HACCP Model for Beef 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 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.

This generic HACCP model illustrates the slaughter processing category. Although this is a beef slaughter model, the model may be used as a starting point for developing a slaughter HACCP plan for other classes of livestock. The slaughter process has inherent food safety hazards that originate with the live animal. Therefore, the slaughter process has heightened food safety significance. Slaughter establishments typically produce carcasses which are raw intact finished products. The food safety hazards identified for the slaughter process are also common to the Raw Intact and Raw Non-Intact processing categories.

The model's critical control points (CCPs) do not necessarily apply to all slaughter 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. This model includes references for guidance on the selection of critical limits.

The records produced while documenting a HACCP plan, including all documentation used to support the hazard analysis are HACCP records (CFR 417.5(a)). 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: Beef Slaughter

Process / Product Name	Carcass and carcass parts, tongue, heart, liver, kidney and intestine.
Important product characteristics (A_w, pH, Preservatives, etc.)	None
How it is to be used[2]	For further processing at this facility or intended for cooking for or by the end consumer
Packaging (durability and storage conditions)	Product bags and cardboard boxes
Shelf Life and at what temperature	Not shelf stable – Keep refrigerated (7 days at ≤40°F) or frozen (180 days at ≤10°F)
Where it will be sold (specify intended consumers, especially at-risk populations[3])	Sold direct to household consumers, through retail outlets or distributed to hotels, restaurants, and institutions.
Labeling instructions and requirements	Product name, inspection legend and establishment number, handling statement, net weight statement, address line, nutritional labeling (when needed) and safe handling instructions.
What special distribution controls are required?	None

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[1] Prior to developing the HACCP plan, please read the FSIS Guidebook for the Preparation of HACCP Plans for detailed descriptions of the worksheets and hazard analysis. The FSIS Guidebook for the Preparation of HACCP Plans and the generic HACCP models are intended for small and very small establishments seeking assistance in understanding the requirements in Title 9 Code of Federal Regulations (9 CFR) Part 417. The HACCP models are for demonstration purposes only. The models do not represent requirements that must be met. Establishments are required to develop HACCP plans specific to their facilities, production practices, and products.
[2] The intended use or consumer of the product must be identified in accordance with 9 CFR 417.2(a)(2). Identifying the product's intended use in the product description is one way to meet the regulatory requirements specific to 417.2(a)(2).
[3] At-risk populations include young children, the elderly and immunocompromised persons.

EXAMPLE LIST OF PRODUCT INGREDIENTS AND INCOMING MATERIALS

Process / Product Name: Beef Slaughter

Meat and meat by-products[4]	Beef
Non-Meat food ingredients	None
Antimicrobials[5] or processing aids	Organic Acid[6]
Packaging material	Product bags and cardboard boxes
Restricted ingredients or allergens	None
Other	None

