

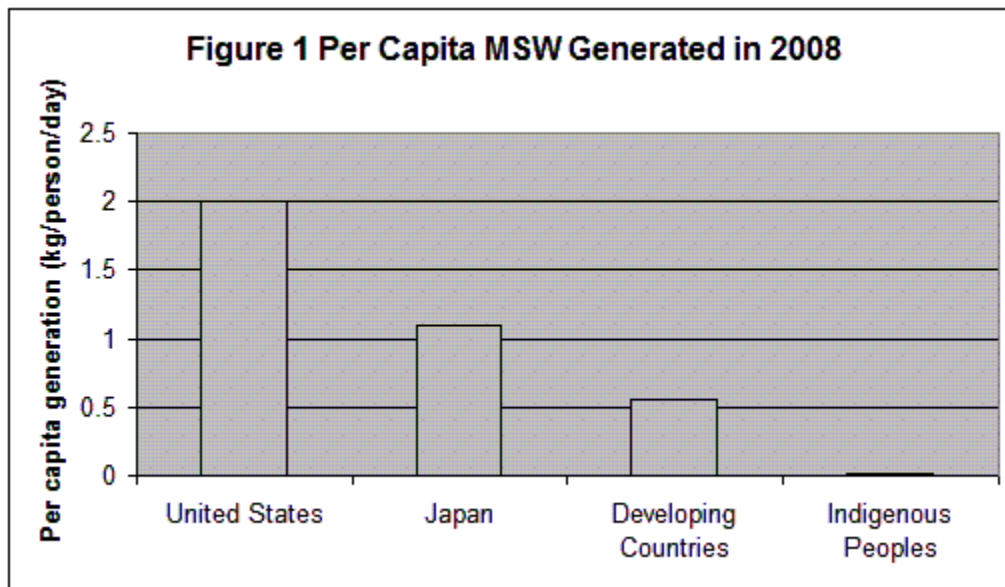
## Chapter 16 Quiz

### Multiple Choice

Identify the choice that best completes the statement or answers the question.

- \_\_\_\_\_ 1. Which of the following best describes municipal solid waste (MSW) in the United States?
- Sixty percent comes from residences and 40% comes from commercial sources
  - Sixty percent comes from commercial sources, 40% comes from residences
  - Fifty percent comes from commercial sources, 30% comes from residences, 20% comes from hospitals
  - Fifty percent comes from residences, 40% comes from commercial sources, 10% comes from hospitals
  - MSW comes from agricultural waste and mining waste.
- \_\_\_\_\_ 2. Which of the following best explains the rise of MSW generated by individuals in developing countries?
- Their growing populations and the increase in disposable income of individuals
  - Their growing populations of young people and urbanization efforts
  - Their growing populations and increased numbers of individuals in the work force
  - Their growing populations and the mass production of consumer goods used in developed countries
  - Their stable populations and their increase in disposable income of individuals

