



8

Food Safety Management Systems

Food Safety Management Systems

Objectives:

By the end of this chapter, you should be able to identify the following:

- What is a food safety management system
- What is active managerial control and how it can be applied
- What is a Hazard Analysis Critical Control point (HACCP) system

Food Safety Management Systems

Food safety management system:

- Group of practices and procedures intended to prevent foodborne illness
- Actively controls risks and hazards throughout the flow of food

Food Safety Programs

These are the foundation of a food safety management system:



Personal hygiene
program



Food safety
training program



Supplier selection and
specification program



Quality control and
assurance program

Food Safety Programs

These are the foundation of a food safety management system:



Cleaning and sanitation program



Standard operating procedures (SOPs)



Facility design and equipment maintenance program



Pest control program

Active Managerial Control

Focuses on controlling the five most common risk factors for foodborne illness:

1. Purchasing food from unsafe sources
2. Failing to cook food adequately
3. Holding food at incorrect temperatures
4. Using contaminated equipment
5. Practicing poor personal hygiene

Active Managerial Control

There are many ways to achieve active managerial control in the operation:

- Training programs
- Manager supervision
- Standard operating procedures (SOPs)
- HACCP

Active Managerial Control

Steps for implementing active managerial control:

1. Identify and document potential risks and ways to control or eliminate them.
2. Monitor critical activities.
3. Correct improper procedures or behaviors.
4. Verify that policies, procedures, and corrective actions are followed.
5. Ensure employees are trained and retrained as needed.
6. Periodically assess the system to make sure it is working.



Active Managerial Control

The FDA public health interventions:

- Demonstration of knowledge
- Staff health controls
- Controlling hands as a vehicle of contamination
- Time and temperature parameters for controlling pathogens
- Consumer advisories



Hazard Analysis Critical Control Point (HACCP)

HACCP program:

- Identifies significant hazards at points within a product's flow through an operation
 - Biological, chemical, and physical hazards
- Identifies how to prevent, eliminate, or reduce hazards to safe levels
- Is documented in a written plan
 - The plan is specific to the facility's menu, customers, equipment, processes, and operations.



9 Safe Facilities and Pest Management

Safe Facilities and Pest Management

Objectives:

By the end of this chapter, you should be able to identify the following:

- How to pick materials and equipment that are safe for use in foodservice operations
- Ways to install and maintain equipment
- Ways to avoid food safety hazards caused by utilities
- Ways to maintain your facility
- Best ways to handle emergencies
- Ways to prevent and control pests

Interior Requirements for a Safe Operation

Floors, walls, and ceilings:

- Made from smooth and durable materials for easier cleaning
- Maintained regularly
- Have coving where the floors and walls meet
- Promptly cleared of any standing water

Interior Requirements for a Safe Operation

Equipment that contacts food:

- Nonabsorbent, smooth, and corrosion resistant
- Easy to clean
- Durable
- Resistant to damage

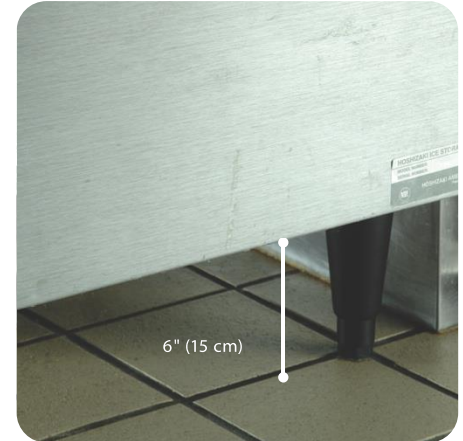


Interior Requirements for a Safe Operation

Installing equipment:

Floor-mounted equipment must be either:

- Mounted on legs at least six inches (15 centimeters) high
- Sealed to a masonry base

