SOLID WASTE MANAGEMENT

[Solid waste management](https://www.conserve-energy-future.com/waste-management-and-waste-disposal-methods.php) is a term that is used to refer to the process of collecting and treating solid wastes. It also offers solutions for [recycling items](https://www.conserve-energy-future.com/Importance_of_Recycling.php) that do not belong to garbage or trash. As long as people have been living in settlements and residential areas, garbage or solid waste has been an issue.

Solid-waste management, the collecting, treating, and disposing of solid material that is discarded because it has served its purpose or is no longer useful. Improper [*disposal of municipal solid waste*](https://www.conserve-energy-future.com/various-waste-disposal-problems-and-solutions.php) can create unsanitary conditions, and these conditions in turn can lead to pollution of the environment and to outbreaks of vector-borne disease—that is, diseases spread by rodents and insects.”

Categories of Waste

1. **Organic waste:** Kitchen waste, waste from food preparation, vegetables, flowers, leaves, fruits, and market places.
2. **Combustibles:** Paper, wood, dried leaves, packaging for relief items etc. that are highly organic and having low moisture content.
3. **Non-combustibles:** Metal, Tins, Cans, bottles, stones, etc.
4. **Toxic waste:** Old medicines, paints, chemicals, bulbs, spray cans, fertilizer and pesticide containers, batteries, shoe polish.
5. **Recyclables:** Paper, glass, metals, plastics.
6. **Ashes or Dust:** Residue from fires that are used for cooking.
7. **Construction waste:** Rubble, roofing, broken concrete etc.
8. **Hazardous waste:** Oil, battery acid, medical waste, industrial waste, hospital waste.
9. **Dead animals:** Carcasses of dead livestock or other animals.
10. **Bulky waste:** Tree branches, tires etc.
11. **Soiled waste:** Hospital waste such as cloth soiled with blood and other body fluids.

The following are major sources of solid waste:

### Residential: Residences and homes where people live are some of the major sources of solid waste. The garbage from these places includes [food wastes](https://www.conserve-energy-future.com/causes-effects-solutions-food-waste.php), plastics, paper, glass, leather, cardboard, metals, yard wastes, ashes and special wastes like bulky household items such as electronics, tires, batteries, old mattresses and used oil.

* 1. Industrial: Industries are known to be one of the biggest contributors to solid waste. They include light and heavy manufacturing industries, construction sites, fabrication plants, canning plants, power and chemical plants.

### 3. Commercial

Commercial facilities and buildings are yet another source of solid waste today. Commercial buildings and facilities, in this case, refer to hotels, markets, restaurants, godowns, stores and office buildings.

Some of the solid [wastes generated from these places include plastics](https://www.conserve-energy-future.com/30-brilliant-ways-towards-reducing-your-plastic-consumption.php), food wastes, metals, paper, glass, wood, cardboard materials, special wastes and other hazardous wastes.

### 4. Institutional

The institutional centers like schools, colleges, prisons, military barracks and other government centers also produce solid waste. Some of the common solid wastes obtained from these places include glass, rubber waste, plastics, food wastes, wood, paper, metals, cardboard materials, electronics as well as [various hazardous wastes](https://www.conserve-energy-future.com/hazardous-waste-disposal-and-companies.php).These industries produce solid waste in the form of housekeeping wastes, food wastes, packaging wastes, ashes, construction and demolition materials, special wastes, [medical wastes](https://www.conserve-energy-future.com/medical-waste-disposal.php) as well as other hazardous wastes.

### 5. Construction and Demolition Areas

### Construction and demolition sites also contribute to the solid waste problem. Construction sites include new construction sites for buildings and roads, road repair sites, building renovation sites and building demolition sites.Some of the solid wastes produced in these places include steel materials, concrete, wood, plastics, rubber, copper wires, dirt and glass.

### 6. Municipal Services: The urban centers also contribute immensely to the solid waste crisis in most countries today. Some of the solid waste brought about by the municipal services include street cleaning, wastes from parks and beaches, wastewater treatment plants, landscaping wastes and wastes from recreational areas, including sludge.

### 7. Treatment Plants and Sites: Heavy and light manufacturing plants also produce solid waste. They include refineries, power plants, processing plants, mineral extraction plants and chemical plants.Among the wastes produced by these plants, there are industrial process wastes, unwanted specification products, plastics, metal parts, just to mention a few.

### 8. Agriculture: Crop farms, orchards, dairies, vineyards and feedlots are also sources of solid wastes. Among the wastes they produce are agricultural wastes, spoiled food, pesticide containers and other hazardous materials.

### 9. Biomedical

This refers to hospitals and biomedical equipment and chemical manufacturing firms. In hospitals, there are different types of solid wastes produced.

Some of these solid wastes include syringes, bandages, used gloves, drugs, paper, plastics, [food wastes](https://www.conserve-energy-future.com/31-smart-and-easy-ways-to-reduce-food-waste.php) and chemicals. All these require proper disposal or else they will cause a huge [problem for the environment](https://www.conserve-energy-future.com/causes-and-effects-of-environmental-degradation.php) and the people in these facilities.

## Effects of Poor Solid Waste Management

### 1. Litter Surroundings

Due to improper waste disposal systems, particularly by municipal waste management teams, wastes heap up and become a menace. While people clean their homes and places of work, they [litter their surroundings](https://www.conserve-energy-future.com/various-littering-facts.php), which affect the environment and the community.

### 2. Impact on Human Health

Improper waste disposal can affect the health of the population living nearby the polluted area or landfills. The health of waste disposal workers and other employees involved with these landfill facilities are also at a greater risk.

Exposure to wastes that handled improperly can cause skin irritations, respiratory problems, blood infections, growth problems, and even reproductive issues.

