communication efforts of organizations in their states and in other states, and to systematically share this information with the LEPCs so that they may learn from each others' experience. We therefore recommend that, where possible, SERCs make concerted efforts to bring LEPC members together periodically to discuss the risk communication aspects of their charge and to participate in workshops on involving and informing the public.

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[18] Existing publications include: Sandman, 1986; McNeil *et al*, 1989; Hadden and Bales, 1989.

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APPENDIX A

Data Collection Instruments --

LEPC Survey

VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY

a land-grant university

University Center for Environmental & Hazardous Materials Studies
Blacksburg Virginia 24061-0113 USA
Tel: (703) 231-7508 *Fax:* (703) 231-7826
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January 24, 1989

Dear Local Emergency Planning Committee Chair,

The enclosed materials are being sent to you as part of research being conducted at Virginia Polytechnic Institute and State University. We are sending questionnaires to all of the LEPCs in ten carefully selected states. We have discussed the selection of your state with your state's Emergency Response Commission, as well as with the EPA regional office in your area.

A primary objective of this research is to obtain information which will help us to determine what materials and programs should be developed to assist LEPC members. We need your assistance to conduct this study. Accordingly, we would be very grateful if you would do the following:

1. Review the questionnaire so that you are generally familiar with it.

2. Distribute one questionnaire to each of your members, including yourself. Each of the enclosed envelopes contains one questionnaire.

   Our preference is that you distribute the questionnaire at a meeting of your LEPC and provide approximately one half-hour at the same meeting for your members to fill it out. However you choose to handle the distribution, please emphasize the importance of completing ***and returning the questionnaire to you promptly.***

   Since we do not know exactly how many members are on each LEPC, we are enclosing 24 questionnaires. In most cases that will be enough to provide one for each member. If you need more questionnaires for your LEPC, please either make additional copies, or call us at the number above and we will send additional copies to you.

3. ***Fill out the enclosed LEPC Information Form and a questionnaire yourself.***

4. Collect the completed questionnaires in their sealed envelopes from your LEPC members as soon as possible, preferably at the same meeting as they were distributed (as suggested in step 2).

5. Return all of the completed questionnaires (still in their sealed envelopes) in the enclosed pre-stamped 10x13 envelope addressed to the University Center for Environmental and Hazardous Materials Studies. If at all possible, please mail these questionnaires back to us by the end of February, 1989.

THANK YOU FOR YOUR HELP!

Sincerely yours,

W. David Conn
William L. Owens
Richard C. Rich

LEPC INFORMATION FORM

To be completed by the LEPC Chair

1. In what month and year was your LEPC officially formed? _____

2. How many members now serve on your LEPC? _____

3. How often did your LEPC meet before submitting the emergency response plan? _____

4. How often will your LEPC meet after the emergency response plan has been approved? _____

5. Please check the statement which most nearly describes the stage your LEPC has reached in developing a comprehensive plan for responding to hazardous materials emergencies.

   _____ Plan has been completed and submitted to the state.

   _____ Currently drafting the final version of the plan.

   _____ In the process of developing the plan.

   _____ Other (please describe) _____

6. Please indicate which of the following methods your committee has used to obtain public input for the planning process.

	NEVER		OCCASIONALLY		FREQUENTLY
• Placed announcements of LEPC meetings which indicated that they were open to the public	1	2	3	4	5
• Placed announcements of LEPC meetings which specifically encouraged the public to attend	1	2	3	4	5
• Held public hearings or community meetings on the Title III planning process	1	2	3	4	5
• Sent representatives to meetings of other organizations to speak about the plan	1	2	3	4	5
• Published drafts or summaries of the emergency response plan and invited public comment	1	2	3	4	5
• Invited local media to carry stories about the LEPC or the emergency response plan	1	2	3	4	5
• Other (specify) _____	1	2	3	4	5

7. How many facilities handling hazardous materials are to report to your LEPC? _____

8. Of those facilities that have already reported, what proportion would you say submitted lists of hazardous materials rather than Materials Safety Data Sheets (eg: 33%, 75%, etc.). _____

9. Approximately how many requests for information on hazardous materials has your LEPC received from citizens or organized groups? _____

10. Which of the following made the most requests?

    ___ Individual citizens

    ___ Environmentalist groups

    ___ Other community organizations

    ___ Other (please specify below)

    _____

    ___ We have no records on this

-- CONTINUED ON BACK --

11. Which of the following statements is/are true of the procedure your LEPC has developed for responding to citizen requests for information on hazardous materials in the community? *Please check all that apply.*

___ An office which is accessible to the public has been designated for receiving citizen requests.

___ The telephone number and/or address of this office has been widely advertised.

___ The person assigned to respond to citizen requests is a full-time employee of some organization which is responsible for emergency preparedness.

