

Food Safety and Sanitation

Chapter 2

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After studying this unit

□ You will be able to:

- Identify the causes of food-borne illness
- Handle foods in a safe manner
- Explain and follow a HACCP system
- Take appropriate actions to create and maintain a safe and sanitary working environment

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The U.S. Public Health Service identifies more than 40 diseases that can be transmitted through food.

Many can cause serious illness; some are even deadly.

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Providing consumers with safe food is the food handler's most important responsibility.

Unfortunately, food handlers are also the primary cause of food-related illnesses.

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Sanitation

- The creation and maintenance of conditions that will prevent food contamination or food-borne illness

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Contamination

- Biological
 - Caused by disease-causing microorganisms such as bacteria, molds, yeasts, viruses or fungi
- Chemical
 - Caused by chemical substances, especially cleaning agents, pesticides and toxic metals
- Physical
 - Caused by particles such as glass chips, metal shavings, bits of wood or other foreign matter

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Contamination Occurs in Two Ways

- Direct contamination
 - The contamination of raw foods in their natural setting or habitat
- Cross-contamination
 - The transfer of bacteria or other contaminants from one food, work surface or piece of equipment to another

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Biological Contaminants

- Microorganisms
 - Single-celled organisms as well as tiny plants and animals that can be seen only through a microscope

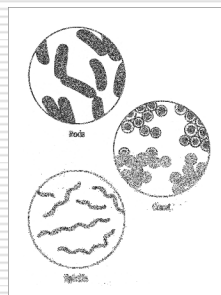
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Bacteria

- Single-celled microorganisms
- The leading cause of food-borne illness
- Putrefactive
 - Bacteria that spoil food without rendering it unfit for human consumption
- Pathogenic
 - Any organism that causes disease; usually refers to bacteria; undetected by smell, sight or taste
 - Responsible for as many as 95% of all food-borne illnesses

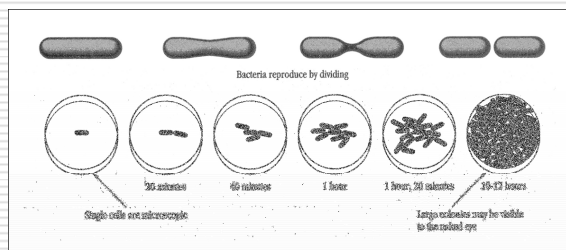
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Shape Classifications of Bacteria



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Binary Fission



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Bacterial Illness

- Intoxication
 - Certain bacteria produce toxins; the toxins can poison the consumer
- Infection
 - Occurs when live pathogenic bacteria are ingested
- Toxin-mediated infection
 - Living organisms are ingested; they then produce toxins

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Potentially Hazardous Foods

- Foods from animal sources
- Food from a plant that has been heat treated
- Raw seed sprouts
- Cut melons
- Garlic in oil mixtures, non-acidic
- Foods containing any of the items above

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Controls in the Fight Against Bacteria

- Temperature
- Time
- Moisture
- Acid/alkali balance
- Atmosphere

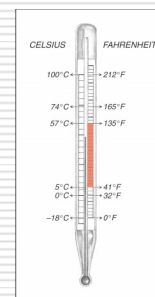
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Temperature

- The most important factor in the pathogenic bacteria's environment because it is the factor most easily controlled by food service workers

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Temperature Danger Zone



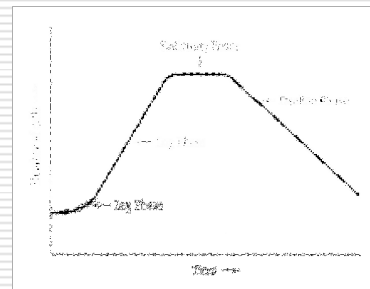
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Time

- Lag phase
 - Getting comfortable
- Log phase
 - Accelerated growth
- Stationary phase
 - Overcrowding
- Decline or negative growth phase
 - Bacteria die at an accelerated rate

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Bacterial Growth Curve



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Moisture

- Bacteria need moisture to live
 - Bacteria growth is halted but not killed in dehydrated foods
 - When dehydrated foods are rehydrated, bacteria present can flourish and the food may become potentially hazardous

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Acid/Alkali Balance

- Bacteria are affected by the pH of their environment
- They can survive in a wide range of pH levels
- They prefer a neutral environment with a pH of 6.6-7.5

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Atmosphere

- Aerobic
 - Thrive on oxygen
- Anaerobic
 - Cannot survive in the presence of oxygen
- Facultative
 - Will adapt and can survive with or without oxygen

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Parasites

- Tiny organisms that depend on nutrients from a living host to complete their life cycle
 - Trichinosis
 - Anisakiasis
 - Cyclospora

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Viruses

- Invade the living cells of a host, take over those cells' genetic material and cause the cells to produce more viruses
 - Hepatitis
 - Norwalk
 - Foot and mouth disease

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Fungi

- Plants ranging from single-celled organisms to giant mushrooms
 - Mold
 - Yeast

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Contaminants

- Residual
 - Used in growing the food supply
- Food service chemicals
 - Cleaners, polishes, pesticides and abrasives
- Toxic metals
 - Lead, mercury, copper, zinc and antimony

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Cross-Contamination

- The transfer of bacteria or other contaminants from one food, work surface or piece of equipment to another

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Reducing Cross-Contamination

- Personal cleanliness
- Dish and equipment cleanliness
- Pest management

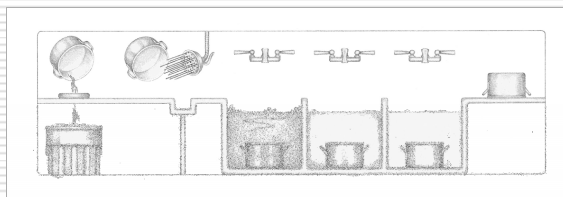
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Hand Washing

- Use hot water
- Apply antibacterial soap
- Rub hands and forearms briskly with lather for at least 20 seconds
- Scrub between fingers and clean nails with a clean nail brush
- Rinse thoroughly under hot running water; reapply soap and scrub hands and forearms for another 5-10 seconds; rinse again
- Dry hands with a single-use towel using the towel to turn off the water; discard the towel in a trash receptacle

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Three-Compartment Sink Procedure



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Pest Management

- Build them out of your facility
- Create an environment in which they cannot find food, water or shelter
- Rely on professional extermination

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FIFO

- First
- In
- First
- Out

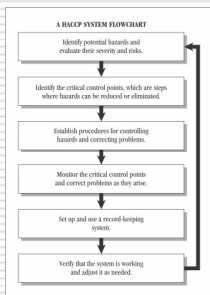
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HACCP

- An effective and efficient system for managing and maintaining sanitary conditions in all types of food service operations
 - Hazard
 - Analysis
 - Critical
 - Control
 - Points

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HACCP System Flowchart



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The Safe Worker

- Personal safety
 - Occupational Safety and Health Act (OSHA)
- Fire safety
 - Know what kind of fire extinguisher you have and how to use it
- First aid
 - CPR
 - Heimlich maneuver

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