|  |  |
| --- | --- |
| **HACCP Plan: Canning or Bottling Acidified or Acidic Foods**  **Establishment Name and Address** | |
| Products: | List the final products for this process. If menu flexibility is a concern, discuss with the regulatory authority how best to build that flexibility into this plan. |
| Ingredients: | Provide a list of product names (such as acidified sushi rice, salad dressings, beef medallions) and ingredients, including the proteins and any marinades. To allow for menu flexibility, include all raw major and minor ingredients that might be used occasionally with this process (such as seasonal menu items). If making sausages, what type and diameter of edible sausage casing will be used? Exact recipes will be required for processes such as canning, fermentation, or curing. For more information, refer to the section of this manual that covers the specific process in which you are interested. |
| Packaging Spec’s: | How will the finished product be packaged (vacuum, modified atmosphere, controlled atmosphere, canned, bottled, cartoned, bagged, or wrapped)? What type of ROP film will be used)? |
| Labeling Req's: | What information must be on the package label? What allergens are present in the product that must be specifically identified on the label? Packaging and use-by dates? If product may or will be sold to consumers for home use, what safe handling instructions are required? (If the consumer must maintain temperature control, or must cook or reheat to a certain temperature, those instructions must be included on the label along with a consume- or discard-by date). Provide an example of the label that will be used. |
| Intended Use: | Is the product displayed and sold refrigerated, or frozen? Is the finished product ready-to-eat, or will it be subjected to full cooking at point of use (such as by the consumer) or as an ingredient in a recipe? Describe the typical consumer – general population, or high-risk population? Is the product used in-house only, sold for consumers’ home use, or both? Is the finished product used in-house in another recipe? |
| Time/Shelf Life: | What is the shelf life for each product? Is the product stored refrigerated, frozen, or at room temperature? If refrigerated or frozen, what are the required temperatures? If different products have different shelf-life and storage temperatures, list those as separate line-items. Refer to the section of this manual pertaining to your process for further guidance on shelf life. |

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| **PROCESS DESCRIPTION** |
| Summarize briefly how this process is used. Is the product used in-house only, or is it sold for customer use off premises? Describe or provide a diagram of the space where this process will be conducted. Is there a dedicated work area, or a procedure to prevent the possibility of cross contamination? |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **MAJOR EQUIPMENT LIST** (Include make, model, and link to specification sheet) | | | | |
| Grinder |  | | | |
| Mixer |  | | | |
| Thermometers/Temperature Measuring Device | | | |  |
| Electronic Cooler Temperature Logger | | | |  |
| pH Meter | |  | | |
| Scale | |  | | |
| Smokehouse | |  | | |
| Vacuum Packaging Machine | | |  | |
| Assorted Food Grade Measuring Containers, Utensils, Lugs, Totes | | | | |
|  | | | | |
| Add Other Equipment As Needed, e.g., Sous Vide Cooking Systems, Stuffers, Dehydrators, etc. | | | | |
|  | | | | |
|  | | | | |
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| --- | --- |
| **HACCP TEAM** | |
| Which staff members will be trained and have HACCP responsibilities? Who will be responsible for training team members and maintaining the HACCP plan? | |
| **Title** | **Role** |
| Example: Executive Chef | HACCP Team Leader |
|  | HACCP Team Member |
|  | HACCP Team Member |
|  | HACCP Team Member |
|  | HACCP Team Member |

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| **PROCESS FLOW DIAGRAM** |
| Verify that this diagram accurately represents your process, and modify as necessary using inserted text boxes and arrows. Or, you may provide your own process flow diagram on a separate sheet of paper. **Each step of the process must be represented.**  The steps in the Hazard Analysis and of the Standard Operating Procedure below must exactly match the steps described in the Flow Diagram. |

Receiving Raw Vegetables and Herbs, Vinegars, Seasoning, Spices (1)

(1)

Receiving of Packaging Materials (2)

Cold Storage

(3)

Preparation (5)

Dry Storage (4)

Kill Step

(6) **CCP#1**

Storage (7)

pH Testing (8)

**CCP#2**

Service (10)

Storage (9)

Discard

Verified by (Name) Date

Hazard Analysis Table: Canning or Bottling Acidified or Acidic Foods

Establishment Name:

