HACCP Model for Traditional Swine Slaughter

The United States Department of Agriculture (USDA) published the Pathogen Reduction/Hazard Analysis Critical Control Point (HACCP) Systems Final Rule in July 1996 mandating all USDA inspected meat and poultry establishments implement a HACCP system. Hazard Analysis Critical Control Point (HACCP) is a systematic and scientific method of process control for the production of safe food products. The HACCP regulations (9 CFR Part 417) require establishments to develop and implement a system of controls designed to improve the safety of their products. The HACCP models' focus is on product safety, not product quality characteristics.

With the rule, FSIS made available a guidebook for the preparation of HACCP plans and a generic model for each food processing category defined in the regulation (9 CFR 417.2(b)(1)). The guidebook and the generic models have been revised since their initial publication to be consistent with current science and policy. FSIS recommends you use of the updated Guidebook for the Preparation of HACCP Plans when developing an establishment-specific HACCP plan.

Generic models serve as useful examples of how to meet the regulatory requirements. Each model represents a food processing category. Each processing category may contain numerous products. Therefore, each single model represents a category of products and, as such, the models do not demonstrate unique products or novel processes. The generic models are not intended to be used "as is". Establishments are to tailor the model(s) to fit the establishment's operation.

The model's critical control points (CCPs) do not necessarily apply to all operations or products. Products or operations may require fewer or more CCPs depending on the operation. The flow diagram demonstrates a general production process and should be modified to reflect the processes used at the establishment. The food safety critical limits selected must come from scientific documents or other reliable sources. Each model includes references for guidance on the selection of critical limits.

To select the model that will be most useful for the products produced, consider the production activity occurring (slaughter, cutting, grinding, smoking, cooking, etc.), the product (beef, pork, chicken, etc.), and the food safety characteristics of the final product produced (intact or non-intact, raw or ready-to-eat, requires refrigeration or is shelf-stable, etc.). Examine the list of processing categories (9 CFR 417.2(b)(1)) and group similar products according to the categories. It is common for many products to be grouped under the same category and HACCP plan. Selection of the processing categories reveals which of the generic models might be useful.

Selecting the most appropriate model to work from will save the establishment time and personnel resources. Deciding on a generic model is an important achievement for your establishment.

The records produced while documenting a HACCP plan, including all documentation used to support the hazard analysis are HACCP records (CFR 417.5(a)). The selection of processing categories and HACCP models are preliminary steps to completing a hazard analysis. The documents produced during the selection process are HACCP records. Ensure you maintain the documents produced while developing a HACCP plan.

For further assistance with developing HACCP plans see the Guidebook for the Preparation of HACCP Plans and the guidance materials available on the FSIS HACCP webpage.

EXAMPLE PRODUCT DESCRIPTION[1]

Process / Product Name: Market Hog Slaughter, Raw Intact (cuts)

Process / product type name	Raw Intact (carcasses, sides, quarters, primals, sub-primals, variety meats (offal) and head meat)
Important product characteristics (A_w, pH, Preservatives, etc.)	Not Applicable
How it is to be used	For further processing at this facility or another establishment or Intended for cooking by end consumer.
Packaging (durability and storage conditions)	Protective cover butcher paper, vacuum packaged, bagged, or boxed
Shelf Life and at what temperature	Refrigerated - 15 days at 40 °F Frozen – 180 Days at <10°F
Where it will be sold (specify intended consumers, especially at-risk populations[2])	Sold direct to another establishment or to household consumers through retail outlets or distributed to hotels, restaurants, and institutions (HRI).
Labeling instructions	Product name, inspection legend and establishment number, handling statement, net weight statement, address line, nutrition facts, and safe handling instructions.
What special distribution controls are required?	Keep refrigerated <40°F Keep frozen <10 °F

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[1] Prior to developing the HACCP plan read the FSIS Guidebook for the Preparation of HACCP Plans for detailed descriptions of the worksheets and hazard analysis. This worksheet helps describe the products.
[2] At-risk populations include young children, elderly and immunocompromised persons.

