

make their own plans tended to have more of an idea than those who would follow instructions. A small proportion (15.4%) of those who had thought about the problem had no family in the area. The others provided a wide range of responses. Those who had local family ties most often favored meeting their families before evacuation and "sticking together" (31%). This contrasted with the 16% who would meet their families outside the area. A characteristic sampling of ideas elicited includes:

"There are only two of us. We'd stick together."

"I have a route picked out - go north and circle back south to L.A."

"I would go get the kids at school and meet my husband."

"We would meet at a pre-arranged place."

"Won't evacuate."

"We have a trailer stocked with food. We would go to the mountains."

"Meet in Bakersfield."

"Hopeless."

"I would get more information."¹

Early warning siren systems have been installed in the area by PG&E, and respondents were asked what they would do if the sirens went off. Some respondents (16.1%) had absolutely no idea what they would do in that event. A surprisingly large number (47.8%) reported that they would seek further information or instructions about what to do. Another 21.6% mentioned that they would either evacuate or prepare to evacuate. There does not appear to be any significant difference in response between those who had heard about the emergency response plan and those who had not, possibly

¹Appendix B contains a complete list of the comments.

suggesting that the anticipated reaction is a matter of personal judgment. A wide variety of possible actions were given. A notable feature was that almost two-thirds (62.5%) of those who mentioned gathering their families were also those who had previously discussed what actions they would take.

The things people would take with them if an evacuation was necessary could expedite or hinder emergency procedures. Respondents were therefore questioned about what items they thought were important. Most of those surveyed mentioned at least some general categories. Two-thirds (65.5%) cited either people, animals, or stores of food--animals being a major concern of 15.5% of the total sample. Water and/or clothing was reported by almost half (47.5%) of the respondents. There was a strong correlation between those who had received some information about the emergency response plan and those who mentioned bringing water and clothing.

Interestingly, despite the dry climate, money was chosen more often than water. Personal effects (9%), bedding (8%), important papers (8%), valuables (6.5%), keepsakes (6%), and transportation (6%) were also mentioned. Some people thought to add medicine or first-aid kits (4.5%), weapons (3%), flashlights and radios (2.5% each), but only two people (1%) suggested they might bring fuel, camping gear, or survival kits. Beer, a clock, a stereo, and a guitar also made their way onto the list. Results suggest that there is a general knowledge about what kinds of items would be a priority, but there is a lack of knowledge and/or consensus about which specific items should be taken.

Attitudes and Confidence

The next portion of the questionnaire examined the communities' overall feelings of confidence and security. Opinions on the likelihood of a

major accident at Diablo Canyon were divided. Approximately 40% of the respondents thought the risk of a major accident was high or very high. Slightly over 50% rated the chances as low or very low (see Figure 11). There did not seem to be much of a difference among communities in this perception of risk. Neither community geographic location nor estimated distance from Diablo Canyon correlated with this response. Analysis did

