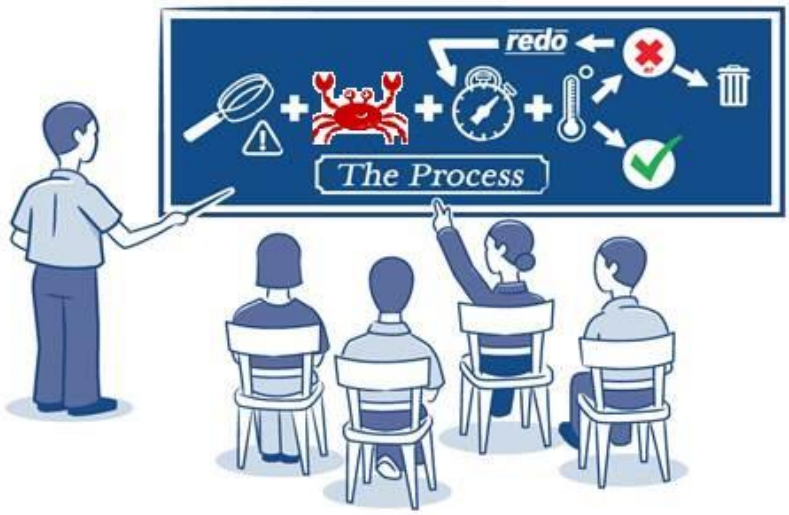
Food Safety Plan Workbook



BRITISH COLUMBIA | Ministry of Agriculture

BCCDC Foundation for Public Health

2017-12-15

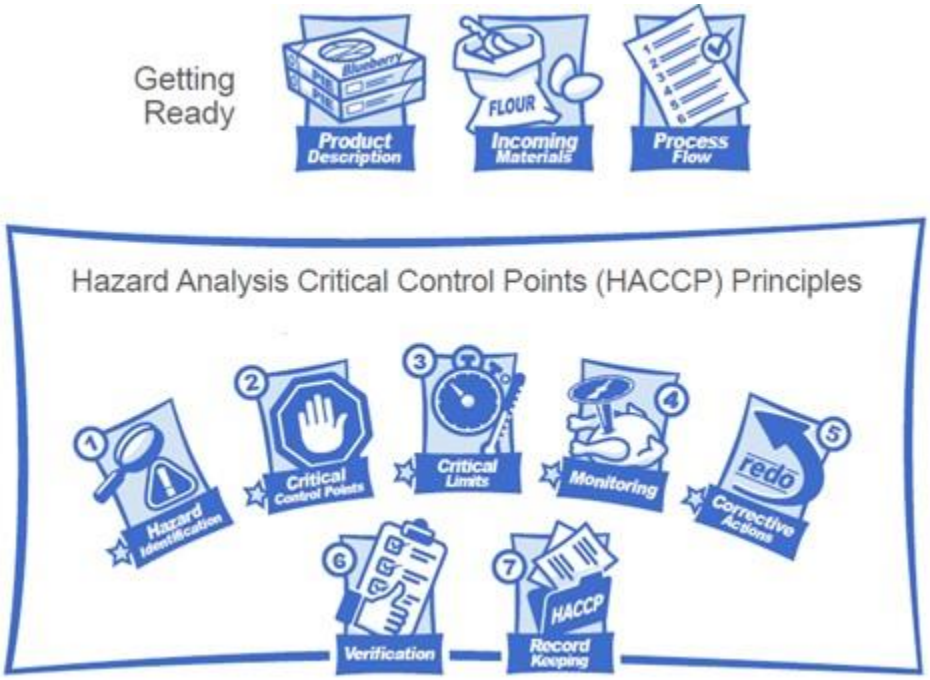
Contents

1. Introduction

Welcome!

This workbook is for seafood processors operating in British Columbia (BC) that are not federally registered with the Canadian Food Inspection Agency (CFIA).

This workbook will help you write a food safety plan, based on the seven principles of the Hazard Analysis Critical Control Point (HACCP) system. The Fish and Seafood Licensing Regulation, which came into effect on January 1, 2017, requires such plans.



This workbook, videos to accompany the workbook, and sample food safety plans, can be accessed from: www.gov.bc.ca/seafoodlicensing

While this workbook guides you in writing a food safety plan, you do not have to use it to write your food safety plan. You can write your food safety plan in any way that works best for you, as long as it meets the requirements of the regulation.

2. Overview of Food Safety Plans

A food safety plan is a written document that describes how you can control food safety hazards in your seafood processing establishment. The goal of the plan is to identify biological, chemical, and physical hazards and then to prevent or control these hazards, or reduce hazards to acceptable levels throughout your production process.

This workbook will help you write a food safety plan based on the Hazard Analysis Critical Control Point (HACCP) system. HACCP is a food safety system that will help you to identify, control, and prevent hazards during your production process.

A complete HACCP plan typically consists of prerequisite programs and a HACCP-based food safety plan. For further information on prerequisite programs, please see Appendix 3.

In this workbook, a complete food safety plan includes the following five parts:

1. Product Description table
2. Incoming Materials table
3. Process Flow
4. Hazard Analysis and Controls table
5. Critical Control Points table (if required)

Please note:

- Sample food safety plans are available here: www.gov.bc.ca/seafoodlicensing
- You do not have to write a food safety plan for each product you prepare. Instead, you can group products that are prepared in a similar way, with similar hazards, and write one food safety plan for the group. For example, if you only head and gut Chinook and sockeye salmon, which have similar hazards, using a similar process, you may be able to prepare only one food safety plan for "headed and gutted salmon."
- However, if you process more than one product, and your products either have different process steps (e.g., halibut fillets and smoked salmon) or different hazards, you will need to create a separate food safety plan for each product.

3. Starting your Food Safety Plan

Describe your Product

The first step is describing your product. Writing this information down will help you identify possible food safety hazards and how to control the hazards.

Table 1 below shows a completed Product Description table for a seafood processor who is cooking live crab. A blank template of the Product Description table can be found in Appendix 2.

Table 1: Product Description – Cooked Crab Meat

Product Description	
1. What is your product name and weight/volume?	Fresh Cooked Dungeness Crab Meat (454g/1lb) *(Cancer magister)*
2. What type of product is it (e.g., raw, ready-to-eat, ready-to-cook, or ready for further processing, farmed vs. wild, domestic vs. import, etc.)?	Ready-to-eat, wild BC
3. What are your product's important food safety characteristics (e.g., acidity, A_w (water availability), salinity, etc.)?	None
4. What allergens does your product contain?	Seafood (crustaceans)
5. What restricted ingredients (preservatives, additives, etc.) does your product contain, and in what amounts (e.g., grams)?	None
6. What are your food processing steps (e.g., cooking, cooling, pasteurization, etc.)?	Receiving incoming materials, sorting, culling, cooking, cooling, peeling, dipping in brine, rinsing with water, removing any remaining shell, packaging/labelling/weighing, cool refrigerator storage and distribution/shipping.
7. How do you package your product (e.g., vacuum, modified atmosphere, etc.) and what packaging materials do you use?	Fresh cooked crab meat is packaged in a 454g/1 lb food-grade plastic container. Five 454g/1lb plastic containers are then packed inside a cardboard box.
8. How do you store your product (e.g., keep refrigerated, keep frozen, keep dry) in your establishment and when you ship your product?	Stored and distributed at refrigerated temperature between 0˚C and 4˚C.
9. What is the shelf-life of your product under proper storage conditions?	5 days from production date under refrigerated temperature.
10. How is the 'best before' date to be noted on your product?	The 'best before' date is printed on the plastic container label as YY MM DD. Example: 17 JA 04 (January 04, 2017)
11. Who will consume your product (e.g., the general public, the elderly, the immunocompromised, infants)?	General public. **Note:** Not suitable for people with seafood (fish, crustaceans, and shellfish) allergies.
12. How might the consumer mishandle your product, and what safety measures will prevent this?	Products that are not properly refrigerated can have food safety and quality concerns; 'keep refrigerated' is printed on the plastic container label. Products that have passed the 'best before' date can be unsafe for consumption; the 'best before' date is printed on the plastic container label.
13. Where will the product be sold?	Food service (e.g., restaurants) and retail premises within BC.

Product Description	
14. What information is on your product label?	Fish and fish products sold intraprovincially (i.e., within BC) are subject to the labelling requirements under the federal *Food and Drug Act* and the *Consumer Packaging and Labelling Act*. Labels on individual plastic containers must contain the following information: product common name, weight, ingredients, allergens, nutritional table, storage and handling instructions, 'best before' date, manufacturing company name and address. Labels on outer cardboard boxes must contain the following information: product common name, total net weight, ingredients, allergens, storage and handling instructions, 'best before' date, manufacturing company name and address.

Once you have completed your own Product Description table, include it as part of your overall food safety plan. You will also need your Product Description table for other parts of your food safety plan later in this workbook.

List your Incoming Materials

The next step is to list the incoming materials for your product. Incoming materials include ingredients, food contact packaging materials (e.g., food-grade plastic container), non-food contact packaging materials (e.g., labels), food contact processing aids (e.g., water, ice), and chemicals (for hand washing, sanitation and maintenance) used in your product or establishment. **Listing your incoming materials and tracking how they move through your establishment will help you find where your hazards are.**

Table 2 below shows a completed Incoming Materials table for the same seafood processor as mentioned previously. A blank template of the Incoming Materials table can be found in Appendix 2.

For more information on listing your incoming materials, see Appendix 4.