___ Photocopying is available to citizens at the location where information is stored.

___ Assistance in interpreting technical information is made available to citizens upon request.

___ A contact has been designated to help citizens understand toxics release emissions information required under Section 313.

___ Other (please specify) _____

12. Has your LEPC developed a "press kit" with information the media can use to report on the LEPC, the response plan and/or the most likely hazmat incidents in your area? *If "YES", please enclose a copy when returning this form.*

___ YES ___ NO, BUT A KIT IS BEING DEVELOPED ___ NO

13. How much does your LEPC rely on each of the following techniques to get nonemergency information to the public through the local media?

	MAJOR RELIANCE		SECONDARY RELIANCE		MINOR OR NO RELIANCE
• Responding to requests for information from the media	1	2	3	4	5
• Inviting media representatives to attend any LEPC function that may produce information the public should have	1	2	3	4	5
• Having any media-affiliated members of the LEPC report information to their organizations	1	2	3	4	5
• Distributing press releases to the media	1	2	3	4	5
• Other (specify) _____	1	2	3	4	5

_____

14. Please write the number of each of the following types of media that regularly cover events in your LEPC's jurisdiction. *If you do not know an answer, put an "X" in that blank.*

_____ RADIO STATIONS _____ TV STATIONS _____ DAILY PAPERS _____ WEEKLY PAPERS

15. Has your LEPC designated in the response plan the person(s) responsible for communicating risk information to the public in the event of a hazmat emergency? ___ YES ___ NO

16. If you answered "YES" to No. 14, please tell us the position of the person(s) whom the plan makes responsible for emergency risk communication (eg: county health official, public information officer for the fire department).

_____

On what date did you complete this form?_____

*** THANK YOU VERY MUCH FOR YOUR COOPERATION. ***

HAZARDOUS MATERIALS RISK COMMUNICATION STUDY

QUESTIONNAIRE TO BE COMPLETED BY LEPC MEMBER AND RETURNED IN SEALED ENVELOPE TO LEPC CHAIR

VIRGINIA POLYTECHNIC INSTITUTE & STATE UNIVERSITY
UNIVERSITY CENTER FOR ENVIRONMENTAL &
HAZARDOUS MATERIALS STUDIES

-- INTRODUCTION --

This questionnaire is a part of research on risk communication being conducted at Virginia Polytechnic Institute and State University. Information from the questionnaire will help us to determine what materials and programs should be developed to assist LEPC members. The study includes all LEPCs in 10 carefully selected states. Your State Emergency Response Commission has been informed of the study.

Your participation in the study is entirely voluntary, and you can be sure that your individual answers will be totally confidential. However, your cooperation is essential if we are to get an accurate picture of the nation's LEPCs. Please answer as frankly as possible. If you feel that you do not have enough information to answer some of the questions, please write "DK" for "don't know" to the right of the responses provided for that particular question.

WHEN YOU HAVE FILLED OUT THE QUESTIONNAIRE, PLEASE PLACE IT IN THE ENVELOPE PROVIDED AND RETURN IT TO THE CHAIR OF YOUR LEPC.
Your name should not appear on the questionnaire or envelope.

A report on the results of the full study will be sent to your State Emergency Response Commission.

---

1. What do you see as the most important purpose of the LEPC **after the response plan has been accepted** -- What should be its major contribution to the community?

_____

_____

_____

_____

_____

2. What do you feel are the major problems your LEPC faces in fulfilling this basic purpose?

_____

_____

_____

_____

_____

3. How would you rate your LEPC in each of the following areas?
(PLEASE PUT AN "X" OVER THE NUMBER THAT CORRESPONDS TO YOUR ANSWER)

AREA	EXCELLENT		FAIR		INADEQUATE
• Information gathering capabilities	5	4	3	2	1
• Capacity for analyzing information	5	4	3	2	1
• Competent and dedicated members	5	4	3	2	1
• Capacity for communicating with government agencies	5	4	3	2	1
• Capacity for communicating with business and industry	5	4	3	2	1
• Capacity for communicating with the general public	5		3	2	1
• Capacity for communicating with groups with a special interest in the environment	5	4	3	2	1
• Relations with the news media	5	4	3	2	1
• Public visibility	5	4	3	2	1
• Confidence of the public in its ability to protect their interests	5	4	3	2	1

4. How would you rate the cooperation your LEPC receives from most businesses involved with hazardous materials?

EXCELLENT		ADEQUATE		INADEQUATE
5	4	3	2	1

5. Please rate both the **frequency** and **nature** of the contact your LEPC has with environmentalist groups by putting an "X" over one number under each category below.

