

## Sushi/ Sashimi Preparation Guidelines

### Background:

Sushi or sashimi, for the purposes of this guideline, includes any fish served raw, raw-marinated, partially cooked, or marinated-partially cooked. Sashimi typically consists of raw fish/ seafood only. Sushi is the generic term used to reference fish/ seafood (cooked or raw) or vegetables rolled around or placed on acidified rice and nori (i.e., seaweed).

### Issue:

Eating raw fish increases the risk of human disease from parasites that are typically destroyed by cooking. Pathogenic roundworms are found in saltwater fish such as cod, haddock, monkfish, halibut, mackerel, herring, pollock, sea bass, tuna, salmon, and flounder. Pathogenic tapeworms are found in most freshwater fish such as pike, perch, trout, and salmon.

Even though sushi may not always contain raw or partially raw fish, it is considered a potentially hazardous food due to the presence of rice, cut vegetables, tofu, and/ or cooked fish/ seafood.

**NOTE:** Any reference in the guideline to unrefrigerated storage or display of food associated with sushi/ sashimi production ***cannot be applied*** to public market vendors at outside venues.

### Requirements:

#### Freezing Fish

1. The following fish species are exempt from the fish freezing requirements, as they do not present a significant parasite risk. The information from the supplier regarding fish species used without freezing must be readily available for review by the Food Safety Specialist upon inspection:
  - Albacore tuna
  - Bigeye tuna
  - Blackfin tuna
  - Bluefin tuna
  - Bluefish
  - Eel
  - Mahi mahi
  - Marlin
  - Pompano

- Wahoo
  - Yellowfin tuna (ahi)
  - Yellowtail (Japanese amberjack)
2. Before using fish for sushi or sashimi, fish must meet the freezing requirements as outlined in Section 3.3.12 (b) of the *NS Food Retail and Foodservices Code*, which states:

“Fish is to be frozen either:

- i. to a temperature of -20C (-4F) or below for 7 days; or
- ii. to a temperature of -35C (-31F) or below for 15 hours in a blast freezer.”

3. The facility operator must be able to provide proof that the fish supplier has followed one of the approved freezing methods above.
4. If the facility operator is freezing fish for parasitic destruction within their food premises, the following information is to be provided:
- i. Submit a written plan to the Food Safety Specialist outlining the capability of freezer units to maintain temperatures necessary for parasitic destruction, and how the facility operator plans to track product to ensure it is not used prior to the freezing timelines outlined above.
  - ii. This submission is to be received and approved by the Food Safety Specialist **prior to using** the procedure. This may require the facility operator to purchase fish from a supplier meeting freezing requirements in the interim.
  - iii. Approval given to use freezing methods within a facility can be revoked by the Food Safety Specialist if conditions outlined in the approved method are not followed.
5. If fresh fish use for raw consumption is proposed, other than the species listed above in # 1, written submission is required to NSDA – Food Safety for consideration **prior to use**. This would only apply if the products can be verified as parasite-free (i.e., some aquaculture-raised seafood).

### Preparing Rice

Sushi rice is typically acidified by vinegar after cooking. The rationale for the pH requirement is that it is accepted culinary practice not to refrigerate rice prior to preparing, and in most cases, displaying sushi. The low pH serves as one microbial growth barrier, but the potential for non-homogenous distribution of the vinegar is also considered in development of these requirements.

1. Room temperature rice without a verified pH must be used within a three-hour timeframe. The 60 minute display time of sushi (see “Displaying Sushi or Sashimi”) would result in the maximum four-hour timeframe for potentially hazardous foods at room temperature.
2. Discard rice that is kept at room temperature and not used within the three-hour timeframe or refrigerate at a temperature of 4C (40F) or colder. Rice can only be cooled once.

3. Leftover (refrigerated) rice cannot be mixed with a newly prepared batch of rice.
4. For sushi rice to be considered non-potentially hazardous (i.e., to exceed the three-hour timeframe as outlined in 1 and 2), the facility operator must:
  - a. Provide a written formulation (recipe) and process to the NSDA Food Safety Specialist;
  - b. Provide initial/ first pH readings of the acidified sushi rice from a source deemed acceptable to NSDA Food Safety;
  - c. consistently meet the requirements as outlined in Appendix 1 – Preparation of White Sushi Rice; and
  - d. consistently meet the requirements as outlined in Appendix 2 – Measuring & Recording the pH of Sushi Rice (which includes obtaining frequent pH readings from a calibrated pH meter).

The process can only be used when NSDA Food Safety provides indication in writing that the process is acceptable.

5. The facility operator can submit an alternative validated process for review by NSDA – Food Safety. The process can only be used when NSDA Food Safety provides indication in writing that the process is acceptable.