EXAMPLE LIST OF PRODUCT INGREDIENTS AND INCOMING MATERIAL[3]

Process / Product Name: Market Hog Slaughter, Raw Intact (Cuts)

Meat and meat by-products	Market hogs
Non-Meat food ingredients	None
Antimicrobials[4] or processing aids	Scald agents, Organic acid[5]
Packaging material	Butcher paper and tape, foam bone protectors, cardboard boxes, self-adhesive labels, plastic vacuum bags
Restricted ingredients or allergens	None
Other	None

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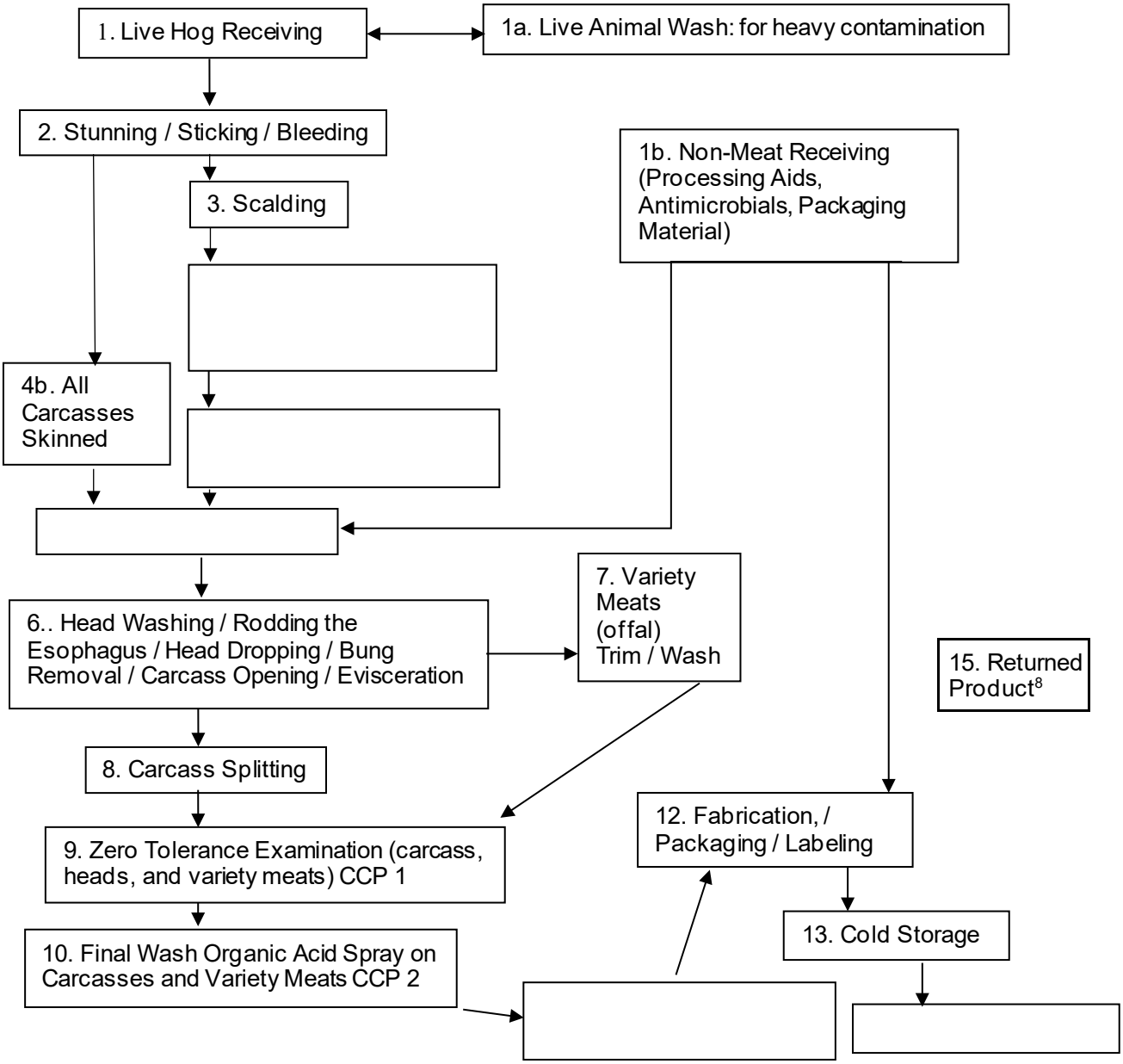
[3] List all meat, non-meat ingredients, restricted ingredients (for example, nitrites), processing aids, packaging material used in the production of this product. This is important to help identify any special ingredients or processes to address in the HACCP plan.
[4] FSIS and the Food and Drug Administration (FDA) have a memorandum of understanding (MOU) that establishes the working relationship followed when responding to notifications for the use of food additives intended for use in the production of FSIS regulated products. FSIS determines the suitability of the use of food ingredients used in the production of meat, poultry, and egg products. FSIS consults, as necessary, with FDA on the requirements under the Food Drug &Cosmetic Act and its implementing regulations. See FSIS Directive 7120.1, Safe and Suitable Ingredients Used in Meat Poultry and Egg Products for the list of suitable ingredients.
[5] Antimicrobial interventions, even if considered processing aids, must be addressed in the HACCP system.