Figure 16-1

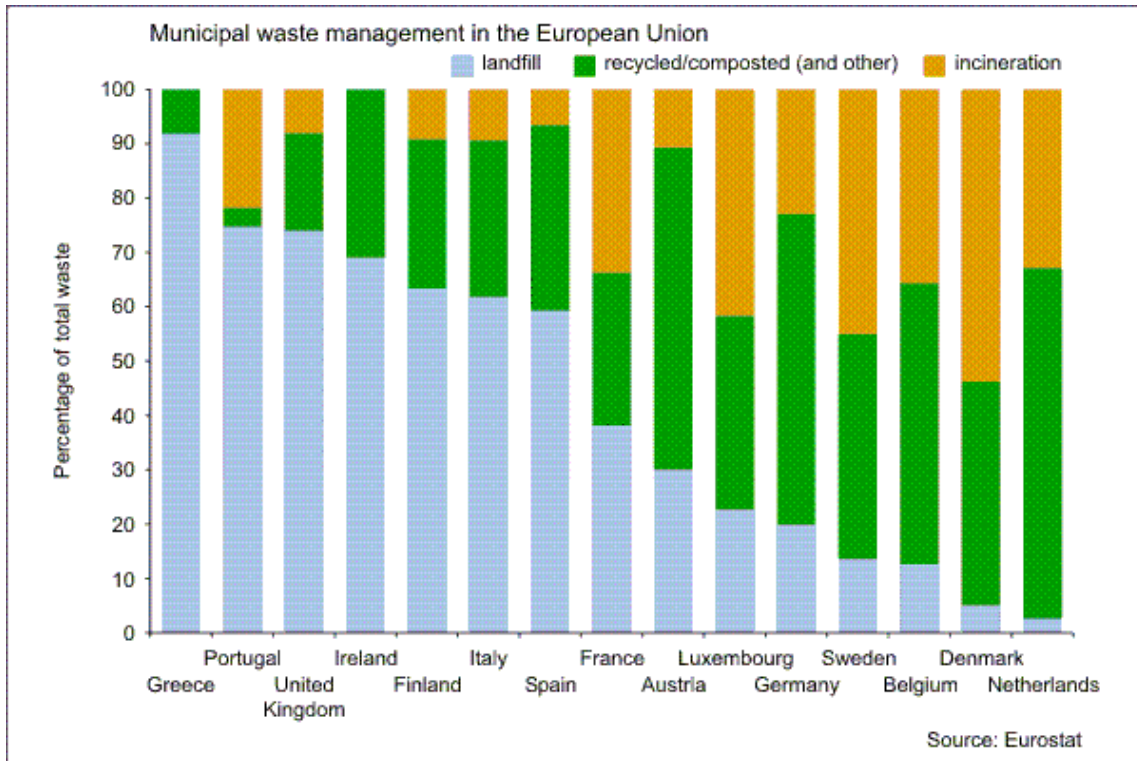


- \_\_\_\_\_ 3. Use Figure 16-1. The population that generates a little over 1000 grams of MSW per capita is
- United States
  - Japan
  - Developing countries
  - Indigenous peoples
  - Developing countries and indigenous peoples combined

- \_\_\_\_\_ 4. Which of the following items would most likely end up in the waste stream the fastest?
- An appliance
  - A paper cup
  - A piece of antique furniture
  - A ceramic plate
  - Auto parts in an abandoned car
- \_\_\_\_\_ 5. The major component of MSW in the United States is
- paper
  - yard trimmings
  - metal
  - plastic
  - wood
- \_\_\_\_\_ 6. When MSW is categorized based on its source, the category that comprises the greatest amount is
- containers and packaging
  - nondurable goods
  - durable goods
  - construction debris
  - food and yard waste
- \_\_\_\_\_ 7. Which of the following would NOT be categorized as e-waste?
- CRTs
  - Computers
  - Cell phones
  - Construction debris
  - Portable music players
- \_\_\_\_\_ 8. An environmental cost of sending computers to landfills is
- there is inadequate landfill space in the United States for computers
  - it is less expensive to send computers to the landfill than to recycle them
  - children separate the components of the disposed of computers
  - the disposed computers contain toxic metals that can end up in the environment
  - landfill standards keep the toxic compounds in the computers from leaching into the water table
- \_\_\_\_\_ 9. In order from the most desirable to the least desirable, the 3 R's stand for
- Recycle, Reuse, Reduce
  - Recycle, Reduce, Reuse
  - Reduce, Reuse, Recycle
  - Reduce, Recycle, Reuse
  - Reuse, Reduce, Recycle
- \_\_\_\_\_ 10. A company that produces laundry detergent switches from distributing its product in plastic bottles to instead using flexible pouches that require 84% less packaging. This is an example of
- source reduction
  - closed-loop reduction
  - single-loop reduction
  - cost analysis reduction
  - life-cycle analysis

- \_\_\_\_\_ 11. Which of the following is/are environmental benefit/s of recycling aluminum?
- I. Reduces the effects on the land from mining
  - II. Reduces the effects of leaching in landfills
  - III. Reduces the energy required to transport and process mined ore
- a. I only
  - b. II only
  - c. I and II only
  - d. I and III only
  - e. I, II, and III
- \_\_\_\_\_ 12. Which of the following best explains why the recycling of plastic is an example of open-loop recycling?
- a. Manufacturers may use a lesser amount of material for newer products.
  - b. Plastic bottles can be melted down and then used in the production of new bottles.
  - c. Plastic bottles can be recycled and used in the production of different plastic products.
  - d. Recycling plastic reduces the need for the raw material.
  - e. Plastic products can be used repeatedly before disposal.
- \_\_\_\_\_ 13. Which of the following is least likely to be a danger associated with leachate from a sanitary landfill?
- a. The leachate can leak into nearby soils
  - b. The leachate can leak into groundwater
  - c. The leachate can contain toxic metal compounds
  - d. The leachate can be at a high temperature
  - e. The leachate can be classified as toxic waste and have to be treated accordingly
- \_\_\_\_\_ 14. The environmental benefits of composting include all of following EXCEPT:
- a. reduced volume of material ending up in a landfill
  - b. generation of rich organic fertilizer
  - c. reduction in work force of waste management company
  - d. reduced amount of methane generated in landfills
  - e. reduced amount of energy needed to transport material to a landfill

