



SUTTER COUNTY

DEVELOPMENT SERVICES DEPARTMENT

Building Inspection
Code Enforcement

Engineering/Water Resources
Environmental Health/CUPA

Planning
Road Maintenance

Sushi Rice HACCP Plan Guidelines

Background

Sushi is a type of Japanese cuisine consisting of acidified rice combined with raw fish and other ingredients. Sushi rice is usually 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*, which are spore forming bacteria. Bacterial spores in food are problematic because spores, once formed, are heat stable and able to survive normal cooking temperatures. If cooked rice is held out of temperature (under 135°F or above 41°F), spores formed by the bacteria can germinate and produce heat-stable toxins that can cause illness. Vinegar is added to sushi rice to decrease its pH to 4.5 or below, 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 their own recipe with differing amounts of vinegar, resulting in differing pH levels.

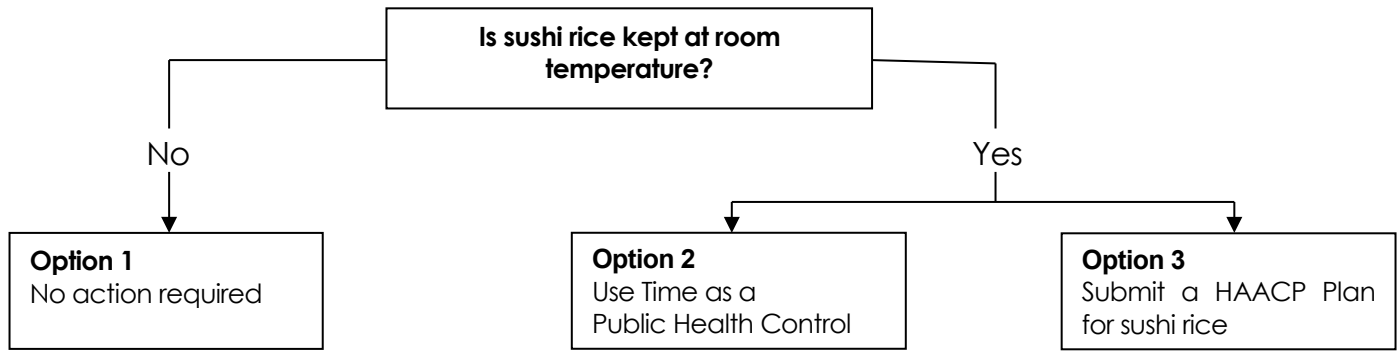


Requirements for Sushi Rice

California Retail Food Code [section 114419(3)] requires a Hazard Analysis Critical Control Point (HACCP) Plan whenever a food facility uses food additives such as vinegar to render a food non-potentially hazardous (food not requiring refrigeration to prevent bacterial growth). When a food facility makes sushi rice, it must follow one of the following measures:



1. Maintain sushi rice at 41°F or below in a refrigeration unit, or at 135°F or above in a hot holding unit.
2. Use Time as a Public Health Control. Written procedures must be approved by this Division and maintained at the facility for review.
3. Develop and maintain a HACCP plan.



Option 2 – Time as a Public Health Control

The California Retail Food Code [section 114000] allows the use of time in place of temperature control or pH control to keep cooked rice at room temperature for up to **4 hours**. The following criteria must be met if you are using Option 2 to store and serve sushi rice at room temperature:

1. The container holding cooked rice must be marked with the time the cooked rice must be discarded (4 hours from when rice was removed from temperature control).
2. Vinegar may not be used as a method of preservation under this option, but it may be used as a flavoring agent.
3. Written procedures detailing Time as a Public Health Control must be approved by Sutter County Environmental Health and made available to Inspector upon request.

If Time as a Public Health Control procedures are not being followed during inspections (Routine, Complaint or Re-Inspection) the facility may lose the ability to use Time as a Public Health Control and a HAACP Plan may need to be submitted.



Option 3 – Sushi Rice HACCP Plan

If vinegar is added to sushi rice as a method of preservation, the facility must develop and follow a HACCP Plan. The following information must be included in the Sushi Rice HACCP Plan:

1. Facility name, address, contact phone number and email address.
2. Name(s) of designated HACCP Plan trained employee(s).
3. Sushi Rice HACCP Plan (see example below).

California Retail Food Code Requirements for a HACCP Plan

California Retail Food Code [section 1144191.1] requires all of the following for a HACCP Plan:

- A flowchart of the specific food (e.g., sushi rice), identifying the Critical Control Points (CCPs) and providing the following information:
 - Ingredients, equipment and materials used in the preparation of the sushi rice
 - Formulations or recipes that address the food safety concerns involved with sushi rice and the methods used to control safety hazards
- A designated and trained employee
- Standard Operating Procedures (SOPs) for the plan identifying the following:
 - Critical Control Points (CCPs)
 - Critical Limits (CLs) for each CCP
 - The method and frequency for monitoring CCP(s)
 - Corrective Action taken in CLs for each CCP 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
- Recipe/formulation including type of rice (e.g., short grain) and the concentration of the vinegar (e.g., 5%).
- Method for cooking rice, including time and temperature
- Method for preparing the vinegar solution (e.g., vinegar, salt and sugar)
- Method for cooling cooked rice, indicating time and temperature
- Method of mixing cooked rice and vinegar solution
- Identification of Critical Control Points (e.g., adding vinegar solution and cooling rice)
- Identification of Critical Limits (target pH is ≤ 4.4 and must not reach 4.6)
- Method of measuring and frequency of monitoring your Critical Control Points (e.g., measuring pH daily with a pH meter or pH testing strips)
- Description of Corrective Action (e.g., if the pH is higher than 4.4, more vinegar will be added to the rice and then retested)
- Policy and procedures regarding the storage of sushi rice should indicate holding time and temperature (e.g., 12 hours at 70°F-80°F)
- Policy regarding sushi rice left over after the holding time (e.g., sushi rice left over after 12 hours is discarded to trash)

