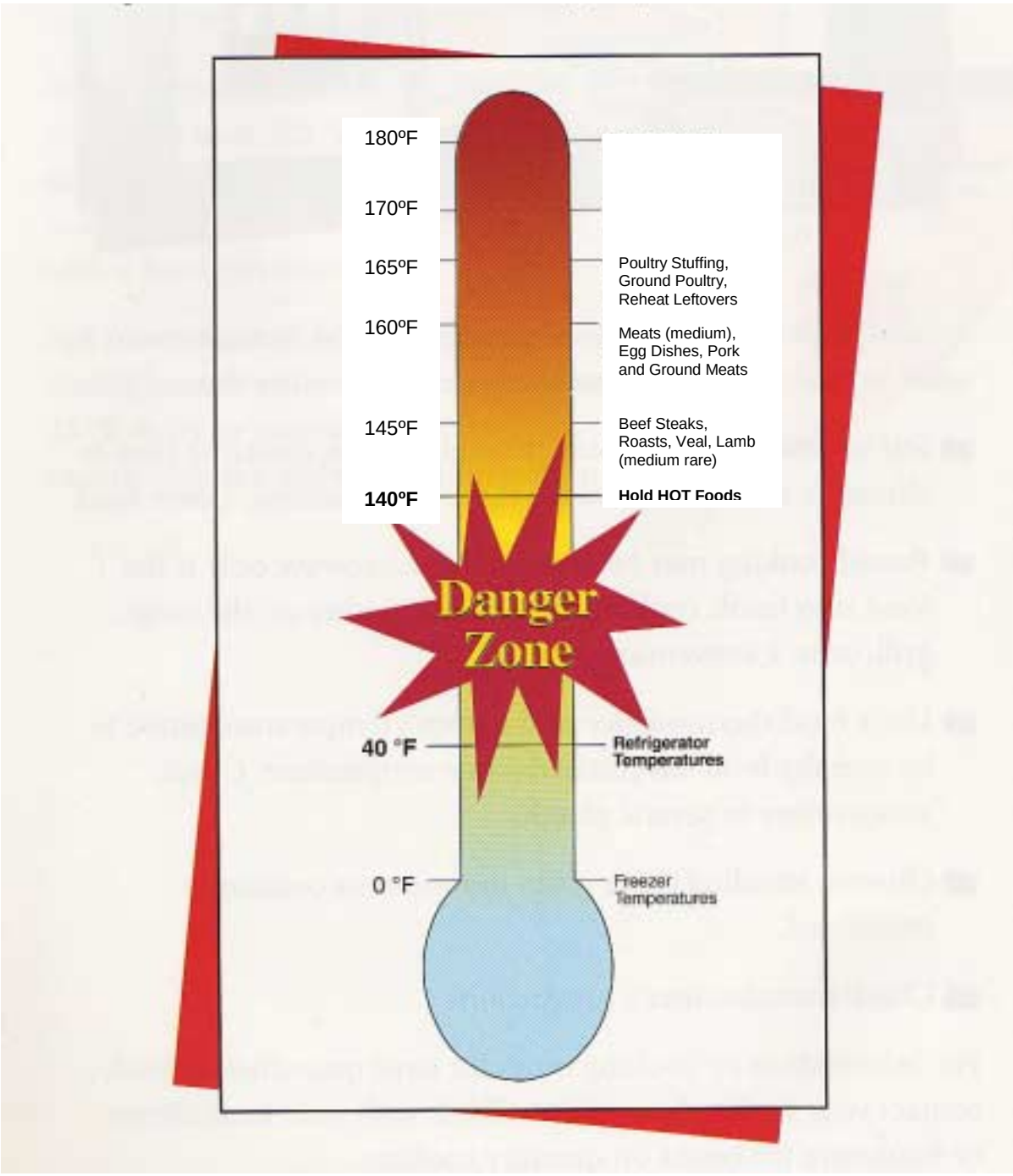
MEAT AND POULTRY SAFETY



NEW YORK STATE DEPARTMENT OF AGRICULTURE AND MARKETS

in conjunction with

UNITED STATES DEPARTMENT OF AGRICULTURE

MEAT AND POULTRY SAFETY

In the last decade there has been a noticeable increase in the instances of foodborne illness attributed to the mishandling of meat and poultry products. These illnesses have resulted in hospitalization and, in some cases, death of consumers; tons of meat and poultry products having to be destroyed; lawsuits; and establishments that were forced to permanently close their businesses.

