

## 8 INDUSTRIAL SANITATION AND PERSONNEL FACILITIES

### ANSWERS—QUIZ 1

1. b
2. a
3. b
4. b
5. b
6. b
7. d
8. a
9. a
10. c
11. b
12. The general rules for sanitation are an approved piping and storage system, good housekeeping, personal cleanliness, and a good inspection system.
13. *Backflow* is a reverse flow condition created by a difference in water pressures. It causes water to flow back into the distribution pipes of a potable water source from an unintended source(s).
14. Chlorine can be added to water directly as a gas or as a soluble salt (calcium hypochlorite or chlorinated lime).
15. Extra heavy cast-iron bell-and-spigot pipes are less susceptible to clogging and much easier to clean than pipes made from other materials.
16. National Sanitation Foundation International (NSFI) and Underwriters Laboratory (UL) are the nationally recognized agencies that set standards for food-service equipment.
17. They should wash their hands frequently during preparation and after any interruption in preparation, after smoking, or after using the bathroom.
18. Flooring should be selected for durability and sanitation and to minimize the hazard of slipping and falling.
19. Collecting waste glass, metals, batteries, chemicals, and even cardboard can pose safety and health risks. In some cases, refuse collectors are exposed to blood and a bloodborne pathogen program is required. Glass and metal materials can cause cuts and lacerations; proper handling, storage, and disposal of waste batteries and chemicals prevents exposure, injury, and environmental damage. Workers are encouraged to

use baling or compacting machines or other mechanical devices to minimize the risk of injuries caused by improper lifting or awkward postures. Nevertheless, these machines can be dangerous and workers should protect themselves against eye and compression injuries.

20. The soap used in washing facilities should have no free alkali or mineral abrasives and its pH should be less than 10.5. The proper type of soap is important for general hygiene as well as for protecting against dermatitis, which can be caused by cleaning agents. Management should provide individually dispensed soap in either paste, liquid, or powder form for common use. Liquid or powdered soaps are the best choices because they are easy to dispense and serve as an aid to housekeeping. Bar soaps should be avoided.

### ANSWERS—QUIZ 2

1. a
2. a
3. b
4. a
5. a
6. c
7. b
8. b
9. d
10. c
11. b
12. The water is safe and satisfactory for drinking and cooking.
13. Water can be disinfected using chlorine or chlorine products, ozone, ultraviolet radiation, and filtering.
14. Chlorine is the best available disinfecting agent for drinking water.
15. Ways to prevent pollution include reducing the source of pollution, reusing materials, substituting materials, and composting.
16. Two-one for work clothing and one for street clothing. Preferably they should be located on opposite sides of a shower room so employees will have to pass through showers before changing clothes.
17. HACCP stands for Hazard Analysis Critical Control Points. It is used to identify and eliminate food safety problems caused by biological, chemical, and physi-

- cal contamination. Using HACCP, management can generate a list of points that can be controlled to reduce or eliminate foodborne illness hazards.
18. The main drawback is ensuring sufficient amounts of hot water.
  19. Septic tanks are buried, watertight receptacles designed and constructed to receive wastewater, separate solids from liquids, provide limited digestion of organic matter, store solids, and allow effluent, clarified liquid to be discharged for further treatment. Retaining solids is essential to preventing the malfunctioning of the secondary treatment component, which may be a subsurface seepage field, a waste oxidation lagoon, an aerated treatment system, or another type of approved treatment system. Septic tanks are comparable to the primary treatment phase of a municipal sewage treatment facility.
  20. Integrated Pest Management (IPM) is a popular alternative method for controlling pests and minimizing the use of pesticides. It is based on the collaborative efforts of housekeeping, maintenance, and pest control services. Operational and administrative intervention strategies are used to reduce the amount of pesticides needed to control pests. An IPM program tends to be site-specific and may not be feasible for all locations. Typically a successful IPM program covers sanitation practices, facility design and maintenance, record keeping, use of nonpesticide controls, and continuous program monitoring and evaluation.
2. To determine the success of a disinfecting job, workers can measure the residual chlorine in the solution at the end of the required time. Commercial test kits can be used for this purpose. They will show residual chlorine if the system's biological chlorine demands have been met. Workers can connect the system to the drinking water supply, flush it out, and put it into service. If no residual chlorine is present, workers should drain the system and recharge it with new disinfectant solution and start again.
  3. The chemical method of sanitizing utensils uses less hot water, but Marlecks must make sure the chemical chosen is approved for use on food-contact surfaces. The most common method of chemical sanitizing involves immersing utensils in a solution of hypochlorite containing at least 50 ppm available chlorine in water at least 75 F for one minute. Workers can use cationic quaternary ammonium and iodine germicides if this method achieves the same sanitary specifications as a hypochlorite solution. Any time chemicals are used, employees should test the parts per million concentration of the chemical in solution.

### ANSWERS—CASE STUDY

1. Workers at Marlecks can disinfect the company's drinking water system by filling it with water containing no less than 100 mg/l of chlorine. The solution should remain for 24 hours in either a new system or one that has not previously carried treated water. For systems that have carried treated water and are being put back into service following minor repairs, 12 hours is sufficient. If management suspects that *Giardia lamblia* or *Cryptosporidium* are present in the water, other measures should be taken, such as filtering. Water can also be disinfected using ozone and ultraviolet radiation. The effectiveness of any of these methods is based on the dose of disinfection product used, temperature, contact time, and quality of the supply water.