Safe Food Handling
Four Principles of Safe Food Handling

1. Temperature Control
2. Preventing Cross-contamination
3. Good Personal Hygiene
4. Proper Cleaning and Sanitizing
1. **Temperature Control**

- Most food poisonings are caused by temperature abuse of hazardous foods. This includes both hot and cold holding, cooling, reheating and cooking.

- You cannot determine the food temperature by color, steam or by touch.

- The only way to accurately measure food temperatures is by using a calibrated thermometer.

**Thermometer Calibration**

**Ice-Point Calibration**
1. Fill the container with crushed ice.
2. Top up the ice with cold water to create a slurry.
3. Stir the mixture.
4. Place the thermometer in the slurry with the sensing area completely submerged, do not let the stem touch the bottom or sides of the container.
5. Hold the thermometer in the slurry for at least 30 seconds.
6. When the dial stops moving, if it does not read 0°C/32°F, keep the stem submerged and adjust the thermometer to read 0°C/32°F.

**Procedure for using your probe thermometer:**
• Clean and sanitize the probe after each use and before inserting it into the next food item.

• Check the stem of the thermometer for an indentation or "dimple" that shows the end of the sensing device. The probe must be inserted the full length of the sensing area (usually 2 to 3 inches).

• The probe must be inserted into the thickest part of the food. Make sure the probe does not touch bone or the container.

• If measuring the temperature of a thin food, such as a hamburger patty or boneless chicken breast, the probe should be inserted through the side of the food so the entire sensing area is positioned through the center of the food.

• It is recommended to record cooking, storage (hot and cold) and reheating temperatures in a log book.
Temperature Danger Zone

- Time and Temperature abuse is the cause of most food borne illness.

- The Danger Zone is the temperature between 4°C/40°F and 60°C/140°F; this is the optimal growth temperature for most pathogens.

- Keep hot food hot (60°C/140°F or above). Ensure that any hot holding apparatus is capable of maintaining this temperature.

- Keep cold food cold (4°C/40°F or below). Ensure that all refrigeration units can keep hazardous foods at or below this temperature.

- Move hazardous foods through the Danger Zone as quickly as possible during cooling and reheating. Do not allow hazardous foods to be in the Danger Zone longer than 2 hours (total cumulative time).

- Hazardous foods at room temperature for longer than 2 hours should not be eaten. It should be discarded.
Safe Food Storage Temperatures

HOT HOLDING ZONE

No Growth
60°C

Bacteria grow and multiply

COLD HOLDING ZONE

DANGER ZONE

KEEP FOOD OUT

4°C

Slow Growth

For more information, contact
Niagara Region Public Health
Environmental Health Program
905-868-8248 or 1-888-505-6074
ext. 7230

Visit www.fightbac.org

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2. Cross-Contamination

Cross-contamination

- The transfer of pathogens, chemicals or unwanted items onto food that may make it unsafe to eat.

Cross-contamination can occur in 3 ways:

1. Contaminated food/water to food. Example, liquids from raw chicken dripping onto salad in refrigerators.

2. Infected person to food. Example, preparing foods before washing hands.

3. Contaminated equipment to food. Example, using the same knife to cut raw meats and vegetables.
Prevention of Cross-Contamination

- Ensure you clean and sanitize all equipment after coming in contact with hazardous food (knives, cutting boards, tongs etc.).

- Store cooked or ready to eat food on a shelf above raw food or in a separate refrigerator.

- Label chemicals and pesticides and store them in a separate area away from food.

- Practice good personal hygiene.

- **WASH YOUR HANDS!**
3. Personal Hygiene

*All food shall be protected from contamination and adulteration* (Ontario Food Premises Regulation).

- Food handlers must wear clean clothing and change aprons as often as necessary.

- Food handlers are not to handle food if they are ill with diarrhea and/or vomiting.

- Food handlers must not handle food with bare hands if they have open cuts on their hands.

- Food handlers must have trimmed nails and wear no jewellery when preparing food.