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **HAZARD ANALYSIS** | | | | | |
| Process Step | **What are the potential hazards?**  **B: Biological**  **C: Chemical**  **P: Physical** | **Is this hazard significant at this step?** | **What is the justification of your decision on significance (likelihood/severity)?** | **What preventive measures can be used to  control the hazard(s)?** | **Is this step a CCP?** |
| Receiving Raw Vegetables  (1) | **B:** Pathogens: *Salmonella* spp., and shiga toxin-producing *E. coli*, *Listeria monocytogenes* | No | Bacterial pathogens may be present on produce and spices but normally should not be at levels hazardous to public health. Later process step will destroy vegetative pathogen cells.  Approved suppliers reduce the likelihood of toxins being present on raw materials. | * Products will be purchased from approved suppliers (Letter of Guaranty may be required) and received at proper temperatures and proper receiving procedures as noted in the SOP. | No |
| **C:** Introduction of toxins such as mycotoxin, patulin, etc. | No |
| **P:** None identified |  |
| Receiving Ambient Ingredients and Packaging (2) | **B:** None identified |  | Non-food packaging materials might have been treated/washed with chemicals not suitable for food contact surfaces | * Letters of Guaranty ensuring packaging materials are appropriate for product use will be kept on file. * Proper receiving procedures as noted in SOP. | No |
| **C:** Deleterious Chemicals | No |
| **P:** Foreign Material | No |
| Cold Storage of Raw Vegetables and Herbs (3) | **B:** Growth or cross contamination: pathogens, *Salmonella*, and *E. coli* 0157:H7 | No | Potential growth of pathogens and cross contamination are controlled by proper temperature control and preventing cross contamination per SOP, and by SSOP. | * Store as required by SC Reg. 61-25 and SOP * Cleaning and sanitizing SOP * Employee Health and Hygiene SOP * Proper maintenance and recording of refrigeration/freezer and Date Mark log | No |
| **C:** Formation of toxin from yeast & mold | No |
| **P:** None identified |  |
| Dry Storage of Ambient Ingredients and Packaging (4) | **B:** None identified |  | Foreign material is prevented by proper storage and SSOP | * Proper storage in designated area per SOP * SSOP | No |
| **C:** None identified |  |
| **P:** Introduction of Foreign Material | No |
| Preparation of Ingredients (5) | **B:** Cross contamination with pathogens: *E. coli* O157:H7, *Salmonella*, *Shigella*, Norovirus, Hepatitis A virus from handling | No | Cross contamination prevented or controlled by SSOP, SOP, Employee Health/Hygiene Policies. Later process step destroys vegetative cells  Follow SOP – no broken, cracked or damaged jars will be used. | * Process SOP * SSOP * Employee Health and Hygiene Policies * Process SOP; SSOP | No |
| **C:** None identified |  |
| **P:** Foreign material | No |
| Kill Step (6) | **B:** Survival of pathogens: *Salmonella* spp., and shiga toxin-producing *E. coli*, *L. monocytogenes* | Yes | Survival of bacteria, yeast, and mold if products are not properly thermally processed to correct temperature and time. | * Follow recommendations from Process Authority, which are Implemented in our SOP, to meet time/temperature requirements at lethality temperature. | Yes  CCP 1 |
| **C:** None identified |  |
| **P:** None identified |  |
| Storage (7) | **B:** None identified |  | Proper equilibrium pH of 4.6 or below at subsequent step will prevent formation of botulinum toxin. | * Product stored for time specified by SOP and Process Authority to ensure equilibrium pH of 4.6 or lower is reached. | No |
| **C:** Formation of botulinum toxin | Yes |
| **P:** None identified |  |
| Testing (8) | **B:** None identified |  | Finished product pH of 4.6 or below prevents toxin formation | * Finished product pH 4.6 or below per SOP | Yes  CCP 2 |
| **C:** Formation of botulinum toxin | Yes |
| **P:** None identified |  |
| Storage (9) | **B:** None identified |  | Finished product pH of 4.6 or below, storage under sanitary conditions and proper temperature prevents recontamination, pathogen growth and toxin formation | * Product is stored according to SOP requirements * SSOP | No |
| **C:** None identified |  |
| **P:** None identified |  |
| Serving (10) | **B:** Cross contamination with pathogens: *E. coli* O157:H7, *Salmonella*, *Shigella*, Norovirus, Hepatitis A virus from handling | No | Following SSOP, Employee Health and Hygiene policies prevents introduction of pathogens by improper handling during final prep/service, or by infected worker. | * Employee Health and Hygiene * SSOP * Proper serving techniques | No |
| **C:** None identified |  |
| **P:** None identified |  |

HACCP Summary Table: Canning or Bottling Acidified or Acidic Foods

Establishment Name:

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **HACCP SUMMARY (CCP Audit Table)** | | | | | | | | | |
| **(1) Critical Control Point** | **(2) Hazard Description** | **(3) Critical Limits** | **Monitoring** | | | | **(8) Corrective Action** | **(9) Verification Activities** | **(10) Record Keeping** |
| **(4) What** | **(5) How** | **(6) Frequency** | **(7) Who** |
| CCP 1  Heat Treatment | **B:** Survival of pathogens: *Salmonella* spp., and shiga toxin-producing *E. coli*, *L. monocytogenes* | What critical limits are provided by the Process Authority letter? | What specific controls must be monitored to ensure the critical limit(s) is/are met? | How will the critical limit(s) be monitored for compliance? | Each batch | Who is responsible for monitoring this critical CCP? | For each critical limit value, what corrective action is required if the critical limit is not met, to bring the process back into control? | What activity is necessary to ensure that workers are following the approved procedure, and that records are complete? Who is responsible? How often?  How often is the thermometer calibration checked? Who is responsible? | What log forms are used to record monitoring and verification data for each critical limit and for all verification activities? *List the forms by name.* |
| CCP 2  Testing | **B:** Pathogens: *C. botulinum* | pH of 4.6 or below | pH of finished product | Use a calibrated pH meter  Follow SOPs for preparing product slurry, calibrating pH meter, and testing pH | Each batch | BPCS Certified Supervisor | What corrective action is required if this critical limit is not met? | What activity is necessary to ensure that workers are following the approved procedure, and that records are complete? Who is responsible? How often?  How often does the pH meter require calibration? Who is responsible? | What log forms are used to record monitoring and verification data for each critical limit and for all verification activities? *List the forms by name.* |
| **C:** Botulinum toxin formation |

