Toxic waste disposal has been very haphazard in the past. Only recently has it been recognized that certain chemicals may persist for many years, that they may migrate, and that drums containing them eventually corrode. Toxic wastes have been and are still being handled in a number of ways. They may be temporarily or permanently stored in controlled and uncontrolled landfills, salt mines, in warehouses, mixed into salvage oil, dumped at night on private property or along road sides, dumped into rivers, lakes and the ocean, treated in special lagoons or ponds with chemicals, bacteria and/or ultraviolet light to degrade them (Johnson, 1977; Dunphy and Hall, 1978). They may be discharged into sewage treatment plants or they may be retained by the toxic waste generator on his property, in which case they are either burned or stored in drums above or below the ground.

In the more recent past, toxic waste treatment plants have been built where chemical waste is incinerated (Dunphy and Hall, 1978).

These different situations present different potential problems and different risk situations.

Occupational exposure may occur when such wastes are handled, remedial actions are taken or warehouses containing chemical wastes catch on fire.

The general public may be exposed directly or indirectly. For instance, in 1971, a salvage oil dealer picked up extremely toxic chemical waste, mixed it with salvage oil and sprayed it on three riding arenas for dust control. Many birds, cats, dogs, and horses died and several people suffered illness (Carter et al., 1975).
If persistent chemicals are discharged into rivers, they will be biomagnified in the food chain and contaminate human food sources, mainly wildlife and fish. For many of our poor, particularly in the southeastern part of the United States, fish and wildlife are a major source of protein (Kreiss, et al., in press). Since fish and wildlife are caught by individuals, it is not known how much polluted fish and game are actually consumed in the United States or any other country. In many instances, it is not possible to determine whether people living around chemical dumps have actually been exposed. Love Canal is a case in point. Most of the chemicals that were determined in the air of the houses and in the soil to which people might have been exposed were solvents which are rapidly metabolized in the body and excreted. They can, therefore, only be detected in people immediately after exposure. The only persistent chemicals at Love Canal that would accumulate in humans were Lindane ($\gamma$-hexachlorocyclohexane) and chlorinated dibenzodioxins. These were found in a few soil samples, basement sumps and remote areas like the storm sewer system. Analysis for chlorinated dibenzodioxins are very difficult and Lindane has not been found in elevated levels in human cases where monitoring was done. However, human monitoring was very limited. When the Centers for Disease Control was asked to conduct a study in the summer of 1980, it was not possible to determine what the exposures might have been in the past. The canal had been capped with a clay cap and a trench had been built around the canal. Drainage from the canal is now collected in the trench and treated in a waste treatment plant built on the site. The people who had lived in the first two rings of houses and presumably had had the highest exposure had been moved out in 1978. Thus, it was not possible to reconstruct exposure and make any risk assessment. Since weather may greatly influence chemical movements from dumps, environmental measurements made in 1978, for instance, can give no information about past exposures. In addition, little is presently known about the effects of multiple chemical exposures, nor is it known whether chemicals measured in soil at Love Canal are actually bioavailable to humans.

In handling chemical wastes, it must be remembered that they may be corrosive, flammable, explosive, and radioactive in addition to being acutely or chronically toxic. Furthermore, a multitude of chemicals are usually involved. To estimate the real and potential risk of stored wastes is a very complex problem. The information needed to attempt any risk assessment is given in Table 1.

As the questions in Table 1 illustrate, each toxic waste situation will have to be evaluated on its own merits. If the amount of toxic waste is limited (a few drums), this can usually be taken care of fairly easily unless supertoxic chemicals are involved. If a warehouse contains primarily nitroglycerin and nitro-cellulose, for example, or many flammable solvents, the danger of a fire or an explosion is very real, and should be of foremost concern. In some cases, acute toxicity may be of utmost concern. However, many chem-