

---

# FOOD HANDLING

---

## Module 5

The Objectives for **Module 5: Food Handling** are for the participants to understand the basics of:

- Physical, chemical and biological contaminant sources for food
- The concept of cross contamination
- The proper methods for safely handling food to prevent contamination
- The importance of time and temperature during the storage process and preventing contamination
- The importance of rotating stock in the storage process to minimize contamination
- The importance of reporting incidents

Module 5: Food Handling teaches participants how to ensure food stays bacteria free using the acronym FATTOM.

- FOOD
- ACIDITY
- TIME
- TEMPERATURE
- OXYGEN
- MOISTURE

Knowing what bacteria require to grow will help employees to properly handle food. In this module, participants will learn that the easiest factor to control is food temperature.

Food handling covers contamination, food hazards and stock rotation.

### Contamination:

The presence of hazards in food that could cause injury or death.



Contamination means there are hazards in the food.

What are some examples of food hazards?



## Contamination

In Module 1, participants were introduced to the term contamination.

**Contamination is the presence of hazards in food that could cause injury or death.**

Hazards include chemicals, foreign materials or physical hazards which could cause many people to become ill.

The three types of food hazards are:

- Physical: such as hair
- Chemical: cleaning agents
- Biological: microbes

## Activities

Review the three kinds of food hazards: chemical, physical and biological.

- Have participants draw an example of each.
- Participants can discuss in small groups and identify as many food hazards as they can in a set time frame.
- Using a variety of pictures of food hazards, have participants classify the hazards into one of the three categories.

Physical hazards can be:



- hair



- broken glass or ceramics



- pieces of metal



- parts from equipment

More physical hazards:



- wood



- fruit pits



- pieces of packaging



- pebbles

## Physical Hazards

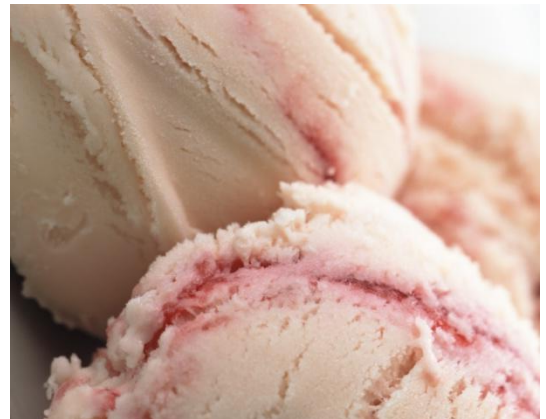
This was covered in Module 1. Use the time to review the physical hazards shown.

Physical hazards or contaminants are any potential harmful extraneous matter not normally found in food.

Challenge participants to think of other examples of physical hazards that are not included in the slides.

## Other examples

- Jewelry
- Eyeglasses
- Fabric
- Medication
- Food
- Plastic utensils
- Pens



## Chemical Hazards

Chemical hazards can be:



- pesticides
- cleaners and sanitizers
- food additives
- allergens such as nuts, eggs, milk and shellfish

Pesticides should be identified in the company's HACCP plan. Employees should be aware that pesticides can be possible chemical hazards and therefore fruit and vegetables should be properly cleaned.

Cleaning agents are also chemical hazards. In Module 3, participants viewed Nanaimo's SalsaMan's good sanitation process. Chemicals are used to sanitize the equipment and processing surfaces. These cleaners and sanitizers are designed to remove contaminants and then to be rinsed off. If chemicals and sanitizers are not properly rinsed off, they can enter the food and pose a chemical hazard to consumers.

Biological hazards are caused by microbes:



- bacteria
- viruses
- parasites
- protozoa
- yeasts and molds

## Biological Hazards

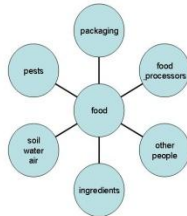
A microbe is a microscopic organism, such as a bacterium, virus or parasite (excluding the large ones). Microbes are so small that you need to use a microscope and special staining techniques to see them. The word *microbe* is often more convenient to use than the word *microorganism*, and it pretty much means the same thing. In many situations, though, *microbe* refers to just the harmful microorganisms (the ones that cause disease), whereas *microorganisms* refer to all microscopic life.

(SSFPA, unknown)



## Sources of Biological Hazards

Where do biological hazards come from?



Employees create the greatest risk of potential food hazards. Bodily fluids that enter a food source are biological hazards.

Employees are only one source biological hazards. Other sources of biological hazard can come from flies and pests. Employees should be prepared to let their supervisor know if they see insects or pests in the food processing facility.

If preparing an employee for a specific food processor, ask the supervisor what the plan is for pests and insects in the processing plant.

What is cross contamination?



Cross contamination happens when a food hazard from one place gets into something else.

What is the result?

Both items are now contaminated.



## Active Learning

Contact a local high school or community college science department and ask to borrow microscopes and slides of microbes. Engage participants in looking at some of the microbes that could be found in their food.

