



Safe Food Handling



Temperature Control

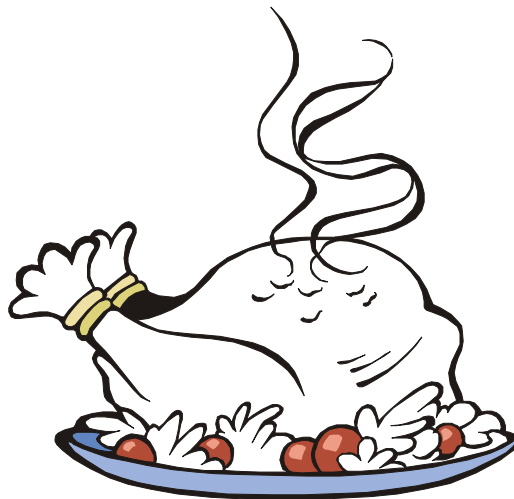
- most food poisonings are caused by temperature abuse during the storage of hazardous foods

This includes storage in the refrigerator and storage or holding hazardous food on a steam table at improper temperatures. Other causes of food poisonings are cross- contamination of raw and ready to eat foods, improper cooking, improper reheating or cooling of hazardous foods, improper or lack of handwashing and food from unsafe sources.

- use a probe thermometer to take the internal temperature of food

Procedure for using your probe thermometer:

1. The probe must be inserted to the thickest part of the food. Make sure the probe does not touch bone or the container.
2. Clean and sanitize the probe after each use and before inserting it into the next food item.
3. Record temperatures in a log book.





The Danger Zone

- the Danger Zone is the temperature range between 4°C and 60°C

Keep food out of the Danger Zone. Bacteria will multiply quickly in the Danger Zone. Bacteria grow extremely well at body temperature, 37.1°C.

- keep hot food hot (60°C or above)

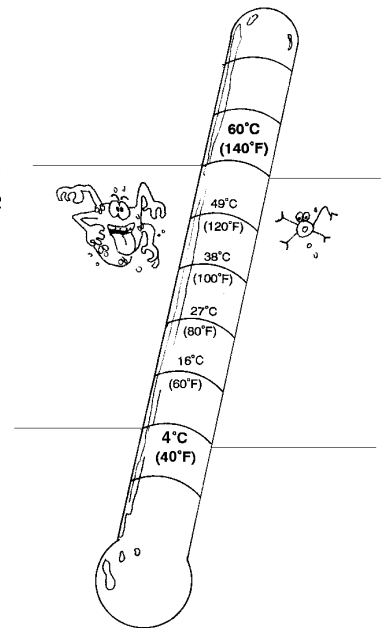
Have a probe thermometer available to check the temperature of the food on the steam table and on the stove. Cover food to keep the heat in and to prevent contamination.

- keep cold food cold (4°C or below)

Provide a reliable thermometer to ensure proper operation of the refrigerator. Place food in the refrigerator so that air can circulate around it freely to maintain proper temperature.

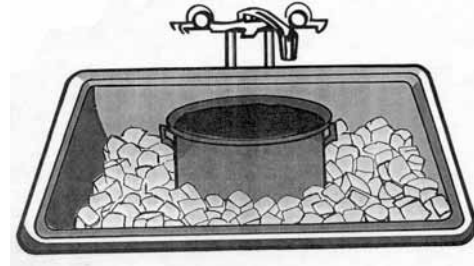
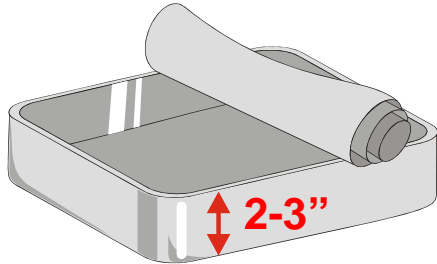
- do not allow hazardous food to be in the Danger Zone longer than 2 hours when preparing food

Move hazardous food through the Danger Zone as quickly as possible.



- cool food quickly using shallow pans or an ice bath

Do not allow food to cool to room temperature before chilling in a refrigerator.