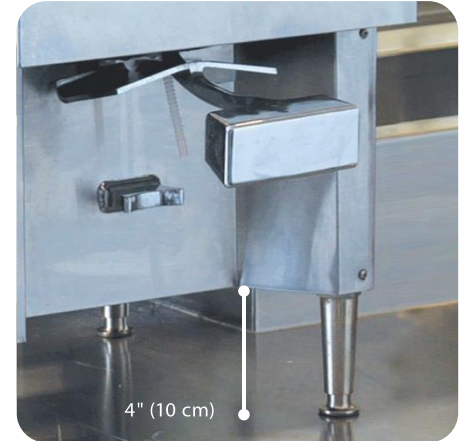


Interior Requirements for a Safe Operation

Installing equipment:

Tabletop equipment should be either:

- Mounted on legs at least four inches (10 centimeters) high
- Sealed to the countertop



Interior Requirements for a Safe Operation

Once equipment has been installed:

- It must be maintained regularly.
- Only qualified people should maintain it.
- Set up a maintenance schedule with your supplier or manufacturer.
- Check equipment regularly to make sure it is working correctly.



Dishwashing Machines

Installing and using dishwashing machines:

- Install them in a way that:
 - Makes them reachable and conveniently located
 - Keeps utensils, equipment, and other food-contact services from becoming contaminated
- Use detergents and sanitizers approved by the local regulatory authority.
- Follow the manufacturer's instructions.



Dishwashing Machines

Selecting dishwashing machines:

- Make sure they can measure:
 - Water temperature
 - Water pressure
 - Cleaning and sanitizing chemical concentration
- Post information about the correct settings on the machine.



Dishwashing Machines

Cleaning dishwashing machines:

- Clean them as often as necessary.
- Follow manufacturer's recommendations.
- Follow local regulatory requirements.

Three-Compartment Sinks

Purchase sinks large enough to accommodate large equipment and utensils.



Handwashing Stations

Handwashing stations must be:

- Conveniently located
- Located in:
 - Restrooms or directly next to them
 - Food-prep areas
 - Service areas
 - Dishwashing areas



Handwashing Stations

Handwashing stations must be:

- Used only for handwashing
- Installed with adequate barriers or distance from food and food-contact surfaces
- Available at all times
 - Do not block them.



Handwashing Stations

Handwashing stations must have:



Hot and cold running water



Soap



A way to dry hands



Garbage container



Signage

Water and Plumbing

Acceptable sources of drinkable (potable) water:

- Approved public water mains
- Regularly tested and maintained private sources
- Closed, portable water containers
- Water transport vehicles



Water and Plumbing

Installation and maintenance:

- If using an on-site septic system, make sure it is properly tested and maintained
- Only licensed plumbers should work on the plumbing



Water and Plumbing

Cross-connection:

- Physical link between safe water and dirty water from
 - Drains
 - Sewers
 - Other wastewater sources

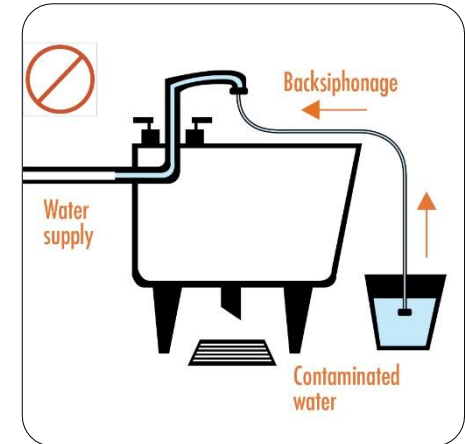
Water and Plumbing

Backflow:

- Reverse flow of contaminants through a cross-connection into the drinkable water supply

Backsiphonage:

- A vacuum created in the plumbing system that sucks contaminants back into the water supply:
 - Can occur when high water use in one area of the operation creates a vacuum.
 - A running hose in a mop bucket can lead to backsiphonage.

