



**Sonoma County Department of Health Services
Environmental Health**

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Sushi Rice HACCP Plan Guidelines

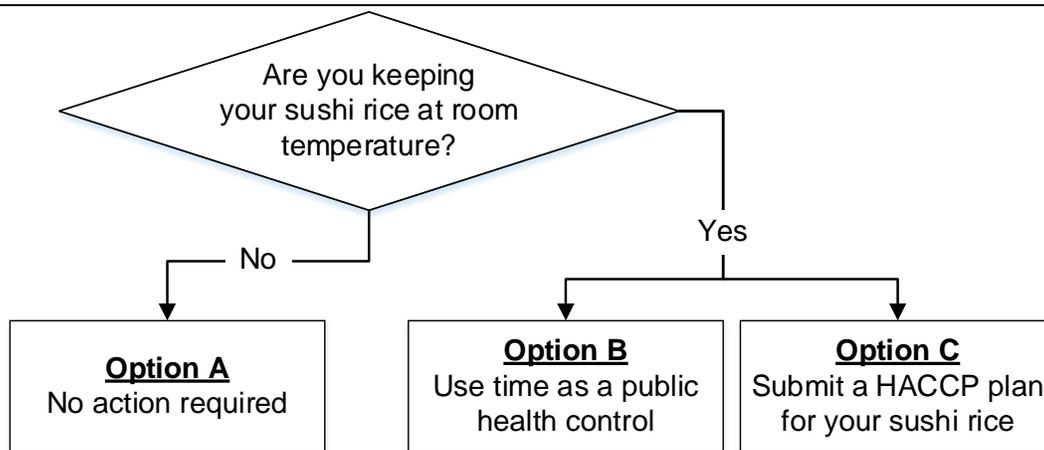
Background

Sushi is a type of Japanese cuisine consisting of acidified rice combined with various toppings and fillings, usually raw fish or other ingredients. Sushi rice is generally kept at room temperature or in a warm holding unit in sushi restaurants for the ideal taste. The primary pathogens of concern associated with cooked rice are *Bacillus cereus* and *Staphylococcus aureus*. Uncooked rice is often contaminated with *Bacillus cereus* bacteria from soil. The bacteria form spores that can survive normal cooking. *Staphylococcus aureus* is a toxin-producing bacterium commonly found on the skin, nose, and throat and can contaminate the food by poor hygiene of food handlers and improper food handling practices. If the cooked rice is kept out of temperature control, spores released by the bacteria can germinate and produce toxins that can make a person ill if consumed. The control measure to keep the sushi rice safe at room temperature is the addition of a vinegar solution to reduce its pH to below 4.6 at which point the growth of harmful bacteria is inhibited. It is difficult to ensure the safety of sushi rice because each sushi chef uses his/her own recipe with differing amounts of the vinegar solution which may result in differing pH levels.

CalCode Requirements for Sushi Rice

Pursuant to the California Retail Food Code (CalCode), Article 5, Section 114419(3), a Hazard Analysis Critical Control Point (HACCP) plan is required when a food facility uses food additives or components such as vinegar to render a food non-potentially hazardous (food not requiring refrigeration to prevent microbial growth). When a food facility is making sushi rice, they must choose one of the following measures to be in compliance with CalCode:

1. Maintain sushi rice under refrigeration at or below 41°F or in a hot holding unit at or above 135°F
2. Use “time only” control measures. Written procedures must be approved by this department and maintained at the facility for this department to review.
3. Develop and maintain a HACCP plan and submit plan to this department for review and approval



Pursuant to CalCode Section 114000, time can be used in place of temperature control or pH control to keep un-acidified cooked rice at room temperature for **up to 4 hours**. The following criteria must be met if you are choosing **Option B** to keep and serve cooked rice at room temperature for a maximum of 4 hours:

1. The cooked rice container must be marked to indicate the time that cooked rice must be discarded if not used within 4 hours.
2. The cooked rice must be served or discarded within 4 hours from the point in time when the cooked rice is removed from temperature control. It may not be re-heated or refrigerated to be used after the 4-hour period.
3. A written procedure specifying time as a public health control must be approved by this office and a copy maintained at your facility and made available to the inspector upon request.
4. If at time of inspection, it is found that the approved procedures are not being followed as required (e.g. rice has not been marked with time of discard), the facility will no longer be allowed to use time as a public health control and a HACCP plan will need to be submitted.