## Role Play

Have participants practice telling their supervisor about a potential biological risk.

- Role playing is one way to practice
- Practicing speaking the words with a partner will also help participants who may struggle with talking with their supervisor.



Where can cross contamination happen?

- food storage
- water
- ingredients with allergens
- reworked product: using one product to make something else

Other sources of cross contamination are:



- chemicals
- poor cleaning
- poor hand washing
- traffic paths

## Cross Contamination

Cross contamination was first introduced in Module 1. Review the concept with participants.

- Have participants discuss the experiment they tried with ink and paper. If you have not done this activity, refer to Module 1 and complete the activity now.

## Traffic Paths

Have participants create a blueprint of their workplace (or have one prepared). Using the blueprint, participants will highlight their usual traffic pattern. Have participants think about what they regularly touch (utensils, door knobs and boxes). Have participants draw stars (or use star stickers) to identify where cross contamination has the highest risk.





**Salmonella:**

a bacteria that can make you very sick

## Food Preparation

Salmonella is a common microbe. A common source of contamination occurs when an employee prepares raw meat and then prepares vegetables on the same surface without properly cleaning and sanitizing the surface.

## Active Learning

### Raw chicken example

14 people got sick after eating lettuce that had **salmonella**.

The lettuce was cross contaminated with raw chicken.



Practice using different cutting boards for preparing raw meat and raw vegetables.

Practice cleaning and sanitizing surfaces between preparing different foods.

Practice is the key to learning!







The employee cut raw chicken on a countertop.



The employee did not wash and sanitize the countertop.



The employee cut lettuce for salad on the same countertop.

### Raw Chicken Case Study:

Fourteen people became ill with *Salmonella* from lettuce after eating in a restaurant. The cook had reported preparing salads on the same countertop previously used for cutting up raw chicken without sanitizing between uses.

(British Columbia FOODSAFE Secretariat, 2006)

Bacteria can grow to large numbers in food and on surfaces



### Bacteria

Bacteria fall under the umbrella of microbes. Bacteria have the capability of growing in food and on surfaces.





## FATTOM

Bacteria needs this to grow:

Food	energy to grow
Acidity	right ph level
Temperature	right temperature for growth
Time	to grow
Oxygen	to survive
Moisture	to grow

The next few slides will explain the six things bacteria need to grow and multiply.

- FOOD
- ACIDITY
- TEMPERATURE
- TIME
- OXYGEN
- MOISTURE

## Food

Bacteria find food in:



- the food you are making
- the food left on equipment
- the food left on mops and cloths

## Food

Bacteria need a source of energy to help them multiply. Foods that contain proteins represent the largest risk. Such as: meat, poultry, dairy products and eggs.



## Acidity

### Acidity (pH)

What is acidity?

What kinds of foods are acidic?



Bacteria need their environment to be within a specific pH range. Bacteria need a neutral pH to grow which is between 4.6 and 7.5 pH. Acidic foods usually inhibit growth. Acidic foods include most fruits, pickles, and vinegar.

## Active Learning

As acidity may be a new term for many participants, taking the time to use Litmus strips (found in local pool stores) and testing the acidity of different foods and drinks may be an interesting activity.

To use Litmus strips, dip the tip the strip into liquid of the food or drink you want to test. Let the strip dry.

The colour of the dry strip tells you if the food or drink is acidic or alkaline.

- Red strip = acidic food or drink
- Blue/purple strip = alkaline food or drinks

### Temperature



- controlling temperature is the **easiest way to keep food safe**



It is important to control the time and temperature:



- when you cook food
- when you cool food
- when you process food
- when you store food

### Time and temperature

The areas that need to be controlled are:



- storage areas
- processing areas
- freezers
- coolers
- trucks

## Temperature

### How to regulate temperature

- Cook to a high temperature
- Cool foods quickly
- Keep food out of the cooler for only a short time
- Keep all coolers at the correct temperature

### Every food is either:

- Shelf stable and stored at room temperature
- Requires refrigeration
- Is kept frozen

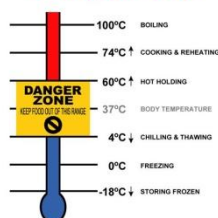
## Thermometers

Keeping record of temperatures of coolers will require an understanding of how to read thermometers. Bring in a variety of thermometers both digital and mercury style and have participants practice reading the temperature.

If you don't have access to a fridge, pour water into jugs and add ice cubes or hot water to have a variety of different temperatures.



### Temperature Danger Zone



Time is as important a factor as temperature is. Given the correct temperature, microbes can multiply rapidly. This will dictate how long certain foods can be stored and processed.

Refrigerated food (0 to 4°C / 32 to 40°F) can be stored between 1-7 days depending on food.

Frozen food (-18°C / 0°F) can be stored between 1-6 months depending on food.

