NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 1 | Introduction to Food Safety

NEHA EDUCATION & TRAINING

# Overview

After completing this lesson, you should be able to:

- Define food safety.
- Explain why learning about food is essential to your job.
- Describe food safety roles at the local, state, and federal levels.

# Lesson 1: Safe Food

- **Food safety** describes the handling, preparation, and storage of food in ways that prevent foodborne illness.
- **Safe food** is free of contaminants, and does not cause harm to the person consuming it.

# Lesson 1: Safe Food

- **Adulterated food** is food that is generally impure, unsafe, or unwholesome.

# Lesson 2: Why Food Safety?

- **Food Safety and Modernization Act (FSMA)** is the most sweeping reform to the U.S. food safety system in more than 70 years.

# Lesson 2: Why Food Safety?

- Learning about the causes and prevention of foodborne illness can save lives.

# Lesson 3: Who Protects Our Food?

- Government agencies are responsible for setting food safety standards, conducting inspections, and ensuring that standards are met.
- Food safety roles vary from local, state, and federal levels.

# Lesson 3: Who Protects Our Food?


# Lesson 3: Who Protects Our Food?



# Questions

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 2 | Foodborne Illness

NEHA
EDUCATION & TRAINING

# Overview

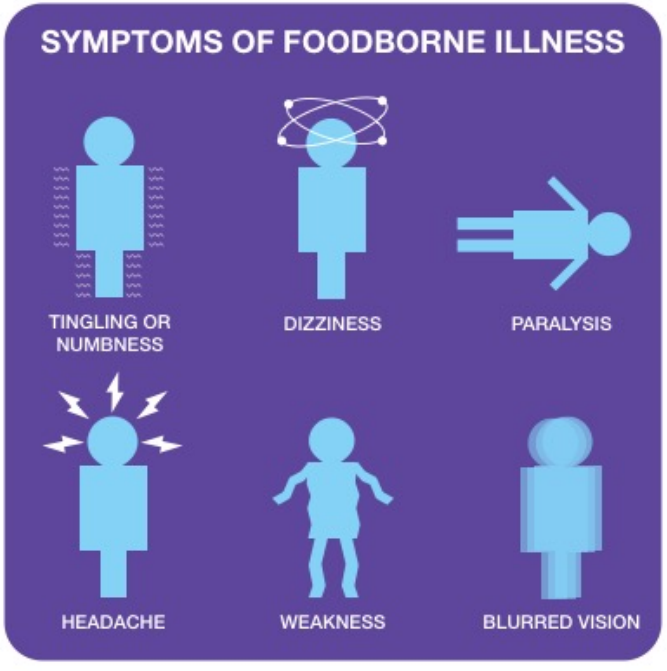
After completing this lesson, you should be able to:

- Identify ways that a person could contract a foodborne illness.
- Discuss high-risk populations and best practices for protecting them.

# Lesson 1: Foodborne Illness Vs. Foodborne Illness Outbreak

# Lesson 1: Foodborne Illness Vs. Foodborne Illness Outbreak

- Symptoms from toxins include:
  - Headache
  - Tingling or numbness of the skin
  - Blurred vision
  - Weakness
  - Dizziness
  - Paralysis



# Lesson 1: Foodborne Illness Vs. Foodborne Illness Outbreak

CDC Five Risk Factors:

1. Improper hot/cold holding temperatures of potentially hazardous food
2. Improper cooking temperatures of food
3. Dirty and/or contaminated utensils and equipment
4. Poor employee health and hygiene
5. Food from unsafe sources

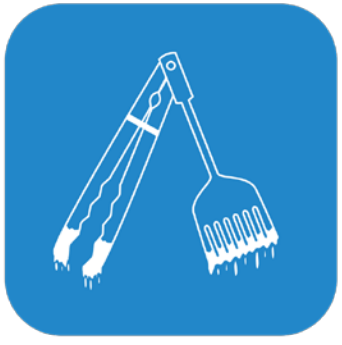
# CDC RISK FACTORS

IMPROPER COOKING TEMPERATURES

POOR EMPLOYEE HEALTH & HYGIENE

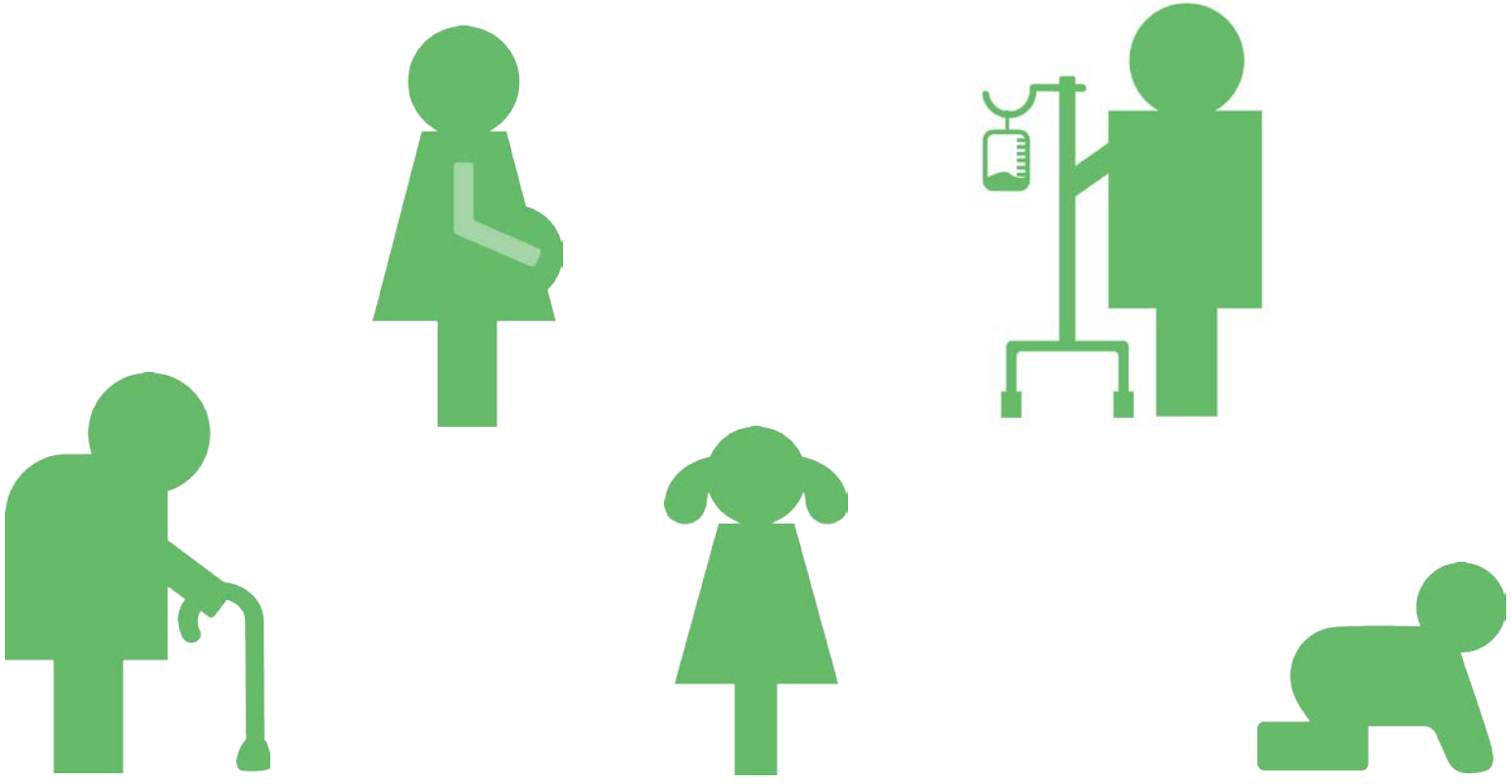
IMPROPER HOT/COLD HOLDING TEMPERATURES

FOOD FROM UNSAFE SOURCES



DIRTY AND/OR CONTAMINATED UTENSILS & EQUIPMENT

# Lesson 2: High-Risk Populations



# Lesson 2: High-Risk Populations

High-risk populations should avoid:

- Raw or undercooked meat or poultry
- Raw fish, partially cooked seafood, and refrigerated smoked seafood
- Raw shellfish
- Unpasteurized milk and products
- Soft cheeses made from unpasteurized milk
- Raw or undercooked eggs

# Lesson 2: High-Risk Populations

High-risk populations should avoid:

- Unwashed fresh vegetables
- Unpasteurized fruit or vegetable juices
- Hot dogs, luncheon meats, fermented and dry sausage, and other deli-style meats
- Salads prepared on site in a deli-type establishment
- Unpasteurized, refrigerated pâtes or meat spreads
- Raw sprouts

# Questions

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 3 | Contamination

NEHA
EDUCATION & TRAINING

# Overview

After completing this lesson, you should be able to:

- Explain some of the ways in which food can become contaminated.
- List bacteria that can cause foodborne illness.
- Describe the characteristics of viruses.
- Describe the characteristics of parasites and fungi.
- Identify best practices for preventing chemical contamination.
- Identify the natural toxins that can cause foodborne illness.
- List the major food allergens.

# Lesson 1: Contamination

- **Contamination** is the presence of physical, chemical, or biological matter in or on food or the food environment.

- **Cross-contamination** can occur by:
  - Direct contact
  - Drip
  - Indirect contact – equipment, hands

# Lesson 1: Contamination

## Ready-to-eat (RTE) foods

# Lesson 1: Contamination

- Contamination is generally caused by:
  - Not knowing correct procedures
  - Not following correct procedures
  - Poor facility design

- Because food is susceptible to contamination at any point from farm to fork, it is vital to have controls in place to prevent adulteration.

# Lesson 1: Contamination

- **Biological contamination**
  - Food contamination by microorganisms, including bacteria, viruses, parasites, and fungi
  - Most common type of contamination

- **Chemical contamination**
  - The contamination of food by chemical substances such as pesticides and cleaning solutions
  - Includes natural toxins and allergens

# Lesson 1: Contamination

## Physical contamination

# Lesson 1: Contamination

- Intentional contamination
  - By employees or guests
  - Training

- Food defense
  - People – employees and suppliers
  - Building – entrances and exits

# Lesson 2: Bacteria

- **Microorganisms**:
  - Bacteria
  - Viruses
  - Fungi
  - Parasites

- **Bacteria**:
  - Single-celled
  - Binary fission

# Lesson 2: Bacteria

- Spoilage bacteria
  - Does not cause foodborne illness
  - Damages the nutrition, texture, and flavor of the food, making it unsuitable to eat

- Pathogenic bacteria
  - Disease-producing
  - Causes foodborne illness
  - Carried by people
  - Already present in food
  - Grows on food during preparation