#### Displaying Sushi or Sashimi

1. Sushi or sashimi must be displayed at 4C (40F) or colder, unless alternative temperatures are permitted by NSDA – Food Safety.
2. An alternative procedure is holding sushi or sashimi for a maximum of 60 minutes at room temperature; after 60 minutes this product must be discarded. The three-hour room temperature rice holding limit (See “Preparing Rice”) would result in the maximum four-hour timeframe for potentially hazardous foods at room temperature.

This procedure may be considered acceptable if the following requirements are met:

- i. A written plan is submitted to the Food Safety Specialist.
- ii. The plan is approved by the Food Safety Specialist.
- iii. The sushi or sashimi cannot have been previously held at temperatures above 4C (40F).
- iv. Displayed sushi or sashimi must be covered or otherwise protected from contamination.
- v. Food containers must be marked or tracked to show the time the sushi/ sashimi is removed from refrigeration, and must indicate when it is to be discarded.
- vi. Approval given to use this procedure can be revoked by the Food Safety Specialist if conditions outlined in the approved method are not followed.

## APPENDIX 1 – Preparation of White Sushi Rice

(Source of content adapted from Association of Food and Drug Officials – Guidance for Processing Sushi in Retail Operations)

**NOTE** – *The use of this appendix is only required if the facility operator is requesting consideration of rice as a non-potentially hazardous food (i.e., to exceed the three-hour timeframe at room temperature).*

Special care must be taken in preparation of rice used in sushi to prevent potential bacterial growth while assuring the rice can still be formed into balls and rolls. Heat during cooking of rice can activate certain bacterial spores that can grow to be toxic unless the rice is preserved or refrigerated.

Acidification of cooked rice with vinegar helps preserve the rice for handling at temperatures above 4C (40F), and eliminates the difficulties of forming sushi from cold rice. Since a properly used acidification process for rice reduces food safety risk, specific standards must be used to monitor the pH.

The work area should include:

1. A designated sink and food contact surface (counter/ table), cleaned and sanitized prior to the preparation of the sushi rice. The sink and surface should be segregated from other concurrent food handling activities until the sushi rice is fully prepared.
2. Use of single-use non-latex gloves to prevent bare hand contact.
3. Clean and properly supplied hand-washing facilities.
4. A written recipe that specifies:
  - a. the amount of rice and water prior to cooking, and the cook schedule. The cooked rice and vinegar solution is to be thoroughly mixed to acidify the rice to an initial target pH of 4.1. It is best to acidify the rice when it is warm to assure better mixing and penetration of the acid solution.
  - b. the vinegar solution, with salts and sugar. It should be made fresh for use or from a designated container labelled to identify the contents, concentration, and age of the vinegar solution to assure a proper acidifying formulation.
  - c. a clean mixing bowl deep enough to allow adequate mixing without clumping, yet shallow enough to allow proper cooling. The depth of the rice must be less than 10 centimetres (4 inches) for proper cooling and thorough acid distribution.

Brown rice cannot typically be acidified since the harder surface coating on the brown rice is difficult to penetrate with most food acid solutions. Therefore cooked brown rice is considered a potentially hazardous food that must be maintained at temperatures 60C (140F) or hotter, or at 4C (40F) or colder.

## APPENDIX 2 – Measuring and Recording pH of Sushi Rice

(Source of content adapted from Association of Food and Drug Officials – Guidance for Processing Sushi in Retail Operations)

**NOTE** – *The use of this appendix is only required if the facility operator is requesting consideration of rice as a non-potentially hazardous food (i.e., to exceed the three-hour timeframe at room temperature).*

Conduct the pH test within 30 minutes after the acidification of the cooked rice and as necessary to assure a targeted pH of 4.1 and an equilibrium pH of 4.6.

1. Make a rice slurry by gathering a ¼ cup sample of the cooked, acidified rice taken from various locations in the batch.
2. Add ¾ cup of distilled water in a clear plastic or metal blend cup. Blend the slurry for approximately 20 seconds to create a thorough mix.
3. Insert the probe of the pH meter into the liquid portion of the slurry. Repeated measurements with a new slurry from the same batch of rice are recommended to assure a proper reading.
4. Record the measurements for a period of 7 days. Keep records for review purposes by the Food Safety Specialist.
5. Upon acceptance of the process by NSDA Food Safety, record a pH test for a batch on a monthly basis. Keep these records available for review by the Food Safety Specialist for a period of one year.

The sushi rice with an initial pH greater than 4.6 should be re-acidified with more vinegar solution and re-checked to assure a targeted pH of 4.1 and not exceed 4.6. If the reading is consistently above 4.6, re-evaluation of the recipe as well as re-calibration of the pH meter may be required.