Approved by: Date:

Standard Operating Procedures: Canning or Bottling Acidified or Acidic Foods

Establishment Name:

*Only food establishment employees trained and that have a thorough understanding of the HACCP plan shall conduct the Canning of Acidified Foods operations. See notes in Hazard Analysis regarding preventive measures.*

1. **Receiving Raw Vegetables:** What must the receiving employee check or look for on each incoming shipment of refrigerated foods to ensure that they are acceptable for use – safe and not contaminated? Consider temperature at receipt as well as the condition of the packages? For what reasons would a shipment be rejected?
2. **Receiving Spices, Seasonings, Salt and Sugar and Packaging:** What must the receiving employee check or look for on each incoming shipment of non-refrigerated foods, ingredients and packaging materials to ensure that they are acceptable for use – safe and not contaminated? Consider condition of the packages? For what reasons would a shipment be rejected?
3. **Cold Storage:** What storage procedures to ensure the food is properly refrigerated and protected from contamination? What storage temperature is required?
4. **Dry Storage:** What are the required procedures to ensure the food is properly stored and protected from contamination?
5. **Preparation**:Provide instructions for preparing each ingredient. How are the ingredients mixed? What containers will be used for bottling? What other instructions must be followed? How are the bottles or jars to be prepared for filling?

Prepare 1 Test Jar that is the same size as all jars for each batch to be tested and discarded after testing. How is the test jar to be marked?

1. **Kill Step (CCP 1):** Give instructions for the kill step, using the process guidance from the Process Letter provided by the Process Authority. What steps must the employee follow to perform this critical step correctly? What temperatures and times are critical to the safety of this process? Is a test jar necessary for monitoring the critical limits?

* Critical Limit: List the critical limit values (temperature and time) that must be met to ensure the safety of this process.
* Monitoring: How is the process monitored to be sure *each critical limit* is met? What records must be maintained to document that the critical limits have been met?
* Corrective Action: For each critical limit, what corrective actions are required if the critical limit is not met?
* Verification: How will management ensure that procedures are being followed correctly, required records are being maintained, and corrective actions are effective. Who is responsible, and how often will this activity occur?

1. **Storage:** If specified by the Process Authority, product may need to be held a certain amount of time before testing and release for consumption. How and where will product be stored before testing? How long must the product be stored? What storage temperature and time are required?
2. **pH Testing (CCP 2):** Provide instructions for the testing step. How is the product in the test jar prepared for analysis to ensure a representative pH value has been reached? What is your quality target for pH, and what is the critical pH value?

* Critical Limit: What pH target must be met?
* Monitoring:

Calibrate pH meter: See procedure below for proper calibration of pH meter.

* + Prepare product slurry:

Select the batch test jar from each batch.

Place contents of test jar in clear plastic or metal blender cup.

Blend the product for approximately 1 minute to create uniform slurry.

* + Test product pH:
* After calibrating the pH meter according to the procedure below, test the pH of the product slurry. Do not use pH papers or strips.
* Record product pH in the Acidified Foods Batch Log.
* Once test is complete, discard test sample.

What records will be maintained to demonstrate compliance with the Critical Limits?

* Corrective Action: If the critical limit is not met, what is to be done with the batch of product?
* Verification: How will management ensure that procedures are being followed correctly, required records are being maintained, and corrective actions are effective. Who is responsible, and how often will this activity occur?

1. **Storage of product released for use or sale**: Where is the finished product to be held for service or sale to consumers? How is each jar or bottle to be marked or labeled?
2. **Serving**: What instructions and policies are to be followed to prevent recontamination of the finished product during final preparation and service?

### References:

A Retail Food Establishment Guide for Developing a HACCP Plan, April 2014, Association of Food and Drug Officials, <https://ag.utah.gov/documents/Retail_Food_Establishment_Guide_for_Developing_a_HACCP_Plan.pdf>

FDA 2022 Model Food Code, <https://www.fda.gov/media/164194/download>

Special Processes at Retail (FD 312), FDA – Office of Training, Education and Development (OTED)

## Sanitation Standard Operating Procedures (SSOP) - Template

### Cleaning and Sanitizing Procedure (Pre-Operational)

Properly cleaned and sanitized food contact surfaces are critical to ensuring a safe, sanitary operation. The use of **approved** cleaners and sanitizers in accordance with the manufacturer’s label instructions will reduce levels of pathogenic organisms to prevent cross contamination of the product. Detergent cleaners suspend and help remove various food soils. Chemical sanitizers reduce the number of pathogens and other microorganisms.