Table 2: Incoming Materials – Cooked Crab Meat

Ingredients	
Live Dungeness crab	Food-grade salt
Food contact processing aid materials	
Water	Ice
Food contact packaging materials	
454g/1lb food-grade plastic container with lid	
Non-food contact packaging materials	
Ink	Cardboard boxes
Tape	Plain labels
Chemicals (hand washing, sanitation and maintenance)	
Hand soap	Equipment cleaner
Hand sanitizer	Equipment sanitizer

Once you have completed your own Incoming Materials table, include it as part of your overall food safety plan. You will also need your Incoming Materials table for other parts of your food safety plan later in this workbook.

Process Flow

The next step is to write down how you make your product, which is your process flow. List all the steps you take in making your product. To help you do this, you could use a table as shown below in Table 3.

Table 3 below shows a completed Process Flow table for a seafood processor who is cooking live crab. A blank template of the Process Flow table can be found in Appendix 2.

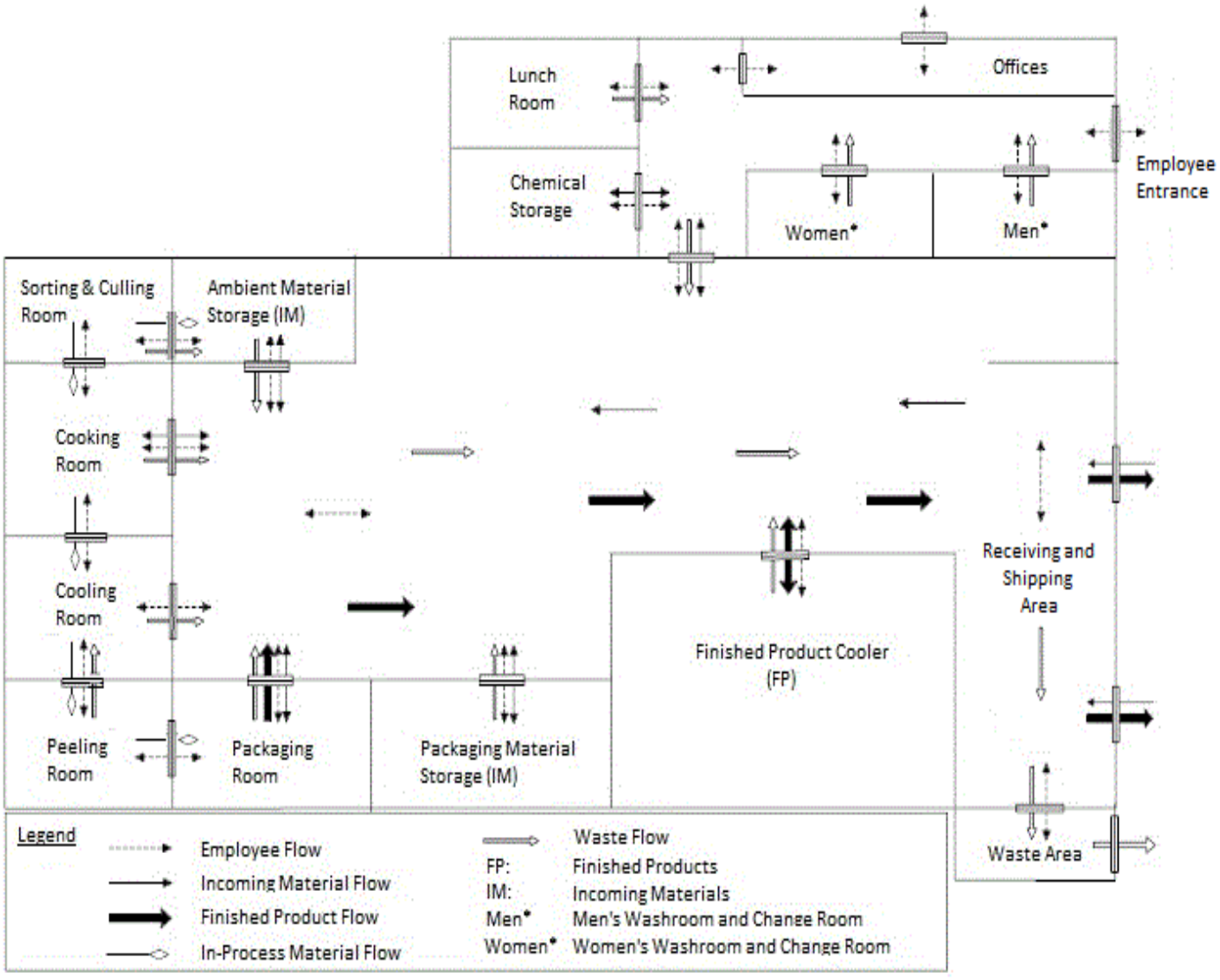
Table 3: Process Flow – Cooked Crab Meat

Process Step Number	Process step (e.g. washing, cooling, drying)
1	Receiving incoming materials
2	Sorting (live crab only)
3	Culling
4	Cooking
5	Cooling
6	Peeling
7	Dipping in brine
8	Rinsing with water
9	Removing any remaining shells
10	Packaging/Labelling/Weighing
11	Storing – Refrigerated Temperature
12	Distributing/Shipping

You should also create a Process Flow diagram showing your process flow, from the receipt of ingredients to the point of distribution of your products, to help you identify potential cross contamination points.

Diagram 1 below shows a completed Process Flow diagram for a seafood processor who is cooking live crab.

Diagram 1: Process Flow – Cooked Crab Meat



Once you have completed your Process Flow, consisting of both the table and diagram, include it as part of your overall food safety plan. You will need this Process Flow information for other parts of your food safety plan later in this workbook.

4. Applying the Seven Hazard Analysis Critical Control Point Principles

Now that you have described your product, listed all the incoming materials and created your process flow, you are ready to complete the next part of your food safety plan.

There are seven HACCP principles that will be applied to your food safety plan:

1. Identifying Hazards
2. Identifying Critical Control Points
3. Establishing Critical Limits
4. Establishing Monitoring Procedures
5. Establishing Corrective Actions
6. Establishing Verification Procedures
7. Keeping Records

The rest of this workbook will guide you through each of the seven HACCP principles.

5. Principle 1: Identifying Hazards

The first HACCP principle is to identify the food safety hazards specific to your product and your operation. Identifying your hazards includes two steps:

1. identifying and assessing the hazards; and
2. identifying measures to control the hazards.

Your focus should be on identifying food safety hazards that are likely to cause illness or injury if they are not controlled.

But first, what is a hazard?

A **hazard** is a material or agent that, when present in the food, can make food unsafe to eat and cause illness, injury or death. There are three types of hazards: 1. biological, 2. chemical and 3. physical.

A **biological hazard** is a microorganism or toxin produced by a microorganism, which can cause illness when ingested.

- Microorganisms include bacteria, yeast, mould, viruses and parasites.
- A microscope is used to view microorganisms.
- Not all microorganisms are hazardous. Some microorganisms are helpful, even necessary (e.g., the microbial culture in the cheese- or yogurt-making process). Some microorganisms are harmful but not hazardous (e.g., spoilage-causing microbes that spoil food and reduce the shelf life of a product).
- Some microorganisms can cause illness when eaten, such as Salmonella, Escherichia coli and Listeria monocytogenes.
- Some microorganisms produce harmful toxins, which can cause illness when eaten, such as Staphylococcus aureus and Clostridium botulinum. Cooking does not destroy all toxins.
- Microorganisms can be present anywhere (e.g., in air, water, raw materials, floors, walls, the food handler, dirty equipment). Most microorganisms require water, food, oxygen and favourable temperatures to grow. Food-processing facilities often provide a perfect environment for growth.

A **chemical hazard** is a chemical agent, which may cause injury or illness when eaten or inhaled. These agents are not supposed to be in the food. Examples include allergens, pesticides, cleaning chemical residues, antibiotics and toxins (e.g., histamines, paralytic shellfish poisoning, etc.).

A **physical hazard** is a material present in the food, which can cause injury to the consumer (e.g., metal, glass, wood, plastic, stone, bone, dust, packaging material or hair).

All of these hazards can be transferred through cross contamination. **Cross-contamination** is the physical movement or transfer of harmful microorganisms, allergens, chemical contaminants, or any foreign substances from one person, object, food, or place to another. Identifying cross-contamination points helps to ensure that potential hazards at cross-contamination points are considered in your food safety plan.

Cross-contamination can happen when:

- there is a crossover between raw and cooked products (a biological hazard);
- there is a crossover between allergenic products and non-allergenic products (a chemical hazard);
- inedible materials (waste) move through the production or packaging areas (a biological hazard); or
- employees move from one production area to other production areas (a biological or chemical hazard).

The following questions can help you to identify some of the potential cross-contamination points in your establishment:

- Is the same area used for storing raw and cooked products? If yes, then this is a potential biological hazard cross-contamination point.
- Is the same area or equipment used for processing or storing allergen- and non-allergen-containing products? If yes, then this is a potential chemical hazard cross-contamination point.
- Do the same employees handle raw and cooked products? If yes, then this is a potential biological hazard cross-contamination point.
- Do the same employees handle products with allergens and products without allergens? If yes, then this is a potential chemical hazard cross-contamination point.
- Is the food processing area also used for storing glass and other packaging materials? If yes, then this is a potential physical hazard cross-contamination point.

Step 1: Identifying hazards

Using the Product Description table, Incoming Materials table, and Process Flow that you completed in the Starting your Food Safety Plan stage, consider the potential hazards in your ingredients, the cross-contamination points and your process steps. Think about all of your processing activities, from when you receive incoming materials from your suppliers to when you ship your packaged products to your customers.

Incoming materials, cross-contamination points and process steps can be hazardous when:

- disease-causing microorganisms or toxins are present due to uncontrolled process steps or cross-contamination points; and
- there is a possibility of chemical or physical contamination.

