

ensuring food safety

Writing Your Own Food Safety Plan - The HACCP Way

A Guide for Food Service Operators



BC Centre for Disease Control
AN AGENCY OF THE PROVINCIAL HEALTH SERVICES AUTHORITY

Ensuring Food Safety

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Ensuring Food Safety

INTRODUCTION

Food safety does not happen by accident. To prepare safe food, you must follow certain steps and procedures throughout the entire food preparation process. You have to think, and you have to pay attention to how you prepare food, to make sure it is safe. This is the basis for developing your own Food Safety Plan.

A basic Food Safety Plan uses the "HACCP" method. HACCP stands for "Hazard Analysis - Critical Control Points". HACCP was developed by NASA to make sure the food on their space flights was safe to eat. But it is not a complicated process. It just means that you have to first identify the various steps you take when you prepare your menu items, then look for possible sources of contamination, and then find ways to control these sources. A good Food Safety Plan will make sure that anything that might make someone sick is under control.

Part of your Food Safety Plan includes ordering and using safe food. In recognition of the harmful effects from eating a diet high in industrially-produced trans fat, the BC government has restricted use in all food service establishments beginning September 30, 2009. Documentation for food must be kept on site to demonstrate compliance. For more information on meeting the regulation visit www.restricttransfat.ca or call 811 and ask to speak to a HealthLink BC dietitian.

This manual has been written to help you design a Food Safety Plan for your own operation. You - and your staff - should take the time to read it. A Food Safety Plan will only work if each staff member knows their role in the plan, and is committed to making it work.

Your Food Safety Plan will not replace FOODSAFE training. The FOODSAFE course only gives you the basics of safe food handling. A Food Safety Plan uses this knowledge to put together a plan that will stop problems before they happen. If you have taken only the basic FOODSAFE course, you may want to take the FOODSAFE Level 2 course. This is a more advanced course in food safety. It covers the HACCP principles, and will help you put together your own Food Safety Plan.

Because food establishments differ from each other, your Food Safety Plan will probably be different than a plan your neighbour may develop. This is to be expected. For that reason, you should think of this manual as just a starting point. It will give you the basic information you need to develop your own Plan, but you will have to customize the information in this manual to "fit" your own operation.

After reading this manual, if you are not sure how to draw up your own Food Safety Plan, please call your local Environmental Health Officer (EHO) at your local health authority. EHOs have a lot of experience with the HACCP way to develop a Food Safety Plan. They can give you more information about your specific operations that will help you develop your own plan. Your EHO will be happy to work with you to make sure you get it right.

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DEFINITIONS

- Cooling.....means to lower the temperature of a food from 60°C (140°F) down to 20°C (70°F) in 2 hours or less AND then from 20°C (70°F) down to 4°C (40°F) in 4 hours or less.
- Cooling wandsare reusable, hollow, plastic, sealable containers that are filled with water, sealed, and then frozen. Once frozen, they can be put in a liquid food in order to help cool the food quickly.
(Cooling sticks)
- Critical Control Point..... see Critical Steps.
- Critical Limitsare the limits or procedures used to control the hazards at each critical step.
- Critical Steps.....are the steps in the food preparation processes where a hazard can be controlled. Loss of control may result in an unacceptable health risk.
- Danger Zone.....is the temperature between 60°C (140°F) and 4°C (40°F) where pathogens can grow in PHFs.
- Finger cots.....are small plastic or rubber tubes that when inserted over a finger, will form a waterproof cover over a cut or sore.
- Glovesare non-latex, plastic, or rubber gloves that when worn, while handling food, and will eliminate direct hand contact with the food.
- Hot holdmeans to hold foods at 60°C (140°F) or hotter. At these temperatures, pathogens will not grow.
- Internal temperature.....is the temperature taken with a thermometer in the centre of the food. In the case of whole poultry or large cuts of meat, the temperature should be taken in the thickest part of the flesh without the thermometer touching a bone.
- Pathogen.....is a bacteria or virus that, if eaten, may cause illness.
- PHF(s)means Potentially Hazardous Food(s).
- Potentially Hazardousare foods that will allow the growth or survival of pathogens OR
Foods foods that may be contaminated by pathogens.
- Poultryis any domestic bird (chickens, ducks, geese, guineas, pheasants, pigeons, turkeys, etc.).
- Productis any menu item.

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- Ready-to-eat..... means any food that can be eaten without cooking or any other additional preparation, and is expected to be served this way.
- Sanitize means to apply heat or chemicals on a clean food contact surface (e.g. cutting board, countertop, etc.) to destroy most pathogens.
- Shallow pans are large metal pans that are usually not deeper than 4"; useful for cooling foods.
- Sick worker..... means any food handler who has one or more of the following symptoms associated with a foodborne illness: sore throat with a fever, diarrhea, fever, vomiting or jaundice (yellow skin) ; or has a sore containing pus that is open and draining.
- "Super" Danger Zone is the temperature range between 20°C (70°F) and 49°C (120°F). In this temperature range, pathogens will grow very quickly.
- Temperature Abuse..... is the practice of either not cooling PHFs fast enough after cooking (see Cooling). It also means storing PHFs between 4°C (40°F) and 60°C (140°F).

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FOOD POISONING - QUESTIONS AND ANSWERS

I've never made anyone sick. Why should I do anything differently?

Foods that make people sick usually get that way by accident. No one means to produce unsafe food, but every year thousands of British Columbians become sick from eating unsafe food. Most of those people will be sick with vomiting and diarrhea for one or two days and then will get over it. Unfortunately, others will develop more serious complications such as kidney failure, permanent heart damage, arthritis, and even death. Food poisoning is very serious business, especially for the food service operator. A food-poisoning outbreak could cost you and your business through bad publicity, lost customers, and lawsuits.

Where Does Food Poisoning Occur?

Many food-poisoning cases originate in food service establishments such as restaurants, caterers and institutions (e.g. hospitals). The following sections will explain how the different preparation steps can cause food poisoning, and what you can do to control those steps to make sure that your operation does not cause a food-poisoning outbreak.

What Causes Food Poisoning?

