



## **SELF-STUDY COURSE 3010-G**

# **Hazardous Waste Management**



## **Environmental Health Sciences Self-Study Course SS3010**

### **Lesson 5: *Hazardous Waste Management***

#### **I. Lesson Consists of the Following**

- A. Part I: 30 multiple choice questions
- B. Part II: 10 true-false questions

Note: These questions are not in sequence due to the interrelated nature of the subject. The student must complete the reading assignments before attempting to complete the questions.

#### **II. Reference**

Salvato, J. A. *Environmental Engineering and Sanitation*. 4th ed. New York: John Wiley & Sons, 1992.

Salvato, J. A. *Environmental Engineering and Sanitation*. 4th ed. 1994 Supplement. New York: John Wiley & Sons, 1994.

Title 40 U. S. Code of Federal Regulations, Parts 260-268.

#### **III. Reading Assignments**

- A. Hazardous Waste, *Environmental Engineering and Sanitation*
- B. Household Hazardous Waste, *Environmental Engineering and Sanitation 1994 Supplement*

(Page No.)

696 to 716

33 to 40

#### **IV. Objectives**

Upon successful completion of Lesson 5, students should be able to correctly

- recognize and define various terms associated with hazardous waste management
- demonstrate an understanding of hazardous waste management principles

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- characterize hazardous waste
- choose disposal options for hazardous waste
- manage a household hazardous waste collection event
- characterize household hazardous waste
- identify major sources of hazardous waste and make correct decisions concerning proper disposal methods.

**Part I: Household Hazardous Waste**

1. Hazardous waste is governed by the
  - a. Clean Water Act
  - b. Occupational Safety and Health Act
  - c. Resource Conservation and Recovery Act
  - d. Food and Drug Act
2. Hazardous wastes include \_\_\_\_\_ substances.
  - a. chemical
  - b. biological
  - c. flammable
  - d. all of the above.
3. By definition under RCRA hazardous wastes are \_\_\_\_\_ wastes.
  - a. solid
  - b. natural
  - c. gray
  - d. none of the above.
4. Hazardous wastes may be in a \_\_\_\_\_ form.
  - a. solid
  - b. liquid
  - c. sludge
  - d. all of the above.
- \* 5. Which of the following is not a characteristic of hazardous waste?
  - a. ignitability
  - b. corrosivity
  - c. reactivity
  - d. combustibility.

Twice

6. Which of the following is not included in hazardous waste regulations?
- a. domestic sewage
  - b. flammable liquids
  - c. corrosive liquids
  - d. none of the above.
7. Toxicity is determined by a laboratory procedure called the
- a. EPA method 012
  - b. toxicity characteristic leaching procedure
  - c. method sixteen
  - d. 1 and fill toxicity screening.
8. Hazardous wastes include
- a. industrial discharges permitted under the FWPCA
  - b. agricultural wastes
  - c. permitted irrigational waters
  - d. none of the above.
9. The regulatory level for benzene under the RCRA Toxicity Characteristic rule is
- a. 0.50 mg/l
  - b. 100 mg/kg
  - c. 0.2 mg/l
  - d. 25.0 mg/l.
10. The regulatory level for total cresol under the RCRA Toxicity Characteristic rule is
- a. 600 mg/l
  - b. 400 mg/l
  - c. 200 mg/l
  - d. 100 mg/l.

11. Information and advice on what to do with hazardous waste when spilled in a transportation accident is available 24 hours a day from the \_\_\_\_\_.
- a. RCRA/Superfund hotline
  - b. Chemical Emergency Center (CHEMTREC)
  - c. EPA administrator
  - d. none of the above.
12. In 1984, RCRA was amended to require \_\_\_\_\_, or the equivalent, at hazardous waste landfills.
- a. double liners
  - b. auxiliary incinerators
  - c. EPA coordinators
  - d. all of the above.
13. Land disposal by hazardous waste regulation includes
- a. incineration
  - b. waste pile
  - c. sewer disposal
  - d. fuel blending.
14. Domestic wastewater which passes through a sewer system to a POTW is not considered to be a \_\_\_\_\_.
- a. solid waste
  - b. hazardous waste
  - c. sewer waste
  - d. both a and b.
15. Which of the following waste material is not on the "California List" of wastes that are banned from land disposal?
- a. liquid having pH equal or less than 2
  - b. any solid waste
  - c. PCBs greater than 50 mg/l
  - d. liquid waste containing 130 mg/l thallium.