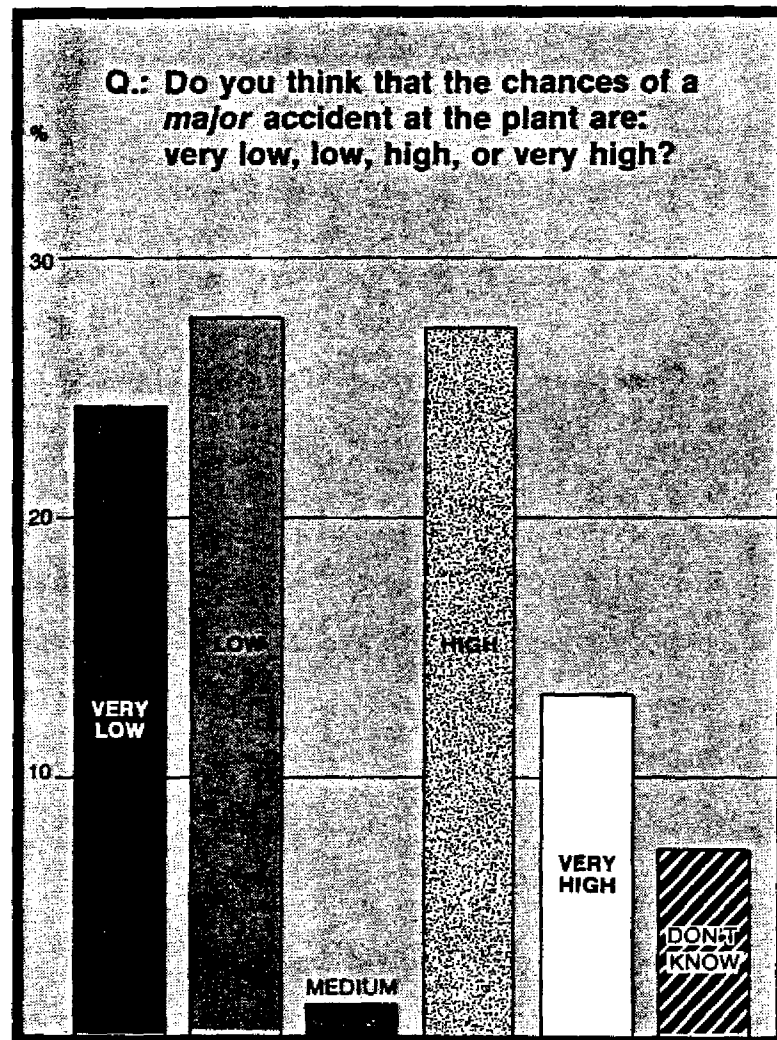


FIGURE 11

PERCEPTIONS OF RISK: MAJOR ACCIDENT POTENTIAL

show, however, a strong connection between this and other feelings of safety, security, and confidence.

As a means of assessing the perceived risks of living near a nuclear power plant, respondents were asked what kind of secondary effects its operation would have on their community. Diablo Canyon was generally felt (48.2%) not to have any effect on the growth of the area. However, a significant number (37.2%) tended to believe that population would actually decrease if the plant were put into operation. A very small number (9%) saw the power plant as an incentive to growth. About half (50.3%) of those questioned believed that property values would decrease if Diablo came "on line." Only 4% thought the effect would be to increase assessed value. Figure 12 graphically demonstrates these results. No positive connection could be made between these figures and any one salient community characteristic; the findings remained consistent across demographic and geographic categories.

Respondents in areas near the nuclear power plant definitely felt a decline in safety and security. Almost two-thirds (63.6%) of the sample population felt that their community's safety and security would decrease if Diablo Canyon began to produce power. In contrast, 20.2% thought there would be no effect, 8.6% thought safety and security would increase, and 7.6% could not predict. Analysis showed a positive correlation between feelings of safety and security and the respondents' estimated number of miles from the plant.¹ Surprisingly, the proportion of respondents feeling a decrease in safety and security also grew larger as estimated distances from the plant lengthened.

¹Chi-square tests for independence showed significance at the .001 level.

