

Hazard Analysis and Critical Control Point (HACCP) Toolkit



Table of Contents

Foreward	3
Acknowledgements	3
Glossary	4
Hazard Analysis Critical Control Points - 7 Principles.....	6
Chapter 1 - History	13
Chapter 2 - Pathogens.....	16
Chapter 3 - ROP (Reduced Oxygen Packaging).....	19
Chapter 4 - Acidification	32
Chapter 5 - Curing.....	42
Chapter 6 - Custom Processing of Animals	52
Chapter 7 - Molluscan Shellfish Tanks	57
Chapter 8 - Writing Your HACCP Plan.....	62
Introduction.....	65
The Flow Chart.....	69
The Hazard Analysis.....	70
The HACCP Plan.....	73
The SOPs.....	76
The Training Plan.....	89
The Records.....	91
Additional Links	95

Foreword

This toolkit was developed in an effort to educate food service operators on special processes as they relate to food preparation in commercial kitchens. Special processing is characterized as a method of preparing a food that has demonstrated an increased risk of foodborne illness. Under Oregon Food Sanitation Rules, special processes may require a Hazard Analysis and Critical Control Points (HACCP) plan, variance, or both. A HACCP plan is a prescriptive, comprehensive document that describes the process of making a food product from initial ingredients to end consumption. It is intended to ensure the safe receiving, handling, preparation and holding of the food, in an effort to deliver a safe product to the end consumer.

A variance is an approved deviation from an established set of rules. In this context, “variance” refers to an approved deviation from the Oregon Food Sanitation Rules.

Because special processes demonstrate an increased risk of food borne illness, it is the responsibility of the operator to prove that their methodology will result in the production of safe food for the end consumer. We hope that this toolkit will assist your facility in maintaining compliance pertaining to special processing, and if necessary, in the development of a HACCP plan and/or variance application.

Acknowledgements

This toolkit was made possible by funding from FDA grant “Practical Application of HACCP for Regulators, Operators, and the Community.”

Some content in this toolkit was adapted from “Validation and Verification of HACCP Plans in Retail Food Establishments” developed by the Massachusetts Department of Health Food Protection Program, and made possible by an FDA Innovative Food Safety Grant.

Some process documents have been replicated from the United States Department of Agriculture.

Glossary

A_w: Water activity which is a measure of the free moisture in a food item, is the quotient of the water vapor pressure of the substance divided by the vapor pressure of pure water at the same temperature, as is indicated by the symbol A_w. Water activity is an expression of moisture content in a food item.

CFR: Code of Federal Regulations. This refers to federal laws.

Comminute: Reduced to small particles. In this manual comminuted typically refers to ground and mixed products, such as ground beef.

Critical Control Point: A point or procedure in a specific food process flow where loss of control may result in an unacceptable health risk.

Critical Limit: The maximum or minimum value to which a physical, biological or chemical parameter must be controlled by Critical Control Points to minimize the risk that the identified food safety hazard may occur.

Cross-Contamination: The transfer of harmful substances or disease causing microorganisms to food by hands, food contact surfaces, equipment and utensils that touch raw foods and then touch ready to eat foods without proper sanitation.

Deviation: Failure to meet an established critical limit for a critical control point (CCP).

FDA: The United States Food and Drug Administration. The FDA is responsible for protecting and promoting public health through the regulation of foods.

Hazard: A biological, physical, or chemical property that may cause a food to become unsafe for consumption.

Molluscan Shellfish: Refers to any edible species of fresh or frozen oysters, clams, mussels, scallops or edible portions thereof-except when the scallop product consists only of the shucked adductor muscle.

pH: Is the symbol for the negative logarithm of the hydrogen ion concentration. In simple terms, pH is a measure of the acidity or alkalinity of a solution.

Pathogen: A microorganism (bacteria, fungi, parasite or virus) that causes disease in humans.

Record: A document of monitoring observations or verification activities.

Risk: The likelihood that an adverse health effect will occur within a population as a result of a hazard in a food.

Sanitization: The application of cumulative heat or chemicals on cleaned food contact surfaces that, when evaluated for efficacy, is sufficient to yield a reduction of five logs, which is equal to a 99.999% reduction of representative disease microorganisms of public health importance. In simple terms, sanitization refers to the killing of germs.

Shellfish Control Authority: State, federal, foreign, tribal or other government entity legally responsible for administering a program that includes certification of molluscan shellfish harvesters and dealers for interstate commerce.

SOP: Standard Operating Procedure. This is a written method of controlling a practice in accordance with predetermined specifications to obtain a desired outcome. An example of a SOP would be methodically washing hands and applying gloves before touching foods, to ensure that the potential of contamination is minimized.

Spore: An environmentally resistant, dormant form of certain bacterial cells that is very resistant to heat and a variety of chemical and radiation treatments that are lethal to vegetative (non-spore) cells.

USDA: The United States Department of Agriculture. The USDA is responsible for developing and executing federal policy on farming, forestry and food.

Variance: A written document issued by the regulatory authority that authorizes a modification or waiver of one or more requirements of the FDA Food Code if, in the opinion of the regulatory authority, a health hazard or nuisance will not result from the modification or waiver.

Vegetative Cell: A bacterial cell which is capable of actively growing. Some bacteria can transition from a vegetative cell to a spore form under the right conditions.

Hazard Analysis Critical Control Points – 7 Principles

Principle 1- Conduct a Hazard Analysis

It is necessary to identify hazards to prevent individuals from becoming sick or hurt. Hazards are safety risks that can be biological, chemical or physical. We describe the nature of these risks and provide some examples below.

Biological

A biological foodborne illness happens when germs such as bacteria, viruses, or parasites are found in food that is eaten. These types of germs can cause food poisoning. Food poisoning can make a person sick. Some symptoms of food poisoning include vomiting, diarrhea, fever, and stomach pain. These symptoms can occur from mishandling foods during harvesting, transport, preparation or serving. You can take steps to help reduce the risk of foodborne illness.

Bacteria: If foods are not stored properly, bacteria can grow. Some bacteria can form spores (a type of protective shielding) which can be harder to kill than bacteria alone. Spores can also make people sick. Depending on the type of bacteria eaten, symptoms can be different. Below is a list of some common types of bacteria that can be found in foods.

Salmonella: Foods: Undercooked chicken and eggs
Symptoms: Stomach pain, diarrhea, chills, nausea, vomiting, and fever

E.coli: Foods: Undercooked beef, improperly washed produce
Symptoms: Severe cramping, diarrhea, and possible kidney failure

Staphylococcus: Foods: Contamination of ready to eat foods prepared without proper hand washing
Symptoms: Nausea, vomiting, diarrhea, and cold sweats

Viruses: Another type of germ that can make people sick are viruses. In the beginning of a viral illness, a person may not show any symptoms and may not know they are sick. This makes it easy to pass germs on to food. To prevent this from happening, foodservice workers should practice good hand washing habits after coughing, sneezing, or using the bathroom. It's also important that you don't work when you are sick. The following are examples of viruses that can contaminate food.

Norovirus: Germs can be passed on to any type of food or surface if hands are not washed properly or if employees work when they are sick. Norovirus is very contagious
Symptoms: Nausea, vomiting, diarrhea

Hepatitis A: Germs can be passed on to any type of food or surface if hands are not washed properly or if employees work when they are sick. Hepatitis A is very contagious
Symptoms: Fever, nausea, vomiting, fatigue, cramping and jaundice (yellowing of the skin and eyes)

Parasites: A parasite is a tiny organism that can be found in foods. It is also found in foods that have been contaminated with human or animal waste. In order to kill parasites, foods must be cooked at a high temperature or frozen for an extended period of time.
Foods: Fish, meat, and raw vegetables
Symptoms: Diarrhea, stomach pain, nausea, and weight loss

Chemical

Chemicals added to food, or that naturally occur on their own in foods can be a hazard if large amounts are present. Histamines in fish are an example of naturally occurring chemicals in food. For example, when curing meats, adding too many salts containing nitrates or nitrites can become toxic. A cleaning chemical coming into contact with food can also pose a serious health risk.

Physical

Physical hazards may include materials such as, glass, wood, stones and metal fragments. They can also include insulation, bone, plastic, and personal items such as jewelry. For instance, if you are wearing jewelry while preparing foods, it could come off and fall into the food. To prevent this type of physical hazard from happening, it's best to remove any jewelry while preparing foods.

The hazard analysis requires two steps:

Step 1: Identify the hazard

For each hazard, your HACCP team will create a list of possible food safety concerns. The focus should be in hazard areas where there is a high potential for a biological, chemical, or physical hazard to occur. Consider the following to help you identify hazards:

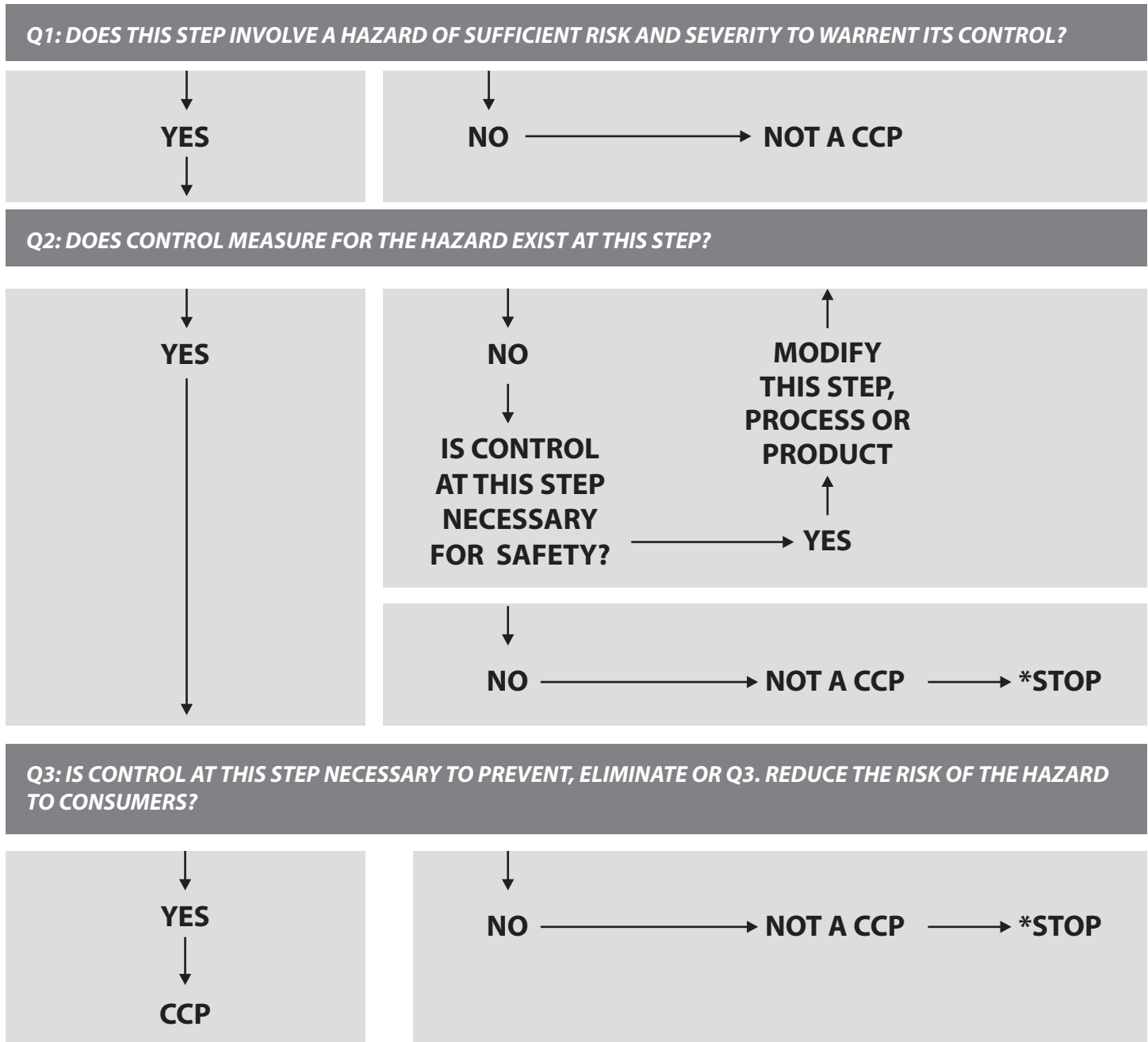
- What are the ingredients for each food product?
Create a list of each ingredient.
- What is the process for each step?
Describe how you prepare the food.
- How is the food item stored and transported?
Identify storage and transport of food item(s) in a temperature controlled setting as needed, safe handling procedures.
- What is the last step in the preparation process?
Describe the final step in preparing the specific food.
- What is the intended use of the final product?
Consider if the item is Ready-To-Eat (RTE), meaning foods that are intended to be eaten in their current form without going through any additional cooking process. Also consider if the intended consumer is a vulnerable population. This includes children, pregnant women, older adults, or individuals with a weakened immune system.

Step 2: Assess the hazard

Once you identify the hazard, your HACCP team should evaluate each one and determine what can be done to eliminate the hazard or bring risk down to an acceptable level.

Principle 2- Determine the Critical Control Points (CCPs)

A critical control point (CCP) is a step in the production process of a HACCP plan where a hazard is likely to occur, and where a control can be applied to eliminate or effectively minimize the risk of occurrence. Use the CCP identification tree (see below) as a tool to determine if a step is a critical control point.



(*) Proceed to the next identified hazard in the described process.

(**) Acceptable and unacceptable levels need to be defined within the overall objectives in identifying the CCPs of HACCP plan.

When deciding whether a step in the process should be a critical control point, consider the following:

- Is there a way to avoid the hazard?
- Is there a way to remove the hazard?
- Is there a way to reduce the hazard to an acceptable level?

Once you have identified the CCPs, move to principle 3.

Principle 3- Establish Critical Limits

A critical limit helps maintain food safety by establishing an acceptable threshold of control for a given point in the preparation process of a food product.

Let's look at homemade bacon as an example. Bacon can be prepared in many ways, so the following are examples of critical limits that could be used at various points in preparation.

Temperature

To kill bacteria found in raw foods, a certain temperature must be reached for a period of time.

- Cook bacon until it reaches a temperature of 145 F for at least 15 seconds (this is the required cook temperature for whole muscle pork).

Physical dimensions

When preparing foods, cut foods in equal size for even cooking.

- Cut each bacon piece ½ inch thick for even temperature distribution when cooking.

Water activity

Bacteria need moisture to grow. When there is a high level of water in a food, bacteria has a better chance of growing in amounts that can become harmful. Bacteria need at least 0.91aw to grow.

Preservatives

Chemicals may be added to help extend a product's shelf life by inhibiting the growth of bacteria or other pathogens.

- Nitrates/nitrites can be added in proper amounts to extend the shelf life of bacon.

You can use outside information to make sure your critical limits are correct. This information can be from:

Regulatory standards and guidelines

Reference local food codes

Literature surveys

Current standard operating procedures or processes already in place or other research

Experimental results

Lab testing, such as testing final product pH

Expert information

Expert information obtained from a process authority

Principle 4—Establish Monitoring Procedures

No process is perfect and deviations will happen. You must continuously observe hazard areas and document in writing when deviations in process occur. This can be done by monitoring.

Monitoring can help in three ways:

- 1) Keep track of processes, and identify problems early
- 2) Alert if a CCP is not staying within its critical limit
- 3) Provide written records for future reference

The person responsible for monitoring must:

- Be well trained in their area of responsibility
- Understand how important monitoring is and write down all necessary information
- Know how to handle deviations and corrective actions when they occur
- Date and sign all monitoring records

Monitoring might include:

- Visual observations
- Measurement of temperature
- Time
- pH
- Moisture level
- Review of monitoring equipment, such as refrigeration temperatures

Principle 5—Establish Corrective Actions

The person most familiar with the HACCP plan should manage and correct critical limit control problems.

This person will:

- Find out what is causing the problem and correct it
- Determine proper action to be taken with the affected food product
- Document action taken to correct the problem

In the HACCP plan, the corrective actions should:

- Show what happens when a deviation occurs
- Show who handles deviations and corrective actions
- Provide a written record of corrective actions taken

Principle 6—Establish Verification Procedures

Verification procedures are activities other than monitoring, that ensure that your HACCP plan is effective and is functioning properly. These activities include review of the initial plan, periodic maintenance of the plan, and verification of regular documentation. This is necessary to make sure your plan and process remain safe and effective.

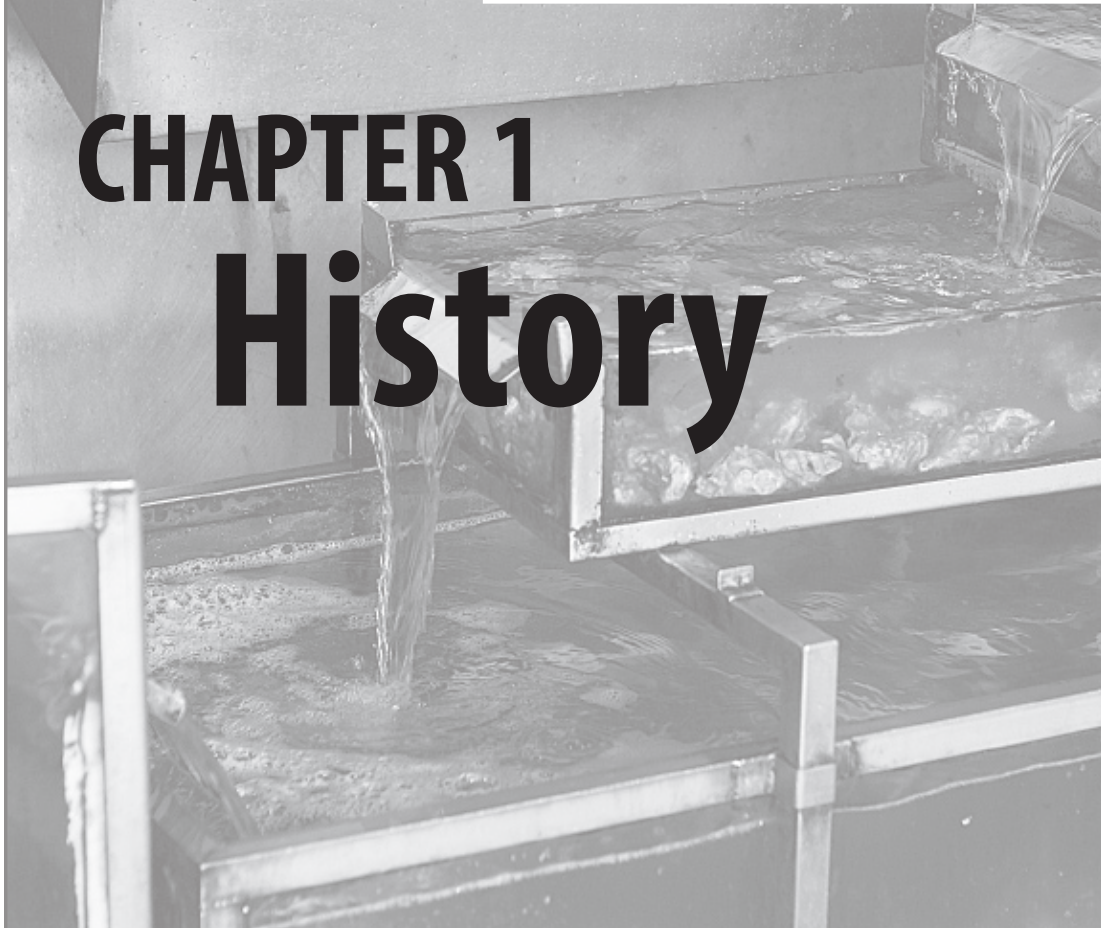
Principle 7—Establish record-keeping and documentation procedures

Your documentation does not need to be complex, but must be effective. Examples of record keeping might include cooling logs, refrigeration logs, thermometer calibration logs and staff training.



CHAPTER 1

History



History of HACCP

The development of Hazard Analysis and Critical Control Points (HACCP) concepts began in the early 60's as a result of a need to ensure a safe food supply to astronauts. Foodborne illness during space travel had the potential of manifesting into a serious condition, as there is limited capacity of medical care. Considering the cost, coordination and effort required for space travel, potentially compromising a mission or the safety of other astronauts due to foodborne illness was unacceptable. To address this, the National Aeronautics and Space Administration (NASA) and the United States Army Laboratories partnered with private industry to develop a means of ensuring that food products sent into space would be safe for consumption and have minimal risk of containing harmful pathogens.

Before the development of HACCP principles, efforts to ensure food safety in the space program included identifying critical limits of pathogens and other harmful adulterants in food products. The testing sought to identify items of concern including bacterial hazards such as salmonella, toxin hazards such as Clostridium botulinum, and physical hazards such as foreign objects. Initially labs were tasked with testing individual lots of food products intended for space consumption, after they were produced. Recognizing that a more upstream approach to hazard control was needed to minimize the risk of pathogen contamination before the final stages of product development, NASA decided to implement control methods currently used for in-house manufacturing processes for engineering management of spacecraft. This approach, which included analyzing and setting guidelines for crucial stages of manufacture, was already being used in the production process of space travel components. These stages were known as "critical control points". This collaboration between government and industry would be the founding point for the standardization of HACCP principles in commercial food product production.

Due to their experience and involvement in the NASA food program, the FDA approached the Pillsbury Company to develop a training process on commercial food production and the importance of integrating Critical Control Points (CCP's) and Good Manufacturing Processes (GMP's) into the process.

Pillsbury, in conjunction with a few other firms, began to develop a comprehensive training process. By 1975, the HACCP principles were completed and proactive food manufacturing firms began to voluntarily use the framework, which included principles of analysis, identification of CCP's, monitoring, and critical limits.