FREQUENCY					NATURE				
FREQUENT CONTACT				VERY LITTLE CONTACT	GENERALLY COOPERATIVE				GENERALLY CONFRONTATIONAL
5	4	3	2	1	5	4	3	2	1

6. How likely do you think it is that your LEPC can accomplish each of the following goals?

GOAL	VERY LIKELY		50/50 CHANCE		NOT LIKELY
• Improving the community's ability to understand risk information in the event of a hazmat emergency	5	4	3	2	1
• Informing citizens of the response plan well enough that they understand and support it	5	4	3	2	1
• Securing enough citizen involvement in updating the plan that it effectively addresses the community's concerns	5	4	3	2	1
• Responding effectively and efficiently to citizens' requests for information on hazardous materials	5	4	3	2	1
• Stimulating public discussion of the environmental choices confronting the community	5	4	3	2	1

7. How important to the success of the Title III planning effort do you think it is that the public be involved in evaluating and updating the plan?

Not very important, the LEPC can design an effective plan alone 1

Somewhat important, we can use selected input to improve the plan. 3

Very important, public participation is necessary for a good plan. 5

8. Which of the following do you feel is the most effective means for the LEPC to use in getting **nonemergency** information to the public in your LEPC jurisdiction? (MARK ONLY ONE)

Newspapers 1 **Television 2** **Radio 3** **Other 4 (Specify)**_____

9. Please rate the media that cover your area in terms of both the **amount** and **quality** of the coverage they give to your LEPC by marking a number under each heading beside each type of media.

	AMOUNT OF COVERAGE					QUALITY OF COVERAGE				
	TOO MUCH		ENOUGH		TOO LITTLE	GOOD		FAIR		POOR
• Newspapers	5	4	3	2	1	5	4	3	2	1
• Television	5	4	3	2	1	5	4	3	2	1
• Radio	5	4	3	2	1	5	4	3	2	1

10. If the media were doing a story on a **nonemergency** hazmat situation in your area, what priority do you think they **should** give to each of the following kinds of information in that coverage?

	HIGH PRIORITY		MODERATE PRIORITY		LOW PRIORITY
• The likelihood of an accident	5	4	3	2	1
• The possible causes of an accident	5	4	3	2	1
• Possible health effects of an accident	5	4	3	2	1
• Statements by public safety officials	5	4	3	2	1
• Statements by local environmentalists	5	4	3	2	1
• Statements from the business involved	5	4	3	2	1
• Provisions of the emergency response plan	5	4	3	2	1
• Political controversy surrounding the conditions leading to the danger	5	4	3	2	1

11. How would you describe the level of concern about environmental problems (including but not limited to hazardous materials) in your community?

MAJOR ISSUE		IMPORTANT ISSUE		MINOR ISSUE
5	4	3	2	1

12. Do you feel that those who are most vocal in their concern about environmental issues in your LEPC area are an unrepresentative minority or a crossection of the public?

UNREPRESENTATIVE MINORITY 1 CROSSECTION OF PUBLIC 2

13. In your LEPC jurisdiction, how active are organized groups concerned with the environment?

VERY ACTIVE		MODERATELY ACTIVE		NOT ACTIVE
5	4	3	2	1

14. How confident are you that you personally have an accurate picture of the level and content of public concern about environmental issues in your LEPC area?

HIGHLY CONFIDENT		MODERATELY CONFIDENT		NOT CONFIDENT
5	4	3	2	1

15. How many months have you been a member of the LEPC? _____ (NUMBER OF MONTHS)

16. Do you currently hold any of the following offices in the LEPC?

• LEPC Chair	YES	NO
• Community Information Coordinator	YES	NO
• Community Emergency Coordinator	YES	NO
• Subcommittee Chair	YES	NO

17. How many hours do you spend on each of the following tasks for the LEPC **in an average month?** (IF "NONE", PLEASE WRITE 0 IN THE BLANK)

TASK	HOURS
• Attending meetings of the full LEPC or its subcommittees	_____
• Planning for meetings (preparing presentations, etc.)	_____
• Gathering information for the LEPC	_____
• Evaluating information for the LEPC (risk assessment, mapping, etc.)	_____
• Seeking public opinion on planning issues	_____
• Informing the public of LEPC activities	_____
• Attending seminars or training sessions	_____
• Studying about hazardous materials risks on your own	_____

18. Please indicate if you have received and read each of the following publications by marking an "X" over a number under each heading beside each publication.