EXAMPLE PROCESS FLOW DIAGRAM[6]

Process / Product Name: Market Hog Slaughter[7], Raw Intact (Cuts)



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[6] Note: This is an example chart. Each establishment's flow chart may be different. An establishment can determine what steps are included in the overall process as long as all of the hazards are considered in the hazard analysis.
[7] This model demonstrates two approaches to carcass preparation, either all carcasses are skinned (proceed from step 2 directly to step 4b), or carcasses are scalded (step 2 through steps 3, 4, and 4a).
[8] The Returned Product step (15) is shown as not connected to another process step. Returned product may re-enter the production system at different process steps depending on condition or problem. Returned product may be relabeled, re-processed, discarded, etc.

EXAMPLE MARKET HOG SLAUGHTER HAZARD ANALYSIS[9]

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Ingredient, Process Step	**Potential Hazards (Introduced or Controlled) at this Step[10]**	**Is the Potential Food Safety Hazard Reasonably Likely to Occur (RLTO)? (Yes or No)[11]**	**Justification / Basis for Decision[12]**	**If yes in Column 3 (hazard RLTO), What Control Measures Can Be Applied to Prevent, Eliminate, or Reduce the Hazard to Acceptable Levels[13]**	**Is this Step a Critical Control Point (CCP)?[14]**

[9] *See* FSIS Compliance Guideline for Controlling Salmonella in Market Hogs, FSIS Compliance Guideline for the Prevention and Control of Trichinella and Other Parasitic Hazards in Pork and Products Containing Pork, and FSIS Compliance Guide: Modernization of Swine Inspection System for suggested slaughter best practices and a list of scientific and technical references.

[10] Hazards are grouped into three categories: Biological (B), Chemical (C), and Physical (P). Biological hazards are living organisms. Chemical hazards may be naturally occurring in foods, used, or added during the processing of foods, or administered to live animals. Physical hazards are a component of a food that is unexpected, such as plastic, glass, metal, or bone in a boneless product. See the Guidebook for the Preparation of HACCP Plans for more information about hazards identification.

[11] Place the justification for your decision in column 4. Include control measures in column 4 for hazards not reasonably likely to occur and place them in column 5 for hazards reasonably likely to occur. If a hazard is reasonable likely to occur, then a CCP must be addressed at this step or a later step. See FSIS Meat and Poultry Hazards and Controls Guide for a list of frequently used controls.

[12] Scientific references are important in making decisions, providing justifications, and validating the HACCP system. When scientific references are used for decisions, the referenced article must be part of the HACCP records. If the scientific justification is from FSIS, then list the document name. If justification is not from an FSIS program, then HACCP system design must be supported by documentary evidence – that is, documents depicting the theoretical principles, expert advice from processing authorities, scientific or technical data, peer-reviewed journal articles, pathogen modeling programs, or other information demonstrating that particular process control measures can adequately prevent, reduce, or eliminate specific hazards. These non-FSIS supporting documents must be kept for the life of the HACCP plan.

