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EMERGENCY PLANNING FOR
NUCLEAR PLANTS

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Planning for emergencies is not new. One could argue that Noah was one of the first emergency planners since he gave considerable attention to what might be needed in an emergency. He was able to act, on the basis of that planning, quite effectively. One would have to admit that he had a rather unique warning system but it was effective. Noahs in modern society have to give greater attention not just to floods but to a wider range of threats and emergencies.

Emergencies, simply stated, are those events which cannot be dealt with by ordinary measures and routines. And the notion of planning for "natural" emergencies has more recently been extended to a variety of technological risks which are present in modern society. A good case can be made that disaster events derived from technological risks will become the "natural" disasters of the future, TMI, Bhopal, Sevesto, and Love Canal have become names which are recognized around the world while the effects of Hurricane "What's His or Her Name" are often quickly forgotten. Certainly among the newer technological risks are nuclear plants, built around the world in the hope that energy costs might be lower in the future and the production of electricity might be more efficient. Those plants were seen as isolated and self contained until TMI and more recently, Chernobyl actually and symbolically came into the American

consciousness. Other names, such as Diablo Canyon, Indian Point, Peach Bottom, Salem, Surry, Calvert Cliffs, Savannah River and Hanford have become a part of the American lexicon, often as a result of controversy.

In the years since the accident, TMI has come to symbolize and to "prove" many different things for many diverse people. There is no need here to analyze or to correct the various "lessons" which people have read into that accident. It did, for our purposes here, symbolize the first time releases from a nuclear plant came "off site" so that nuclear plants could no longer be seen as simply locations of industrial accidents but a source of a new "community" problem. Given this new community problem, it was obvious that greater attention had to be given to community emergency planning. This should not suggest that there was no emergency planning in the counties surrounding TMI prior to that accident. There was, but much of that local planning was overlooked and ignored when the "problem" became national and worldwide. But during that attention and subsequently, there has been considerable thought given to planning for emergencies around nuclear plants and significant improvements have been made. The most significant step was made when criteria were established to be used to develop response plans for radiological emergencies and for preparedness for nuclear plants. These criteria were established by the Nuclear Regulatory Commission and the Federal Emergency Management Agency, then a new agency, to be used as a source of guidance for the development of planning. Many of the concepts were set forth in NUREG-0654, a document which has become a standard reference sources for planning officials.

The criteria were intended as guidance for state and local governments and for nuclear facilities operators in the development of their own plans. They were also intended as guidance for various Federal agencies, such as NRC and FEMA, which had acquired new responsibilities to review State, local and licensee plans. A particular focus on planning was achieved by the establishment of "Emergency Planning Zones" (EPZ's). These were areas for which planning was specifically needed to assure that prompt and effective actions could be taken to protect the public in the event of an accident which had off site consequences. Two different planning units were defined, one at a ten mile radius around a plant which would encompass areas that might be affected by exposure from a radioactive plume and another zone 50 miles which might be affected from the ingestion of contaminated water or food. The areas for planning did not suggest that any and every accident would affect the entire area within the radius but simply designate those areas for extensive planning. Of course, the lines defining the EPZ's could cut across state, county and township lines which means that cross jurisdictional emergency planning is often necessary. This is simply another example of the fact that "problems" seldom follow existing political boundaries.

The planning standards which were established are extensive and comprehensive. They include the assignment of organizational responsibility, planning standards for the on site emergency organization, arrangements for obtaining external resources if needed, a definition of what is an emergency, procedures were established for the notification by the license of state and local response organizations and the development of timely messages to response organizations and to the public. In

addition, the planning criteria required the periodic dissemination of public information on how they might be notified of an accident and what actions they might take in such an emergency. This accounts, in part, for emergency information now placed in phone books, in utility bills, and in newspaper ads. Many of the other criteria tried to insure adequate emergency facilities and equipment to support any future emergency response, especially on- and off-site monitoring equipment. In addition, the criteria provided standards for means of relocating people out of the risk areas, including taking into consideration of weather, road conditions and time estimates to evacuate populations. The plans also included plans for recovery and reentry. And also the criteria sought to develop ways of exercising the planning through drills and to evaluate those drills to update and improve planning.

In effect, one of the positive consequences of TMI has been the improvement of emergency planning in the U.S., especially in those areas around existing nuclear plants. Sometimes, that activity has been misinterpreted. Drills are important but not everyone needs to "rehearse". It is important for various emergency organizations to rehearse, since differences in style, domain and political base require coordination to overcome possible differences. It is not necessary, however, to conduct a full scale evacuation drill including potential evacuees.