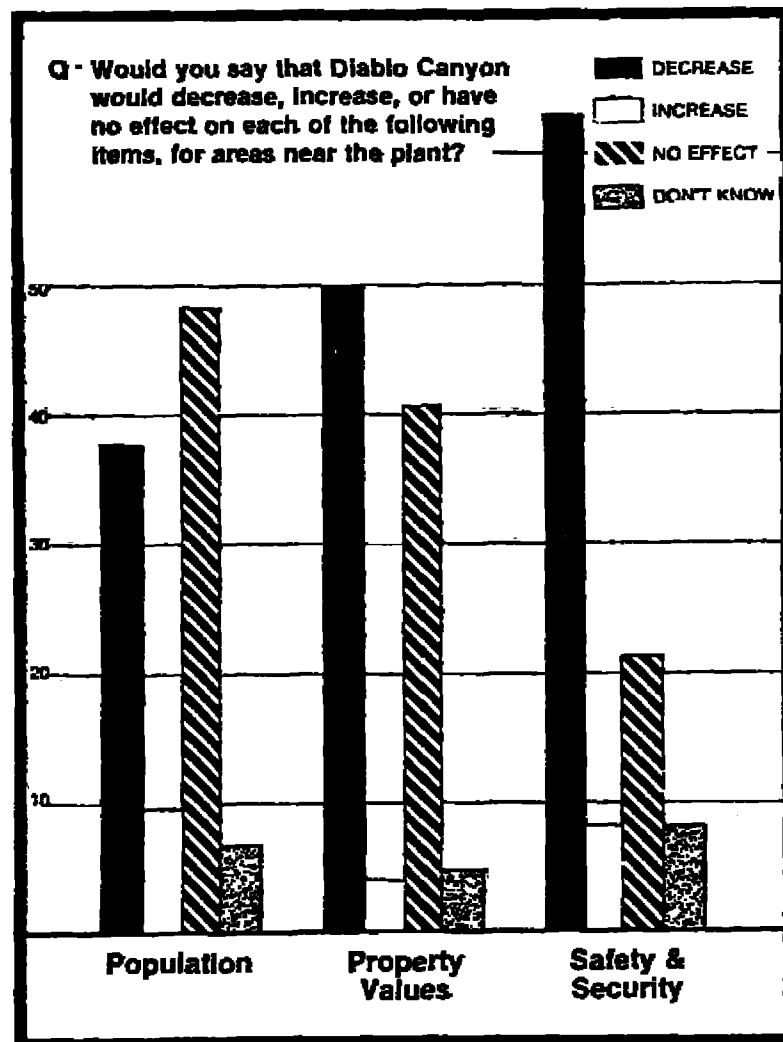


FIGURE 12

PERCEPTIONS OF RISK:
POPULATION, PROPERTY VALUES, SAFETY AND SECURITY

There were other links between attitudes and awareness. In comparing perceptions of risk and perceptions of safety and security, it was found that among respondents who felt the chances of an accident were serious, there was a greater likelihood of perceived loss of safety and security. However, the perceived risk tended to decline slightly for those who had received some information about emergencies.

Confidence in the source of information can be extremely important in a crisis situation. As a partial measure of respondents' confidence in various sources, the survey population was asked to rate their feelings about local government and the Pacific Gas and Electric Company. The communities in the sample tended to rate both relatively low (see Figure 13). Approximately three-quarters (73.9%) felt the local government's ability to respond to a major emergency at Diablo Nuclear Power Plant was low or very low. Less than 15% thought the ability was at least high, and only three individuals rated it as very high. Many potential correlations were analyzed for significance, but opinions were independent of most factors with only a few exceptions. The percentages of those who rated the government's ability to be low tended to rise with an increased perception of risk. However, even a majority (71.6%) of respondents who felt that the risk of a major accident was low held a low estimate of government's ability to manage a crisis. Information about emergencies also tended to affect respondents' ratings of the government's ability to respond to a major emergency. Those who had some information gave higher ratings than those who did not, reflecting some increase in their confidence in government.

Similarly, 59% of those questioned rated as low or very low their confidence that PG&E would promptly inform the correct agencies of any hazard at Diablo Canyon Power Plant. Over one-third (37%) expressed a high or very high degree of confidence in the utility. In this case, less than half (42.8%) of those who felt a low risk of a major accident had low confidence in PG&E as well. These figures suggest that residents hold PG&E responsible for pre-emergency risk management and the government for post-emergency management, and that those residents have little confidence in