For each step in your Process Flow, consider what can go wrong with the incoming materials, process steps, and cross-contamination points. Then think about what effects these hazards would have on your customers if they were not controlled. These are the potential hazards in the production of your product.

The following tools can assist you in identifying hazards in your establishment:

- Product or material specification sheet obtained from your suppliers.
- Sample food safety plans on the Ministry of Agriculture website: www.gov.bc.ca/seafoodlicensing. These plans may help you develop your own plan by providing examples of hazards and controls.
- Canadian Food Inspection Agency Reference Database for Hazard Identification:
    - http://active.inspection.gc.ca/rdhi-bdrid/english/rdhi-bdrid/introe.aspx?i=3 (Introduction);
    - http://active.inspection.gc.ca/rdhi-bdrid/english/rdhi-bdrid/hazdane.aspx?i=3 (Hazard Identification for Process Steps);
- Canadian Food Inspection Agency Generic HACCP Models:
    - www.inspection.gc.ca/food/safe-food-production-systems/haccp-generic-models-and-guidance documents/eng/1374992202076/1374992233926
- Internet searches for CFIA recalls related to your product:
    - http://www.inspection.gc.ca/about-the-cfia/newsroom/food-recall-warnings/eng/1299076382077/1299076493846
- US FDA Fish and Fishery Products Hazards and Controls Guidance & Bad Bug Book:
    - https://www.fda.gov/Food/GuidanceRegulation/GuidanceDocumentsRegulatoryInformation/Seafood/ucm2018426.htm
    - https://www.fda.gov/food/foodborneillnesscontaminants/causesofillnessbadbugbook/

Step 2: Identifying control measures

For each of the hazards you identified, you need to identify control measures that will prevent or eliminate the hazard, or reduce the hazard to an acceptable level. Note that:

- there may be more than one control measure for each hazard; and
- control measures can be process steps, standard operating procedures (SOPs) or prerequisite programs (see Appendix 3).

Table 4 below shows a completed Hazard Analysis and Control Measures table for the same seafood processor mentioned previously. A blank template of the Hazard Analysis and Control Measures table can be found in Appendix 2.

The first column of the table identifies the process step from your Process Flow. The second column of the table identifies the hazards at each process step. The third column lists the control measures for each hazard.

Table 4: Hazard Analysis and Control Measures – Cooked Crab Meat

Process Step Number	Biological, Chemical and Physical Hazards	Control Measures (can include: process steps, Standard Operating Procedures (SOPs), and Prerequisite Programs – see Appendix 3)
1. Receiving ingredient – live Dungeness crab	Biological: Potential contamination due to presence of, and growth of, pathogens (Coliforms, Salmonella, Listeria M., E.Coli). Chemical: Potential contamination due to presence of allergens, natural toxins, environmental chemical residues, and sanitation chemicals. Chemical: Potential contamination due to presence of natural toxins from harvesting crab in a contaminated area. Physical: Potential contamination due to presence of foreign material (such as dirt, bits of wood).	Product needs to be cooked before eating. Purchasing and Supplier (e.g., Letter of Guarantee that no dead crab will be shipped). Receiving, Transportation and Storage (e.g., checking products during receiving for dead/live crab). Allergen Control. Premises.
1. Receiving ingredient – salt (food-grade)	Biological: Potential contamination due to presence of pathogens at supplier level. Chemical: Potential contamination due to presence of allergens, chemical residues and sanitation chemicals at supplier level. Physical: Potential contamination due to presence of foreign materials at supplier level.	Use and purchase only food-grade salt. Purchasing and Supplier (e.g., Letter of Guarantee). Receiving, Transportation and Storage.

Process Step Number	Biological, Chemical and Physical Hazards	Control Measures (can include: process steps, Standard Operating Procedures (SOPs), and Prerequisite Programs – see Appendix 3)
1. Receiving Food Contact Processing Aid – water	Biological: Potential contamination due to presence of water borne pathogens (Coliforms, E.Coli, Fecal Coliform). Chemical: Potential contamination due to presence of chemical residues (such as chlorine, lead). Physical: Potential contamination due to presence of foreign material (such as dirt, sand, and tiny rocks).	Potable water from a reliable municipal system used for processing. Water sample is sent and tested by 3rd party accredited laboratory yearly.
1. Receiving Food Contact Processing Aid – ice	Biological: Potential contamination due to presence of water borne pathogens (Coliforms, E.Coli, Fecal Coliform). Chemical: Potential contamination due to presence of chemical residues (such as chlorine, lead). Physical: Potential contamination due to presence of foreign material (such as dirt, sand, and tiny rocks).	Ice used for chilling the crab meat is made from potable water from a reliable municipal system. Ice sample is sent and tested by 3rd party accredited laboratory yearly.
1. Receiving Food Contact Packaging Materials – 454g/1 lb plastic container with lid (food-grade)	Biological: Potential contamination due to presence of pathogens at supplier level. Chemical: Potential contamination due to presence of allergens, chemical residues and sanitation chemicals at supplier level. Physical: Potential contamination due to presence of foreign material (such as dirt, sand, and tiny rocks) at supplier level.	Use and purchase only food contact packaging material which is food-grade and approved by Health Canada. Purchasing and Supplier (e.g., Letter of Guarantee). Receiving, Transportation and Storage.
1. Receiving non-food contact packaging materials - ink, tape, plain label, cardboard boxes	None.	Any broken plastic container will not be used. Any broken plastic container found during final product storage will not be shipped to the customer. Therefore, the non-food contact packaging material should not be in contact with the product or be a source of contamination.
2. Sorting live crab only	Biological: Potential contamination due to presence of, and growth of, pathogens (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus aureus). Chemical: Potential contamination due to presence of cleaning/sanitizing chemicals. Physical: Potential contamination due to presence of foreign material (such as dirt, hair, bits of wood, plastic, glass).	Product needs to be cooked before eating and only live crab can be cooked/processed. Cleaning and Sanitation. Personal Hygiene and Training. Operational Controls (Crab Sorting SOP). Premises.

Process Step Number	Biological, Chemical and Physical Hazards	Control Measures (can include: process steps, Standard Operating Procedures (SOPs), and Prerequisite Programs – see Appendix 3)
3. Culling	Biological: Potential contamination due to presence of, and growth of, pathogens (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus aureus). Chemical: Potential contamination due to presence of cleaning/sanitizing chemicals. Physical: Potential contamination due to presence of foreign material (such as dirt, hair, bits of wood, plastic, glass).	Product needs to be cooked before eating and only live crab can be cooked/processed. Cleaning and Sanitation. Personal Hygiene and Training. Premises. Equipment, Calibration and Maintenance.
4. Cooking	Biological: Potential pathogen survival due to inadequate cooking temperature and time (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus aureus). Chemical: Potential contamination due to presence of cleaning/sanitizing chemicals. Physical: Potential contamination due to presence of foreign material (such as dirt, hair, bits of wood, plastic, glass).	Cooking time and internal temperature of crab. Potable water from a reliable municipal system used for processing. Cleaning and Sanitation. Personal Hygiene and Training. Equipment, Calibration and Maintenance. Premises.
5. Cooling (with running cold water or occasionally ice if needed)	Biological: Potential re-contamination due to presence of, and growth of, pathogens (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus aureus). Chemical: Potential contamination due to presence of cleaning/sanitizing chemicals. Physical: Potential contamination due to presence of foreign material (such as dirt, hair, bits of wood, plastic, glass).	Cooling time and internal temperature of crab. Potable water from a reliable municipal system used for processing. Ice used for chilling the crab meat is made from potable water. Cleaning and Sanitation. Personal Hygiene and Training. Equipment, Calibration and Maintenance. Premises.

Process Step Number	Biological, Chemical and Physical Hazards	Control Measures (can include: process steps, Standard Operating Procedures (SOPs), and Prerequisite Programs – see Appendix 3)
6. Peeling 7. Dipping in Brine 8. Rinsing with Water 9.Removing any Remaining Shells Note: these four steps were grouped into one row as the hazards and controls are the same for each of the four steps.	Biological: Potential contamination due to presence of, and growth of, pathogens (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus aureus). Chemical: Potential contamination due to presence of cleaning/sanitizing chemicals. Physical: Potential contamination due to presence of foreign material (such as dirt, hair, bits of wood, plastic, glass).	Crab Post-Cooling Processing SOP (e.g., Product is processed in a processing room at 8-9˚C. The time of peeling, dipping in brine, rinsing with water and removing any remaining shells until the product is transferred to refrigerated temperature storage is not more than 4 hours). Potable water from a reliable municipal system used for processing. Cleaning and Sanitation. Personal Hygiene and Training. Equipment, Calibration and Maintenance. Premises. Brine Preparation SOP.
10. Packaging/ Labelling/ Weighing Note: these related activities occur at the same time.	Biological: Potential contamination due to presence of, and growth of, pathogens (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus aureus). Chemical: Potential contamination due to presence of undeclared allergens, and cleaning/sanitizing chemicals. Physical: Potential contamination due to presence of foreign material (such as dirt, hair, plastic, glass, bits of wood).	Packaging SOP (e.g., No broken plastic containers used for packaging). Labelling SOP. Cleaning and Sanitation. Personal Hygiene and Training. Premises. Equipment, Calibration and Maintenance.
11. Storing - Refrigerated Temperature	Biological: Potential contamination due to presence of, and growth of, pathogens (Coliforms, Salmonella, Listeria M., E.Coli) because of improper refrigeration temperature during storage. Chemical: None. Physical: None.	Storage SOP (e.g., Product is packed inside 454g/1lb food-grade plastic container and stored under refrigeration temperature between 0˚C and 4˚C. Product found in a broken plastic container will be discarded.) Premises. Equipment, Calibration and Maintenance. Personal Hygiene and Training. Receiving, Transportation and Storage.