The fact that emergency planning is constantly in process around existing nuclear plants is not necessarily an indication of great risk but of increased safety. From what we know about nuclear technology, the risks for the public center on possible extensive exposure to radioactive

materials. This can be avoided or minimized, primarily by sheltering populations, i.e. staying indoors to escape exposure, or by evacuation, i.e. leaving a potentially contaminated area. Contrary to the typical movie scenario which presents evacuation as symptomatic of chaos and trauma, a casual reading of the newspaper will indicate that evacuations occur successfully every day in the U.S. for a variety of reasons. We have evidence from the past that massive evacuations can be successfully accomplished on the U.S. coast to avoid the consequences of hurricanes and that 150,000 can be evacuated at the dead of night after a chlorine tank car was damaged in a Toronto suburb. No one looks forward to taking such measures but a traditional Chinese saying suggests that "Of the 36 ways to escape danger, running away is best." By and large, the research shows that if a public is given accurate information about a threat and are able to translate that threat into "personal" terms and consequences, that public will act responsibly and effectively. Emergency planning is simply an effort to make sure that public response is as effective as it can be. The evidence shows that emergency planning in the U.S. is much more widespread than it has been in the past and that emergencies in general are handled with greater knowledge and wisdom than they have been in the past. Past events can provide a basis for learning and improving.

In order to learn and improve, a number of current trends need to continue. Certainly, the nuclear industry needs to continue its effort to improve plant safety through new technology, better training and a continued safety consciousness. It also needs to continue to work effectively with local governments surrounding plants which may not have the knowledge and resources to develop effective planning. For local and

state governments, there needs to continue the existing trend to see emergency planning and management as a proper governmental function at all levels. That planning effort also needs to be seen, not in the narrow sense of planning for a specific plant, but as an effort to plan for all of the risks, natural and technological, which affect the community and/or the governmental unit. There is an important effort in the United States to develop what is called "comprehensive emergency management". This concept points to the fact that diverse kinds of emergencies are a fact of life in American communities. They are not isolated events having little in common with one another and they are not events which only affect large urban areas which have a complex industrial base. Many nuclear plants are in "rural" areas and no "isolated" community near an interstate highway can avoid the unexpected consequences of chemical and toxic accidents. There is no place to hide from the complexities and threats which are a by-product of the modern world. By seeing the various threats as part of a larger set of risks which characterize the modern world, and by recognizing that dealing with these threats is the responsibility of private and public organizations at all levels captures the tone and direction of comprehensive emergency management.

Citizens then need to appreciate that some tax dollars need to be spent to support such planning and response functions. For many years, citizens have recognized the importance of supporting police and fire activities for the common good and certainly these organizations continue to play important roles in any community wide emergency. But there is a need to extend our notion of emergencies beyond the traditional activities of police and fire. Many emergencies, such as those at nuclear plants,

can spill out of the plant locations. Responding to those types of emergencies require even more complex cooperation and effort than do our traditional ones.

Beside the role of the nuclear industry and the efforts required of local and state governments, certainly there is also a place for "personal" emergency planning - being informed and anticipating possible personal action in the future. As individuals, we should know where to seek information in order to better understand warning messages or know the directions and "details" of evacuation routes. Preparation is not only a governmental or industry responsibility, but is an obligation for everyone.

The recent effort to strengthen planning around nuclear plants can direct attention away from the generic problem. The nuclear case is only one part of a much larger picture. That larger picture is the fact that living in the modern world exacts some costs. One of those costs is possible nuclear plant accidents but there are many other risks - natural disasters, chemical accidents, toxic spills, airplane crashes, drunk drivers, violence, AIDS and still fires. To catalogue them in this way may present a picture of overwhelming doom, which can be enhanced by personal experiences or imaginative scenarios. More realistically, such a catalogue should reinforce the need to think about emergencies and to plan for how we should respond to them. This can be done on the "personal" level but it is much more effective if we think of emergencies on the community level since collectively we can deal with them, not just "suffer" them. The very definition of emergency is that they are situations which cannot be dealt with by ordinary measures. We then need

to expect the extraordinary efforts of local governments to deal with their problems. There is plenty of evidence across the country that they can do that and that they are doing that.