# Lesson 2: Bacteria

- Note that ***Bacillus cereus*** can produce 2 types of toxins:

o **Emetic:** Causing vomiting
  - Starchy foods

o Diarrheal
  - Meat products

# Lesson 2: Bacteria

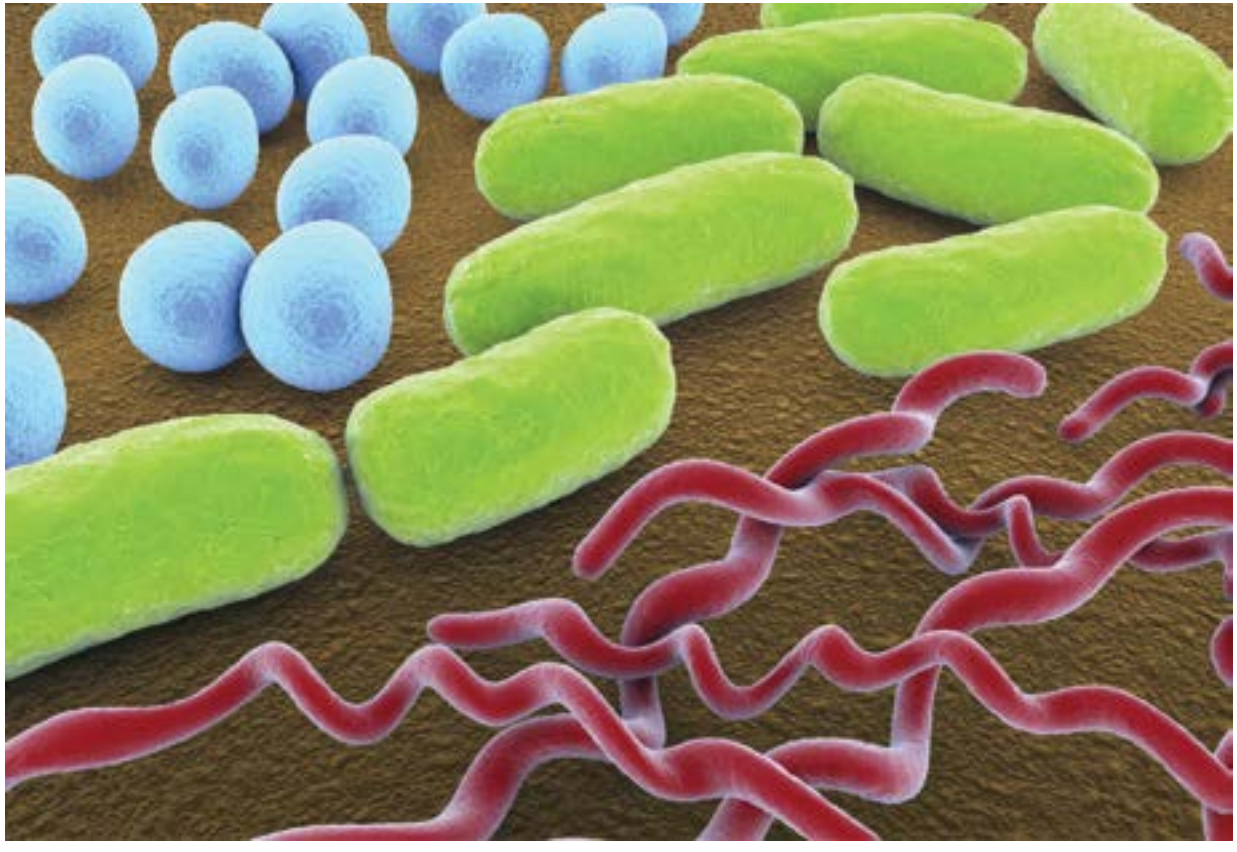
- Other common foodborne bacteria:

  - ***Clostridium botulinum*** (*C. botulinum*): Can contaminate improperly canned foods and smoked and salted fish. A very small amount of Clostridium botulinum toxin can cause botulism, a deadly foodborne illness.
  - ***Staphylococcus aureus*** (*S. aureus*): Found in dairy products, deli salads, and custards.
  - ***Listeria monocytogenes*** (*L. monocytogenes*): Found in raw and undercooked meats, unpasteurized milk, soft cheeses, ready-to-eat deli meats, and hot dogs.

# Lesson 2: Bacteria

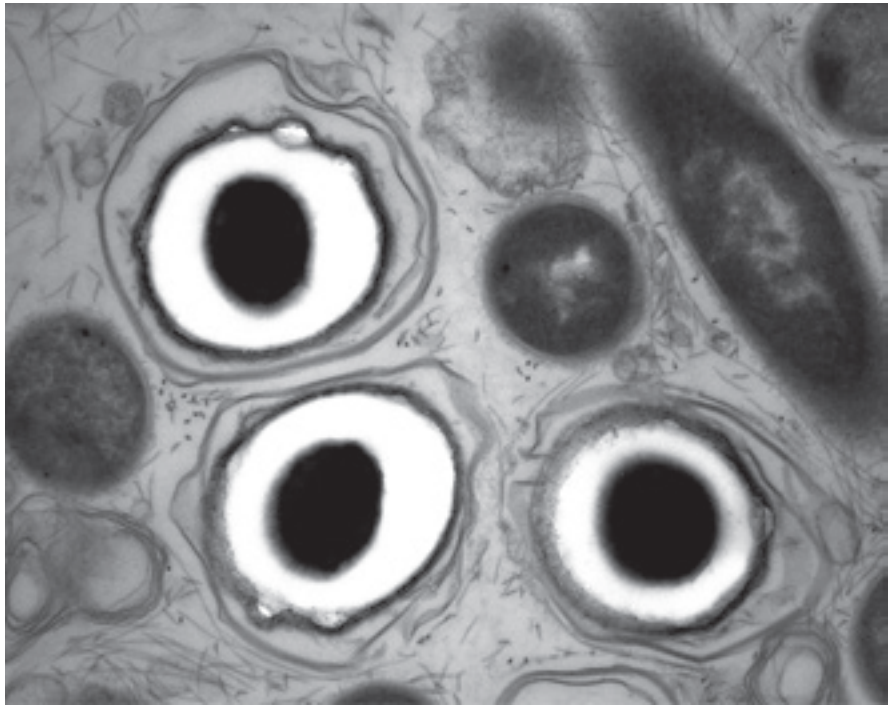
- **Carrier**: A person who harbors, and may transmit, pathogenic organisms with or without showing any signs of illness.
- **Infectious**: Communicable; tending to spread between people.
- **Pathogen**: Disease-producing organism.

# Lesson 2: Bacteria



# Lesson 2: Bacteria

## Bacterial spores



# Lesson 2: Bacteria

- Classifications
  - **Intoxication**: An illness caused when bacteria produce exotoxins that are released into food; short onset time.
  - **Exotoxin**: A toxin produced during the multiplication of some bacteria. They are highly toxic proteins and are often produced in food.
  - **Toxic:** Directly poisonous; affected by a toxin, or poison.

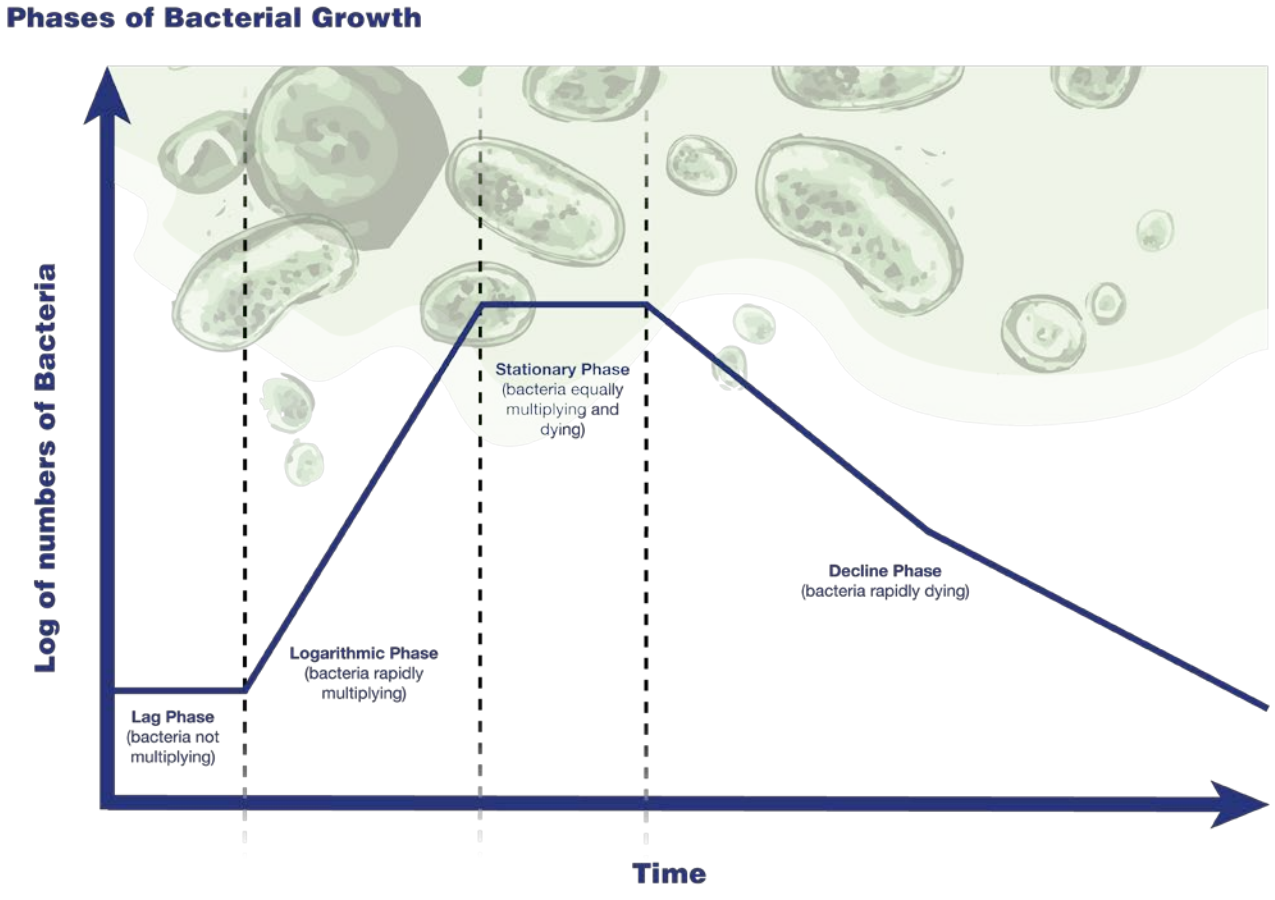
# Lesson 2: Bacteria

- Classifications
  - **Infection**: A disease caused by the release of endotoxins in the intestine of the affected person; has a 1-2 day onset time.
  - **Endotoxin**: A toxin present in the cell wall of many bacteria that is released on death of the bacteria.
  - **Onset time**: The period between eating contaminated food and the first signs of illness.

# Lesson 2: Bacteria

## Binary fission

# Lesson 2: Bacteria



# Lesson 2: Bacteria

- **FAT TOM**: The acronym that lists the conditions that support the rapid growth of bacteria. These conditions are:
  - Food – Protein
  - Acidity – pH<7.0
  - Time – Around 20 minutes
  - Temperature – 41ºF (5ºC) and 135ºF (57ºC)
  - Oxygen – Specific to bacteria
  - Moisture – $a_w$ 0.95 – 0.99

# Lesson 2: Bacteria

- **Time/temperature control for safety (TCS) foods :** Products that under the right circumstances support the growth of microorganisms that cause foodborne illness.

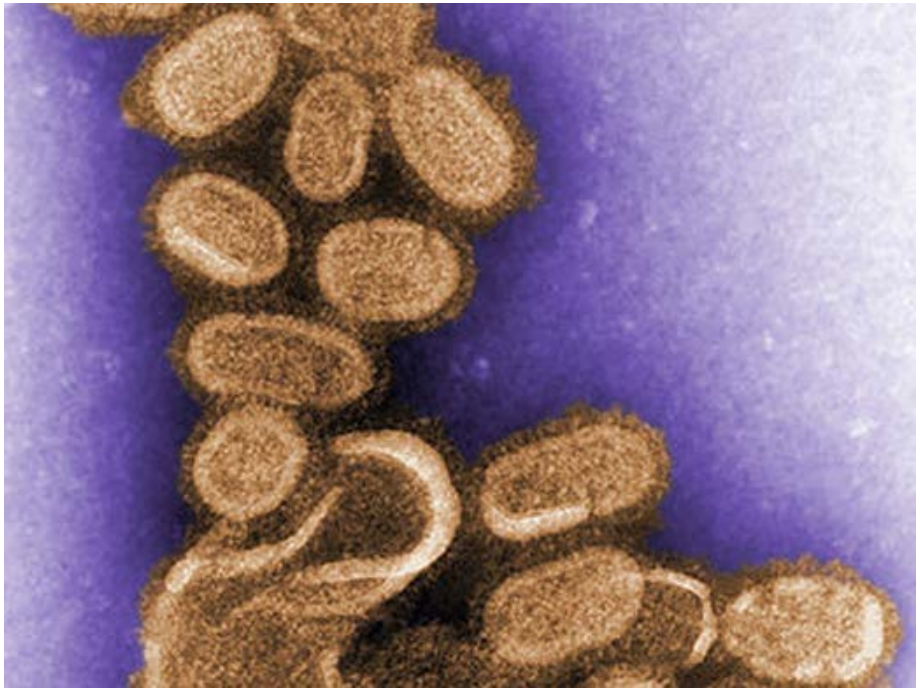
# Lesson 2: Bacteria

## TCS Foods

- Milk and dairy products
- Meat: beef, lamb, pork
- Poultry
- Sliced melons
- Leafy greens
- Cut tomatoes
- Fish and shellfish
- Cooked rice, beans, and vegetables
- Sprouts
- Tofu / soy proteins
- Untreated garlic and oil mixtures

# Lesson 3: Viruses

- **Viruses**: Submicroscopic pathogens (smaller than bacteria) that multiply in the living cells of their host.