- quickly reheat food to at least the original cooking temperature.

See page 34 for a list of cooking and reheating temperatures. Whole chickens must be cooked to 82°C but can be reheated to 74°C

- if hazardous food is displayed for sale at room temperature for any length of time, the food must not be eaten and properly disposed of

Pathogenic bacteria will not multiply fast enough to cause food poisoning outside the Danger Zone but will multiply fast enough in the Danger Zone.



Cook Food Thoroughly

- make sure all hazardous food is cooked and reheated to an internal temperature as listed below

Check internal temperatures with a probe thermometer.

Hazardous Food Item	Cooking °C (°F) for 15 seconds	Reheating °C (°F) for 15 seconds
Poultry: Whole	82 (180)	74 (165)
Poultry: <ul style="list-style-type: none"> ▪ other than whole poultry ▪ all parts of ground poultry ▪ all parts of ground meats that contain poultry 	74 (165)	74 (165)
A food mixture containing poultry, egg, meat, fish or another hazardous food	74 (165)	74 (165)
Pork and pork products All parts of ground meat, other than ground meat that contains poultry	71 (160)	71 (160)
Fish	70 (158)	70 (158)

- cook hamburger (no poultry) all the way through to an internal temperature of 71°C, making sure the juices run clear and the meat is brown or grey



Ground meat is very dangerous as the pathogens are mixed throughout the meat mixture in the grinding process. An illness caused by eating improperly cooked ground meat, commonly known as “hamburger disease,” is caused by *E. coli 0157:H7*.

- make sure poultry is fully cooked. Do not partially cook poultry and finish cooking it at a later time.

Poultry is one of the most common sources of foodborne illness. Assume all poultry is contaminated with pathogenic bacteria. *Salmonella* and *Campylobacter* are the most common types of pathogenic bacteria associated with poultry.



Defrost Food Safely

- keep frozen food below -18°C

Pathogenic bacteria do not grow below -18°C but will survive.

- storing hazardous food at -20°C or below for 7 days or at -35°C or below for 15 hours will kill parasites and their eggs

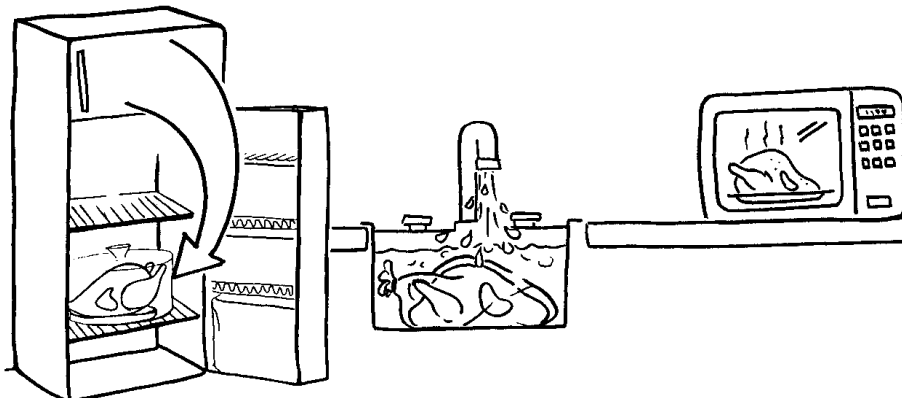
Food can also be stored at -18°C or below for 21 days to kill the parasites and their eggs.

- food can be safely defrosted in the refrigerator, under running cold water or in the microwave

Food can also be cooked from frozen safely.

- make sure the outside of the food is kept cool and out of the Danger Zone

Defrost and clean refrigerators regularly for efficient operation. All interior surfaces, racks, trays and the fan grill must be washed and sanitized at least once a week to prevent odours and maintain cleanliness.