PUBLICATION	HAVE YOU RECEIVED IT? YES	HAVE YOU RECEIVED IT? NO	HAVE YOU READ IT? YES	HAVE YOU READ IT? NO
• "Hazardous Materials Emergency Planning Guide" (NRT-1) by The National Response Team	1	2	1	2
• "Technical Guidance for Hazards Analysis" distributed by the EPA	1	2	1	2
• "Explaining Environmental Risk" by Peter Sandman, distributed by the EPA	1	2	1	2
• EPA Technical Assistance Bulletin #4: Report on the Risk Communication Conference	1	2	1	2
• "Its Not Over in October: A Guide for LEPCs"	1	2	1	2

19. Please tell us if you are a member of the following types of organizations or groups by putting an "X" over "YES" or "NO" beside each one.

TYPE OF ORGANIZATION	MEMBER?	
A. Fire department or rescue squad	YES	NO
B. Police department	YES	NO
C. Hospital emergency team or management	YES	NO
D. Industry safety team or management	YES	NO
E. Business association (Chamber of Commerce, etc.)	YES	NO
F. News media	YES	NO
G. Environmental interest group	YES	NO
H. Community or neighborhood organization	YES	NO
I. Elected government officials	YES	NO
J. Non-elected government officials (planner, etc.)	YES	NO

20. LEPCs are supposed to include members from a variety of groups. If you feel that you were appointed to the LEPC **as a result of** your association with one of the above groups, please write the letter which is to the left of that group in the blank that follows. *If your appointment was unrelated to group affiliation, put a "X" in the blank.* _____

21. How much experience have you had with each of the following?

ACTIVITY	GREAT DEAL		SOME		VERY LITTLE
• Speaking before groups	5	4	3	2	1
• Dealing with representatives of the news media	5	4	3	2	1
• Communicating technical information to the public	5	4	3	2	1
• Resolving conflicts among diverse groups	5	4	3	2	1
• Working with government officials	5	4	3	2	1
• Using a personal computer	5	4	3	2	1

22. How likely is it that **you** would actively use training materials containing each of the following types of information? *Please look over the complete list before rating individual items since we are trying to identify the most important types of materials to develop with limited resources.*

	VERY LIKELY		SOMEWHAT LIKELY		NOT LIKELY
• How to effectively manage information acquired under right-to-know provisions	5	4	3	2	1
• How to effectively communicate chemical risk information to the public during an emergency	5	4	3	2	1
• How to communicate chemical risk information to the public in the absence of an emergency	5	4	3	2	1
• Coordinating OSHA planning requirements for facilities with the response plan	5	4	3	2	1
• Coordinating spill prevention and control planning with the response plan	5	4	3	2	1
• Coordinating catastrophic earthquake planning with the response plan	5	4	3	2	1
• Coordinating nuclear power plant and radiation plans with the response plan	5	4	3	2	1
• Coordinating federal facilities planning with the response plan	5	4	3	2	1
• How to take Department of Transportation route planning into consideration in the plan	5	4	3	2	1
• Information on evacuation and in-place sheltering in emergencies	5	4	3	2	1
• How to use the planning process to **prevent** chemical accidents	5	4	3	2	1
• A catalog of resources to use in planning for and responding to hazards	5	4	3	2	1

23. For background information, which of the following describes your highest level of education?

Some high school	1
High school degree	2
Vocational school	3
Some college	4
College degree	5
Some graduate work	6
Graduate or professional degree	7

24. What is your occupation? *Please be as specific as possible. Give job title if applicable (for example: Safety director for local chemical firm; Homemaker; Retired high school biology teacher; etc.*

_____

_____

25. In which "sector" is your occupation?

Public Sector *(government)*	1
Private Sector *(business)*	2
Volunteer Sector *(Red Cross, charity hospital, etc.)*	3
Other *(homemaker, retiree, etc.)*	4

26. What is your gender? _____ MALE _____ FEMALE

27. Which of the following categories includes your age?

_____ Under 30

_____ 30 - 39

_____ 40 - 49

_____ 50 - 59

_____ 60 and Over

28. If you have any observations **concerning the LEPC's communication with the public** which our questions have not covered but which you feel are important to understanding the situation, please write them on the inside back cover of this questionnaire or enclose additional pages.