16. Toxic priority pollutants include
- a. arsenic
  - b. cadmium
  - c. vinyl chloride
  - d. all of the above.
17. Wastes generated by the construction industry include
- a. ignitable paint wastes
  - b. spent solvents
  - c. strong acids and bases
  - d. all of the above.
18. Hazardous wastes generated by vehicle maintenance shops include
- a. heavy metal paint wastes
  - b. ignitable wastes
  - c. spent solvents
  - d. all of the above.
19. The goal for hazardous waste management should be
- a. zero discharge
  - b. increased generation
  - c. more regulations
  - d. both b and c.
20. Which of the following is the least appropriate option for hazardous waste minimization?
- a. treatment
  - b. waste reduction at the point of generation
  - c. process modification
  - d. concentration.

21. High temperature incineration systems are most suitable to destroy
- a. wastewater
  - b. organic compounds
  - c. domestic sewage
  - d. none of the above.
22. Examples of thermal destruction processes in addition to incineration are
- a. cement kiln
  - b. chemical treatment
  - c. separation
  - d. none of the above.
23. Which of the following is not a type of hazardous waste incinerator?
- a. rotary kiln
  - b. fixed hearth
  - c. fluidized
  - d. fuel blending.
24. Heating of air, gas, or gas mixture up to 9032°F for the thermal destruction of hazardous wastes describes a process called
- a. plasma technology
  - b. rotary kiln incineration
  - c. fuel blending
  - d. all of the above.
25. The disposal of equipment and other materials containing PCBs
- a. have been completed according to national goals
  - b. is unregulated due to lack of documented need
  - c. will remain a national priority for a long time
  - d. has been privitized.



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26. The EPA requires that dioxin-bearing wastes be \_\_\_\_\_ destroyed or reduced before disposal in a secure hazardous waste landfill.
- a. 99.99 percent
  - b. 95.00 percent
  - c. 99.9999 percent
  - d. 0.05 percent
27. Sources of dioxin include \_\_\_\_\_.
- a. wood preserved with PCPs
  - b. paper mill bleached pulp and sludge
  - c. bleached paper products
  - d. all of the above.
28. Neutralization and detoxification are feasible with most of the organophosphate and carbamate insecticides, but not with the \_\_\_\_\_.
- a. chlorinated hydrocarbons
  - b. acids
  - c. bases
  - d. all of the above.
29. The EPA requires that toxic waste incinerators achieve a destruction and removal rate of \_\_\_\_\_ before the material is landfilled.
- a. 99.99 percent
  - b. 95.00 percent
  - c. 98.00 percent
  - d. 15.00 percent
30. It can be assumed that all hazardous waste landfill liners
- a. are designed for all hazardous materials
  - b. will eventually leak
  - c. will never leak
  - d. both a and c.

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### Part II: True-False

*(Mark answer sheet under column "A" if the statement is true, or under column "B" if the statement is partially or totally false.)*

1. Household hazardous waste is regulated like any other hazardous waste.
2. PCB waste collected from households is exempt from disposal regulations.
3. Support of household hazardous waste management is an avenue for industries to paint themselves as community leaders and defenders of the environment.
4. Funding for the collection, storage, and disposal of household hazardous waste always comes directly from the individuals who generate the waste.
5. Household hazardous waste is not exempt from DOT regulations when shipped to a disposal facility.
6. Household hazardous waste disposal bids should be evaluated solely on the basis of price.
7. The state or federal regulatory agency with jurisdiction should never be consulted when conducting a suitability audit of a waste disposal company.
8. Well-placed, existing solid waste collection areas are good choices for household hazardous waste collection sites.
9. A permanent facility for collecting and storing household waste should be located away from residential areas and places of public gathering.
10. A household hazardous waste management program draws much of its strength from informed and concerned citizens.

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**Answer Keys**



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**Answer Keys (Page No.)**

**Lesson 5: Part I**

1. C (696)	6. A (699)	11. B (700)	16. D (703)	21. B (708)	26. C (711)
2. D (697)	7. B (699)	12. A (701)	17. D (706)	22. A (708)	27. D (710)
3. A (696)	8. D (699)	13. B (701)	18. D (706)	23. D (708)	28. A (711)
4. D (697)	9. A (700)	14. D (701)	19. A (706)	24. A (708)	29. A (712)
5. D (699)	10. C (700)	15. B (702)	20. D (707)	25. C (709)	30. B (715)

**Part II**

1. B; false (33)	3. A; true (34)	5. A; true (36)	7. B; false (37)	9. A; true (39)
2. B; false (33)	4. B; false (34)	6. B; false (37)	8. A; true (38)	10. A; true (40)