The clean-up process must be completed in accordance with the following general procedure. *Be sure to add any specific cleaning, sanitizing, and pre-operational inspection instructions required for the equipment used in your* ***HACCP*** *process or processes – such as blenders, choppers, and fermentation vessels*.

* Pre-cleaning – equipment and utensils shall be pre-flushed, presoaked, or scraped as necessary to eliminate excessive food debris.
* Washing – equipment and utensils shall be effectively washed to remove or completely loosen soils using a manual or mechanical means. Only approved chemicals are to be used in this process. Mix concentration according to the manufacturer’s recommendations.
* Rinsing – washed utensils and equipment shall be rinsed to remove abrasives and to remove or dilute cleaning chemicals with water.
* Sanitizing – after being washed and rinsed, equipment and utensils must be sanitized with an approved chemical by immersion, manual swabbing, brushing or pressure spraying methods. Concentration and exposure times are important to ensure the effectiveness of the chemical. Refer to the manufacturer’s label for concentrations and times.
* Air drying - all utensils and equipment shall be air dried and inspected to ensure good repair before the next use.
* Ensure that an appropriate chemical test kit such as chlorine, quaternary ammonia, iodine, etc. test strips is available and routinely used to ensure that accurate concentrations of the sanitizing solutions are being used. What is the required chemical and concentration? How is this measured? How often is this measured?

Record results/findings/activities including sanitizer strength and corrective actions on Sanitation Log, along with initials of the person who performed cleaning and sanitizing, with date and time. Periodic verification review is to be documented by management.

### Frequency of Cleaning (Operational)

Equipment, food contact surfaces, and utensils shall be cleaned in a time frame as follows:

1. Before each use with a different type of raw animal food, including beef, fish, lamb, pork or poultry;
2. Each time there is a change from working with raw foods to working with ready-to-eat foods;
3. Between uses with raw fruits or vegetables and with potentially hazardous foods.
4. At any time during the operation when contamination may have occurred;
5. If used with TCS Foods, throughout the day at least once every four hours;
6. Utensils and equipment used to prepare food must be cleaned at least once every four hours when in use.
7. Slicers, grinders, stuffers, choppers and injectors must be disassembled for cleaning and sanitizing after each use, and must be inspected for any maintenance issues when reassembled for use.
8. Before using or storing a food temperature measuring device;
9. Equipment used for storage of packaged or un-packaged food, including coolers, and the equipment is cleaned at a frequency necessary to eliminate soil residue.
10. For ice bins, at a frequency necessary to preclude accumulation of soil or mold.
11. Cooking equipment shall be cleaned at a frequency to prevent the accumulation of food residues.
12. Non-food-contact surfaces of equipment shall be cleaned at a frequency necessary to prevent the accumulation of soil residues.

Provide a diagram of the kitchen showing where the special process is to be conducted. The concern is to show how the process and product will be protected to prevent cross contamination. It is understood that many retail kitchens may not have dedicated space in which to conduct their special processes, so explanation must be provided to detail how the process and product will be protected from cross contamination through other means such as physical barriers or separation in time and space with sanitation controls from other activities in the kitchen.

## Employee Hygienic Practices - Template

1. Hands are to be thoroughly washed for 10 to 15 seconds in a hand sink with soap and water, paying particular attention to the areas underneath the fingernails and between the fingers by scrubbing thoroughly with a fingernail brush. Dry with single-use towels. Hand washing is to be done at the following times:

* Changing or putting on gloves
* After using the toilet, in the toilet room
* After coughing, sneezing, using a tissue, using tobacco, eating or drinking
* After handling soiled equipment or utensils
* Immediately before engaging in food preparation activities
* During food preparation activities necessary to remove soil and prevent cross contamination
* When switching between raw and ready-to-eat foods
* Every four hours of continuous use in a single activity
* Other times as needed to maintain good sanitation

1. Fingernails must be kept trimmed, filed, free of nail polish, and maintained so the edges are cleanable and not rough. Artificial nails are prohibited.
2. Eating and drinking are prohibited in areas where contamination of exposed food, clean equipment, utensils, unwrapped single service and single-use articles could occur. A food employee may drink from a closed beverage container so long as it is handled and stored in a way that prevents contamination.
3. Effective hair restraints and beard covers (as appropriate) must be worn in processing areas.
4. Smoking and other uses of tobacco are prohibited. If smoking is allowed only in a designated location, include the information in this section.
5. Clean outer clothing must be worn each day and changed as often as necessary throughout the day (when moving from a raw food operation to a ready-to-eat food operation.
6. Smocks and aprons used by employees are to be hung in a designated area (where?) when not in use. They are not to be worn in the toilet area, eating areas, or locker rooms.
7. Footwear is to be kept clean.
8. No jewelry (except a wedding band or other plain ring) is allowed during the handling of food.
9. Bare-hand contact with ready-to-eat food is prohibited. Employees must use gloved hands, deli paper, tongs, or other appropriate utensils to handle ready-to-eat foods.
10. All employees are required to follow the establishment’s Employee Health Policy regarding notification of management when experiencing listed symptoms, diagnoses, or exposures, and regarding required exclusions and restrictions.