**3. Disease-causing Pests:** This type of dumping of waste materials forces biodegradable materials to rot and decompose under improper, unhygienic and uncontrolled conditions.

### 4. Environmental Problems

Solid wastes from industries are a source of toxic metals, [hazardous wastes](https://www.conserve-energy-future.com/hazardous-waste-disposal-and-companies.php), and chemicals. When released to the environment, the solid wastes can cause biological and physicochemical [problems to the environment](https://www.conserve-energy-future.com/15-current-environmental-problems.php) that may affect or alter the productivity of the soils in that particular area.

### 5. Soil and Groundwater Pollution

[Toxic materials and chemicals](https://www.conserve-energy-future.com/top-10-worst-toxic-pollution-problems.php) may seep into the soil and pollute the groundwater. During the process of collecting solid waste, hazardous wastes usually mix with ordinary garbage and other flammable wastes making the disposal process even harder and risky.

### 6. Emission of Toxic Gas: When hazardous wastes like pesticides, batteries containing lead, mercury or zinc, cleaning solvents, radioactive materials, e-waste and plastics mixed up with paper and other non-toxic scraps are burned they produce dioxins, furans, polychlorinated biphenyls, and other gases. These toxic gases have the potential of causing various diseases, including cancer.

### 7. Impact on Land and Aquatic Animals Our carelessness with our waste and garbage also affects animals, and they suffer the effects of pollution caused by improperly disposed of wastes and rubbish.

## Methods of Solid Waste Management

There are different methods of solid waste management. The following are some of the recognized methods:

### 1. Sanitary Landfill

This is the most popular solid [waste disposal method](https://www.conserve-energy-future.com/nuclear-waste-disposal-methods.php) used today. Garbage is basically spread out in thin layers, compressed and covered with soil or plastic foam. These are designed in such a way that the bottom of the landfill is covered with an impervious liner, which is usually made of several layers of thick plastic and sand. This liner protects the [groundwater from being contaminated](https://www.conserve-energy-future.com/causes-effects-solutions-groundwater-pollution.php) because of leaching or percolation.When the landfill is full, it is covered with layers of sand, clay, topsoil and gravel to prevent seepage of water.

**Advantage**: If landfills are managed efficiently, it is an ensured sanitary waste disposal method.

**Constraint**: It requires a reasonably large area.

**2. Incineration**

This method involves the burning of solid wastes at high temperatures until the wastes are turned into ashes. Incinerators are made in such a way that they do not give off extreme amounts of heat when burning solid wastes. heat energy through furnace and boiler are called [waste-to-energy plants](https://www.conserve-energy-future.com/waste-to-energy.php). These waste-to-energy systems are more expensive to set up and operate compared to plain incinerators because they require special equipment and controls, highly skilled technical personnel, and auxiliary fuel systems.

This method of solid waste management can be done by individuals, municipalities and even institutions. The good thing about this method is the fact that it reduces the volume of waste up to 20 or 30% of the original volume.

**Advantage**: The volume of combustible waste is reduced considerably by burning waste. In the case of off-site pits, it is an appropriate method to minimize scavenging.

**Constraint**: It can cause smoke or fire hazard and also emits gaseous pollutants.

### 3. Recovery and Recycling

[Recycling](https://www.conserve-energy-future.com/various-recycling-facts.php) or recovery of resources is the process of taking useful but discarded items for the next use. Plastic bags, tins, glass and containers are often recycled automatically since, in many situations, they are likely to be scarce commodities.

Traditionally, these items are processed and cleaned before they are recycled. The process aims at reducing energy loss, consumption of new material and [reduction of landfills](https://www.conserve-energy-future.com/15-easy-ways-to-reduce-landfill-waste.php). The most developed countries follow a strong tradition of recycling to lower volumes of waste.

**Advantage**: Recycling is environmentally friendly.

**Constraint**: It is expensive to set up, and in most emergencies, there is limited potential.

### 4. Composting

Due to a lack of adequate [space for landfills](https://www.conserve-energy-future.com/causes-effects-solutions-of-landfills.php), biodegradable yard waste is allowed to decompose in a medium designed for the purpose. Only biodegradable [waste materials are used in composting](https://www.conserve-energy-future.com/Composting.php).

It is a biological process in which micro-organisms, specifically fungi and bacteria, convert degradable organic waste into substances like humus. This finished product, which looks like soil, is high in carbon and nitrogen. Good quality [environmentally friendly manure](https://www.conserve-energy-future.com/15-easy-ways-to-become-environmentally-friendly.php) is formed from the compost that is an excellent medium for growing plants and can be used for agricultural purposes.

**Advantage**: Composting is [environmentally friendly](https://www.conserve-energy-future.com/innovative-ways-to-build-environmentally-friendly-home.php) as well as beneficial for crops.

**Constraint**: It requires intensive management and experienced personnel for large scale operation.

### 5. Pyrolysis

This is a method of solid waste management whereby solid wastes are chemically decomposed by heat without the presence of oxygen. It usually occurs under pressure and at temperatures of up to 430 degrees Celsius. The solid wastes are changed into gasses, solid residue of carbon and ash and small quantities of liquid.

**Advantage**: This will keep the [environment clean](https://www.conserve-energy-future.com/environmental-ethics.php) and reduce health and settlement problems.

**Constraint**: The systems that destroy chlorinated organic molecules by heat may create incomplete combustion products, including dioxins and furans. These compounds are highly toxic in the parts per trillion ranges. The residue it generates may be hazardous wastes, requiring proper treatment, storage, and disposal.

To summarize, proper solid waste management is an integral [part of environmental conservation](https://www.conserve-energy-future.com/methods-and-importance-of-environmental-conservation.php) that should be observed by both individuals and companies globally.