Most cases of food poisoning are caused by certain disease causing micro-organisms called pathogens. In order for these pathogens to make people sick, two things are usually needed:

- 1) The presence of at least one pathogen in the food, AND
- 2) Time to grow in the Danger Zone when the food is in the temperature zone between 4°C (40°F) and 60°C (140°F) (See Appendix 3). Most pathogens grow quickly when the food they are in is kept in the Danger Zone. Keeping food in the Danger Zone is dangerous and will greatly increase the chance of making people sick.

Are Some Foods More Likely to Cause Food Poisoning?

Yes. Most pathogens require a food source that is rich in protein to grow well. As a result, protein rich foods such as meat, dairy, and egg-containing dishes cause most cases of food poisoning. However, sometimes even low protein foods such as cooked vegetables, starches (rice, pasta) and other foods can cause food poisoning if they are not handled properly. All foods known to cause food poisoning are called Potentially Hazardous Foods (PHFs). See Appendix 2 for more information on PHFs.

MYTHS AND TRUTHS ABOUT FOOD POISONING

Not True

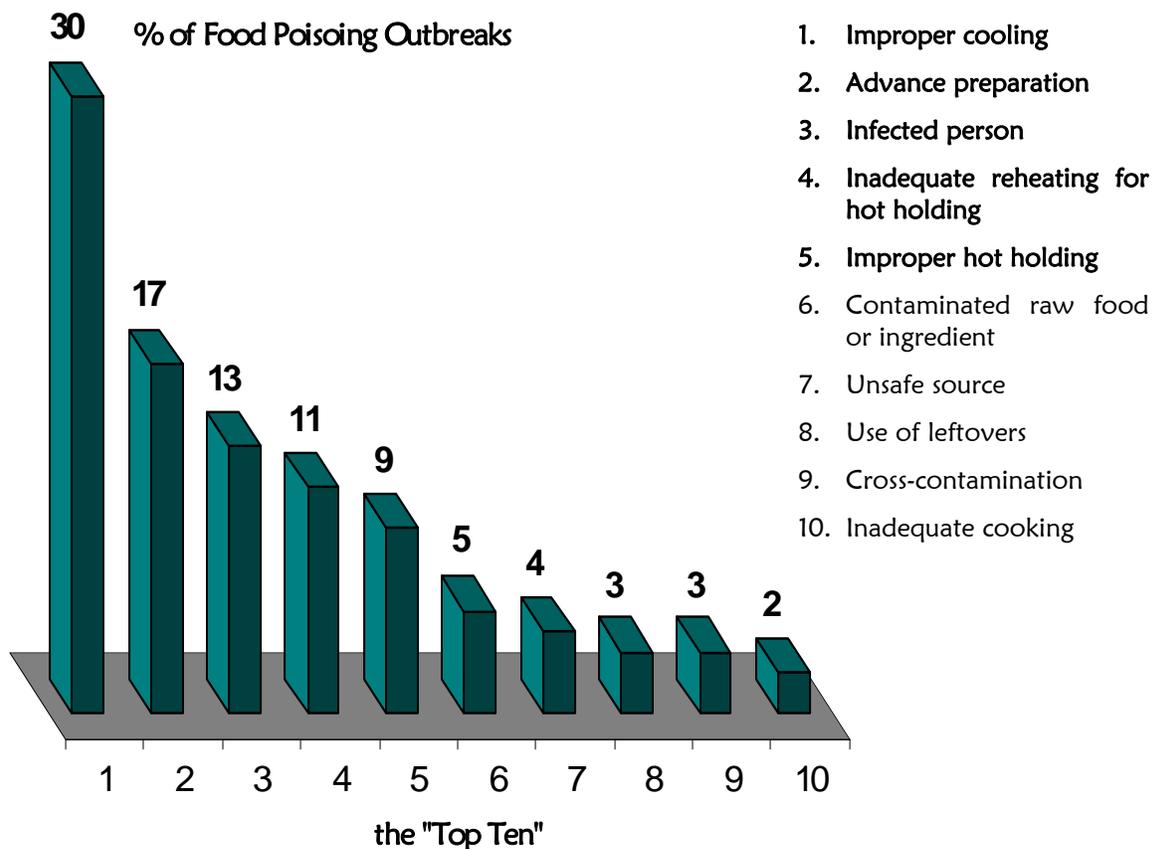
- 1) A food with enough pathogens to make you sick will look, smell or taste bad.
- 2) Really fresh food cannot make people sick.
- 3) Only dirty kitchens can make people sick.
- 4) Properly cooked food can never cause food poisoning.

True

- 1) A food with enough pathogens to make you sick may look, smell or taste good.
- 2) Really fresh food can cause food poisoning if it is not properly handled.
- 3) Even clean kitchens can make people sick.
- 4) Food poisoning can occur even when foods are properly cooked.

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THE "TOP TEN" FOOD HANDLING PRACTICES THAT CAUSE FOOD POISONING*



These "TOP TEN" food-handling practices cause almost all food-poisoning outbreaks in food service establishments. The top five cause 80% of all outbreaks.

If you can get rid of these practices in your operation, you will reduce the risk of causing a food-poisoning outbreak to nearly zero. You will be sure that the food you serve your customers is safe. For more information on the TOP TEN list, see Appendix 1 - The TOP TEN List: Do's and Don'ts to Prevent Problems.

* Dr. Frank, Bryan, Journal of Food Protection, 1988

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SETTING UP YOUR OWN FOOD SAFETY PLAN

Do you really want to know, without a doubt, that the food you serve your customers is safe? If the answer is yes, then the only way you can be sure is to develop a Food Safety Plan for your operation.

The following section shows you the seven basic steps you must follow to develop your own Food Safety Plan.

Step 1: Find the Food Safety Hazards

- Look at your menu. Find those menu items that are Potentially Hazardous Foods (PHFs) or which have one or more PHFs as ingredients (see Appendix 2, which explains which foods are PHFs and which foods are not PHFs).
- For each of these menu items, think about the steps the food goes through from when you first get the ingredients to when you serve the food to your customers.
- To make this step easier, use your recipe or make a flowchart for each menu item (see Appendix 6 examples).
- Look back at in the TOP TEN list this manual. For each menu item, ask yourself if it is handled in any of the ways shown on the TOP TEN list:
 - Does the food ever go through the temperature range in the Danger Zone? Is it cooked and then cooled? Hot held? Reheated, etc.? Remember, most food poisoning cases involve food that has been heated up and then cooled down through the Danger Zone.
 - Is the food handled a lot by workers- could it be contaminated by a sick worker?
 - Could the food be contaminated by raw food or dirty equipment after it is cooked?
- If the answer is yes to any of these, then the menu item has a food safety hazard that must be controlled.
- To give you an idea of how to find food safety hazards, turn to Appendix 6(a) - The Beef Stew Recipe. Beef stew is a PHF. The main hazards with this menu item would be:
 - pathogens in the raw beef stew, and
 - pathogens in the cooked beef stew that survived the cooking step or were accidentally introduced after the cooking step and are then given a chance to grow if the cooked beef stew is temperature abused.