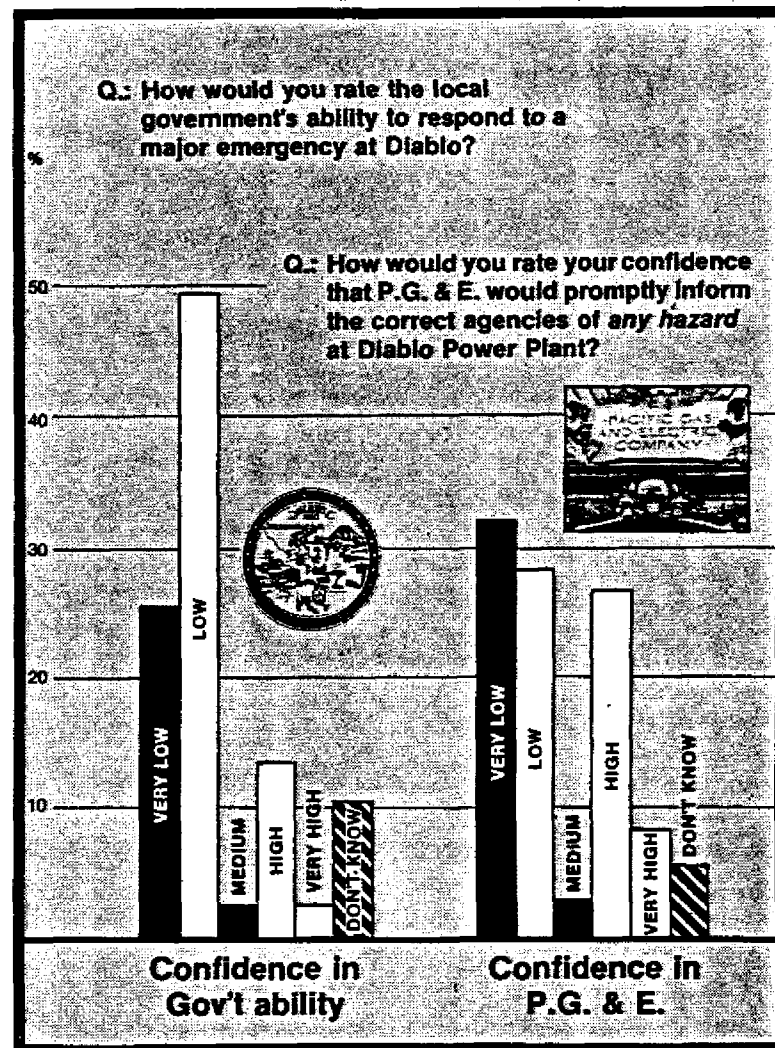


FIGURE 13

FEELINGS OF CONFIDENCE IN THE UTILITY AND IN LOCAL GOVERNMENT

either organization's ability. Of course, both organizations must contribute to produce an effective response.

Needs and Resources

The survey was designed both to gain and to give information. Respondents were asked about their past experience with emergencies and their expectations of government in a possible future emergency. It was found

that 30.8% of the study population had witnessed some type of public emergency in the past. The events mentioned were diverse. As might be expected, the most common emergency mentioned (41.3%) was an earthquake. Flooding was also frequently reported (22.2%), and tornadoes (12.1%), fires (9.6%), war, and hurricane (both 8%) were also mentioned. A few respondents listed typhoons, tidal waves, avalanches, dam breaks, and one respondent reported having been in a nuclear radiation accident. Many persons offered descriptions of their emergencies and their responses. Some had had to evacuate, and others had barely escaped harm.¹

When these answers were compared to others, it was found that those who had been in emergencies before were slightly more likely to plan to take shelter in their homes if an emergency occurred at Diablo Canyon. Persons who had experienced an emergency were twice as likely as those who had not to have thought about how they would reunite with their families. Similarly, 46.7% of those with experience had discussed what action to take in a radiological emergency compared to only 28.7% of those without this background. There appeared to be no difference between these groups in their attitudes toward issues or confidence in groups related to emergency operations at the power plant. Perhaps importantly, 10% of the population studied had been in a situation serious enough to call for evacuation. Their experience and knowledge of emergency response may be a valuable community resource.

Strong concern was expressed for the needs of special groups of people, and respondents felt that these groups should be monitored by local government. Approximately 85% agreed that government should have a special

¹Individual comments are included in Appendix B.

means of helping the mentally and physically handicapped, and those in institutions such as prisons and hospitals.

Other dependent groups were given similar support. Approximately three-quarters of the respondents felt that government should have information on elderly and school age populations and should keep track of these groups. Transportation-dependent populations were also identified by 70.4% as requiring special attention, and 63.8% reported that all those living within ten miles of the plant should be kept track of by local government. Some respondents commented that the feasibility of collecting and maintaining such information was questionable, but the overwhelming majority felt that something should be done.

Perceived risk tended to influence the perceived needs of these special groups. Respondents who thought the chances of a major accident were high were much more likely to support the idea of special help for these groups. Similarly, as confidence in PG&E and the government's ability to respond decreased, the perceived need to provide special help for people living within ten miles of the plant increased.

Twenty-seven percent of the respondents reported that someone in their household fell into one of these special categories. By far, most were school children (31.5%) or elderly (38.9%). Thirteen percent of the respondents reported that someone in their household was without private transportation. Homes with school children and transportation dependent members were more likely to have low confidence in PG&E and in the government's ability to protect them.

The major sources of information for most of the special groups, particularly the elderly, were television and the newspaper, but not the radio.

Many who were questioned (44%) mentioned that they knew of someone in their neighborhood who might need help in an emergency. They often offered suggestions, proposing ways that government might help dependent groups, most often citing transportation, evacuation, communication, and information needs.

The study population seemed to welcome the opportunity to express their ideas and concerns, and offered many comments. Because they were assured that what they thought mattered, their comments are included in Appendix B.