HACCP Toolkit

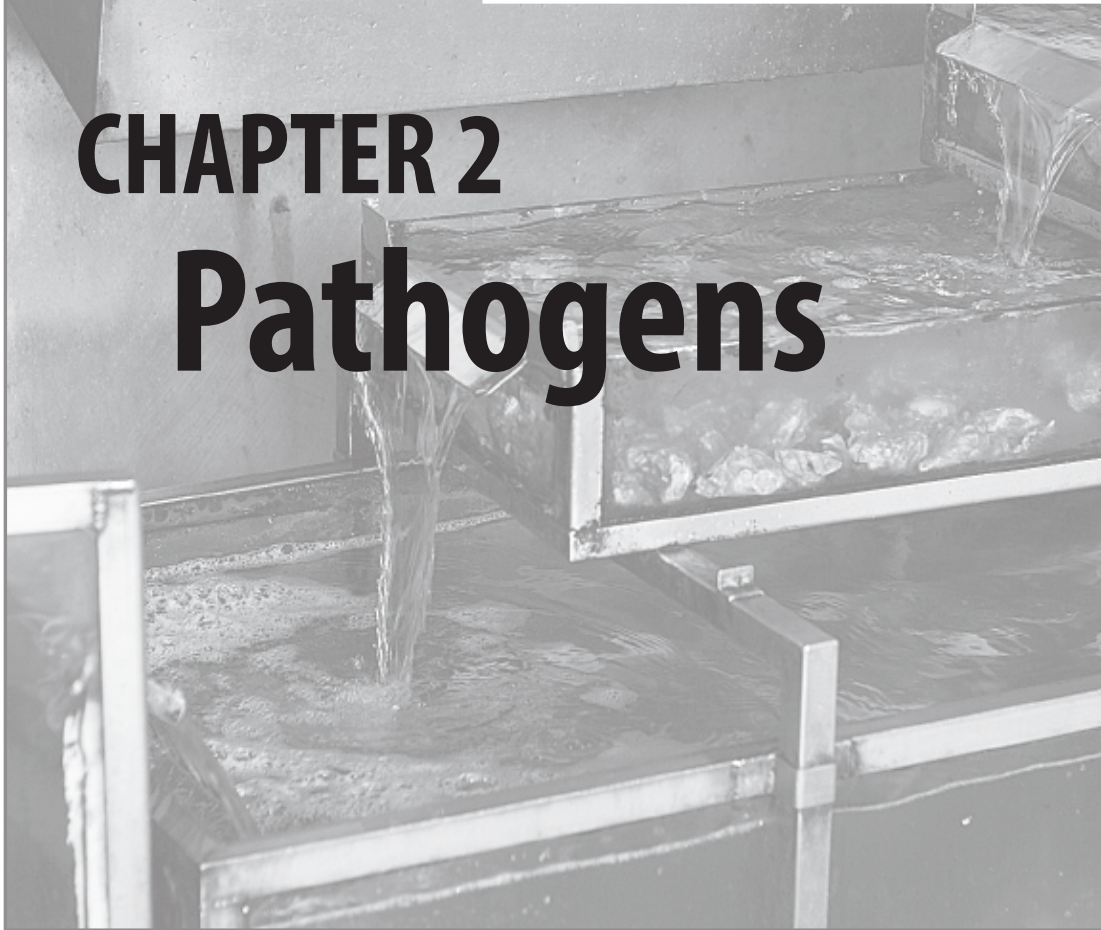
HACCP and GMP processes were integrated into the International Organization for Standardization (ISO) 22000, which specifies the requirements for a food production safety management system. This action helped to standardize safe production processes internationally, thereby strengthening the safety of the global food supply and trade system.

Currently, a HACCP based production system is mandated for commercial meat and poultry manufacturers/processors, juice manufacturers/processors and seafood manufacturers/processors. It's also required in the National School Lunch Program (NSLP) to help ensure safe food for school children. It is voluntary for other commercial food industry, but due to its success in assuring food safety it's been voluntarily adopted by many firms.



CHAPTER 2

Pathogens



The Food Safety Hazards

Food safety hazards are biological, physical or chemical properties that could cause food to be unsafe and make people sick. One of your goals as a restaurant operator is to keep foods safe by preventing, controlling, reducing or eliminating these hazards. If you are special processing a food, you are engaging in an activity deemed to carry a higher risk of food borne illness. A HACCP Plan shows that you are aware of food safety hazards, and know how to address them to reduce or eliminate the risk of illness by the consumer.

Biological hazards account for the majority of the hazards we are worried about. They are categorized into viruses, bacteria or parasites. Bacteria can be further categorized into non-spore forming and spore forming. Spore forming refers to the bacteria's ability to create a protective cell, which can make them more resistant to destruction by environmental factors such as heat, cold or acidity. On the next page is a list of common bacteria and viruses and what you need to know about them.

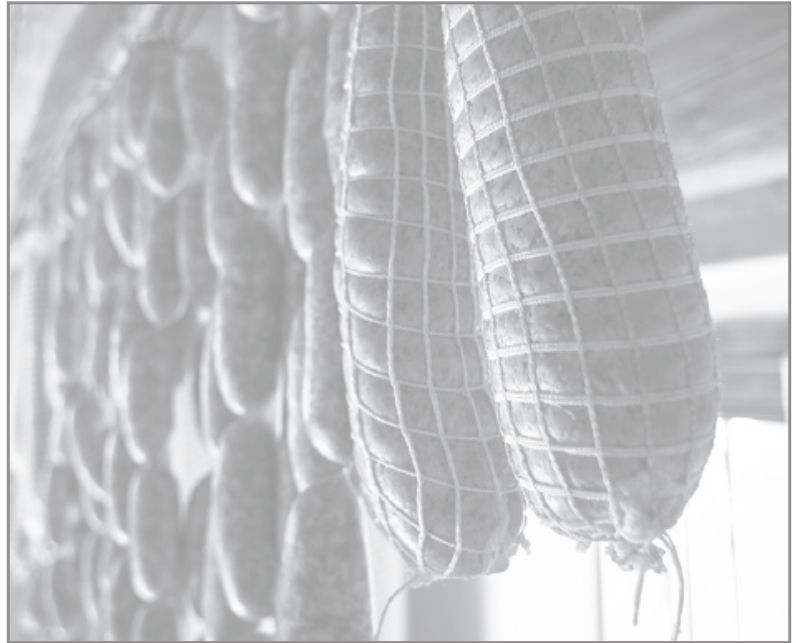
Refer to the chart on the next page for assistance in writing your Hazard Analysis. The bacterium *Clostridium botulinum* and *Listeria monocytogenes* will be your main biological hazards you need to control when conducting ROP. *Clostridium botulinum*, *Listeria monocytogenes*, *Salmonella*, *E coli*, *C perfringens*, *Campylobacter*, *Staphylococcus* and *Yersinia enterocolitica* will be pathogens of concern for cured meats. The biological hazards may vary at different operational steps in the process of production.

Chemical hazards account for a relatively low risk. For example, if you are engaging in Reduced Oxygen Packaging, Cook/Chill or Sous Vide, a primary chemical concern would be that the bag you are using is food grade- meaning that foods can be heated and stored in them safely. Many plastics are not made to be heated, and can leech chemicals during a cooking process. It is important to check with the manufacturer to ensure the bag you use is appropriate for your process. Other chemical concerns could be allergens, preservatives, cleaners or sanitizers.

Physical hazards are not as common. They could include metal, glass or bone in the food ingredients. In a processing plant a metal detector would be used to scan food items after packaging.

HACCP Toolkit

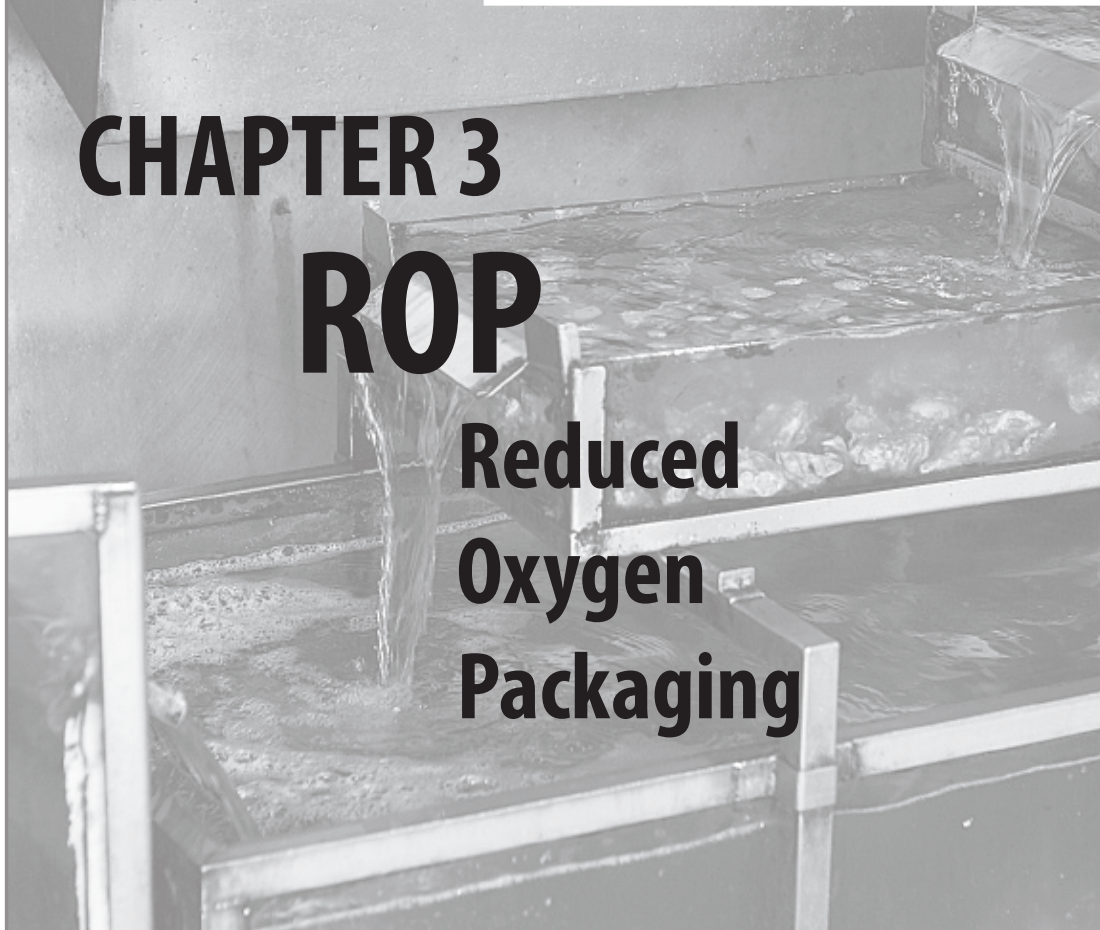
Pathogen	Categorization	Min. Water Activity (a _w)	Min. pH	Oxygen Requirement
Bacillus Cereus	Sporeforming bacteria "toxin producer"	.93	4.9	aerobe
Campylobacter jejuni	Non-sporeforming bacteria	.987	4.9	micro- aerophilic*
Clostridium botulinum, all types	Sporeforming bacteria "toxin producer"	93 (A&B) .97 (E" on fish)	4.6	anaerobe**
Clostridium perfringens	Sporeforming bacteria	.94	5.5 – 5.8	anaerobe**
Escherichia coli	Vegetative Non-sporeforming bacteria	.95	4.4	facultative anaerobe***
Listeria monocytogenes	Non-sporeforming bacteria	.92	4.4	facultative anaerobe***
Norovirus	Virus			
Salmonella	Non-sporeforming bacteria	.94	4.2	facultative anaerobe***
Shigella spp.	Non-sporeforming bacteria	.97	4.9	facultative anaerobe***
Staphylococcus aureus-toxin	Vegetative bacteria "toxin producer"	.88	4.6	facultative anaerobe***
Vibrio vulnificus		.96	5	facultative anaerobe***
Yersinia enterocolitica	bacteria	.945	4.2	facultative anaerobe***
*requires limited levels of oxygen ** requires the absence of oxygen ***grows with or without oxygen				



CHAPTER 3

ROP

Reduced
Oxygen
Packaging



Reduced Oxygen Packaging (ROP)

There are many advantages of extending the shelf life for food items and with advances in ROP technology the equipment cost has significantly decreased over the years. This allows even small food service operations to purchase commercial equipment to vacuum seal products on-site. ROP can significantly slow down or prevent growth of spoilage organisms such as pseudomonas, yeasts and molds. These three organisms are responsible for texture changes, odors, slime and off-taste. ROP requirements are listed out in section 3-502.12 of the Oregon Food Sanitation Rules. Potentially hazardous foods (PHF) that are vacuum sealed may require a HACCP Plan and may also require a variance from the Oregon Health Agency (OHA). A vacuum sealed environment is lacking oxygen- it's that oxygen deficient environment that helps extend the shelf life of the food item. Most pathogenic (disease causing) bacteria that are concerns in food are aerobic, meaning that they thrive in oxygen rich environments. There are two major anaerobic (meaning that they thrive in the absence of oxygen) organisms of concern and those two are spelled out under the Variance Requirement section 3-502.11 (D), *Clostridium botulinum* and *Listeria monocytogenes*. These anaerobic organisms are the pathogens of concern when engaging in ROP.

Foods that cannot support bacterial growth (non-potentially hazardous foods) are not an issue for *C. botulinum* or *L. monocytogenes* proliferation. Foods that can support growth must have control measures or barriers put in place. Foods must be held at or below 41 degrees F and meet one or more of the following criteria;

- 1) Has a Water Activity (aw) of 0.91 or less,
- 2) Has a pH of 4.6 or less,
- 3) Is a meat or poultry product cured at a food processing plant regulated by the USDA using substances specified in 9 Code of Federal Regulations 424.21, use of food ingredients and sources of radiation, and is received in an intact package, or
- 4) Is a food with a high level of competing organisms such as raw meat, raw poultry or raw vegetables.

If your food falls within one or more of these parameters you will need a HACCP plan but might not need a variance. Your plan must include not just the barriers utilized, but also labeling requirements, operational procedures, using commercial grade equipment, identification of segregated work areas and a training program.

Labeling

Foods must be conspicuously labeled with a date and time that the item was vacuum sealed. These foods must be held at or below 41 degrees F and can be stored for a maximum of 14 days. Foods that are held frozen at or below 32 degrees F can be stored for an unlimited amount of time.

Standard Operating Procedures (SOPs)

Standard Operating Procedures, or commonly referred to as SOPs, would include a bare hand contact prohibition, designated work areas for ROP, barriers or other methods to reduce cross contamination, restricting equipment access to trained personnel, and describing cleaning and sanitizing of food contact surfaces, to name a few.

Staff Training

A training program for designated staff that are responsible for ROP is required and must be in writing as part of the HACCP plan. The training program should ensure that staff involved understand the concepts required for safe operation, equipment used, facilities, and the HACCP plan.

If foods are to be packaged and then cooked such as sous vide, or cooked and then packaged i.e. cook-chill, Oregon Food Sanitation Rules 3-502.12 (D) outlines the additional requirements for a HACCP plan. Also, verify that bags used for one of these two processes are designed for their intended use. As part of the record retention requirement, you must keep bag documentation from the manufacturer on-site for review.

That portion of the HACCP plan must include section (D)(2) (a) through (h), as referenced below.

(D) Except as specified under ¶ (C) of this section, a food establishment that packages food using a cook-chill or sous vide

process shall:

(1) Implement a HACCP plan that contains the information as specified under ¶ 8-201.14(D); Pf

(2) Ensure the food is:

(a) Prepared and consumed on the premises, or prepared and consumed off the premises but within the same business entity with no distribution or sale of the packaged product to another business entity or the consumer, Pf

HACCP Toolkit

- (b) Cooked to heat all parts of the food to a temperature and for a time as specified under § 3-401.11, P
 - (c) Protected from contamination before and after cooking as specified under Parts 3-3 and 3-4, P
 - (d) Placed in a package with an oxygen barrier and sealed before cooking, or placed in a package and sealed immediately after cooking and before reaching a temperature below 57°C (135°F), P
 - (e) Cooled to 5°C (41°F) in the sealed package or bag as specified under § 3-501.14 and subsequently: P
 - (i) Cooled to 1°C (34°F) within 48 hours of reaching 5°C (41°F) and held at that temperature until consumed or discarded within 30 days after the date of packaging;P
 - (ii) Cooled to 1°C (34°F) within 48 hours of reaching 5°C (41°F), removed from refrigeration equipment that maintains a 1°C (34°F) food temperature and then held at 5°C (41°F) or less for no more than 72 hours, at which time the food must be consumed or discarded; P
 - (iii) Cooled to 3°C (38°F) or less within 24 hours of reaching 5°C (41°F) and held there for no more than 72 hours from packaging, at which time the food must be consumed or discarded; P or
 - (iv) Held frozen with no shelf life restriction while frozen until consumed or used. P
 - (f) Held in a refrigeration unit that is equipped with an electronic system that continuously monitors time and temperature and is visually examined for proper operation twice daily, Pf
 - (g) If transported off-site to a satellite location of the same business entity, equipped with verifiable electronic monitoring devices to ensure that times and temperatures are monitored during transportation, Pf and
 - (h) Labeled with the product name and the date packaged;Pf and
- (3) Maintain the records required to confirm that cooling and cold holding refrigeration time/temperature parameters are required as part of the HACCP plan and:
- (a) Make such records available to the regulatory authority upon request, Pf and
 - (b) Hold such records for at least 6 months; Pf and
- (4) Implement written operational procedures as specified under Subparagraph (B)(5) of this section and a training program as specified under Subparagraph (B)(6) of this section.Pf

Per FDA all fish being ROP'd MUST be frozen before, during and after packaging. Retail food service operations are not allowed to vacuum seal fresh fish.

Record retention must include documentation to confirm cooling time/temperature parameters and cold holding of the refrigeration unit used for holding ROP'd products. These records must be available upon request and retained for at least six months.

There are two other types of ROP that are associated with larger production facilities, but are not really appropriate for a food service operation. Controlled Oxygen Packaging (CAP) is defined as the vacuum sealing of a product in a modified atmosphere followed by maintaining control of that atmosphere. Modified Atmosphere Packaging (MAP) is a process that utilizes a gas, usually nitrogen or carbon dioxide, flushing and sealing of the product changing the atmosphere, thereby greatly reducing the oxygen content.

Cheese

A food service operation that packages cheese utilizing a ROP method must:

- 1) Limit the cheese packaged to those that are commercially manufactured in a food processing plant with no ingredients added at the food service operation and is limited to hard cheese (21 CFR 133.150), pasteurized process cheese (21 CFR 133.169) or semi soft cheeses (21 CFR 133.187)
- 2) Have a HACCP plan that identifies the food, maintained at or below 41 degrees F has operational procedures and documented training program
- 3) Labels the cheese with a "use by" date that does not exceed 30 days from the packaging or the original manufacturer's "sell by" or "use by" date, whichever occurs first; and
- 4) Discard the ROP'd cheese if it is not sold for off-premises consumption or consumed in house within 30 calendar days of its packaging

HACCP Toolkit

The following is a list of cheeses that identifies hard and semi-soft varieties. This list is provided as an example, and may not be comprehensive.