- Food handlers must be aware of their personal habits such as biting nails, touching their face especially around the mouth, nose and eyes.

- Food handlers must wear headgear that confines the hair.

- Employees must not smoke in the kitchen area.
Sanitary Facilities

- Washrooms, toilets, lockers and change rooms must be kept clean, sanitary and in good repair at all times.

- You must provide a constant supply of hot and cold running water, liquid soap in a dispenser and paper towels or a hand dryer.

- A garbage container must be provided.

- Provide a sign clearly identifying the sex for which the washroom is intended.
Handwashing Basins

- Handwashing basins are required by legislation.

- They must be located in each food preparation area and easily accessible so employees can wash their hands conveniently.

- They are to be used for handwashing only and not for dishwashing or food preparation.

- They must be supplied with hot and cold running water, soap in a dispenser and paper towels.

- Washroom basins are not a replacement for handwash basins.

- All food service employees are required to wash their hands when returning to the kitchen.
Eleven Step Method of Handwashing

**Clean your Hands**

with soap and warm water...clean for at least 15 seconds

1. Wet hands and wrists.
2. Use a sufficient amount of soap—one squirt of the pump.
3. Lather soap and scrub hands well, palm to palm.
4. Scrub in between and around fingers.
5. Scrub back of each hand with palm of other hand.
6. Scrub fingertips of each hand in opposite palm.
7. Scrub each thumb clasped in opposite hand.
8. Scrub each wrist clasped in opposite hand.
9. Rinse thoroughly under running water.
10. Wipe and dry hands well with paper towel.
11. Turn off water using paper towel.

Clean hands:
- before preparing meals
- before eating
- after using the washroom
- after coughing or sneezing
- after blowing your nose
- after playing with pets
- after playing outdoors
Handwashing practices are important in food service. Thorough handwashing is needed at the following times:

- before starting work or preparing foods
- when switching from working with one food to another
- when switching activities from non-food tasks to food preparation tasks
- after working with raw food products that may contain bacteria such as raw meats, poultry, eggs and egg shells and vegetables
- after touching contaminated surfaces such as cutting boards, dirty dishes, bags or garbage containers, mop handles, etc.
- after using the toilet
- after sneezing, coughing or blowing your nose
- after smoking
• after playing with pets
• after any activity that may result in contamination of your hands
Rules for Glove Use

Follow these rules for the safe and appropriate use of gloves when handling food:

• Glove use does not replace handwashing !!!!
• Wash hands before putting on gloves and after taking them off.
• Change gloves when they become soiled or torn.
• Change gloves after handling raw meats and before handling cooked or ready-to-eat foods.
• Change gloves when leaving your task.
  (For example, if you have to answer the phone while making sandwiches, follow these steps: remove the gloves, answer the phone, wash your hands, put on a fresh pair of gloves and then return to your task.)
• As long as direct hand contact with food is limited as much as possible, frequent and thorough handwashing is the easiest way to prevent contamination.
• Gloves must be worn if you have a cut, open sore or skin diseases on your hand.
4. **Cleaning and Sanitizing**

**Clean:** To remove oil, grease, dirt and debris using soap and water

**Sanitize:** To kill 999 out of 1,000 pathogenic microorganisms

- Utensils, multi-service articles, equipment and food contact surfaces must be cleaned and sanitized after each use.

- Regulated Sanitizers

  - Chlorine (bleach) 100 p.p.m.
  - Iodine 25 p.p.m.
  - Quats 200 p.p.m

- Sanitizer test strips are to be used to verify the concentration of the sanitizer.

- Vinegar is **NOT** a sanitizer.

- Contact time for sanitizers is based on manufacturer’s recommendations.

- Always follow the manufacturer’s instructions when mixing solutions and allowing for contact time.

- Use 2 mL (1/2 tsp) of liquid chlorine for every 1 litre of water to make a disinfection solution of 100 mg/L or 100 p.p.m.