OK - HERE'S THE PLAN. JOE - YOU HAVE TWO HOURS TO ATTACK THE GRAVY. BERT - YOU INFILTRATE THE SEAFOOD CHOWDER - OUR INTELLIGENCE SAYS IT'S BEING HELD BELOW 60° C. FEG - YOU TRIP THE CHEF WHEN HE COMES THROUGH THE DOOR...

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Step 2: Identify Where and When You Have to Control the Hazards for Each Menu Item

- In Step 1 you found the food safety hazards in a specific menu item that must be controlled.
- Now you must find the step or steps in the food preparation process where these hazards can best be controlled - these Critical Steps are also called Critical Control Points.
- The critical step is the "kill step" where the bacteria are either killed by cooking or are "controlled" to prevent or slow their growth (such as by proper hot holding or rapid cooling).
- Cooking, cooling, hot holding, and reheating are always critical steps.
- For ready-to-eat foods (e.g. sandwiches, salads) all steps where hands touch foods are critical steps.
- Highlight critical steps in your recipe or flowchart of the menu item by underlining, using a highlighter, etc.
- See the Beef Stew Recipe, (Appendix 6(a)). The Critical Steps are identified in that version of the recipe.

Step 3: Set Critical Limits or Procedures to Control the Hazards

- You found the food safety hazards and where to control them (the critical steps).
- Now you have to set limits or procedures to control the hazard at each critical step. This includes identifying things like minimum cooking temperature/times, the maximum time to cool foods down, minimum hot hold temperatures, etc. For an example, see Appendix 6(b), which shows the critical steps and their critical limits. Also, see Appendices 3,4 and 5 for standards for cooking and cooling foods.
- For most control procedures or limits, you can incorporate these right onto your recipe cards.
- For the Beef Stew Recipe in Appendix 6(b), you will see that the cooking temperature and time, the hot hold temperature, the cooling temperatures and times, and the reheating temperature and times (the Critical Steps) have the limits written right into the recipe.
- Review the 'Preventing Problems' boxes in Appendix 1. This will give you ideas for setting critical limits and controls for the critical steps you found.



ANYBODY ELSE THINK A CRITICAL CONTROL POINT IS WHEN THE CUSTOMER IS ADDING THE TIP...?

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Step 4: Check the Critical Limits

- You have now set critical limits for each critical step.
- You want to make sure the limits that you've set are actually being followed. To do this they must be checked regularly.
- For those critical steps that involve temperature, measure the actual internal temperature of the food (whether cooking, cooling, or hot holding).
- For those critical steps that involve things that workers do, this means first training them to make sure they know how to do their jobs properly, and then watching them regularly to make sure they keep doing it right.
- Make sure everyone in your operation knows their responsibilities for checking critical limits. Make it a part of their job description.

Step 5: Set up Procedures to Handle Control Problems

- Workers must also know what to do if a process or step does not meet critical limits and what corrective action can be taken.
- Problems happen when critical limits are not met. You must have a plan in place when a critical limit is not met. These procedures are called Corrective Actions.
- Let's again use the Beef Stew Recipe but turn to Appendix 6(c) to see an example of a recipe flowchart, which includes corrective actions to take when critical limits are not met. In most cases, the corrective actions are common sense and can easily be incorporated into the recipe or flowchart.
- Examples of corrective actions might include:
 - rejecting received products that are unacceptable (broken containers, etc.)
 - adjusting a thermostat in the cooler to get the proper temperature
 - recooking or reheating a food again to get to the proper temperature (one time only)
 - changing the food handling steps
 - throwing the food away.
- If you find a problem, correct it right away!!!
- If in doubt, throw it out!!!

Step 6: Keep Accurate Records - Review Them Regularly to Make Sure that the Controls are Working

- You and your workers are now taking corrective actions when critical limits are not met.
- To make sure that the controls are working, you have to keep records of the checks that are being done, and any corrective actions that have been taken.
- A regular review of these records will quickly tell you if your controls are working, and if your workers are handling the foods properly.
- If your records show a problem - fix it right away.



OUR RESTAURANT HAS AN EXCELLENT RECORD-KEEPING SYSTEM... OVER THERE'S A COMPLETE COLLECTION OF DINNER MUSIC AND HERE'S A COPY OF FRANKIE LAINE SINGING 'OH HOW LOVELY COOKS THE MEAT.'

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Step 7: Check Your Food Safety Plan to Make Sure It's Working

- At least once a year, you should check your Food Safety Plan to make sure it is working and is complete.
- Verify with your Environmental Health Officer that your plan is appropriate.
- Questions to ask yourself can include:
 - are there any new foods or recipes being served?
 - have you changed recipes for some foods?
 - have any preparation steps been changed?
- If the answer is **yes** to any of these questions, you probably need to adjust your Food Safety Plan.



I ASKED HER WHAT SHE'D RECOMMEND AND SHE SAID THE RESTAURANT
DOWN THE STREET WITH THE FOODSAFE EXCELLENCE CERTIFICATE ...

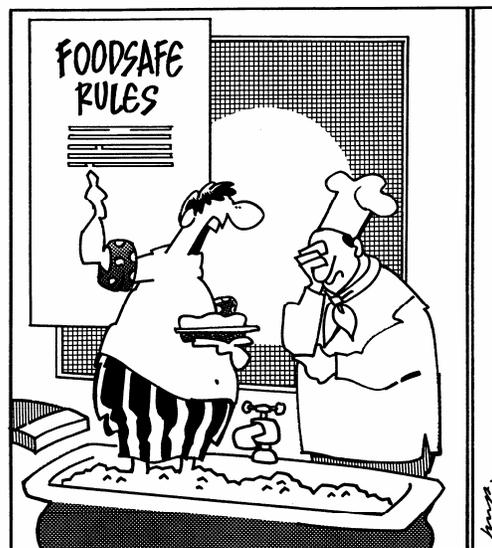
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APPENDIX 1: THE "TOP TEN" LIST: DO'S AND DON'TS TO PREVENT PROBLEMS

This section describes each food-handling practice outlined in the "TOP TEN" list in Section D and the ways to prevent each problem.