Important Note:

- **Cooked rice in an unmarked container is not allowed**
- **Cooked rice exceeding a 4-hour limit must be discarded**

If cooked rice is acidified by adding vinegar (**Option C**), a HACCP plan is required to be submitted. A sample sushi rice HACCP plan has been included in this guideline along with a pH log to help facilitate the development of a sushi rice HACCP plan for your facility. This HACCP plan may be used as a model to develop an individual HACCP plan specific to your operation. Please be advised that an incomplete HACCP plan or missing required information as listed below will result in rejection of the plan. The following must be included in the sushi rice HACCP plan:

1. Facility name, address, contact phone and the name of designated HACCP trained employee(s)
2. A sushi rice HACCP plan (see sample sushi rice HACCP plan)

Please submit the sushi rice HACCP plan by mail or email to this department using the following address/info:

County of Sonoma Department of Health Services
Environmental Health
625 5th Street
Santa Rosa, CA 95404
eh@sonoma-county.org

CalCode Requirements for a HACCP Plan

The HACCP plan must indicate all of the following pursuant to CalCode section 1144191.1:

- A flow diagram of the specific food identifying the Critical Control Points (CCPs) providing the following information:
 - Ingredients, equipment, and materials used in the preparation of that food
 - Formulations or recipes that address the food safety concerns involved with sushi rice and the methods used to control safety hazards
- A trained designated food employee
- Standard Operating Procedures (SOPs) for the plan identifying the following:
 - Critical Control Point (CCP)
 - Critical Limits (CLs) for each CCP
 - The method and frequency for monitoring CCP(s)
 - Corrective Action taken if CLs for each CCP are not met
 - The method and frequency for verifying the HACCP plan
 - Record keeping

The following should be included in a sushi rice HACCP plan:

- Operational steps including receiving, storage and preparation
- A recipe/formulation including type of rice (e.g., short grain) and the concentration of the vinegar (e.g., 5%)
- Methods for cooking rice including time and temperatures
- Methods for preparing the vinegar mixture (e.g., vinegar, salt and sugar)
- Method of cooling cooked rice indicating time and temperature
- Method of mixing rice and vinegar solution
- Identify the Critical Control Points (adding vinegar and cooling rice)
- Identify your critical limits (target pH is ≤ 4.4 and must not reach critical limits >4.6)
- Methods of measuring and the frequency of monitoring your Critical Control Points (e.g. measuring the pH daily by using a pH meter or pH test strips accurate to 0.2-0.3)
- Describe your Corrective Action (e.g. if the pH is not less than 4.4, more vinegar will be added to the rice and retested, if pH test result is again not less than 4.4, the rice will be discarded)
- Policy and procedures regarding the storage of sushi rice should indicate holding time and temperature (e.g. 12 hours at 70°F - 80°F)
- Describe policy regarding remaining sushi rice following the holding time (e.g. discard leftover sushi rice after 12 hours)
- Describe policy regarding recordkeeping (for example: keeping a record of all sushi rice HACCP plan related documents for at least 2 years)

Lastly, the sushi rice recipe will be tested by this department to ensure acceptable pH level of 4.4 or below prior to approval of the HACCP plan

