

Single Hazard Special Process HACCP Template for

Curing as a Single Special Process

Regulatory Agency Jurisdiction NAME (fill in form)

Date Submitted _____ Date Approved _____ Valid until _____

A. General Information

This is a placeholder for the general information needed: e.g. operator name, location, Person-in-Charge (PIC) Name, contact information, etc.

fill in form

B. Categorization – Recipe(s)

Categorization: **Template for Curing as a Single Special Process**

2013 FDA Food Code Section 3-502.11: “A *FOOD ESTABLISHMENT* shall obtain a *VARIANCE* from the *REGULATORY AUTHORITY (RA)* as specified in §8-103.10 and under §8-103.11 before: (B) *Curing food.*”

This template is to be utilized for raw food that will follow US FDA model Food Code parameters for cooking, cooling and cold storage. This template is not intended for products where additional critical control points (CCPs)/variances would be needed (for example, products with a fermentation or drying step or products where slow cooling is used).

Recipe: *Attach recipes of all current and future meat and poultry products containing sodium nitrite to this document (see C2 Control below) [label as attachment 1].* Product must contain a minimum of 120ppm ingoing nitrite. The use of nitrate is not permitted (under this Special Processes HACCP template). Only curing salt mixtures, which contain sodium chloride (NaCl) with 6.25% sodium nitrite, are permitted. The curing salt mixture must be dyed pink so that it cannot be confused with common salt. The curing salt mixture must be stored in a safe and secure place. Appropriate labeling must remain on the packaging. *Attach copy of label or certificate of analysis for curing salt mixture [label as attachment 2].*

Are there any buyer specifications (supply controls) or special equipment required/recommended?

<input type="text"/> Calibrated scale for weighing curing salts (brand and model <input type="text"/>) <input type="text"/> 6.25% sodium nitrite (brand <input type="text"/>)

C. Flow Diagram-Chart

[Instructions] – Add each step of the process in the following table starting in box 1. The first step should be receiving ingredients and the last step consumption or sale of the product.

1 Receiving Ingredients and any other materials	2	3
4	5	6
7	8	9
10	11	12
13	14	Last- consumption (foodservice) or sale to consumer (retail)

The step in which curing agent is added to the meat/poultry for curing is number . This is the critical control step in the template. Mark that step above with the designation “CCP”.

C. 1. Hazard.

The main hazard in curing is the concentration of the curing agent; too much may result in chemical contamination of the food and/or nitrite poisoning of the consumer. Signs and symptoms of nitrite poisoning include prompt fall in blood pressure, headache [which is persistent and throbbing], intense cyanosis, nausea, vertigo, vomiting, collapse, spasms of abdominal pain, tachycardia, tachypnea, coma, convulsions and death. Too little could result in the potential growth of *Clostridium botulinum* (*C. botulinum*). For *Clostridium botulinum*, if enough vegetative cells are produced during temperature abuse, toxigenesis can occur in the product. The toxin is not destroyed at the minimum required cooking temperatures.

C. botulinum can cause symptoms such as weakness, vertigo, double vision, difficulty in speaking, swallowing and breathing, abdominal swelling, constipation, paralysis, and death. Symptoms start from 18 hours to 36 hours after consumption. *C. botulinum* is considered a hazard for various reasons. It is a spore forming foodborne illness bacteria and those spores are commonly found in the viscera of fish, on raw meat and poultry products, as well as spices and herbs, and in soil and water. Additionally, those spores can survive the cooking step therefore when cooling, the spores can germinate and grow into vegetative bacteria producing toxin that can cause illnesses. Outbreaks of *C. botulinum* foodborne illness have occurred in sausage, fermented meat, and smoked fish. The CDC confirms multiple cases of foodborne illness caused by *C. botulinum* each year.

C. 2. Control.

The main control that prevents the growth of *C. botulinum* in this type of process is nitrite concentration. NOTE: Proper cooking, cooling, and cold storage according to the FDA Model Food Code must also be followed (see above section B). The control for nitrite poisoning is regulating the concentration of nitrite added to the food. Proper concentrations of sodium nitrite and adequate holding temperatures prohibit the outgrowth of *C. botulinum* vegetative cells and spores. The addition of curing salts is an effective control as long as the concentration is at proper levels. It is essential that a calibrated scale be used to measure the curing salt and the curing salt is evenly distributed. Accurate measurement of the curing salt using a properly calibrated scale and uniform distribution of the nitrite throughout the meat/poultry ensures this control measure produces a safe product.

The following is permitted for this process:

The operator must use an ingoing minimum of 120ppm sodium nitrite in meat or poultry recipes, or the operator will use the amounts permitted by the USDA per 9 Code of Federal Regulations (CFR) 424 (see chart below). Each recipe shall indicate the exact pre-determined quantity of pink curing salt that targets the minimum ingoing sodium nitrite of 120ppm for the meat or poultry, or each recipe shall indicate the exact pre-determined quantity of pink curing salt that targets the appropriate product category as detailed in 9 CFR 424 (see chart below). The permitted amounts in the chart below cannot be exceeded and are considered the maximum amount allowed for sodium nitrite in the recipes.