Asadero	Parmesan	Edam
Abertam	Pecorino	Fontina
Appenzeller	Queso Anejo	Gorgonzola (blue veined)
Asiago medium or old	Queso Chihuahua	Gouda
Bra	Queso de Prensa	Havarti
Cheddar	Romanello	Konigskase
Christalinna	Romano	Limburger
Colby	Reggiano	Milano
Cotija Anejo	Sapsago	Manchego
Cotija	Sassenage (blue veined)	Monterey
Coon	Stilton (blue veined)	Muenster
Derby	Swiss	Oka
Emmentaler	Tignard (blue veined)	Port du Salut
English Dairy	Vize	Provolone
Gex (blue veined)	Wensleydale (blue veined)	Queso de Bola
Gloucester	Asiago soft	Queso de la Tierra
Gjetost	Battelmatt	Robbiole
Gruyere	Bellelay (blue veined)	Roquefort (blue veined)
Herve	Blue	Samsoe
Lapland	Brick	Tilsiter
Lorraine	Camosum	Trappist
Oaxaca	Chantelle	

Source: FDA 2009 Food Code Annex

Reduced Oxygen Packaging (ROP)

No HACCP Plan or Variance Required

**Sous Vide, Cook/
chill, Vacuum
packaged
Held sealed
< 48 hours, if:**

1. Product is ROP'd prior to or after cooking, cooling or reheating
2. Product labeled with time and date placed in bag
3. Product removed from bag within 48 hours of bag being sealed
4. Product stored at or below 41°F
5. Raw fish is frozen before, during, and after bagging (recommend breaking seal when thawing)

County Approval of HACCP Plan Required

**Sous Vide,
Cook/chill,
Held sealed
48-72 hours**

If operator has continuous electronic monitoring for their refrigeration units, otherwise OHA variance required

**Vacuum packaged
Held for 2-14 days
at 41°F or less**

1. Raw beef, pork, poultry
2. Raw vegetables
3. Raw fish that is FROZEN before, during and after bagging (recommend breaking seal when thawing)

**Vacuum packaged
Held frozen**

Raw beef, pork, poultry, fish and vegetables that are held frozen can be stored frozen indefinitely

State Variance Required

**Sous Vide,
Cook/chill,
Held sealed
48-72 hours**

If operator does NOT have continuous electronic monitoring for their refrigeration units

Vacuum packaged

**All other cooked
products held
sealed for > 48
hours**

Hazard Analysis of Critical Control Points (HACCP) Guidance for Operators Requesting a Variance or Submitting a HACCP Plan in accordance with Chapter 8-201.14

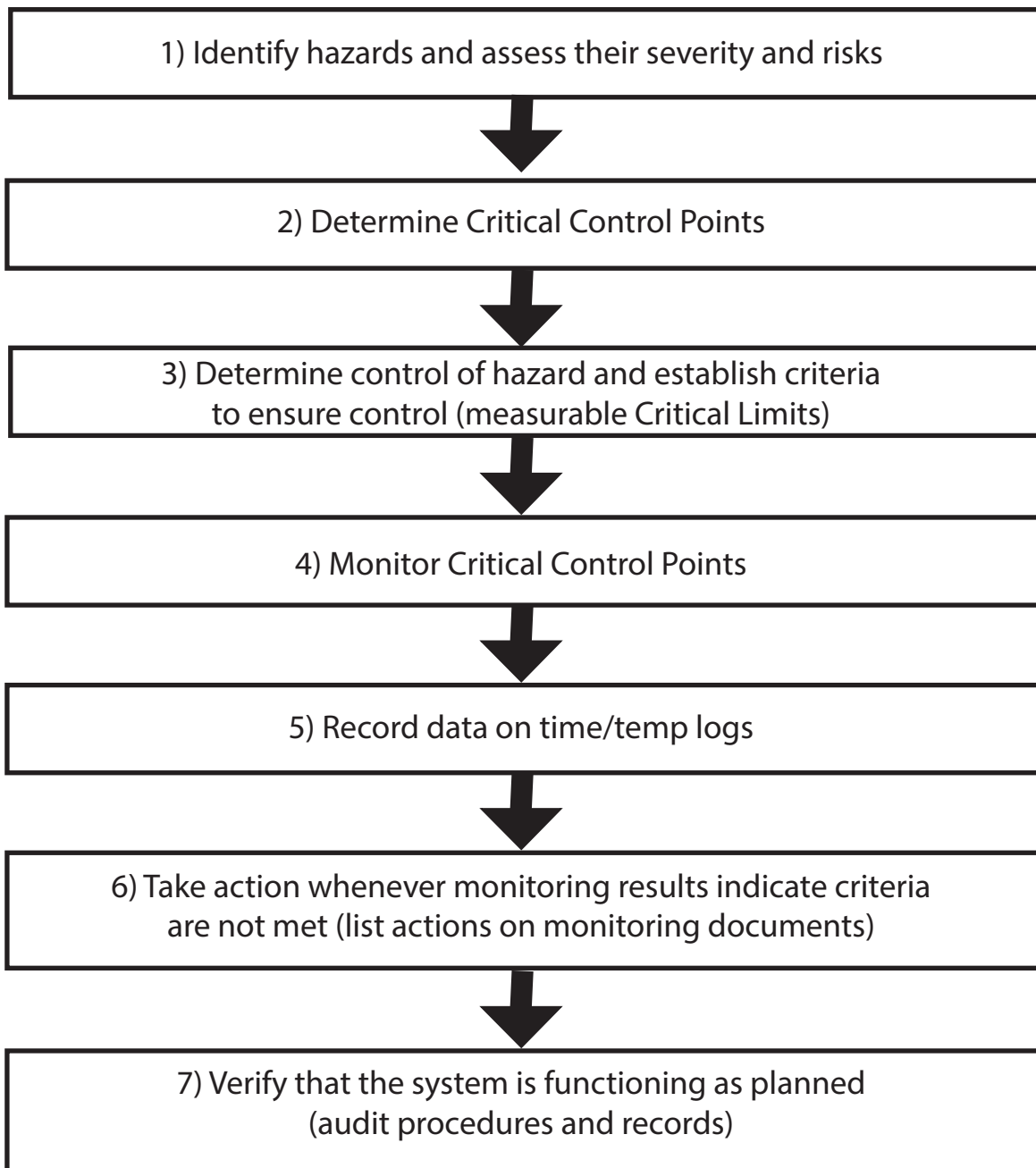
This outlines the expectations for what will be submitted with each Variance application. While it is the facility's responsibility to put their plan together, there are many resources available in the form of classes or private contractors. On the back of this form are the seven steps for creating a HACCP plan and more examples and information can be found in the document, "Managing Food Safety: A Manual for the Voluntary Use of HACCP Principles for Operators of Food Service and Retail Establishments" which is online at: <http://www.fda.gov/downloads/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/UCM077957.pdf>.

Each HACCP plan must include:

- A categorization of the types of potentially hazardous foods subject to the HACCP plan requirements, such as the types of raw meats being packaged under reduced oxygen packaging or different foods being cooked using the sous vide method.
- A flow diagram for each specific food or category type identifying each critical control point and including:
 - o Ingredients, materials, and equipment used in the preparation of that food, and;
 - o Formulations or recipes that delineate methods and procedural control measures that address the food safety concerns involved;
- Employee and supervisory training plan that addresses the FOOD safety issues of concern;
- A statement of standard operating procedures for the plan under consideration that clearly identifies:
 - o Each critical control point,
 - o The critical limits for each critical control point,
 - o The method and frequency for monitoring and controlling each critical control point by the food employee designated by the Person In Charge (PIC),
 - o The method and frequency for the PIC to routinely verify that the food employee is following standard operating procedures and monitoring critical control points,
 - o The action to be taken by the PIC if the critical limits for each critical control point are not met, and
 - o What records will be maintained by the PIC to demonstrate that the HACCP plan is properly operated and managed; and

Any additional scientific data or other information to support that food safety is not compromised by the proposal.

Hazard Analysis of Critical Control Points (HACCP) Flow Chart



Documents needed when submitting a HACCP Plan for Special Processing to Multnomah County:

Please refer to the Oregon Food Sanitation Rules Sections 3-502.11 Variance Requirement, 3-502.12 Reduced Oxygen Packaging Without a Variance, Criteria, 8-201.13 When a HACCP Plan is Required, and 8-201.14 Contents of a HACCP Plan.

HACCP stands for Hazard Analysis Critical Control Points. HACCP is a proactive, scientifically proven, food safety program. The HACCP Plan is a written document that details how you plan to keep your (Special Processed) foods safe for your customers. The HACCP Plan contains a number of Sections. Each section will provide information or charts that demonstrate your ability to ensure safe food production. Below is a list of Sections, information, or charts that are required in your HACCP Plan when you submit it to Multnomah County Environmental Health Department for review and approval.

Section 1 – The Introduction

- A statement with the Company/Restaurants information: location, chain, single operation,
- A description of your food service and customer base
- A summary of who is writing the HACCP Plan and their job function and experience
- A description of the product
- A list of the ingredients and a recipe name for the product(s)
- A list of the equipment used and description of designated area where ROP will occur

Section 2 – The Flow Chart

- A chart that documents the flow of the food product through your facility from Receiving to Serving to the customer, identifying the steps that are Critical Control Points

Section 3 – The Hazard Analysis

- A chart that documents the operational steps food will go through in your facility,
- The potential hazards; biological, chemical, physical
- Answering whether the hazards are significant in your facility
- Justification for that answer
- Listing the control measures that can be applied to prevent the significant hazards
- Answering whether this step will be considered a Critical Control Point

Section 4 – The HACCP Plan

- A chart documenting each critical control point, the hazards, the critical limits, the monitoring procedures, the corrective actions, verification, and the records used.

Section 5 – The SOP's

- ❑ Identified Standard Operating Procedures that apply to your food product - **Required** 1) No Bare Hand Contact with Ready to Eat foods, 2) Designated and segregated work area, 3) Cleaning and sanitizing ROP areas, 4) Employee training, **Highly Recommended** – 1) Labeling and sample of your labels, 2) Refrigeration Data logger 3) How you will conduct record keeping, 5) Proper Hand Washing, **Also** - How to Cook food product, How to Calibrate A Probe Food thermometer, etc
- ❑ Some SOP's can be downloaded at this web site: <http://sop.nfsmi.org/HACCPBasedSOPs.php>

Section 6 – The Training Program

- ❑ A written program that outlines the training food employees and managers receive in order to perform the special processing tasks.
- ❑ A chart documenting the employee name, the training received, the date and time of the training, and initialed by the employee and trainer.

Section 7 – The Records

- ❑ Examples of the Records/Charts that will be used in the HACCP Plan are Thermometer Calibration, Refrigeration/Freezer Daily Temperatures, Receiving Charts, Final Cook/Cool Time/Temperatures, Hot Holding Foods Times/Temperatures, etc

❑ **Extra Requirement for Sous Vide/Cook-Chill Reduced Oxygen Packaging** – A Specification sheet with make and model number of the electronic system that will continuously monitor times and temperatures in the refrigeration unit that holds these products. Include in the HACCP Plan when you will visually monitor the temperatures of the refrigeration unit twice daily.

Link to the current 2012 Oregon Food Sanitation Rules <http://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Documents/foodsantiationrulesweb.pdf>

Links to the Fact Sheets provided by the Oregon Health Authority on the Sept. 4, 2012 Revised 2012 Oregon Food Sanitation Rules affecting Special Processing and HACCP Plans:

<http://public.health.oregon.gov/Partners/foodsafetycounty/Documents/FactSheet2ROP.pdf>

<http://public.health.oregon.gov/Partners/foodsafetycounty/Documents/FactSheet4SousVide.pdf>

<http://public.health.oregon.gov/Partners/foodsafetycounty/Documents/FactSheet3Variance.pdf>

Link to FDA HACCP Plan Guidance:

<http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/default.htm>

If your HACCP Plan has been approved you will be notified and receive a Letter of Approval from Multnomah County. Please retain this approval letter in your on-site restaurant records.

Hazard Analysis Critical Control Points (HACCP) Plan Review Application

Date _____ Facility Number _____

Establishment Name _____

Establishment Address _____

Establishment Phone Number _____

Owner Name _____

HACCP Plan Contact _____

HACCP Plan Contact Phone Number _____

HACCP Plan Contact Email Address _____

Do you have an approved HACCP Plan or have you submitted a HACCP Plan for this special processing in another county/state? _____

Special Process (one per application):

- Cook/chill Sous Vide Vacuum Packaging Vacuum Packaging Fish
 Vacuum Packaging Cheese

Required in your HACCP Plan:

- Introduction
 Flow Chart
 Hazard Analysis
 HACCP Plan
 SOP's
 Training Program
 Examples of records/charts
 If Plan is for Sous Vide or Cook/Chill ROP -

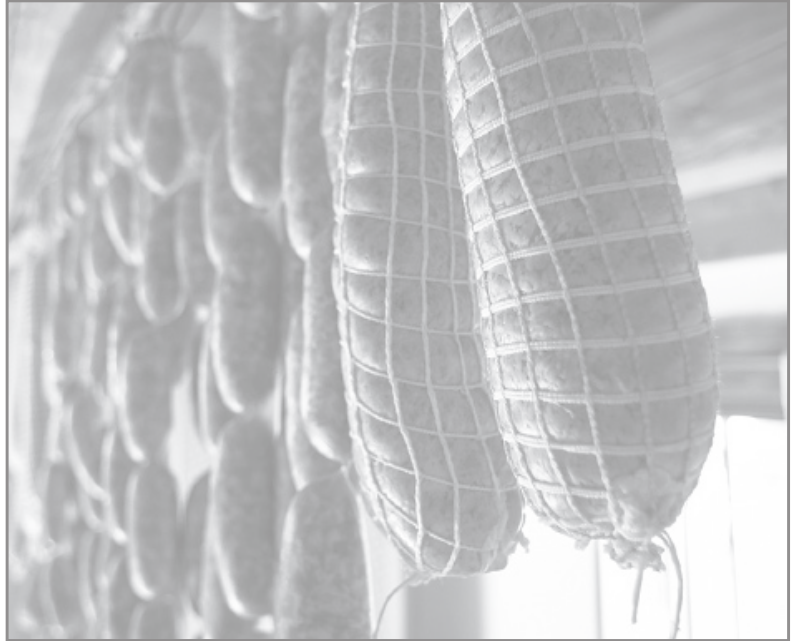
make/model of electronic system to continuously monitor refrigeration unit time and temperatures

All the information submitted is accurate and true to the best of my knowledge. I understand that failure to comply with this plan and/or falsification of monitoring, corrective action or verification records, once approved, may result in a suspension of conducting the stated special processing. I understand that I must keep all records for at least 6 months and they shall be available for review to Multnomah County during routine semi-annual inspections.

Owner Signature _____

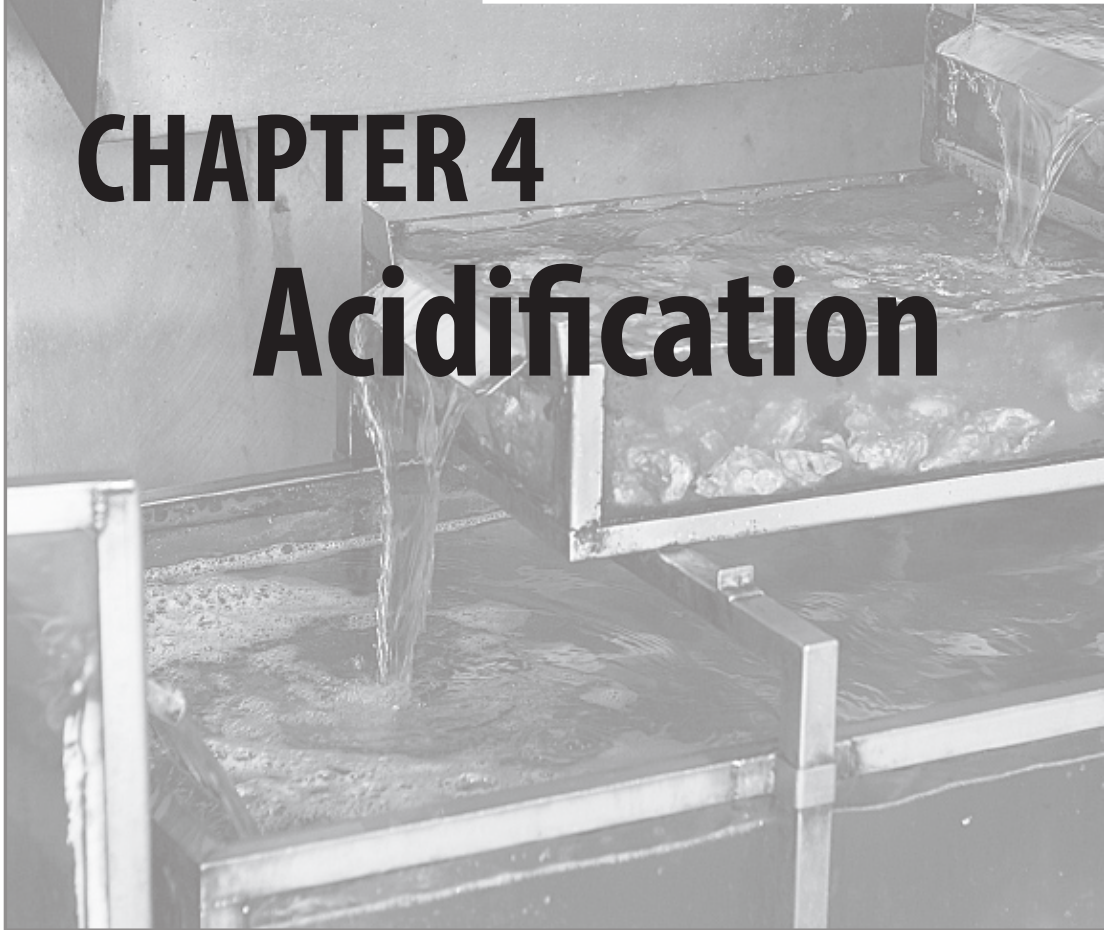
HACCP Plan Contact Signature _____

HACCP Plan Contact Title _____ Date _____



CHAPTER 4

Acidification



The preservation of foods through the manipulation of pH has been used for centuries. Fermentation of foods such as yogurt, kimchi, sauerkraut and buttermilk by lactic acid produced by certain bacteria are examples of ways that cultures have traditionally changed the acidity of a food item. Lactic acid can slow down or prevent the growth of disease or spoilage causing organisms. This prolongs the shelf life of a food item while allowing the nutrient value to remain relatively unchanged.

Fermentation is not necessary for acidification of foods. Manipulation of pH can also be achieved by adding acids directly to the food. The term pH expresses the negative logarithm of the hydrogen ion concentration, which is a measure of the degree of acidity or alkalinity of a solution. The solution in this case is the food environment. Vinegar (acetic acid) or citric acid are common additives that are used to reduce the pH (acidify) a food item. An acidified food is defined by the FDA (21 CFR 114.3 (b)) as a low acid food to which acid(s) or acid food(s) are added to produce a product that has a finished equilibrium pH of 4.6 or below and a water activity greater than 0.85. Equilibrium pH is the condition achieved when all components-solid and liquid-have the same pH. This state must be reached and maintained in each container so the pH does not rise above 4.6. A pH meter is used to verify that the solution (food item) does not rise above this level. It is required that a pH meter is on-site at the facility and used anytime that pH is specified as a critical control point for a process.

There are multiple methods for producing acidified food products. One of the most common forms of acidification is pickling of food items. This is usually achieved by blanching (partial cook) a food item and then immersing into an acid solution such as vinegar. The blanching allows for a quicker penetration of the outside cell walls of the food item. Larger foods are sometimes heated in a hot acid bath to achieve that penetration. Once again, equilibrium pH is the point where the internal portions of the food and the liquid (brine) have the same pH. Acids can also be added directly to a batch of ingredients, which is typically used for liquid food items. Other types of acidification include adding a specific predetermined amount of acid to individual containers during filling or adding acid foods to low acid foods in controlled portions.

Table 3-3. pH ranges of some common foods.

Food	pH Range	
Dairy Products	Butter	6.1 - 6.4
	Buttermilk	4.5
	Milk	6.3 - 6.5
	Cream	6.5
	Cheese (American mild and cheddar)	4.9; 5.9
	Yogurt	3.8 - 4.2
	Meat and Poultry	Beef (ground)
Ham		5.9 - 6.1
Veal		6.0
Chicken		6.2 - 6.4
Fish and Shellfish	Fish (most species)	6.6 - 6.8
	Clams	6.5
	Crabs	7.0
	Oysters	4.8 - 6.3
	Tuna Fish	5.2 - 6.1
	Shrimp	6.8 - 7.0
	Salmon	6.1 - 6.3
	White Fish	5.5
Fruits and Vegetables	Apples	2.9 - 3.3
	Apple Cider	3.6 - 3.8
	Bananas	4.5 - 4.7
	Figs	4.6
	Grapefruit (juice)	3.0
	Limes	1.8 - 2.0
	Honeydew melons	6.3 - 6.7
	Oranges (juice)	3.6 - 4.3

Table 3-3. pH ranges of some common foods (cont'd)

Food	pH Range	
Fruits and Vegetables (cont'd)	Plums	2.8 - 4.6
	Watermelons	5.2 - 5.6
	Grapes	3.4 - 4.5
	Asparagus (buds and stalks)	5.7 - 6.1
	Beans (string and lima)	4.6 - 6.5
	Beets (sugar)	4.2 - 4.4
	Broccoli	6.5
	Brussels Sprouts	6.3
	Cabbage (green)	5.4 - 6.0
	Carrots	4.9 - 5.2; 6.0
	Cauliflower	5.6
	Celery	5.7 - 6.0
	Corn (sweet)	7.3
	Cucumbers	3.8
	Eggplant	4.5
	Eggs yolks (white)	6.0 - 6.3 (7.6- 9.5)
	Lettuce	6.0
	Olives (green)	3.6 - 3.8
	Onions (red)	5.3 - 5.8
	Parsley	5.7 - 6.0
	Parsnip	5.3
	Potatoes (tubers and sweet)	5.3 - 5.6
	Pumpkin	4.8 - 5.2
	Rhubarb	3.1 - 3.4
Spinach	5.5 - 6.0	
Squash	5.0 - 5.4	
Tomatoes (whole)	4.2 - 4.3	
Turnips	5.2 - 5.5	

Your HACCP plan for acidification must contain these critical factors and must be documented to ensure that process and procedures for acidification are being controlled. This means every container is acidified to a pH of 4.6 or below uniformly throughout the product, you must monitor by taking pH measurements before and after pH equilibrium has been achieved, and pH measurements must be recorded and available for review. If heating a product, you must monitor the scheduled thermal process, record it, and keep available for review. You must also document how containers will be properly handled to avoid contamination. Compromising the integrity of the product seal can lead to recontamination of the food item. Deviation from the scheduled process requires the food go through one of the following processes:

- The food must be fully re-acidified using a process established by a Process Authority (PA),
- Thermal processing of the product as a low acid food,
- Discarding the food product, or
- Setting aside the product for further evaluation by a PA to evaluate the public health significance.

As part of your HACCP plan, detailed information is required regarding pH meters including usage of the meter and staff training. All pH meters require continuous calibration to ensure proper readings. pH meters are calibrated by using known solutions called buffers which are of a specific pH to check/standardize the equipment. Typically buffer solutions are 4.0 and 7.0 and should be used prior to checking product pH values at the start of the process and then once an hour after that. When not in use it is pH meters should be stored in a buffer of solution with a pH of 4.0. As a side note, to help ensure the accuracy of the pH meter, buffer solutions used for calibration should be at the same temperature as the product to be tested.