PLEASE PLACE THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED, SEAL IT, AND RETURN IT TO THE CHAIR OF YOUR LEPC.

****** THANK YOU VERY MUCH FOR YOUR COOPERATION! ******

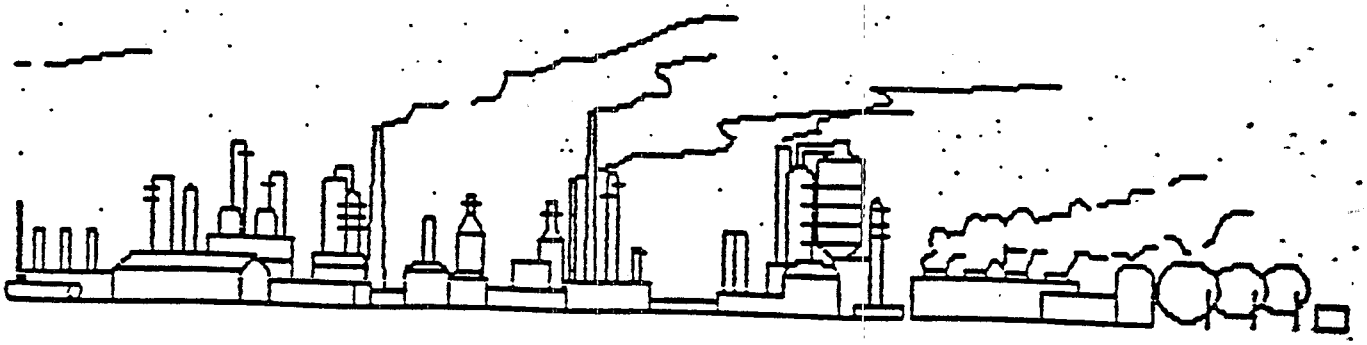
APPENDIX B

Data Collection Instrument --

Case Studies

HAZARDOUS MATERIAL IN ST JAMES PARISH

What do YOU think?



VIRGINIA POLYTECHNIC INSTITUTE & STATE UNIVERSITY
UNIVERSITY CENTER FOR ENVIRONMENTAL &
HAZARDOUS MATERIALS STUDIES

A SURVEY OF COMMUNITY LEADERS

EXPLANATION

Hazardous materials are chemicals (liquids, gases and solids) that can pose a serious threat to human health. They are increasingly common in most of our communities. The University Center for Environmental and Hazardous Materials Studies is conducting a national study of how people communicate about environmental risks. Our long-term objective is to assist communities in effectively handling the problems that can be created by hazardous materials. St. James Parish has been selected as one of the localities to be included in this research.

We are seeking your opinions because you are affiliated with a community service organization or have been identified as a concerned citizen. We hope you will take a few moments to fill out this brief questionnaire and return it in the enclosed self-addressed envelope. While each questionnaire is numbered on the back for record keeping purposes, you can be sure that your responses will be treated in the strictest confidence and that no one other than our project staff will see your answers.

Since the questionnaire is going to a wide variety of people, many of you will find the questions to be about totally unfamiliar subjects while others will find that they know a great deal about the topic. Please remember that even if the questions are completely new to you or if they seem far to simple for your level of knowledge, we still need your opinions to have a complete study.

Thank you in advance for your cooperation. Results of the overall study will be shared with public officials in your community. If you want to be informed of the products of the study or have other questions, please contact us at the following address.

W. David Conn
William L. Owens
Richard C. Rich
University Center for Environmental
and Hazardous Materials Studies
Virginia Polytechnic Institute
and State University
Blacksburg, VA 24061-0113

1. Please indicate how serious you feel each of the following potential environmental problems actually is in your community by marking an "X" over the number that corresponds to your assessment of each problem.