1. Improper Cooling

Many people think that once a food has been properly cooked, all disease-causing organisms (pathogens) have been killed. This is not true. Some pathogens can form heat resistant spores. These spores can survive cooking temperatures. When the food begins cooling down, and enters the Danger Zone (See Appendix 3), the spores begin growing and multiplying. If the food spends too much time in the Danger Zone, the pathogens will increase in number to a point where the food will make people sick. That is why cooked food must be cooled from 60°C (140°F) to 20°C (70°F) in 2 hours or less, AND then from 20°C (70°F) to 4°C (40°F) in 4 hours or less.



IT SAYS: COOL FOODS QUICKLY IN AN ICE BATH...

Even in modern walk-in coolers, large cuts of meat will not properly cool down properly. Neither will whole poultry. Large pots (4 litres or more) of soup, stews, gravy, etc. can take a day or more to cool to 4°C (40°F). However, you can cool these foods down quickly by using one or more of the following methods depending on the type of food being cooled:

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TO PREVENT PROBLEMS. . .

- a) Place the food in shallow pans (food no deeper than 2") and put the pans in the cooler. When the food is cooling, do not tightly cover. This only seals in the heat.
- b) Do not stack the shallow cooling pans (during the cooling step). This will defeat the purpose of shallow panning by preventing cold air from reaching the food. You may need to add more shelves to your cooler.
- c) Cut large cuts of meat or whole poultry into smaller or thinner portions. Then place these portions into shallow pans for cooling.
- d) Use cooling wands or cooling sticks to cool foods quickly.
- e) Use rapid cooling equipment such as walk-in coolers with wire shelving and good airflow. Home-style refrigerators or reach-ins do not cool food well.
- f) Stir the food in a container placed in an ice water bath.
- g) Use containers that help heat transfer, such as stainless steel or aluminium. Plastic does not transfer heat well.
- h) Use ice as an ingredient (e.g. stews or soups).
- i) For large pots of cooked desserts (e.g. custard) divide it up into serving sizes and then cool.

2. Advance Preparation

Advance preparation is the cause of many food-poisoning outbreaks. This is usually because of improper cooling. Many times, foods that are prepared well before serving spend too much time in the Danger Zone. The foods are either:

- left out at room temperature too long, or
- not heated or reheated properly (to a high enough temperature) , or
- are not cooled properly, or
- brought in and out of the Danger Zone too many times (e.g. cooked, hot held, cooled, reheated, hot held, cooled, reheated , again, etc., or
- a combination of these.

Another problem is that pathogens can be present in the cooked and cooled food, which can still grow at refrigerated temperatures, if given enough time. These pathogens grow slowly but they can eventually reach numbers where they can make people sick. As such, foods that are prepared many days before serving can make people sick even if they are stored in the cooler the whole time.

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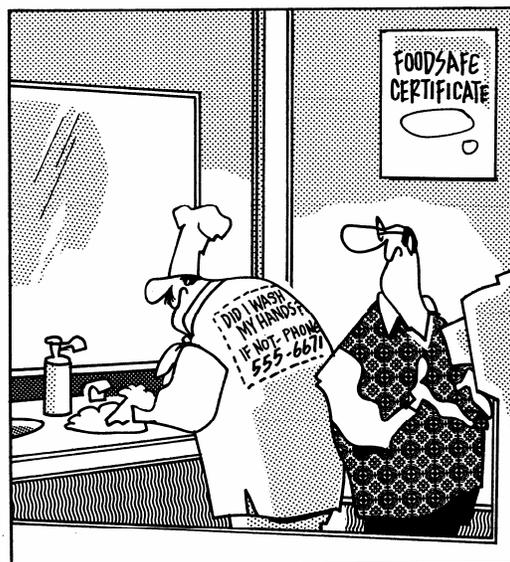
TO PREVENT PROBLEMS. . .

- a) Try to prepare all foods for same-day use and as close to serving time as possible.
- b) To prevent outside contamination of foods prepared in advance, cover them tightly after they have been properly cooled.
- c) Reheat leftovers only once. If leftovers are not consumed after being reheated, throw them out.
- d) For foods prepared and held refrigerated in the cooler for more than 24 hours, mark the date of preparation and a "serve by" date. Generally, PHFs should be thrown out if not used up within 3 days from the date they were made.
- e) If you must prepare foods in advance, be sure you properly cool and refrigerate these foods.

3. Infected Person

Many people carry pathogens somewhere on or in their bodies without knowing it in their gut, in their nose, on their hands, in their mouth and other warm, moist places. People that are carrying pathogens often have no outward signs of illness. However, people with symptoms of illness (diarrhea, fever, vomiting, jaundice, sore throat with a fever, hand infections, etc.) are much more likely to spread pathogens to food.

Some pathogens are worse than others (e.g. Salmonella, E. coli, Campylobacter). Even if they are only present in low numbers, they can make people very sick. A food handler who is carrying these kinds of pathogens can easily spread them to foods - usually with their hands. Ready-to-eat foods are extra dangerous. These foods get no further cooking after being prepared so any pathogens on them will not be killed or controlled by cooking.



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TO PREVENT PROBLEMS. . .

- a) Make sure all food handlers wash their hands properly after any job that could dirty their hands (e.g. using the toilet, eating, handling raw meats, blowing their nose, smoking, etc.).
- b) Food handlers with infected cuts on their hands or arms (including sores, burns, lesions, etc.) must not handle food or utensils unless the cuts are properly covered (e.g. waterproof bandage covered with a non-latex glove or finger cot).
- c) When using gloves or finger cots, food handlers must still wash their hands at the same times as when they wash their hands without gloves or finger cots. As well, gloves or cots must be replaced if they are soiled, have a hole, or at least once a day.
- d) Food handlers with symptoms must not handle utensils or food. Send them home.
- e) Where possible, avoid direct hand contact with food especially ready-to-eat foods (e.g. use utensils plastic or non-latex gloves).

