

Disposal of toxic waste

[Environment](#), [Pollution](#)



A waste is considered toxic or hazardous if it threatens the health of the people and the destruction of the environment. The waste may be in any form and may be considered toxic even upon its storage. A more distinct characteristic of a toxic waste is given by U. S. Environmental Protection Agency (EPA). These are ignitability, corrosivity, reactivity and toxicity. Ignitability is characterized by the ability of the waste to create or catch fire. Not only is the waste needed to be able to start fire, but even to just catch it and spread it that it is considered to possess this characteristic.

On the other hand, it falls under corrosive if it has the capacity to cause rusting to metal substances. Usually, these wastes are categorized to acids or bases. A substance with pH level with less than or equal to 2, or greater than or equal to 12.5 is corrosive. Substances under this category are acids or bases that have the ability to harm the environment due to its high acidic and basic properties. Reactivity is described as instability under "normal" conditions. This means that without any special treatment or mixture with other substance, the waste has the tendency to explode or emit hazardous cyanide or sulfide gas.

The last characteristic is proven when there is fatal consequence of its ingestion or absorption. A fatal consequence may be a severe illness, discomfort or even death. Depending on this consequence, the waste can be further classified as carcinogenic, mutagenic, or teratogenic according to the EnviroFacts. If it caused the development of cancerous cells in the body of the victim, it is considered carcinogenic. On the other hand, if its ingestion results to damage in chromosome of the victim, it is considered mutagenic.

Lastly, if the victim is an expectant mother and the contact with the toxic waste affected the baby even before its birth, then the waste is teratogenic. The procedure that is being used in identifying and determining the toxicity of the substance (or what is known to as EPA) is Toxicity Characteristic Leaching Procedure (TCLP). If the toxicity of the waste affects the plants or animals, it is bioaccumulative, that is, the plants or animals which are active parts of the food chain can infect other organisms.

The characteristics above need not be fully applicable to the whole material for it to be considered a toxic waste. A small presence of toxic substance in a waste is enough for the latter to be toxic. Even if it is mixture or residue, it is still considered toxic waste. Hazardous wastes are usually by-products of different industries and commercial entities. Biological processes can also create a toxic waste. Even households can be held liable for the continuous increase of toxic wastes in the world. Hospitals also have its contribution, as well as the military. As such, the U. S.

Environmental Protection Agency or EPA provides a categorization of toxic wastes based from the source. Differences in source gives different kinds of wastes, and hence, treatments and means of disposal. According to the EPA website, hazardous wastes may belong to the F-list, K-list or P-list and U-list. The wastes belonging to the F-list are the most common among industries especially those engaging to manufacturing. Since there are numerous of this in a state, this list is also called the non-specific source wastes. These include solvents and other substances used for cleaning or degreasing purposes.

If the industry that served as source for the waste is easily identifiable such as oil company or petroleum refining company, the wastes they produce belong to the K-list or the source-specific wastes. Lastly, discarded commercial chemical products belong to the P-list and U-list. Medicines and pesticides belong to this group. Toxic substances have the capacity to contaminate air, land and water. In effect, all organisms that interact or have contact with these can also be victims of the hazardous effects these substances bring.

As such, government agencies and different organizations designed ways for these materials to be treated and disposed. According to the EnviroFacts site, there is really no completely safe way to treat these kinds of wastes. Land disposal, incineration and chemical or biological treatment were just the safe ways to solve the problem. Land disposal means dumping the waste in a selected area called landfills. These must be far from settlers, animals or humans alike and must be permanently sealed. Seals can either be plastic or clay. A concrete wall can also be built to enclose the garbage.

However, these wastes can still penetrate the ground and eventually mix with the ground water. Some substances that oxidize can also affect the air causing illness or hazard to any organism. EnviroFacts also suggest incineration. This is burning the waste in either low or high temperature. In this process, the wastes are confined and are burned. This is highly preferred for hospital wastes. However, large caution must be taken in using this method. Several substances may produce highly toxic gases when burnt. For instance, lead or arsenic is released in the air when old painted surfaces are burned.