To calculate the amount of ingoing sodium nitrite for each recipe, the facility must use the proper formulation calculations, such as the calculations found in the USDA FSIS processing inspectors' calculations handbook. The health authority will use the submitted recipes to calculate the ingoing amount of nitrite in the food to ensure a minimum ingoing concentration of 120ppm sodium nitrite or that the amount of sodium nitrite does not exceed the permitted amount of sodium nitrite per 9 CFR 424.

Choosing this option does not require lab nitrite verification.

<p>USDA Guidance for usage of cure mix No. 1 in meat or poultry Cure Mix No. 1. - 6.25% nitrite in NaCl</p>
--

	Immersion (+12 gal water)	Comminuted	Dry Rub	Bacon Immersion (+12 gal water)	Bacon Dry Rub
Nitrite ppm critical limit	200	156	625	120	200
<i>The nitrite critical limit comes from USDA requirements in 9 CFR 424. The cure No.1. mix in ounces by weight is only valid for cure mixes of 6.25% nitrite and 93.75% salt.</i>					

Cure dry rubs can be applied and the food wrapped in plastic or placed inside a plastic zip style bag. Cure brine and food can be mixed in a food safe bin with a lid. Dry rubs or brines should not be reused and should be immediately discarded after use. Dry cure especially, and brine cure, MUST be rinsed off just prior to use (cooking). The product is NOT permitted to be stored in reduced oxygen packaging (ROP).

NOTE: The cured food must be held at 41F or below prior to the cooking process. A shelf life of 7 days or less is calculated after the cooking process takes place, i.e., once the product is a ready to eat food (as per section 3-501 of the FDA Food Code).

- Reference: FDA Food Code. Section 3-501.17, Page 92 and Appendix 6, Section 3, Pages 634-641. www.fda.gov
- Reference: National Library of Medicine Hazardous Substances Data Base, Sodium nitrite www.nlm.nih.gov
- Reference: Centers of Disease Control and Prevention (CDC), Botulism www.cdc.gov
- Reference: FSIS Processing Inspectors Calculations Handbook www.fsis.usda.gov

D. CCP Summary

D.1. Critical Limit(s)

The curing salt must be accurately measured. FSIS recommends a minimum of 120ppm of ingoing nitrite in all cured “Keep Refrigerated” products.

D.2. Monitoring

Each batch of product must be measured using a calibrated scale. Document weight of product and curing salt on the curing log. The salt must be evenly distributed by mixing into comminuted ground meat, coating the exterior with a dry rub, or completely submerging in brine. The cured product must be stored at 41F or below.

D.3. Corrective Action

If the curing salts are not measured properly according to the recipe, repeat the measurement of the curing salts. If the improperly measured curing salts were added to meat/poultry, the meat/poultry must be discarded. The corrective action taken must be documented on the curing log.

D.4. Verification

The PIC or a designee is responsible for reviewing and signing the curing log daily when the process is conducted. The PIC should also observe employees performing the measurement and recording required data periodically. Document observation notes on the curing log.

D.5. Validation

Per the USDA FSIS, curing agents are considered to have multiple functions including inhibiting rancidity in cured meats, fixing the color of cooked cured meats by forming a heat stable form of myoglobin; and retarding the outgrowth of *C. botulinum*, thus preventing formation of the toxin that causes botulism. For this reason, as a general rule, the USDA FSIS recommends a *minimum* of 120 ppm of ingoing nitrite in *all* cured "Keep Refrigerated" products. To ensure that a minimum ingoing amount of 120ppm sodium nitrite is in the product or to ensure the amount is as permitted per 9 CFR 424, the facility must attach recipes (including ingredients and amounts of ingredients). The recipes will be used by the health authority to calculate the ingoing amount of nitrite in the food.

D.6. Record

Provide a blank curing log used for monitoring the measurement of each batch of cured product as part of this document. A record of scale calibration, curing salt measurements, corrective actions, and supervisor verifications is kept on this single form. Specifically, the following information must be included on the log: Date, Scale Calibration, Recipe name, Weight of Curing Salts, Weight of Meat/Poultry, Brine amount, Other ingredients, Corrective Action, Initials or Signature of the Processor and Initials or Signature of the Person in Charge.

Note: Once records are created they MUST be kept for 6 months and made available to the RA upon inspection request.

E. Training

Each employee who will have responsibility for making and measuring curing salts is REQUIRED to receive training such that they understand the hazards and controls and that they may perform their role in this **Single Hazard Special Process HACCP Template**. THE PIC must review section C and D with employees and complete a hands-on training for section D. Provide a training log form as an attachment to this **Single Hazard Special Process HACCP Template**. The training sessions must be recorded in this log, and must include date, employee name in attendance, and instructor. Maintain the training log as an additional appendix to this **Single Hazard Special Process HACCP Template**.

F. Standard operating procedures

For the Regulatory Authority to list. Are there any SOPs required or recommended that will make this **Single Hazard Special Process HACCP Template** safer? **Such as: cleaning and sanitizing food contact surfaces, personal hygiene, hand washing, eliminating bare hand contact, proper chemical/nitrite storage**

Signature

print name, as the person in charge of , do certify that the above food safety plan will be fully implemented as written above.

Signature Date

= operator fill in places.

*--Attach a blank copy of a curing log and a blank copy of a training log to this **Single Hazard Special Processes HACCP Template**.*