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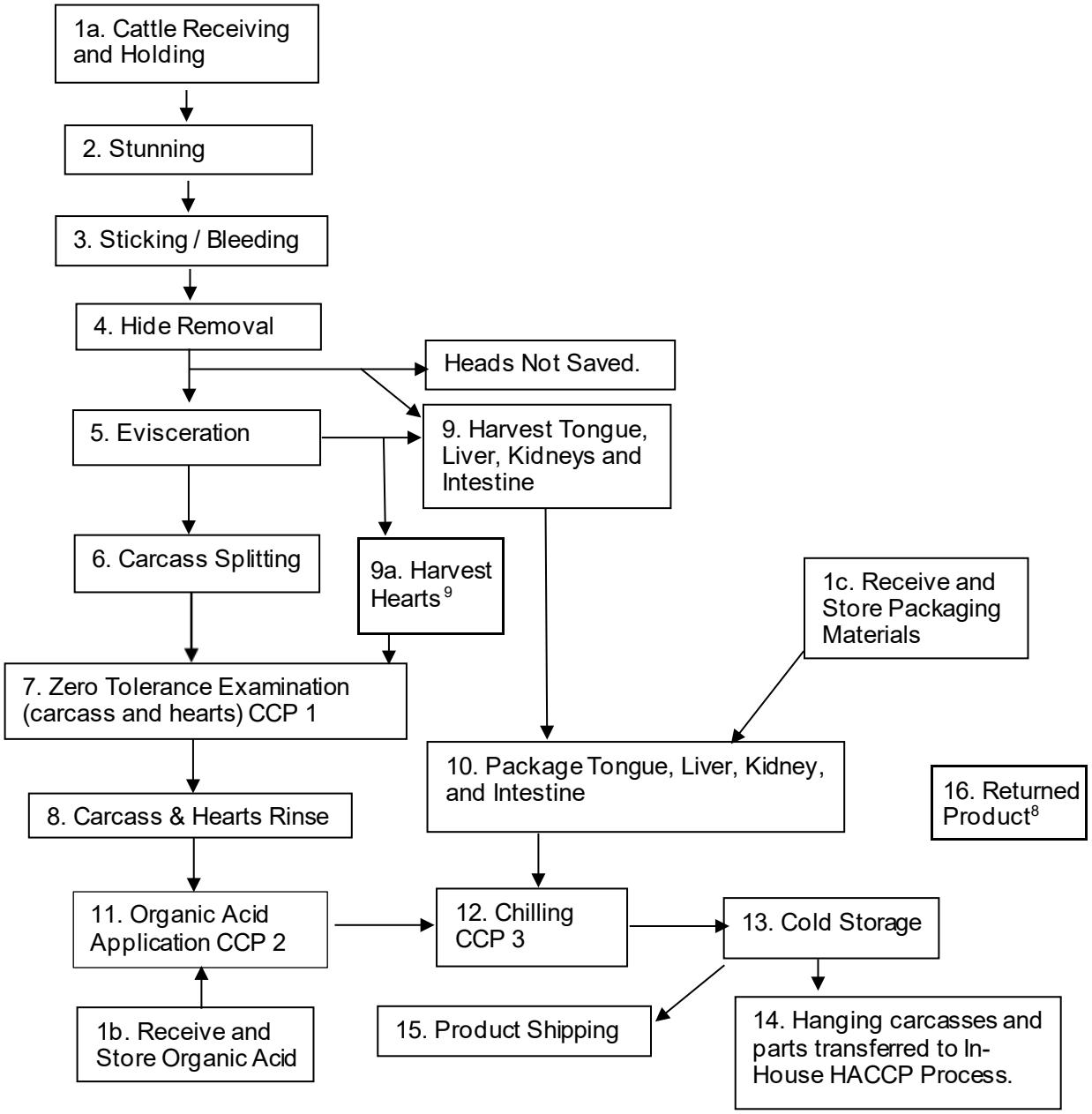
[4] List all meat (beef), processing aids, and packaging material used in production of these products. This is important to help identify any special ingredients or processes to address in the HACCP plan.

[5] 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 (including ingredients) 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 Federal 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.

[6] There are many different organic acids (for example, lactic acid, acetic acid). If used, establishments will need to select a product best suited for their unique circumstances.

EXAMPLE PROCESS FLOW CHART[7]
Process / Product Name: Beef Slaughter



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[7] This is an example flow diagram. Establishments' flow diagrams for the same product may be different. Establishments determine which steps are included in their process. The steps must represent all relevant hazards in the hazard analysis. The Meat and Poultry Hazards and Controls Guide (starting on page 5) describes the usual process steps, potential hazards and frequently used controls for beef slaughter.

[8] The Returned Product step (16) 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.

[9] In this model, beef heart undergoes the same CCPs as carcasses because the heart meat may be a component of ground beef.