**Figure 16-2**

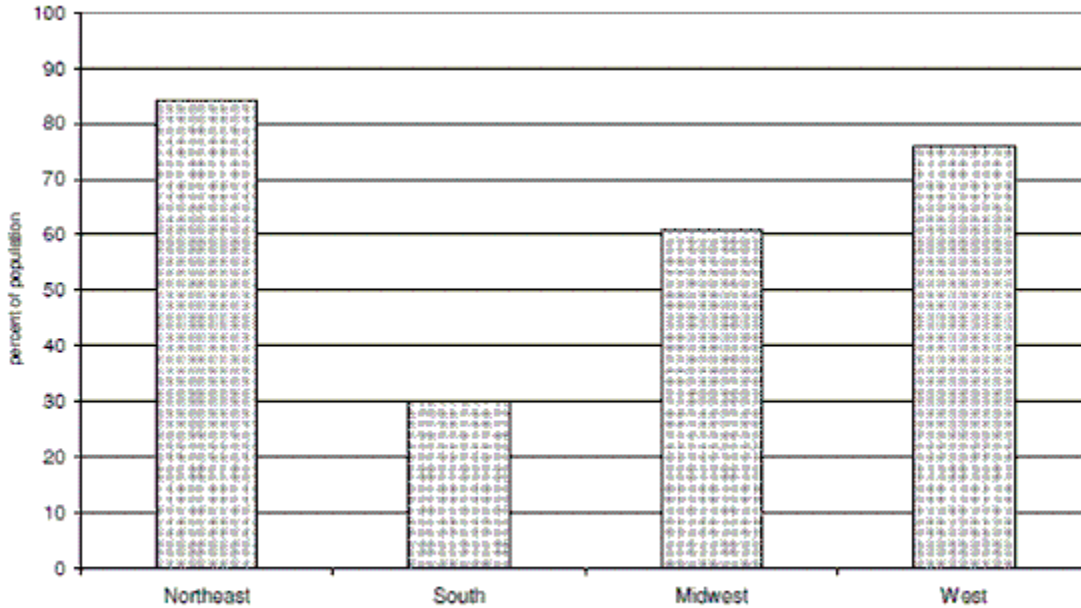


- \_\_\_\_\_ 15. Use Figure 16-2. The country that could benefit the most from a program that educates its population on the benefits of recycling and composting is
- Netherlands
  - France
  - Denmark
  - Portugal
  - United Kingdom
- \_\_\_\_\_ 16. Use Figure 16-2. The country that would most likely have problems with toxic ash due to the nature of its MSW facilities is
- Spain
  - Portugal
  - Germany
  - Luxembourg
  - Denmark
- \_\_\_\_\_ 17. The reclamation of a sanitary landfill occurs
- after the cells have been compacted
  - before the clay liner is installed
  - after the landfill is capped
  - before the landfill is capped
  - after the clay liner is installed

