

11

Safe Facilities and Equipment

Chapter Overview

Chapter 11 introduces students to the basics of designing and maintaining safe foodservice facilities.

Learning Objectives

- 11-1** Describe the proper operation of facilities and equipment
- 11-2** Explain requirements for installing equipment
- 11-3** Identify requirements for handwashing sinks and accessibility
- 11-4** List requirements for proper garbage and biohazard removal
- 11-5** Identify whether or not equipment meets approved standards for foodservice equipment

Opening Case Study

1. What do the owners need to fix in order to open for business?

Here is what the owners need to fix in order to open for business:

- The floor tiles that are cracked must be replaced. Once installed, flooring must be kept in good condition and replaced if damaged or worn.
- New adhesive should be applied to the loose coving so it can be adhered to the wall. Coving tile or strip must adhere tightly to the wall. This will help eliminate hiding places for insects.
- A service call should be placed to make sure the ventilation system is working correctly. It will probably also need to be cleaned.
- Any household equipment in the restaurant needs to be replaced with a commercial equivalent. Only commercial foodservice equipment should be used in commercial operations. Household equipment is not built to withstand heavy use.
- The cutting boards need to be replaced because they have several large cracks.
- The hot water supply to the handwashing sinks in the restroom will need to be fixed. Restroom handwashing sinks must have hot and cold water available for handwashing.
- The dumpster lid must be replaced. Outdoor garbage containers must have tight-fitting lids and their drain plugs must be in place except during cleaning.

In addition to the above items, the owners should consider reviewing the facility and all equipment with their menu and the flow of food in mind.

Chapter Breakdown

Pages 218 to 223**11.1 Designing a Safe Operation**

Resources

PowerPoint Slides 3 to 7

Reinforce and Review:

- Plans for new construction or extensive remodeling must be reviewed and approved by the local regulatory authority and the local building department.
- Choose flooring, wall, and ceiling materials that are smooth and durable. This will make cleaning easier. Replace and maintain these materials when necessary.

Key Terms

- **Porosity:** Extent to which liquids are absorbed by a material. The term is usually used in relation to flooring material.
- **Resilience:** Ability of a surface to react to a shock without breaking or cracking; usually used in relation to a flooring material.
- **Coving:** Curved, sealed edge placed between the floor and wall to eliminate sharp corners or gaps that would be impossible to clean. Coving also eliminates hiding places for pests and prevents moisture from deteriorating walls.

Knowledge Check Answers

1. A well-designed kitchen layout will:
 - Provide a safe, efficient workflow.
 - Minimize the risk of cross-contamination.
 - Ensure that equipment is accessible for cleaning.
2. For most areas of the operation, flooring should be:
 - Smooth
 - Durable
 - Nonabsorbent
 - Easy to clean

Chapter Breakdown

Pages 223 to 228**11.2 Considerations for Other Areas of the Facility**

Resources

PowerPoint Slides 8 to 9

Reinforce and Review:

- Handwashing stations are required in areas used for food prep, service, and dishwashing. They must be used only for handwashing and should never be blocked for use.
- Handwashing stations should include hot and cold running drinkable water, soap, and a way to dry hands. They should also include a garbage container if paper towels are provided and signage reminding staff to wash hands before returning to work.

Key Terms

No key terms for this section

Knowledge Check Answers

1. Windows in dry-storage areas should have frosted glass or shades because direct sunlight can increase the temperature of the dry-storage area and affect the quality of the food.
2. Each sink in the operation must be used only for its intended purpose in order to prevent cross-contamination.

CLASSROOM ACTIVITY: Construction Competition

LO: 11-1 Describe the proper operation of facilities and equipment

11-2 Explain requirements for installing equipment

Materials: Blank sheets of paper or graph paper

1. Divide students into small groups and give each group a blank sheet of paper.
2. Tell your students to imagine you are planning to open a fast casual restaurant and that each group is a construction design firm competing for your business.
3. Explain that students will have 10 minutes to create a construction proposal that includes a kitchen layout and list of materials.
4. Write the components you will be looking for in the proposal on the board (ex: dishwashers, storage areas, restrooms, handwashing sinks, materials for walls and flooring).
5. Ask each group to present their proposal to you and the class.
6. Evaluate the proposals and determine which team has "won the contract."
7. Explain why the winning plan exemplifies proper kitchen operations.