[13] Because the results obtained under prerequisite programs could affect decisions made in the hazard analysis, an establishment is required to maintain records associated with these programs as supporting documentation for its hazard analysis (9 CFR 417.5(a)). When an establishment determines that a potential hazard is not reasonably likely to occur because the implementation of a prerequisite program (e.g., Sanitation SOP, written sanitary dressing procedures incorporated into prerequisite programs, purchase specifications, antimicrobial interventions) prevents conditions that make the potential hazard likely, that prerequisite program then becomes part of the HACCP system and as a result, must be validated. This means that establishments must maintain scientific or technical support for the design of those prerequisite programs used to support decisions in the hazard analysis and must collect in-plant validation data to support that the programs are implemented as designed (see FSIS Compliance Guideline HACCP Systems Validation, page 5).

[14] To determine whether a CCP is necessary, see Guidebook for the Preparation of HACCP Plans for decision tree to evaluate the areas of control (column 5) to determine the best CCP to control, reduce, or eliminate a hazard.

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
1. Live Hog Receiving	B: Pathogens, *Salmonella*	Yes	Live hogs may have pathogens on hair, skin, feet, and in the digestive tract.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Maintain adequate sanitation in holding pens, Good Manufacturing Practices. Documented pre-harvest farm management measures to reduce *Salmonella.* Transportation controls to reduce stress and fecal shedding, as well as cross-contamination.	No
	Trichinella[15]	No	APHIS[16] validated Trichinella pre-harvest safety program. Therefore, the hazard is not reasonable likely to occur and treatment of such products for the destruction of Trichinae is not necessary.		
	C: Drug residues	No	Low risk per USDA Residue Monitoring Program, Compliance Guide for Residue Prevention. Residue certifications for live animals. Written Drug Residue Control SOP (Standard Operating Procedure).		
	P: Foreign material, metal	No	Recorded historical data from written Foreign Material SOP[17] indicates low		

[15] See , FSIS Compliance Guideline for Controlling Salmonella in Market Hogs for guidance on controlling Salmonella and FSIS Compliance Guideline for the Prevention and Control of Trichinella and Other Parasitic Hazards in Pork and Products Containing Pork for options used to prevent the control of Trichinella in pork and pork products.

[16] USDA Animal and Plant Health Inspection Service

[17] Example: This Foreign Material SOP (prerequisite program) should have details on how this procedure is preventing the hazard from occurring (metal prevention controls) as well as the on-going verification procedures. These controls should be evident within the written document upon review. The Foreign Material SOP and plant data related to validation and on-going verification activities then become part of recordkeeping and historic data.

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
	(needles, wire)		likelihood at this establishment and from suppliers.[18] Written Visual Ante-mortem Examination of Swine SOP for observation of live hogs in holding pens, carcasses during dressing, and parts, viscera, and equipment during processing make this hazard not reasonably likely to occur.		
1a. Live Animal Wash: for heavy Contamination[19]	B: Pathogens *Salmonella*	Yes	Skin and hair from swine are a significant source of contaminants in slaughter operations.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Written Live Animal Wash SOP with conditions for use (processing conditions, suppliers, customer specifications, etc.) and wash parameters to decrease pathogens and prevent cross-contamination.	No
	C: None				
	P: None				
1b. Non-Meat Receiving (Processing Aids / Antimicrobials, Packaging Material)	B: None				

[18] Note: this "historical data" must be supported with evidence from the establishment through the establishment's history or validation data with reference to the actual SOP or prerequisite program. When historical data is not available (for example, a HACCP plan for a new process or product), then system design must be supported by other documentary evidence, such as the FSIS Meat and Poultry Hazards and Controls Guide which states "visual examination of carcass for foreign material during slaughter" is a frequently used control for foreign material hazards in swine slaughter.