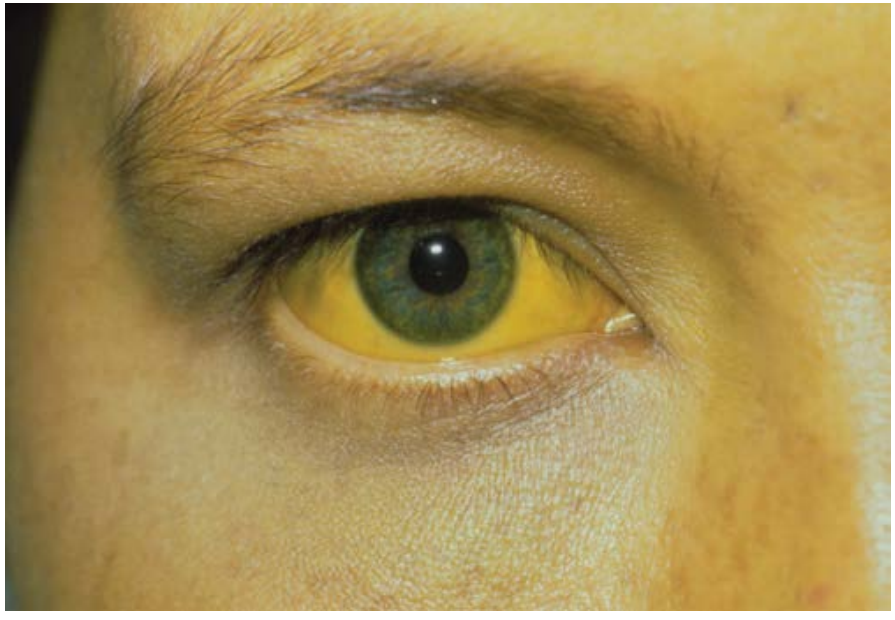


# Lesson 3: Viruses

- **Norovirus**
  - Causes viral gastroenteritis
  - Is the most common form of foodborne illness
  - Route of contamination is hands

- **Viral gastroenteritis**: The swelling or inflammation of the stomach and intestines from a virus, leading to diarrhea and vomiting.

# Lesson 3: Viruses



## Hepatitis A

- Self-limiting disease
- Vaccine is available
- May cause **jaundice:** a yellowish discoloration of the skin and eyes, indicating liver malfunction and illness

# Lesson 3: Viruses

- **HIV:** A retrovirus spread through blood and bodily fluids. The CDC has found no evidence that the HIV virus can be transmitted through food.

- **Prions**
  - Pathogenic proteins
  - Best known for BSE – mad cow disease

# Lesson 4: Parasites & Fungi

**Parasite**: An organism that lives and feeds in or on another living creature, known as a host, in a way that benefits the parasite and disadvantages the host.

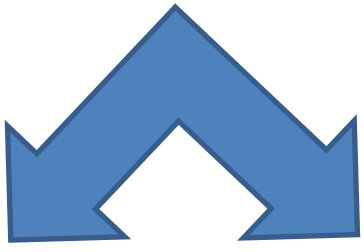
# Lesson 4: Parasites & Fungi

- **Trichinosis**: An infection caused by the parasite ***Trichinella spiralis***.

- Other common parasites are:
  - *Anisakis simplex*
  - *Giardia lamblia / Giardia duodenalis*
  - *Cryptosporidium parvum*
  - *Cyclospora cayetanensis*

# Lesson 4: Parasites & Fungi

- **Fungi**: Biological contaminants that can be found naturally in air, plants, soil, and water. Fungi can be small, single-celled organisms or larger multicellular organisms.



**Molds** **Yeasts**

# Lesson 4: Parasites & Fungi

- **Mold**: A fungus that produces threadlike filaments; it can be black, white, or of various colors.
  - Produces spores
  - Survives freezing and cooking
  - Occurs naturally in certain cheeses
- **Mycotoxins,** e.g., **aflatoxin**

# Lesson 4: Parasites & Fungi

- **Yeast:** Single-celled microscopic fungus that reproduces by budding and grows rapidly on certain foodstuffs, especially those containing sugar.
    - Spoils food quickly
    - Requires oxygen
    - Is destroyed by cooking

# Lesson 5: Chemical Contamination

- Chemical contamination is the presence of unwanted chemical components in food or the food environment.

- Preventing chemical contamination
  - Check suppliers
  - Use only food-grade products
  - Train employees
  - Store food in original containers only
  - Store chemicals away from food

# Lesson 5: Chemical Contamination

- **Toxic metal poisoning**: The leaching of certain poisonous metals, such as aluminum, copper, or galvanized metal, into acidic food being prepared with pots and/or utensils of those metals.

# Lesson 6: Natural Toxins

Natural toxins are classified as a chemical contamination and come from plants, or the fish that feed on plants. The only way to prevent illness from natural toxins is to purchase fish and shellfish from reputable suppliers and cook red kidney and fava beans thoroughly.

# Lesson 6: Natural Toxins

- Scombrotoxic fish poisoning
  - Toxins that accumulate in certain fish, known as **scombrotoxins:**
    - Tuna
    - Mackerel
    - Sardines
    - Pilchards
    - Herring
    - Anchovies
    - Salmon
  - Usually occurs when stored above 39.2°F (4°C)

# Lesson 6: Natural Toxins

- **Ciguatoxin**
  - A toxin found in tropical coral reef fish
  - Found in gonads, liver, and intestines of south Florida, Bahamian, and Caribbean regions:
    - Snapper
    - Grouper
    - Mackerel

# Lesson 6: Natural Toxins

- Shellfish toxins:
  - Paralytic (PST)
  - Diarrhetic (DST)
  - Neurotoxin (NSP)
  - Amnesic (ASP)

- Molluscan shellfish – oysters, clams, mussels, and scallops; PSP and ASP are also formed in lobsters and crabs.

# Lesson 7: Allergens

Dr. P. Marazzi/Science Source

- **Allergen**: Any substance that can cause an allergic reaction in some people, when their immune system sees the substance as foreign or dangerous.
- A severe allergic reaction affecting the whole body, often within minutes of eating the food, is called an **anaphylactic reaction,** which may result in death. This is also referred to as anaphylaxis.

# Lesson 7: Allergens

- **Allergy symptoms**
  - A tingling sensation in the mouth or throat
  - Itching in and around the mouth, face, and/or scalp
  - Swelling, including swelling of the tongue, throat, face, eyes, hands, and feet
  - Difficulty breathing, including wheezing or shortness of breath
  - Rash or hives
  - Nausea and/or vomiting
  - Abdominal cramps
  - Diarrhea
  - Loss of consciousness

# Lesson 7: Allergens

# Questions

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 4 | Pest Control

NEHA
EDUCATION & TRAINING

# Overview

After completing this lesson, you should be able to:

- Identify the common pests that can compromise food safety.
- Describe the three basic goals of integrated pest management.
- Explain the best practices for preventing pests within a food establishment.
- Describe the proper use and storage of pesticides.

# Lesson 1: Pests

- Food managers should focus pest control efforts on preventing the spread of disease.

- **Pest:** An animal, bird, or insect capable of directly or indirectly contaminating food.

# Lesson 1: Pests

- Cockroaches **-** Physical characteristics
  - ½ to 1 ¾ inches in size
  - Dark brown or black in color
  - Strong oily odor
  - Feces look similar to black pepper
  - Leave egg casings

# Lesson 1: Pests

## Rodents - Physical characteristics

- Light to dark brown in color
- Brown rice-shaped feces
- Leave urine trails
- Good climbers, jumpers, and swimmers
- Nocturnal
- Mice – hairless tails and large ears
- Rats – up to 9 inches in length

# Lesson 1: Pests

- Flies
  - Bodies covered with debris and feces
  - Vomit on food prior to ingestion

# Lesson 1: Pests

Ants

- Like sweets
- Generally do not carry disease

# Lesson 2: Integrated Pest Management

- **Integrated pest management**, or IPM, approaches pest control with a wide range of practices to prevent or solve pest problems.
  - The strength of IPM is in preventing an occurrence in the first place.
  - Prevention works to keep pests out, and control removes those that get in.
  - Successful implementation of IPM balances prevention with control.

# Lesson 2: Integrated Pest Management

# Lesson 3: Pest Prevention

- Keep the facility clean, waste out of reach, and potential entrances closed off.

# Lesson 3: Pest Prevention

- Waste management
  - Clean and secure waste containers
  - Spotless food preparation areas
  - Covered recyclables
- General housekeeping
  - Employee lockers and break areas
  - Immediately clean up spills
  - Check restrooms frequently
  - Storage and maintenance of cleaning materials

# Lesson 3: Pest Prevention

- Prevent pest entrance
  - Seal walls
  - Patch cracks
  - Repair leaks
  - Maintain door and window seals
  - Maintain screens
  - Install air curtains
  - Check drain covers
  - Seal pipe and duct gaps
  - Post signs

# Lesson 3: Pest Prevention

- Deliveries
  - Select reputable suppliers
  - Check supplier pest control plans
  - Inspect deliveries

- Outside areas
  - Bus and clean tables immediately
  - Maintain landscaping
  - Keep areas dry and picked up
  - Frequently check outside waste containers
  - Discourage the feeding of wildlife

# Lesson 4: Pesticides

- **Pesticides**: Chemicals used to kill pests

- Pesticides can cause serious illness and physical conditions in humans, and must be handled properly.

# Lesson 4: Pesticides

***Safety Data Sheet***

according to ANSI Z400.1 -2004 and 29 CFR 1910.1226

Weyland's

**WEYLAND'S ANT KILLER 16 - UNSCENTED**

Version *1.0*
Revision Date 04/11/2008

Print Date 03/04/2011
SDS Number 350000009774

**1. PRODUCT AND COMPANY IDENTIFICATION**

**Product information**

| | |
|---|---|
| Trade name | : WEYLAND'S ANT KILLER 16 - UNSCENTED |
| Use of the Substance/Preparation | : Insecticide |
| Company | : Weyland Products, Inc.<br>1234 Random Street<br>Anytown, AB 12345-1234 |
| Emergency telephone | : 24 Hour Transport & Medical Emergency Phone (123) 555-2368 |

# Questions

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 5 - Employee Training

NEHA
EDUCATION & TRAINING

# Overview

After completing this lesson, you should be able to:

- Describe the relationship between personal hygiene and food safety hazards.
- Explain why hand washing is important for food handlers.
- Explain the importance of wearing gloves.
- Discuss the importance of a personal hygiene policy in a food facility.
- Demonstrate the importance of communication in the workplace.
- Create a successful training schedule.

# Lesson 1: Hygiene

- **Personal hygiene**: Standards of personal cleanliness habits, including keeping hands, hair, and body clean and wearing clean clothing in the food establishment.