Chapter Breakdown

Pages 228 to 232

11.3 Equipment Selection

Resources

PowerPoint Slides 10 to 15

Reinforce and Review:

- Dishwashing machines must be installed so that they prevent contamination of utensils, equipment, and other food-contact surfaces.

Key Terms

- **NSF International:** Organization that develops and publishes standards for the design of sanitary equipment. It also assesses and certifies that equipment has met these standards.

Knowledge Check Answers

1. When comparing dishwashing machines, high-temperature dishwashing machines sanitize with extremely hot water. Chemical-sanitizing machines use a chemical solution.
2. Two pieces of equipment that can cool food quickly are blast chillers and tumble chillers.

Chapter Breakdown

Pages 232 to 233

11.4 Installing and Maintaining Kitchen Equipment

Resources

PowerPoint Slide 16

Reinforce and Review:

- Make sure equipment that will come in contact with food is smooth, nonabsorbent, and easy to clean. Floor-mounted equipment must be put on legs at least six inches (15 centimeters) high or sealed to a masonry base. Tabletop equipment must be put on legs at least four inches (10 centimeters) high or sealed to the countertop.

Key Terms

No key terms for this section

Knowledge Check Answers

1. When installing floor mounted, stationary equipment:
 - Put floor-mounted equipment on legs at least six inches (15 centimeters) high.
 - Another option is to seal it to a masonry base.
2. When installing tabletop, stationary equipment:
 - Put tabletop equipment on legs at least four inches (10 centimeters) high.
 - Another option is to seal it to the countertop.

Chapter Breakdown

Pages 233 to 238

11.5 Utilities

Resources

PowerPoint Slides 17 to 21

Reinforce and Review:

- Plumbing must always be installed and maintained by a licensed plumber. This will help prevent cross-connections from occurring. A cross-connection is dangerous because it can let backflow occur. Backflow is the reverse flow of contaminants through a cross-connection into a drinkable water supply.
- The best way to prevent backflow is to avoid creating a cross-connection. Vacuum breakers, double-check valve backflow preventers, and reduced-pressure-zone backflow preventers can all be used to prevent backflow. However, an air gap is the best way to prevent backflow.
- Garbage must be removed from prep areas as quickly as possible to prevent odors, pests, and possible contamination. Garbage containers must be leakproof, waterproof, and pest-proof. They must be cleaned, inside and out, frequently. Facilities must also be regularly maintained. Clean them on a regular basis, and make sure there are no leaks, holes, or cracks in the floors, foundation, or ceilings.

Key Terms

- **Potable:** Drinkable—for example, potable water is water that is safe to drink.
- **Booster heater:** A special type of water heater typically used with dishwashers to heat rinse water to proper sanitizing temperatures.
- **Cross-connection:** Physical link through which contaminants from drains, sewers, or other wastewater sources can enter a drinkable water supply. A hose connected to a faucet and submerged in a mop bucket is an example.
- **Backflow:** Unwanted reverse flow of contaminants through a cross-connection into a drinkable-water system.

- **Backsiphonage:** A backflow that occurs when high water use in one area of an operation creates a vacuum that sucks contaminants into the drinkable water supply.
- **Vacuum breaker:** A mechanical device that prevents backsiphonage by closing a check valve and sealing the water supply line shut when water flow is stopped.
- **Air gap:** An air space that separates a water supply outlet from a potentially contaminated source.

Knowledge Check Answers

1. Backflow and backsiphonage both pose a risk to food safety by allowing contaminants into the potable water supply.
2. Proper ventilation improves the air inside of an operation by removing heat, steam, and smoke from cooking lines. It also eliminates fumes and odors.

End of Chapter

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Discussion Questions

1. What is one of the most important considerations when choosing flooring for food-preparation areas?

One of the most important considerations when selecting flooring for food-preparation areas is the material's porosity, or the extent to which it will absorb liquids. Avoid high porosity flooring. Its absorbency often makes it ideal for pathogen growth. Flooring should also be smooth, durable, and easy to clean. It should resist wear and help prevent slips.