Process Step Number	Biological, Chemical and Physical Hazards	Control Measures (can include: process steps, Standard Operating Procedures (SOPs), and Prerequisite Programs – see Appendix 3)
12. Distributing/ Shipping	Biological: Potential contamination due to presence of, and growth of, pathogens (Coliforms, Salmonella, Listeria M., E.Coli because of improper refrigeration temperature during shipping. Chemical: None. Physical: None.	Distributing/Shipping SOP (e.g., Product is fully packaged and shipped under refrigerated temperature. Any product with broken packaging will not be distributed). Personal Hygiene and Training. Receiving, Transportation and Storage.

Completing Principle 1: Identifying Hazards

To identify your hazards and controls, look at your Process Flow, and use the Hazard Analysis and Controls Table Template from Appendix 2. Fill in the process steps in the first column. Determine the hazards for each process step, and enter them into the second column. Then list what you do to control the hazards in the third column. The example above can guide you.

It is important for the controls to be sufficient in preventing or eliminating the hazard, or reducing the hazard risk to an acceptable level. You will also need to determine if there are any hazards that cannot be controlled in your establishment. If a hazard that will make people ill cannot be controlled, then you must change your process or product form, to eliminate the hazard. If that is not possible, then you must change your process or product form, to reduce the hazard risk to an acceptable level.

You will need this information to help you identify Critical Control Points in HACCP Principle 2. **Although you have identified all your hazards, please do not yet complete the first column of your Critical Control Points Table found in Appendix 2. You will do this later.**

6. Principle 2: Identifying Critical Control Points

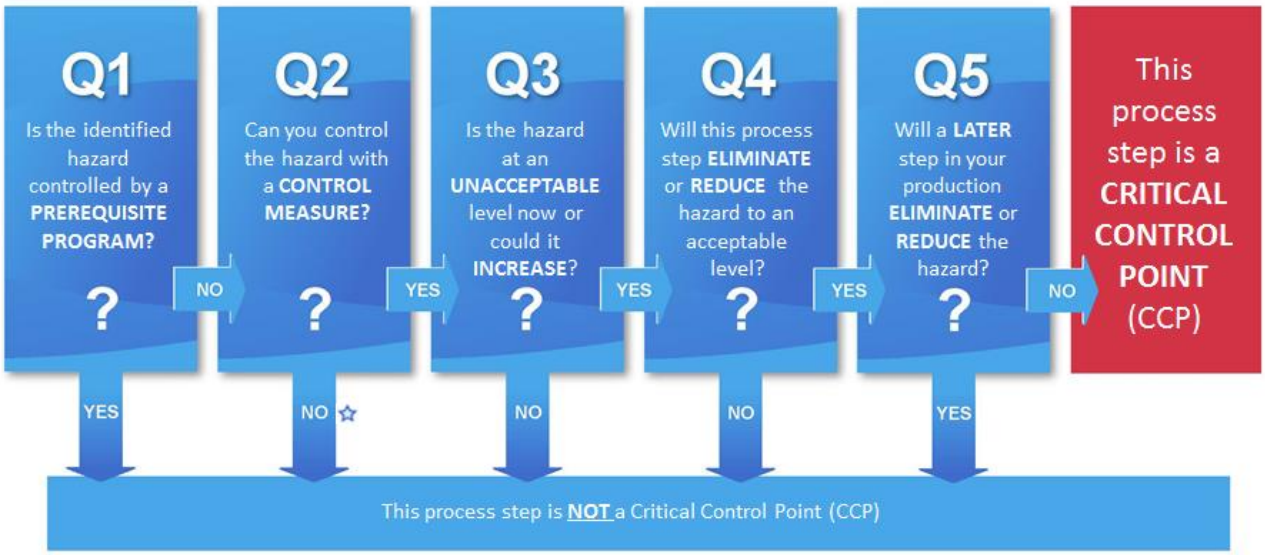
Now that you have identified your hazards and the controls for those hazards, you are ready to identify the Critical Control Points in your process.

Critical Control Points (CCPs) are the points in the production process where you can prevent or eliminate a hazard – or reduce the risk – by taking certain actions. CCPs are also the points in your process where, if you fail to prevent or eliminate a hazard, you will not be able to prevent or eliminate that hazard at a later stage.

For example, in many processes, cooking is a CCP. The control measure (heating to a specific temperature for a specific amount of time) makes sure that any pathogens (which are biological hazards) are killed. For more examples of CCPs, please see the Critical Control Point Table for cooked crab meat in Appendix 1.

Now you are ready to identify your CCPs, using a CCP Decision Tree.

CCP Decision Tree



☆ If the hazard can not be controlled by any control measure you should modify this process step, your production process, or your product.

The CCP Decision Tree will help you identify the CCPs in your own process. Use the CCP Decision Tree to find out which of your process steps (e.g., sorting, cooking, cooling) are CCPs.

Let us use a few examples of hazards in the previous cooked crab meat example to work through the CCP Decision Tree. You will need the Hazard Analysis and Control Measures – Cooked Crab Meat (Table 4) and the Process Flow – Cooked Crab Meat (Table 3 & Diagram 1) to work through the examples below. **You will need to go through the questions in the CCP Decision Tree for *each* hazard identified in *every* step in your process.**

Please note that for the purposes of these examples, only one hazard from each step has been selected.

Example from Process Step 1: Receiving Incoming Materials
Physical hazard: Contamination of foreign material (such as dirt, bits of wood)

Question 1: Is the identified hazard controlled by a prerequisite program?
Answer: Yes, it is controlled by prerequisite #3 (Receiving, Transportation and Storage – see Appendix 3).
Example: Purchasing and Supplier (e.g., Letter of Guarantee is required).
Example: Checking products during receiving is required.
As per the CCP Decision Tree, since the hazard is controlled by the operator's prerequisite program, this process step is NOT a CCP for this physical hazard.

Example from Process Step 4: Cooking
Biological hazard: Pathogen survival due to inadequate cooking temperature and time (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus aureus)

Question 1: Is the identified hazard controlled by a prerequisite program?
Answer: No. Go to Question 2 in the CCP Decision Tree.

Question 2: Can you control the hazard with a control measure?
Answer: Yes, the biological hazard can be controlled by establishing and measuring appropriate cooking temperature and time. Go to Question 3 in the CCP Decision Tree.

Question 3: Is the hazard at an unacceptable level now or could it increase?
Answer: Yes, it is potentially at an unacceptable level now or it could potentially increase, or both. Go to Question 4 in the CCP Decision Tree.

Question 4: Will this process step eliminate or reduce the hazard to an acceptable level? (Remember, you are checking to see if the cooking step controls the biological hazard of survival of pathogens in the cooked product.)
Answer: Yes. Go to question 5 in the CCP Decision Tree.

Question 5: Will a later step in your production eliminate or reduce the hazard to an acceptable level?
Answer: No, there is no later step in the process that would control the survival of pathogens. **This process step (cooking) is a CCP for this biological hazard.**

Example from Process Step 5: Cooling
Biological hazard: Re-contamination and growth of pathogen (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus aureus)

Question 1: Is the identified hazard controlled by a prerequisite program?
Answer: No. Go to Question 2 in the CCP Decision Tree.

Question 2: Can you control the hazard with a control measure?
Answer: Yes, the biological hazard can be controlled by establishing and measuring appropriate cooling temperature and time. Go to Question 3 in the CCP Decision Tree.

Question 3: Is the hazard at an unacceptable level now or could it increase?
Answer: Yes, it could increase to an unacceptable level. Go to Question 4 in the CCP Decision Tree.

Question 4: Will this process step eliminate or reduce the hazard to an acceptable level? (Remember, you are checking to see if the cooling step controls the biological hazard of re-contamination and growth of pathogen in cooked product.)
Answer: Yes. Go to question 5 in the CCP Decision Tree.

Question 5: Will a later step in your production eliminate or reduce the hazard to an acceptable level?
Answer: No, there is no later step in the process that would control the re-contamination and growth of pathogen due to inadequate cooling process. **This process step (cooling) is a CCP for this biological hazard.**

Example from Process Step 7: Dipping in brine
Chemical hazard: Contamination from cleaning/sanitizing chemicals

Question 1: Is the identified hazard controlled by a prerequisite program?
Answer: Yes, it is controlled by prerequisite #6 & 7 (Cleaning and Sanitation; Personal Hygiene and Training – see Appendix 3).
Example: Sanitation Plan (identification of all chemicals used and sanitation records are required).
Example: Personal Hygiene and Training is required.
As per the CCP Decision Tree, since the hazard is controlled by the operator's prerequisite programs, this process step is NOT a CCP for this chemical hazard.

For the cooked crab example, there are two CCPs: 1. cooking to control pathogens (see example from Process Step 4 above) and 2. cooling to control pathogens (see example from Process Step 5 above).

Once the CCPs are identified, the hazards and CCPs are then added to columns 1 and 2 in the Critical Control Points Table. For the cooked crab example, you can see how the hazards and the CCPs are entered in the Critical Control Points Table in Appendix 1.