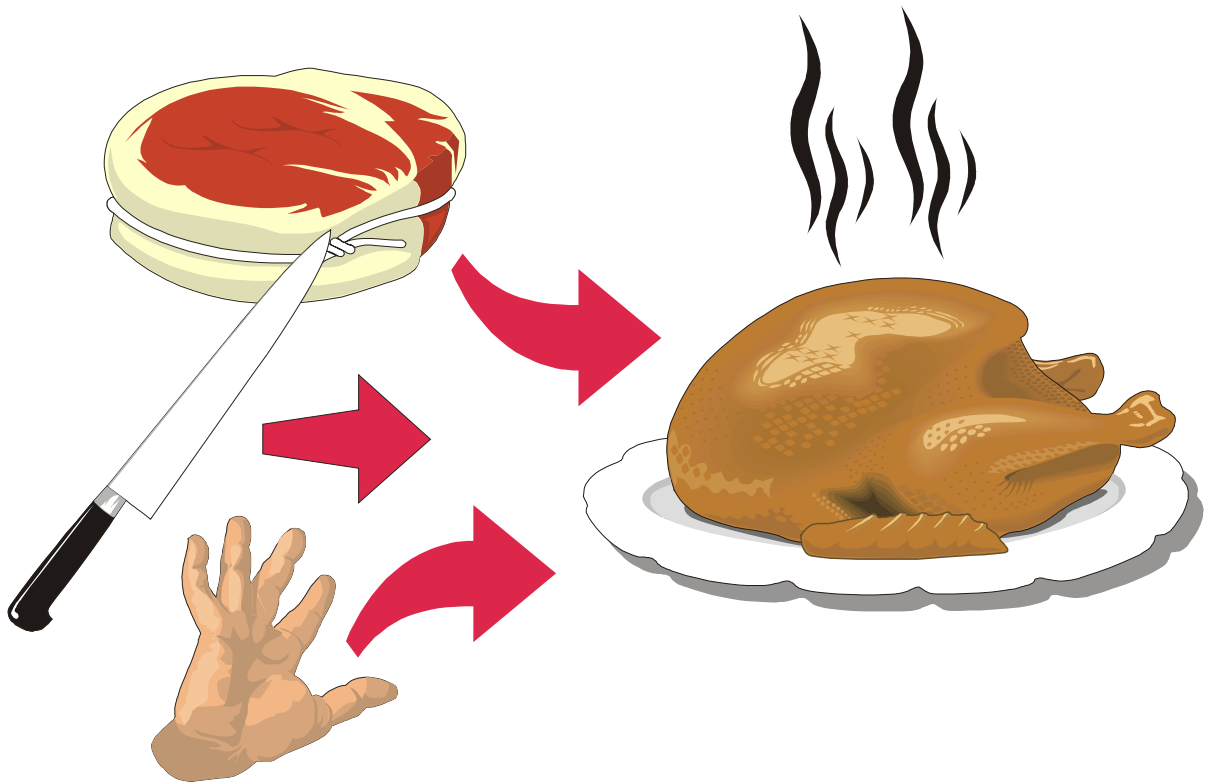


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Cross-contamination

- cross-contamination occurs when safe to eat food comes into contact with pathogenic bacteria, chemicals or unwanted items making the food unsafe to eat



- This commonly happens in three ways:
 - 1) raw food or its juices come in contact with cooked food.
 - 2) using the same equipment, to handle raw and cooked food.
 - 3) contaminated hands touching food.

- **PREVENT CROSS CONTAMINATION**

- store cooked or ready to eat food above raw food or in a separate refrigerator

This will prevent the juice from raw food dripping into cooked or ready-to-eat food. All food must be covered when stored in the refrigerator to protect it from contamination as well. Do not store food on the floor of walk-in refrigerators. Rotate stock to ensure food does not sit too long.

- make sure cutting boards, knives and equipment are cleaned and sanitized after they come in contact with hazardous food

When cooking meat, use separate tongs to handle raw and cooked meat. Do not place cooked meats on the same plate that had the raw meat on it. When cooking meat, do not brush marinade on the meat in the last 10 minutes of cooking as this contaminates the cooked meat with raw juices. When tasting food, use the two spoon method to prevent cross-contamination. One spoon scoops out the food and places it onto the second spoon. The second spoon is used to taste the food.

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

Mops, brooms and brushes must be stored in a separate room.