**THE NEXT TWO PAGES PROVIDE A MODEL EMPLOYEE HEALTH POLICY AGREEMENT WHICH MAY BE USED AS A POSTING AND AS DOCUMENTATION OF EMPLOYEE TRAINING.**

## Food Employee Health Policy Agreement

*(Retail Food Establishment name)* is committed to ensuring the health and safety of our employees and customers, and complying with all health department regulations. The purpose of the Food Employee Health Policy is to protect consumers by ensuring that all food employees notify the **person-in-charge (PIC)**, when experiencing any listed condition so that proper steps are taken to prevent the transmission of foodborne illness.

### POLICY

All food employees experiencing any of the following symptoms shall report this to their PIC:

* Diarrhea
* Vomiting
* Jaundice
* Sore throat with fever
* Lesions (boils, infected wounds, burns) containing pus on the hand or wrist.

Food employees shall also notify their PIC whenever diagnosed by a healthcare provider with any of the following diseases that can be transmitted through food, or when they have had a significant exposure to any of these illnesses:

* Salmonellosis (non-typhoid *Salmonella*)
* *Salmonella typhi* (typhoid fever)
* Hepatitis A virus
* Shigellosis
* Norovirus
* *Escherichia coli* (EHEC or STEC)

Examples of significant exposures include:

* A member of the employee’s household is diagnosed with any of the above illnesses.
* The employee or a member of their household works in, or attended a conference or other setting where there has been a confirmed outbreak of one of the above illnesses.

### EXCLUSION, RESTRICTION, AND REINSTATEMENT (RETURN TO WORK)

If a food employee has diarrhea, vomiting, jaundice, or sore throat with fever; or if a food employee has, or has been exposed to Norovirus, *Salmonella typhi (typhoid fever),* non-typhoid Salmonellosis*, Shigella* spp. infection, *E. coli* infection (*Escherichia* coli O157:H7 or other EHEC/STEC infection), or Hepatitis A, the PIC will determine whether to **exclude**\* that employee, or to **restrict**\*\* that employee from food-handling duties. The PIC will refer to the FDA’s Employee Health and Personal Hygiene Handbook[[1]](#footnote-1) or specific guidance regarding excluding, restricting, and reinstating (return to work). In the case of most of the specified illnesses, an employee who has been excluded or restricted may not return to work until they have been asymptomatic for at least 24 hours, depending on the diagnosis. If an employee has been diagnosed with Hepatitis A, they must provide written clearance from a medical professional prior to returning to work.

If a food employee has an infected cut, wound, or lesion containing pus on the hand or wrist, that wound must be covered with an impermeable bandage and a single use glove. If not covered in this manner, the employee will be **restricted**\*\* from work.

*\*An excluded employee is not allowed to* come *to work.*

*\*\*A restricted employee’s duties will* not *include handling of food.*

### FOOD EMPLOYEE RESPONSIBILITY

All food employees shall follow the reporting requirements specified above involving symptoms, diagnoses and high-risk conditions. All food employees shall comply with any work restrictions or exclusions that are imposed upon them as required by the FDA Model Food Code. Compliance with this health policy, and with good hygienic practices, is vital to protecting the health and safety of our patrons.

### PIC RESPONSIBILITY

The PIC will:

1. Ensure that all food employees are informed and reminded of their responsibility to report to management certain symptoms or illnesses that may be transmitted through food; and
2. Take appropriate action as specified in the FDA Model Food Code including exclusion, restriction and/or monitoring of food employees who have reported certain symptoms, or who have been diagnosed with or had significant exposure to certain illnesses that may be transmitted through food.

I have received training on the Food Employee Health Policy, understand my responsibilities regarding the policy, and I will comply.

Employee Signature Date

## Special Process Employee Training Plan – Template

All personnel operating parts of the plan will be trained as specified in the HACCP Plan. Management will document the required training for each employee. As an essential, required part of HACCP-related training, food employee and supervisory training must address the food safety issues of concern.

1. Who is to be trained?
2. When does training occur? (Examples: new employee, annual, and quarterly talks on different food safety topics)
3. How is training documented?
4. What is covered in training? Must include relevant food safety issues, and training relevant to the procedures involved in the specialized process and proper corrective actions (those resulting from human error).

## HACCP Plan Verification and Maintenance – Template

### Verification Procedures - Routine

All monitoring records will be checked for accuracy and completeness prior to sale or service within 24 hours, or as prescribed by the HACCP plan. If discrepancies are noted, corrective action will be documented.