- When used in a bucket, make sure to change the solution at least every 2 hours.
• When use in a spray bottle, make sure to change the solution at least everyday.

Machine Utensil and Dishwashing
Dishwashing Machines

1. Scrape, sort and pre-rinse

2. Wash with clean hot water between 60°C (140°F) and 71°C (160°F) and detergent

3. Rinse with hot water.

4. Sanitize with hot water at a minimum of 82°C (180°F) for 10 seconds or with a chemical solution, following suppliers' instructions, for proper concentration and contact time

5. Air dry

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June 2000
Manual Utensil and Dishwashing

Dishwashing
3 Sink Method

Scrape

Sink #1 Wash
In clean hot water and detergent

Sink #2 Rinse
In clean water at 43°C (110°F)

Sink #3 Sanitize

Air Dry

Sanitize

Soak dishes based on manufacturer’s contact time
1. In water at 77°C (170°F)
   or
2. Use clean warm water with a sanitizer such as:
   - Chlorine, 100 parts per million (ppm), or
   - Quaternary Ammonium, 200 ppm, or
   - Iodine, 25 ppm

Note: Chlorine has 45 second contact time.

Niagara Region Public Health
www.niagararegion.ca

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June 2008
Dishwashing
2 Sink Method

Scrape, sort and pre-rinse

Sink #1
Wash & Rinse

Sink #2
Sanitize

Air dry

Wash
- In clean hot water and detergent

&

Rinse
- With clean water (43°C/110°F)

Sanitize
Soak dishes based on manufacturer's contact time
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Clean in Place Method

- Use the Clean-in-Place Method for all equipment which come into contact with food, but are too large to fit and therefore cannot go in the dishwasher or the 2 or 3 compartment sink.

- This method is also used for equipment and utensils that cannot be moved from their location.

- Use the Clean-In-Place Method for equipment such as a meat slicer (after the blade has been removed), a soft ice cream machine, or large soup kettles.

- WASH, RINSE, SANITIZE.

- Sanitize using double the strength - chlorine at 200 p.p.m., iodine at 50 p.p.m. and quats at 400 p.p.m.

- Ensure all parts that come in contact with food are fully disassembled and exposed to the sanitizer.

- Allow at least 45 seconds contact time or see manufactures recommendations.
Housekeeping

- Clean floors using damp mops at least once daily.
- Keep walls, ceilings and light fixtures clean and in good repair.
- Remove dirt from under equipment, in corners and in hard-to-reach places.
- Store all supplies at least 15cm (6 inches) off the ground to allow for proper cleaning, to help reduce pest problems and to prevent cross-contamination.
- Keep equipment clean and in good repair.
- Clean and disinfect all tables, counters and work surfaces before and after food preparation or service.
- Routinely clean mechanical ventilation hoods, filters and vent pipes that remove heat, steam and odours.
- Wash and sanitize empty food bins and containers before refilling them.
Mechanical Ventilation

- Removes heat, steam and odours from the kitchen.
- Found over cooking equipment, dishwashing equipment and in each washroom.
- Must be maintained so that it is not a health hazard, therefore clean regularly.
Pest Control

- Eliminate all nesting areas by removing unused equipment and by keeping all areas clean, especially behind equipment and shelving.

- Keep pests out by screening doors and windows.

- Caulk and fill all holes with steel wool.

- Inspect deliveries for infestations.

- Eliminate all food and water sources.

- It is recommended to have a licensed pest control company on contract.

- Poison bait must be labelled and stored in an area separate from food.

- Store garbage in pest proof containers and keep these areas clean.
This is what happens when a **FLY** lands on your food...

Flies can’t eat solid food, so to soften it up ... they **VOMIT** on it.

Then they stamp the vomit in Until it’s a liquid, usually

Stamping in a few germs for good Measure.

Then when it’s good and runny, they suck it all back again; probably dropping some excrement at the same time...and then when they’ve finished eating ......it’s **YOUR** turn!
Hazard Analysis Critical Control Point (HACCP) System

Background

• 1960s developed by Pillsbury Company and NASA to produce foods with “zero defects”.