- **WASH YOUR HANDS**

Frequent handwashing can reduce the chances of catching a cold or flu during the winter months by over 80%

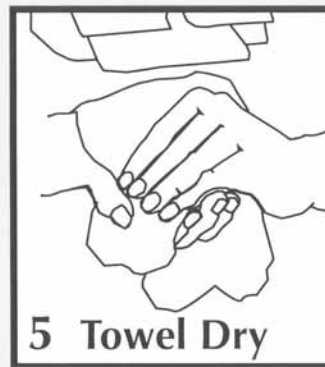
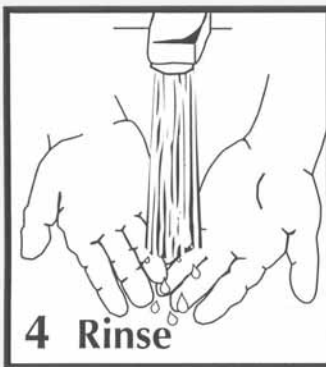
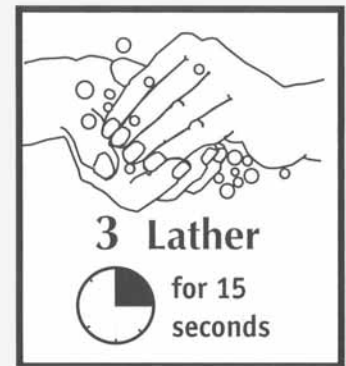


Handwashing

- wash your hands after:
 - handling hazardous or raw food
 - sneezing or coughing
 - touching something contaminated
 - smoking
 - using the washroom



Many Pathogens are passed between people through improper handwashing when handling food. Handwashing is the best way to prevent the spread of disease. Hands must also be washed before starting work, before handling any food, whenever they are visibly dirty or after finishing one job and before beginning another job.



Hands must be scrubbed for at least 15 seconds with soap in Step 3.



Handwashing Basins

- required by legislation
- must be easy to get to so employees can wash their hands often

If the handwashing basin is blocked off, it will discourage employees from washing their hands.

- must be used for handwashing only and not for dishwashing or food preparation

Separate sinks must be provided for dishwashing and food preparation to prevent cross-contamination.

- must have hot and cold running water, soap in a dispenser and paper towels

These things will help employees wash their hands properly. Bar soap is not recommended.





Glove Use

- using gloves does not replace handwashing
- only a tool and must be used properly to food safety

The wearing of gloves to handle food is not required by law in Ontario.



- plastic or latex gloves can be to prevent cross-contamination in the following manner:
 - washing hands thoroughly before and after wearing gloves
 - any cuts or wounds on hands are properly bandaged and protected
 - replace gloves after each task
 - gloves are properly stored to protect them from contamination



Personal Hygiene

- employees must not smoke in the kitchen area

This will keep their hands away from their mouth and will also prevent ashes and butts from getting into the food. As well, employees should not chew gum in the kitchen area as this will spray micro-organisms onto the food.

- food handlers must wear headgear that confines the hair

Hair nets, chef's hats and baseball caps are acceptable headgear. The hair must be confined to prevent hair from falling into the food and to stop food handlers from touching their hair to move it out of their face. Hair has also been known to cross-contaminate food.

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

Do not wear uniforms outside of the establishment. Always change and hang clothes in the change room, never in the kitchen or food storage areas.

- food handlers are not to handle food if they are ill with diarrhea, coughing or sneezing

- food handlers must not handle food if they have open cuts on their hands or are wearing band-aids.

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

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



Hazard Analysis Critical Control Point System (HACCP)

- **a system which:**

1. looks at hazardous and high risk food;
2. identifies the greatest risk factors of the food known to cause foodborne illness;
3. makes the changes necessary to reduce or eliminate the risk;
4. monitors the overall food handling

HACCP was developed by Pillsbury Foods and NASA to ensure their astronauts would have a safe source of food in space.

