

# Hazardous Waste

by Sophia



## WHAT'S COVERED

In this lesson, we will cover the topic of hazardous waste. We will define hazardous waste and discuss how it is managed. We will also discuss its negative impacts on the environment and human health. We will explore efforts to reduce its impacts, including the U.S. law about hazardous waste. Specifically, this lesson will cover the following:

1. Hazardous Waste
2. Storage of Hazardous Waste
3. Impacts of Hazardous Waste
4. Management of Hazardous Waste

## 1. Hazardous Waste

Hazardous waste is basically solid waste. This type of waste has one or more of the characteristics listed in the table below.

Hazardous Waste Characteristics	Description
Toxicity	It is harmful to human or ecological health if ingested or absorbed.
Corrosivity	It is acidic or basic enough to corrode metal.
Reactivity	It is unstable enough to cause explosions and create toxic fumes, gases, or vapors when heated, compressed, or combined with water and other substances.
Ignitability	It can catch fire.

Hazardous waste includes radioactive, medical, and industrial waste, as well as some paints and solvents.

⇒ **EXAMPLE** Hazardous waste that can be found at home includes paint that you might use to touch up the bathroom, lawn chemicals used to keep it green, and even batteries.



#### DID YOU KNOW

Household cleaning products, such as ones that contain ammonia or bleach, can also be considered hazardous waste.

## 2. Storage of Hazardous Waste

Hazardous waste can be stored in a variety of locations, such as tanks, containment buildings, waste piles, containers, and holding ponds.

It can be intentionally or accidentally released from these locations in many different ways including the following:

- Tanks for storing petroleum products both above and below ground can leak and/or catch fire. A gas station is a good example of this; it is common for leakages from gas station tanks to contaminate local drinking water supply.
- Hazardous waste reservoirs, holding ponds, and pipelines can also have leaks that release chemicals into the environment, causing all sorts of problems.
- In the event that trains or trucks carrying hazardous waste crash, their contents can leak out.
- It is not uncommon for hazardous waste to be illegally dumped into water systems, sewer systems, ditches, and abandoned buildings so that individuals and companies don't have to pay for disposal.



#### HINT

Despite their impacts, agricultural chemicals normally used in fields are not considered hazardous waste by law.



### 3. Impacts of Hazardous Waste

Hazardous waste has the potential to contaminate and pollute air, water, and land resources. Without proper management and disposal, it can have negative effects on human and environmental health.

⇒ **EXAMPLE** A coal-fired plant is shown below. Sludge is a hazardous waste created from normal processes of a coal plant. Sludge can contain arsenic, mercury, chromium, and cadmium, which, in the case of leaks from a containment pond, can contaminate water, damage human organs, and even cause cancer.



Hazardous waste can become dangerous to humans, plants, and animals if ingested, inhaled, or experienced through dermal exposure, meaning if it touches skin.

Impacts to human and ecological health are determined by the following three factors:

1. Amount of waste released at first, as well as over time
2. Concentration of harmful components in the waste
3. Toxicity of the waste

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## 4. Management of Hazardous Waste

Efforts to reduce hazardous waste and its impacts include the following:

- Reducing the amount of waste at its source
- Recycling hazardous waste for other uses
- Monitoring the life cycle of the waste from harvest to disposal to prevent unwanted leakages or illegal disposal
- Treating the waste chemically, thermally, or biologically to render it less dangerous and mitigate its impacts

- Storing it in landfills specially built for hazardous waste containment

The U.S. government has developed a permitting system for hazardous waste landfills, and this system tracks the waste in its management and disposal facilities.



#### KEY CONCEPT

The 1980 Comprehensive Environmental Response Compensation & Liability Act, which is also known as Superfund, taxes certain chemicals and then uses funds to address environmental impacts of hazardous waste.

Finally, it is important to note what is not hazardous waste. Unless they contain hazardous substances or by-products, the following types of waste are not considered hazardous waste:

- Animal waste
- Septic waste
- Petroleum, which includes automotive, heating, cooking fuels, natural gas, and crude oil

None of these three are, by themselves, considered hazardous waste by law.



#### SUMMARY

In this lesson, we learned about **hazardous waste**, which is essentially solid waste that is one or more of the following: toxic, corrosive, reactive, or ignitable. We discussed the **storage of hazardous waste**, how it can be intentionally or unintentionally released into the environment, and the negative **impacts** that this can have. We also learned about the ways those impacts can be addressed, and U.S. law related to **hazardous waste management**.

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