[19] The criteria for use of the live animal wash should be clearly established in the prerequisite program.

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
	C: Incorrect chemical concentration received	No	Letters of Guarantee from suppliers. Written Chemical Receiving, Storage and Use SOP describing procedures for receiving, storage, mixing, use, and operational parameters verification procedures. Safety Data Sheets		
	P: None				
2. Stunning, Sticking, Bleeding	B: Pathogens *Salmonella*	Yes	Live hogs may have pathogens on hair, skin, feet, and in the digestive tract. Contaminants on swine hair and skin could transfer to product during dressing procedures.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Written Slaughter SOP describing the removal (trimming) of visible contaminants in the area where sticking occurs and the sanitation (heat or chemical) of the sticking knife prior to each procedure.	No
	C: None				
	P: None				
3. Scalding	B: Pathogens *Salmonella*	Yes	Potential for cross-contamination through stick wound as well as scalding process.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Written Scalding SOP for procedures to minimize cross-contamination during scalding and use of processing aids, scald agent, anti-foam, and carcass holding time and solution temperature parameters used in scalding process to decrease pathogen load, and maintenance of scalder sanitary condition (easy to clean and in good repair).	No

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
				Immediate trimming of stick wound after scalding.	
	C: Inappropriate chemical or concentration of scald agent used	No	Letters of Guarantee from suppliers. Safety Data Sheets on file. Written Chemical Receiving, Storage, and Use SOP for mixing and determining concentration of chemicals to ensure the mixture is made per the manufacturer's instructions and is within the allowable limits identified in Directive 7120.1 (FCN# [insert number])		
	P: None				
4. Dehairing, Gambrelling, Singeing, Polishing, Shaving, Knife Trimming	B: Pathogens *Salmonella*	Yes	Pathogens may be present on hog's skin. Potential for cross-contamination during dehairing operation. Singeing may reduce pathogens but is not a means to eliminate pathogens on skin.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray Written Sanitation SOP to maintain equipment sanitary conditions to minimize cross-contamination. Written Sanitary Dressing SOP.	No
	C: None				
	P: None				
4a. Skinning (as needed during hard hair season)	B: Pathogens *Salmonella*	Yes	Pathogens may be present on hog's skin. Potential for cross-contamination during skinning operation.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Written Sanitation SOP to maintain equipment sanitary conditions to minimize cross-contamination. Written Sanitary Dressing SOP.	No
	C: None				

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
	P: None				
4b. All Carcasses Skinned	B: Pathogens *Salmonella*	Yes	Pathogens may be present on hog's skin. Potential for cross-contamination during skinning operation.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Written Sanitation SOP to maintain equipment sanitary conditions to minimize cross-contamination. Written Sanitary Dressing SOP.	No
	C: None				
	P: None				
5. Pre-Evisceration Wash[20]	B: Pathogens *Salmonella*	Yes	Pathogens may be present on hog's skin. Washing may reduce pathogens but is not a means to eliminate pathogens on skin.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Written Pre-evisceration Carcass Wash SOP. Process Control SOP (prerequisite program) for sampling of microbial organisms to monitor the establishment's ability to maintain process control (9 CFR 310.18).	No
	C: Inappropriate antimicrobial use and concentration	No	Letters of Guarantee from suppliers. Safety Data Sheets on file. Written Chemical Receiving, Storage, and Use SOP for mixing and determining concentration of chemicals in scald water to ensure it meets manufacturer's instructions and Directive 7120.1 approval (FCN# [insert number]).		

[20] Pre-evisceration wash can be a control step where application parameters are monitored and documented in a prerequisite program (as listed). If a hazard at a step is considered reasonably likely to occur, a CCP needs to be assigned either at that step or at a later step. FSIS Directive 7120.1, Safe and Suitable Ingredients Used in Meat, Poultry and Egg Products lists suitable compounds for pre-evisceration wash. Concentrations and control parameters in prerequisite programs need to be validated to ensure they work as intended in the establishment (see FSIS Compliance Guide HACCP Systems Validation).