Hazard Analysis:

- a review of recipes to determine which food requires a lot of handling and has a high possibility for time and temperature abuse

Critical Control Point (CCP):

- a point where a hazard exists and a control measure is used to eliminate, prevent or minimize that hazard



6 Steps to a HACCP System

1. Review recipes and assess their risk.

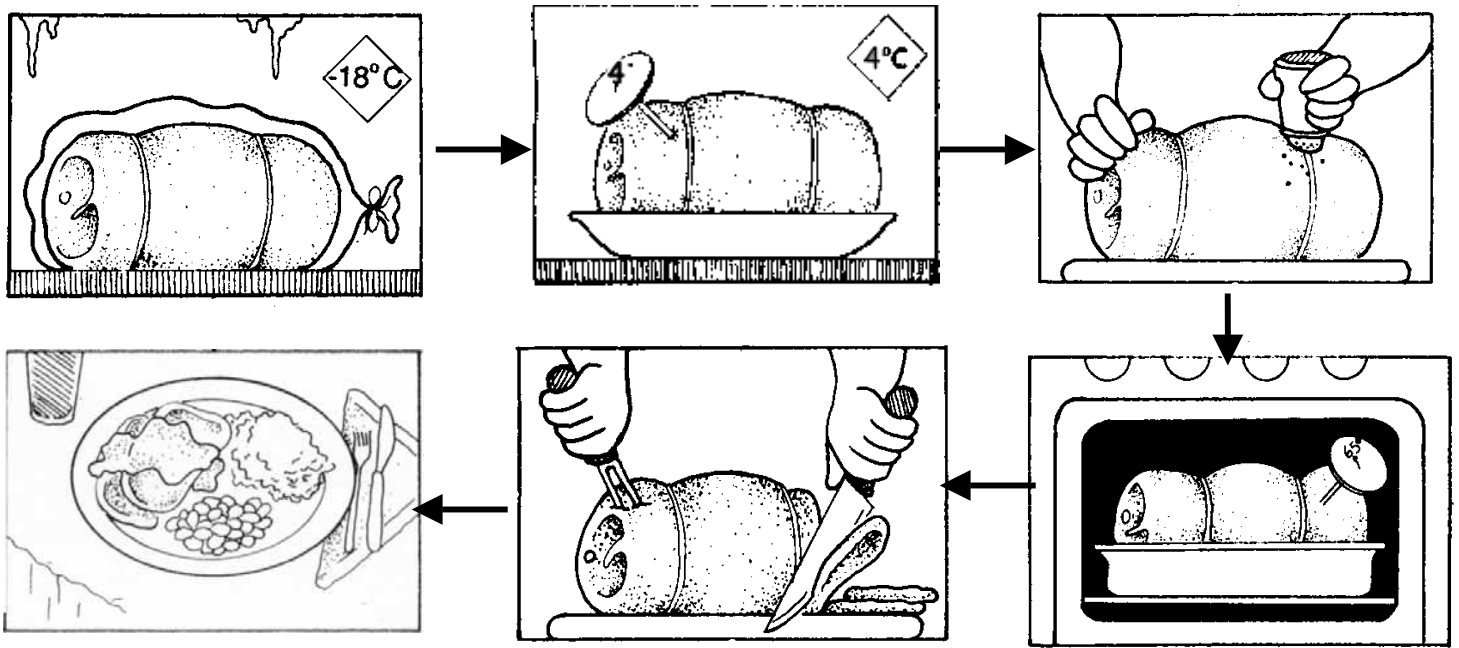
There are three levels of risk in HACCP. Examples of low risk foods are cereals, bread, fruits and vegetables. Examples of medium risk foods are hazardous foods with little handling and potential for temperature abuse. Examples of high risk foods are poultry and its products, beef, veal, pork, seafood, mixed salads, rice dishes, dairy products and cream products.

- review recipes listing each step and its level of hazard, paying special attention to food with high risk ingredients
- breakdown recipes into delivery, storage, preparation, cooking, portioning, serving and use of left-overs

Delivery is the approving and receiving of food. Storage is the storing and refrigerating of ingredients. Preparation is the thawing, cutting, chopping, deboning, mixing, washing and marinating of food. Cooking is the roasting, grilling, barbecuing, stir-frying and combining of ingredients. Portioning is the slicing, deboning, arranging for serving of cooked food. Serving is the giving to the customer directly to eat, take-out or offering for sale on a buffet. Use of left-overs is the refrigerating of food for later use.