# Lesson 1: Hygiene

- **Clothing**
  - Clean
  - Appropriate
  - Dress from top down
  - Change in the work facility

# Lesson 1: Hygiene

- **Jewelry, perfume, and long or fake nails**
  - None of the above
  - Can hide dirt and bacteria
  - Can fall into food
  - Can taint smell and taste
- **Smoking**
  - Illegal around food; check regulations
  - People touch their lips and can transfer bacteria to food from their mouth
  - Cigarettes contaminated with saliva may be placed on work surfaces
  - Smoking encourages coughing
  - Cigarette butts and ash may land on and contaminate food

# Lesson 1: Hygiene

- Food handlers are potentially the greatest hazard in a food facility
  - Practice proper hand washing techniques and employ proper glove use
  - Maintain a high level of personal cleanliness
  - Wear proper work attire

# Lesson 1: Hygiene

- Hands
  - Keep hands clean at all times
  - Keep nails short and clean
  - Not use false nails or nail polish
  - Cover wounds with waterproof dressing, preferably blue
  - Employees with boils, lesions, or infections on hands must be excluded from working with TCS foods

# Lesson 2: Hand Washing

**Hand washing** is one of the most important actions that can be taken to prevent the spread of foodborne illnesses.

# Lesson 2: Hand Washing

- Why wash?
    - Reduce number of pathogens on hands to a safe level
- When to wash?
- Where to wash?

# Lesson 2: Hand Washing

- Double-wash procedure with a nailbrush after heavy contamination:
  - Going to the toilet
  - Changing a dressing
  - Cleaning up feces or vomit

# Lesson 2: Hand Washing

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# Lesson 2: Hand Washing

- Bare-hand contact
    - Current FDA Food Code prohibits bare-hand contact with RTE foods
    - No bare-hand contact with RTE foods when serving a high-risk population

# Lesson 3: Gloves

- When used properly, gloves can aid in the service of safe food by acting as an added layer of protection between hands and food.

# Lesson 3: Gloves

- Purchasing gloves:
  - Single-use gloves only
  - Variety of different sizes
  - Do not use latex gloves – alternative materials include: polyvinyl, nitrile, chloroprene, and polyethylene
  - Match the proper type of glove to the appropriate task
- Change gloves:
  - When changing tasks
  - After touching raw meat
  - Before handling cooked or ready-to-eat food
  - After touching the mouth when sneezing or coughing
  - After touching face or hair
  - When they become soiled or torn
  - After four hours

# Lesson 4: Employee Health

- Food handlers are particularly hazardous when they are ill. Every facility should have a personal hygiene policy to discuss the **exclusion** or **restriction** of an employee.

# Lesson 4: Employee Health

- **If** an employee has:
  - A sore throat with fever
  - A wound or lesion, such as a boil or infected wound, that is covered and protected

- **Then** that employee must:
  - Report the illness to the manager
  - Be restricted from working with food
  - Be excluded from the facility if serving a high-risk population

# Lesson 4: Employee Health

- **If** an employee has:
  - Vomiting
  - Diarrhea
  - Jaundice
  - A wound or lesion, such as a boil or infected wound, that is open or draining and cannot be protected by a proper cover

- **Then** that employee must:
  - Report the illness to the manager
  - Be excluded from the facility

# Lesson 4: Employee Health

- Jaundice must be reported to the local health agency

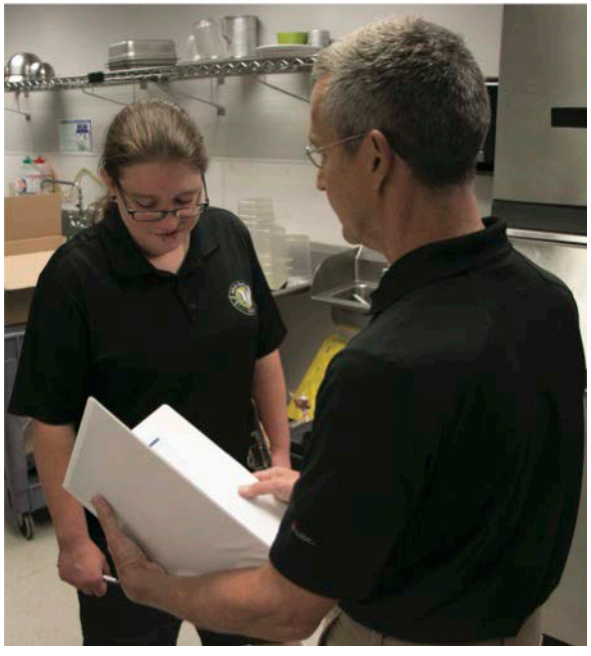
- Other illnesses that must be reported to the health agency are:
  - Norovirus
  - Hepatitis A virus
  - *Shigella* spp.
  - Shiga toxin-producing *E. coli*
  - *Salmonella* Typhi
  - Non-typhoidal *Salmonella*

# Lesson 4: Employee Health

- For foodborne illnesses that must be reported to an agency:
  - If employee shows no symptoms of being affected by the illness, restrict the employee from working with food in all facilities and completely exclude the employee from facility if working with a high-risk population.
  - If the employee exhibits symptoms, he or she must be excluded from all facilities.
  - A health care practitioner or regulatory authority must approve the employee's return to work.

# Lesson 5: Communication

- Communication is key to a good working environment in any industry.
- Listen – reflect on comments
- Lead by example – demonstrate what is expected of employees



# Lesson 6: Delivering Training

- Employee training enables food workers to acquire the capabilities they need to perform their jobs correctly.

- Training is linked to both employee performance and retention.

# Lesson 6: Delivering Training

- Value proposition
  - Help employees see the value of training
  - Offer hands-on activities
  - Give feedback

  - Keep sessions short – no more than 45 minutes
  - Keep it appropriate: in-depth discussion or overview of material

# Lesson 6: Delivering Training

- Refresher training
  - Keeps employees up-to-date

- Provide refresher training:
  - When new equipment, legislation, or products arrive
  - At regular intervals
  - After a complaint or incident

# Questions

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 6 | Facilities and Equipment

NEHA
EDUCATION & TRAINING

# Overview

After completing this lesson, you should be able to:

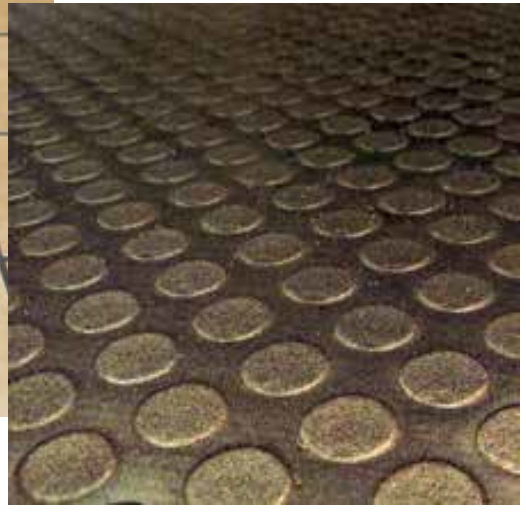
- Explain how the design of a food facility can reduce cross-contamination.
- Describe how the use of certain food contact materials can cause contamination.
- Explain the importance of cleaning and sanitizing the food service facility.
- Describe the various washing facilities found in a food establishment.
- Explain the importance of safe drinking water in a food service facility.

# Lesson 1: Facility Design

- Good design and regular maintenance of food facilities are both essential to avoid hazards such as the contamination of food and multiplication of bacteria.

# Lesson 1: Facility Design

Floors



# Lesson 1: Facility Design

## Walls & Ceilings

- Keep the walls sealed, sturdy, easy to clean
- Keep ceilings covered – joists and rafters cannot be exposed to moisture
- Utility lines and pipes cannot be exposed
- Attached fixtures must be easy to clean

# Lesson 1: Facility Design

- Lighting

  - **108 lux (10 foot candles):** dry storage areas, walk-in refrigerators, and freezers
  - **215 lux (20 foot candles):** buffets, bars, reach-in and under-the-counter refrigerators, hand washing and dishwashing stations, equipment storage areas, restrooms
  - **540 lux (50 foot candles):** food preparation surfaces with knives, slicers, grinders, and other utensils

# Lesson 1: Facility Design

## Ventilation

# Lesson 1: Facility Design

## Waste

# Lesson 2: Food Contact Materials

- To avoid contamination, food contact materials must be well designed and constructed, cleaned and sanitized as needed, properly maintained, and used correctly.

- Equipment that comes into contact with food should be smooth, waterproof, nontoxic, non-flaking, non-tainting, resistant to corrosion, durable, and easy to clean.

- Food equipment that is made from inappropriate materials or that is cracked, chipped, broken, worn, or badly designed is a haven for dirt and bacteria.

# Lesson 2: Food Contact Materials

- **Utensils**
  - Safe
  - Corrosion resistant
  - Waterproof
  - Smooth
  - Easy to clean
  - Sturdy – resistant to chipping or scratching

# Lesson 2: Food Contact Materials

- Non-food contact equipment
    - Parts of some equipment – such as legs, housings, and supports
    - Must be smooth, waterproof, corrosion resistant, easy to clean, and simply designed without ledges or hard-to-reach areas

# Lesson 2: Food Contact Materials

- Large and immovable equipment
  - Arrange and position for easy access
  - At least six inches off the floor
  - At least four inches from the tabletop
  - Cracks or seams wider than 1/32 of an inch must be sealed
  - Cantilever mounted equipment

# Lesson 2: Food Contact Materials

Underwriters Laboratories

NSF Certification

- Purchasing equipment
  - Approved equipment will be marked with the NSF or UL logos
  - Commercial-grade food service equipment only

# Lesson 3: Cleaning and Sanitizing

- Cleaning methods
  - Physical cleaning
  - Thermal cleaning
  - Chemical cleaning
  - Combination of all of these
- Cleaning agents
  - Detergents
  - Degreasers
  - Acid cleaners
  - Abrasive cleaners

# Lesson 3: Cleaning and Sanitizing

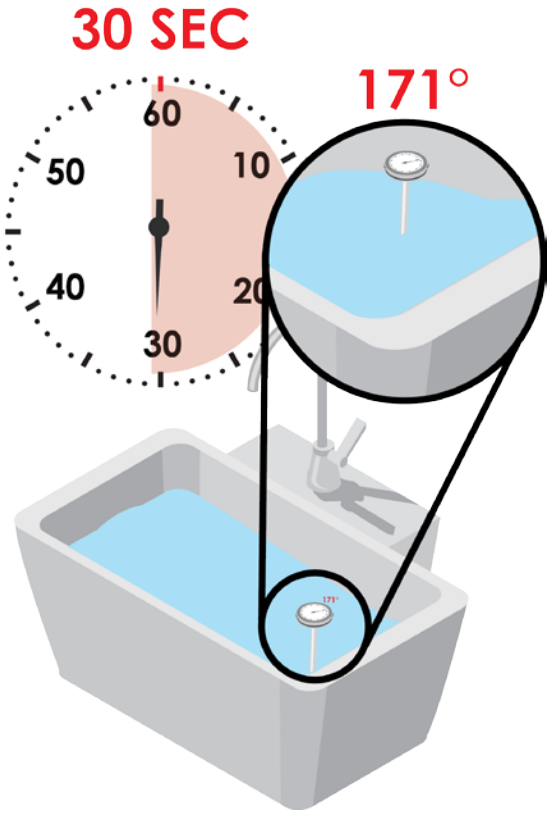
- Cleaning tools
  - All tools should be cleaned and sanitized after use.
  - Tools should be left to air-dry.
  - Cleaning materials should not be left in dirty buckets or soaking in water.
  - Cleaning tools should be kept separate from food items.

# Lesson 3: Cleaning and Sanitizing

- Critical sanitizing times:
  - When changing to a different type of raw animal food
  - When changing from working with raw foods to RTE foods
  - When changing from raw fruits and vegetables to TCS foods
  - Before using or storing a food temperature-measuring device
  - At any time when contamination may have occurred

# Lesson 3: Cleaning and Sanitizing

- Heat sanitization
  - Manually immerse the object for at least 30 seconds in water that is a minimum of 171°F (77°C).
  - High-temperature dishwashing machines must be set at 180°F (82°C). If the water is too hot, it can vaporize before it sanitizes the objects.



