



Disposal Techniques of Chemical Waste Management and their Regulation Methods

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DESCRIPTION

Chemical waste management is the collection, treatment, and disposal of waste material that can cause harm to human health, safety, or the environment if improperly handled. It can be hazardous or non-hazardous, depending on their physical, chemical, or biological properties. It requires strict inventory control, proper labeling and storage, and safe transportation and disposal methods. Chemical waste management also aims to prevent or minimize pollution and environmental damage from chemical wastes. The harmful chemical wastes are those that can cause death or injury to life or damage to the environment if improperly handled. They may have one or more of the following characteristics: ignitability, corrosivity, reactivity, toxicity, radioactivity, infectivity, or bioaccumulation. Harmful chemical wastes may come from various sources, such as industrial processes, household products, agricultural activities, or medical facilities. Harmful chemical wastes may affect human health through inhalation, ingestion, or skin contact. They may also contaminate water sources, soil quality, and air quality. The disposal of chemical waste depends on the type and amount of waste and regulations. Some general steps for disposing of chemical waste are:

- Read the product label and the Material Safety Data Sheet (MSDS) for disposal instructions and hazards.
- Identify if the waste is hazardous or non-hazardous according to the EPA criteria.
- Store the waste in appropriate containers with proper labels. Plastic bottles are preferred over glass for hazardous waste.
- Contact a licensed hazardous waste disposal company or your local EPA office for collection and disposal.
- Do not mix different chemicals together or dispose of them *via* sinks, trash bins, or dumpsters.

Chemical waste does not have a specific color. The color of chemical waste depends on the type and composition of the chemicals in the waste. Some chemical wastes may be colorless, while others may have various colors due to the presence of

transition metals, organic dyes, or other substances that can absorb or reflect light. Some chemical waste storage facilities may use color-coded labels to indicate the category and compatibility of the chemicals in the waste containers. For example, red may indicate flammable liquids, blue may indicate corrosive liquids, yellow may indicate oxidizers, etc. These color codes are not universal and may vary by location and regulation.

It can come from various sources, such as: Industrial processes that use or produce chemicals, such as manufacturing, mining, metallurgy, petrochemicals, pharmaceuticals, etc. Household products contain chemicals, such as batteries, pesticides, paints, cleaning agents, cosmetics, etc. Agricultural activities use chemicals, such as fertilizers, herbicides, insecticides, fungicides, etc. Medical facilities use chemicals, such as drugs, disinfectants, sterilizers, reagents, etc. Biological processes that produce chemicals, such as waste from humans, animals, plants, microorganisms, etc. some ways to minimize the amount of chemical waste that is produced in high amount are: Implement inventory management practices to avoid over-purchasing, over-stocking, or re-purchasing of chemicals that may expire or become unwanted. Purchase chemicals in small quantities that match your needs and dispose of outdated or excess chemicals promptly.

CONCLUSION

Use scaling and substitution techniques to reduce the volume and toxicity of chemical waste generated. Conduct experiments in small scale and avoid unnecessary dilutions. Substitute hazardous chemicals with less-hazardous or non-hazardous alternatives whenever possible. Use pre-mixed chemicals with desired concentration to eliminate extra steps. Recycle or reuse chemical waste that can be recovered or regenerated, such as solvents, acids, bases, metals, etc. This will save resources and reduce waste generation and disposal costs. Recycling can also improve production efficiency and reduce environmental impacts. Segregate chemical waste by category and compatibility to prevent mixing of incompatible chemicals that may cause

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reactions or contamination. This will also facilitate proper storage and disposal of chemical waste and reduce the risk of accidents or spills. Composting of organic waste can be turned

into nutrient-rich fertilizer, such as food scraps, yard trimmings, paper products, etc. This will reduce the amount of waste sent to landfills and improve soil quality.