SANITATION PROBLEMS IN DISASTERS

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NATURAL DISASTERS AND ACCIDENTS

From time immemorial man has faced the threat of disaster. Floods, hurricanes, tornadoes, earthquakes, fires and snowstorms are the natural consequence of nature's fury, and when Mother Nature goes on a rampage the consequences are likely to be death, destruction and human suffering. Coupled with this have been human conflicts from the time man learned to wield a club or throw a stone. As man's society has become more complex, the effects of these conflicts have become more widespread, partly because there are more people around to become affected and partly because additional threats, largely of man's own fashioning, are taking place: explosions, train wrecks, plane wrecks, accidents of all kinds, including spills of toxic materials and now the potential accidents of nuclear reactors and the hazards of handling radioactive materials.

We have survived danger in the past, and we will survive danger in the future. The sooner we realize this and take into consideration potential hazards in our planning and thinking, the better will be our chance of survival irrespective of what occurs.

THREAT OF MAN MADE DISASTERS

We in OCDM frequently receive requests for discussions on problems concerning natural disasters, but often the request makes plain that discussions of problems of nuclear warfare are not desired. Just why is this? What is the reason for this failure to face reality? Certainly this isn't in keeping with the pioneer spirit of our American forefathers. This isn't the kind of spirit that resulted in the winning of the West. The hardships endured by our founding fathers, the suffering and deprivation they withstood, and the brawn required for mere survival surely did not come from people with a faint heart or weak spirit. And the dangers they faced were every bit as great, as far as the individual was concerned, as the dangers we face today. Yet they plodded on.

Many people will argue that we know natural disasters will occur. We know we will have a flood, we know there will be fires, we know there will be tornadoes, and hurricanes. True, but are they any more predictable as to time and place, with the possible exception of floods, than the occurrence of war?

No one here wants a war, but the fact remains that potential enemies exist who have the capacity, if they so desire to use it, to wreak untold destruction on this country. In the last half century there have been two world conflicts and there is little evidence as yet to indicate man has learned to exist peacefully. Fortunately in the past we were protected by distance and time to prepare. Today time and distance no longer favor us. The front line would be right here at home.

Probably it is the stark reality of the situation that makes us want to dismiss it. We probably feel that the hydrogen bomb is the ultimate weapon and that warfare unleashed, utilizing such weapons, will mean the end to humanity.

It will certainly mean many changes in our way of life. It will certainly mean we will face many hardships and there will be much death and destruction. But there are likely to be survivors, and these survivors are likely to be in great numbers. True, many cities, whole communities, will be wiped off the map. However, many communities will remain, and it is for the survival of these communities that our planning should be directed. Since it cannot be predicted which will disappear and which will survive, all must assume they will be selected to carry on.

This is not the first time people have thought the ultimate weapon has been developed. The following, under the caption, "The Ultimate Weapon" is taken from the Atlanta Constitution, dated June 8, 1894:

It is said that recent experiments made with the new rifles in Germany make it reasonably apparent that the next war will be simply one of extermination. A prominent French writer is a recent article says that the battlefield would at the termination of the engagement be covered with two or three hundred thousand corpses, all crushed and broken, and would be nothing but a vast charnel house. No one would be left to bury the dead, and pestilence would in turn sweep away the country people. Pointing the moral, he adds that the man—emperor, king, or president of a republic—who, under these conditions, would expose the human race to such a fate would be the greatest criminal the world had ever seen. It is tolerably plain that the horrors and butchery which a war would entail are becoming more and more recognized, and that the terrible vista thus opened out is exercising a sobering effect on those who are formerly wont to discuss eventualities with a light heart.

Irrespective of the type of disaster that may befall, whether an act of God or caused by man, whether small, affecting only a few people, or large, affecting many millions, death, destruction and disruption of what we consider essential facilities, resulting in

¹Based on a talk presented by K. C. Lauster before the Indiana Association of Sanitarian's 9th Annual Meeting, Indianapolis, Indiana, June 11, 1939.
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potential threat to the health and welfare of the people affected, are likely to result. In thinking about how to cope with disasters of any kind, why attempt to segregate them? Why attempt to look on one side and not on the other? The job of the sanitarian is to deal with environmental factors that may affect the health and well-being of the people, and it is his job to view the total problem—not just that part to his liking.