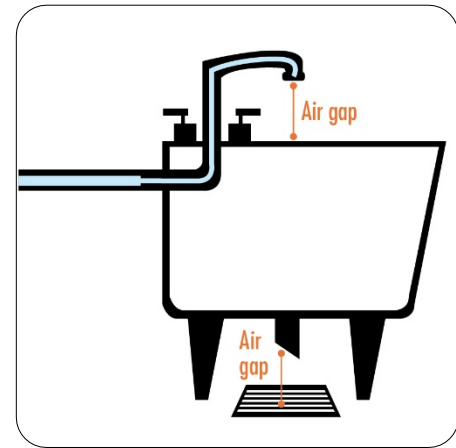


Water and Plumbing

Backflow prevention methods:



Vacuum breaker



Air gap

Water and Plumbing

Grease buildup in pipes:

- Grease traps can be installed to prevent grease from blocking drains.
- Grease traps must be:
 - Installed by a licensed plumber
 - Easy to access
 - Cleaned regularly



Lighting

Consider the following when installing and maintaining lighting:

- Different areas of the facility have different lighting intensity requirements.
- Local jurisdictions usually require prep areas to be brighter than other areas.
- All lights should have shatter-resistant lightbulbs or protective covers.
- Replace burned out bulbs with correct size bulbs.



Ventilation

Ventilation systems:

- Improve air quality
- Reduce grease and condensation buildup
- Must be cleaned and maintained
 - Follow manufacturers' recommendations.



Garbage

Removal and cleaning:

- Remove garbage from prep areas as quickly as possible.
 - Be careful not to contaminate food and food-contact surfaces.
- Clean the inside and outside of garbage containers frequently.
 - Clean them away from food-prep and storage areas.



Garbage

Indoor containers must be:

- Leakproof, waterproof, and pestproof.
- Easy to clean.
- Covered when not in use.
- Included with a cover in women's restrooms.



Designated storage areas:

- Store waste and recyclables away from food and food-contact surfaces.
- Storage must not create a nuisance or a public health hazard.



Garbage

Outdoor containers must:

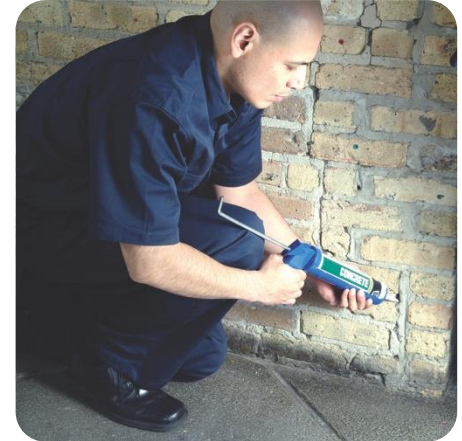
- Be placed on a smooth, durable, nonabsorbent surface:
 - Asphalt or concrete
- Have tight-fitting lids
- Be covered at all times
- Have their drain plugs in place



Maintaining the Facility

To prevent food safety problems due to the facility:

- Clean the operation regularly.
- Check building systems regularly.
- Maintain the building:
 - Repair leaks, holes, or cracks in the floors, foundation, ceilings, or windows.
 - Maintain the outside, including patios and parking lots.
- Control pests.



Emergencies That Affect the Facility

Imminent health hazard:

- A significant threat or danger to health
- Requires immediate correction or closure to prevent injury

Possible imminent health hazards:

- Power outages and refrigeration failures
- Security issues
- Fires
- Water supply problems
- Floods and sewage backups

Emergencies That Affect the Facility

How to respond to a crisis affecting the facility:

- Determine if there is a significant risk to the safety or security of your food.
- If the risk is significant:
 - Stop service.
 - Notify the local regulatory authority.
- Throw away contaminated food and food in damaged packaging.

Emergencies That Affect the Facility

How to respond to a crisis affecting the facility:

- Decide how to correct the problem:
 - Establish time-temperature control.
 - Clean and sanitize surfaces.
 - Reestablish physical security of the facility.
 - Verify water is drinkable.