# Lesson 3: Cleaning and Sanitizing

- Iodine
  - A minimum temperature of 68°F (20°C)
  - A pH of 5.0 or less, or a pH no higher than the level for which the manufacturer specifies the solution is effective
  - A concentration between 12.5 mg/L and 25 mg/L
- Quats
  - A minimum temperature of 75°F (24°C)
  - Concentration as indicated by the EPA-registered label use instructions
  - Only use in water with a hardness no greater than specified by the EPA-registered label use instructions

# Lesson 3: Cleaning and Sanitizing

Chlorine

| Concentration | Minimum temperature | |
|---|---|---|
| **mg/L** | **pH 10 or less** | **pH 8 or less** |
| 25-49 | 120°F (49°C) | 120°F (49°C) |
| 50-99 | 100°F (38°C) | 75°F (24°C) |
| 100 | 55°F (13°C) | 55°F (13°C) |

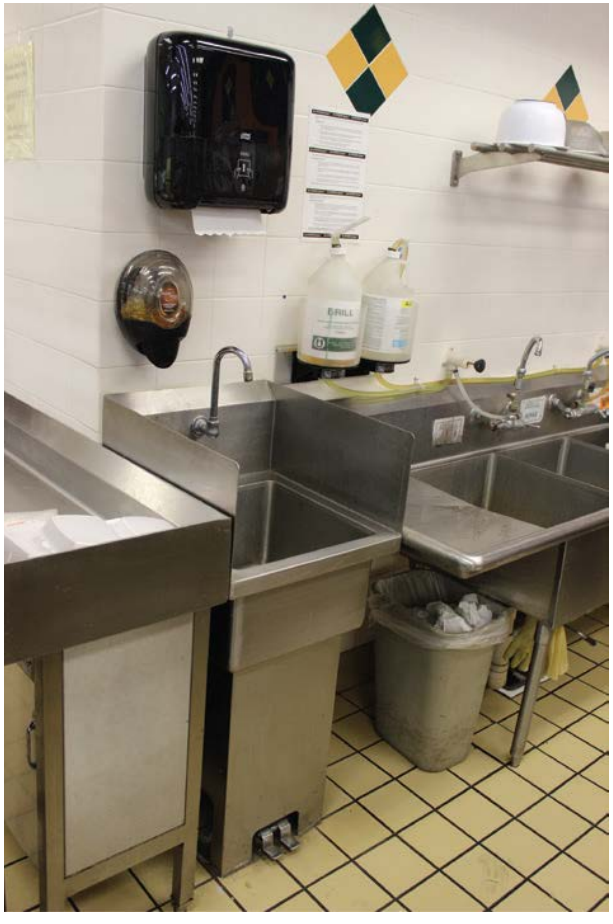
# Lesson 3: Cleaning and Sanitizing

**Health First**
Random Street, 123
DENVER CO, 80246

**Alzar's Fine Cuisine**
Fake Street, 123
DENVER CO, 80246

| Daily General Cleaning Schedule | | | | Date: | 05/06/16 |
|---|---|---|---|---|---|
| **Area to clean** | **How to clean** | **Cleaning supplies** | **Times** | **Staff Initials** | **Mgt. Initials** |
| Floors (daily and as needed) | Sweep, mop | Approved sanitizer | 2 | M.A/C.K | L.B. |
| Dry Storage (daily and as needed) | Sweep, mop | Approved sanitizer | 1 | C.K. | L.B./F.D. |
| Prep Areas (daily and as needed) | Wash, rinse, sanitize | Warm soapy water and 200 ppm sanitizer | 3 | M.A/C.K /S.E. | L.B. |
| Hood Grease Pan (daily and as needed) | Clean with degreaser, wash with dishwasher | Warm soapy water and 200 ppm sanitizer | 2 | S.E./C.K. | L.B. |
| Hood Filter (daily) | Soak in degreaser, rinse, air dry | Degreaser | 1 | C.K. | F.D. |
| Storage Bins (daily and as needed) | Use a clean, damp cloth to wipe exterior | Warm soapy water and 200 ppm sanitizer | 1 | S.E. | L.B. |
| Trash Bins (daily and as needed each shift) | Use a clean, damp cloth to wipe exterior and interior | Warm soapy water and 200 ppm sanitizer | 3 | M.A/C.K /S.E. | L.B./F.D. |
| Walk-in Cooler (daily and as needed) | Sweep, moop; wipe outside and inside | Approved sanitizer` | 2 | M.A/C.K | L.B. |

# Lesson 4: Washing Facilities



- There are a variety of washing facilities in every food establishment.
- Each washing facility should be used for its specific application and nothing else.

# Lesson 4: Washing Facilities

## Dishwashers

# Lesson 4: Washing Facilities

Food equipment sink

- Items that cannot be washed and sanitized in a dishwashing machine must be washed manually
- Used if items are too large for machine washing
- Three-compartment most common
- Compartments must be able to fully immerse an item

# Lesson 4: Washing Facilities

## Manual dishwashing procedure

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## Manual dishwashing procedure

# Lesson 4: Washing Facilities

- **CIP**: Cleaning in place

    1. Pre-rinsing, to remove soil in the pipes
    2. Detergent circulation, to remove residual debris and dissolve grease or soiling
    3. Intermediate rinse with water
    4. Sanitization, to destroy the remaining organisms to a safe level
    5. Air-drying

# Lesson 5: Plumbing

- All food premises must have a satisfactory, constant supply of drinking water. Only drinking water, also known as potable water, can be used in food preparation and for cleaning food or food-contact areas.

# Lesson 5: Plumbing


Nondrinking water

- No contact with food or food contact surfaces
- Pipes must be labeled nondrinking: even condensation from pipes is dangerous if it drips onto food
- Only use for AC, fire protection, non-food equipment cooling

# Lesson 5: Plumbing

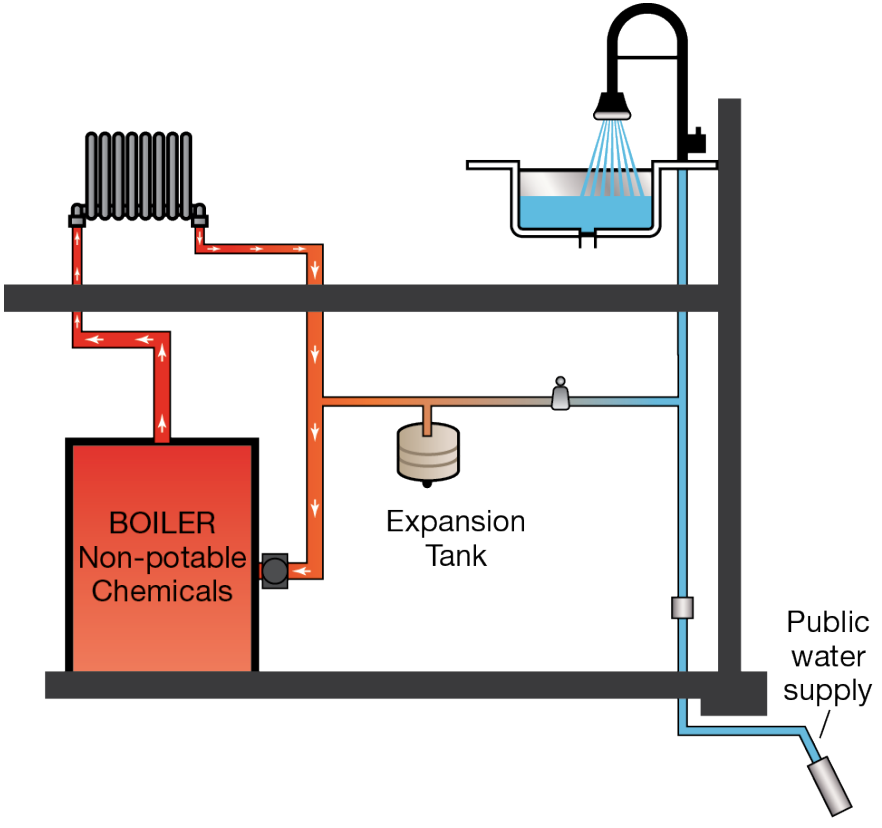
- Emergency guidelines:
  - Listen for announcements from local authorities.
  - If the water is deemed unsafe, boil it for 60 seconds.
  - Boiling will not remove chemical contaminants.
  - It is possible to treat water with bleach, chlorine tablets, or iodine tablets; be aware that parasitic organisms will not be killed.

# Lesson 5: Plumbing

The main function of a plumbing system is to prevent drinking water from mixing with nondrinking water.

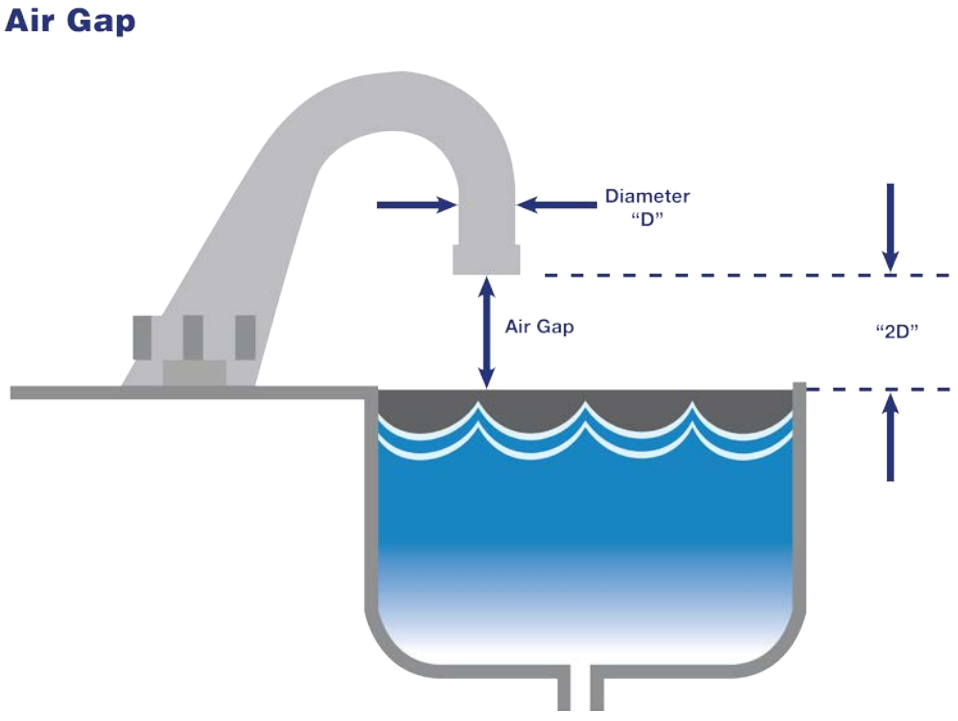
# Lesson 5: Plumbing

**Backflow as the Result of Back Pressure**



# Lesson 5: Plumbing

**Air gap:** The vertical air space that separates the end of a supply line and the flood level rim of a sink, drain, or tub.



# Lesson 5: Plumbing

- Grease traps
  - Or grease interceptors, grease recovery devices, and grease convertors
  - Designed to intercept most greases and solids in wastewater before they flow into a wastewater disposal system
- Sewage and wastewater
  - Highly contaminated
  - Drainage system must allow for cleaning access
  - Constructed to prevent pest entrance
  - Must empty directly into public sewage treatment facility

# Questions

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 7 | Purchasing and Storing Food

NEHA EDUCATION & TRAINING

# Overview

After completing this lesson, you should be able to:

- Evaluate food safety controls of the supplier.
- Identify the potential hazards associated with food delivery.
- Describe the actions needed to avoid hazards in food storage.

# Lesson 1: Purchasing

Purchasing is the first step in the flow of food.