pH Measurement Methods

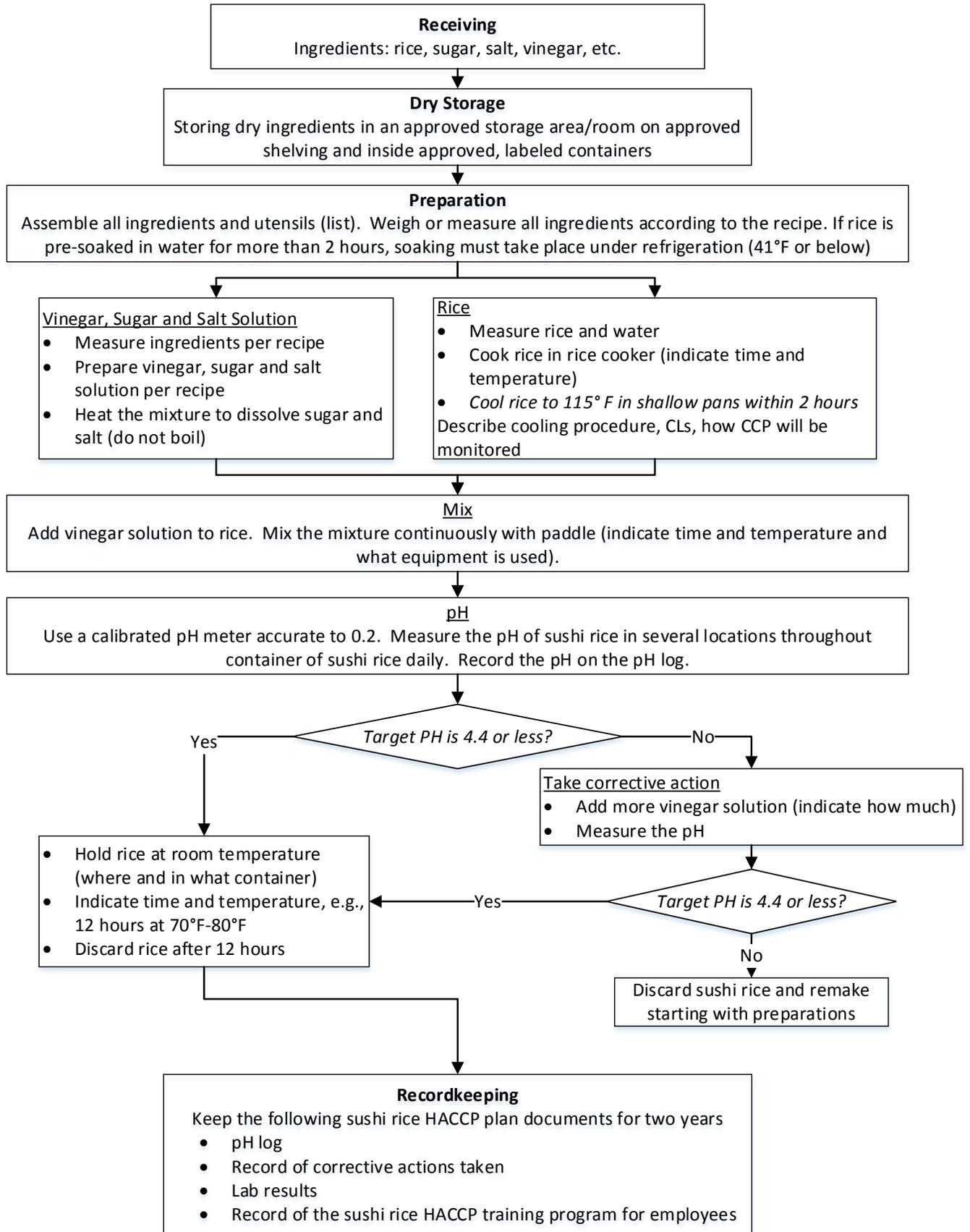
Monitoring the acidity of sushi rice is an essential part of your approved HACCP plan. You may follow the instructions below to measure the pH of sushi rice on a daily basis. Some test strips may not require making a slurry and can be used directly on the sushi rice with enough moisture.

- Use a pH test strip accurate to 0.2 -0.3
- Measure the acidity (pH) of your sushi rice within 30 minutes after acidification (mixing the cooked rice and vinegar solution)
- Make a rice slurry by mixing $\frac{3}{4}$ cup of distilled water and $\frac{1}{4}$ cup of sushi rice in a clear plastic or metal cup
- Stir the slurry (mixture) for 20 seconds
- Dip into the liquid portion of the rice slurry (for time period as directed by the manufacturer)
- Compare the color of test strip to color chart
- Record the pH in pH log
- Add more vinegar if the pH is more than 4.4

A probe meter shows the pH result of a solution instantly on a readable display by measuring the concentration of hydrogen ions present. Depending on the specific model, the meter may have to be plugged into an outlet or used in the field with batteries. Probe meters provide more accurate results than test strips where a color indicator can be read differently by different people than the actual result. Some probes can be inserted directly into the rice versus having to make a slurry for testing. Probe meters provide more accurate results than test strips which use a color indicator where the colors may be perceived differently than the actual result. The disadvantages of a pH meter to consider is the cost which is significantly higher than using test strips and that they have to be cleaned regularly to avoid contamination.

Attachment B: Model Sushi Rice Procedure Workflow

Italic font indicates Critical Control Point (CCP)



Attachment C: Sample Sushi Rice HACCP Plan- Modify to your specifications

Receiving

Ingredients – short grain white rice (7 lbs.), water (8 lbs.), distilled white vinegar (5% acidity, 15 oz.), sugar (12 oz.), salt (5 oz.)

The source/supplier should be operating in accordance with applicable food safety requirements. Provide source identity (name and address).

These ingredients are delivered from an approved source operating in accordance with applicable food safety requirements. Shipment for these ingredients are delivered by truck to our back door along with other deliveries.

We will not accept shipment if any of the food items are received in a damaged or adulterated state. Employees will be trained on how to receive/inspect shipments.