• Need for safe foods for astronauts in space.

• HACCP developed as a proactive, upstream monitoring system to reduce hazards.

What is HACCP?

• Look at the foods and practices in your establishment which could cause foodborne illness. (Hazard Analysis)

• Develop food safety procedures which will reduce the risk of foodborne illness. (Critical Control Points)

• Develop monitoring procedures.

Hazards

• Pathogens and/or toxins that can grow or survive in food.
• Chemicals or physical objects in food.

Analysis

Analysis is the process of examining the flow of food to identify the points that may cause food borne illness.

Critical Control Point

A step in the preparation of a food where any unsafe situation that may lead to food borne illness is eliminated, prevented or controlled.

• For example, a burger must be cooked to a minimum internal temperature of 71°C (160°F) to destroy pathogens, such as E.coli 0157:H7 that may cause serious illness. The CCP for this example is cooking - ensuring that the burger is cooked to the minimum safe internal temperature.

The PURPOSE of HACCP is to:

• Identify poor food handling processes

• Make corrections to the processes

The GOAL of HACCP is to:

• Prevent foodborne illness

• Make the safest food possible
6 Steps to HACCP Implementation

1. Conduct a hazard analysis
   - Review the recipe and assess their risk.
   - Mapping the flow of food, looking for biological, chemical and physical hazards that might get into the food.
   - At each step in the diagram show the equipment used, the personnel involved, the location of the process and other processes in the same area.

2. Determine the Critical Control Points (CCP’s)
   - Steps at which the hazard can be reduced or eliminated. How can you control for the hazard?
   - Break down each step and look for possibility of contamination and growth of micro-organisms.

3. Establish critical limit(s)
   - Critical limits establishes acceptable risk from unacceptable risk. Need to meet these limits to ensure that the CCP is under control.
   - Record the expected time, temperature and the amount of handling involved in each step according to the recipe.

4. Establish a system to monitor control of the CCP
• Making sure critical limits are followed by scheduling times and procedures for testing.
• Provide education to all employees so that process can be done properly by anyone.
• Watch food preparation and ensure the actual time, temperature and the amount of handling at all the steps and record this information on the flow chart.

5. Corrective action when monitoring indicates that a CCP is not under control

• If you deviate from the critical limit, what should be done?
• All steps must be monitored to make sure the planned control and preventative measures work.
• Action must be taken when monitoring shows that there is unsafe food handling practices.

6. Verification

• Checking to see that the system is working.
• Documentation of procedures & records.
• Checking documentation to ensure that the system is handling the deviations.
• Review the procedures often and record the proper preparation steps and handling concerns.
Review Questions

1. The Danger Zone is:
   a) The temperature range between 7°C/45°F and 65°C/149°F
   b) The temperature range between 4°C/40°F and 60°C/140°F
   c) The temperature range between 2°C/36°F and 57°C/145°F
   d) None of the above

2. What is cross contamination?
   a) Bacteria and viruses mixing together
   b) The transfer of pathogens to ready to eat food
   c) Bacteria transferring to food by dirty hands
   d) Using a dirty mop to wash the floor
   e) b and c only

3. An infected cut could cause:
   a) Staphylococcal food intoxication
   a) *Salmonella* foodborne illness
   b) Botulinum food intoxication
   c) Campylobacter food infection
4. Washrooms must have the following items:
   a) Hot and cold running water
   b) Soap in a dispenser and paper towels
   c) A garbage can
   d) All of the above

5. How do flies contaminate food?
   a) With pathogens on feet and body hairs
   b) With contaminated faeces
   c) With saliva and vomit
   d) All of the above

6. Racks, skids and non-movable furniture should be 15 cm (6") off the floor to:
   a) Facilitate cleaning
   b) Allow for storage underneath them
   c) Allow ventilation
   d) All of the above