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
	P: None				
6. Head Washing, Rodding the Esophagus, Head Dropping, Bung Removal, Carcass Opening, Evisceration	B: Pathogens *Salmonella*	Yes	Live hogs may have pathogens on hair, skin, feet, and in the digestive tract. Contaminants could transfer to product during dressing procedures. Cross-contamination from insanitary dressing procedures and employee handling.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Documentation of properly trained employees.[21] Written Sanitation SOP for procedures and verification of equipment sanitized between each carcass processed to minimize cross-contamination. Written Sanitary Dressing Procedures which include tying the esophagus to prevent contamination from stomach contents. Written Pre-evisceration Wash SOP to minimize overspray from cabinet.	No
	C: None				
	P: None				
7. Variety Meats (Offal) Trim / Wash	B: Pathogens *Salmonella*	Yes	Live hogs may have pathogens on hair, skin, feet, and in the digestive tract. Contaminants could transfer to product during dressing procedures.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Properly trained employees to examine variety meats (offal). Written Sanitation SOPs to prevent cross-contamination and to minimize outgrowth of pathogens.[22]	No

[21] FSIS recommends that slaughter operations focus on their sanitary dressing procedures on preventing carcass contamination and the creation of insanitary conditions. Document the training of employees and training material used. Poor sanitary dressing procedures result in carcass contamination (visible or invisible, for example, microbial contamination) and limit the effectiveness of antimicrobial interventions.

[22] Reference can be used to justify temperature and time during processing (for example, The Significance of time-temperature to growth of foodborne pathogens during refrigeration at 40-50°F (Tompkin, R.B. 1996).

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
	C: None				
	P: None				
8. Carcass Splitting	B: Pathogens *Salmonella*	Yes	Meat can become contaminated with pathogens during dressing procedures and processing. Splitting saw can transfer contaminants from carcass to carcass.	Controlled at Subsequent CCP in process: CCP 1: Zero Tolerance Examination, CCP 2: Organic Acid Spray. Recorded historical data from written Sanitation SOP Check to address splitting saw sanitation between carcasses to prevent cross-contamination indicates low likelihood of occurrence.[23] Written Sanitary Dressing SOP for monitoring the time required to move carcasses through the slaughter process to reduce exposure to contaminants.	No
	C: None				
	P: None				
9. Zero Tolerance Examination (Carcass heads, and Variety Meats (Offal))	B: Pathogens *Salmonella*	Yes	It is widely accepted that carcasses and organs are to be handled in a sanitary manner to prevent contamination with feces or ingesta. FSIS enforces a zero tolerance standard for visible fecal material, ingesta, or milk on carcasses and parts (Livestock Carcasses and Poultry Carcasses Contaminated With Visible Fecal Material). If contamination		Yes CCP 1[24]

[23] Documentation to support this statement using in-plant data collected from prerequisite program (Sanitation SOP) validation and on-going verification check. When historical data is not available (for example, a HACCP plan for a new process or product), then system design must be supported by other documentary evidence, such as the FSIS Meat and Poultry Hazards and Controls Guide which states "minimize cross-contamination through sanitary dressing procedures; Sanitation SOPs" is a frequently used control for biological hazards in swine slaughter.

[24] The CCP to reduce, control, or eliminate the previous hazards associated with zero tolerance for milk, fecal material and ingesta as designated by "yes" in column 6.

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
			occurs, it is removed by trimming (9 CFR 310.18(a)).		
	C: None				
	P: None				
10. Final wash and Organic Acid Spray on Carcass and Variety Meats	B: Pathogens *Salmonella*	Yes	Live hogs may have pathogens on hair, skin, feet, and in the digestive tract. Contaminants could transfer to product during dressing procedures.	Organic Acid sprays documented[25] to reduce contaminants on carcasses, variety meats (offal), and meat.[26] Written Carcass Wash SOP to minimize overspray from cabinet and ensure complete coverage.	Yes CCP 2
	C: Inappropriate concentration of organic acid	No	Written Chemical Receiving, Storage, and Use SOP for mixing and determining concentration of chemicals to ensure the mixture is made per the manufacturer's instructions and is within the allowable limits identified in Directive 7120.1 (FCN# [insert number])		
	P: None				
11. Product (Carcass and	B: Pathogen outgrowth *Salmonella*	No	Written Product Chilling SOP to address carcass and variety meats chilling and		

