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CHEMICAL ENGINEERING REFRESHER PROGRAM
INDUSTRIAL WASTE MANAGEMENT AND CONTROL

1. This is the process of determining the chemical, biological, and physical characteristics; flow rate, concentration, and discharge schedule of a waste stream
 - a. waste characterization
 - b. waste audit
 - c. environmental audit
 - d. waste survey
2. The following are wastewater sludge disposal options except
 - a. incineration
 - b. anaerobic digestion
 - c. sea dumping
 - d. composting
3. The industry of ___ produces solid wastes of ____.
 - a. food products; cloth and filter residues
 - b. metal furniture; cloth and padding residues
 - c. leather products; scrap rubber and dyes
 - d. petroleum refining; asphalt and tars
4. Which of the following is not a characteristic of a persistent organic pollutant?
 - a. resist photochemical, biological, and chemical degradation
 - b. high water solubility and low lipid solubility
 - c. undergo long range transport in air and water
 - d. often halogenated
5. Which of the following is possibly not an air contaminant emitted by a pulp mill?
 - a. methanol
 - b. dust
 - c. hydrogen sulfide
 - d. ammonia
6. If the concentration of the gaseous pollutants are less than 1 g/m^3 but the volumetric flow rate of the gas stream is above $10,000 \text{ m}^3/\text{h}$, the appropriate pollution control equipment is
 - a. biofilter
 - b. adsorber
 - c. incinerator
 - d. condenser
7. This pollution control process decomposes hazardous gases at high temperature and release them into the atmosphere.
 - a. condensation
 - b. adsorption
 - c. wet scrubbing
 - d. thermal oxidation

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8. This is a thermal treatment to degrade hazardous waste in water using oxygen as the oxidizer.
 - a. incineration
 - b. pyrolysis
 - c. Zimmerman process
 - d. pervaporation

 9. What is the top priority of the waste management hierarchy?
 - a. disposal
 - b. treatment
 - c. recycling
 - d. prevention

 10. What method measures the environmental impact of a product over the entire period of its life?
 - a. life cycle analysis
 - b. multimedia analysis
 - c. feasibility analysis
 - d. BAST analysis