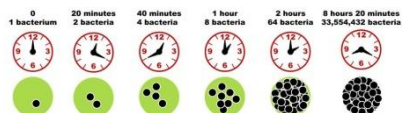
Dry food (10 to 21°C / 50 to 70°F) can be stored between 4-24 months depending on food.

Bacteria grow by multiplying. When conditions are right, they can double every 20 minutes.

Potentially hazardous food left in the DANGER ZONE can grow enough to cause food borne illness. People who are elderly, very young, pregnant or immuno-compromised can become ill from even fewer bacteria. Be safe: throw it out!

(British Columbia FOODSAFE Secretariat, 2006)

### Time Bacteria growing



### Improper time and temperature control



### Oxygen

- Vacuum packing food removes oxygen



### Oxygen

Bacteria need oxygen to grow. Food in cans have been vacuumed sealed, once a can has been opened, there is risk for bacteria to grow.

What do participants do at home when they open a can of food at home but don't use all of it? What should participants do with an open can of food?

Food should be removed from cans and placed in a clean and sanitized container once a can has been opened.

### Moisture

Bacteria need water to grow:



- moist foods
- wet equipment
- wet cloths
- water puddles

### Moisture

Bacteria also need moisture to grow. Participants should be aware of common sources of moisture in a food facility. Dish clothes and mops that are damp are moist and are ideal areas for bacteria to grow and present an opportunity for cross contamination.

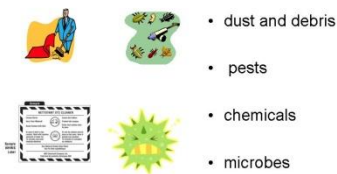


### Preventing contamination

Why is it important to store food properly?

Food must be stored properly or it can become contaminated.

Food must be covered to keep out:



- dust and debris
- pests
- chemicals
- microbes

### Preventing Contamination

Have participants think about why it matters how food is stored?

Responses will vary.

If food is not stored in an appropriately controlled environment, spoilage (i.e. microbial growth, toxin formation) can occur. If ingredients, food containers and packages are not protected during storage, contamination from microbes, chemicals and foreign matter can occur.

Personnel having open cuts or wounds **do not** handle exposed food, ingredients, packaging materials or food contact surfaces unless measures are taken to prevent direct or indirect contamination of food.

### Active Learning

Have participants practice covering food with lids, plastic wrap, and moving from cans to another sanitized container.



### Stock rotation



What is stock rotation?

Why is it important?

### Rotate Food

Ask participants if they have ever witnessed a store employee stocking shelves. Discuss how a store employee would take the food at the back and move it to the front. Also discuss how the employee would be checking the best before date to ensure the food is still good.

### Active Learning

Bring in a variety of food products that have expiry dates on them. Have participants order the food based on the expiry date. Foods with the closest expiry date would be the first in the line as it would need to be the first to go.





### Stock rotation is important:

- so you don't run out of products
- prevents food spoilage
- prevents food contamination
- saves money

### Stock rotation

- your supervisor will tell you how to rotate stock

**stock rotation** is also called:

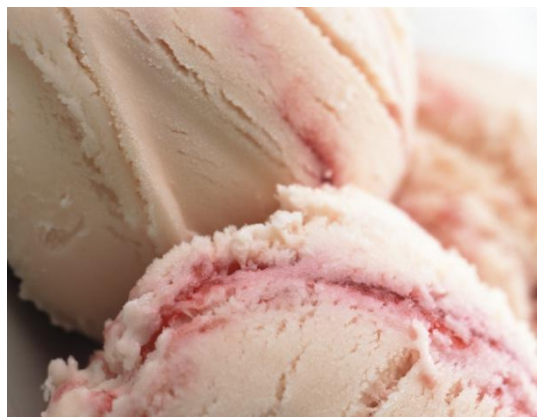
**First In, First Out (FIFO)**

### FIFO

Employees need to be aware of the established procedures for the appropriate rotation of food, ingredients and packaging materials (i.e. **First In, First Out**) to prevent or minimize food product contamination, damage or spoilage (e.g. corrosion resulting in leakage, shelf-life expiration).

### Active Learning

Take a trip to a local grocery store and have a store employee show participants how they stock shelves using the First In, First Out policy.



Tell your supervisor if you see food or packages that are:



- leaking



- torn or broken



- spoiled



- past expiry date

## Damaged packaging

Employees are responsible for letting their supervisor know about potential food hazards. If packaging has been damaged in transit or becomes damaged in the food processing facility, employees should notify their supervisor before using the product.



## References

British Columbia FOODSAFE Secretariat, (2006). *Foodsafe Level 1 Student Workbook: 2006 Edition*. Camosun College. Victoria, British Columbia

Small Scale Food Processors (unknown). *Basic Hygiene Training for Food Processor Workers – Module 2 Regulations*.

Untitled photograph of grapes and leaves]. Retrieved February 21, 2012, from: [dgl.microsoft.com](http://dgl.microsoft.com)