- \_\_\_\_\_ 18. A landfill in Minnesota receives an average of 50 cm of rainfall per year. 60 percent of the water runs off the landfill without infiltrating the surface. The landfill has a surface area of 5000 m<sup>2</sup>. What is the volume of water that annually infiltrates the landfill?
- 2000 m<sup>3</sup>
  - 1800 m<sup>3</sup>
  - 1200 m<sup>3</sup>
  - 1000 m<sup>3</sup>
  - 800 m<sup>3</sup>
- \_\_\_\_\_ 19. Negative aspects of waste incineration include all of the following EXCEPT:
- generation of electric energy
  - cadmium in ash
  - environmental justice issues when determining the site
  - incomplete burning of all waste in the incinerator
  - required hazardous waste treatment of ash
- \_\_\_\_\_ 20. If the United States produces approximately 40 million U.S. tons of hazardous waste annually, and only about 5% is recycled, what is the amount of waste that must be disposed of according to hazardous waste protocol?
- 2 million tons
  - 4 million tons
  - 8 million tons
  - 34 million tons
  - 38 million tons
- \_\_\_\_\_ 21. The US legislation that is designed to track hazardous waste from its production, “cradle,” to its disposal, “grave,” is
- Resource Conservation and Recovery Act
  - Clean Water Act
  - Comprehensive Environmental Response, Compensation, and Liability Act
  - National Priorities List
  - National Environmental Policies Act
- \_\_\_\_\_ 22. The US legislation that imposes a tax on targeted industrial facilities and then utilizes those funds to cleanup selected abandoned hazardous waste sites is
- NEPA
  - CWA
  - CERCLA
  - RCRA
  - NPA

**Figure 16-3**

*Population of the United States served by curbside recycling*



Source: U.S. Census Bureau, BioCycle April 2006, California Integrated Waste Management Board, Illinois Recycling Association, [www.coloradocurbside.com](http://www.coloradocurbside.com), Nebraska State Recycling Association, Pennsylvania Department of Environmental Protection

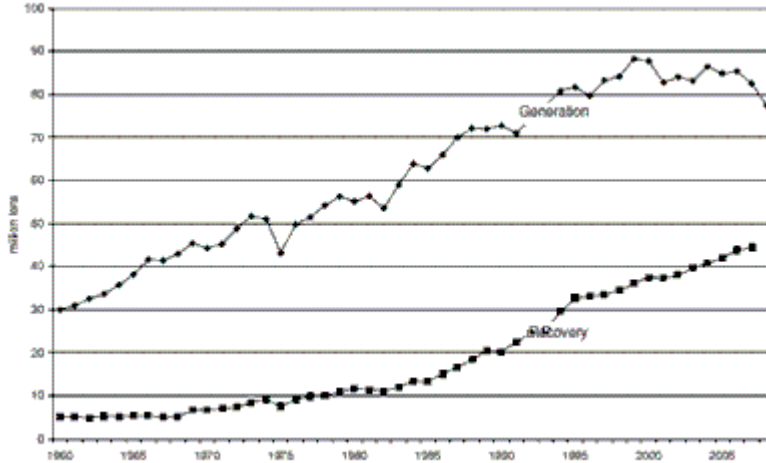
Source: U.S. Census Bureau, BioCycle April 2006, California Integrated Waste Management Board, Illinois Recycling Association, [www.coloradocurbside.com](http://www.coloradocurbside.com), Nebraska State Recycling Association, Pennsylvania Department of Environmental Protection

- \_\_\_\_\_ 23. Use Figure 16-3. The region(s) of the United States in which at least 50% of the population is being served by curbside recycling is/are
- I. the Northeast
  - II. the Midwest
  - III. the South
- a. I
  - b. III
  - c. I and II
  - d. I and III
  - e. I, II, and III
- \_\_\_\_\_ 24. Use Figure 16-3. If the percentage of the population served by curbside recycling in the South were to double, its new rate would be closest to the rate of:
- a. the Northeast
  - b. the Southwest
  - c. the Midwest
  - d. the West
  - e. Alaska

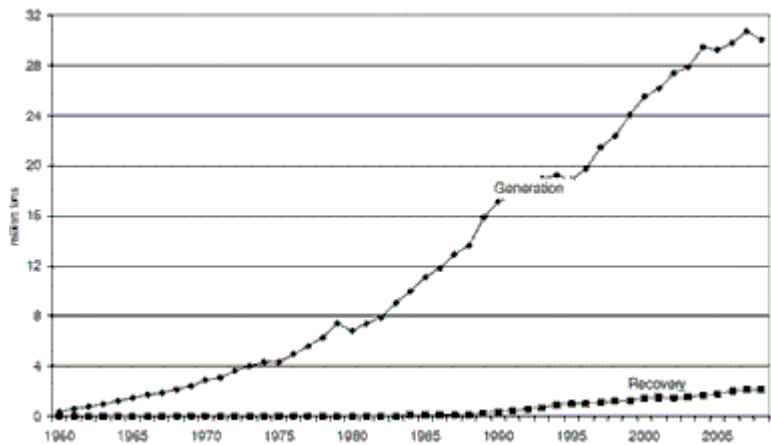
**Figure 16-4**

*Material generation and recovery, 1960 to 2008*

***Paper and Paperboard***



***Plastics***



- \_\_\_\_ 25. Use Figure 16-4. There has been approximately a \_\_\_\_ in the use of plastics from 1980 to 2005.
- a. 53% decrease
  - b. 53% increase
  - c. 75% increase
  - d. 200% increase
  - e. 300% increase