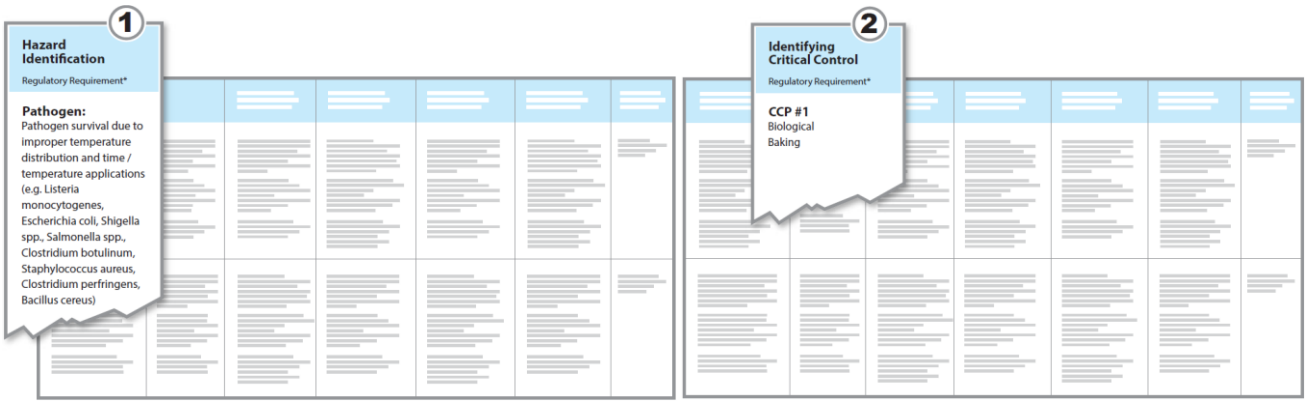
In the cooked crab example, the first hazard controlled by the first CCP is in column 1 and is:

Biological hazard: Pathogen survival due to inadequate cooking temperature and time (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus aureus)

The corresponding CCP controls the biological hazard and goes in the second column like this:

CCP #1 Cooking

Completing Principle 2: Identifying Critical Control Points



To identify your own CCPs for your food safety plan, use your Hazard Analysis and Controls table and go through the questions in the CCP Decision Tree for *each* hazard identified in *every* step in your process.

Once you have identified your CCPs, add the hazards that are controlled by CCPs to Column 1 of your Critical Control Points Table Template in Appendix 2. Then add the CCPs to column 2 of the table.

If your analysis, using the CCP Decision Tree, does not indicate any CCPs, you do not need to complete the Critical Control Points Table, and your food safety plan is complete.

7. Principle 3: Establishing Critical Limits

A **Critical Limit** is a standard that you must meet to ensure that a health hazard does not occur at a CCP.

For example, a Critical Limit at the cooking step would be cooking to a minimum specific internal temperature for a minimum amount of time.

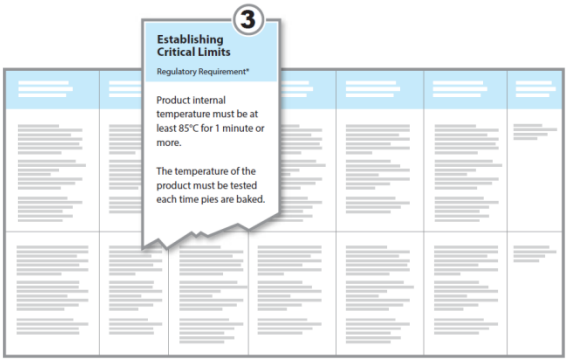
Critical Limits help distinguish safe products from potentially unsafe products.

- Critical Limits can be regulatory requirements or science-based industry standards.
- They often include measurements of temperature, time, moisture level, salt level, acidity (pH), and/or water availability (A_w).

Please see the examples of Critical Limits for cooked crab in the Critical Control Points Table in Appendix 1 and the other sample food safety plans on the Ministry of Agriculture website. Here is a summary of the Critical Limits for cooked crab:

> *1. Cooking is the first CCP in the Critical Control Points Table. It controls biological hazards. The Critical Limit is to cook the crab until the internal product temperature is 85˚C for at least 1 minute.*
>
> *2. Cooling is the second CCP in the Critical Control Points Table. It controls biological hazards. The Critical Limit is to cool the cooked crab to an internal temperature of 21˚C within 2 hours of cooking, and then further cooled to 4˚C within an additional 4 hours.*

Completing Principle 3: Establishing Critical Limits

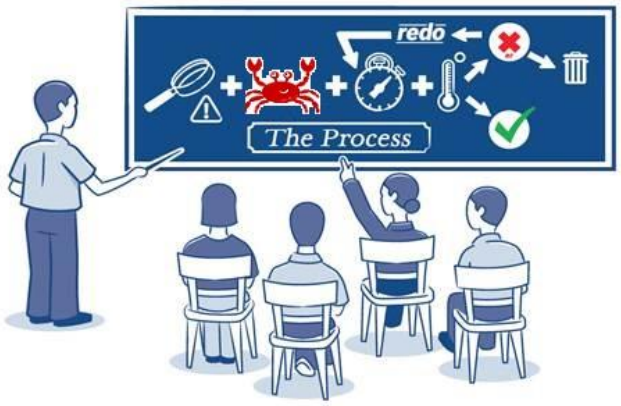


For your food safety plan, identify each Critical Limit in column 3, for each of your CCPs in column 2, of your Critical Control Points Table Template, located in Appendix 2.

8. Principle 4: Establishing Monitoring Procedures

Monitoring Procedures are observations or measurements used to assess whether a Critical Limit is being met.

For example, Monitoring Procedures for a cooking CCP may include taking the internal temperature of the product with a thermometer and using a stopwatch or timer to ensure the internal temperature holds for a specific amount of time.



Monitoring Procedures tell you who, what, how and when to check.
Monitoring Procedures must:

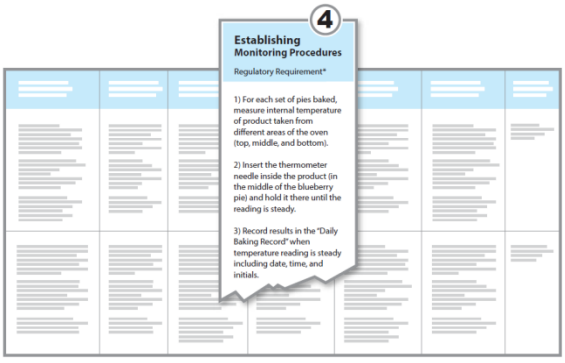
1. be practical and realistic;
2. allow you to identify, locate and control the unsafe product quickly and easily;
3. describe record-keeping requirements; and
4. be regularly repeated based on product type, amount and process.

The Monitoring Procedure for the first CCP (i.e., cooking) in the cooked crab example involves two steps. These are:

> *1. Production line employee measures the product's internal temperature, for every cooking batch, by inserting the thermometer into the centre of the product. The employee must wait until the thermometer reading is steady.*
> *2. Production line employee records results for each cooking batch on the "Cooking and Cooling Time and Temperature Record".*

For more examples of Monitoring Procedures, see the Critical Control Points Table in Appendix 1 and the sample food safety plans on the Ministry of Agriculture website.

Completing Principle 4: Establishing Monitoring Procedures



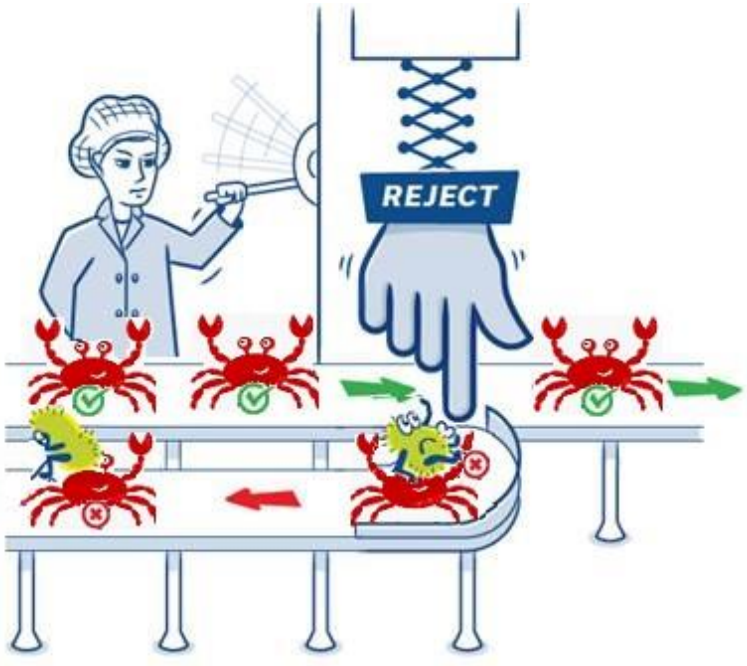
For your own food safety plan, identify your Monitoring Procedures in column 4, for your Critical Limits in column 3, of your Critical Control Points Table Template, located in Appendix 2.

If a piece of equipment needs to be calibrated for accuracy, then include calibration procedures, the name of the person trained in equipment calibration and the actual monitoring procedures (e.g., thermometer calibration, pH meter calibration).

9. Principle 5: Establishing Corrective Actions

A **Corrective Action** must be taken to correct your production process if monitoring shows that a Critical Limit has not been met (this is called "non-conformance"). In food production, it is better to correct problems during processing rather than discover a problem after the product is finished.

For example, look at cooking as a CCP. If the required internal temperature has not been reached, a Corrective Action could be to continue cooking the product until the required internal temperature is reached. If the cooking temperature cannot be reached, a Corrective Action could be to discard the product.