[25] Provide reference for scientific support and validation for effective concentrations and support for critical operational parameters that reduce biological hazards. FSIS Directive 7120.1, Safe and Suitable Ingredients Used in Meat, Poultry and Egg Products contains the list of substances that may be used in the production of meat and poultry products. The list contains the allowable amounts and the intended use of the approved antimicrobials. The list (Directive 7120.1) can be used as supporting documentation for chemical hazard controls (safety and suitability). Directive 7120.1 cannot be used as support for the control of biological hazards because the antimicrobial concentration needed to control bacteria is different from the concentrations required for safety and suitability.

[26] If an establishment implements a process consistent with the process specifications described in the scientific support, and the scientific support contains microbiological data specifying the level of pathogen reduction achieved by the intervention strategy for the target pathogen identified in the hazard analysis, the in-plant validation data collected during the 90 day initial validation period will consist of data on quantifiable characteristics of the critical operational parameters, such as pressure, temperature, and concentration. However, if an establishment implements different critical operational parameters in the process from the scientific support, or the scientific support identified does not contain microbiological data, then the establishment should collect in-plant data demonstrating the critical operational parameters that it has implemented can all be met AND should collect in-plant microbiological validation data or identify scientific support with microbiological data that demonstrates the effectiveness of those implemented critical operational parameter (FSIS Compliance Guideline HACCP Systems Validation, page 27).

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
Variety Meats) Chilling			holding cooler temperature to reduce pathogen growth[27] Tompkin, R.B. 1996. Written Sanitation SOP to address cooler sanitation and sanitary handling of products held in the cooler. Process Control prerequisite program for sampling of microbial organisms to monitor the establishment's ability to maintain process control (9 CFR 310.18).		
	C: None				
	P: None				
12. Fabrication, Packaging, Labeling	B: Pathogen outgrowth *Salmonella*	No	Written Fabrication SOP to address temperature control for the processing room to reduce pathogen outgrowth (Tompkin, R.B. 1996). Written Sanitation SOP includes procedures for sanitary handling of product.		
	C: None				
	P: None				
13. Cold Storage	B: Pathogen outgrowth *Salmonella*	No	Written Cooler Storage SOP for proper cooler storage temperature (Tompkin, R.B. 1996). Written Sanitation SOP to address cooler sanitation.		
	C: None				
	P: None				

[27] References can be used to justify temperature and time during processing (for example, The Significance of time-temperature to growth of foodborne pathogens during refrigeration at 40-50°F (Tompkin, R.B. 1996).

Step	Hazard	RLTO	Justification / Basis	Controls	CCP
14. Product Shipping	B: Pathogen Outgrowth *Salmonella*	No	Written Final Product SOP for procedures to examine outgoing products including sanitary condition of trucks, functioning transport refrigeration unit, and package integrity.		
	C: None				
	P: None				
15. Returned Product	Reinspection SOP implemented before accepting returned product. Product enters the appropriate step of the production system based on findings of product evaluation. Opened packages are not accepted. Notify FSIS personnel when product has been returned.				