2. What action must be taken in the event of a backup of raw sewage in an operation?

A backup of raw sewage in an operation is cause for immediate closure of the area, correction of the problem, and thorough cleaning. If the backup is a significant risk to the safety of food, service must be stopped. Then the local regulatory authority must be notified.

3. What actions can be taken to control contamination from garbage in an operation?

The following can help control contamination from garbage:

- Garbage should be removed from prep areas as quickly as possible to prevent odors, pests, and possible contamination.
- Clean the inside and outside of garbage containers frequently.
- Indoor containers must be leakproof, waterproof, and pest-proof. They also should be easy to clean.
- Waste and recyclables must be stored separately from food and food-contact surfaces.
- Place outdoor garbage containers on a surface that is smooth, durable, and nonabsorbent. Keep lids closed and drain plugs in place.

4. What can be done to prevent backflow in an operation?

To prevent backflow in an operation:

- Avoid creating a cross-connection. Do not attach a hose to a faucet unless a backflow prevention device, such as a vacuum breaker, is attached.
- Install air gaps where necessary. This is the only sure way to prevent backflow. An air gap is an air space that separates a water supply outlet from a potentially contaminated source.

5. What are some approved water sources for an operation? What are the testing requirements for nonpublic water systems?

Sources of approved water include:

- Approved public water mains
- Private water sources regularly maintained and tested
- Closed portable water containers
- Water transport vehicles

If an operation uses a private water supply, such as a well, rather than an approved public source, it should check with the local regulatory authority for information on inspections, testing, and other requirements. Nonpublic water systems should be tested at least annually, and the report should be kept on file in the operation.

6. What are the requirements of a handwashing station? In what areas of an operation are handwashing stations required?

The requirements of a handwashing station include:

- Hot and cold running water that is drinkable and meets temperature and pressure requirements.
- Soap in liquid, bar, or powder form.
- A way to dry hands. Disposable paper towels or a continuous towel system that supplies the user with a clean towel can be used. Hands can also be dried with a hand dryer using either warm air or room-temperature air delivered at high velocity.
- A garbage container. This is required if disposable paper towels are used.
- A clearly visible sign or poster that tells staff to wash hands before returning to work. The message should be in all languages used by staff in the operation.

Handwashing stations are required in restrooms or directly next to them. Handwashing stations are also required in areas used for food prep, service, and dishwashing. Handwashing sinks must be used only for handwashing and not for any other purpose. Make sure adequate barriers are present on handwashing sinks or that there is an adequate distance between handwashing sinks and food and food-contact surfaces. Make sure these stations work correctly and are well stocked and maintained. They must also be available at all times. Handwashing stations cannot be blocked by portable equipment or stacked full of dirty kitchenware.

Page 240**Apply Your Knowledge****Go or No-Go****1. Did the manager handle the situation correctly? Why or why not?**

The manager appeared to handle the sewage backup correctly. First, she evaluated the situation and determined there was no significant risk to food or food-contact surfaces. This allowed her to remain open. When there is a backup of sewage, the affected area should be closed right away. Then the problem must be corrected, and the area thoroughly cleaned. Again, the manager followed the correct procedures. She closed the prep area and contacted building management to get a plumber. She also assigned a staff member to clean up the backup.

Where There's Smoke**1. What is the problem?**

The ventilation system is not working correctly. When this happens, grease and condensation will build up on walls and ceilings.

2. What should the regional manager do to fix it?

The regional manager should ask the store manager to schedule maintenance on the ventilation system. It is also likely that the ventilation and ductwork needs to be cleaned. This should be performed periodically by a professional.

Pages 240 to 241**Study Questions**

1. D. Smooth and durable
2. B. NSF
3. B. 4 inches (10 centimeters).
4. C. Water pressure
5. B. wash hands before returning to work.
6. C. To keep broken glass away from food
7. A. Created a cross-connection
8. A. Pests will have a place to hide.
9. A. The ventilation system is not working correctly.
10. B. The surface underneath the dumpster should have been paved with concrete or asphalt.