An essential element of routine verification of a HACCP process is the calibration of instruments used to make measurements to monitor critical limits. The following templates provide guidance for the most common monitoring instruments and procedures.

### Verifying Accuracy of Thermometers and Thermocouples:

Digital thermometers and probes will be checked for accuracy at least weekly (state your frequency) and when accuracy may be questionable, or when dropped or broken. Bimetallic (dial-type) thermometers are less stable than digital thermometers, and for this reason, their calibration should be verified no less than daily. All thermometers and probes will be checked for accuracy using an ice bath or a standard according to manufacturer’s recommendations and recorded on the Thermometer/Probe Accuracy Log. To check thermometer calibration using an ice bath, fill a glass with crushed ice; then add enough water to fill the gaps in the ice. Mix well for 30 seconds to a minute, then place the thermometer or thermocouple probe in the center of the ice slush without touching the sides or bottom to the container. Allow the reading to stabilize. Then record the observed temperature on the Thermometer Calibration Log. If the measured temperature is not within 32 +2 °F. (0 +1°C.), recalibrate according to manufacturer instructions, or replace the thermometer. The boiling point method should be used to check accuracy of thermometers that are used to measure cooking temperatures. In this method, the water must be at a rolling boil (212 +2 °F. or 100 +1°C.). Boiling point elevation correction[[2]](#footnote-2) should be made when appropriate and when required by the regulatory authority.

### Calibration of pH Meters and pH Testing Procedure:

Calibration of pH meters is necessary on each day of use. Calibration points above and below the **critical limit** must be used to ensure accuracy. For purposes of the processes requiring pH **control** covered in this manual, the **critical limits** for pH will be either 4.2, 4.6, 5.3, or 5.8. Calibration points for the pH meter should therefore be 7.0 and 4.0 pH values. Use of a 10.0 pH buffer is optional but not necessary as a third calibration point.

1. Follow the manufacturer’s instructions to establish a valid calibration. Typical instructions are as follows:

* Open up electrode (usually will need to pop a cap or turn the top to expose). This may not apply to some meters.
* Clear out previous pH slope (may only pertain to some meters) and set meter to calibrate mode.
* Rinse with deionized water into a waste container.
* Blot with soft, low-lint tissue – do not wipe!
* Place electrode into pH 4.0 buffer until it stabilizes (may have to confirm or enter once it stabilizes).
* Rinse with deionized water into a waste container.
* Blot with soft, low-lint tissue – do not wipe!
* Place electrode into pH 7.0 buffer until it stabilizes (may have to confirm or enter once it stabilizes).
* Some pH meters will display a slope value at this time. The slope should be within the range specified by the manufacturer. If not, recalibrate.
* Rinse with deionized water into a waste beaker or container.
* Blot with soft, low-lint tissue – do not wipe!
* The pH meter may prompt you to accept the calibration – confirm. Other meters will automatically go to testing mode once the calibration is accepted.

1. After establishing the calibration and returning the meter to testing mode, re-read the low pH standard to ensure that it reads within +0.1 pH unit from the true value (for example, 4.0 buffer should read between 3.9 and 4.1 pH units). If this test fails, repeat the calibration procedure above and this step before testing product samples. Record the calibration results on the pH calibration log or on the appropriate batch production log.
2. Now you are ready to take the pH of your product samples!
3. Rinse the probe after every standard buffer or sample using distilled or deionized water, then blot gently with a soft, low-lint tissue.
4. Prepare product samples in a manner that ensures a uniform distribution of acidity. Mix 1 ounce of products such as fermented sausage with four parts of distilled water and blend to ensure a uniform mixture. For products such as chow chow or relish, shake a product sample well, then immediately pour out at least 4 ounces into a small container; use an immersion blender or blender to homogenize. For products such as pickles, kimchi or sauerkraut, a test jar should be included in every batch. Blend the entire contents of the test jar. After homogenizing the product sample, measure the product pH and record on the appropriate batch log or pH testing log.
5. After every use, clean the pH probe according to manufacturer instructions and gently blot with a soft tissue. Over time, food residue penetrates the probe, resulting in slower readings and more drift in readings. Consult manufacturer instructions for reconditioning the probe, or replace the probe when re-conditioning is no longer effective.
6. The cotton pad in the cap for the pH probe must be kept moistened with fresh 7.0 buffer to keep the probe properly conditioned.

### Annual HACCP Plan Reverification and Maintenance

The HACCP plan and related records will be reviewed by the HACCP Team Leader at least annually and when significant modifications are proposed to ensure that procedures are accurate, working as intended, and in compliance with current regulations. A review of receiving, monitoring and training records will include an overview of corrective actions and routine verifications to identify weaknesses in procedures or policies. Adjustments are to be made when required, and retraining of staff must be provided as necessary.