- **Reputable supplier**

  - Food safety management system in place
  - Impeccable premises, with full records of products going in and out
  - High standards of the driver and vehicle

# Lesson 2: Transportation and Delivery

- Two significant safety hazards regarding the delivery of food:
  - Contamination of food by physical contaminants, chemicals, or bacteria – either before or at the point of delivery
  - Multiplication of bacteria within the food due to improper temperatures, either en route to the establishment or at point of delivery

# Lesson 2: Transportation and Delivery

- Shellfish is required to have certification because of the possibility of environmental contamination.

# Lesson 2: Transportation and Delivery

- Boxes, cans, and packaging must be:
  - Clean
  - Free from signs of pests
  - Dry
  - Not dented or swollen
  - Labeled
  - Not out of date

# Lesson 3: Storage

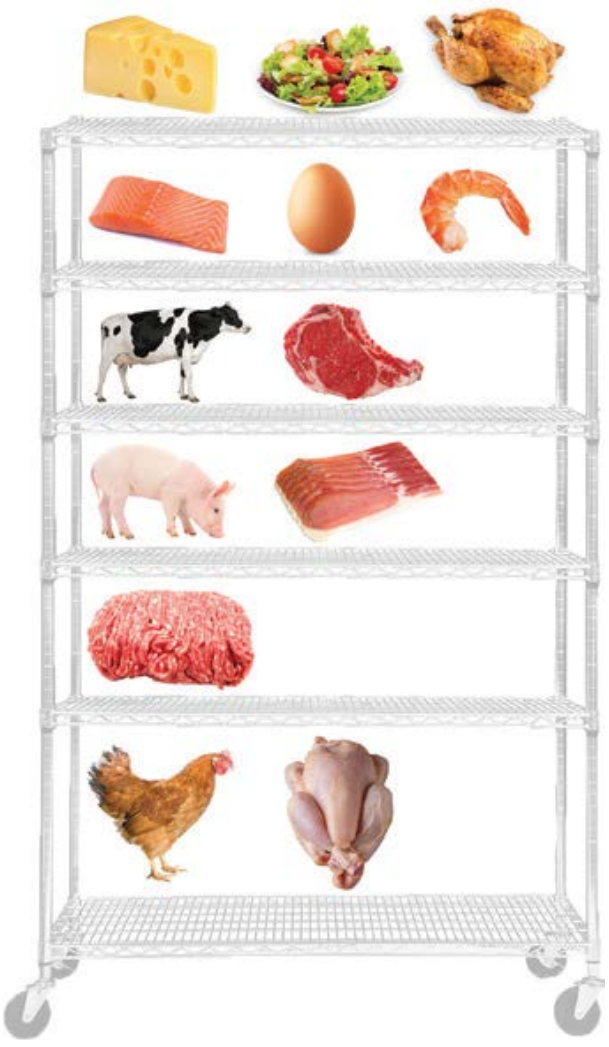
- Refrigerated items should be stored first, followed by frozen foods, and then dry goods.

- **Stock rotation**: The practice of ensuring the oldest stock is used first and that all stock is used within its shelf life.

- **FIFO** – First In, First Out

# Lesson 3: Storage


- Major hazards for refrigerated storage
  - Contamination by raw foods
  - Multiplication of bacteria if temperatures are too high



# Lesson 3: Storage

Food storage order from top to bottom is:

- Ready-to-eat foods and fully cooked foods
- Fruits and vegetables
- Fish and seafood
- Beef and pork
- Ground meats
- Poultry

# Lesson 3: Storage

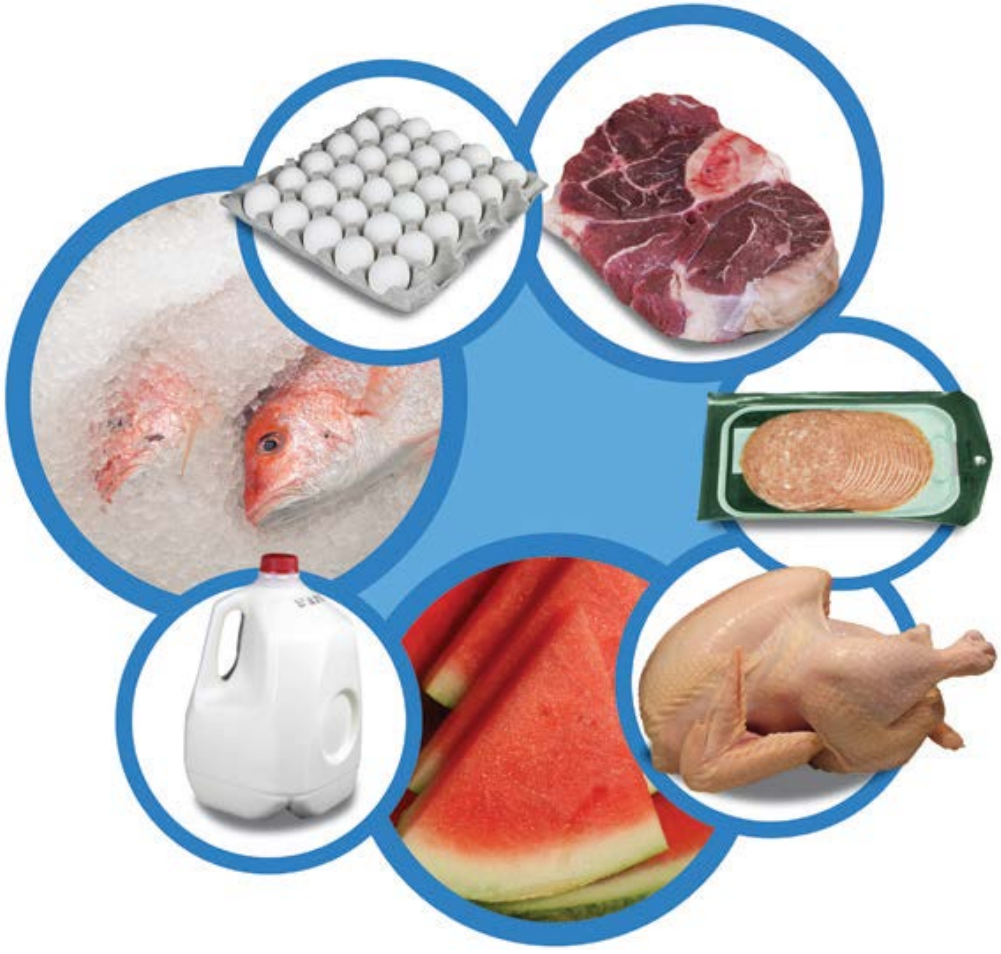
- The major hazard associated with frozen food storage is the multiplication of dormant bacteria that takes place when the temperature rises above 14°F (–10°C).

# Lesson 3: Storage


The two main hazards associated with dry food storage are:

- Physical contamination - Occurs from objects brought in on delivery packaging, such as staples or cardboard
- Chemical contamination - Which comes from rusty cans or chemicals kept in dry storage

# Lesson 3: Storage



# Lesson 3: Storage

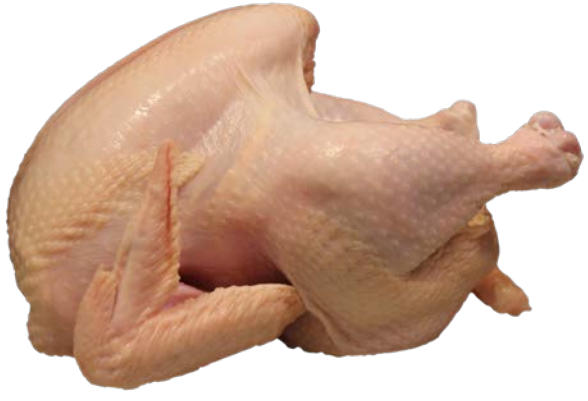
- Meat
    - Meats should be stored in their original wrapping or in air-tight, moisture-proof wrapping at 41ºF (5ºC) and must be USDA-inspected.
    - Meats have a short shelf life and if time/temperature abused, will support rapid bacterial growth.

# Lesson 3: Storage

- Eggs
  - Store at 45ºF (7ºC) or lower.
  - Should not be subjected to fluctuating humidity or temperatures, which encourage condensation.
  - Don't wash eggs before storing them.

# Lesson 3: Storage

- Poultry
  - Chicken, turkey, goose, duck
  - Store at 41°F (5°C) or below
  - Must be USDA-inspected
  - If delivered frozen, keep it frozen



# Lesson 3: Storage

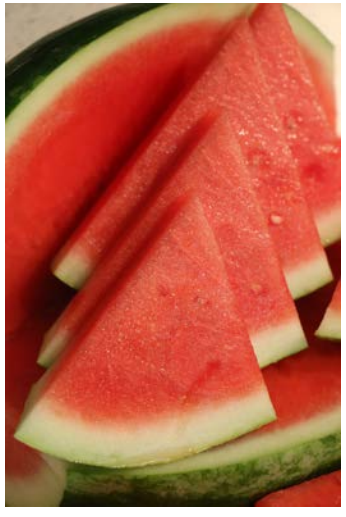
- Seafood
  - Fish, shellfish, crustaceans
  - Stored at an internal temperature between 32°F (0°C) and 41°F (5°C)
  - If delivered frozen, keep it frozen

# Lesson 3: Storage

- Milk and dairy
  - Milk and dairy products, including bakery fillings that contain dairy, must be stored at 41°F (5°C) or lower.
  - The use-by or expiration date on milk and dairy products represents the last day the product can be used or sold.

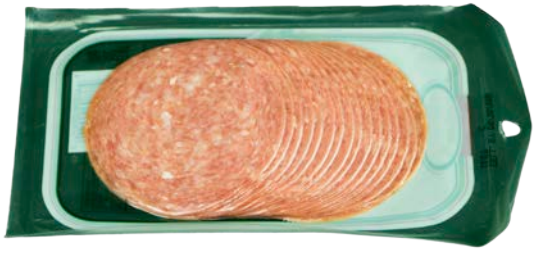
# Lesson 3: Storage

- Fresh fruits and vegetables
  - Whole, raw fruits and vegetables, such as carrots and celery, can be refrigerated at 41°F (5°C) or below, at a relative humidity of 85 to 95 percent.
  - Many fruits and vegetables continue to ripen after they are harvested. Fruits and vegetables such as avocados, bananas, and tomatoes, ripen best at room temperature.



# Lesson 3: Storage

- Reduced Oxygen Packaging
  - **ROP**: Refers to any packaging procedure that results in a reduced oxygen level.
  - Types of ROP foods are controlled atmosphere packaging (CAP) and modified atmosphere packaging (MAP).



# Questions

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 8 | Safe Food Handling

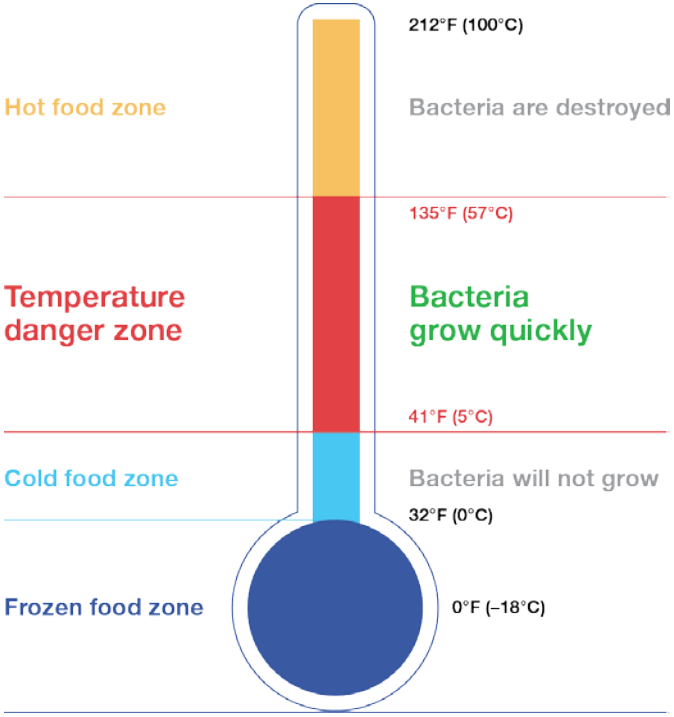
NEHA
EDUCATION & TRAINING

# Overview

After completing this lesson, you should be able to:

- Describe the importance of time and temperature controls in food safety.
- List the ways to avoid potential hazards during food preparation.
- Explain how to avoid potential food safety hazards involved in cooking food.
- Describe how to avoid potential hazards involved in cooling and reheating food.
- Explain the potential hazards associated with holding and serving safe food.