- \_\_\_\_\_ 26. Use Figure 16-4. The environmental costs associated with the trend in the amount of plastic recovery compared to the amount of plastic generated include
- I. large amounts of nonbiodegradable waste
  - II. deforestation of old growth forests
  - III. toxic compounds associated with petrochemicals
- a. I
  - b. III
  - c. I and II
  - d. I and III
  - e. I, II, and III
- \_\_\_\_\_ 27. In the United States, the primary method of disposal of MSW is to:
- a. collect it at a recycling facility
  - b. collect it in a sanitary landfill
  - c. burn it in an incineration facility
  - d. collect it and ship it to a country that purchases it
  - e. collect it and compost food and other organic waste
- \_\_\_\_\_ 28. All of the following are environmental costs of relying on sanitary landfills for waste handling EXCEPT:
- a. the amount of suitable land available for siting
  - b. the release of fly ash into the atmosphere
  - c. the release of methane gas into the atmosphere
  - d. the potential for leaking of leachate
  - e. the reliance on fossil fuels for transporting waste
- \_\_\_\_\_ 29. Which component of a landfill is extracted and either used as fuel or burned off?
- a. clay liner
  - b. leachate
  - c. solid waste
  - d. methane
  - e. toxic metals
- \_\_\_\_\_ 30. Which component of a landfill is extracted and transported to a wastewater treatment facility?
- a. clay liner
  - b. leachate
  - c. solid waste
  - d. methane
  - e. toxic metals



## Chapter 16 Quiz Answer Section

### MULTIPLE CHOICE

1. ANS: A	PTS: 1	DIF: M	MSC: Fact based
2. ANS: D	PTS: 1	DIF: M	MSC: Concept based
3. ANS: B	PTS: 1	DIF: E	MSC: Analytical thinking
4. ANS: B	PTS: 1	DIF: E	MSC: Concept based
5. ANS: A	PTS: 1	DIF: M	MSC: Fact based
6. ANS: A	PTS: 1	DIF: E	MSC: Fact based
7. ANS: D	PTS: 1	DIF: E	MSC: Definitional
8. ANS: D	PTS: 1	DIF: E	MSC: Fact based
9. ANS: C	PTS: 1	DIF: E	MSC: Concept based
10. ANS: A	PTS: 1	DIF: E	MSC: Critical thinking
11. ANS: E	PTS: 1	DIF: M	MSC: Concept based
12. ANS: C	PTS: 1	DIF: E	MSC: Definitional
13. ANS: D	PTS: 1	DIF: E	MSC: Fact based
14. ANS: C	PTS: 1	DIF: E	MSC: Concept based
15. ANS: D	PTS: 1	DIF: E	MSC: Analytical thinking
16. ANS: E	PTS: 1	DIF: E	MSC: Analytical thinking
17. ANS: C	PTS: 1	DIF: E	MSC: Fact based
18. ANS: D	PTS: 1	DIF: M	MSC: Analytical thinking
19. ANS: A	PTS: 1	DIF: E	MSC: Fact based
20. ANS: E	PTS: 1	DIF: E	MSC: Analytical thinking
21. ANS: A	PTS: 1	DIF: M	MSC: Fact based
22. ANS: C	PTS: 1	DIF: M	MSC: Fact based
23. ANS: C	PTS: 1	DIF: E	MSC: Analytical thinking
24. ANS: C	PTS: 1	DIF: E	MSC: Analytical thinking
25. ANS: E	PTS: 1	DIF: M	MSC: Analytical thinking
26. ANS: D	PTS: 1	DIF: M	MSC: Fact based
27. ANS: B	PTS: 1	DIF: E	MSC: Fact based
28. ANS: B	PTS: 1	DIF: M	MSC: Critical thinking
29. ANS: D	PTS: 1	DIF: E	MSC: Fact based
30. ANS: B	PTS: 1	DIF: E	MSC: Fact based