	NOT SERIOUS		SOMEWHAT SERIOUS		VERY SERIOUS
The danger of a major release of hazardous substances from a plant, warehouse, etc.	1	2	3	4	5
The chance that a truck or train accident will release hazardous materials	1	2	3	4	5
The chance that people's health will suffer due to long-term exposure to hazardous substances	1	2	3	4	5
The danger that water, soil or air will be contaminated by slow leaks of hazardous materials.	1	2	3	4	5

2. How concerned do you think most residents of your community are about each of the following environmental issues?

	LITTLE CONCERNED		SOMEWHAT CONCERNED		HIGHLY CONCERNED
The danger of a hazardous materials emergency (for example, a large chemical spill or gas leak)	1	2	3	4	5
Long-term pollution by hazardous materials	1	2	3	4	5

3. Do you feel that you are personally well-informed about what types of hazardous materials emergencies are most likely to occur in your community?

____YES ____NO ____NOT SURE

- If you answered "yes" to question 3, please use the space below to tell us how you got this information.

_____

_____

4. Do citizens have a legally established right to know what hazardous materials are used, stored, or produced at specific plants or other facilities in their community?

____YES ____NO ____NOT SURE

5. If you wanted to find out what hazardous materials were handled by a given firm in your community, what specific agency or official would you contact to get this information?

_____

_____

6. Are you a member of any local organization that has, in the past two years, done something to learn more about hazardous materials risks in your community (invited speakers, sent someone to talk with a local firm, held a public forum, etc.)?

____YES ____NO ____NOT SURE

- If you answered "yes," please tell us what organization this is and what type of activity it undertook.

_____

_____

_____

7. Information on environmental issues in your community can come from many sources. Please tell us which of the following sources you would rely on by writing a 1, 2, or 3 beside the three sources you are most likely to turn to for information. (Number your first choice "1".)

____ community organizations (civic groups, homeowners associations, etc.)

____ environmental groups (Sierra, Audubon, etc.)

____ private physicians

____ local industry

____ friends or work associates

____ local emergency planning committee

____ public agencies (health department, civil defense office, etc.)

____ personal contact with specific public officials

____ local newspapers

____ local television

____ local radio

____ other (please specify) _____

8. Do you feel that you now know what to do to protect yourself and/or your family if a major hazardous materials emergency occurred in your community?

____ YES ____ NO ____ NOT SURE

- If you answered "yes," from what source did you get this information?

_____

9. If there was a major hazardous materials emergency in your community today, how would you personally get information on what you should do to protect yourself and/or your family?

_____

_____

10. Are you aware that an organization in your community has conducted a hazards analysis and developed a plan for responding to hazardous materials emergencies (designated shelters and evacuation procedures, for example)?

____ YES ____ NO

- If you answered "yes," can you tell us what organization developed the plan?

_____

- How did you learn about the existence of the response plan?

_____

- How aware of the existence of this plan do you think most other residents of your community are? (Mark the number that corresponds to your answer.)

NOT AWARE		SOMEWHAT AWARE		HIGHLY AWARE	CAN'T JUDGE
1	2	3	4	5	0

- From what you know of this plan, how confident are you that it is adequate to protect the community in most hazardous materials emergencies?

NOT CONFIDENT		FAIRLY CONFIDENT		HIGHLY CONFIDENT	CAN'T JUDGE
1	2	3	4	5	0

11. Some people feel that it is important for them to know a good deal about the environmental risks that exist in their community. Others don't feel this way. Is it important enough to you that you would be willing to do each of the following?

Spend two hours studying the hazards analysis and emergency response plan for your community.	____ YES	____ NO
Attend a two-hour public meeting where these issues were addressed.	____ YES	____ NO
Spend 30 minutes a week reading news articles or other materials that keep you up-to-date on these issues.	____ YES	____ NO

12. Have you seen any explanation (publication, film, speech, etc.) of the process by which citizens can learn about hazardous materials risks in this area under the "community right to know" provisions of Title III of the Superfund Amendments and Reauthorization Act (SARA)?

____YES ____NO ____NOT SURE

- If you answered "yes," please tell us how and where you saw this explanation?

_____

_____

_____

- Have you shared this information with other members of an organization to which you belong by some formal means like speaking at a meeting or putting an item in the newsletter?

____ YES ____ NO

THANK YOU VERY MUCH FOR YOUR COOPERATION.
PLEASE RETURN THE QUESTIONNAIRE IN THE ENVELOPE PROVIDED.

If you would like more information on hazardous materials issues, you may want to request a booklet entitled Chemicals in Your Community: A Guide to the Emergency Planning and Community Right to Know to Act from: U.S. Environmental Protection Agency (OS-120), Washington, DC 20460.