EXAMPLE BEEF SLAUGHTER HAZARD ANALYSIS[10]

Column 1	Column 2	Column 3	Column 4	Column 5	Column 6
Ingredient/ Process Step	**Potential Hazards (introduced or controlled) at this step[11]**	**Is the Potential Food Safety Hazard Reasonably Likely to Occur (RLTO)? (Yes or No)[12]**	**Justification / Basis for Decision[13]**	**If yes in Column 3, (RLTO), What Control Measures Can Be Applied to Prevent, Eliminate, or Reduce the Hazard to Acceptable Levels[14]**	**Is this step a Critical Control Point (CCP)?**
1a. Cattle Receiving and Holding	C: Drug Residues	No	No cattle purchased from suppliers with history of violative residues (Residue Repeat Violators List). Supplier provides an affirmation.		
	P: Foreign Material	No	Lack of historical findings from visual inspection during livestock handling and slaughter.[15]		

[10] This is an example hazard analysis. Each establishment's flow chart, hazards analysis, hazards, decision-making, and support may be different. An establishment can determine what "steps" are included in the overall process if all of the hazards are considered in the hazard analysis. The FSIS Meat and Poultry Hazards and Controls Guide (starting on page 5) describes the usual process steps for beef slaughter.

[11] 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.

[12] Place the justification for your decision in column 4. Control measures either go in column 4 for hazards not reasonably likely to occur or go in column 5 for hazards reasonably likely to occur. If a hazard is reasonably likely to occur, then a CCP must be addressed at the step where the hazard is recognized or a later step. See FSIS Meat and Poultry Hazards and Controls Guide for a list of frequently used controls.

[13] 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 document, then HACCP system design must be supported by documentary evidence – that is, 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.

[14] 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 (NRLTO) because the implementation of a prerequisite program (e.g., Sanitation Standard Operating Procedure (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).

[15] 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, parts and viscera" is a frequently used control for foreign material hazards in beef slaughter.

Step	Potential Hazard	RLTO	Justification / Basis	Controls	CCP
	(needles, wire, buckshot, bullets).				
	B: Presence of pathogens, Shiga-toxin producing *Escherichia coli* (STEC) (*E. coli* O157:H7, O26, O45, O103, O111, O121 and O145) and *Salmonella*.	Yes	The intestinal tract, mouth, hide, and hooves of cattle may harbor these pathogens.	Controlled later at CCP 1 Zero Tolerance Examination, CCP 2 Organic Acid Application and CCP 3 Chilling.	No
	B: Bovine Spongiform Encephalopathy (BSE) Prions associated with Specified Risk Materials (SRMs).	No	Non-ambulatory cattle are not slaughtered (9 CFR 309.3(e)). Written SRM Program to remove, segregate and dispose of SRMs (9 CFR 310.22).		
1b. Receive and Store Organic Acid	B: None				
	C: Non-Food Grade Chemical.	No	Letter of Guarantee (LOG) maintained for organic acid. Written Incoming Materials Receiving and Storage Standard Operating Procedure (SOP).		
	P: None				

Step	Potential Hazard	RLTO	Justification / Basis	Controls	CCP
1c. Receive and Store Packaging Materials	B: Contamination with Pathogens	No	Packaging materials are protected from pests and environmental contaminates.		
	C: Non-food grade materials	No	Letter of guarantee (LOG) for all packaging materials. Written Incoming Materials Receiving and Storage SOP with procedures to examine packaging materials and to protect packaging materials from environmental contaminates.		
	P: None				
2. Stunning	B: Presence of pathogens, STEC and *Salmonella.*	Yes	The intestinal tract, mouth, hide, and hooves of cattle may harbor these pathogens.	Controlled later at CCP 1 Zero Tolerance Examination, CCP 2 Organic Acid Application and CCP 3 Chilling.	No
	B: BSE / SRMs	No	Written SRM Program to remove, segregate and dispose of SRMs (9 CFR 310.22). Heads are not saved		
	C: None				
	P: Foreign Material	No	Firearms are used for stunning. Heads are not saved. (9 CFR 310.18(b)).		
3. Sticking / Bleeding	B: Presence of pathogens, STEC and *Salmonella*	Yes	The intestinal tract, mouth, hide, and hooves of cattle may harbor these pathogens.	Controlled later at CCP 1 Zero Tolerance Examination, CCP 2 Organic Acid Application and CCP 3 Chilling. Written Sanitary Dressing Procedures[16] to reduce likelihood	No

[16] The FSIS Compliance Guideline for Minimizing the Risk of Shiga Toxin-producing Escherichia Coli (STEC) and Salmonella in Beef (including Veal) Slaughter Operations helps establishments design comprehensive written sanitary dressing programs; shows establishments how to implement antimicrobial interventions effectively, and helps establishments develop verification activities.

