Flow Diagram for Smoked Sausage

	POTENTIAL HAZARDS	CCP/CP	CRITICAL LIMITS	POTENTIAL HAZARDS	CORRECTIVE ACTIONS
RECEIVING	Rapid bacterial growth, spoilage, cross- contamination, foreign objects.	CP	Frozen items must be kept frozen. Chilled items must be kept at 40°F or below. No cross-contamination, foreign objects or spoilage.	Visual inspection. Use a digital thermometer.	Reject thawed frozen items. Reject chilled items above 40°F. Reject product with foreign objects.
STORAGE	Rapid bacterial growth, spoilage, cross- contamination, foreign objects.	CP	Temperature at 40°F or below. Any product stored above 70°F or a four-hour period must be discarded.	Record temperature every four hours. After normal working hours, the cooler will be on automatic alarm system.	Adjust cooler temperature. Discard any product that exceeds 70°F for more than four hours.
GRINDING	Rapid bacterial growth and cross- contamination.	CP	Utensils and equipment must be clean. Employees must meet personal sanitary standards.	Visual inspection.	Stop production and modify procedure.
MIXING	Insufficient mixing or amounts may result in poor distribution of cure.	CCP	Cure must be properly distributed, following uniform formulation mix.	Observe batch make slip, date and weight of product. Attach seasoning and cure bag.	Modify and re-blend, following uniform formulation mix.
STUFFING AND HANDLING	Cross- contamination between personnel and equipment.	CP	Utensils and equipment must be clean. Employees must meet personal sanitary standards.	Visual inspection.	Stop production and rework product.
COOKING AND SMOKING	Pathogens and bacterial spores may survive if product is not properly cooked.	CCP	Internal temperatures must be: Beef and Pork: 155°F Poultry: 165°F	Inspect temperature chart. Verify that the minimum time and temperature have been met.	Re-cook product until the minimum time and temperature have been met.
CHILLING	Surviving bacterial spores may germinate to vegetative cells if chilling is to slow.	CCP	Products must be cooled to 70°F within two hours, and to 40°F and below within another 4 hours.	Record internal temperature on batch make slip at two hours and six hours.	Discard any product not cooled to 40°F or below within six hours.
PACKAGING AND LABELING	Products may be incorrectly labeled. Outdated product may not be safe. Economic fraud. Cross-contamination.	CP	Overwrap product to prevent bacteria growth. Policies for rotation, disposal, and proper labeling must be followed. Follow good manufacturing practices.	Record the lot code and refrigeration statement. Follow proper procedures for coding and dating. Follow good manufacturing practices.	Reject or discard improper packaging. Discard outdated products.
DISPLAY	Improper temperature may result in rapid and progressive growth of pathogens.	CCP	Temperature must be maintained at 40°F or below. Products will be considered temperature-abused if they are exposed to temperatures above 40°F for more than six hours.	Check and record display case temperature every four hours.	Lower the thermostat. Discard any temperature-abused products.

PROCESS STEP	FOOD SAFETY HAZARD	REASONABLY LIKELY TO OCCUR	JUSTIFICATION FOR DECISION	IF YES IN COLUMN 3 What measures could be applied to prevent, eliminate, or reduce the hazard to an accepable level?	IS THE STEP A CRITICAL CONTROL POINT (CCP)?
Receive meat form raw, not ground HACCP Plan	B — None	B: — No			
	C — None	C: — No			
	P— None	P: — No			
Storage of meat	B — Pathogen Growth	B — Yes	Proper storage temperature suffiecient to prevent pathogen growth.	Temperature control to reduce a potential risk of pathogenic growth.	Yes (CCP 1B Holding Cooler)
	C — None	C — No			
	P — Foreign Materials (ex. overhead contamination)	P — None	Preventive maintenance and sanitation SOP's to prevent contamination.		
Receiving from chill	B — Pathogen Growth	B — No	Proper storage temperature sufficient to prevent pathogen growth.		
	C — Pathogen Growth	C — No			
	P — Foreign Materials (ex. overhead contamination)	P — No	Preventive maintenance and sanitation SOP's to prevent contamination		
Receive packaging supplies	B — Microbial Spores	No	Letters of guarantee are on file for all packaging supplies and ingredients.		
	C — None				
	P — Foreign Materials	No	Letters of guarantee are on file for all packaging supplies and ingredients.		
Receive non-meat ingredients	B — Microbial Spores	No	Letters of guarantee are on file for all packaging supplies and ingredients.		
	C — None				
	P — Foreign Materials	No	Letters of guarantee are on file for all packaging supplies and ingredients.		
Storage of packaging supplies	B — Microbial Spores	B — No	Letters of guarantee are on file for all packaging supplies and ingredients		
	C — None	C — No	Letters of guarantee are on file for all packaging supplies and ingredients. GMP's, routine samition, visual observation for container integrity.		
	P — Foreign Materials	P — No			
Receive non-meat ingredients	B — Microbial Spores	No	Letters of guarantee are on file for all packaging supplies and ingredients		
	C — None				
	P — Foreign Materials	No	Letters of guarantee are on file for all packaging supplies and ingredients		