4. Inadequate Reheating for Hot Holding

Many restaurants prepare some of their menu items in advance or use leftovers in their hot hold units the next day. In both cases, the foods travel through the Danger Zone when they are cooled for storage and again when they are reheated. Foods that are hot held before serving are particularly vulnerable to pathogens. In addition to travelling through the Danger Zone twice, even in properly operating hot hold units, the food temperature is close to those temperatures that will allow the pathogens to grow.

Rapid reheat to 74°C (165°F) or hotter and hold the food at that temperature for at least 15 seconds before putting it in the hot hold unit. This will kill any pathogens that may have grown during the "cool down" step and the reheat step.

TO PREVENT PROBLEMS. . .

- a) Do not use hot hold units to reheat food. They are not designed to do this - they take too long. Instead, use a rapid reheat method (stove top, oven, microwave, etc.) and transfer the heated food to the hot hold unit after it has been heated.
- b) If using direct heat (stove top, oven, etc.) , the temperature of the reheated food must reach at least 74°C (165°F) for at least 15 seconds within 2 hours. Keep a thermometer handy to check the temperature of the food.
- c) If using a microwave, rotate or stir the food at least once during the reheat step, as microwaves heat unevenly. As well, the food must be heated up to at least 74°C (165°F) and then let the food stand covered for 2 minutes after reheating before adding to the hot hold unit. The snapping and crackling sounds coming from food being reheated in a microwave does not mean it is hot.

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5. Improper Hot Holding

Hot hold units are meant to keep hot foods at 60°C (140°F) or hotter. At or above this temperature, pathogens will not grow.

However, a mistake in using the hot hold unit can result in foods being held in the "Super" Danger Zone - between 20°C (70°F) and 49°C (120°F) - temperatures at which pathogens grow very quickly.

TO PREVENT PROBLEMS . . .

- a) Make sure the hot hold unit is working properly (e.g. heating elements are not burnt out; water is not too low in steam tables; the thermostat is properly set so food remains at 60°C (140°F) or hotter, etc. Check it daily with a thermometer.
- b) Put only already hot 74°C (165°F) foods into the hot hold unit.
- c) Preheat the hot hold unit to at least 60°C (140°F) before you start putting hot foods into it.
- d) Do not use the hot hold unit to reheat cold foods. It is not designed for or capable of doing this rapidly.
- e) After the lunch or dinner rush, do not turn off the heat in the hot hold unit and then leave the food there to cool. This is very dangerous. When you do this, the food does not cool down. It stays hot in the "Super Danger Zone" and lets pathogens grow quickly. Foods in hot hold units should be taken out of the units after the meal time is over and cooled right away.

6. Contaminated Raw Food or Ingredient

We know that many raw foods often contain pathogens. Certain foods are often served raw. While some people believe these foods served raw are "good for you", the truth is that they have always been dangerous to serve or eat raw. Some examples include:

- raw oysters served in the shell
- the use of raw eggs in certain recipes (e.g. Caesar salad, eggnog made from raw eggs)
- customer's request for a rare hamburger
- sushi/ sashimi
- steak tartar

These types of foods have caused many food-poisoning outbreaks. Always remember, you cannot tell if a food contains pathogens just by look, taste, or smell.

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TO PREVENT PROBLEMS. . .

- a) Buy all your foods or ingredients from approved suppliers.
- b) If available, buy foods or ingredients from suppliers who also have Food Safety Plans for their operations.
- c) Where possible, use processed or pasteurized alternatives (e.g. pasteurized, liquid eggs).
- d) Never serve these types of foods to high-risk customers (e.g. seniors, young children, people in poor health, people in hospitals or nursing homes, etc.).

7. Unsafe Source

Foods from approved sources are less likely to contain high levels of pathogens or other forms of contamination. Approved sources are those suppliers that are inspected for cleanliness and safety by a government food inspector. Foods supplied from unreliable or disreputable sources, while being cheaper, can contain high levels of pathogens and have caused many food-poisoning outbreaks. Fly-by-night suppliers (trunk sales) often do not care if the product is safe to sell to you, but approved suppliers do! As well, many fly-by-night suppliers have obtained their product illegally (e.g. closed shellfish fisheries, rustled cattle, poached game and fish), and often do not have the equipment to properly process, handle, store and transport the food safely.

Of particular concern is seafood from unapproved sources. Seafood, especially shellfish, from unapproved sources can be heavily contaminated with pathogens or poisons if they have been harvested from closed areas.

All food located on the premises of, prepared, served or offered in a food service establishment must also meet the trans fat restrictions beginning September 30, 2009. Documentation for food, as an ingredient list, Nutrition Facts table or product specification sheet must be kept on site to demonstrate compliance. Talk to your supplier or visit www.restricttransfat.ca for a list of products that meet the restrictions.

TO PREVENT PROBLEMS. . .

Buy your food and ingredients from approved sources only. If you are not sure a supplier has been approved, contact your local Environmental Health Officer. He or she can find out for you. Do not take the chance of causing a food-poisoning outbreak by trying to save a few dollars remember, your reputation is on the line.

8. Use of Leftovers

Using leftovers has caused many outbreaks of food poisoning because of improper cooling and reheating (of "hot" leftovers). Leftovers that are intended to be served "hot" pass through the Danger Zone twice (during the initial cooling of the hot food and when reheating). Those leftovers intended to be served without reheating, or, as an ingredient

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in other foods (e.g. sandwich filler) go through the Danger Zone during cooling and then, when being prepared and portioned, will often stay in the Danger Zone for another long period. The time in the Danger Zone adds up unless the food is quickly cooled and then quickly reheated (if being served hot), or kept cold until serving (if not being served hot).

Another source of contamination with leftover foods can happen when they are stored in the cooler. Improperly stored leftovers can accidentally be contaminated by raw foods (i.e. blood dripping from a higher shelf).