Summary of Major Findings

The "Communities Speak" questionnaire was administered to households within the Emergency Planning Zone for Diablo Canyon Nuclear Power Plant--encompassing 75% of the county's population. The results showed:

The communities

1. The age structure and sex ratio of those studied came within 5% of county statistics.
2. The ratio of owners to renters was one to one.
3. The majority of the sample population had some college background.
4. The majority of the sample population had engaged in some kind of citizen participation.
5. The respondents tended to feel that the plant was closer to where they lived than it actually was.

Public exposure to the emergency response plan

1. Only one-third of the households had any familiarity with the plan.
2. Only 5.5% of the households claimed they had any information telling them what to do if there was an emergency at Diablo Canyon Nuclear Power Plant.

Community preparedness

1. About one-half of the households felt that they would follow the instructions of authorities in a radiation emergency.
2. About one-third of the households said they would not take shelter in their homes if so instructed.
3. About one-third of the households had had at least some conversation among themselves that generally concerned the problem.
4. Most of those questioned had no idea how they would reunite their families if an evacuation were necessary.
5. Respondents with local family ties most often favored "sticking together" if there were a radiation emergency.
6. About one-half of the households said they would interpret a siren as a signal to seek further information; slightly over one-fifth would interpret it as a signal to evacuate; and over 15% said they would have no idea what to do.
7. The kinds of things people would bring along if evacuating varied widely and ranged from the very general to the very specific.

Attitudes and confidence

1. Approximately 40% of the households perceived the risk of a major accident at Diablo Canyon to be high or very high.
2. Overall, respondents felt that the operation of the plant would not affect the population growth of the area.
3. One-half of the households thought that the operation of the power plant would cause property values to decrease.
4. Two-thirds of the households thought that the safety and security of the area would decrease if the plant began to produce electricity.
5. The feelings of risk tended to decline and the feelings of confidence in the government's ability to respond tended to increase with those who had received some information about emergencies.
6. About three-quarters of the households felt that the local government's ability to respond to a major emergency at Diablo Canyon was low.
7. Over one-half of the households rated their confidence that PG&E would promptly inform the correct agencies of any hazard at the plant as low or very low.

Needs and resources

1. About one-third of the study population had witnessed some type of public emergency in the past.
2. Overall, 10% of the study population had been in a situation serious enough to call for evacuation.
3. A very strong concern was expressed for the special needs of the mentally and physically handicapped, the elderly, school children, the transportation-dependent, and residents living within ten miles of the plant.
4. About one-quarter of the respondents reported that someone in their household fell into one of the special needs categories.
5. The major sources of information for the special groups were television and newspapers.
6. About one-half of the households knew of someone in their neighborhood who might need help in an emergency.
7. In offering advice on how the government might help special groups, respondents most often cited the need to work on transportation, evacuation routes, communications, and information.

CONCLUSION AND RECOMMENDATIONS

Analysis of the survey showed that public notice and education programs for the emergency plan had not been very successful. Local residents were not very aware of the plan, and did not know where to get information concerning radiation emergencies.

The public had not been significantly involved in emergency response planning, and the plan, therefore, did not reflect the collective perceptions and concerns of citizens.

Residents did not have much confidence in the government's ability to handle a radiological hazard, nor did they have high confidence in the utility's commitment to the safety of surrounding areas. They felt that the operation of Diablo Canyon Nuclear Power Plant would impose a risk to the area's safety and security.

that could be used. Crime prevention groups (for example, Crime Watch) might disseminate information on preparedness. Retired citizens groups such as R.S.V.P. or relief organizations like the American Red Cross might also provide support. Civic clubs might provide a forum for speakers and presentations. Schools and professional training programs could also be used as planning and education resources. And, of course, the media could be used to distribute information. To be successful, preparedness for any emergency must be a component of daily life, part of normal daily activities.

Thus, in several ways, effective emergency preparedness has to be a continuous process. Surveying techniques such as the one used here, advisory groups, and public forums should be employed periodically to examine and express changing community attitudes and needs. Objectives and their implementation have to be modified as technology and society change, and evaluation of the resulting plan should again include participation by residents of the affected area. The resulting plan must then be effectively communicated to the public on a continuing basis, and modified as the hazard or the public perception of it changes. The process is necessarily circular; to be maximally effective it must not end.

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