HACCP Toolkit

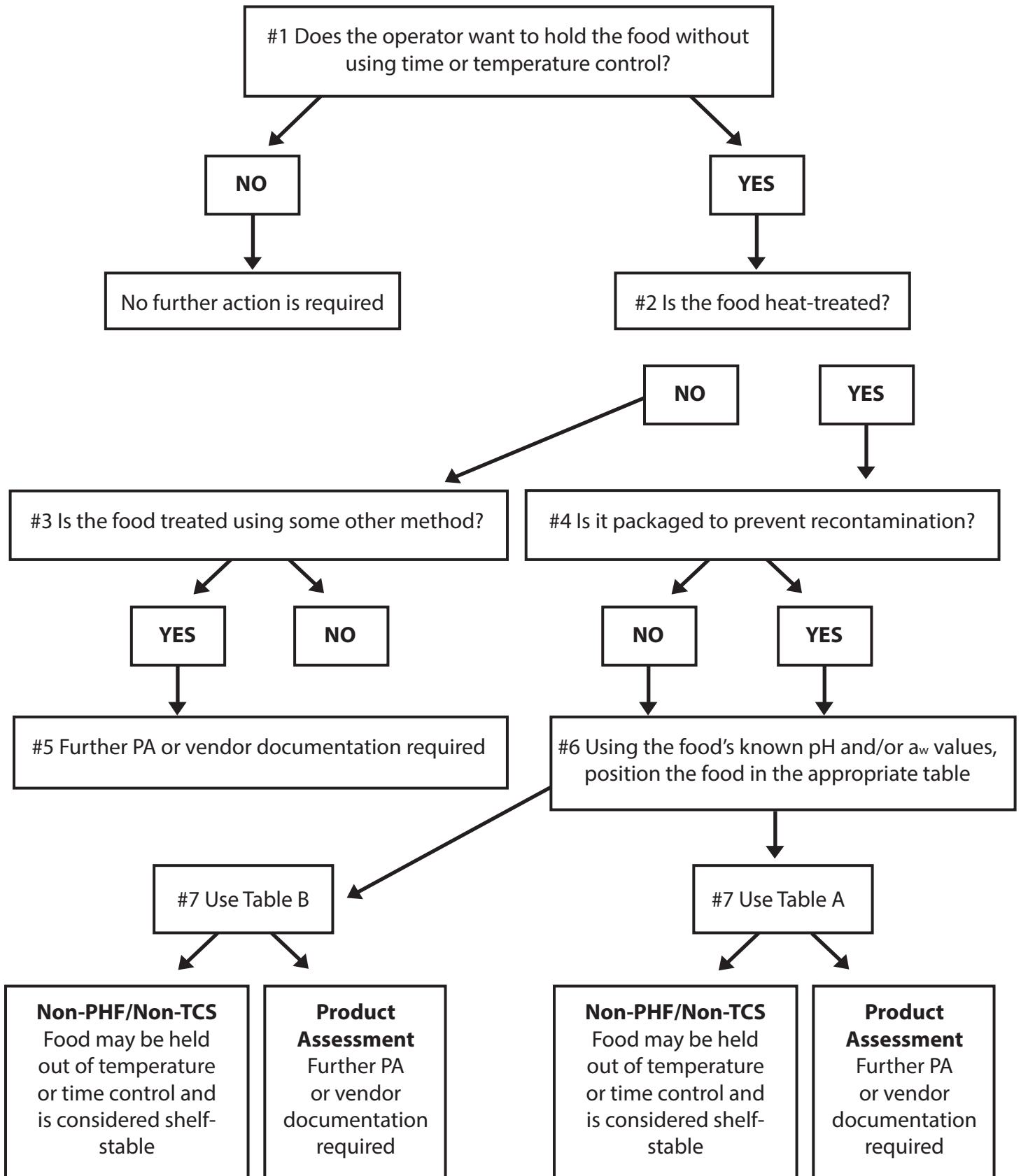


Table A. Interaction of pH and aw for control of spores in food heat-treated to destroy vegetative cells and subsequently packaged

a _w values	pH values		
	4.6 or less	> 4.6 - 5.6	> 5.6
≤ 0.92	non-PHF*/non-TCS food**	non-PHF/non-TCS food	non-PHF/non-TCS food
> 0.92 - .95	non-PHF/non-TCS food	non-PHF/non-TCS food	PA***
> 0.95	non-PHF/non-TCS food	PA	PA

* PHF means Potentially Hazardous Food
 ** TCS food means Time/Temperature Control for Safety food
 *** PA means Product Assessment required

Table B. Interaction of pH and aw for control of vegetative cells and spores in food not heat-treated or heat-treated but not packaged

a _w values	pH values			
	< 4.2	4.2 - 4.6	> 4.6 - 5.0	> 5.0
< 0.88	non-PHF*/ non-TCS food**	non-PHF/ non-TCS food	non-PHF/ non-TCS food	non-PHF/ non-TCS food
0.88 - 0.90	non-PHF/ non-TCS food	non-PHF/ non-TCS food	non-PHF/ non-TCS food	PA***
> 0.90 - 0.92	non-PHF/ non-TCS food	non-PHF/ non-TCS food	PA	PA
> 0.92	non-PHF/ non-TCS food	PA	PA	PA

* PHF means Potentially Hazardous Food
 ** TCS food means Time/Temperature Control for Safety food
 *** PA means Product Assessment required
 Last Updated: 08/19/2013

Foodborne Illness Prevention Program Food Preparation or Process Variance Application

Please complete this application form and submit with supporting material to your local health department. You must submit multiple applications if you are requesting variances on more than one item.

Name of Applicant/Operator: _____
Signature: _____
Telephone: _____
Email: _____
Name of Establishment: _____
Statewide Chain? _____ Nationwide Chain? _____
Mailing Address: _____

Request for Variance:

- 1) State proposed variance of Code requirement citing relevant Code section numbers
- 2) Explain rationale for how potential public health hazards and nuisances addressed by the relevant Code sections will be alternatively addressed by the proposal
- 3) Explain how your proposed procedure will control the public health hazards addressed in the Code
- 4) Include HACCP plan if required as specified under Section 8-201.13(A) including the information specified under Section 8-201.14
<https://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Pages/variance.aspx>

Submit to:
Administration Fee: \$ _____

Hazard Analysis of Critical Control Points (HACCP) Guidance for Operators Requesting a Variance or Submitting a HACCP Plan in accordance with Chapter 8-201.14

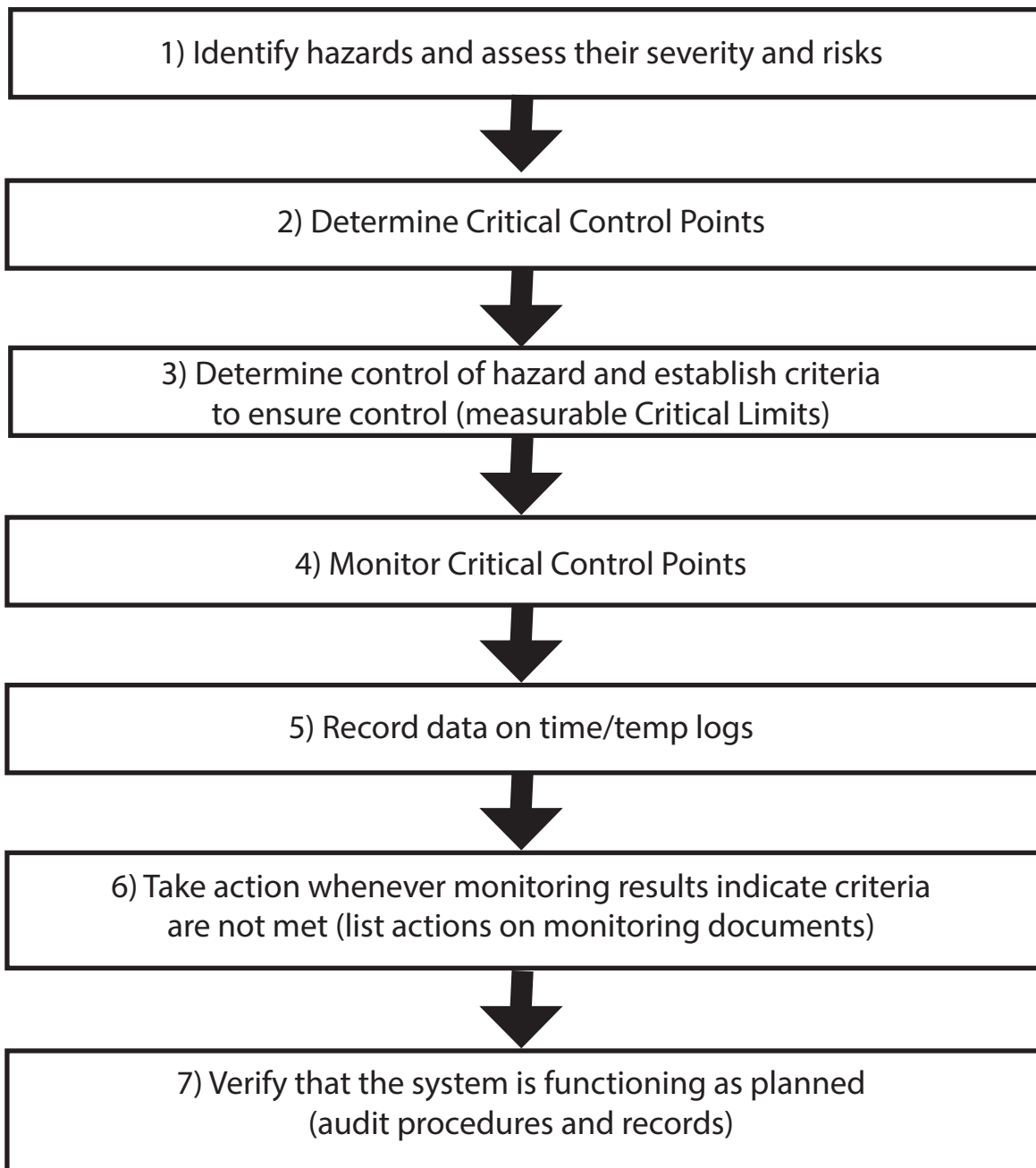
This outlines the expectations for what will be submitted with each Variance application. While it is the facility's responsibility to put their plan together, there are many resources available in the form of classes or private contractors. On the back of this form are the seven steps for creating a HACCP plan and more examples and information can be found in the document, "Managing Food Safety: A Manual for the Voluntary Use of HACCP Principles for Operators of Food Service and Retail Establishments" which is online at: <http://www.fda.gov/downloads/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/UCM077957.pdf>.

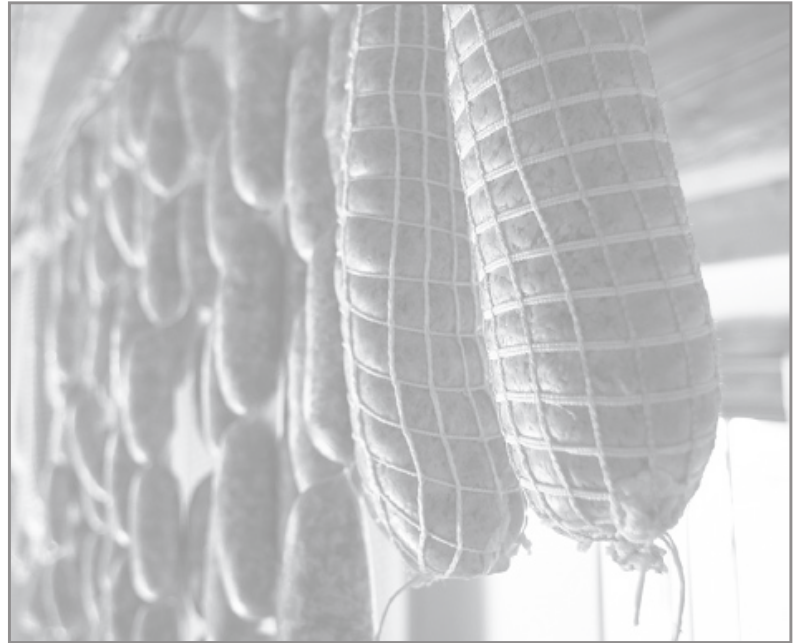
Each HACCP plan must include:

- A categorization of the types of potentially hazardous foods subject to the HACCP plan requirements, such as the types of raw meats being packaged under reduced oxygen packaging or different foods being cooked using the sous vide method.
- A flow diagram for each specific food or category type identifying each critical control point and including:
 - o Ingredients, materials, and equipment used in the preparation of that food, and;
 - o Formulations or recipes that delineate methods and procedural control measures that address the food safety concerns involved;
- Employee and supervisory training plan that addresses the FOOD safety issues of concern;
- A statement of standard operating procedures for the plan under consideration that clearly identifies:
 - o Each critical control point,
 - o The critical limits for each critical control point,
 - o The method and frequency for monitoring and controlling each critical control point by the food employee designated by the Person In Charge (PIC),
 - o The method and frequency for the PIC to routinely verify that the food employee is following standard operating procedures and monitoring critical control points,
 - o The action to be taken by the PIC if the critical limits for each critical control point are not met, and
 - o What records will be maintained by the PIC to demonstrate that the HACCP plan is properly operated and managed; and

Any additional scientific data or other information to support that food safety is not compromised by the proposal.

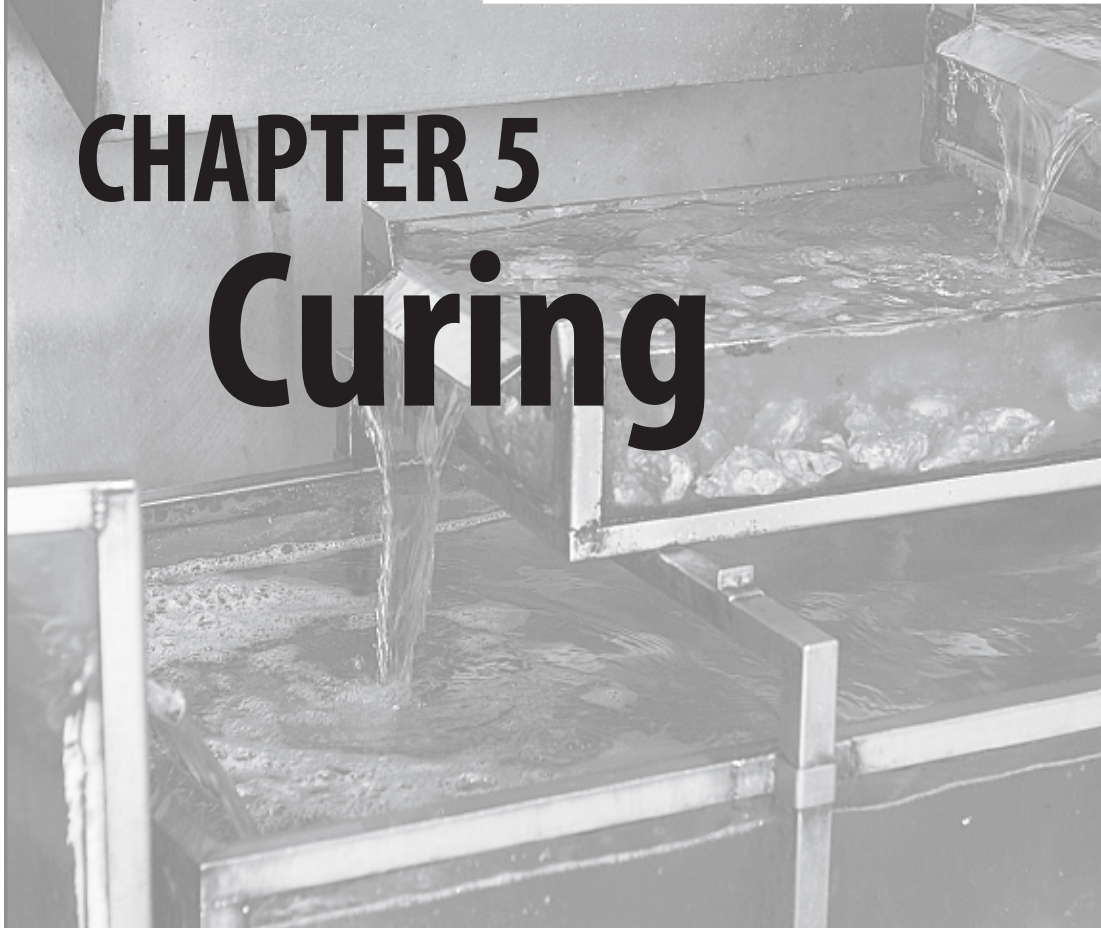
Hazard Analysis of Critical Control Points (HACCP) Flow Chart





CHAPTER 5

Curing



Meat and poultry are cured by the addition of salt alone or in combination with one or more ingredients such as sodium nitrite, sugar, curing accelerators, and spices. These are used for partial preservation, flavoring, color enhancement, tenderizing and improving yield of meat. The process may include dry curing, immersion curing, direct addition, or injection of the curing ingredients. Curing mixtures are typically composed of salt (sodium chloride), sodium nitrite, and seasonings.

The preparation of curing mixtures must be carefully controlled. A number of proprietary mixtures which are uniform in composition are available. The maximum residual sodium nitrite in the finished product is limited to 200 ppm by the USDA Food Safety and Inspection Service (FSIS). A sodium nitrite concentration of 120 ppm is usually sufficient for most purposes. Specific requirements for added nitrite may be found in USDA regulations, 9 CFR 424. It is important to use curing methods which achieve uniform distribution of the curing mixture in the meat or poultry product.

Cured meat and poultry can be divided into four basic categories: (1) uncomminuted smoked products; (2) sausages; (3) cured sausages and (4) uncomminuted unsmoked processed meats.

1. Uncomminuted smoked products – include foods such as bacon, beef jerky, hams, pork shoulders, turkey breasts and turkey drumsticks.
2. Sausages - including both finely ground and coarse ground products. Finely ground sausages include foods such as bologna, frankfurters, luncheon meats and loaves, sandwich spreads and Vienna. Coarse ground sausages include chorizos, kielbasa, pepperoni, salami, and summer sausages.
3. Cured sausages - may be categorized as: (a) raw, cured; (b) cooked, smoked; (c) cooked, unsmoked; and (d) dry, semidry, or fermented.
4. Uncomminuted, unsmoked processed products – include foods such as corned beef, pastrami, pigs feet and corned tongues. This category of products may be sold as either raw ready-to-cook or ready-to-eat.

Incorporation of Cure Ingredients

Regardless of preparation method, cure ingredients must be distributed throughout the product. Cure ingredients may be introduced into sausage products during mixing or comminuting. Proper and thorough mixing is necessary whether the cure is added to the formulation in dry or solution form. Muscle cuts may be cured by immersion into a curing (pickle) solution. These methods depend on slow diffusion of the curing agents through the product. Products must be properly refrigerated during immersion curing.

Several methods may be used to shorten curing times. These include hot immersion curing greater than 49°C (120°F), injection by arterial pumping (e.g. hams), and stitch pumping by a series of hollow needles. If the injection method is used, injection needles must be frequently monitored during processing to ensure that they are not fouled or plugged.

Tumbling or massaging may also be used as an aid to hasten curing. Proper sanitation must be observed to prevent contamination during this operation.

The dry curing method, a similar process, may also be used. In this case, curing ingredients are rubbed over cuts and surfaces of meat held under refrigeration. Precautions must include wearing sanitary gloves when meat is handled. Product temperature maintenance is critical.

Smoking

Smoking is the process of exposing meat products to wood smoke. Depending on the method, some products may be cooked and smoked simultaneously, smoked and dried without cooking, or cooked without smoking. Smoke may be produced by burning wood chips or using an approved liquid smoke preparation. Liquid smoke preparations may also be substituted for smoke by addition directly onto the product during formulation in lieu of using a smokehouse or another type of smoking vessel. As with curing operations, a standard operating procedure must be established to prevent contamination during the smoking process.

Fermentation and Dehydration

Meat may be fermented or dehydrated for preservation. The purpose of fermentation is to reduce the pH to below 4.6 and inhibit bacteria harmful to health as well as bacteria which can cause spoilage. Meat products may also be cured and then dehydrated to prevent germination and growth of bacterial spores. Many fermented and dehydrated meats are made without a cooking step. Sanitary practices in the production of these products are extremely important because *Staphylococcus aureus* can be introduced. *Staphylococcus aureus* produces an enterotoxin that is heat stable and thus will not be inactivated by subsequent cooking.

Processed pork products require treatment to destroy *Trichinella spiralis*. At retail, products which contain raw pork and which are not subsequently cooked must be produced from certified trichina-free pork or treated to destroy trichinae. USDA regulations, 9 CFR 318.10(c)(3), establish various requirements for destroying trichina in pork by heating, freezing, drying, or smoking.

Some fermented and dry cured products are processed without cooking. The labeling for these products should include instructions to the consumer to cook thoroughly before consumption.

(F) Recommendations for Safe Curing of Meat and Poultry

2. (1) Posting of Acceptable Products

A list of products approved by the regulatory authority, or by an approved knowledgeable authority on curing acceptable to the regulatory authority, must be posted in the processing area of the establishment.

3. (2) Employee Training

Employees assigned to cure meat or poultry must demonstrate familiarity with these guidelines and the potential hazards associated with curing foods. A description of the training and course content provided to the employees must be available for review by the regulatory authority.

4. (3) HACCP

A HACCP plan is needed for all curing operations. The following recommendations must be met to cure meat and poultry products in the establishment. References are available from local USDA extension offices, public libraries, and college or university food or meat science departments to develop HACCP plans for curing meat and poultry.

1. (a) Critical Control Points

The following are critical control points to be addressed:

1.1. (i) Purchase of prepared cure mixes; or

1.2. (ii) If cure mixes are blended on the premises instead of acquired pre-mixed, mixing must be carefully controlled by using calibrated weighing devices.

1.3. (iii) Cure ingredients must be stored in a dry location. Cure must be discarded if the package is wet or appears to have been wetted.

2. (b) Raw Material Handling

2.1. (i) Thawing must be monitored and controlled to ensure thoroughness and to prevent temperature abuse. Improperly thawed meat could cause insufficient cure penetration. Temperature abuse can cause spoilage or growth of pathogens.

2.2. (ii) Meat must be fresh. Curing may not be used to salvage meat that has excessive bacterial growth or spoilage.

3. (c) Formulating, Preparation and Curing

- 3.1. (i) A formulation and preparation procedure must be documented.
- 3.2. (ii) All equipment and utensils must be cleaned and sanitized.
- 3.3. (iii) Pieces must be prepared to uniform sizes to ensure uniform cure penetration. This is extremely critical for dry and immersion curing.
- 3.4. (iv) Calibrated scales must be used to weigh ingredients.
- 3.5. (v) A schedule or recipe must be established for determining the exact amount of curing formulation to be used for a specified weight of meat or meat mixture.
- 3.6. (vi) Methods and procedures must be strictly controlled to ensure uniform cure.
- 3.7. (vii) Mixing of curing formulation with comminuted ingredients must be controlled and monitored.
- 3.8. (viii) All surfaces of meat must be rotated and rubbed at intervals of sufficient frequency to ensure cure penetration when a dry curing method is used.
- 3.9. (ix) Immersion curing requires periodic mixing of the batch to facilitate uniform curing.
- 3.10. (x) The application of salt during dry curing of muscle cuts requires that the temperature of the product be strictly controlled between 1.7°C (35°F) and 7.2°C (45°F). The lower temperature is set to limit microbial growth and the upper temperature is set for the purpose of ensuring cure penetration. Refer to USDA regulations 9 CFR 318.10(c)(3)(iv) for specific details on dry curing.
- 3.11. (xi) Curing solutions must be discarded daily unless they remain with the same batch of product during its entire curing process.
- 3.12. (xii) Injection needles must be inspected for plugging when stitch pumping or artery pumping of muscle cuts is performed.
- 3.13. (xiii) Sanitary casings must be provided for sausage, chub or loaf forming.
- 3.14. (xiv) Casings may not be stripped for reuse in forming additional chubs or sausages from batch to batch.
- 3.15. (xv) Hot curing of bacon bellies, hams, or any other products must be performed at >49°C (120°F) as specified in 9 CFR 318.