Pest Management

Three rules of pest prevention:

1. Deny pests access to the operation.
2. Deny pests food, water, and shelter.
3. Work with a licensed Pest Control Operator (PCO).



Pest Prevention

Deny pests shelter:

- Throw out garbage quickly and correctly.
- Maintain garbage containers and storage areas:
 - Keep containers clean and in good condition.
 - Keep outdoor containers tightly covered.
 - Clean up spills around containers immediately.
- Store recyclables correctly:
 - Keep recyclables in clean, pest-proof containers.
 - Keep containers as far away from the building as regulations allow.



Pest Prevention

Deny pests shelter:

- Store food and supplies quickly and correctly.
 - Keep them away from walls and at least six inches (15 cm) off the floor.
 - Rotate products (FIFO) so pests cannot settle and breed.
- Clean up food and beverage spills immediately.

Pest Prevention

Deny pests access:

- Check deliveries before they enter the operation.
 - Refuse shipments if pests or signs of pests are found.
- Make sure all of the points where pests can access the building are secure:
 - Screen windows and vents
 - Seal cracks in floors and walls, and around pipes
 - Install self-closing doors and air curtains



Pest Control

Contact your PCO immediately if you see these or any other pest-related problems:

- Feces
- Nests
- Damage on products, packaging, and the facility itself

Poisonous or toxic pest-control materials should only be applied by a certified applicator.





10

Cleaning and Sanitizing

Cleaning and Sanitizing

Objectives:

By the end of this chapter, you should be able to identify the following:

- Different ways of sanitizing and the requirements for each
- How and when to clean and sanitize surfaces
- How to wash items in a dishwasher or a three-compartment sink and then store them
- How to use and store cleaning tools and supplies
- How to develop an effective cleaning program

Cleaning and Sanitizing

Cleaning:

- Removes food and other dirt from a surface

Sanitizing:

- Reduces pathogens on a surface to safe levels

Cleaners

Cleaners must be:

- Stable
- Noncorrosive
- Safe to use

Types of cleaners include:

- Detergents
- Degreasers
- Delimers
- Abrasive cleaners



Cleaners

To use cleaners correctly:

- Follow manufacturers' instructions.
- Only use them for their intended purpose.
 - Do **NOT** use one type of cleaner in place of another unless the intended use is the same.



Sanitizers

Sanitizing methods:

- Heat sanitizing:
 - Immerse the item in water that is 171°F (77°C) for at least 30 seconds.
 - Use a high-temperature dishwasher.
- Chemical sanitizing:
 - Soak items in a sanitizing solution.
 - Rinse, swab, or spray items with a sanitizing solution.



Sanitizers

Chemical sanitizers:

- Commonly used chemical sanitizers include:
 - Chlorine.
 - Iodine.
 - Quats (quaternary ammonium compounds).
- Detergent-sanitizer blends can be used In some cases:
 - Use it once to clean.
 - Use it a second time to sanitize.



Sanitizer Effectiveness

Concentration:

- Sanitizers should be mixed with water to the correct concentration:
 - **Not enough sanitizer** may make the solution weak and useless.
 - **Too much sanitizer** may make the solution too strong, unsafe, and corrode metal.



Sanitizer Effectiveness

Concentration:

- Check concentration with a test kit:
 - Make sure the kit is made for the sanitizer being used.
 - Make sure kits are always available and employees can easily access them.
 - Check the concentration often.
- Change the solution when:
 - It is dirty.
 - The concentration is too low.



Sanitizer Effectiveness

Temperature:

- Follow manufacturer's recommendations for the correct temperature.

Contact time:

- The sanitizer must make contact with the item for a specific time.
- Minimum times differ for each sanitizer.