- Policy regarding recordkeeping (e.g., records relating to sushi rice HACCP plan kept for at least 2 years)

pH Measurement Methods

Monitoring the acidity of sushi rice is an essential part of your HACCP plan. Either of the following two methods may be used to monitor/determine the pH of each batch of sushi rice.

pH Testing Strips

- Measure the pH of your sushi rice within 30 minutes after mixing cooked rice with vinegar solution
- Make a rice slurry by mixing $\frac{3}{4}$ cup distilled water and $\frac{1}{4}$ cup cooked sushi rice in a clear plastic or metal cup
- Stir the mixture for 20 seconds
- Dip strip into liquid portion of the rice slurry (follow strip manufacturer direction for the time strip must remain in contact with liquid portion of slurry)
- Compare the resulting color on test strip to color chart to determine pH
- Record the pH on pH log
- If pH is greater than 4.4, add more vinegar and retest



Note: Some testing strips may not require the making of a slurry; follow label directions. Testing strip must be accurate to 0.2-0.3.

pH Meter

Probe pH meters measure the concentration of hydrogen ions present to instantly give results on a readable display. Probe pH meters are more accurate than test strips as color results may be read differently by different food handlers. Some probes can be inserted directly into the rice while others require making a slurry.



Sample Sushi Rice HACCP Plan

Receiving

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

Provide supplier name and address for each ingredient.

Ingredients are delivered by truck to facility's back door along with other deliveries.

No shipments are received in a damaged or adulterated state. Employees are trained on how to inspect and receive shipments.

Equipment

Commercial grade rice cooker, measuring cup, large bowl, large mixing paddle, pH meter, log sheets.

Storage

Ingredients stored in dry storage area on approved shelving. Once bulk bags of rice are opened, the remainder is transferred to covered food-grade containers. Labels are provided for all dry food containers and products are used in a first in-first out rotation. Employees are trained on standard operating procedures regarding proper food storage.

Preparation

Assemble all ingredients and equipment. Verify rice cooker is clean and all other utensils and equipment (including prep sink and prep table) have been cleaned and sanitized. (Note: Soiled or improperly cleaned utensils and/or equipment can harbor bacteria and contaminate sushi rice with harmful bacteria). Wash hands properly with hand soap, rubbing hands together vigorously for at least 15 seconds at dedicated hand sink. Food handler making sushi rice to use single use gloves or appropriate utensils to minimize bare hand contact with sushi rice.

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

Employees are trained on the standard operating procedures of our sushi rice procedure to assure proper food handling, measuring of ingredients, cleanliness of work area, the cleaning and sanitizing of utensils, equipment and food contact surfaces as well as proper hand washing.

Recipe

- 2 cups short grain white rice
- Vinegar solution
 - ½ cup rice wine vinegar (5%)
 - 1 teaspoon salt
 - 1 teaspoon sugar
 - Cook over medium heat until sugar dissolves. Let cool.
- Stir vinegar solution into the cooked rice.

Method of Cooking Rice

- Measure rice and water
- Rinse rice in colander until water runs clear.
- Place rice and water in rice cooker
- Cook approximately 30 minutes

Method of Cooling Rice

Place cooked rice in shallow pan and spread evenly with spatula until it is no more than 4 inches deep.

Note: 4-inch maximum depth of cooked rice speeds cooling process.

Method of Mixing Rice and Vinegar Solution

When rice has cooled to warm, run a spatula through the rice using right and left slicing motions to separate the grains. Slowly add vinegar mixture, ensuring all rice is evenly coated. The pH will be tested within 30 minutes after acidification with vinegar mixture with a calibrated pH probe to ensure it is equal to, or less than, 4.1. More vinegar mix will be added if target pH is greater than 4.4.

Method for pH Measurement and Frequency

The pH meter is calibrated according to manufacturer directions at least once each week to assure accuracy. The pH is tested within 30 minutes after adding the vinegar solution by taking a ¼ cup of distilled water in a clear plastic or metal blend cup. The slurry is blended for approximately 20 seconds to thoroughly mix. The pH probe meter is inserted in the liquid portion of the slurry to obtain the pH and then the pH is recorded in the log. If the target pH of 4.4 is not obtained, more vinegar solution is added to the rice and the pH is measured again and then recorded in the sushi rice log.

Identify Critical Control Points and Set Critical Limits

The target pH of the rice/vinegar solution is 4.4 or below. If pH measures at 4.4 or below, sushi rice will be held at room temperature for up to 12 hours.

Corrective Action

If pH is above 4.4, more vinegar will be added, and the sushi rice will be measured again. If the pH is still above 4.4, the batch of sushi rice will be discarded and the process will start over.

Policy and Procedure Regarding Storage of Sushi Rice

When the sushi rice measures pH at 4.4 or below (ideally 4.1), rice will be stored at room temperature.

Policy Regarding Leftover Sushi Rice

Sushi rice will be discarded after 12 hours.

Recordkeeping and Methods

The following sushi rice plan documents will be kept on the premises for at least two years:

- pH log
- Record of corrective action taken
- Record of the sushi rice HACCP training program for designated employees.

Employee Training

Designated employees involved in making sushi rice will be trained in HACCP plan and standard operating procedures such as food handler hygiene, hand washing, food handling practices, utensil, equipment and general cleaning and pH probe calibration and usage. Additional training and review of information will be conducted as needed and with all newly designated employees. These trainings will be documented and said documentation will be kept on premises for at least two years.

Model Sushi Rice Procedure Workflow

Note: *Italics indicate Critical Control Points*