4. (d) Cooking and/or Smoking

- 4.1. (i) When smokehouses are initially installed or structurally modified, calibration of product heating characteristics must be ascertained by competent food technologists. Tests should be run with full range of anticipated product loading. Verification of even airflow and moisture should be recorded in operational records of the smokehouse for these various loads.

- 4.2. (ii) Procedures for delivering the appropriate thermal treatment of cooked meats in conformance with the Food Code must be developed and used. (Also see 9 CFR 318.17 and 318.23 for USDA requirements for meat products.) A minimum of 73.9°C (165°F) should be used for cured poultry products.
- 4.3. (iii) Cooking equipment that provides even temperature control of the heating medium must be used.
- 4.4. (iv) Products must be adequately separated to prevent overlap in the cooking media whether immersed in hot water, sprayed with hot water, steamed, or oven heated.
- 4.5. (v) Calibrated temperature measuring devices must be used for determining internal product temperatures.
- 4.6. (vi) Temperature measuring device probes must be sanitized to prevent contaminating products when internal temperatures are measured.
- 4.7. (vii) Calibrated temperature measuring devices must be used for measuring temperatures of the heating medium.
- 4.8. (viii) Raw products must be separated from cooked products.
- 4.9. (ix) Time/temperature parameters of the cooking process must be monitored and recorded. In some processes, the heating medium temperature should also be monitored.

5. (e) Cooling

- 5.1. (i) Cooling must be done in accordance with recommendations in the Food Code or under a variance. The USDA Cooling Guideline, FSIS Directive 7110.3 for special procedures for cured products, provides specific guidance.
- 5.2. (ii) Written cooling procedures must be established.
- 5.3. (iii) Chill water used in water sprays or immersion chilling which is in direct contact with products in casings or products cooked in an impervious package must be properly chlorinated.
- 5.4. (iv) Chill water temperature must be monitored and controlled.
- 5.5. (v) Chill water may not be reused until properly chlorinated. Reclaimed chill water must be discarded daily.
- 5.6. (vi) Product must be placed in a manner that allows chilled water or air to uniformly contact the product for assurance of uniform cooling.
- 5.7. (vii) Internal temperatures must be monitored during cooling by using calibrated temperature measuring devices.
- 5.8. (viii) Adequate cooling medium circulation must be maintained and monitored.
- 5.9. (ix) Temperatures of the cooling medium must be monitored and recorded in accordance with a written procedure.

5.10. (x) Handling of product must be minimized during cooling, peeling of casing, and packaging. Sanitary gloves must be used in these procedures.

6. (f) Fermentation and Drying

6.1. (i) Temperature and time must be controlled and logs must be maintained that record the monitoring of this process.

6.2. (ii) Humidity must be controlled by use of a humidistat. Monitoring of the process must be recorded in a written log.

6.3. (iii) Product must be kept separated to allow adequate air circulation during the process.

6.4. (iv) Use of an active and pure culture must be ensured to effect a rapid pH drop of the product. Use of commercially produced culture is necessary and the culture must be used according to the manufacturer's instructions.

6.5. (v) Determination of the pH of fermented sausages at the end of the fermentation cycle must be recorded.

6.6. (vi) Handling of products must be minimized and only done with sanitary gloves or sanitized utensils.

6.7. (vii) Dry (unfermented) products may not be hot smoked until the curing and drying procedures are completed.

6.8. (viii) Semi-dry fermented sausage must be heated after fermentation to a time/temperature sufficient to control growth of pathogenic and spoilage organisms of concern.

5. (4) Dedicated Area/Restricted Access

All aspects of curing operations must be conducted in an area specifically designated for this purpose. There must be an effective separation to prevent cross contamination between raw and cooked foods or cured and uncured foods. Access to processing equipment shall be restricted to responsible trained personnel who are familiar with the potential hazards inherent in curing foods.

6. (5) Equipment Cleaning and Sanitizing

7. The procedures for cleaning and sanitization must be accomplished according to parts 4-6 and 4-7 of the Food Code.

Source: FDA 2009 Annex

Foodborne Illness Prevention Program Food Preparation or Process Variance Application

Please complete this application form and submit with supporting material to your local health department. You must submit multiple applications if you are requesting variances on more than one item.

Name of Applicant/Operator: _____
Signature: _____
Telephone: _____
Email: _____
Name of Establishment: _____
Statewide Chain? _____ Nationwide Chain? _____
Mailing Address: _____ _____

Request for Variance:

- 1) State proposed variance of Code requirement citing relevant Code section numbers
- 2) Explain rationale for how potential public health hazards and nuisances addressed by the relevant Code sections will be alternatively addressed by the proposal
- 3) Explain how your proposed procedure will control the public health hazards addressed in the Code
- 4) Include HACCP plan if required as specified under Section 8-201.13(A) including the information specified under Section 8-201.14

<https://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Pages/variance.aspx>

Submit to:

Administration Fee: \$ _____

Hazard Analysis of Critical Control Points (HACCP) Guidance for Operators Requesting a Variance or Submitting a HACCP Plan in accordance with Chapter 8-201.14

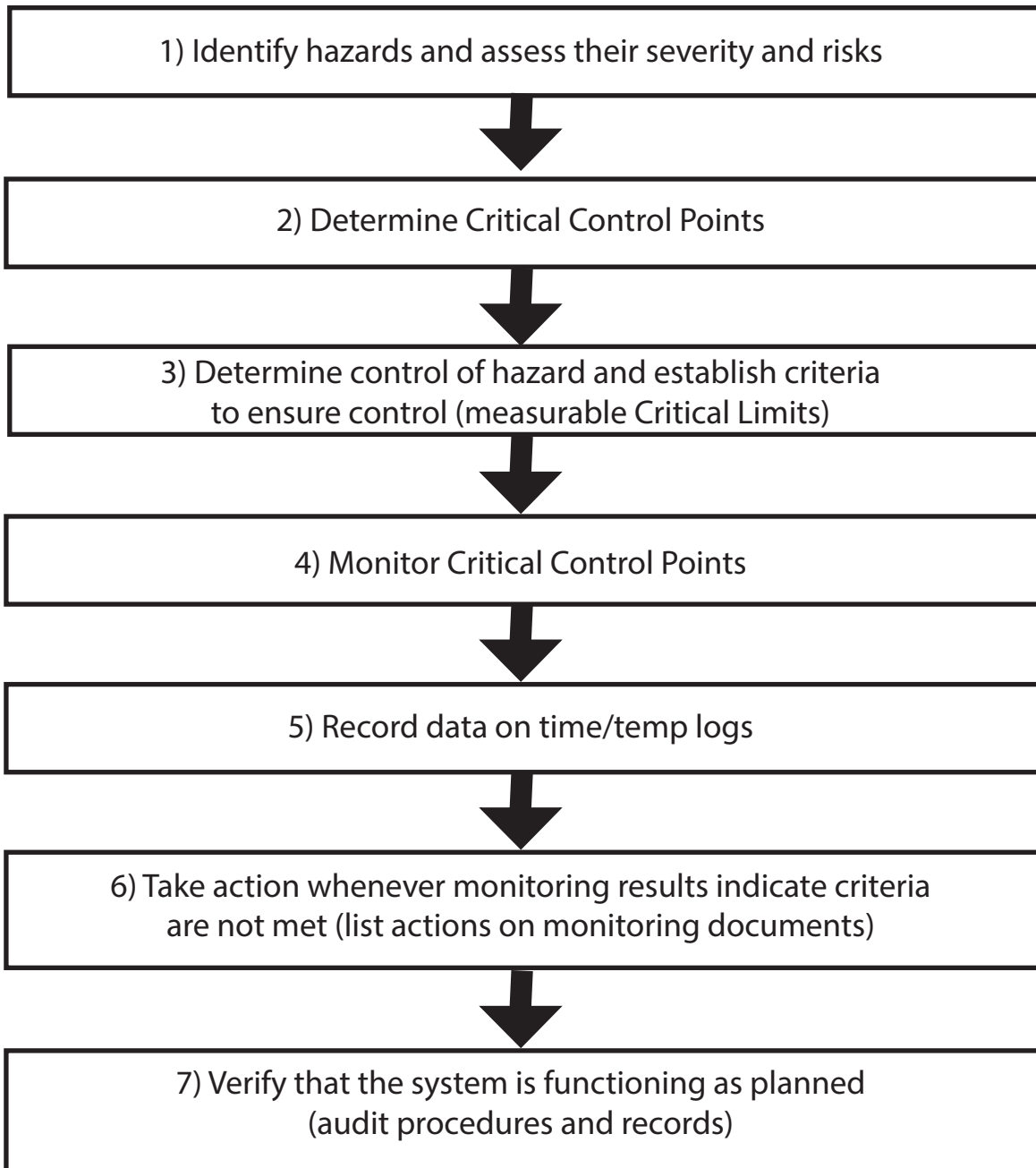
This outlines the expectations for what will be submitted with each Variance application. While it is the facility's responsibility to put their plan together, there are many resources available in the form of classes or private contractors. On the back of this form are the seven steps for creating a HACCP plan and more examples and information can be found in the document, "Managing Food Safety: A Manual for the Voluntary Use of HACCP Principles for Operators of Food Service and Retail Establishments" which is online at: <http://www.fda.gov/downloads/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/UCM077957.pdf>

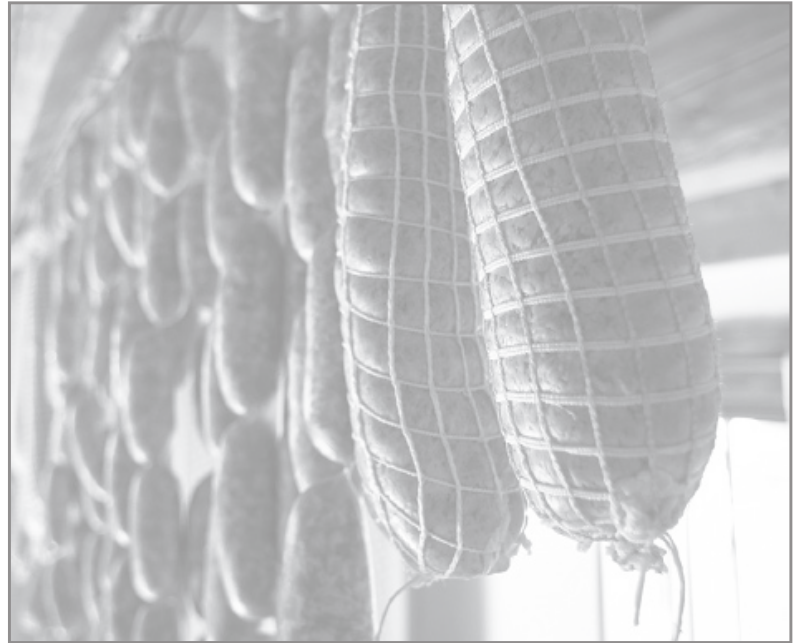
Each HACCP plan must include:

- A categorization of the types of potentially hazardous foods subject to the HACCP plan requirements, such as the types of raw meats being packaged under reduced oxygen packaging or different foods being cooked using the sous vide method.
- A flow diagram for each specific food or category type identifying each critical control point and including:
 - o Ingredients, materials, and equipment used in the preparation of that food, and;
 - o Formulations or recipes that delineate methods and procedural control measures that address the food safety concerns involved;
- Employee and supervisory training plan that addresses the FOOD safety issues of concern;
- A statement of standard operating procedures for the plan under consideration that clearly identifies:
 - o Each critical control point,
 - o The critical limits for each critical control point,
 - o The method and frequency for monitoring and controlling each critical control point by the food employee designated by the Person In Charge (PIC),
 - o The method and frequency for the PIC to routinely verify that the food employee is following standard operating procedures and monitoring critical control points,
 - o The action to be taken by the PIC if the critical limits for each critical control point are not met, and
 - o What records will be maintained by the PIC to demonstrate that the HACCP plan is properly operated and managed; and

Any additional scientific data or other information to support that food safety is not compromised by the proposal.

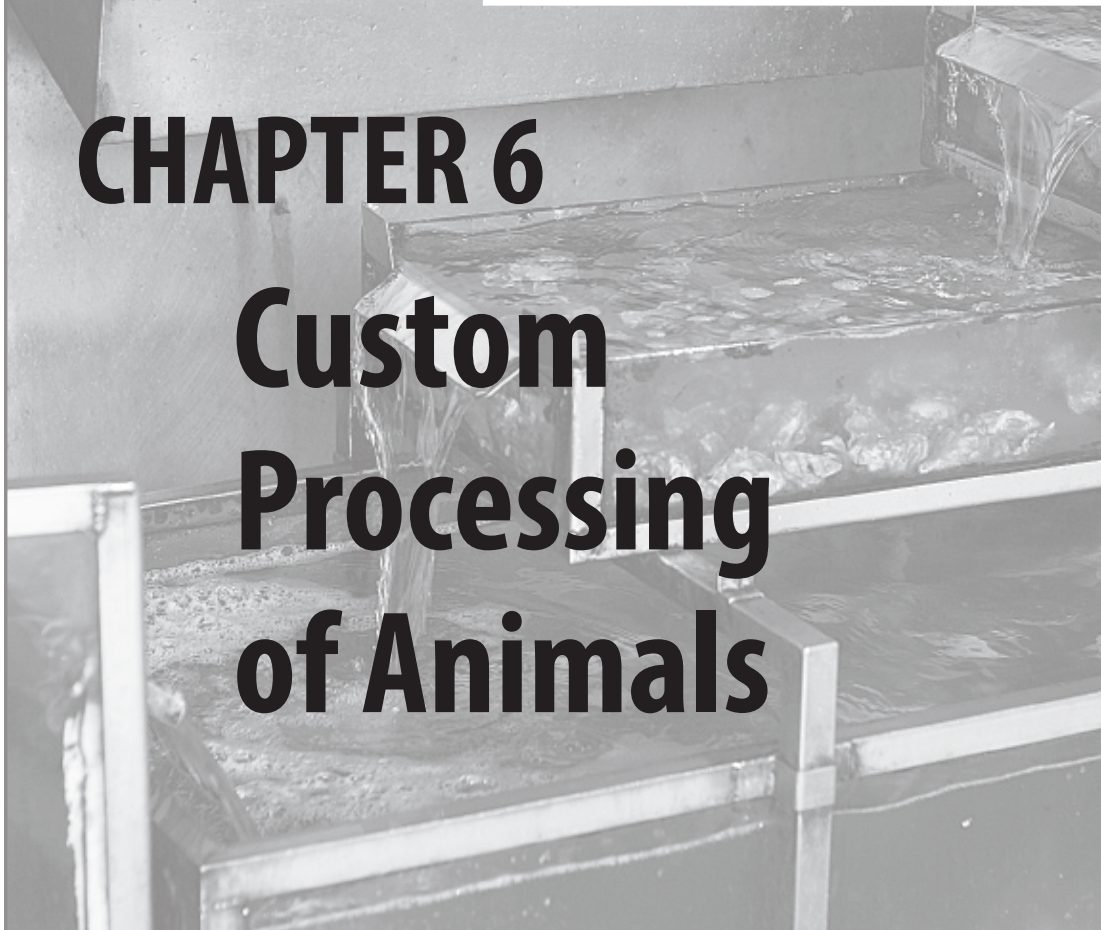
Hazard Analysis of Critical Control Points (HACCP) Flow Chart





CHAPTER 6

Custom Processing of Animals



All domesticated meat and poultry whose product is intended for sale must be slaughtered and processed in a U.S. Department of Agriculture (USDA) inspected facility. Any food service establishment that intends to process meat raised for private use (field dressed animals intended for private use) is required to apply for a variance and submit a HACCP Plan.

Controls and Guidelines

The following guidelines are recommended to ensure that any custom processed animals stored in the establishment must be handled and contained so there is a complete separation from all other products for sale to the consumer.

- 1) Provide a written list of days and times when game animals are processed. This must be documented as part of the procedure to help reduce/eliminate the chance of contamination of other food items in the facility.
- 2) Attach a label or tag with the words "Not For Sale" to all incoming carcasses. Tags should include space for assigning a designated carcass number. This label can be stamped directly onto the carcass as long as the stamp is large enough to be clearly visible.
- 3) Keep a log book or record of the name and address of the owner of each carcass, the species, date received, weight and the assigned carcass number to the tag.
- 4) Equipment used to process game animals must be thoroughly cleaned and sanitized before it can be used for processing domestic meat, poultry, fish and other retail products.
- 5) Store all custom processed animals and animal products on separate shelves while in cold storage. The "Not For Sale" tag and corresponding record number from the original tag should be attached to ANY shelves or packages storing custom processed animals.

As part of the HACCP Plan all records must be maintained for at least 90 days and must be available for inspection by regulators. This process is ONLY approved for private use by the customer that brought the slaughtered animal in for custom processing. At no point is a food service operation allowed to custom process an animal intended to be used in-house for menu items.

Hazard Analysis of Critical Control Points (HACCP) Guidance for Operators Requesting a Variance or Submitting a HACCP Plan in accordance with Chapter 8-201.14

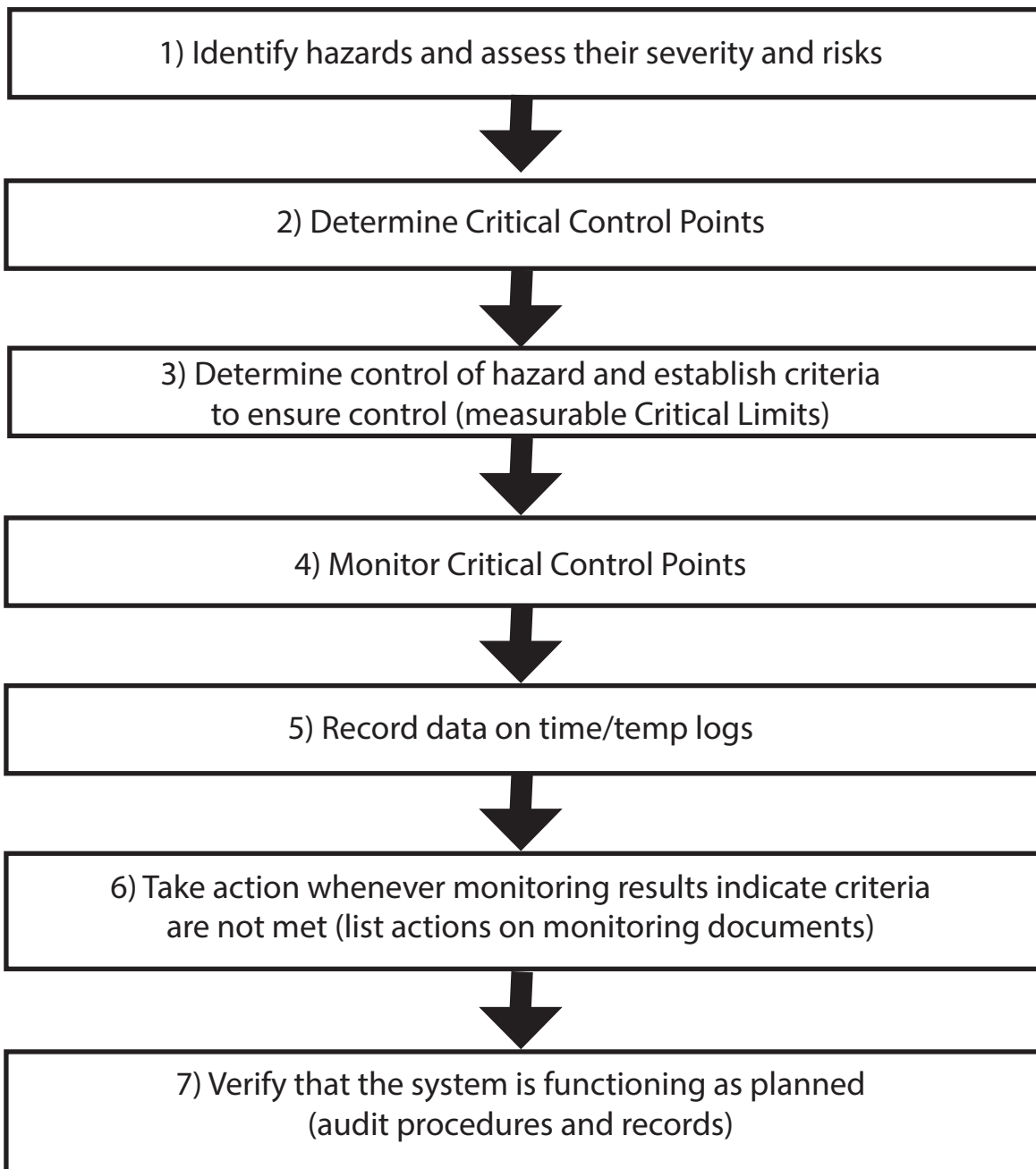
This outlines the expectations for what will be submitted with each Variance application. While it is the facility's responsibility to put their plan together, there are many resources available in the form of classes or private contractors. On the back of this form are the seven steps for creating a HACCP plan and more examples and information can be found in the document, "Managing Food Safety: A Manual for the Voluntary Use of HACCP Principles for Operators of Food Service and Retail Establishments" which is online at: <http://www.fda.gov/downloads/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/UCM077957.pdf>

Each HACCP plan must include:

- A categorization of the types of potentially hazardous foods subject to the HACCP plan requirements, such as the types of raw meats being packaged under reduced oxygen packaging or different foods being cooked using the sous vide method.
- A flow diagram for each specific food or category type identifying each critical control point and including:
 - o Ingredients, materials, and equipment used in the preparation of that food, and;
 - o Formulations or recipes that delineate methods and procedural control measures that address the food safety concerns involved;
- Employee and supervisory training plan that addresses the FOOD safety issues of concern;
- A statement of standard operating procedures for the plan under consideration that clearly identifies:
 - o Each critical control point,
 - o The critical limits for each critical control point,
 - o The method and frequency for monitoring and controlling each critical control point by the food employee designated by the Person In Charge (PIC),
 - o The method and frequency for the PIC to routinely verify that the food employee is following standard operating procedures and monitoring critical control points,
 - o The action to be taken by the PIC if the critical limits for each critical control point are not met, and
 - o What records will be maintained by the PIC to demonstrate that the HACCP plan is properly operated and managed; and

Any additional scientific data or other information to support that food safety is not compromised by the proposal.