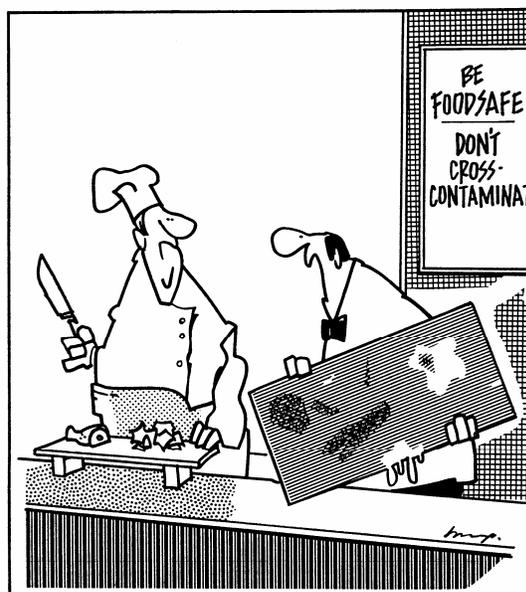
TO PREVENT PROBLEMS. . .

- a) Reheat leftovers only once. Throw out any leftovers that have already been reheated once.
- b) Do not mix leftover foods with fresh foods.
- c) Be sure to follow the proper cooling and reheating procedures when handling leftovers. These are critical steps.
- d) Cool leftovers in uncovered containers separate from any raw foods. After they are cooled, cover them tightly.

9. Cross-Contamination

You can expect certain foods to contain pathogens - especially foods like raw meat, raw poultry, and raw seafood. Use extreme caution when you bring these foods into your kitchen. Cross-contamination happens when something that can cause illness (pathogens or chemicals) is accidentally put into a food where not previously found.

This can include, for example, pathogens from raw meats getting into ready-to-eat foods like deli meats. It can also include nuts (which some people are very allergic to) getting into a food that does not normally have nuts (e.g. tomato sauce).



DON'T CUT SALAD GREENS ON THE SAME BOARD AS CHICKEN.
HERE - USE THIS WOODEN TRAY...

Ensuring Food Safety

TO PREVENT PROBLEMS. . .

- a) Use separate cutting boards, separate cleaning cloths, separate knives/utensils, separate sinks, separate preparation areas, etc., for raw and for ready-to-eat foods. Otherwise, wash all of these items with detergent and sanitize them with bleach between use.
- b) Use separate storage areas for raw and ready-to-eat foods. Always store ready-to-eat foods on separate shelves and above raw foods. Store dry foods above wet foods.
- c) Prepare ready-to-eat foods at the beginning of the day before the raw foods are prepared.
- d) After handling raw foods, always wash your hands properly before doing anything else.
- e) Keep wiping or cleaning cloths in a container of fresh bleach solution (1 ounce or 2 tablespoons of bleach per gallon of water) when not in use.
- f) Use clean utensils, not your hands, to handle cooked or ready-to-eat foods.

10. Inadequate Cooking

Proper cooking is one of the best means of making sure your operation does not cause a food-poisoning outbreak. Proper cooking kills all pathogens (except spores) or at least reduces their numbers to a point where they cannot make people sick.

Inadequate cooking is often done by accident: cooking still frozen poultry or meat; attempting to cook a "stuffed" bird using the same time and temperature as an "unstuffed" bird; or using an inexperienced cook.

TO PREVENT PROBLEMS. . .

- a) Don't rely on cooking times alone. Check the internal temperature of the food being cooked. See Appendices 4 and 5 for cooking temperatures and times for different foods.
- b) For large cuts of meat or large batches of food, check the temperature in several spots.
- c) Be extra careful when cooking partially-frozen foods. There can be "cold spots" in the foods that are not properly cooked. The normal cooking time will have to be increased.
- d) When grilling or frying meat, cook until the juices run clear. Cooked fish will flake off.
- e) Make thin, not thick hamburgers.

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APPENDIX 2: POTENTIALLY HAZARDOUS FOODS (PHFs)

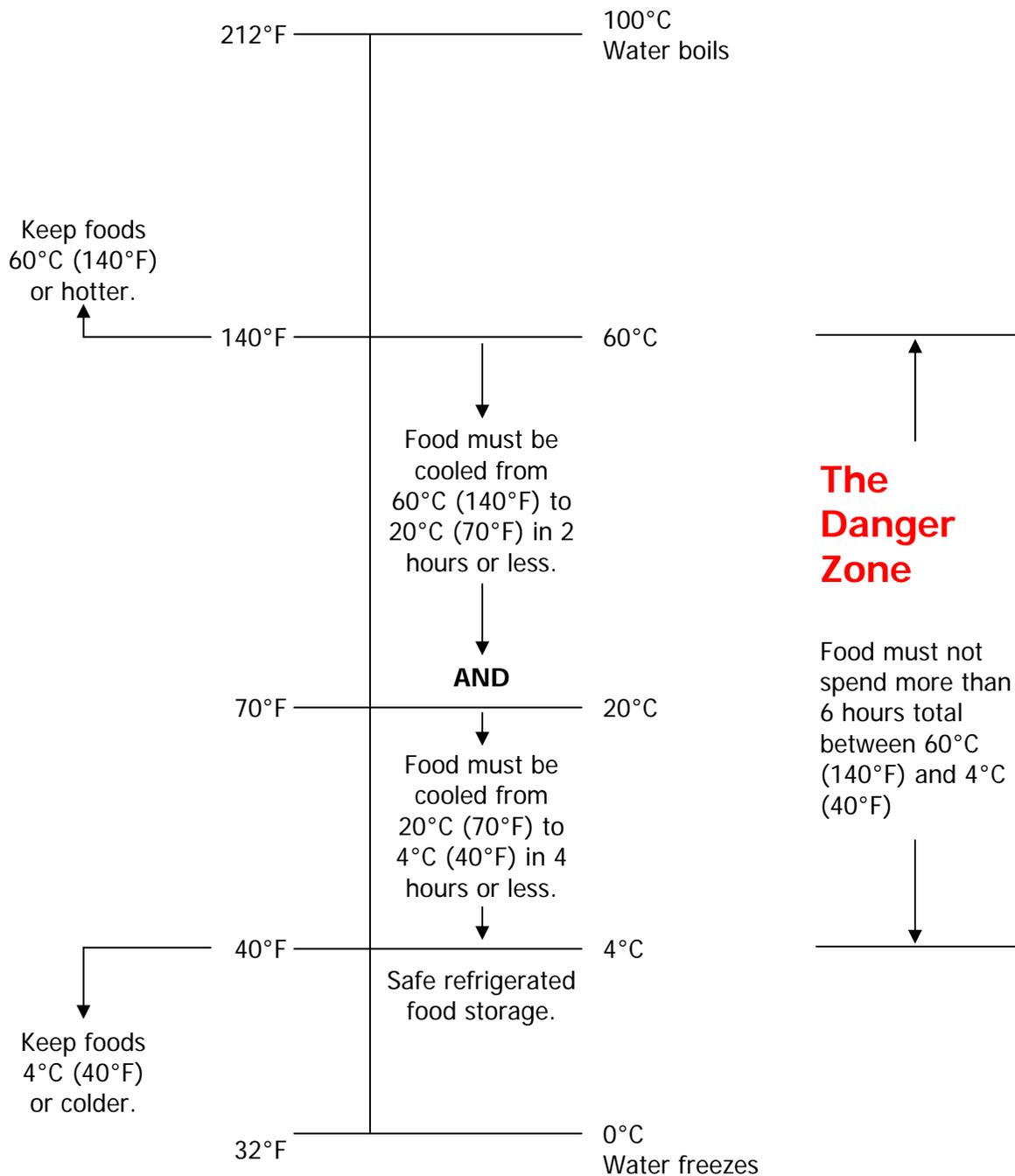
PHFs are those foods that are considered perishable. They will spoil or "go bad" if left out at room temperature. PHFs are foods or food ingredients that support the growth or survival of disease causing bacteria (called "pathogens") or foods that may be contaminated by pathogens. Generally, a food is a PHF if it is:

- 1) Of animal origin such as meat, milk, eggs, fish, shellfish, poultry (or if it contains any of these products).
- 2) Of plant origin (vegetables, beans, fruit, etc.) that has been heat- treated or cooked.
- 3) Any of the raw sprouts (bean, alfalfa, radish, etc.).
- 4) Any cooked starch (rice, pasta, etc.).
- 5) Any type of Soya protein (Soya milk, tofu, etc.).

Examples of:	
PHFs	Not PHFs
Chicken, beef, pork and other meats	Beef Jerky
Pastries filled with meat, cheese or cream	Bread
Cooked rice	Uncooked rice
Fried onions	Raw onions
Opened cans of meat, vegetables, etc.	Unopened cans of meat, vegetables, etc. (as long as they are not marked with "Keep Refrigerated")
Tofu	Uncooked beans
Coffee creamers	Cooking oil
Fresh garlic in oil	Fresh garlic
Fresh or cooked eggs	Powdered eggs
Gravy	Flour
Dry soup mix with water added	Dry soup mix

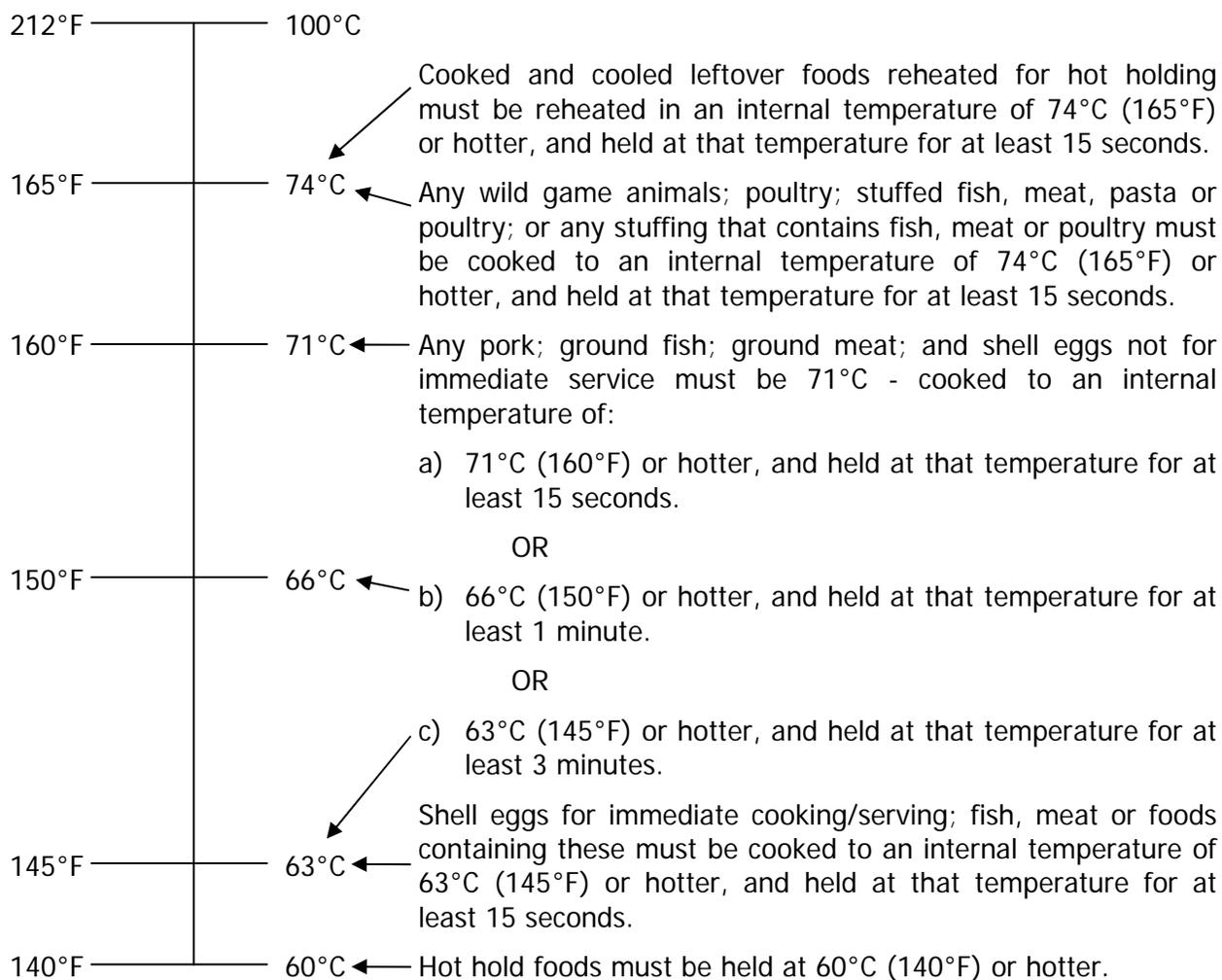
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APPENDIX 3: THE "DANGER ZONE": COOLING TIMES AND TEMPERATURES



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APPENDIX 4: SAFE COOKING, REHEATING TIMES AND TEMPERATURES



MICROWAVE:

Foods cooked or reheated in a microwave oven must be:

- cooked/reheated in a covered container;
- rotated or stirred at least once during the cooking/reheating;
- allowed to stand covered for 2 minutes after cooking before serving.