Sanitarian In Key Position

The sanitarian is a key person in our complex society. Furthermore, sanitation is now, has always been, and always will be one of the cornerstones of any public health program. Any sanitarian could easily devise a dozen ways of engineering a breakdown in sanitary facilities that would make people sick much faster than the doctors could hope to cure them. Whether these breakdowns are by design through diabolical planning, or accidental producing similar effects, the end result is likely to be the same. Thus the sanitarian becomes even more important in disaster, whether natural or man made, than in normal circumstances. Clearly the man who knows how best to disrupt something is the man who knows how best to repair after disruption has occurred, or to minimize the effects.

Sanitation problems in disaster are becoming more complex as our life becomes more complex. Just a good snowstorm can deliver a knockout punch over a wide area with our present-day dependence upon electricity. Heat, light, refrigeration and all the many labor saving devices we take for granted suddenly become inoperative. In all aspects of our daily life we are becoming less self-sufficient and more dependent upon others for essential services. Our interdependence is becoming greater as time goes on. This must be taken into consideration in any planning to cope with disasters.

No Package Plan Available

We frequently receive inquiries concerning disaster planning which would lead one to believe that people would like to obtain a complete disaster plan which they can adopt as their own plan. There is no such thing as a ready made disaster plan that can be bought as a paper back edition. And if there were it wouldn't be worth the 35c because it wouldn't be tailored to fit the specific area involved.

Disasters are all different. There is no pat answer. To solve the technical problems one may face in disasters the best answer is to have a well rounded knowledge of the basic principles of sanitation—the same principles that are used day in and day out. These then must be applied with ingenuity to the problems as they arise. Also, if we are to be properly prepared to take care of our daily tasks the knowledge of biological warfare agents, chemical warfare agents, and radioactive materials must be a part of our armamentarium.

Our stock-in-trade is antibacterial operations. The new insecticides that are used daily are first cousins to the chemical warfare agents, the nerve gases. And the sanitarian who does not have knowledge of radiation and can speak about roentgens, curies, micro-curies, rads and rep's, will soon be replaced by a sanitarian who has the scope to meet with these daily problems.

Study of Needs Essential

An effective element of military tactics is the element of surprise. Mother Nature apparently utilizes the same tactics. If one expects the flood waters to rush down from the hills washing over the city, probably the first thing that will happen is that sewers become surcharged from high tides resulting in the initial flooding by backed up sewers. If our water systems are designed above the highest known flood level the first thing we know they become over-topped because of higher floods than previously recorded. In the Kansas River flood in 1951 some places were inundated 10 feet above any known previous level. Similarly in Stroudsburg, Pennsylvania, in 1955 no one expected the water supply to be completely knocked out.

In Connecticut, in 1955, run-off records ran to three or more times any previous record, and some records went back well over 100 years. A rain storm in central Pennsylvania a few years ago was estimated at 36 inches in 24 hours. Our country is just too new to have records for a long enough period to provide completely reliable predictions.

So in preparation for these problems we need to study what has taken place, and make adequate allowance in addition. Also we need to study the problems that have arisen and see how they were solved. We must have a good basic knowledge of the principles of sanitation and we must remember that necessity is the mother of invention. Something different is always likely to happen and ingenuity and improvisation will be the order of the day.