Hazard Analysis of Critical Control Points (HACCP) Flow Chart



Foodborne Illness Prevention Program Food Preparation or Process Variance Application

Please complete this application form and submit with supporting material to your local health department. You must submit multiple applications if you are requesting variances on more than one item.

Name of Applicant/Operator: _____
Signature: _____
Telephone: _____
Email: _____
Name of Establishment: _____
Statewide Chain? _____ Nationwide Chain? _____
Mailing Address: _____ _____

Request for Variance:

- 1) State proposed variance of Code requirement citing relevant Code section numbers
- 2) Explain rationale for how potential public health hazards and nuisances addressed by the relevant Code sections will be alternatively addressed by the proposal
- 3) Explain how your proposed procedure will control the public health hazards addressed in the Code
- 4) Include HACCP plan if required as specified under Section 8-201.13(A) including the information specified under Section 8-201.14

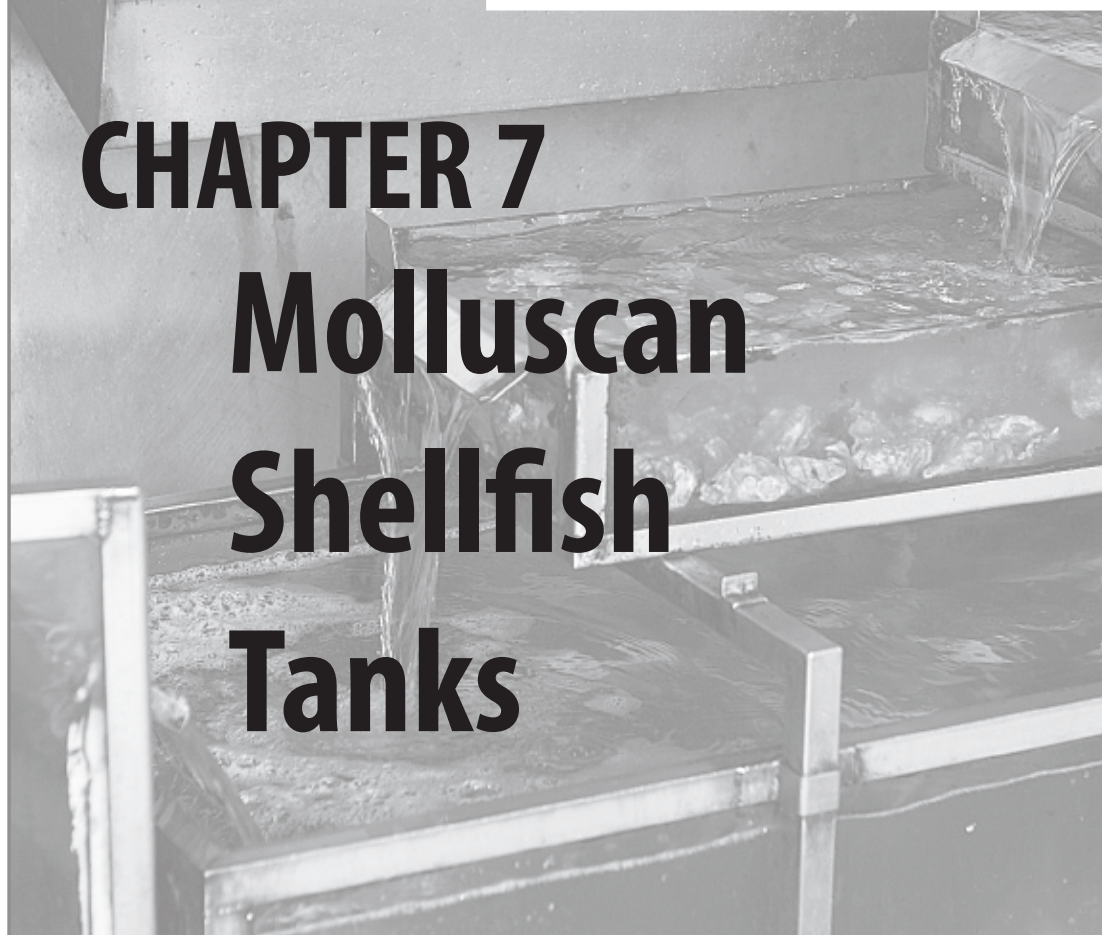
<https://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Pages/variance.aspx>

Submit to:
Administration Fee: \$ _____



CHAPTER 7

Molluscan Shellfish Tanks



Operating a Molluscan shellfish life-support system display tank used to store or display shellfish that are offered for human consumption

If you wish to hold molluscan shellfish, which include oysters, clams, mussels and scallops, in a tank with the intent of keeping them alive until it's time to eat them, you will need a HACCP plan and may need a variance. If you just want to keep shellfish in a tank for display purposes only, you may do so without applying for a HACCP plan or variance, but you must have signage indicating to the customer that they are not available for consumption.

Molluscan shellfish are often offered for consumption in raw or undercooked form. This means that they often do not go through a pathogen kill step, typically constituted by a cooking process. So think about your red center steak or over-easy egg- both of these items come with an increased risk of foodborne illness because they are served undercooked (does consumer advisory ring a bell?) So in the case of shellfish, when we consume them raw or undercooked, we are essentially consuming everything that's come in contact with the product during its growth in nature or in a farmed environment, harvesting, handling, storage, preparation, etc.

Just as it's important to harvest shellfish from waters that are not heavily polluted, it's also important to maintain a safe holding environment in a live holding tank. If your tank becomes contaminated, so does your product. That contamination can then be passed on to the consumer, potentially making them sick. So if you wish to keep live shellfish for consumption in a tank in your facility, you must submit a HACCP plan and obtain a variance from the Oregon Foodborne Illness Prevention Program.

A HACCP plan for maintaining a molluscan life support system tank might include:

- Documentation of tank design and system operation showing adequate water and circulation requirements for the amount of shellfish you intend to hold
- A maintenance plan detailing how the tank will be maintained, how often it will be cleaned and who will do it
- Staff training
- Monitoring and record retention guidelines
- Shellfish receiving, inspection, and handling procedures

Foodborne Illness Prevention Program Food Preparation or Process Variance Application

Please complete this application form and submit with supporting material to your local health department. You must submit multiple applications if you are requesting variances on more than one item.

Name of Applicant/Operator: _____
Signature: _____
Telephone: _____
Email: _____
Name of Establishment: _____
Statewide Chain? _____ Nationwide Chain? _____
Mailing Address: _____ _____

Request for Variance:

- 1) State proposed variance of Code requirement citing relevant Code section numbers
- 2) Explain rationale for how potential public health hazards and nuisances addressed by the relevant Code sections will be alternatively addressed by the proposal
- 3) Explain how your proposed procedure will control the public health hazards addressed in the Code
- 4) Include HACCP plan if required as specified under Section 8-201.13(A) including the information specified under Section 8-201.14
<https://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Pages/variance.aspx>

Submit to:
Administration Fee: \$ _____

Hazard Analysis of Critical Control Points (HACCP) Guidance for Operators Requesting a Variance or Submitting a HACCP Plan in accordance with Chapter 8-201.14

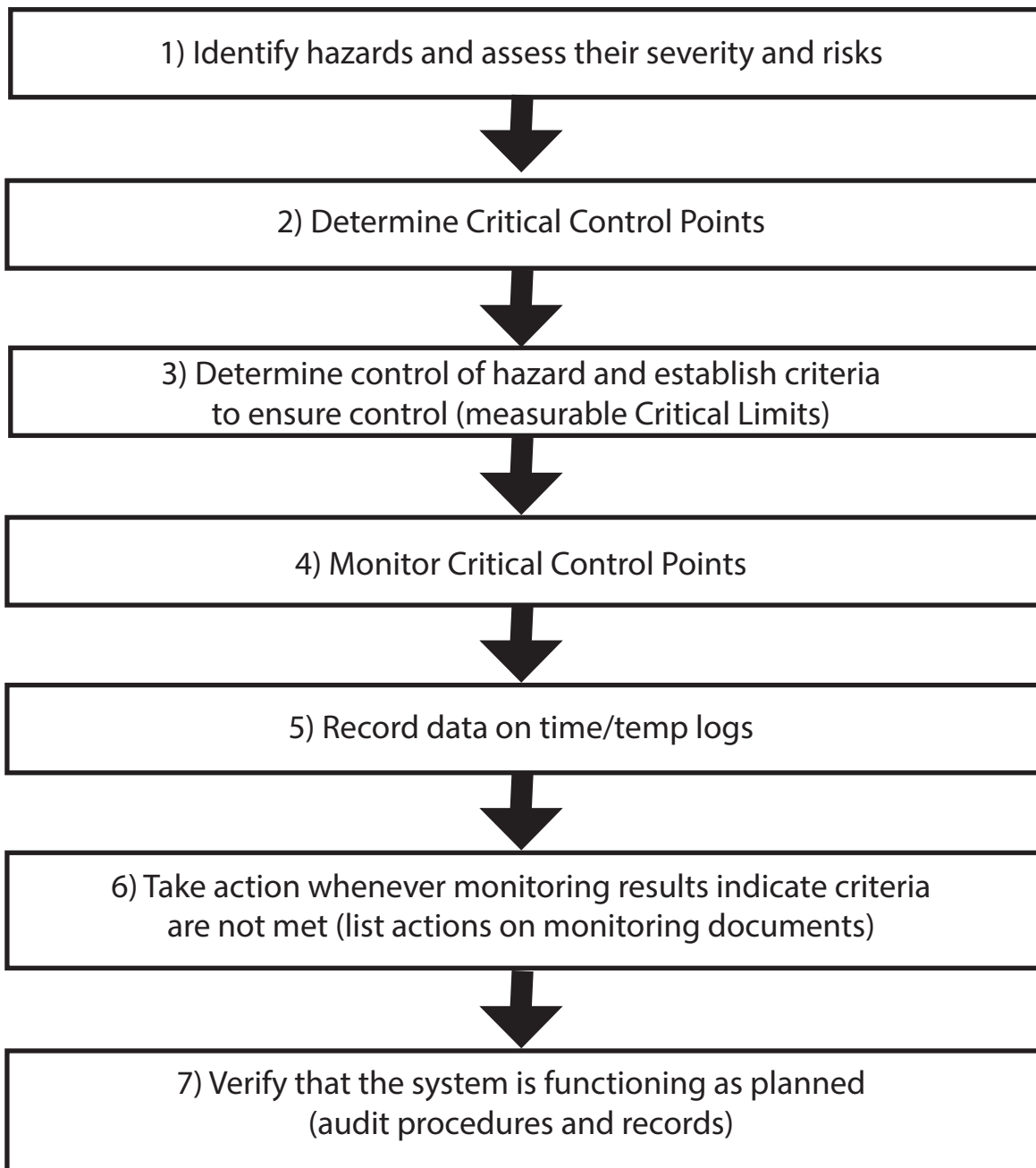
This outlines the expectations for what will be submitted with each Variance application. While it is the facility's responsibility to put their plan together, there are many resources available in the form of classes or private contractors. On the back of this form are the seven steps for creating a HACCP plan and more examples and information can be found in the document, "Managing Food Safety: A Manual for the Voluntary Use of HACCP Principles for Operators of Food Service and Retail Establishments" which is online at: <http://www.fda.gov/downloads/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/UCM077957.pdf>

Each HACCP plan must include:

- A categorization of the types of potentially hazardous foods subject to the HACCP plan requirements, such as the types of raw meats being packaged under reduced oxygen packaging or different foods being cooked using the sous vide method.
- A flow diagram for each specific food or category type identifying each critical control point and including:
 - o Ingredients, materials, and equipment used in the preparation of that food, and;
 - o Formulations or recipes that delineate methods and procedural control measures that address the food safety concerns involved;
- Employee and supervisory training plan that addresses the FOOD safety issues of concern;
- A statement of standard operating procedures for the plan under consideration that clearly identifies:
 - o Each critical control point,
 - o The critical limits for each critical control point,
 - o The method and frequency for monitoring and controlling each critical control point by the food employee designated by the Person In Charge (PIC),
 - o The method and frequency for the PIC to routinely verify that the food employee is following standard operating procedures and monitoring critical control points,
 - o The action to be taken by the PIC if the critical limits for each critical control point are not met, and
 - o What records will be maintained by the PIC to demonstrate that the HACCP plan is properly operated and managed; and

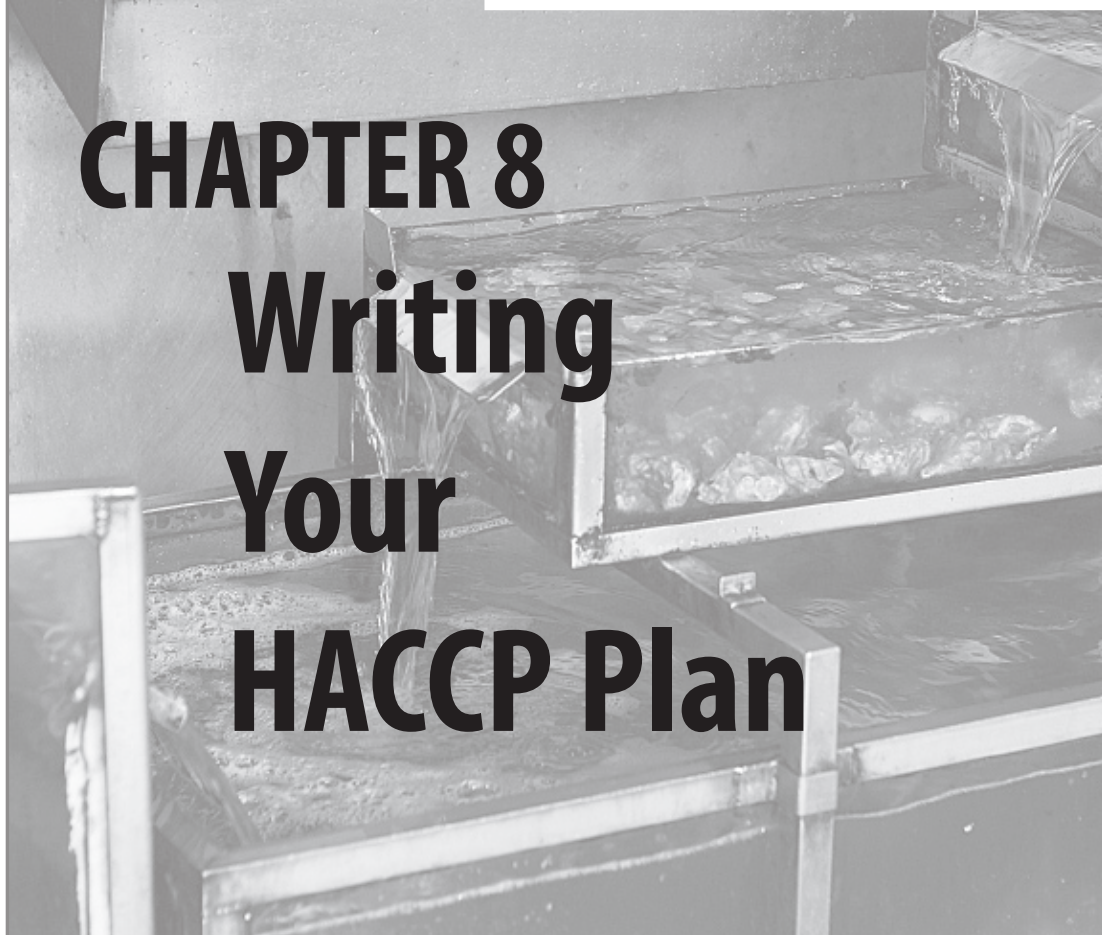
Any additional scientific data or other information to support that food safety is not compromised by the proposal.

Hazard Analysis of Critical Control Points (HACCP) Flow Chart





CHAPTER 8
Writing
Your
HACCP Plan



Documents needed when submitting a HACCP Plan for Special Processing to Multnomah County:

Please refer to the Oregon Food Sanitation Rules Sections 3-502.11 Variance Requirement, 3-502.12 Reduced Oxygen Packaging Without a Variance, Criteria, 8-201.13 When a HACCP Plan is Required, and 8-201.14 Contents of a HACCP Plan.

HACCP stands for Hazard Analysis Critical Control Points. HACCP is a proactive, scientifically proven, food safety program. The HACCP Plan is a written document that details how you plan to keep your (Special Processed) foods safe for your customers. The HACCP Plan contains a number of Sections. Each section will provide information or charts that demonstrate your ability to ensure safe food production. Below is a list of Sections, information, or charts that are required in your HACCP Plan when you submit it to Multnomah County Environmental Health Department for review and approval.

Section 1 – The Introduction

- A statement with the Company/Restaurants information: location, chain, single operation,
- A description of your food service and customer base
- A summary of who is writing the HACCP Plan and their job function and experience
- A description of the product
- A list of the ingredients and a recipe name for the product(s)
- A list of the equipment used and description of designated area where ROP will occur

Section 2 – The Flow Chart

- A chart that documents the flow of the food product through your facility from Receiving to Serving to the customer, identifying the steps that are Critical Control Points

Section 3 – The Hazard Analysis

- A chart that documents the operational steps food will go through in your facility,
- The potential hazards; biological, chemical, physical
- Answering whether the hazards are significant in your facility
- Justification for that answer
- Listing the control measures that can be applied to prevent the significant hazards
- Answering whether this step will be considered a Critical Control Point

Section 4 – The HACCP Plan

- A chart documenting each critical control point, the hazards, the critical limits, the monitoring procedures, the corrective actions, verification, and the records used.

Section 5 – The SOP's

- ❑ Identified Standard Operating Procedures that apply to your food product - **Required** 1) No Bare Hand Contact with Ready to Eat foods, 2) Designated and segregated work area, 3) Cleaning and sanitizing ROP areas, 4) Employee training, **Highly Recommended** – 1) Labeling and sample of your labels, 2) Refrigeration Data logger 3) How you will conduct record keeping, 5) Proper Hand Washing, **Also** - How to Cook food product, How to Calibrate A Probe Food thermometer, etc
- ❑ Some SOP's can be downloaded at this web site: <http://sop.nfsmi.org/HACCPBasedSOPs.php>

Section 6 – The Training Program

- ❑ A written program that outlines the training food employees and managers receive in order to perform the special processing tasks.
- ❑ A chart documenting the employee name, the training received, the date and time of the training, and initialed by the employee and trainer.

Section 7 – The Records

- ❑ Examples of the Records/Charts that will be used in the HACCP Plan are Thermometer Calibration, Refrigeration/Freezer Daily Temperatures, Receiving Charts, Final Cook/Cool Time/Temperatures, Hot Holding Foods Times/Temperatures, etc

❑ **Extra Requirement for Sous Vide/Cook-Chill Reduced Oxygen Packaging** – A Specification sheet with make and model number of the electronic system that will continuously monitor times and temperatures in the refrigeration unit that holds these products. Include in the HACCP Plan when you will visually monitor the temperatures of the refrigeration unit twice daily.

Link to the current 2012 Oregon Food Sanitation Rules <http://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Documents/foodsantiationrulesweb.pdf>

Links to the Fact Sheets provided by the Oregon Health Authority on the Sept. 4, 2012 Revised 2012 Oregon Food Sanitation Rules affecting Special Processing and HACCP Plans:

<http://public.health.oregon.gov/Partners/foodsafetycounty/Documents/FactSheet2ROP.pdf>

<http://public.health.oregon.gov/Partners/foodsafetycounty/Documents/FactSheet4SousVide.pdf>

<http://public.health.oregon.gov/Partners/foodsafetycounty/Documents/FactSheet3Variance.pdf>

Link to FDA HACCP Plan Guidance:

<http://www.fda.gov/Food/FoodSafety/RetailFoodProtection/ManagingFoodSafetyHACCPPrinciples/Operators/default.htm>

If your HACCP Plan has been approved you will be notified and receive a Letter of Approval from Multnomah County. Please retain this approval letter in your on-site restaurant records.

Introduction

An introduction is the first section in a HACCP Plan. This section will paint a picture for the HACCP Plans Examiner on the operations of your food service establishment. This includes statements about:

1. Restaurant information – is this restaurant part of a chain or is it a stand-alone establishment? If it's part of a chain will the special processed food be transported to the other stores in the chain? How many meals a day does the restaurant serve? How many employees work in your restaurant – front of the house and back of the house? Which employees will be making your special processed foods? You should also describe the expertise of the people conducting the special processing.
2. The type of food service the restaurant conducts – sit down dining, catering, drive thru window, etc, mobile unit commissary, temporary event prep site?
3. The restaurants customer base – is the primary focus an older adults or children (vulnerable populations)?
4. What kind of equipment is in the kitchen – is there enough walk-in cooler space for the special processed foods? Are there continuous electronic monitoring devices in the walk-in coolers? Do you have a commercial grade vacuum packaging machine for ROPing? Do you have a company that comes in regularly to calibrate your scales that measure the nitrates/nitrites you use for curing?
5. Where will the special processing be conducted in your kitchen – do you have a special room to vacuum package your raw steaks? Do you have an area in the prep room to ice bath your cook/chill bags before moving them to the walk-in? Is there a designated area in the walk-in cooler to hang meat that is curing?
6. What products are you creating a HACCP Plan for? This is where you will include the name of the products and recipes.

