

Hazardous Waste Treatment (RV-10857)

Description

Hazardous waste can exist in liquid, solid or slurry forms. It may originate in a current manufacturing process or from clean-up of an abandoned site. This course will review the background and design considerations for different methods of treating hazardous waste.

This training course has 6 learning modules with a 10-question exam.

Intended Audience: Water Treatment and Water Distribution Operators

Objectives

After successfully completing this course, you will be able to:

- Analyze five major sectors of chemical treatment for industrial and municipal wastewater streams, sludge and solids, and learn how they are utilized.
- Differentiate between four major types of physical treatment processes and summarize how they are used.
- Discuss the important factors and concepts in biological treatment, along with processes and types of reactors used.
- Describe the steps involved in incineration, main factors controlling incineration effectiveness, and effluent standards for incineration.
- State the methods and mechanisms utilized in stabilization.
- Describe five emerging technologies used in hazardous waste treatment.

Outline

Introduction – 3 minutes

- Course overview
- Learning Objectives

Chemical Treatment – 10 minutes

- Neutralization
- Oxidation/Reduction
- Precipitation
- Coagulation/Flocculation
- Ion Exchange

Physical Treatment – 10 minutes

- Air Stripping
- Soil Vapor Extraction
- Carbon Adsorption
- Membrane Processes
- Microfiltration
- Ultrafiltration
- Nanofiltration

- Reverse Osmosis

Biological Treatment – 15 minutes

- Microbial Factors
- Engineering Factors
- Reactors
- Methods
- Electrodialysis (ED)/Electrodialysis Reversal (EDR)

Incineration – 5 minutes

- Target Wastes of Incineration
- Parameters for incineration

Stabilization, Solidification, and Land Disposal – 10 minutes

- The Last Options for Hazardous Waste Disposal
- Land Disposal

Emerging Technologies – 5 minutes

- Monitored Natural Attenuation
- Perchlorate Removal
- Phytoremediation
- Microbial Mats
- Permeable Reactive Barriers

Conclusion – 2 minutes