# Lesson 1: Time and Temperature




- In order to protect food, it is important to minimize the amount of time food spends in the **temperature danger zone** (also known as the TDZ).

# Lesson 1: Time and Temperature

- Time/temperature control for safety (TCS) food is particularly important to monitor.



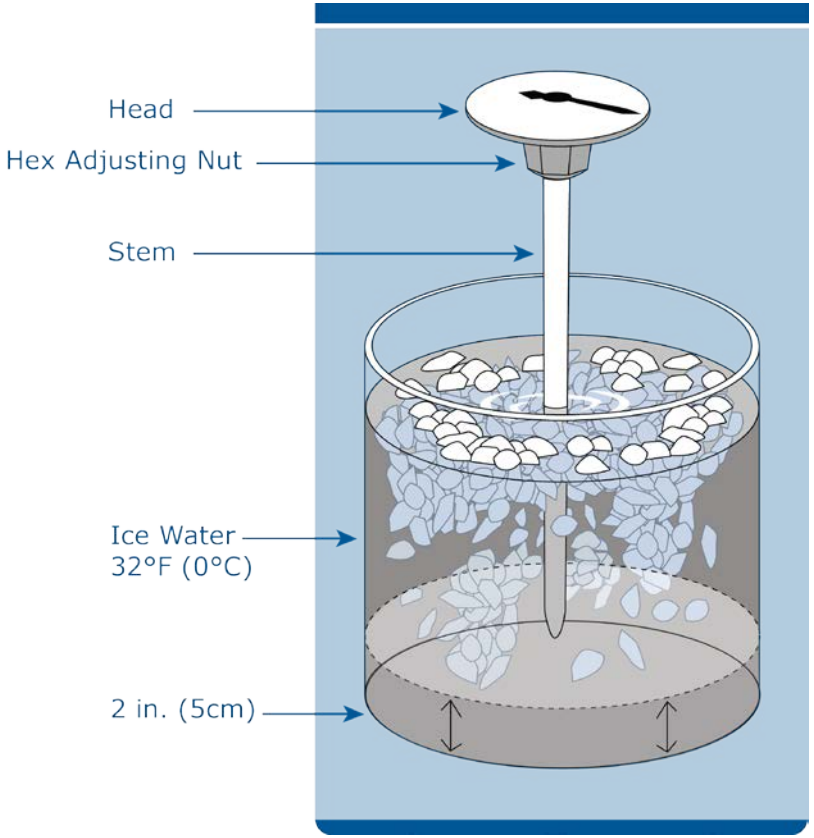

# Lesson 1: Time and Temperature

- Time as a public health control
  - Time without temperature control.
  - The food has an initial temperature of 41°F (5°C) or less when removed from cold holding temperature control, or 135°F (57°C) or greater when removed from hot holding temperature control.

# Lesson 1: Time and Temperature

- Thermometers
  - Types:
    - Bi-metal stem
    - Infrared
    - Thermocouples
  - Acceptable range in a food establishment is 0°F to 220°F (–18°C to 104°C) with a variance of +/– 2°F (1°C).

# Lesson 1: Time and Temperature



# Lesson 1: Time and Temperature

## Thermocouples and Infrared Thermometers

# Lesson 2: Preparation

- The main hazards most likely to occur during food preparation are:
  - Cross-contamination – separate raw and RTE foods
  - Time/temperature abuse – minimize time in the TDZ

# Lesson 2: Preparation

- Thawing
  - Never at room temperature
  - Away from RTE foods
  - Clean and sanitize area after thawing
  - Refrigerate or cook immediately

# Lesson 3: Cooking

- The main hazards in the cooking or processing stage are:
  - Survival of bacteria as a result of inadequate cooking
  - Multiplication of bacteria as a result of prolonged cooking at low temperatures
  - Contamination

# Lesson 3: Cooking

- Specific cooking procedures apply to certain foods

- Eggs
- Ground beef and meats
- Beef steaks
- Poultry
- Fish
- Pork, veal, lamb chops
- Tenderized meats
- Stuffing and stuffed foods
- Fruits and vegetables
- Commercially raised game and birds
- Leftovers
- RTE foods
- Roasts
- Cubed beef or fish

# Lesson 3: Cooking

- Roasts, including beef roasts, corned beef, pork roasts, and ham, must be cooked to specific internal temperatures.

| Roast Temperature | Time (in minutes) |
|---|---|
| 130°F (54°C) | 112 |
| 131°F (55°C) | 89 |
| 133°F (56°C) | 56 |
| 135°F (57°C) | 36 |
| 136°F (58°C) | 28 |
| 138°F (59°C) | 18 |
| 140°F (60°C) | 12 |
| 142°F (61°C) | 8 |
| 144°F (62°C) | 5 |
| 145°F (63°C) | 4 |

# Lesson 3: Cooking

- Beef or fish cut up into small pieces should be cooked according to specific minimum temperatures:

| Temperature | Time |
|---|---|
| 145°F (63°C) | 3 minutes |
| 150°F (66°C) | 1 minute |
| 155°F (68°C) | 15 seconds |
| 158°F (70°C) | < 1 second |

# Lesson 3: Cooking

- **Noncontinuous cooking**
  - Cooked no longer than 60 minutes initially
  - Immediately cooled and stored after heating
  - All parts of the food are reheated to the cooking guidelines prior to service
  - Clearly written procedures approved by the local regulatory authority

# Lesson 4: Cooling and Reheating

- Hazards associated with cooling and reheating include:
  - Multiplication of food poisoning bacteria not destroyed during cooking
  - Contamination of food by bacteria, foreign bodies, or chemicals
- Controlling the processes of cooling and reheating food before serving it to customers is very important to the overall flow of food from purchase to service.

# Lesson 4: Cooling and Reheating

- Cooling

  - **Blast chiller**: Rapid cooling refrigeration units.
  - **Ice bath**: The method of cooling food in which a container holding hot food is placed into a sink or larger container of ice water. The ice water surrounding the hot food container disperses the heat quickly.
  - **Ice paddles**: Plastic paddles filled with ice or water and then frozen; they are used to stir hot food to cool it quickly.

# Lesson 4: Cooling and Reheating

- Cooling times
  - From 135ºF to 70ºF (57ºC to 21ºC) within two hours
  - From 70ºF to 41ºF (21ºC to 5ºC) within four hours
    - Or from 135ºF to 41ºF (57ºC to 5ºC) within a **total** of six hours
  - Vital to cool TCS foods as quickly as possible

# Lesson 4: Cooling and Reheating

- **Reheating**: The process of heating previously cooked and cooled foods to the proper temperature.

# Lesson 5: Service

- Service hazards
  - Multiplication of bacteria if not served quickly
  - Time before service – standards for disposal of food
  - Separate raw and RTE food equipment and utensils
  - Previously served food cannot be re-served
  - Improperly handled ice

# Lesson 5: Service

- Hot holding

# Lesson 5: Service

- Displayed food
  - Keep cold food cold
  - Only whole fruits, vegetables, and cut, raw vegetables can be stored directly on ice
  - Prewrapped
  - Sneeze guards
  - Utensils – handles longer than display dishes

# Questions

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 9 | The HACCP Approach to Food Safety

NEHA
EDUCATION & TRAINING

# Overview

After completing this lesson, you should be able to:

- Explain the purpose and principles of the HACCP approach to food safety.
- Explain the hazard analysis process.

# Lesson 1: HACCP Overview

- **HACCP**: Acronym for hazard analysis and critical control point. A food safety management system that identifies, evaluates, and controls hazards that are significant for food safety.

- **Control measures:** The actions required to prevent or eliminate a food safety hazard, or reduce it to an acceptable level.

# Lesson 1: HACCP Overview

- Elements of a food safety management system include:

o Certified food protection managers (CPFM)
o Standard operating procedures (SOPs)
o Recipe cards
o Purchase specifications
o Equipment and facility design and maintenance
o Monitoring procedures
o Recordkeeping
o Employee health policy
o Manager and employee training
o Ongoing quality control and assurance
o Specific goal-oriented plans, such as risk control plans (RCPs)

# Lesson 1: HACCP Overview

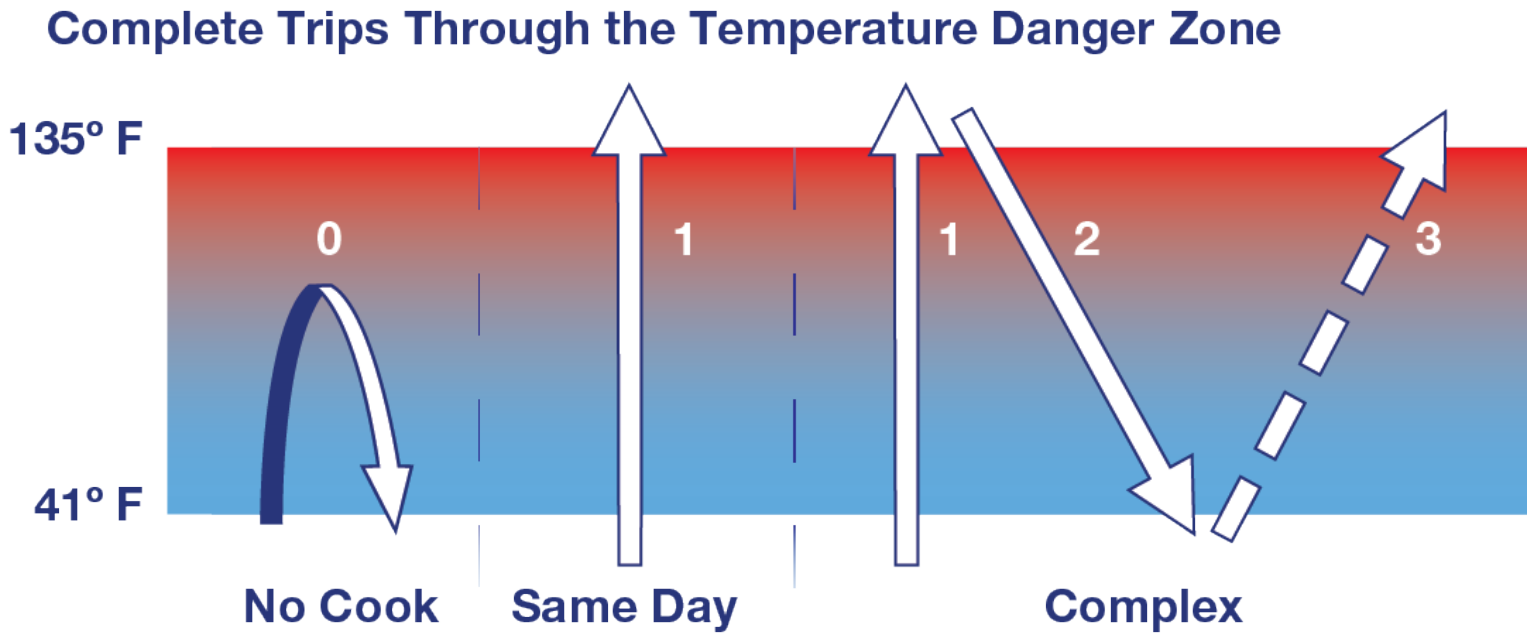
- To effectively implement food safety management systems, operators of retail and food service establishments must focus their efforts on achieving **active managerial control**.

# Lesson 1: HACCP Overview

- Prior to the successful development of a HACCP plan, an establishment must have certain prerequisite programs in place.