As you see, these elements are not part of the Hazard Analysis or HACCP Plan, but they provide extra details for the HACCP Plans Examiners to visualize the environment in which you will be conducting your special processed food items.

Annex 4, Table 1. Selected Biological Hazards Found at Retail, Associated Foods, and Control

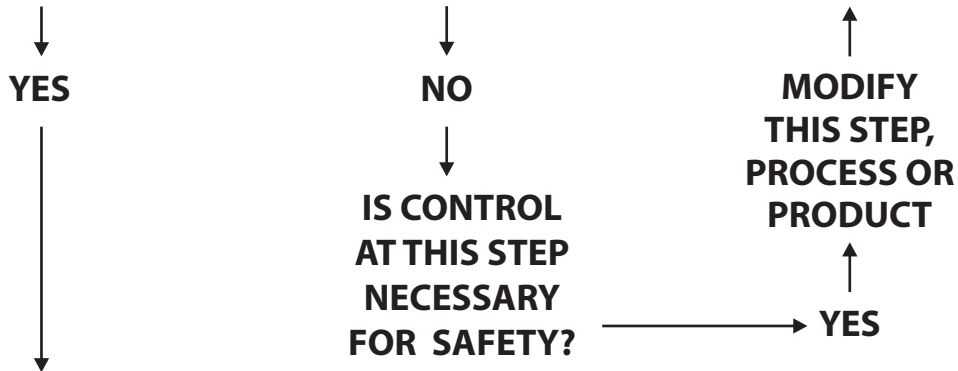
Hazard	Associated Foods	Control Measures	
Bacteria	Bacillus cereus (intoxication caused by heat stable, preformed emetic toxin and infection by heat labile, diarrheal toxin)	Meat, poultry, starchy foods (rice, potatoes), puddings, soups, cooked vegetables	Cooking, cooling, cold holding, hot holding
	Campylobacter jejuni	Poultry, raw milk	Cooking, handwashing, prevention of cross-contamination
	Clostridium botulinum	Vacuum-packed foods, reduced oxygen packaged foods, under-processed canned foods, garlic-in-oil mixtures, time/temperature abused baked potatoes/sautéed onions	Thermal processing (time + pressure), cooling, cold holding, hot holding, acidification and drying, etc.
	Clostridium perfringens	Cooked meat and poultry, Cooked meat and poultry products including casseroles, gravies	Cooling, cold holding, reheating, hot holding
	E. coli O157:H7 (other shiga toxin-producing E. coli)	Raw ground beef, raw seed sprouts, raw milk, unpasteurized juice, foods contaminated by infected food workers via fecal-oral route	Cooking, no bare hand contact with RTE foods, employee health policy, handwashing, prevention of cross-contamination, pasteurization or treatment of juice
	Listeria monocytogenes	Raw meat and poultry, fresh soft cheese, pâté, smoked seafood, deli meats, deli salads	Cooking, date marking, cold holding, handwashing, prevention of cross-contamination
	Salmonella spp.	Meat and poultry, seafood, eggs, raw seed sprouts, raw vegetables, raw milk, unpasteurized juice	Cooking, use of pasteurized eggs, employee health policy, no bare hand contact with RTE foods, handwashing, pasteurization or treatment of juice
	Shigella spp.	Raw vegetables and herbs, other foods contaminated by infected workers via fecal-oral route	Cooking, no bare hand contact with RTE foods, employee health policy, handwashing
	Staphylococcus aureus (preformed heat stable toxin)	RTE PHF foods touched by bare hands after cooking and further time/temperature abused	Cooling, cold holding, hot holding, no bare hand contact with RTE food, handwashing
	Vibrio spp.	Seafood, shellfish	Cooking, approved source, prevention of cross-contamination, cold holding
Parasites	Anisakis simplex	Various fish (cod, haddock, fluke, pacific salmon, herring, flounder, monkfish)	Cooking, freezing
	Taenia spp.	Beef and pork	Cooking
	Trichinella spiralis	Pork, bear, and seal meat	Cooking
Viruses	Hepatitis A and E	Shellfish, any food contaminated by infected worker via fecal-oral route	Approved source, no bare hand contact with RTE food, minimizing bare hand contact with foods not RTE, employee health policy, handwashing
	Other Viruses (Rotavirus, Norovirus, Reovirus)	Any food contaminated by infected worker via fecal-oral route	No bare hand contact with RTE food, minimizing bare hand contact with foods not RTE, employee health policy, handwashing

RTE = ready-to-eat

PHF = potentially hazardous food (time/temperature control for safety food)

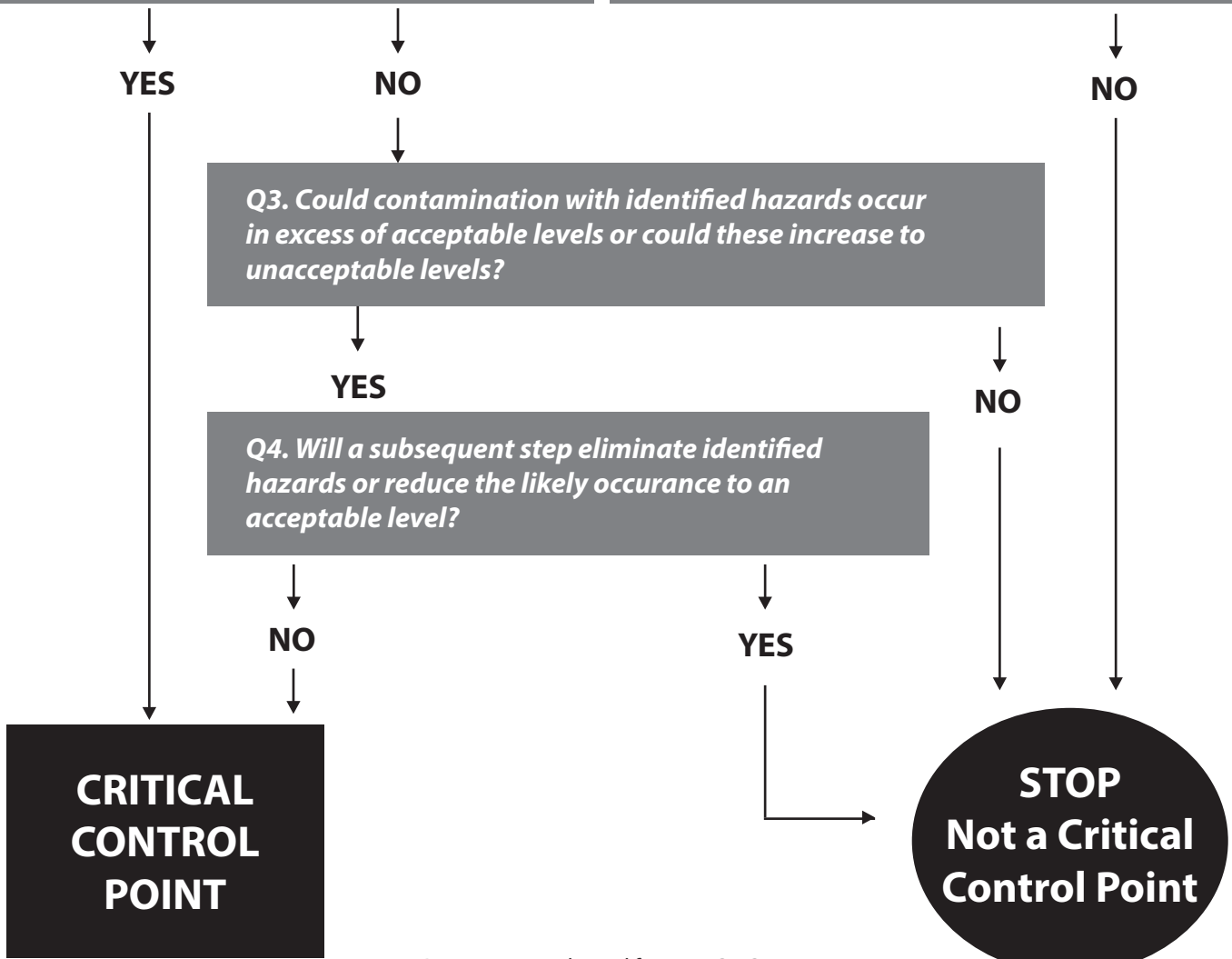
HACCP Toolkit

Q1. Do preventative measures exist at this step or subsequent steps for the identified hazard?



Q2. Does this step eliminate or reduce the likely occurrence of a hazard to an acceptable level?

Is control at this step necessary for safety?



Decision Tree adapted from NACMCF

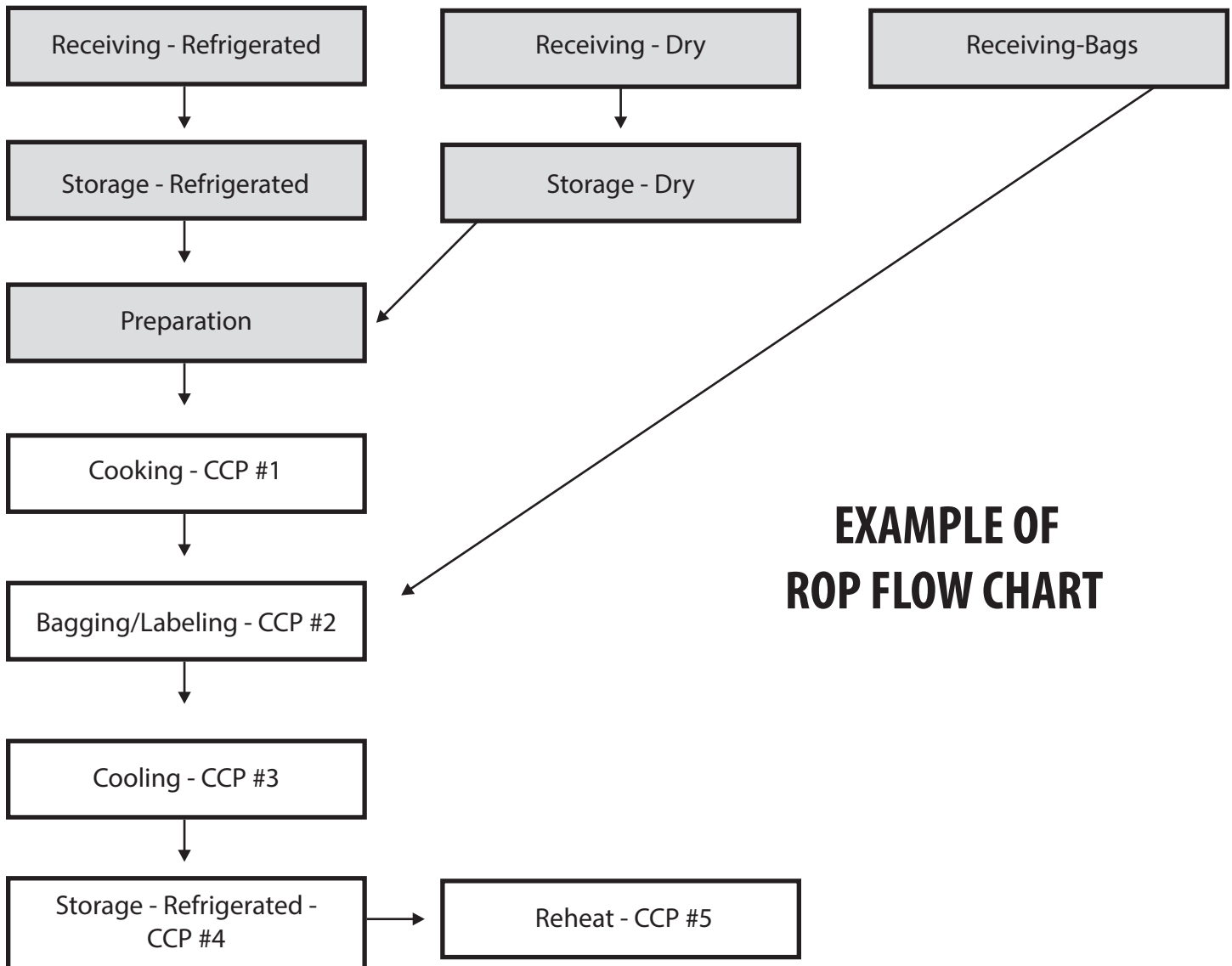
All HACCP plans have seven main components:

- 1) Conduct a hazard analysis
- 2) Determine Critical Control Points (CCP)
- 3) Establish Critical Limits
- 4) Establish monitoring procedures
- 5) Establish corrective actions
- 6) Establish verification of procedures
- 7) Establish record keeping and documentation procedures

The Flow Chart

The Flow Chart is like a road map showing the flow of food through your restaurant from Receiving to Serving. It helps to verify that all the steps the food goes through have been captured. The Flow Chart can be a verification tool if you are doing the special processing in other restaurants in your chain. How restaurant A makes the chicken noodle soup for cook/chill might not be the same way that restaurant C makes it. This is a good time to standardize the way chicken noodle soup is made in your company.

HACCP Plan Flow Charts will look different from operation to operation, and process to process. They will help you when writing your Hazard Analysis to determine if operational steps are to be identified as Critical Control Points (CCPs).



The Hazard Analysis

A **food safety hazard** is any unacceptable contamination by a biological, chemical, or physical agent at sufficient levels to cause a food to be unsafe for human consumption. By far the most common agents are biological, mainly harmful bacteria, other microorganisms and parasites.

Biological hazards include: bacteria, bacterial toxins, viruses and parasitic organisms that could survive, grow, or contaminate food products/raw materials, and potentially cause foodborne illness.

Chemical hazards could result from a number of sources: agricultural chemicals, insecticides, fungicides, etc.; cleaning/sanitizing agents and chemicals, certain naturally-occurring toxins such as Scombrototoxin (histamine), Ciguatoxin, mycotoxins from mold, shellfish toxins, etc. and misuse of food chemicals (preservatives, additives, etc.).

Physical hazards include: inadvertent field matter (stones, wood, metal fragments, etc.); inadvertent processing residues (glass, metal fragments, etc.); intentional materials (employee sabotage) and miscellaneous particulates and fragments.

Special processed foods have a higher risk for these hazards due to a reduced oxygen atmosphere in a bag, or using curing salts, or extending a shelf life past the standard 7 days. Hazards are a huge threat to your business. You need to understand the operation and determine what food safety hazards are likely to occur. You need to understand how the people, equipment, methods, and foods all affect each other as well as the processes and procedures used to prepare the food.

Conducting a Hazard Analysis as the first step in creating your HACCP Plan. The HACCP team who will be creating the HACCP Plan for your facility should evaluate the hazards of significance and preventative measures needed for each food product and process you wish to conduct. You should use as many sources of information as possible in this evaluation phase, including scientific literature, expert opinion, laboratory testing and your state food code. Go to the UDSA and FDA websites for guidance documents and generic HACCP Plans. The FDA link is provided below. <http://www.fda.gov/downloads/Food/GuidanceRegulation/HACCP/UCM077957.pdf>

HACCP Toolkit

First think about the flow of the food through your restaurant – these can be called operational steps. They are typically receiving, storing (cold and dry), preparation, cooking, packaging, cooling, storing, reheating and serving. These steps will be different depending on your special process. Then think about any potential biological, physical or chemical hazards at these steps. Let's take chicken for example- the primary pathogens of concern would be salmonella and campylobacter at receiving, storing, and cooking. Physical hazards might be bone in the chicken. A chemical hazard might be very strong quaternary ammonium sanitizer residue on the food prep table. Are these hazards significant? How do you control these hazards?

With this information you can complete the Hazard Analysis worksheet answering the questions as to whether a hazard exists at each point in your facility, determine it's a significant risk or not, determine control measures, and finally determine whether the step is a Critical Control Point (CCP).

Hazard Analysis Worksheet

Ingredient / Process Step	Potential Hazard Introduced, controlled, or enhanced at this step	Is the potential hazard significant?	Justification for decision	What control measures can be applied to prevent the significant hazards?	Is this step a Critical Control Point (CCP)?
Receiving					
Storage					
Preparation					
Cook					
Cool					
Final Preparation					
Cold Storage					
Serving					

The HACCP Plan Worksheet

The HACCP Plan Worksheet is where we are going to get specific on the “who, what, where and when” with the Critical Control Points identified in our Hazard Analysis. The HACCP Plan Worksheet contains the following:

- Identification of hazards associated with your special processing
- Critical limits to control the hazards identified
- Who will monitor the hazards in the operational steps, how they will be monitored, and when they will be monitored
- Corrective actions for deviation from established critical limits
- How you will verify that your HACCP plan is being followed correctly
- Records that will be kept for verification

This worksheet is the heart of your HACCP Plan

Let's work our way across the worksheet from left to right

- 1) The very left hand column is our starting point. This column is where we will list all of our identified Critical Control Points. Write "Cook CCP #1" in the first row.
- 2) In the Hazard Column you will write in the hazards listed in your Hazard Analysis.
- 3) In the Critical Limits column you will list what has to be done to control the hazards (the pathogens) - in this case we know that salmonella is killed once the chicken reaches 165°F for a minimum of 15 seconds. Write this in the Critical Limits column.
- 4) The next column is Monitoring and is divided into 4 sections – What, How, Frequency and Who. Monitoring explains how we are going to ensure we reach the Critical Limits and it involves action by a person.
 - a. "What" are we going to be measuring? - The internal temperature of the chicken.
 - b. "How" are we going to measure? - We are going to use a probe food thermometer to measure the internal temperature of the chicken.
 - c. "Frequency" – This is how often we will measure the internal temperature of the chicken
 - d. "Who" is going to be measuring? You or another designated person(s)
- 5) Corrective Action is the next column. Even the best laid plans go awry sometimes, so it's important to have a plan if something goes wrong. In this case, if I measure the internal temperature of the chicken and it is only measuring 138°F my plan is to put the chicken back into the oven and keep cooking it.
- 6) Verification is having someone else check my charts and work to make sure I am not cheating and just writing in the temperatures without using the thermometer. The person usually doing verification is the manager or owner. Verification is a good way to spot training issues as well. If you have a new person you can tell rather quickly if they need more help on understanding how to do this task.
- 7) The last column is Records. We will list all the charts that the person verifying will have to review for this CCP. By listing the charts we know they won't be forgotten and not reviewed.

The HACCP Plan Worksheet is where you state how you are going to be proactive on serving safe food. It shows you understand the hazards and how to control them.

Standard Operating Procedures (SOPs)

Standard Operating Procedures, commonly called SOPs, are a detailed set of instructions, steps or procedures that control the operational conditions within a food establishment, which allow for environmental conditions favorable to the production of safe food. These written procedures are often equivalent to prerequisite programs of HACCP.

Let's look at calibrating a food probe thermometer. You need a food probe thermometer to measure the final cook temperature of a product. You need to know the critical limit temperature of the food item when pathogen kill has been achieved. To ensure that you have achieved the critical limit to achieve pathogen kill your thermometer needs to be accurately and frequently calibrated. You will need to write a complete and detailed step-by-step instruction list of how to calibrate your thermometer. You should write it so that anyone walking in off the street can read the instructions and demonstrate that they can correctly calibrate your thermometer. You might start off with:

1. Foodservice employees will use either the ice-point method or boiling-point method to verify the accuracy of food thermometers. This is known as calibration of the thermometer.
2. To use ice-point method:
 - Insert the thermometer probe into a cup of crushed ice.
 - Add enough cold water to remove any air pockets that might remain.
 - Allow the temperature reading to stabilize before reading temperature.
 - Temperature measurement should be 32 °F (+ 2 °F) [or 0 °C (+ 1 °C)]. If not, adjust according to manufacturer's instructions.
3. To use boiling-point method:
 - Immerse at least the first two inches of the probe into boiling water.
 - Allow the temperature reading to stabilize before reading temperature.
 - Reading should be 212°F [or 100 °C]. This reading may vary at higher altitudes. If adjustment is required, follow manufacturer's instructions.
4. Foodservice employees will check the accuracy of the food thermometers:
 - At regular intervals (at least once per week)
 - If dropped
 - If used to measure extreme temperatures, such as in an oven
 - Whenever accuracy is in question

If you are conducting Reduced Oxygen Packaging the following SOPs are required:

- ✓ No Bare Hand Contact with RTE Foods
- ✓ Designated and segregated work area with access on by trained employees
- ✓ Cleaning and sanitizing ROP area
- ✓ Employee Training
- ✓ Labeling the bags with examples of the labels
- ✓ How you are going to maintain the refrigeration data logger and what times of day will you do the manual checks (2 per day required)
- ✓ How you are going to maintain the records
- ✓ Other SOPs that you might need include Proper Hand Washing, Calibrating a Food Scale, Ill food workers, how to fill a cook/chill bag, etc. You can download many SOPs from http://sop.nfsmi.org/sop_list.php

Chart 4-A Summary Chart for Minimum Cooking Food Temperatures and Holding Times Required by Chapter 3

Food	Minimum Temperature	Minimum Holding Time at the Specified Temperature
Raw Eggs prepared for immediate service Commercially Raised Game Animals and Exotic Species of Game Animals Fish, Pork, and Meat Not Otherwise Specified in this Chart or in & 3-401.11(B)	63°C (145°F)	15 seconds
Raw Eggs not prepared for immediate service Comminuted Commercially Raised Game Animals and Exotic Species of Game Animals Comminuted Fish and Meats Injected Meats Mechanically Tenderized Meats	70°C (158°F)	< 1 second
	68°C (155°F)	15 seconds
	66°C (150°F)	1 minute
	63°C (145°F)	3 minutes
Poultry Baluts Stuffed Fish; Stuffed Meat; Stuffed Pasta; Stuffed Poultry; Stuffed Ratites Stuffing Containing Fish, Meat, Poultry, or Ratites Wild Game Animal	74°C (165°F)	15 seconds
Food Cooked in A Microwave Oven	74°C (165°F) and hold for 2 minutes after removing from microwave oven	



Cleaning and Sanitizing Food Contact Surfaces ***(Sample SOP)***

PURPOSE: To prevent foodborne illness by ensuring that all food contact surfaces are properly cleaned and sanitized.