Chlorinated hydrocarbons on the other hand produce hydrochloric acid and dioxins. Even solid by-products of this process that are left in the incinerators must be treated as hazardous as well. Lastly, certain chemicals or bacteria are added to the waste to lessen its toxins. Bacteria are believed to “eat” the toxins in the material, making it lesser hazardous. Water is used in the United States to treat hazardous wastes. Sulfuric acid wastes, if not recycled, can be treated with ammonia wastes from the same plant, forming ammonium sulfate, a fertilizer (Encarta Encyclopedia, 2007).

Another treatment for the wastes is solidification. In this process, the waste is melted and then mixed with binder for it to huge solid mass. This process is widely used for radioactive wastes. Specific types of wastes require specific treatment. Lack of knowledge regarding this often leads to more trouble and danger. Caroline Black and Chris Stavroudis presented several ways for treatments and disposal of certain wastes and gave precautionary measures in dealing with them. In their article Hazardous Waste Disposal, they started with the solvents.

These are highly corrosive materials that may include paints, oils or polymer residues. These must be kept in glass jars and not in metal containers to avoid rusting. If what is left to dispose is only a small amount, it can be allowed to evaporate. However, it must not be disposed on sinks and water pipes. This rule does not exempt water-soluble substances. When these accumulate in water pipe, it may cause fire or explosion. Since detergents are widely used in household, it is important to know that this is the only toxic substance allowed to be disposed of in the drain.

Unlike solvents, there is no tendency to accumulate flammable vapors that pose threat of explosion in the detergents. However, the triethanolamine is exempted from this. This particular substance must be treated as a solvent (Black C. and C. Stavroudis). For alkali and acids, the first thing that has to be done before treating or disposing it is the presence of a heavy metal like mercury, copper, zinc or cadmium. If any of this is a component of the waste, it must be put in a container and be removed with the help of the authorities. It must not be disposed in the sewer system.

Otherwise, the acid and alkali can be neutralized with the use of vinegar and baking soda, respectively. Then, they can be disposed in the drain with the aid of plenty of water. Ether, being a highly flammable substance must be treated with utmost care. It must be kept in a metal jar, not a glass one, to reduce the formation of peroxide. Upon using ether, there must be no fire that is near. Even a lit cigarette can ignite fire. If the ether was kept beyond three months, it must be surrendered to bomb squads because it has higher tendency of exploding (Black C. and C. Stavroudis).

While several chemicals can be used to neutralize and treat some toxic substances, there are some which can aggravate the problem than minimize it. For one, acids and alkalis must be kept separated, as well as solvents and known flammable substances (Black C. and C. Stavroudis). Because toxic waste disposal has been a long-running problem, countries have long tried different measures to address this problem. However, the process of treating and disposing the wastes are too costly and not to mention health-threatening.

Even if there are ways to treat it in landfills or special sites, it is difficult to find a place where dumpsites could be established. And so, rich nations opt to bring them to the Third World nations in exchange for several billions of dollars or so. These Third World Nations, driven by their need for funds for their own development oftentimes accept these offers, discounting the threat it pose. This act increases the problem. The shipment of toxic wastes is usually by means of cargoes or ships. The tendency of spilling the wastes in its way to its destination is high.

Also, the recipient nations do not usually have enough facilities and technologies to treat the wastes properly. This result to a larger threat for the people and the environment of the receiving nation. Also, landfills and dumpsites are usually inhabited by slums and squatters, ignoring the huge possibility of acquiring illness. Although several nations already realized the adverse effects of accepting wastes from other nations, still, there are some which continues to be the garbage bag of the richer nations. However, it is very essential to say that this act do not solve the problem.

It just moves it. It is like passing the burden to the other. Through time, much legislation has been passed to address the issue of proper waste, especially toxic wastes, management. However, the main concern is their treatment and disposal. But the catch is there is no completely safe way to do this. One way or another, the waste would still affect the land, the water, and the air. And so, to really address this problem which started with the existence of these waste materials, the control must be put on the production and manufacturing of this highly toxic substances.

The industries must find alternatives to their existing materials to find them less toxic. Further studies may also be concluded to improve the sewer system. Recycling and reusing had also been the longest running advice to minimize the waste. The problem on waste disposal must be addressed right down to its roots. It is not just the duty of the government officials, or the environmentalists, but rather, it is the duty of everyone. It might not be realized, but everyday is an opportunity to change the situation.