Sanitizer Effectiveness

Water hardness and pH:

- Find out your operation's water hardness and pH from your municipality.
- Work with your supplier to identify the correct amount of sanitizer to use for your water.

Guidelines for the Effective Use of Sanitizers

Chlorine

Water temperature	$\geq 100^{\circ}\text{F}$ (38°C)	$\geq 75^{\circ}\text{F}$ (24°C)
Water pH	≤ 10	≤ 8
Water hardness	As per manufacturer's recommendations	
Sanitizer concentration range	50–99 ppm	50–99 ppm
Sanitizer contact time	≥ 7 sec	≥ 7 sec

Guidelines for the Effective Use of Sanitizers

	Iodine	Quats
Water temperature	68°F (20°C)	75°F (24°C)
Water pH	≤5 or as per manufacturer's recommendations	As per manufacturer's recommendations
Water hardness	As per manufacturer's recommendations	≤500 ppm or as per manufacturer's recommendations
Sanitizer concentration range	12.5–25 ppm	As per manufacturer's recommendations
Sanitizer contact time	≥30 sec	≥30 sec

How to Clean and Sanitize

How to clean and sanitize:



1. Scrape or remove food bits from the surface.



2. Wash the surface.



3. Rinse the surface.



4. Sanitize the surface.



5. Allow the surface to air-dry.

When to Clean and Sanitize

Food-contact surfaces must be cleaned and sanitized:

- After they are used
- Before working with a different type of food
- After handling different raw TCS fruits and vegetables
- Any time a task was interrupted and the items may have been contaminated
- After four hours if the items are in constant use



Cleaning and Sanitizing Stationary Equipment

Follow the manufacturer's directions.

General steps:

- Unplug the equipment.
- Take off the removable parts.
 - Wash, rinse, and sanitize them by hand or run the parts through a dishwasher if allowed.
- Scrape or remove food from the equipment surfaces.



Cleaning and Sanitizing Stationary Equipment

General steps (continued):

- Wash the equipment surfaces.
- Rinse the equipment surfaces with clean water.
- Sanitize the equipment surfaces.
 - Make sure the sanitizer comes in contact with each surface.
- Allow all surfaces to air-dry.
- Put the unit back together.



Cleaning and Sanitizing Clean-in-Place Equipment

Equipment that holds and dispenses TCS food:

- Must be cleaned and sanitized every day unless otherwise indicated by the manufacturer

Machine Dishwashing

High-temperature machines:

- Final sanitizing rinse must be at least 180°F (82°C).
 - 165°F (74°C) for stationary rack, single-temperature machines

Chemical-sanitizing machines:

- Clean and sanitize at much lower temperatures.
- Follow the temperature guidelines provided by the manufacturer.



Dishwasher Operation

Guidelines:

- Clean the machine as often as needed.
- Scrape items before washing.
- Use the correct dish racks.
- **NEVER** overload dish racks.
- Air-dry all items.



Dishwasher Operation

Guidelines:

- Check the machine's water temperature, water pressure, and sanitizer levels.
 - Take corrective action if necessary.
- For high-temperature dishwashing machines, provide tools to check the temperature of the items being sanitized, such as:
 - Maximum registering thermometers.
 - Temperature sensitive tape.



Manual Dishwashing

Setting up a three-compartment sink:

- Clean and sanitize each sink and drain board.
- Fill the sinks:
 - First sink—detergent and water at least 110°F (43°C)
 - Second sink—clean water
 - Third sink—water and sanitizer



Provide a clock with a second hand.

Three-Compartment Sinks

Steps for cleaning and sanitizing:



1. Scrape items.



2. Wash items in the first sink.



3. Rinse items in the second sink.



4. Sanitize items in the third sink.



5. Air-dry items on a clean and sanitized surface.

Storing Tableware and Equipment

When storing clean and sanitized tableware and equipment:

- Store them at least six inches (15 cm) off the floor.
- Clean and sanitize drawers and shelves before items are stored.
- Store glasses and cups upside down on a clean and sanitized shelf or rack.