Step	Potential Hazard	RLTO	Justification / Basis	Controls	CCP
				of cross-contamination.	
	C: None	No			
	P: None	No			
4. Hide Removal	B: Presence of pathogens, STEC and *Salmonella.*	Yes	The intestinal tract, mouth, hide, and hooves of cattle may harbor these pathogens.	Controlled later at CCP 1 Zero Tolerance Examination, CCP 2 Organic Acid Application and CCP 3 Chilling. Written Sanitary Dressing Procedures to reduce likelihood of cross-contamination.	No
	C: None				
	P: None				
5. Evisceration	B: Presence of pathogens, STEC and *Salmonella.*	Yes	The intestinal tract, mouth, hide, and hooves of cattle may harbor these pathogens.	Controlled later at CCP 1 Zero Tolerance Examination, CCP 2 Organic Acid Application and CCP 3 Chilling.	No
	B: BSE / SRMs	No	Written SRM Program to remove, segregate and dispose of SRMs (9 CFR 310.22).	Written Sanitary Dressing Procedures to reduce likelihood of cross-contamination.	
	C: None				
	P: None				
6. Carcass Splitting	B: Presence of pathogens, STEC and *Salmonella.*	Yes	Carcass splitting equipment may transfer contaminants from carcass to carcass.	Controlled later at CCP 1 Zero Tolerance Examination, CCP 2 Organic Acid Application and CCP 3 Chilling. Written Sanitary Dressing Procedures to reduce likelihood	No

Step	Potential Hazard	RLTO	Justification / Basis	Controls	CCP
	B: BSE / SRMs	No	Written SRM Program to remove, segregate, and dispose of SRMs (9 CFR 310.22)	of cross-contamination. Records indicate low likelihood of occurrence.[17]	
	C: None				
	P: None				
7. Zero Tolerance Examination (carcass and hearts) CCP 1	B: Presence of pathogens, STEC and *Salmonella.*	Yes	FSIS enforces a zero-tolerance standard for visible fecal material, ingesta, or milk on carcasses (Livestock Carcasses and Poultry Carcasses Contaminated With Visible Fecal Material). Hearts are not subject to the FSIS zero-tolerance standard. Hearts are included in this step because they can become a component of raw ground beef products. Therefore, hearts undergo the same CCPs as the carcass.[18]	CCP 1 Zero Tolerance Examination for carcasses and hearts. If contamination occurs, it is removed by trimming (9 CFR 310.18(a)).	CCP 1
	C: None				
	P: None				
8. Carcass and Hearts Rinse	B. Presence of pathogens, STEC and *Salmonella.*	Yes	Rinse with potable water to remove blood, bone dust, and debris.	Controlled later at CCP 2 Organic Acid Application and CCP 3 Chilling.	No
	C: None				
	P: None				

[17] 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 beef slaughter.

[18] This generic beef slaughter HACCP model demonstrates how beef heart meat—which is to be incorporated into ground beef—can be addressed in the hazard analysis. In this model, hearts are subject to the CCP 1 Zero Tolerance Examination, although beef hearts are not subject to FSIS' zero tolerance policy. Beef hearts are subject to the requirements of 9 CFR 310.18(a).