Equipment

Commercial grade rice cooker, utensils, thermometer, pH meter, log sheets

Storage

Ingredients are stored in dry storeroom on stainless steel shelving above the floor (by at least 6 inches). Once bags of bulk dry goods are opened, the remainder is transferred to food grade containers and covered for protection. Labels are provided for all dry food containers before they are placed back on the shelf. The schedule for product rotation uses a first in, first out (FIFO) rule. Employees will be trained on standard operating procedures (SOPs) regarding proper food storage.

Preparation

Assemble all ingredients and equipment. Verify rice cooker is clean and in good repair because dirty or damaged equipment can harbor bacteria and lead to foodborne illness. A designated sink (prep sink) separated from other concurrent food handling activities and table for preparation of the rice will be cleaned and sanitized before handling the food. Handwashing using adequately supplied hand wash sinks. The use of utensils or single-use gloves to minimize bare hand contact with ready-to-eat food.

While the rice is cooking, combine the distilled white vinegar, sugar, and salt into a small stainless steel pot and heat the mixture until the sugar has dissolved (about 160F), stirring constantly, remove from heat, and set aside.

Employees will be trained on preparation SOP's to assure proper food handling, measuring dry ingredients, general cleanliness of work area, cleaning and sanitizing of all food equipment used as well as proper hand washing.

Formulation/Recipe

- 2 cups of white short-grain Japanese rice (japonica) labeled as sushi rice.
- Vinegar solution: ½ cup rice wine vinegar at 5% concentration + 1 teaspoon salt + 1 teaspoon sugar. In a small saucepan, combine the rice vinegar, sugar, and salt. Cook over medium heat until the sugar dissolves. Let cool.
- Stir vinegar solution into the cooked rice.

Method of cooking rice

- Measure rice and water
- Rice is rinsed in a colander until the water runs clear. Put the amount of rice per recipe into rice cooker with adequate amount of water until rice is thoroughly cooked, approximately 30 minutes (indicate time and temperature)

Method of cooling rice

- Use clean spatula to empty rice cooker and put into a mixing pan no more than 4 inches deep and spread rice evenly. This will speed the cooling process and make it easier to mix the vinegar mixture into the rice.

Method of mixing rice and vinegar solution

Once the rice has cooled enough but still warm, run a spatula through the rice using right and left slicing motions to separate the grains. Slowly add about 32 oz. vinegar mixture making sure all rice is evenly coated with the vinegar mixture so that all rice reaches the appropriate pH (less or equal to 4.1). The pH will be tested within 30 minutes after acidification of the cooked rice using a calibrated pH probe. More vinegar mixture may be added if target pH is not reached.

Method(s) used for pH measurement and frequency, including calibration if applicable

A pH probe meter is calibrated according to manufacturer's directions before first use and thereafter calibrated once/week to assure accuracy. The calibration is based on the readings from standard buffer solutions selected to provide specific pH readings. The pH is tested within 30 minutes after adding the vinegar solution by taking ¼ cup sample of the cooked acidified rice from various locations in the batch and adding ¾ cup of distilled water in a clear plastic or metal blend cup. The slurry is blended for approximately 20 seconds to create a thorough mix. pH probe meter is inserted in the liquid portion of the slurry. Measurement is recorded. If target pH of 4.4 or below is not measured, more vinegar solution is added to the rice and pH is measured again.

Identify Critical Control Point (CCP), set Critical Limits (CL)

Target pH of rice/vinegar solution is 4.4 or below. If pH measurement is at 4.4 or below, will hold rice at room/ambient temperature for no more than 12hrs.

Describe corrective action

If pH is above 4.4, add more vinegar solution and measure again. If pH is above 4.4 again, discard and start over.

Policy and procedure regarding storage of sushi rice

Once vinegar solution is added to the rice and the pH measures below 4.4, ideally 4.1, rice will be stored at room temperature or out of the temperature control range.

Policy regarding remaining sushi rice following holding time

Rice will be discarded after 12 hours.

Describe recordkeeping and methods

Will keep the following sushi rice HACCP plan documents for two years:

- pH log
- Record of corrective action taken
- Laboratory results if applicable
- Record of the sushi rice HACCP training program for designated employees

Describe employee training:

Designated employees who will be involved in making sushi rice are trained in this HACCP plan and SOP's such as hygiene, handwashing, food handling practices, cleaning and pH probe calibration and usage. Re-trainings/reviews will be conducted as needed and with all new employees. These trainings will be documented.