



Hazardous Waste Management and their Process

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DESCRIPTION

Reduced production of hazardous materials, treatment of hazardous wastes to lessen their toxicity, and implementation of effective technical controls to minimise or completely eliminate exposures to these wastes are all components of hazardous waste management. Chemical engineers view all wastes as unintentionally produced, but notably dangerous wastes. Chemical production facilities aim to produce products that are in demand in the market, however during the production process or under certain conditions, these products or their components might become hazardous. The same substances would be hazardous materials rather than hazardous trash if they were generated on purpose.

A risk is defined as the likelihood of an undesirable result. The risk of illness or death is the most significant hazard associated with chemicals. Morbidity and mortality are the terms used by epidemiologists to describe this. In the fields of medicine and environmental research, the risks to human health are collectively referred to as toxicity. The study of these health effects and their potential causes is known as human toxicology. Ecotoxicology, often known as ecological toxicology or simply ecotoxicology, is the study of threats to ecosystems. It is further separated into subfields like aquatic toxicology and mammalian toxicity.

Hazardous waste management

Usually, the process starts with transport, when garbage is delivered to a different facility or business for management. Many nations require meticulous documentation at every stage of the transport process, and transportation is closely regulated. Next, garbage is frequently processed to lessen its volume, make it recyclable, and/or limit its toxicity. There are many different treatment techniques, some of which include burning, chemical reprocessing, bacterial biodegradation, or physical solidification. In the past, certain hazardous materials were dumped in common landfills. Unfavourable quantities of dangerous pollutants began to seep into the earth as a result. These chemicals gradually found their way into the hydrologic systems

of nature. Nowadays, many landfills must take precautions against groundwater contamination. Currently, hazardous wastes frequently need to be stabilized and solidified before going into a landfill. They also need to go through several treatments before being stabilized and disposed of. For industrial fuel, the majority of combustible materials can be recycled. Lead acid batteries are one example of a substance having hazardous elements that can be recycled.

Recycling

Some hazardous wastes can be turned into fresh products through recycling. Lead-acid batteries and electronic circuit boards are two examples. If heavy metals in these ashes are properly treated, they may bind to other contaminants and turn them into solids that are simpler to dispose of or be utilized as pavement filler. These processes recycle the safe product while lowering the threat posed by dangerous substances like fly and bottom ash. In Oxnard, there is a recycling facility. There is a monthly cap on the amount of hazardous waste can bring in, however the city does not charge for any hazardous waste disposal. The city also permits to dispose of electronic garbage, light bulbs, and batteries in addition to hazardous material.

Incineration, destruction and waste-to-energy

Waste that poses a risk may be "destroyed". For instance, it is sometimes possible to use combustible wastes as energy sources by incinerating them at a high temperature. For instance, a lot of cement kilns burn dangerous wastes like solvents or old oils. Today's incineration processes produce electricity from the gases emitted during the process in addition to reducing the amount of hazardous waste. It is well known that this specific waste treatment emits hazardous gases that are created when by-products or other materials are burned. However, modern technology has created more effective incineration units that regulate these pollutants to the point that this course of treatment is thought to be more advantageous. Depending on the qualities of the trash, there are various types of incinerators. The incineration of hazardous material using starved air is

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Received: 03-Feb-2023, Manuscript No. JPEB-23-19718; **Editor assigned:** 06-Feb-2023, Pre QC No. JPEB-23-19718 (PQ); **Reviewed:** 20-Feb-2023, QC No JPEB-23-19718; **Revised:** 27-Feb-2023, Manuscript No. JPEB-23-19718 (R); **Published:** 06-Mar-2023, DOI: 10.35248/2157-7463.23.14.503

Citation: Zhang L (2023) Hazardous Waste Management and their Process. J Pet Environ Biotechnol. 14:503

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another technique. Burning happens just like in conventional incineration, however limiting the amount of oxygen permitted helps to significantly lower the amount of toxic byproducts created. In terms of air pollution, starved air incineration is an improvement over conventional incinerators. By controlling the waste's rate of burning, it is feasible to lower the amount of air pollutants produced during the process.

Hazardous waste landfill

A permanent disposal facility or a hazardous waste dump can be used to sequester hazardous material. A landfill is defined as a

place where hazardous waste is disposed of, or a portion of a place where it is disposed of, on land and which is not a pile, a land treatment facility, a surface impoundment, an underground injection well, a salt dome formation, a salt bed formation, an underground mine, a cave, or a corrective action management unit.