March 16, 2022

OESAC CEU Committee
P.O. Box 577
Canby, OR 97013-0577

RE: Course Appeal

Dear Sir or Madam,

Vector Solutions, sponsor number 480, requests the CEU Committee re-evaluate "Hazardous Waste Treatment" (OESACID 4624).

The course was previously approved for CEUs in the topics of Wastewater and General. However, during the most recent Board review the course did not receive those approvals based on timeframe requirements. This decision contradicts the confidence we have in our courses and prompted us to double check our existing timed outline. It was determined that an incorrect timed outline was submitted to the committee.

Vector Solutions apologizes for this error and kindly requests that the CEU Committee review the revised timed outline which is included.

Sincerely,

Brenda Knebel

Brenda Knebel
Director of Accreditation
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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