PROCESS STEP	FOOD SAFETY HAZARD	RESEASONABLY LIKELY TO OCCUR	JUSTIFICATION FOR DECISION	IF YES IN COLUMN 3 What measures could be applied to prevent, eliminate, or reduce the hazard to an accepable level?	IS THE STEP A CRITICAL CONTROL POINT (CCP)?
Storage of non-meat ingredients	B — Micobial Spores	No	Letters of guarantee are on file for all packaging supplies and ingredients.		
	C — None				
	P— None	No	Letters of guarantee are on file for all packaging supplies and ingredients.		
Formulate non-meat ingredients	B — Pathogen Introduction	B — No	Responsible employee prepares according to formulation.		
	C — None	C — No			
	P — Foreign Materials (ex. metal)	P — No	Plant history indicated that metal contamination is not likely to occur.		
Mix brine	B — Pathogen Introduction	B — No	Sanitation SOP's to prevent cross-contamination.		
	C — Nitrate	C — No	Responsible employee prepares according to formulation.		
	P — Foreign Materials (ex. overhead contamination)	P — No	Plant history indicated that metal contamination is not likely to occur.		
Inject/pump	B — Pathogen Introduction	No	Sanitation SOP's to prevent cross-contamination.		
	C — Excessive Nitrate		Proper pump % for appropriate formulation.		
	P — None	No			
Tumble	B — Microbial Spores	No	Sanitation SOP's to prevent cross-contamination.		
	C — None				
	P — None	No			
Net/stuff/ hangrack	B — Microbial Spores	B — No	Sanitation SOP's to prevent cross-contamination.		
	C — None	C — No			
	P — None	P — No			
Storage of meat cure	B — Pathogen Growth	B — Yes	Proper storage temperature sufficient to prevent pathogen growth.	Temperature control to reduce a potential risk of pathogenic growth.	Yes (CCP 2B cured meat cooler)
	C — None	C — No			
	P — None	P — No			
Cook/smoke	B — Pathogen Reduction	Yes	Potential survivor and/or growth of pathogens with improper cooking.		Yes (CCP 3B)
	C — None				
	P — None				

PROCESS STEP	FOOD SAFETY HAZARD	REASONABLY LIKELY TO OCCUR	JUSTIFICATION FOR DECISION	IF YES IN COLUMN 3 What measures could be applied to prevent, eliminate, or reduce the hazard to an accepable level?	IS THE STEP A CRITICAL CONTROL POINT (CCP)?
Chill/storage	B — Pathogen Growth	B — Yes	Potential survival and/or growth of pathogens with improper chilling. Improper storage temperature can provide ambient temperature for both spoilage and pathogenic growth.	Temperature control to reduce a potential risk of pathogenic growth.	Yes (CCP 4B smoked meats cooler)
	C — None	C — No			
	P— Foreign Materials	P — No	Container integrity.		No
Fabricate	B — Pathogen Contamination (*Listeria monocytogenes*)	No	Potential contamination form envimmental sources. Pre-operational and operation sanitation can reduce the risk of contamination from the environment and cross-contamination between products.		No
	C — None	C — No			
	P — None	P — No			
Package and label	B — Pathogen Contamination	B — No	Sanitation Standard Operating Procedures are in place to prevent contamination.	.	No
	C — Nitrate	C — No			
	P — None	P — No			
Storage of finished product	B — Pathogen Growth	B — No	Improper storage temperature can provide ambient temperature for both pathogenic growth.	Temperature control to reduce a potential risk of pathogenic growth.	Yes (CCP 5B holding cooler)
	C — None	C — No			
	P — Foreign Materials	P — No	Container integrity.		No
Ship	B — Pathogen Growth	B — No	Low risk, temperature abuse is unlikely to occur, since truck temperatures are sufficient to prevent pathogen growth.		No
	C — None	C — No			
	P — Foreign Materials	P — No	Container integrity.		

CCP	CRITICAL LIMITS	MONITORING PROCEDURES & FREQUENCIES	MONITORING RECORDS	CORRECTIVE ACTIONS	VERIFICATION PROCEDURES & FREQUENCIES	VERIFICATION RECORDS
CCP 1B Holding Cooler Hazard: Pathogen Growth	The cooler temperature is not to exceed 40°F except for periods of defrost.	The temperature of the raw meat storage areas will be taken continuously by a computerized data recorder with an alarm.	Bi-weekly or as necessary a printout of the plant temperatures. Non-compliance Log	See the Corrective Action Report for the specific actions taken to bring the CCP under control. Corrective actions may include but are not limited to; Plant management will immediately notify maintenance personnel to repair the cooler. The temperature of the cooler will be brought into compliance as soon as possible. If the increased temperature effects product temperature, the product will be temporarily relocated in another cooler or freezer, a hold may be placed on the cooler to prevent cold air from escaping.	Thermometers. Alarms will be checked and if necessary calibrated on a monthly basis.	Thermometer Calibration Log Monthly Verification Log
CCP 2B Cured Meat Cooler	Same as CCP1B	The temperature of the cured meat storage areas will be taken continuously by a computerized data recorder with an alarm.	Same as CCP1B	Same as CCP1B	Same as CCP1B	Same as CCP1B
CCP 3B Internal Product Temperature	The minimal internal temperature must reach 148°F.	At the end of the cooking, the oven operator or designee will take and record the internal temperature per each product in the oven. The temperature will be taken with a calibrated thermometer.	Smokehouse Log Non-compliance Report	Specific corrective actions will be recorded for each deviation from the critical limit. Corrective actions may include but are not limited to: holding in the oven until the temperature is reached, recooking the product, reworking the product, or disposing of the product.	Thermometers will be calibrated on a monthly basis or as necessary. Daily review of production records by management Visual Observations of procedures will be conducted on a monthly basis or as necessary. Findings will be recorded on the Monthly Verification Log.	Thermometer Calibration Log Monthly Verification Log
CCP 4B Smoked Meat Cooler	Same as CCP1B	The temperature of the smoked meat storage areas will be taken continuously by a computerized data recorder with an alarm.	Same as CCP1B	Same as CCP1B	Same as CCP1B	Same as CCP1B
CCP 4B Holding Cooler	Same as CCP1B	The temperature of the finished and packaged product areas will be taken continuously by a computerized data recorder with an alarm.	Same as CCP1B	Same as CCP1B	Same as CCP1B	Same as CCP1B