

## **INDUSTRIAL WASTE AND ITS ENVIRONMENTAL IMPACTS**

Industrial waste is the waste produced by industrial activity which includes any material that is rendered useless during a manufacturing process such as that of factories, industries, mills, and mining operations. Types of industrial waste include dirt and gravel, masonry and concrete, scrap metal, oil, solvents, chemicals, scrap lumber, even vegetable matter from restaurants. Industrial waste may be solid, liquid or gaseous. It may be hazardous or non-hazardous waste. Hazardous waste may be toxic, ignitable, corrosive, reactive, or radioactive. Industrial waste may pollute the air, the soil, or nearby water sources, eventually ending up in the sea. Industrial waste is often mixed into municipal waste, making accurate assessments difficult. An estimate for the US goes as high as 7.6 billion tons of industrial waste produced every year. Most countries have enacted legislation to deal with the problem of industrial waste, but strictness and compliance regimes vary. Enforcement is always an issue.

### **Classification and treatment**

Toxic waste/Hazardous waste, chemical waste, industrial solid waste and municipal solid waste are designations of industrial wastes. Sewage treatment plants can treat some industrial wastes, i.e. those consisting of conventional pollutants such as biochemical oxygen demand (BOD). Industrial wastes containing toxic pollutants or high concentrations of other pollutants (such as ammonia) require specialized treatment systems.

Industrial wastes can be classified on the basis of their characteristics:

Waste in solid form, but some pollutants within are in liquid or fluid form, e.g. crockery industry or washing of minerals or coal

Waste in dissolved and the pollutant is in the liquid form, e.g. dairy industry

### **Environmental Impact**

Factories and power plants are typically located near bodies of water due to the need for large amounts of water as an input to the manufacturing process, or for equipment cooling. Many areas that are becoming industrialized do not yet have the resources or technology to dispose off the waste with lesser effects on the environment. Both untreated and partially treated wastewater are commonly fed back into a nearby body of water. Metals, chemicals and sewage released into bodies of water directly affect marine ecosystems and the health of those who depend on the waters as food or drinking water sources. Toxins from the wastewater can kill off marine life or cause varying degrees of illness to those who consume these marine animals, depending on the contaminant. Metals and chemicals released into bodies of water affect the marine ecosystems. Effective manners in properly removing waste

Wastewater containing nitrates and phosphates often causes eutrophication which can kill off existing life in the water.

## Air Pollution

Main article: air pollution

Another obvious effect of industrial waste is air pollution resulting from fossil fuel burning. This affects the lives of many people because this spreads illnesses. Over time, this issue that has been widespread. Several environmental issues have a devastating effect on third world countries because they don't have sufficient resources to solve this particular issue. This also effects the quality of soil because farmers have to try and deal with this massive issue. In addition, nitrogen dioxide is a common air pollutant found in the air. Air pollutants have a devastating effect on the human population because it causes sicknesses. Ammonia also causes a lot of respiratory problems that can be contracted from the air. "Illnesses that can occur from air pollution range from irritation to eyes, skin, nose, or throat. There is also a chance to get Pneumonia or Bronchitis both being very dangerous. Commonly, people have reported to have gotten headaches, nausea and dizziness from air pollution." The WHO or The World Health Organization has stated that air pollution is the worst risk in terms of human health. Air pollution has been around for a long time. Indoor air pollution is also a risk for humans. This type of air pollution is caused of the burning of solid fuels mostly from cooking or heating.

## Water pollution

One of the most devastating effects of industrial waste is water pollution. For most industrial processes, heavy amount of water is used which comes in contact with harmful chemicals. These chemicals are usually metals or radioactive material. This heavily effects the environment because most of waste ends up in oceans, lakes, or rivers. As a result, water becomes polluted posing as health hazard to everyone. Farmers rely on this water but if the water is polluted, then crops that are produced can become polluted. These affect the health of society because if industrial companies can't clean up their waste, this begins to affect the life of humans but also animals. Sea creature's health are affected because their lives become endangered by this polluted water. Water pollution can have devastating effects on the human body with the main ones being infections from bacteria, parasites, and chemicals. "Diseases that humans can be exposed from drinking unsafe water range from cholera, typhoid, or Giardia.

## **Management**

### Segregation

Industrial wastes like glass, plastic, and paper are recyclable. As such, a company should segregate this waste from bio-degradable wastes, hazardous waste, and solid non-hazardous waste. To do this, the factory or company should identify the recyclable material and the set up a

separate waste collection system for them. This can be done by providing a recycling bin or dumpster at the factory or company.

### Utilize Landfills

After sorting the waste, the factory or company should dispose of non-hazardous waste that cannot be recycled to landfills. A landfill is a confined area where wastes are compacted and buried beneath the surface of the earth. As the buried wastes decompose or degrade, it releases gases that can be used to generate electricity or fuel. As such, burying waste in landfills has been widely adopted as it is cost effective and safe. However, landfills are limited because they are designed to accommodate a specific volume of waste.

### Composting

There are compostable industrial wastes that can be converted into fertilizers and manures. Some industrial wastes that fall into this category are food waste, newspaper, leaves, sawdust, straw, and cardboard. These compostable wastes can be added to the soil directly or processed into fertilizers to help improve the nutrient level of the soil. As such, you are both getting rid of waste and improving the environment.

### Recruit Industrial Waste Management Firms

Rather than go through the rigorous processes of sorting and composting waste, a company or manufacturer can enlist the help of industrial waste management firms. These firms are specially created to manage industrial waste, as such, a factory can save itself the stress of monitoring and managing waste. However, it is important to do an in-depth analysis of the waste management firm as some are known to adopt waste management strategies that solely focus on reducing the operating cost. Recruiting such firms will defeat a manufacturer's waste management goals.