- use a flow chart diagram to show each step, the equipment used, the personnel involved, the location of the process and other processes in the same area

This step will help you in staffing and efficient flow of product.



2. Identify Critical Control Points (CCP).

- on the flow chart, record the expected time, temperature and amount of handling involved in each step according to the recipe
- break down each step and look for the possibility of contamination and growth of micro-organisms

The most hazardous steps should be looked at most carefully. The time and temperature relationship and the amount of handling with the type of food will determine the risk.

There are 5 basic food service systems. Each system can stand as a recipe on its own or a combination of systems add up to a recipe for a food item.

assemble/serve - CCP - source of food
 cook/serve - CCP - cooking
 cook/hold - CCP - cooking and hot holding
 cook/chill - CCP - cooling
 cook/freeze - CCP - cooling



When reviewing recipes and applying the basic food service systems, it reveals that each recipe has a time-temperature CCP.

3. Make a plan to use preventive and control measures.

- minimize contamination of food, by killing pathogenic micro-organisms, destroying toxins or stopping pathogenic micro-organism growth

Look at those steps that are the most hazardous and try to reduce the food's time in the Danger Zone. Also, reduce the amount of people that handle food and use sanitized utensils where possible. Use accepted food handling practices.

- plan how the recipe can be changed in case monitoring reveals problems



4. Monitor CCP's.

- watch food preparation and measure the actual time, temperature and amount of handling at all the steps and record this information on the flow chart

Record the time and temperature on the chart as well as the amount of food for each item.

- all steps must be monitored to make sure the planned control and preventive measures work

The control measures are to remove or minimize the hazardous step in the process.

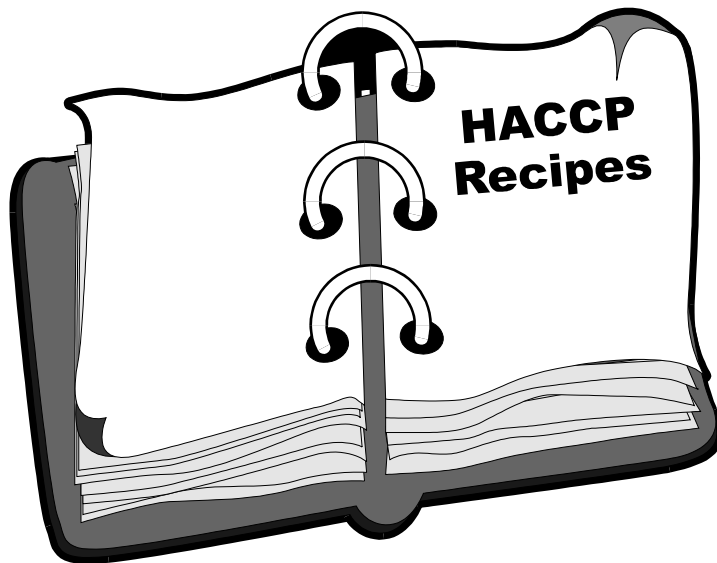
5. Take immediate action to correct any problems.

- action must be taken when time and temperature measurements show that there is unsafe food practices

If the control measures implemented in step 4 are not working as planned, alter the control measures until they are minimizing the hazard.

6. Keep a log of recipes.

- this log will contain the recipe, its flow chart, time, temperature and amount of handling at each step
- 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 and 65°C
 - b) the temperature range between 4°C and 60°C
 - c) the temperature range between 2°C and 57°C
 - d) none of the above

2. Cook hamburgers until:
 - a) the internal temperature of the food is 71°C
 - b) the meat is grey or brown
 - c) the juices run clear
 - d) all of the above

3. Proper temperature controls and avoiding cross contamination can eliminate most foodborne illness
 - a) true
 - b) false

4. HACCP:
 - a) breaks down a recipe into steps
 - b) identifies critical control points
 - c) uses preventive measures at the most dangerous steps
 - d) all of the above