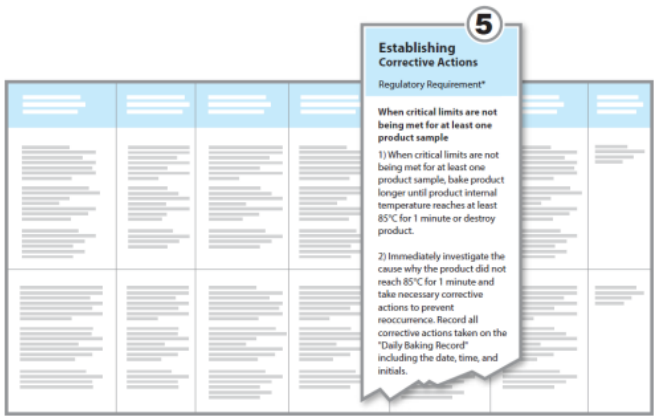
The Corrective Actions for the first CCP (i.e., cooking) in the cooked crab example, are:

When critical limits are not being met for one or more product samples:

1. *The product must be cooked longer until the product's internal temperature reaches at least 85°C for a minimum of 1 minute, or the product must be destroyed.*
2. *Immediately investigate the cause of the non-conformance and take necessary corrective actions to prevent reoccurrence.*
3. *Record all non-conformances and corrective actions taken on the "Cooking and Cooling Time and Temperature Record".*

For more examples of Corrective Actions, see the Critical Control Points Table in Appendix 1 and the sample food safety plans on the Ministry of Agriculture website.

Completing Principle 5: Establishing Corrective Actions

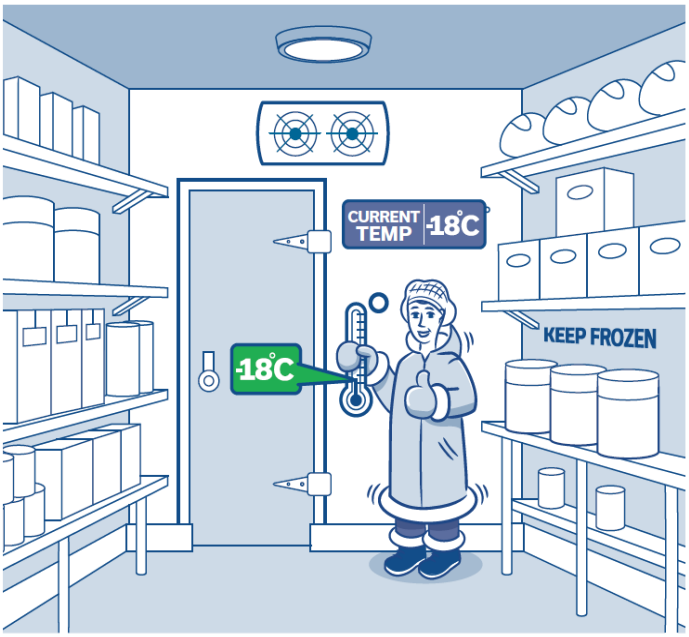


For your own food safety plan, identify your Corrective Actions in column 5, for your Monitoring Procedures in column 4, of your Critical Control Points Table Template, located in Appendix 2.

10. Principle 6: Establishing Verification Procedures

Verification is the use of procedures, tests, sampling and other evaluation tools (in addition to monitoring) to see if a control measure at a CCP is working correctly.

Verification also ensures the completion of Monitoring and Corrective Actions, according to your food safety plan. If possible, someone other than the person who does the Monitoring should do the Verification.



Verification Procedures tell you who, what, how and when to check. Verification makes sure:

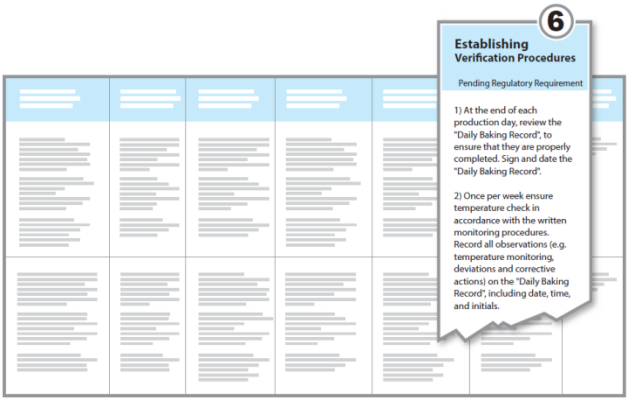
- Monitoring and Corrective Actions are recorded correctly;
- Monitoring and Corrective Actions are performed properly;
- employee training is effective; and
- the food safety plan is effective.

The Verification Procedures for the first CCP (i.e., cooking) in the cooked crab example, are:

1. *At the end of each production day, Production Supervisor reviews the "Cooking and Cooling Time and Temperature Record" to ensure that it has been properly completed.*
2. *Once per week, Production Supervisor ensures that the temperature check follows the written monitoring procedure.*
3. *If non-conformance is found during the verification procedure, Production Supervisor immediately investigates the cause of the non-conformance and takes necessary corrective actions to prevent reoccurrence.*
4. *Production Supervisor records all observations on the "Cooking and Cooling Time and Temperature Record".*

For more examples of Verification Procedures, see the Critical Control Points Table in Appendix 1 and the sample food safety plans on the Ministry of Agriculture website.

Completing Principle 6: Establishing Verification Procedures



For your own food safety plan, identify your Verification Procedures in column 6, for your Corrective Actions in column 5, of your Critical Control Points Table Template, located in Appendix 2.

11. Principle 7: Keeping Records

Records are used to verify that your food safety plan is being followed.

You should:

- keep records to demonstrate how well your food safety plan works;
- review your processing records to make sure your product is being made safely; and
- be able to produce these records if there are ever concerns regarding the safety of your product.

The Record for the first CCP (i.e., cooking) in the cooked crab example is:

Cooking and Cooling Time and Temperature Record

This record contains information about the cooking and cooling process. A sample Cooking and Cooling Time and Temperature Record for cooked crab can be found in Appendix 1.

For other examples of Records, please see the sample food safety plans on the Ministry of Agriculture website.

Completing Principle 7: Keeping Records

For your own food safety plan, identify the Records you need in column 7, for each of your CCPs in column 2, of your Critical Control Points Table Template, located in Appendix 2.

12. Your Completed Food Safety Plan

Have you completed your:

- Product Description table?
- Incoming Materials table?
- Process Flow?
- Hazard Analysis and Controls table?
- Critical Control Points table?

If so, then CONGRATULATIONS! You have completed your food safety plan!

Make sure you have also completed a sanitation plan as the Fish and Seafood Licensing Regulation requires such sanitation plans. If you have not written your own sanitation plan yet, please use the Sanitation Plan Workbook. It is available at: www.gov.bc.ca/seafoodlicensing

Appendix 1: Examples

Critical Control Points Table: Cooked Crab Meat

1. Identifying Hazards	2. Identifying Critical Control Points (CCPs)	3. Establishing Critical Limits	4. Establishing Monitoring Procedures (who, what, how and when)	5. Establishing Corrective Actions	6. Establishing Verification Procedures (who, what, how & when)	7. Keeping Records
Biological hazard: Potential pathogen survival due to inadequate cooking temperature and time (Coliforms, Salmonella, Listeria M., E.Coli, Staphylococcus *aureus*).	**CCP #1** **Cooking**	The internal temperature of the product must be at least 85°C (185˚F) for a minimum of 1 minute. **Source:** p. 422, Table A-3, Appendix 4, FDA Fish and Fishery Products Hazards and Controls Guidance – 4th edition	1. Production line employee measures the product's internal temperature for every cooking batch by inserting the thermometer into the centre of the product. Wait until the thermometer reading is steady. 2. Production line employee records result for each cooking batch on the "Cooking and Cooling Time and Temperature Record".	**When critical limits are not met for one or more product samples:** 1. The product must be cooked longer until the product's internal temperature reaches at least 85°C for a minimum of 1 minute, or the product must be destroyed. 2. Immediately investigate the cause of the non-conformance and take necessary corrective actions to prevent reoccurrence. 3. Record all non-conformances and corrective actions taken on the "Cooking and Cooling Time and Temperature Record".	1. At the end of each production day, Production Supervisor reviews the "Cooking and Cooling Time and Temperature Record" to ensure that it has been properly completed. 2. Once per week, Production Supervisor ensures that the temperature check follows the written monitoring procedure. 3. If non-conformance is found during the verification procedure, Production Supervisor immediately investigates the cause of the non-conformance and takes necessary corrective actions to prevent reoccurrence. 4. Production Supervisor records all observations on the "Cooking and Cooling Time and Temperature Record".	Cooking and Cooling Time and Temperature Record.

1. Identifying Hazards	2. Identifying Critical Control Points (CCPs)	3. Establishing Critical Limits	4. Establishing Monitoring Procedures (who, what, how and when)	5. Establishing Corrective Actions	6. Establishing Verification Procedures (who, what, how & when)	7. Keeping Records
Biological hazard: Potential re-contamination due to presence of, and growth of, pathogens (Coliforms, Salmonella, Listeria M., E. Coli, Staphylococcus aureus).	**CCP #2** **Cooling**	Product is cooled in running cold tap water (or ice if needed). The internal temperature of the product must be cooled down to 21˚C within 2 hours of cooking and then further cooled to 4˚C within an additional 4 hours. **Source:** p. 230, Chapter 12, FDA Fish and Fishery Products Hazards and Controls Guidance – 4th edition	1. Production line employee measures the product's internal temperature for every batch in 2 hours and 6 hours after the cooling process started. Wait until the thermometer reading is steady. 2. Production line employee records result for each cooling batch on the "Cooking and Cooling Time and Temperature Record".	**When critical limits are not met for one or more product samples:** 1. Segregate, hold the product and discard. 2. Immediately investigate the cause of the non-conformance and take necessary corrective actions to prevent reoccurrence. 3. Record all non-conformances and corrective actions taken on the "Cooking and Cooling Time and Temperature Record".	1. At the end of each production day, Production Supervisor reviews the "Cooking and Cooling Time and Temperature Record" to ensure that it has been properly completed. 2. Once per week, Production Supervisor ensures that the temperature check follows the written monitoring procedure. 3. If non-conformance is found during the verification procedure, Production Supervisor immediately investigates the cause of the non-conformance and takes necessary corrective actions to prevent reoccurrence. 4. Production Supervisor records all observations on the "Cooking and Cooling Time and Temperature Record".	Cooking and Cooling Time and Temperature Record.