Step	Potential Hazard	RLTO	Justification / Basis	Controls	CCP
9. Harvest Tongue, Liver, Kidney and Intestine	B: Presence of pathogens, STEC and *Salmonella.*	No	The intestinal tract, mouth, hide, and hooves of cattle may harbor these pathogens. The STEC and *Salmonella* biological hazards for tongue, liver, kidney and intestine are recognized as not reasonably likely to occur because these products are not to be incorporated into raw ground beef products.	Written Sanitary Dressing Procedures designed to reduce the likelihood of cross-contamination.	No
	B: Outgrowth of pathogens, STEC and *Salmonella.*	Yes	Chilling inhibits growth of pathogens. (Tompkin, R.B. 1996). Outgrowth of STEC and *Salmonella* is reasonably likely to occur, and outgrowth is controlled with product chilling (CCP 3) and cold storage.	Controlled later at CCP 3 Chilling.	
	B: BSE / SRMs	No	Written SRM Program to remove, segregate and dispose of SRMs (9 CFR 310.22).		
	C: None				
	P: None				
9a. Harvest Hearts	B: Presence of pathogens, STEC and *Salmonella.*	Yes	Hearts may become contaminated during evisceration. The STEC and *Salmonella* biological hazards for beef hearts are recognized as reasonably likely to occur because heart meat is to be incorporated into raw ground beef product.	Controlled later at CCP 1 Zero Tolerance Examination, CCP 2 Organic Acid Application and CCP 3 Chilling. Written Sanitary Dressing Procedures designed to prevent the likelihood of cross-contamination.	No
	C: None				
	P: None				
10. Package Tongue, Liver,	B: Outgrowth of pathogens,	Yes	Low product temperatures inhibit growth of pathogens. (Tompkin, R.B. 1996)	Controlled with CCP 3 Chilling.	No

Step	Potential Hazard	RLTO	Justification / Basis	Controls	CCP
Kidney, and Intestine	STEC and *Salmonella.*				
	C: None				
	P: None				
11. Organic Acid Application	B. Presence of pathogens, STEC and *Salmonella.*	Yes	Eliminate or reduce STEC to non-detectable levels. Eliminate or reduce *Salmonella*.	CCP 2 Organic Acid Application.[19, 20]	CCP 2
	C: Incorrect acid concentration.	No	We adhere to the manufacturer's guidance on storing, mixing, verifying concentrations, and applying the organic acid. The acid is used in accordance with FSIS Directive 7120.1.[21]		
	P: None				
12. Chilling	B: Outgrowth of pathogens, STEC and *Salmonella.*	Yes	Chilling inhibits growth of pathogens. FSIS Compliance Guideline for Minimizing the Risk of Shiga Toxin-Producing Escherichia Coli (STEC) and Salmonella in Beef (including Veal) Slaughter Operations	CCP 3 Chilling Process Control SOP (prerequisite program) for sampling of microbial organisms to monitor the establishment's ability to maintain process control (9 CFR 310.18).	CCP 3

[19] 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 (FSIS Compliance Guideline HACCP Systems Validation, page 27).

[20] The Pennsylvania State University worked with Texas Tech University and Washington State University to generate new data that very small establishments can use to effectively remove pathogens from carcass surfaces. See the Antimicrobial Spray Treatments for Red Meat Carcasses Processed in Very Small Meat Establishments for additional information.

[21] 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.

Step	Potential Hazard	RLTO	Justification / Basis	Controls	CCP
	C: None				
	P: None				
13. Cold Storage	B: Outgrowth of pathogens, STEC and *Salmonella.*	No	Written Cold Storage Program to maintain product ≤40°F to prevent outgrowth (Tompkin, R.B. 1996)		
	C: None				
	P: None				
14. Hanging carcasses and parts transferred to In-House HACCP Process.	B: None				
	C: None				
	P: None				
15. Product Shipping	B: Outgrowth of pathogens, STEC and *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				
16. Returned Product	B: None		Returned Product Evaluation SOP implemented before accepting returned product. Entity returning the product must demonstrate the product was held in the appropriate temperature range and in a sanitary manner. When such assurance is not available, returned product is rejected or destroyed. Opened packages are not accepted. Accepted product enters the appropriate step of the production system based on findings of product		

Step	Potential Hazard	RLTO	Justification / Basis	Controls	CCP
			evaluation. Notify FSIS personnel when returned product has been accepted.		
	C: None				
	P: None				