If problems are identified by a team member (such as confusing or incorrect instructions), notify HACCP Team Leader so that the recommended change can be reviewed properly and implemented consistently. Any unapproved modifications to the HACCP plan, and unapproved changes to the procedures, equipment, food suppliers, or foods and ingredients used will invalidate the approval and may result in an uncontrolled food safety hazard.

Timely revisions are necessary to maintain compliance with state regulations and to ensure that HACCP procedures are effective and accurate. Certain situations require a special review:

1. Potential new hazards are identified that may be introduced into the process.
2. New ingredients are added, or when an ingredient supplier is changed.
3. The process steps or procedures are changed.
4. New or different processing equipment is introduced.
5. Production volume changes.
6. Personnel changes.
7. There are changes in the regulations.
8. Consumer complaints or illnesses are associated with a product from the process.
9. Patterns of deviations result in corrective actions.

Maintaining a record of review and revisions provides important documentation of the effective dates of procedures in force at any given time. This information is essential in the event of a food safety problem being traced to food processed using this HACCP process.

Revisions that do not change the process do not require re-approval from the regulatory authority. Changes that directly affect the process, such as changing suppliers, recipes, products, or the food preparation process, do require regulatory review and approval. Whenever the HACCP plan is revised, relevant training of HACCP team members is required; working copies of the previous version must be retracted and archived, and working copies of the new version are made available to the team. Archival original versions of the HACCP plan are maintained according to the retention schedule in the record-keeping policy.

## HACCP Plan Record Keeping

The **HACCP system** must include records that are current and maintained, and provided to the regulatory authority upon request. The **HACCP plan** submitted for regulatory approval must include blank copies of each **monitoring** record required by the plan, covering **monitoring** of **critical control points**, instrument calibrations, corrective actions, staff training, and maintenance and reassessment of the plan. **HACCP** records must demonstrate that the following are routinely employed and in compliance with the **approved** plan and with state regulations, as relevant:

* Procedures for **monitoring** the **critical control points**
* Results of **monitoring** of the **critical control points**
* **Verification** of the effectiveness of the operation or process,and
* Necessary corrective actions when a **critical limit** at a **critical control point** is not met

Documents such as supplier Letters of Guaranty and **validation** of critical **control** **measures** are permanent records and should be retained as long as the **HACCP** process is in use. Records for products of **HACCP** processes that have a short shelf life (such as the 7 days allowed for sous vide products), should be retained for at least six months, or as required by the regulatory authority. Records for products that have a long preparation process and/or shelf life should be retained for at least six months beyond the shelf life of the product batch.

Example Forms and **monitoring** logs are provided in Section 9. Electronic record-keeping systems may be an option your establishment could consider to reduce record-keeping labor. However, all electronic records should provide at least the same information identified in the example forms in Section 9. Additionally, electronic logs should:

* Secure, to prevent tampering with data entries;
* Provide automatic date and time stamping for data entries and management reviews;
* Be routinely backed up to prevent loss of data;
* Provide for documenting management review
* Provide an electronic audit trail.

Local jurisdictions may have additional requirements for electronic record-keeping systems.

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| **BATCH RECORD: Canning or Bottling Acidified or Acidic Foods** | | | | | | |  |  | |
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| **Batch:** | |  |  |  |  |  |  |  | |
|  | Recipe: |  |  |  |  |  | Date: |  | |
|  | Batch #: |  |  |  |  |  |  |  | |
|  | CCP Met? |  | Yes |  |  | No |  |  | |
|  |  |  |  | Staff Initials: | |  |  |  | |
|  |  |  |  |  |  |  |  |  | |
| **Brine:** | |  |  |  |  |  |  |  | |
|  | Type: |  |  |  |  |  | pH: |  | |
|  | Ingredients: | |  |  |  |  |  |  | |
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| **Thermal Processing:** | | |  |  |  |  |  |  | |
|  | Start Time: |  |  |  |  | Temperature: | | |  | |
|  | End Time: |  |  |  |  | Final Temperature: | | |  | |
|  | CCP Met? |  | Yes |  |  | No |  |  | |
|  |  |  |  | Staff Initials: | |  |  |  | |
|  |  |  |  |  |  |  |  |  | |
| **Storage and Testing:** | | |  |  |  |  |  |  | |
|  | Storage Location: |  |  |  |  |  |  |  | |
|  | Final pH: |  |  |  |  |  |  |  | |
|  | CCP Met? |  | Yes |  |  | No |  |  | |
|  |  |  |  | Staff Initials: | |  |  |  | |
|  |  |  |  |  |  |  |  |  | |
| **Verification:** | |  |  |  |  |  |  |  | |
|  | All CCPs Met? | | Yes |  |  | No |  |  | |
|  | Corrective Actions: | |  |  |  |  |  |  | |
|  | Verified By: |  |  |  | Date: |  |  |  | |

**Corrective Action Log**

Store Name:

Street Address:

City: State: Zip Code:

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| **CCP #** | **Date** | **Product** | **Problem** | **Disposition of Product** | **Corrective Actions** | **Person Responsible** | **Verified By/Date** | **Compliance Procedures**  **(Preventive Measures)** |
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**Thermometer Calibration Check Log**