Cooking and Cooling Time and Temperature Record – Cooked Crab Meat

For Critical Control Points #1 & #2

Cooking Process (CCP#1)							Cooling Process (CCP#2)								
Date	Purchase Order#	Live Check	Weight Prior to Cooking (lbs)	Cook Start Time	Cook End Time	Cooked Product Internal Temperature (˚C)	Product internal temperature after 2 hours (˚C)		Product internal temperature after 6 hours (˚C)		Weight of Product Produced (lbs)	Corrective Action	Employee initials	Verification initials and date	Verification Corrective Action
							Time	Temp (˚C)	Time	Temp (˚C)					
2 June '16	4433	Alive	50	10:00 AM	10:03 AM	87.4°C	12:00 PM	18.4 °C	4:00PM	2.2°C	30 x 1 lb	-	RH	2 June ' 16 AS	-
3 June '16	4434	Alive	50	10:00 AM	10:03 AM	88.2°C	12:00 PM	19.4 °C	4:00PM	6.2°C	None	Operator forgot to add ice in the cooling process. All crab meat was disposed due to product internal temperature not reaching below 4°C after 6 hours.	RH	3 June ' 16 AS	Supervisor retrained the operator regarding cooling procedures. Training record was kept for future reference.
6 June '16	4435	Alive	50	10:30 AM	10:33 AM	86.5°C	12:30 PM	17.2 °C	4:30PM	1.7°C	30 x 1 lb	-	RH	6 June ' 16 AS	-

Appendix 2: Templates

Copies of these templates can be found on the Ministry of Agriculture website at:
www.gov.bc.ca/seafoodlicensing

Product Description Template

Product Description	
1. What is your product name and weight/volume?	
2. What type of product is it (e.g., raw, ready-to-eat, ready-to-cook, or ready for further processing, farmed vs. wild, domestic vs. import, etc.)?	
3. What are your product's important food safety characteristics (e.g., acidity, A_w (water availability), salinity, etc.)?	
4. What allergens does your product contain?	
5. What restricted ingredients (preservatives, additives, etc.) does your product contain, and it what amounts (e.g., grams)	
6. What are your food processing steps (e.g., cooking, cooling, pasteurization, etc.)?	
7. How do you package your product (e.g., vacuum, modified atmosphere, etc.) and what packaging materials do you use?	
8. How do you store your product (e.g., keep refrigerated, keep frozen, keep dry) in your establishment and when you ship your product?	
9. What is the shelf-life of your product under proper storage conditions?	
10. How is the 'best before' date to be noted on your product?	
11. Who will consume your product (e.g., the general public, the elderly, the immunocompromised, infants)?	
12. How might the consumer mishandle your product, and what safety measures will prevent this?	
13. Where will the product be sold?	
14. What information is on your product label?	

Incoming Materials Template

Ingredients	
Food contact processing aid materials	
Food contact packaging materials	
Non-food contact packaging materials	
Chemicals (hand washing, sanitation and maintenance)	

Process Flow Template

Process Step Number	Process Step (e.g., washing, cooking, cooling)

Hazard Analysis and Control Measures Template

Process Steps	Biological, Chemical, and Physical Hazards	Measures that can be taken to control the hazards

Critical Control Points Table Template

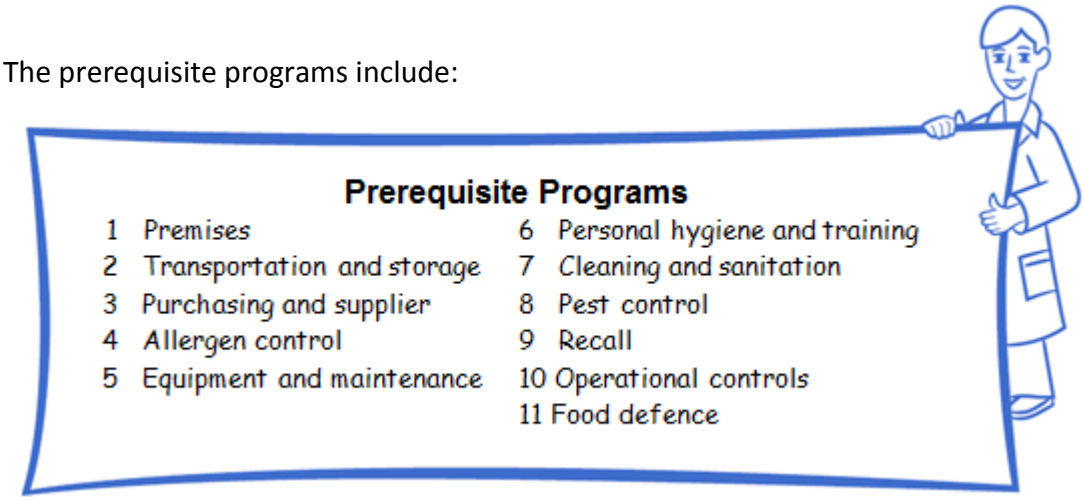
PRODUCT NAME:

1. Identifying Hazards	2. Identifying Critical Control Points	3. Establishing Critical Limits	4. Establishing Monitoring Procedures (who, what, how and when)	5. Establishing Corrective Actions	6. Establishing Verification Procedures (who, what, how and when)	7. Keeping Records

Appendix 3: HACCP Prerequisite Programs

There are 11 HACCP prerequisite programs that could apply to seafood processors. These 11 prerequisite programs are the conditions and activities that help you to create a clean environment and good manufacturing practices for your establishment. These programs will also help you to become even more aware of your surroundings and your processes as you write your food safety plan.

The prerequisite programs include:



1. Premises

Interior and exterior areas of the premises (or establishment) must be maintained and monitored to prevent contamination (biological, chemical or physical) of the food products.

- The establishment should be protected from outside contaminants, and surrounding roadways should be maintained regularly to minimize environmental hazards.
- Food-grade materials should be used wherever food is produced, stored, packaged, received or shipped; production and storage areas must have appropriate lighting; and lighting and glass windows should be protected with shatterproof coverings.
- The establishment should have appropriate heating, air conditioning and ventilation, and there should be adequate employee amenities and hand-washing stations.

2. Receiving, transportation and storage

All incoming materials, finished products and carriers should be inspected to make sure they are free from damage and tampering.

- Incoming materials should be labeled with the product name, ingredients, manufacturing company name, and lot number and/or best before date.
- Carriers must be constructed, maintained, cleaned, unloaded and loaded in a way that prevents contamination, damage or deterioration of the food product.
- Food safety requirements of the finished product must be met prior to shipping.
- Incoming materials and finished products must be stored under appropriate conditions. A FIFO (“first in, first out” or “first expired, first out”) rotation should be followed.

3. Purchasing and supplier

Incoming materials must be safe and of good quality. All fish must come from an approved source. Suppliers should provide:

- An ingredients specification sheet, a packaging material specification sheet; food and non-food chemical specification sheets, a material safety data sheet (MSDS), a food-grade material letter, and allergen information.
- A guarantee that its products comply with regulations and were produced, stored and transported according to good manufacturing practices.

4. Allergen control

There is no processing step to reduce or eliminate undeclared allergens in food products.

- Identify all allergens in incoming materials and finished products, and verify allergens through pre-operation inspections or allergen swabs.
- If your finished products contain different allergens, control for cross-contamination.

5. Equipment and maintenance

Equipment must meet specifications in the Fish and Seafood Licensing Regulation.

- Equipment, utensils and food contact surfaces must be suitable for their intended purpose, durable, easily cleaned and free from any noxious or toxic substance.
- Equipment, utensils and food contact surfaces must be accessible for cleaning, sanitizing, maintenance and inspection.
- Your establishment should have an equipment maintenance program, and an equipment and instrument calibration program.
- Your establishment should maintain a list of equipment that requires regular maintenance and/or calibration, develop a maintenance/calibration schedule and maintenance/calibration procedures, and keep maintenance/calibration records.
- Water and ice used in your establishment must be suitable for the intended purpose and of a quality that will prevent seafood from becoming unsafe food, compressed air should be monitored for microbial contamination, and food-grade gases must be used where required.

6. Personnel hygiene and training

Your personnel hygiene program should include:

- policies about clothing and accessories, eating and drinking on the establishment, and sanitation and health;
- a list of employees who should receive training; and
- appropriately timed training sessions (at start of employment, when changes are made to the program and at regular intervals) and records of personnel training.

7. Cleaning and sanitation

The cleaning and sanitation prerequisite program ensures all parts of the establishment and your equipment are cleaned and sanitized on a scheduled basis.

The cleaning and sanitation will be a part of your sanitation plan (not your food safety plan). A sanitation plan is required under the Fish and Seafood Licensing Regulation.

For information on how to write a sanitation plan, please see: www.gov.bc.ca/seafoodlicensing

8. Pest control

Pests (e.g., insects, rodents, birds) can contaminate food, ingredients, packaging materials and food contact surfaces. Your pest control program ensures the establishment is free from pests.

Pesticide use will be a part of your sanitation plan (not your food safety plan). A sanitation plan is required under the Fish and Seafood Licensing Regulation.

For information on how to write a sanitation plan, please see: www.gov.bc.ca/seafoodlicensing

9. Recall

Food recalls can be necessary when a food product has been identified as unsafe and must be removed from the market quickly.

- Food products must be labeled correctly to allow your customers to use the product safely and to make product recall possible.
- Your recall team should include individual(s) responsible for recall decisions, technical/quality assurance, production, government/agency communications, media communication, complaint investigation and customer relations.
- Performing mock recalls will help ensure your recall program works.