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EXAMPLE HACCP PLAN

Beef Slaughter HACCP Plan

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	Presence of pathogens: STEC (*E. coli* O157:H7, O26, O45, O103, O111, O121 and O145) and *Salmonella* in fecal material, ingesta and milk.	Zero visible fecal material, milk, or ingesta on carcasses at the final rail inspection station and hearts after processing is completed in the slaughter department.	Examine carcasses and hearts for contaminants. Document observations.	Observe all surfaces of 2 randomly selected carcasses at the USDA final rail inspection station. Examine 2 randomly selected hearts after processing is complete in the slaughter department. Document observations on the Zero Tolerance Monitoring Form.	Once per shift	Designee	If a deviation from the critical limit occurs, the supervisor will: 1. Hold all product produced after the last acceptable check until appropriate disposition taken (no product injurious to health will enter commerce); 2. Determine and eliminate the cause of the deviation; 3. Bring the CCP under control; 4. Take measures to prevent recurrence 9 CFR 417.3	Once per week, a supervisor observes the designee perform the monitoring activity. Once per week, a supervisor will conduct the records review.	Zero Tolerance Monitoring Form Verification Form Corrective Action Form Pre-shipment Review Form

Example Beef Slaughter HACCP Plan									
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 Application	Presence of pathogens: STEC (*E. coli* O157:H7, O26, O45, O103, O111, O121 and O145) and *Salmonella*	Solution at appropriate concentration (e.g., 2-5%), per supporting documentation. Solution applied to each carcass and heart until all surfaces are visibly wet with solution.	Solution concentration. Carcasses and hearts visibly wet.	Monitor the measuring and combining of the solution components. Monitor application of the solution to carcasses and hearts. Document on the Organic Acid Application Form.	Monitor the measuring and combining of the solution components once at the beginning of the slaughter day. Monitor the application of the solution once per slaughter day.	Designee	If a deviation from the critical limit occurs, the supervisor will: 1. Hold all product produced after the last acceptable check until appropriate disposition taken (no product injurious to health will enter commerce); 2. Determine and eliminate the cause of the deviation; 3. Bring the CCP under control; 4. Take measures to prevent recurrence 9 CFR 417.3	Once per week, a supervisor observes the designee perform the monitoring activity. Once per week, a supervisor will conduct the records review.	Organic Acid Application Form Verification Form Corrective Action Form Pre-shipment Review Form

Example Beef Slaughter HACCP Plan									
Critical Control Point (CCP)	**Significant Hazard(s)**	**Critical Limits for Each Control Measure**	**Monitoring Procedures**				**Corrective Action**	**Verification**	**Records**
			What	**How**	**Frequency**	**Who**			
CCP 3 Chilling[22]	Pathogen outgrowth: STEC (*E. coli* O157:H7, O26, O45, O103, O111, O121 and O145) and *Salmonella*	Carcass, tongue, hearts, liver, kidney and intestine surface temperature will be ≤40°F within 24 hours of slaughter.	The surface temperature.	Insert a handheld digital thermometer 1 mm under the fascia on the inside round of carcasses and just under the surface of the hearts, liver, kidney and intestine. Document on the Chilling Monitoring Form.	Within 24 hours of slaughter, for 2 randomly selected carcasses and 2 randomly selected hearts, livers, kidneys or intestines.	Designee	If a deviation from the critical limit occurs, the supervisor will: 1. Hold all product produced after the last acceptable check until appropriate disposition taken (no product injurious to health will enter commerce); 2. Determine and eliminate the cause of the deviation; 3. Bring the CCP under control; 4. Take measures to prevent recurrence 9 CFR 417.3	Once per week, a supervisor observes the designee perform the monitoring activity. Once per week, a supervisor will conduct the records review. Once per week, the supervisor or designee will calibrate the thermometer (per supporting documentation).	Chilling Monitoring Form Corrective Action Form Pre-shipment Review Form Calibration Log

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[22] These limits, procedures and frequencies are all examples, and can vary by establishment. 9 CFR 417.2(c) requires each CCP to include a critical limit, and 9 CFR 417.5(a)(2) requires support for the selection and development of the CCP and critical limits. 9 CFR 417.2(c) requires the HACCP plan to include monitoring and verification procedures and frequencies, and 9 CFR 417.5(a)(2) requires support for the select procedures and frequencies. 9 CFR 417.4 requires each HACCP plan be validated.