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Market Hog Slaughter (Raw Intact) HACCP PLAN[28]									
Critical Control Point (CCP)	**Significant Hazard(s)**	**Critical Limits for Each Control Measure**	**Monitoring Procedures**				**Corrective Action**	**Verification**	**Records**
			What	**How**	**Frequency**	**Who**			
CCP 1 Zero Tolerance Examination	B: Pathogen: *Salmonella*	No (Zero) visibly detected fecal material, milk, or ingesta contaminants on carcasses, heads, or variety meats.	Examine carcasses, heads, and variety meats for contaminants.	Observe all surfaces of 2 carcasses at the USDA final rail inspection station. Observe all surfaces of 2 heads after dressing at head processing station. Observe all surfaces of 2 pieces of variety meats.	Once per shift for carcasses. Once per shift for variety meats and heads.	Designated employee.	Any visible fecal material, ingesta, or milk contaminants are knife trimmed immediately from carcasses, heads, or variety meats.[29] If a deviation from the critical limit occurs, the production supervisor will per 9 CFR 417.3: 1. Hold all product produced after the last acceptable check until appropriate disposition taken (no product injurious to health will be sold); 2. Determine and eliminate the cause of the deviation; 3. Bring the CCP under control; 4. Take measures to prevent recurrence.	Once per day a QA Tech or designated employee will examine for contaminants 2 randomly selected carcass sides from those held in the cooler. Once per week at a randomly chosen time, a QA Tech will examine for contaminants 2 randomly selected dressed heads and 2 randomly selected pieces of variety meats. Once per week at a randomly chosen time, a QA Tech will observe the designated employee perform zero tolerance monitoring on carcasses, variety meats, and heads. Weekly, the QA Tech will review the Zero Tolerance Check Form completed by designated employee. Records Review (9 CFR 417.4(a)(2)(iii))	Zero Tolerance Check Form[30] Corrective Action Log Preshipment Records Review Form Verification Records

[28] This information is to help small and very small establishments in understanding the requirements in Title 9 Code of Federal Regulations (9 CFR) Part 417. The HACCP model is for demonstration purposes only. The model does not represent requirements that must be met.

[29] For example, an SOP describing the monitoring procedures might include this statement "each head, carcass and variety meat with a deviation will be shown to the supervisor. The supervisor will determine the cause of the deviation, take whatever measures are necessary to restore the CCP to control, and document the corrective actions in the Corrective Actions Log."

[30] One form for all monitoring and verification activities.

Critical Control Point (CCP)	Significant Hazard(s)	Critical Limits for Each Control Measure	Monitoring Procedures				Corrective Action	Verification	Records
			What	How	Frequency	Who			
CCP 2 Organic Acid Spray	B: Pathogens, *Salmonella*	Mix solution[31] per manufacturer's instructions to achieve 2-5% solution of organic acid. Temperature of the solution in the tank is not to exceed 55°C. The solution is sprayed directly onto carcasses, head meat, and variety meats. The solution will be applied to each carcass side for 15 seconds and each whole carcass for 25 seconds or until all surfaces are dripping wet and some of the solution drips off. The solution will be applied to head meat and variety meats until all surfaces are wet and some of the solution drips off.	Monitor the mixing of the organic acid solution, measure the temperature of the solution in the pressure tank, and check the application of the solution.	Check the volumes of the ingredients used to make the solution. Check the temperature of the solution in the tank with a handheld thermometer. Monitor the application of the solution to carcasses, variety meats, and head meat pieces.	Check the volumes of the ingredients and solution temperature once per shift. The application of the solution is monitored twice per shift.	QA Tech or designee	If the organic wash is outside the solution range, not applied to all surfaces or exceeds 55°C then the critical limits are not met. If a deviation from the critical limit occurs, the production supervisor will per 9 CFR 417.3: 1. Hold all product produced after the last acceptable check until appropriate disposition taken (no product injurious to health will be sold); 2. Determine and eliminate the cause of the deviation; 3. Bring the CCP under control; 4. Take measures to prevent recurrence.	Randomly, once per week, QA Manager observes QA Tech performing monitoring functions; Once per week, QA Manager will calibrate thermometer per manufacturer's procedures. Once per week, the QA Manager will use a test kit to measure the solution concentration. Daily, QA Tech will review the Organic Acid Spray Form completed by designated employee. Records Review 9 CFR 417.4(a)(2)(iii)	Organic Acid Spray Form Corrective Action Log Preshipment Records Review Form Verification Records

[31] This is an example HACCP plan. See Directive 7120.1 for a complete list of antimicrobials that FSIS verifies as safe and suitable.