SCOPE: This procedure applies to foodservice employees involved in cleaning and sanitizing food contact surfaces.

KEY WORDS: Food Contact Surface, Cleaning, Sanitizing

INSTRUCTIONS:

1. Train foodservice employees on using the procedures in this SOP.
2. Follow State or local health department requirements.
3. Follow manufacturer's instructions regarding the use and maintenance of equipment and use of chemicals for cleaning and sanitizing food contact surfaces. Refer to Storing and Using Poisonous or Toxic Chemicals SOP.
4. If State or local requirements are based on the 2001 FDA Food Code, wash, rinse, and sanitize food contact surfaces of sinks, tables, equipment, utensils, thermometers, carts, and equipment:
 - Before each use
 - Between uses when preparing different types of raw animal foods, such as eggs, fish, meat, and poultry
 - Between uses when preparing ready-to-eat foods and raw animal foods, such as eggs, fish, meat, and poultry
 - Any time contamination occurs or is suspected
5. Wash, rinse, and sanitize food contact surfaces of sinks, tables, equipment, utensils, thermometers, carts, and equipment using the following procedure:
 - Wash surface with detergent solution.
 - Rinse surface with clean water.
 - Sanitize surface using a sanitizing solution mixed at a concentration specified on the manufacturer's label.
 - Place wet items in a manner to allow air drying.

6. If a 3-compartment sink is used, setup and use the sink in the following manner:

- In the first compartment, wash with a clean detergent solution at or above 110 oF or at the temperature specified by the detergent manufacturer.
- In the second compartment, rinse with clean water.
- In the third compartment, sanitize with a sanitizing solution mixed at a concentration specified on the manufacturer's label or by immersing in hot water at or above 171 oF for 30 seconds. Test the chemical sanitizer concentration by using an appropriate test kit.

7. If a dishmachine is used:

- Check with the dishmachine manufacturer to verify that the information on the data plate is correct.
- Refer to the information on the data plate for determining wash, rinse, and sanitization (final) rinse temperatures; sanitizing solution concentrations; and water pressures, if applicable.
- Follow manufacturer's instructions for use.
- Ensure that food contact surfaces reach a surface temperature of 160 oF or above if using hot water to sanitize.

MONITORING:

Foodservice employees will:

1. During all hours of operation, visually and physically inspect food contact surfaces of equipment and utensils to ensure that the surfaces are clean.
2. In a 3-compartment sink, on a daily basis:
 - Visually monitor that the water in each compartment is clean.
 - Take the water temperature in the first compartment of the sink by using a calibrated thermometer.
 - If using chemicals to sanitize, test the sanitizer concentration by using the appropriate test kit for the chemical.
 - If using hot water to sanitize, use a calibrated thermometer to measure the water temperature. Refer to Using and Calibrating Thermometers SOPs.
3. In a dishmachine, on a daily basis:
 - Visually monitor that the water and the interior parts of the machine are clean and free of debris.
 - Continually monitor the temperature and pressure gauges, if applicable, to ensure that the machine is operating according to the data plate.

HACCP Toolkit

- For hot water sanitizing dishmachine, ensure that food contact surfaces are reaching the appropriate temperature by placing a piece of heat sensitive tape on a smallware item or a maximum registering thermometer on a rack and running the item or rack through the dishmachine.
- For chemical sanitizing dishmachine, check the sanitizer concentration on a recently washed food-contact surface using an appropriate test kit.

CORRECTIVE ACTION:

1. Retrain any foodservice employee found not following the procedures in this SOP.
2. Wash, rinse, and sanitize dirty food contact surfaces. Sanitize food contact surfaces if it is discovered that the surfaces were not properly sanitized. Discard food that comes in contact with food contact surfaces that have not been sanitized properly.
3. In a 3-compartment sink:
 - Drain and refill compartments periodically and as needed to keep the water clean.
 - Adjust the water temperature by adding hot water until the desired temperature is reached.
 - Add more sanitizer or water, as appropriate, until the proper concentration is achieved.
4. In a dishmachine:
 - Drain and refill the machine periodically and as needed to keep the water clean.
 - Contact the appropriate individual(s) to have the machine repaired if the machine is not reaching the proper wash temperature indicated on the data plate.
 - For a hot water sanitizing dishmachine, retest by running the machine again. If the appropriate surface temperature is still not achieved on the second run, contact the appropriate individual(s) to have the machine repaired. Wash, rinse, and sanitize in the 3-compartment sink until the machine is repaired or use disposable single service/single-use items if a 3-compartment sink is not available.
 - For a chemical sanitizing dishmachine, check the level of sanitizer remaining in bulk container. Fill, if needed. "Prime" the machine according to the manufacturer's instructions to ensure that the sanitizer is being pumped through the machine. Retest. If the proper sanitizer concentration level is not achieved, stop using the machine and contact the appropriate individual(s) to have it repaired. Use a 3-compartment sink to wash, rinse, and sanitize until the machine is repaired.

HACCP Toolkit

VERIFICATION AND RECORD KEEPING:

Foodservice employees will record monitoring activities and any corrective action taken on the Food Contact Surfaces Cleaning and Sanitizing Log. The foodservice manager will verify that foodservice employees have taken the required temperatures and tested the sanitizer concentration by visually monitoring foodservice employees during the shift and reviewing, initialing, and dating the Food Contact Surfaces Cleaning and Sanitizing Log. The log will be kept on file for at least 1 year. The foodservice manager will complete the Food Safety Checklist daily. The Food Safety Checklist is to be kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ BY: _____

DATE REVIEWED: _____ BY: _____

DATE REVISED: _____ BY: _____



Cooling Potentially Hazardous Foods ***(Sample SOP)***

PURPOSE: To prevent foodborne illness by ensuring that all potentially hazardous foods are cooled properly.

SCOPE: This procedure applies to foodservice employees who prepare or serve food.

KEY WORDS: Cross-Contamination, Temperatures, Cooling, Holding

INSTRUCTIONS:

1. Train foodservice employees on using the procedures in this SOP. Refer to the Using and Calibrating Thermometers SOP.
2. Follow State or local health department requirements.
3. Modify menus, production schedules, and staff work hours to allow for implementation of proper cooling procedures.
4. Prepare and cool food in small batches.
5. Chill food rapidly using an appropriate cooling method:
 - Place food in shallow containers no more than 4 inches deep and uncovered on the top shelf in the back of the walk-in or reach-in cooler.
 - Use a quick-chill unit such as a blast chiller.
 - Stir the food in a container placed in an ice water bath.
 - Add ice as an ingredient.
 - Separate food into smaller or thinner portions.
 - Pre-chill ingredients and containers used for making bulk items such as salads.
6. If State or local requirements are based on the 2001 FDA Food Code, chill cooked, hot food from: 135 °F to 70 °F within 2 hours. Take corrective action immediately if food is not chilled from
 - 135 °F to 70 °F within 2 hours.
 - 70 °F to 41 °F or below in remaining time. The total cooling process from 135 °F to 41 °F may not exceed 6 hours. Take corrective action immediately if food is not chilled from 135 °F to 41 °F within the 6 hour cooling process.
7. Chill prepared, ready-to-eat foods such as tuna salad and cut melons from 70 °F to 41 °F or below within 4 hours. Take corrective action immediately if ready-to-eat food is not chilled from 70 °F to 41 °F within 4 hours.

HACCP Toolkit

MONITORING:

1. Use a clean, sanitized, and calibrated probe thermometer to measure the internal temperature of the food during the cooling process.
2. Monitor temperatures of products every hour throughout the cooling process by inserting a probe thermometer into the center of the food and at various locations in the product.

CORRECTIVE ACTION:

1. Retrain any foodservice employee found not following the procedures in this SOP.
2. Reheat cooked, hot food to 165 °F for 15 seconds and start the cooling process again using a different cooling method when the food is:
 - Above 70 °F and 2 hours or less into the cooling process; and
 - Above 41 °F and 6 hours or less into the cooling process.
3. Discard cooked, hot food immediately when the food is:
 - Above 70 °F and more than 2 hours into the cooling process; or
 - Above 41 °F and more than 6 hours into the cooling process.
3. Use a different cooling method for prepared ready-to-eat foods when the food is above 41 °F and less than 4 hours into the cooling process.
4. Discard prepared ready-to-eat foods when the food is above 41 °F and more than 4 hours into the cooling process.

VERIFICATION AND RECORD KEEPING:

Foodservice employees will record temperatures and corrective actions taken on the Cooling Temperature Log. Foodservice employees will record if there are no foods cooled on any working day by indicating "No Foods Cooled" on the Cooling Temperature Log. The foodservice manager will verify that foodservice employees are cooling food properly by visually monitoring foodservice employees during the shift and reviewing, initialing, and dating the temperature log each working day. The Cooling Temperature Logs are to be kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ BY: _____

DATE REVIEWED: _____ BY: _____

DATE REVISED: _____ BY: _____



Personal Hygiene ***(Sample SOP)***

PURPOSE: To prevent contamination of food by foodservice employees.

SCOPE: This procedure applies to foodservice employees who handle, prepare, or serve food.

KEY WORDS: Personal Hygiene, Cross-Contamination, Contamination

INSTRUCTIONS:

1. Train foodservice employees on using the procedures in this SOP.
2. Follow State or local health department requirements.
3. Follow the Employee Health Policy. (Employee health policy is not included in this resource.)
4. Report to work in good health, clean, and dressed in clean attire.
5. Change apron when it becomes soiled.
6. Wash hands properly, frequently, and at the appropriate times.
7. Keep fingernails trimmed, filed, and maintained so that the edges are cleanable and not rough.
8. Avoid wearing artificial fingernails and fingernail polish.
9. Wear single-use gloves if artificial fingernails or fingernail polish are worn.
10. Do not wear any jewelry except for a plain ring such as a wedding band.
11. Treat and bandage wounds and sores immediately. When hands are bandaged, single-use gloves must be worn.
12. Cover a lesion containing pus with a bandage. If the lesion is on a hand or wrist, cover with an impermeable cover such as a finger cot or stall and a single-use glove.
13. Eat, drink, use tobacco, or chew gum only in designated break areas where food or food contact surfaces may not become contaminated.
14. Taste food the correct way:
 - Place a small amount of food into a separate container.
 - Step away from exposed food and food contact surfaces.
 - Use a teaspoon to taste the food. Remove the used teaspoon and container to the dish room.
 - Never reuse a spoon that has already been used for tasting.
 - Wash hands immediately.

15. Wear suitable and effective hair restraints while in the kitchen.

MONITORING:

A designated foodservice employee will inspect employees when they report to work to be sure that each employee is following this SOP.

The designated foodservice employee will monitor that all foodservice employees are adhering to the personal hygiene policy during all hours of operation.

CORRECTIVE ACTION:

1. Retrain any foodservice employee found not following the procedures in this SOP.
2. Discard affected food.

VERIFICATION AND RECORD KEEPING:

The foodservice manager will verify that foodservice employees are following this SOP by visually observing the employees during all hours of operation. The foodservice manager will complete the Food Safety Checklist daily. Foodservice employees will record any discarded food on the Damaged or Discarded Product Log. The Food Safety Checklist and Damaged or Discarded Product Logs are to be kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ BY: _____

DATE REVIEWED: _____ BY: _____

DATE REVISED: _____ BY: _____



Using and Calibrating Thermometers

(Sample SOP)

PURPOSE: To prevent foodborne illness by ensuring that the appropriate type of thermometer is used to measure internal product temperatures and that thermometers used are correctly calibrated for accuracy.

SCOPE: This procedure applies to foodservice employees who prepare, cook, and cool food.

KEY WORDS: Thermometers, Calibration

INSTRUCTIONS:

1. Train foodservice employees on using the procedures in this SOP.
2. Follow State or local health department requirements.
3. Follow the food thermometer manufacturer's instructions for use. Use a food thermometer that measures temperatures from 0 °F (-18 °C) to 220 °F (104 °C) and is appropriate for the temperature being taken.

For example:

- Temperatures of thin products, such as hamburgers, chicken breasts, pizza, filets, nuggets, hot dogs, and sausage patties, must be taken using a thermistor or thermocouple with a thin probe.
 - Bimetallic, dial-faced stem thermometers are accurate only when measuring temperatures of thick foods. They may not be used to measure temperatures of thin foods. A dimple mark located on the stem of the thermometer indicates the maximum food thickness that can be accurately measured.
 - Use only oven-safe, bimetallic thermometers when measuring temperatures of food while cooking in an oven.
4. Have food thermometers easily-accessible to foodservice employees during all hours of operation.
 5. Clean and sanitize food thermometers before each use. Refer to the Cleaning and Sanitizing Food Contact Surfaces SOP for the proper procedure to follow.
 6. Store food thermometers in an area that is clean and where they are not subject to contamination.

MONITORING:

1. Foodservice employees will use either the ice-point method or boiling-point method to verify the accuracy of food thermometers. This is known as calibration of the thermometer.
2. To use ice-point method:
 - Insert the thermometer probe into a cup of crushed ice.
 - Add enough cold water to remove any air pockets that might remain.
 - Allow the temperature reading to stabilize before reading temperature.
 - Temperature measurement should be 32 °F (+ 2 °F) [or 0 °C (+ 1 °C)]. If not, adjust according to manufacturer's instructions.
3. To use boiling-point method:
 - Immerse at least the first two inches of the probe into boiling water.
 - Allow the temperature reading to stabilize before reading temperature.
 - Reading should be 212 °F (+ 2 °F) [or 100 °C (+ 1 °C)]. This reading may vary at higher altitudes. If adjustment is required, follow manufacturer's instructions.
4. Foodservice employees will check the accuracy of the food thermometers:
 - At regular intervals (at least once per week)
 - If dropped
 - If used to measure extreme temperatures, such as in an oven
 - Whenever accuracy is in question

CORRECTIVE ACTION:

1. Retrain any foodservice employee found not following the procedures in this SOP.
2. For an inaccurate, bimetallic, dial-faced thermometer, adjust the temperature by turning the dial while securing the calibration nut (located just under or below the dial) with pliers or a wrench.
3. For an inaccurate, digital thermometer with a reset button, adjust the thermometer according to manufacturer's instructions.
4. If an inaccurate thermometer cannot be adjusted on-site, discontinue using it, and follow manufacturer's instructions for having the thermometer calibrated.
5. Retrain employees who are using or calibrating food thermometers improperly.

HACCP Toolkit

VERIFICATION AND RECORD KEEPING:

Foodservice employees will record the calibration temperature and any corrective action taken, if applicable, on the Thermometer Calibration Log each time a thermometer is calibrated. The foodservice manager will verify that foodservice employees are using and calibrating thermometers properly by making visual observations of the employees during the calibration process and all operating hours. The foodservice manager will review and initial the Calibration Log daily. The Calibration Log will be kept on file a minimum of 1 year. The foodservice manager will complete the Food Safety Checklist daily. The Food Safety Checklist is to be kept on file for a minimum of 1 year.

DATE IMPLEMENTED: _____ BY: _____

DATE REVIEWED: _____ BY: _____

DATE REVISED: _____ BY: _____

The Training Program

Special processing should not be done by just anyone in your restaurant. You will want to assign specific people who will cure the meat or make the sous vide. You need to create a training program that defines what the employee must learn before they can actually do the special processing. The program can be written in SOP format detailing each step of a particular function – how they clean the vacuum packaging machine, how and where they hang the prosciutto, how they fill the sous vide bags, etc

You will also keep a training log for each employee that will be doing the special processing identifying what training they received, the date of the training, the signature of who did the training, and the signature of the employee. This ensures that:

- 1) the employee is receiving the training needed to work the HACCP Plan
- 2) the employee understands this training is important
- 3) the employee is taking responsibility for doing the work correctly
- 4) the employee understands what the critical limits are to reduce hazards in the food, and corrective actions in case the critical limits have not been achieved
- 5) the employer is providing the training to ensure the food stays safe for the customers

Training your employees goes beyond telling them to get their food handler card. It means possibly watching food safety videos, reading the SOP's, going to specialized managers training or becoming ServSafe certified, attending HACCP trainings, having a salesperson train employees on operating a new piece of equipment, or you personally teaching employees how you want a specific task done.

Special processing in your restaurant is a higher risk practice. Your business is resting in the hands of an employee that will be making the cured sausages, or running the cook/chill bagging of spaghetti sauce, or making the shelf stable salsa. Having a well documented training program will help ensure safe food handling practices in your kitchen.

HACCP Employee Training Record

Hazard Analysis and Critical Control Points (HACCP) is a preventive approach to assuring food safety.



Employee Name	Date	Training Topics	Length of Training	Employee Initials	Trainer Initials
(EXAMPLE) John Smith	July 18	Cooling Liquid Foods	1 Hour	JS	MC

Instructions: Use this form to record food safety training (GMP's, SOP's, etc) provided to employees. Maintain this form for 1 year.

The Records

Records are the format for documenting the data, proving that the critical limits have been met, and documenting corrective actions if those limits aren't met. Records are reviewed to verify that a HACCP plan is being followed. Records are usually kept in a chart format

There are a number of different types of charts used in HACCP Plans. The more common ones are:

- Receiving Charts (date/products/temperatures)
- Rejection Charts (date/products rejected at receiving/why)
- Daily Refrigeration/Freezer Temperatures
- Cook/Cool/Reheat Charts (dates/products/finished cook dates/times/temperatures and cooling dates/times/temperatures and reheating dates/times/temperatures)
- A Corrective Action Charts
- Thermometer Calibration (dates/calibrated to 32F in ice water)
- Employee Training Charts (date/subject of training)

There can be other charts - it just depends what you are doing in your restaurant. If you have a variance from the Oregon Health Authority to cure meats you would have a chart for calibrating the scale you measure your cure salt on. If you are vacuum packaging raw beef steaks you might want a chart for recording dates you vacuum packed on, the product, the amount of packages packed and the use by date. Not all charts are for temperatures. Charts can be for any data you want to track, such as Employee Training.

Charts are usually kept for a period of time in your restaurant. The code states you must keep your HACCP Charts for 6 months. Many places keep them for a year or more. The charts will be reviewed by your Health Inspector during your semi-annual inspections.

When you develop a HACCP Plan it is not just a document that needs to get approval from your local Health Department, or a variance requirement from the Oregon Health Authority that simply needs approved, or just being proactive on your food safety practices – it's also a legal document. If someone should claim that they got sick from the food you prepared under the HACCP Plan your charts and HACCP Plan could be admissible in a court of law. Operating under an approved HACCP Plan could help reduce your liability. It's very important that once you have an approved HACCP Plan that you are earnest at maintaining the charts as they are your proof of compliance.

HACCP Refrigeration Log

Hazard Analysis and Critical Control Points (HACCP) is a preventive approach to assuring food safety.



Refrigeration Unit	Date	Time	Temp	Corrective Action taken? <i>(If yes = specify what action taken)</i>	Initials	Verified by/date
(EXAMPLE)	July 18, 2013	8 AM	38 F	No	MC	JS/July 18

Instructions: Employee will record the required information on this chart. If refrigeration temperature measures above 41 of implement the Corrective Actions - refer to the HACCP Plan Worksheet. Maintain this chart for 1 year.

HACCP Cook and Cooling Temperature Log
 Hazard Analysis and Critical Control Points (HACCP) is a preventive approach to assuring food safety.



Date	Food Item	135-70°F in 2 hours						70-41°F in 4 hours				Corrective Action taken? (If yes = specify what action taken)	Initials	Verified by/date	
		Time/ Cook/ Temp	Time/ Cool/ Temp	Time/ Cool/ Temp	Time/ Cool/ Temp	Time/ Cool/ Temp	Time/ Cool/ Temp	Time/ Cool/ Temp	Time/ Cool/ Temp	Time/ Cool/ Temp					
EXAMPLE	Chicken	10 AM 170	11 AM 100	12 PM 69	1 PM 60	2 PM 50	3 PM 45	4 PM 38	No	JS	MC 6/12				

Instructions: Record the final cook time and temperature. Record cooling time and temperatures hourly. Implement corrective actions if not meeting the critical limits - refer to the HACCP Plan Worksheet. Maintain records this chart for 1 year.

HACCP Thermometer Calibration Log

Hazard Analysis and Critical Control Points (HACCP) is a preventive approach to assuring food safety.



Date	Thermometer Being Calibrated	Temperature Reading	Corrective Action	Employee Initials	Verified by/date
July 18, 2013	(EXAMPLE)	32 F	No	MC	JS/July 18

Instructions: Calibrate thermometers once a week to 32oF in ice water. Record Corrective Action if deviation found - refer to HACCP Plan Worksheet. Refer to SOP for proper handling of thermometer in use. Maintain this record for 1 year.

additional links

Link to the current 2012 Oregon Food Sanitation Rules

<http://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Documents/foodsantiationrulesweb.pdf>

Links to the Fact Sheets provided by the Oregon Health Authority on the Sept. 4, 2012 Revised 2012 Oregon Food Sanitation Rules affecting Special Processing and HACCP Plans:

<http://public.health.oregon.gov/Partners/foodsafetycounty/Documents/FactSheet2ROP.pdf>

<http://public.health.oregon.gov/Partners/foodsafetycounty/Documents/FactSheet4SousVide.pdf>

<http://public.health.oregon.gov/Partners/foodsafetycounty/Documents/FactSheet3Variance.pdf>

Link to FDA HACCP Plan Guidance:

<http://www.fda.gov/downloads/Food/GuidanceRegulation/HACCP/UCM077957.pdf>

OHA variance page

<http://public.health.oregon.gov/HealthyEnvironments/FoodSafety/Pages/variance.aspx>

NFSMI SOPs

<http://sop.nfsmi.org/HACCPBasedSOPs.php>