Storing Tableware and Equipment

When storing clean and sanitized tableware and equipment:

- Store flatware and utensils with handles up.
- Clean and sanitize trays and carts used to carry clean tableware and utensils.
- Cover the food-contact surfaces of stationary equipment until ready for use.



Cleaning and Sanitizing in the Operation

Wiping cloths:

- Used to wipe up food spills and wipe down equipment.
- Two types:
 - Wet wiping cloths
 - Dry wiping cloths
- **NEVER** use cloths that are meant for wiping food spills for any other purpose.

Cleaning and Sanitizing in the Operation

Wet wiping cloths:

- For wiping counters and other surfaces.
- Store in sanitizer solution between uses.
 - Change the solution when necessary.
- Keep cloths that contact raw meat, fish, and poultry separate from other cleaning cloths.



Cleaning and Sanitizing in the Operation

Dry wiping cloths:

- Used to wipe food spills from tableware
- Must be kept dry while in use
- Must **NOT**
 - Contain food debris
 - Be visibly dirty



Cleaning and Sanitizing in the Operation

Cleaning the nonfood-contact surfaces on the premises:

- Nonfood-contact surfaces include:
 - Floors, ceilings, walls, equipment exteriors, etc.
- Regular cleaning prevents:
 - Buildup of dust, dirt, food residue and other debris
 - Growth of pathogens
 - Pests



Cleaning and Sanitizing in the Operation

Cleaning up after people who get sick:

- Diarrhea and vomit must be cleaned up correctly.
 - They can carry Norovirus, which is highly contagious.
- Correct cleanup can prevent:
 - Contamination of food.
 - Spreading illness to others.
- Operations must have procedures for cleaning up vomit and diarrhea:
 - Procedures must be specific.
 - Employees must be trained on these procedures.

Cleaning and Sanitizing in the Operation

Storing cleaning tools and chemicals:

- Place in a separate area away from food and prep areas.

The storage area should have:

- Good lighting so chemicals can be easily seen
- Hooks for hanging cleaning tools
- Utility sink for filling buckets and washing cleaning tools
- Floor drain for dumping dirty water



Cleaning and Sanitizing in the Operation

NEVER:

- Clean tools in sinks used for:
 - Handwashing
 - Food prep
 - Dishwashing
- Dump mop water or other liquid waste into toilets or urinals.



Cleaning and Sanitizing in the Operation

Using foodservice chemicals:

- Only use chemicals approved for foodservice operations.
 - **NEVER** keep chemicals that are not used in the operation.
- Cover or remove items that could become contaminated before using chemicals.
- After using chemicals, clean and sanitize equipment and utensils.
- Follow the law and manufacturers' directions.



Cleaning and Sanitizing in the Operation

Storing foodservice chemicals:

- Store chemicals in their original containers.
- Keep chemicals separate from food, equipment, utensils, and linens by either:
 - Spacing chemicals away from other items
 - Partitioning chemicals from other items
- Always store chemicals below food, equipment, utensils, and linens.



Cleaning and Sanitizing in the Operation

Labeling foodservice chemicals:

- Manufacturer's label must:
 - Include directions for use.
 - Be clear enough to read.
- If chemicals are transferred to a new working container:
 - The working container must be labeled with the common name.



Developing a Cleaning Program

To develop an effective cleaning program:

- Create a master cleaning schedule.
- Train your staff to follow it.
- Monitor the program to make sure it works.

Developing a Cleaning Program

To create a master cleaning schedule, identify:

- What should be cleaned
- Who should clean it
- When it should be cleaned
- How it should be cleaned

Developing a Cleaning Program

Train your staff and monitor the cleaning program:

- Supervise daily cleaning routines.
- Check cleaning tasks against the master schedule every day.
- Change the master schedule as needed.
- Ask staff for input on the program.