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APPENDIX 5: SAFE COOKING INTERNAL TIMES AND TEMPERATURES FOR ROAST BEEF AND CORNED BEEF ONLY

Meat Temperature No Lower Than		Meat Must be Held in Oven for At Least
°F	°C	Holding Time
130	54	121 minutes
132	56	77 minutes
134	57	47 minutes
136	58	32 minutes
138	59	19 minutes
140	60	12 minutes
142	61	8 minutes
144	62	5 minutes
145	63	3 minutes

EXAMPLE:

If the maximum internal temperature of the Roast or Corned Beef is only 56°C (132°F), then the meat must be kept at this temperature for at least 77 minutes in order to kill off potential pathogens. When measuring the internal temperature, be sure to insert the end of the thermometer in the middle of the cut and not near a bone.

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APPENDIX 6(A): BEEF STEW RECIPE

(With identification of Critical Steps)

Ingredients

Stewing beef (pre-cooked)
Beef stew base, Beef consommé, Beef gravy
Vegetables (frozen)
Seasoning
Water

Weights and Measures

2.5 kilograms
1 can (each)
2 packages
1 packet
5 litres

PREPARING

1. Pour beef stew base, beef consommé, and beef gravy into stockpot. Add water and seasoning. Stir with wire whisk until all seasoning is dissolved.

COOKING

2. Preheat stove. Begin heating beef stew mix.
3. Break up any clumps in the frozen vegetables. Add to the beef stew mix. Stir with long-handled spoon.

Critical Step:

4. Add cooked stewing beef and stir.
Simmer for 30 minutes.

SERVING AND HOLDING

5. Serve immediately, or

Critical Step:

6. Hold beef stew in hot hold unit.

COOLING

Critical Step:

7. Store any leftovers in a covered pan in the cooler.

REHEATING

Critical Step:

8. Reheat beef stew until steaming.

SANITATION INSTRUCTIONS:

Wash hands before handling food, after handling raw foods, and after any interruption that may contaminate hands. Wash, rinse, and sanitize all equipment and utensils before and after use.

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APPENDIX 6(B): BEEF STEW RECIPE WITH FOOD SAFETY PLAN

(Critical Steps and detailed information on how to control the hazard)

Ingredients

Stewing beef (pre-cooked)
Beef stew base, Beef consommé, Beef gravy
Vegetables (frozen)
Seasoning
Water

Weights and Measures

2.5 kilograms
1 can (each)
2 packages
1 packet
5 litres

PREPARING

1. Pour beef stew base, beef consommé, and beef gravy into stockpot. Add water and seasoning. Stir with wire whisk until all seasoning is dissolved.

COOKING

2. Preheat stove. Begin heating beef stew mix.
3. Break up any clumps in the frozen vegetables. Add to the beef stew mix. Stir with long-handled spoon.

Critical Step:

4. Add cooked stewing beef and stir. **Continue heating beef stew until 74°C (165°F) or hotter is reached for at least 15 seconds.** Simmer for 30 minutes.

SERVING AND HOLDING

5. Serve immediately, or

Critical Step:

6. **Hold beef stew at 60°C (140°F) or hotter in hot hold unit, and cover if possible. Do not mix new product with old.**

COOLING

Critical Step:

7. Cool in shallow pans with a product depth not to exceed 2 inches. **Product temperature must reach 20°C (70°F) within 2 hours and then reach 4°C (40°F) within 4 hours (6 hours total).** Stir frequently.
8. Store at a product temperature of 4°C (40°F) or colder in the cooler. Cover.

REHEATING

Critical Step:

9. **Reheat beef stew to a product temperature of 74°C (165°F) or hotter for at least 15 seconds within 2 hours - one time only.**

SANITATION INSTRUCTIONS:

Measure all temperatures with a cleaned and sanitized thermometer. Wash hands before handling food, after handling raw foods, and after any activity that may contaminate hands. Wash, rinse, and sanitize all equipment and utensils before and after use. Return all ingredients to refrigerated storage if preparation is delayed or interrupted.

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APPENDIX 6(C): BEEF STEW RECIPE FLOWCHART WITH FOOD SAFETY PLAN

Step	Food Safety Hazards	Critical Step	Critical Limits	Monitoring the Critical Steps	Corrective Action
Receiving	Contamination Growth of pathogens	No	PHFs must be below 4°C (40°F).	Check temperature Visual inspection.	Reject load if above 4°C (40°F), or if contamination is seen.
Refrigeration	Growth of pathogens	No	Maintain below 4°C (40°F).	Check food and air temperature every 4 hours.	Lower the cooler temperature setting.
Preparing	Contamination	No	Use of clean utensils.	Ensure all utensils and mixing pots are clean before use.	Inform dishwasher if any utensils/pots are not clean.
Cooking	Pathogen survival	Yes	Heat to 74°C (165°F) or hotter and hold for at least 15 seconds.	Check stew temperature (sanitized thermometer) before serving/holding.	Continue heating until 74°C (165°F) or hotter for 15 seconds.
Holding	Growth of pathogens	Yes	Minimum temperature of 60°C (140°F).	Check stew temperature in hot hold unit every 2 hours (sanitized thermometer).	Reheat to 74°C (165°F) if stew is less than 60°C (140°F) for 2 hours or less. If more than 2 hours, discard.
Cooling	Growth of pathogens	Yes	60°C (140°F) to 20°C (70°F) within 2 hours AND then 20°C (70°F) to 4°C (40°F) within 4 hours.	Check temperature (sanitized thermometer) of cooling stew.	Discard if time/temperature standards not met.
Reheating	Pathogen survival	Yes	Heat to 74°C (165°F) or hotter and hold for at least 15 seconds. Heating must be done within 2 hours.	Check temperature (sanitized thermometer) of heating stew every hour.	Discard if time/temperature standards not met.

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APPENDIX 6(D): FOOD SAFETY PLAN

Flow Chart

Step	Food Safety Hazards	Critical Step	Critical Limits	Monitoring the Critical Steps	Corrective Action

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FOOD SAFETY NOTES