Store Name:

Street Address:

City: State: Zip Code:

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| **Instructions**: The designated food establishment employee(s) must record the calibration temperature and corrective action taken each time a thermometer is calibrated. Thermometers intended for measuring hot temperature items must be calibrated in hot water, while those used for cold temperatures must be calibrated in ice water. The designated supervisor must verify and initial that food establishment employees are using and calibrating thermometers properly by making visual observations of employee activities during hours of operation. This log should be maintained for a minimum of 6 months. | | | | | | | | |
| **Date** | **Time** | **Thermometer**  **ID#** | **Method Used**  **(Ice Slurry/ Boiling Point)** | **Thermometer**  **Reading** | **Accurate**  **(Yes /No)** | **Corrective Action** | **Initials** | **Verified By** |
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**pH Meter Calibration and Product pH Monitoring Log**

Store Name:

Street Address:

City: State: Zip Code:

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| **Instructions:** The designated food establishment employee(s) must record the calibration of the pH meter and any corrective action taken each time the meter is calibrated. The pH meter must be calibrated daily. Verify that the 4.00 pH buffer solution reads between 3.9 and 4.1 after calibration is complete. The designated supervisor must verify and initial that food establishment employees are using and calibrating pH meter properly by visually observing employee activities during hours of operation. This log should be maintained for a minimum of 6 months. | | | | | | | | | |
| **Date & Initial** | **pH meter #** | **Calibrated before use?** | **pH 4.0 reading after calibration** | **Accurate within 3.9 – 4.1 (yes/no)** | **Corrective Action** | **Product Tested** | **Product Batch ID** | **pH value observed** | **Reviewed By/Date** |
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**Acidic or Acidified Food Cold Fill Hold/Release Log**

Store Name:

Street Address:

City: State: Zip Code:

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| **Instructions:** The designated food establishment employee(s) must record the calibration of the pH meter and any corrective action taken each time the meter is calibrated. The pH meter must be calibrated on each day of use. Verify that the 4.00 pH buffer solution reads between 3.9 and 4.1 after calibration is complete. The designated supervisor must verify and initial that food establishment employees are using and calibrating the pH meter properly by visually observing employee activities during hours of operation. This log should be maintained for a minimum of 6 months. | | | | | | | | | | |
| **Date & Initial** | **Product Tested** | **Prep Time** | **Hold temp.** | **pH meter calibrated before use?** | **pH 4.0 reading *after calibration*** | **Accurate within 3.9 – 4.1 (yes/no)** | **Product pH value** | **Corrective Action** | **Release Date & Time** | **Reviewed By/Date** |
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**Cleaning and Sanitizing Food Contact Surfaces Log**

Store Name:

Street Address:

City: State: Zip Code:

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| **Instructions:** Food establishment employees will observe practices and procedures in accordance with the SSOP and corrective action taken, if applicable. The foodservice manager will verify that food establishment employees are following the SSOP properly by making visual observations of employee activities during all hours of operation and noting any corrective actions taken, or none taken if no violations for the day. The food establishment manager will review and initial the log on a weekly basis. Retain this log for a minimum of 1 year. | | | | | |
| **Date** | **Observed Practices in Accordance with SSOP (Y/N)** | **If No, Violations Observed** | **Corrective Action** | **Initials** | **Manager Initials/Date** |
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**Employee Training Record**

Store Name:

Street Address:

City: State: Zip Code:

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| I have been provided training on the subject described above. I have read or re-read the relevant policies and procedures, and I have had any questions answered. I understand what is required and will comply with the requirements. | | |
| **Name** | **Initials** | **Title** |
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**HACCP Re-Verification and Maintenance Log**

Store Name:

Street Address:

City: State: Zip Code:

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| **Instructions**: Each HACCP plan must be reviewed and re-verified at least annually to maintain regulatory compliance and to ensure that the plan is current and effective. Procedures, policies and all records related to the HACCP plan must be reviewed to identify weaknesses or needed corrections and updates. Special reviews prompted by changes in procedures, equipment, recipes, regulations, corrective actions, or supplier issues, may require revision of parts of the HACCP plan. Staff training related to revisions in the HACCP plan may be required. This log should be maintained for a minimum of 3 years. | | | | | | |
| **Manager Initials/Date** | **Revisions Required? Y/N** | **If Yes, Affected Section(s):** | **Reason** | **Regulatory Review Required? Y/N** | **Approved by Regulatory? Y/N** | **Old Version Retracted? Y/N** |
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1. <https://www.fda.gov/media/77065/download> [↑](#footnote-ref-1)
2. [www.asi.k-state.edu/doc/meat-science/thermometer-calibration-guide-2.pdf](file:///Users/paulabarbour/Downloads/www.asi.k-state.edu/doc/meat-science/thermometer-calibration-guide-2.pdf) [↑](#footnote-ref-2)