10. Operational controls

Operational control programs might include:

- quality control programs; and
- label creation and approval programs.

11. Food defence

A food defence program ensures your food products are protected from intentional contamination. This prerequisite program might include:

- securing the establishment, and inspecting procedures at receiving and shipping; and
- monitoring of employees, contractors and visitors.

Appendix 4: Details on Incoming Materials

A complete list of incoming materials (food and non-food) helps you to identify possible hazards and develop the controls to prevent, eliminate, or reduce the risk of them. If a hazard is not identified, food safety may be compromised.

Identifying your incoming materials:

- Review the product recipe/formula, the product label, the manufacturing process and the customer requirements.
- Think of a list of incoming materials by yourself or with your HACCP team.
- Collect incoming materials information from your supplier(s):

1. **Information on ingredients** can be found on the product specification sheet, allergen information, label, material safety data sheet (for food chemicals only) and preservative percentage.

2. **Information on food contact packaging materials** can be found on the material specification sheet, allergen information and food grade letter. Food contact packaging materials come into direct contact with the food (e.g., plastic bags, trays, cans, bottles, lids).

3. **Information on non-food contact packaging materials** can be found on the material specification sheet and allergen information. Non-food contact packaging materials do not come into direct contact with the food (e.g., corrugated boxes, labels, pallets).

4. **Information on food contact processing aids** can be found on the material specification sheet, allergen information and food grade letter. Food contact processing aids are substances or materials used in processing but not present in any significant amount in the finished product (e.g., enzymes used in juice extraction, some types of antimicrobials substances for use on meat).

5. **Information on chemicals** (for hand washing, cleaning and maintenance) can be found on the material safety data sheet, allergen information, food grade letter and labels.

Writing your list of incoming materials:

- Use the template in Appendix 2. List all the incoming materials you have identified individually. For example, if “spice” is an ingredient in your product, list all the spices you use separately (e.g., salt, dill, Cajun).

Walk through your establishment:

- Have you identified all your incoming materials?

Appendix 5: Considerations for Hazard Analysis Critical Control Point Principles 3, 4, 5 & 6

For each of your CCPs, your procedures for Principle 3 (Establishing Critical Limits), Principle 4 (Establishing Monitoring Procedures), Principle 5 (Establishing Corrective Actions) and Principle 6 (Establishing Verification Procedures) can include the steps below. You can write your Critical Limits, Monitoring Procedures, Corrective Action Procedures and Verification Procedures in any way that works best for you.

If you choose to write your Critical Limits, Monitoring Procedures, Corrective Action Procedures and Verification Procedures in a table, you can use the templates in Appendix 2.

Steps to take for establishing your Critical Limits, Monitoring Procedures, Corrective Action Procedures and Verification Procedures:

- **Analyzing Hazards**
  - Identify the type of hazard.
  - Describe the hazard to be controlled by the CCP.
  - You can copy this information from Principle #1: Analyzing Hazards.

- **Identifying CCPs**
  - Record the CCP number, if there is more than one. (i.e., the first CCP in the process step would be “1”, with the following points numbered sequentially).
  - If possible, identify where the CCP is located in your process.

- **Establishing Critical Limits**
  - Describe the acceptable Critical Limits for the CCP.
  - Describe the Critical Limit in terms of what is acceptable and what is unacceptable.

- **Responsible person(s)**
  - Record who will be responsible for any Monitoring, Corrective Action and Verification procedures.

- **Frequency**
  - Record when and how often monitoring needs to be performed.
  - Record the instrument calibration frequency, if applicable.

- **Establishing Monitoring Procedures**
    - Describe in detail your monitoring steps. For example:
        - List what will be inspected and/or measured (e.g., product temperature or water activity).
        - Define or describe the locations for your checks and/or measurements (e.g., top, middle, and bottom tray of your oven).
        - Indicate how the monitoring will take place (e.g., by inserting a thermometer into the product or by placing a metal test wand inside a loaf of bread).
        - Indicate whether you have instrument calibration procedures and, if so, how often instruments are monitored and/or calibrated.
        - Indicate where monitoring results are recorded.

- **Establishing Corrective Actions**
    - Analyze your Monitoring Procedures and identify all scenarios where/when your Critical Limits may not be met during normal operations.
    - For each identified scenario, describe in detail who is responsible for undertaking the Corrective Action Procedure and how this Corrective Action Procedure will be used to correct the scenario and meet the Critical Limit.

- **Establishing Verification Procedures**
    - Describe in detail your verification steps, including what kind of verification will be completed, what procedure will be followed, who is responsible for verification and where observations will be recorded.

Appendix 6: Glossary

Biological hazard: Any microorganism or toxin produced by a microorganism that can cause illness when eaten (e.g., bacteria, virus, yeast, mould, parasite).

Calibration: To determine, check or rectify the graduation of something (any instrument giving quantitative measurements).

Chemical hazard: Any chemical agent that may cause injury or illness when ingested or inhaled.

Control *(v)*: To take all necessary actions to ensure and maintain compliance with criteria in the Hazard Analysis Critical Control Point-based food safety plan.

Control *(n)*: The state in which correct procedures are being followed and Hazard Analysis Critical Control Point criteria are being met.

Control measure: Any action that can prevent or eliminate a food safety hazard or reduce the hazard to an acceptable level.

Corrective Action: Any action taken to regain control of a hazard when the results of the monitoring at the Critical Control Point show a loss of control, or any action taken to determine the effect of the hazard on a product or to prevent a reoccurrence of the problem.

Critical Control Point: A point, step or procedure during which a control measure can be applied. It is essential to prevent or eliminate a food safety hazard or reduce it to an acceptable level.

Critical Control Point decision tree: A sequence of questions that can be used to determine where and when in the food production process Critical Control Points are located.

Critical Limit: The maximum and/or minimum level at which a biological, chemical or physical factor must be controlled at a critical control point in order to prevent or eliminate a food safety hazard, or to reduce the occurrence of a food safety hazard to an acceptable level. A critical limit helps distinguish a safe food product from a potentially unsafe food product.

Cross-contamination: The physical movement, or transfer, of harmful micro-organisms, allergens, chemical contaminants or any foreign substances from one person, object, food or place to another.

Food safety plan (or Hazard Analysis Critical Control Point-based food safety plan): A document prepared in accordance with the principles of the Hazard Analysis Critical Control Point system to ensure control of hazards that affect food safety.

Hazard: A material or agent that, when present in the food or food processing establishment, can make food unsafe to eat and/or cause illness, injury or death. A hazard can be biological, chemical or physical.

Hazard analysis: The process of collecting and evaluating information on hazards and conditions leading to their presence, in order to decide which hazards are significant for food safety and should be addressed in the Hazard Analysis Critical Control Point-based food safety plan.

Hazard Analysis Critical Control Point: A science-based food safety system that identifies, evaluates and controls hazards that affect food safety.

Hazard Analysis Critical Control Point principles: Seven principles for the development of a Hazard Analysis Critical Control Point-based food safety plan.

Hazard Analysis Critical Control Point team: The person or group of people involved in the development, implementation, and maintenance of the Hazard Analysis Critical Control Point system in a food processing establishment.

Immunocompromised people: Individuals who may be at higher risk of food-borne and other illness due to their weakened immune-system responses.

Monitor *(v)*: To conduct a planned sequence of observations or measurements to determine if your prerequisite program is operating correctly and that Critical Control Points are being managed (controlled) to make sure food is safe.

Non-conformance: Failure to meet a Critical Limit.

Pathogen: A microorganism, such as a bacterium, which can cause illness in humans.

pH: A way of expressing the acidity or alkalinity of a substance. The measurement is expressed on a scale from 0 to 14, where 0 is extremely acidic, 7.0 is neutral, and 14 is extremely alkaline.

Physical hazard: Any material present in the food that can cause injury to the consumer.

ppm: Parts per million.

Processing aid: A substance or material used to assist in the processing of a food product, which may or may not be present in the finished product.

Salinity: A measure of the salt concentration in a particular substance.

SOP: Standard operating procedures.

Step: A point, procedure, operation or stage in the food processing chain, from primary production to final consumption.

Validation: The condition of having obtained evidence that a particular element of the Hazard Analysis Critical Control Point-based food safety plan is effective.

Verification: The application of procedures, tests, and other forms of evaluation, in addition to monitoring, in order to determine compliance with the Hazard Analysis Critical Control Point-based food safety plan.

Water activity (Aw): A measure of the availability of water in food for bacterial growth.

Appendix 7: References

Other Food Safety Plan Reference Documents

Canadian Food Inspection Agency. *Food Safety Enhancement Program Manual*.
www.inspection.gc.ca/food/safe-food-production-systems/food-safety- enhancement-program/program-manual/eng/1345821469459/1345821716482

Canadian Food Inspection Agency. *HACCP Generic Models and Commodity-Specific Food Safety Guidance Documents*.
www.inspection.gc.ca/food/safe-food-production-systems/haccp-generic-models-and-guidance-documents/eng/1374992202076/1374992233926

Other Reference Documents

Canadian Food Inspection Agency. *Reference Database for Hazard Identification*.
active.inspection.gc.ca/rdhi-bdrid/english/rdhi-bdrid/introe.aspx?i=1

CFIA Reference Hazard Data Base.
http://www.inspection.gc.ca/food/safe-food-production-systems/food-safety-enhancement-program/rdhi/eng/1384900871739/1384900941583

Health Canada. Lists of Permitted Food Additives.
www.hc-sc.gc.ca/fn-an/securit/addit/list/index-eng.php

Health Canada: Food Additives and Processing Aids.
http://www.hc-sc.gc.ca/fn-an/securit/addit/index-eng.php