Ingenuity Necessary

An illustration of this is the situation in Stroudsburg, Pennsylvania, following Hurricane Diane in 1955, when the water supply system was knocked out. Water was being hauled in by tank truck but it was found that many people did not even have a container to carry it in. The mayor thought of milk cartons and called to the Lehigh Valley Cooperative Farmers Dairy at Allentown asking them to send over a supply of cartons. The creamery manager thought a moment and said, "Sure I'd be glad to send over some cartons." "But" he said, "I can send
full ones just as easily as I can send empty ones. I'll just load up a truck of full cartons and send them over.” Thus was born one method of providing water to natural disaster victims in a safe and sanitary manner that permitted people to take water to their homes, fully protected, permitted restaurants to open, permitted hospitals to function, and served many other obvious purposes.

In the Kansas City stock yards, in 1951, the hundreds of dead animals soon became a serious problem. How could these water logged decaying carcasses be disposed of when they would fall apart upon any attempt to move them? They were bloated and odors and insects became severe. Here an article of war became the answer. The insertion of a gasoline jelly bomb into the interior of a carcass and touching a match to it resulted in complete cremation.

Burial of the dead becomes an urgent matter particularly in warm weather. This problem was aided in one instance by bringing in refrigerator trucks to retard decomposition until identification could be made.

Among the items in shortest supply in the Cameron, Louisiana, hurricane were snake-bite kits. Further serious problems were caused by nutria (an aquatic rodent) washed in from the swamps, that were attacking and biting people.

A sewage treatment plant in New Jersey was felt to be perfectly secure because the river surely would not overtop the plant itself. But no one thought that an empty settling tank would be floated out of its position by the hydrostatic pressure from below.

An unexpected problem in some New England communities was the necessity to post guards at the dump grounds to keep people away who wanted to go in and salvage the canned goods, furniture, appliances, and other things that had been condemned and discarded. Hasty land fill operations were necessary to eliminate the hazards involved.

Appropriate information programs are vital to keep the people informed of what is safe, what is not safe, and what can be pursued properly. People want to know how to clean up their houses, their basements, and what precautions should be taken. Strange as it may seem they will even be hesitant, many times, about driving non-stop through a flood-stricken area for fear of getting typhoid.

All of this points up the fact that we must consider all types of disaster and their potential for destruction. In floods, it is water, contamination, and damage. In explosions it is blast, heat, and possibly fire. A nuclear accident as in Windscale, England, will spew radioactive material over the landside. Or an accident with isotopes such as occurred in Houston, Texas, will cause radiation hazards. Accidents with insecticides, cyanide or other toxic material are not unknown. A nuclear explosion is merely a combination of these, only greater in magnitude. Thus we must be prepared to cope with all of these environmental hazards in peace as well as war.

Operational Plans Needed

But our technical ability is only one aspect. All the technical competence in the world cannot be effectively utilized in the solution of problems unless it is properly organized and effectively directed. In fact, the principal deficiency that has been observed with respect to disasters has been the lack of operational plans that provide for the coordination and direction of the forces available—an operational plan which specifies who is the boss, the area of responsibility of the various personnel assigned to the organization, what equipment and materials are available, where they are to be found, and how they can be obtained; a plan which provides for a system of communications, who to communicate with, and how; a plan which provides for transportation of both personnel and other resources and also directs the personnel to report back to headquarters on observations so the boss can provide what is needed to supplement the field forces.

Clearly, disaster plans should be developed for all eventualities. The magnitude of the disaster would determine to what extent the organization is mobilized, but this is for the boss to say upon receiving reports from the field. But one plan and one plan only is a desirable objective for coping with both natural disaster and enemy caused disaster.

In throwing this plan into operation procedures of course would vary. It is normal in the solution of any problem to size up the resources in relation to the problem and tackle it accordingly. In natural disasters, resources are usually unlimited. If the local area is not self sufficient it can draw upon the State. If the State needs additional help, it can draw on the Federal Government. For major natural disasters, so declared by the President upon request of the Governor of any State affected, the resources of the Federal Government are available both in personnel and in rehabilitative funds.

In natural disasters it is often found more expedient to discard and destroy rather than attempt to salvage. Our industrial potential makes it so. Furthermore, salvage operations and the cost of controlling such activities are often prohibitive. In contrast, following an enemy attack, the watchwords of the day will be conserve and salvage.