# Lesson 1: HACCP Overview

- The process approach to HACCP



# Lesson 1: HACCP Overview

- The process approach to HACCP

  - For example, chicken salad includes:
    - Chicken
    - Mayonnaise
    - Celery
    - Onion
    - Tarragon
    - Salt

# Lesson 1: HACCP Overview

Development of a HACCP plan is accomplished through following the seven HACCP principles:

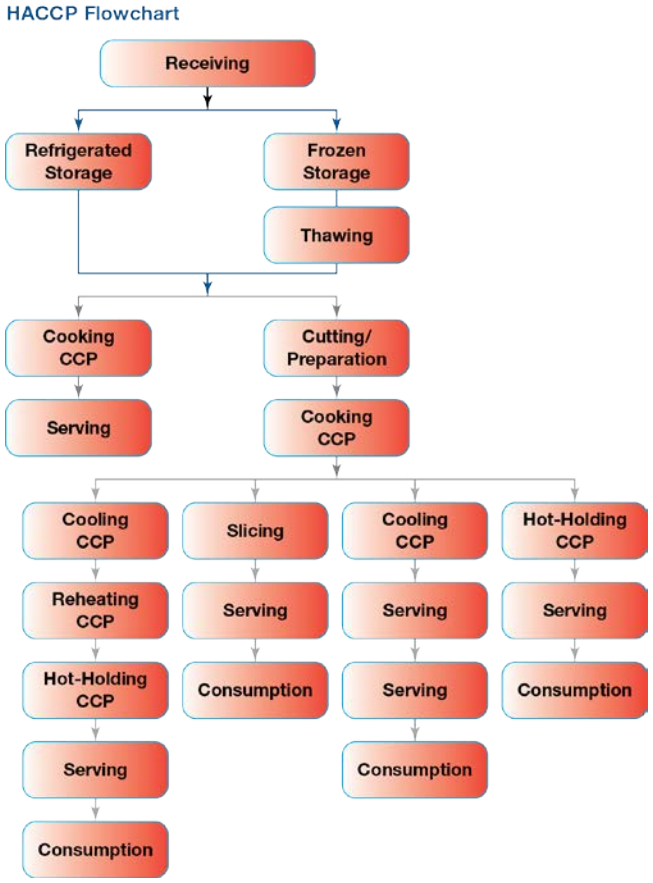
1. Hazard analysis
2. CCPs
3. Critical limits
4. Monitoring
5. Corrective actions
6. Verification
7. Recordkeeping

# Lesson 2: HACCP Principles

1. **Hazard analysis**
   Identify hazards and specify control measures.

   1. Assemble team
   2. Determine products and processes to be examined
   3. Prepare flow diagram
   4. Brainstorm potential hazards
   5. Perform risk assessment
   6. Determine control measures

# Lesson 2: HACCP Principles



# Lesson 2: HACCP Principles

**2. Critical Control Points (CCPs)**

Identify which control measures are essential to food safety.

# Lesson 2: HACCP Principles

**3. Critical limits (CL)**

Identify target levels and tolerances for each CCP.

# Lesson 2: HACCP Principles

**4. Monitoring**

Create a testing and observation schedule for each CCP.

# Lesson 2: HACCP Principles

**5. Corrective actions**

Identify necessary procedures to take when a CL is not met.

# Lesson 2: HACCP Principles

**6. Verification**

Confirm that the HACCP program is working as written.

# Lesson 2: HACCP Principles

**7. Recordkeeping**

Document processes and results

# Lesson 2: HACCP Principles

## 7. Recordkeeping

- o CCP and non-CCP monitoring activities
- o Deviations and corrective actions
- o Modifications to the HACCP system, including details from the review
- o Cleaning schedules and training records
- o Calibration of instruments
- o Approved supplier list
- o Stock rotation records
- o Staff health records
- o Audit reports
- o Customer complaints

# Questions

NATIONAL ENVIRONMENTAL HEALTH ASSOCIATION

# PROFESSIONAL FOOD MANAGER POWERPOINT PRESENTATION

## Chapter 10 | Food Safety Standards

NEHA
EDUCATION & TRAINING

# Overview

After completing this lesson, you should be able to:

- Explain the purpose and application of the FDA Food Code.
- Explain the purpose of an inspection program.
- Identify best practices for sampling foods in a food facility.
- Explain the importance of using dates and labels on food.
- Describe proper safety precautions for hazardous materials.

# Overview

The **food safety policy** outlines management's responsibilities and communicates standards to staff. The policy is effectively a commitment to:

- Produce safe food
- Provide satisfactory facilities and equipment
- Ensure that legal responsibilities are met
- Ensure that appropriate records are maintained

# Lesson 1: FDA Food Code

- The FDA Model Food Code represents the federal government's "best advice" for minimizing the incidence of foodborne illness.


- The Food Code is not law but is good guidance.
  - All 50 states have adopted some form of the Food Code.
  - The most recent Food Code states that all food facilities must have at least one employee who is a CFPM.

# Lesson 2: Inspections

- The primary purpose of a food service inspection program is to protect the public's health by determining if a facility provides food that is safe, unadulterated, and honestly presented.

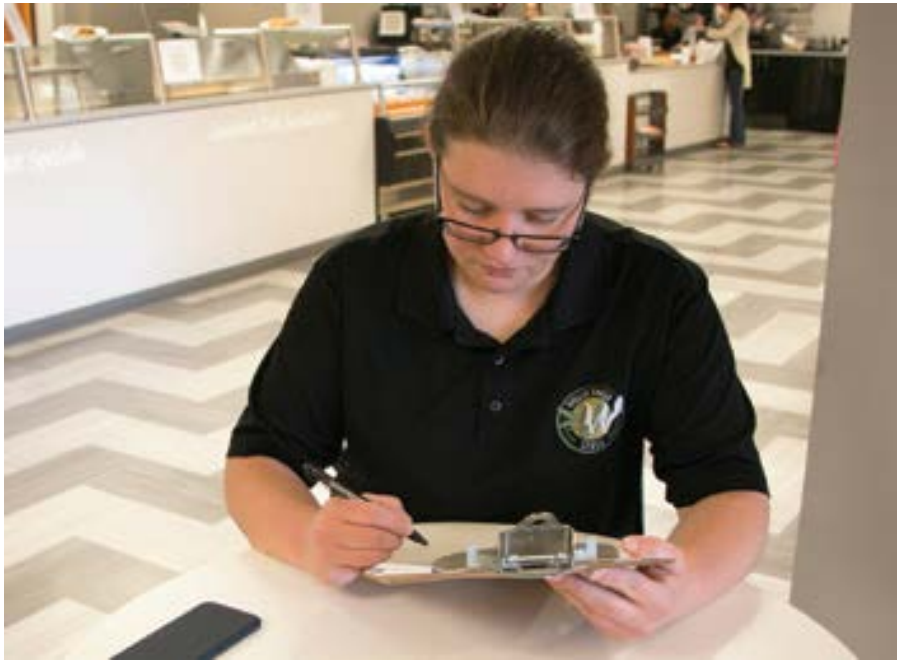
# Lesson 2: Inspections

- 3 types of inspections:
  - Traditional
  - Risk-based
  - HACCP-based
- Frequency of inspections based on risk

- Factors to determine risk of an establishment include:
  - Establishment size
  - Foods served
  - Clientele
  - Compliance history

# Lesson 2: Inspections

- **Risk-based inspection**
  - Priority items
  - Priority foundation items
  - Core items



# Lesson 2: Inspections

- **Priority items:** Operations that contribute directly to the elimination, prevention, or reduction of hazards associated with foodborne illness or injury. These items include things such as cooking, reheating, cooling, and handwashing.

- Violations of priority items:

  - Are more likely to cause illness than other violations
  - Must be corrected within 72 hours per the Food Code

# Lesson 2: Inspections

- **Priority foundation items:** Provisions whose application supports, facilitates, or enables priority items; a specific action or procedure to attain control of a hazard.

- Violations of priority foundation items:

  - Require specific actions or procedures to be controlled
  - Have 10 days to be corrected

# Lesson 2: Inspections

- **Core items:** General physical facility conditions and general work practices that do not have a direct impact on food safety.

- Violations of core items:

  - Are generally marked “in” or “out” of compliance
  - Have 90 days to be corrected

# Lesson 2: Inspections

# Lesson 2: Inspections

- Best practices during an inspection:
  - Accompany the inspector
  - Take notes
  - Don’t argue
  - Sign the report
- Best practices after an inspection:
  - Correct violations as soon as possible
  - Determine why and how any violations occurred
  - Revise plans to ensure same violations do not occur again

# Lesson 2: Inspections

- Suspensions and closures

# Lesson 3: Sampling

- Use sterile sampling equipment and an aseptic technique.

# Lesson 3: Sampling

Submitting samples:

- Identify each sample unit
- Obtain at least 100 grams
- Submit open and closed controls
- Maintain temperature
- Deliver promptly
- Keep records

| Chain of Custody | | | | |
|---|---|---|---|---|
| **File Name** | **Date/Time** | **Released by** (Signature ) | **Received by** (Signature ) | **Comments/Location** |
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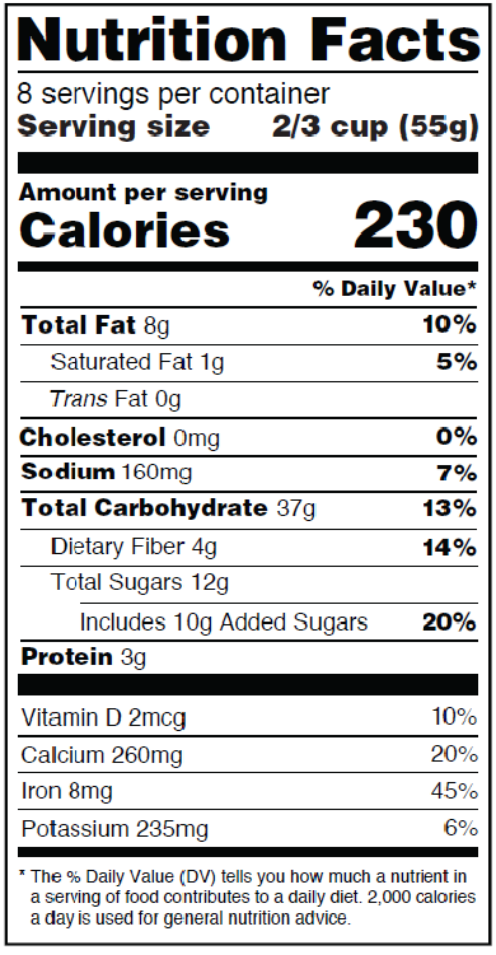
# Lesson 4: Labeling

- Labeling food is important in order to identify ingredients, allergens, use-by dates, and proper handling techniques.



**Nutrition Facts**

8 servings per container

**Serving size** **2/3 cup (55g)**

**Amount per serving**

**Calories** **230**

| | % Daily Value* |
|---|---|
| **Total Fat** 8g | **10%** |
| Saturated Fat 1g | **5%** |
| *Trans* Fat 0g | |
| **Cholesterol** 0mg | **0%** |
| **Sodium** 160mg | **7%** |
| **Total Carbohydrate** 37g | **13%** |
| Dietary Fiber 4g | **14%** |
| Total Sugars 12g | |
| Includes 10g Added Sugars | **20%** |
| **Protein** 3g | |
| Vitamin D 2mcg | 10% |
| Calcium 260mg | 20% |
| Iron 8mg | 45% |
| Potassium 235mg | 6% |

* The % Daily Value (DV) tells you how much a nutrient in a serving of food contributes to a daily diet. 2,000 calories a day is used for general nutrition advice.

# Lesson 5: Hazardous Materials

- OSHA is the federal agency that sets standards for the use of hazardous materials in the workplace, but always ensure compliance by checking with a local regulatory agency.

# Lesson 5: Hazardous Materials

- **Personal protective equipment, PPE**

# Questions