Each Community Should Have A Plan

The National Plan for Civil and Defense Mobilization urges every family to be prepared to exist on its own resources in its own home for not less than two
weeks. Similarly communities should be prepared to be self-sufficient for four weeks. For planning purposes no State should expect Federal assistance prior to four weeks following attack. However, Federal aid will be forthcoming as soon as humanly possible.

Let us consider this for just a moment. Ordinarily in meeting with the problems of disaster help can be obtained from unaffected areas. Immediately following a nuclear attack this can not be anticipated. Thus the people within each community should be properly trained and prepared to meet such problems as may arise. Technical know how will be among the most precious resources — the ability to utilize what is available to cope with problems.

To meet extraordinary problems throughout the country, the U. S. Public Health Service has had a reserve for many years. The reserves are called up when needed. Wouldn’t it be appropriate for State health departments to have a similar reserve and likewise for local health departments to maintain a ready reserve? These reserves could be enlisted from industry, from educational institutions, and other sources where personnel with appropriate backgrounds could readily assimilate the necessary principles to enable them to supplement the local health department sanitation force. They could be trained in advance and brought into periodic exercises for refreshing their training and putting their knowledge into practice, and they could be utilized in natural disasters. What they may lack in technical background they would make up for by having a knowledge of the area they are serving. A further advantage to such a reserve in each community would be the moral support they could provide to the local health department in the programs it is attempting to foster.

**Federal-State Responsibilities**

The responsibility of the Federal Government with respect to enemy attack is shared jointly with the States. The responsibility of the Federal Government in meeting natural disasters is to supplement State and local efforts. Public Law 875 recognizes the need for such assistance in major disasters and provides the authority to the President to make assistance available. By Executive Order the responsibility for administering this Act is placed with the Office of Civil and Defense Mobilization. In providing this assistance, OCDM coordinates the activities of other Federal agencies.

It is also the policy of OCDM to foster the development of State and local organizations and plans for coping with major disasters, and to provide advice and guidance to States and local governments on organization and planning to meet the effects of major disasters and to assure the maximum application of this experience in preparing Federal, State, and local governments to meet the effects of enemy attack. This can best be accomplished as an overall disaster planning activity to encompass both natural disasters and enemy attack.

The act also authorizes, when so declared by the President as a major disaster, the expenditure of Federal money for debris clearance, preservation of life and property, and for the emergency restoration of public facilities. This is a rather limited authorization. If a tornado were to cut a swath through a town a great many houses could be destroyed but it may not hit a school building or any other essential public facility. The principal item eligible for reimbursement under such circumstances would be debris clearance as necessary to resume essential public services.

**Role of Red Cross**

The organization chartered by Congress for aiding individuals and families as opposed to governments in natural disaster is the American National Red Cross. It is well organized to assist in natural disasters through its hundreds of local chapters, backed up by competent and experienced personnel within its national organization. Through formal understandings between the ARC and OCDM, the respective responsibilities and functions in natural disasters have been clearly defined.

The Red Cross recognizes that the primary responsibility for public health activities in disaster situations rest with the State and local health officials. For health and sanitation problems, particularly in Red Cross shelters, the assistance of the State and local health officials is earnestly solicited.

**Sanitarians Must Plan**

It is noteworthy to see the status of the sanitarians throughout the country being elevated. Along with this recognition comes the responsibility for controlling environmental hazards, of whatever nature and from whatever source, which cannot be overlooked. This means that operational planning to meet disasters must become a part of your daily task. It means that you must know what your job is, to whom you report, what is your area of responsibility, who is to work for you, what resources you have at your command, where they are to be found, and how to obtain them. It means that you must have the technical capability to cope with such problems as may arise whether they be biological, chemical, or radiological.

The fate of the Nation may very well lie with sanitarians whether the enemy be nature on the rampage, an element of our industrial complex gone berserk, or an attack by a foreign power. This is a tremendous challenge which must be accepted without hesitation.