In order for you, as a retail meat and poultry processor, to combat hazards you must initiate an active approach to ensure that these illnesses will not occur. The following information is meant to provide an awareness to the hazards that you may face and offer possibilities in developing plans to ensure the safety of your meat and poultry products.

Foodborne Illness…

In most cases of foodborne illness (food poisoning), symptoms resemble intestinal flu and last a few hours to several days. But in cases of botulism or when food poisoning strikes infants, the ill, the elderly or those with compromised immune systems, life-threatening complications can result.

Microscopic organisms that cause foodborne illness are everywhere - in the air, soil, water and in human and animal digestive tracts. Most are capable of growing undetected in food because they do not produce an "off" odor, color or texture. The only way these microbes can be prevented from causing human illness is by handling and storing food safely.

BACTERIA (Disease)	SOURCE	SYMPTOMS (after eating)	PREVENTION
Salmonella (*Salmonellosis*)	Spread when contaminated food (meat, poultry, eggs) is eaten raw or undercooked. Also, when cooked food comes in contact with contaminated raw food or when an infected person prepares food.	Onset: 6-48 hours; nausea, fever, headache, abdominal cramps, diarrhea and vomiting lasting 2-7 days. Can be fatal to infants, the elderly, the infirm and the immune-compromised.	Separate raw foods from cooked foods. Thoroughly cook meat, poultry and eggs. Consume only pasteurized milk, dairy products and egg nog. Don't leave food at room temperature over 2 hours. (refrigerate below 40ºF).
Staphylococcus aureus (*Staph*)	Carried by people on skin, in boils, pimples and throat infections; spread when carriers handle food. Staph bacteria produce toxins (poisons) at warm temperatures. Meat, poultry, salads, cheese, eggs, custards and cream-filled desserts are susceptible foods.	Onset: 1-8 hours; vomiting, diarrhea, nausea and abdominal cramps lasting 1-2 days. Rarely fatal.	Cooking won't destroy staph poison, so practice good personal hygiene and sanitary food handling. Don’t leave perishable food unrefrigerated over 2 hours. (For quick cooling, place hot food in small containers no more than 4 inches deep; cover when cool.)

BACTERIA (Disease)	SOURCE	SYMPTOMS (after eating)	PREVENTION
Clostridium botulinum (*Botulism*)	Most common in low-acid foods canned improperly at home. The presence of these bacteria or their poisons is sometimes signaled by clear liquids turned milky, cracked jars, loose or dented lids, swollen or dented cans or an "off" odor. Recently, botulism has also been associated with low-oxygen cooked foods (e.g. foil wrapped; vacuum packaged) which have been held at room temperatures for long periods of time.	Onset: 4-72 hours; nervous system disturbances such as double vision, droopy eyelids, trouble speaking, swallowing, breathing. **Untreated botulism can be fatal.** If you or a family member has botulism symptoms, **get medical help immediately.** Then call health authorities.	Carefully exam canned goods (particularly those canned at home) and don't use **any** canned goods showing danger signs. Also, cook and reheat foods thoroughly, keep cooked foods hot (above 140ºF) or cold (below 40ºF) and divide large portions of cooked food into smaller portions for serving and cooling.
Clostridium perfringens (*Perfringens food poisoning*)	"Buffet germ" that grows rapidly in large portions of food that cool slowly. It grows in chafing dishes which may not keep food sufficiently hot and in the refrigerator if food is stored in portions too large to cool quickly.	Onset: 8-24 hours; diarrhea, gas pains, nausea and sometimes vomiting lasting only a day. Usually mild, but can be serious in ulcer patients, the elderly, ill or immune-compromised.	Keep food hot (over 140ºF) or cold (below 40ºF). Divide bulk cooked foods into small portions for serving and cooling. Reheat leftovers to at least 165ºF. (Take special care with poultry, stew, soup, gravy and casseroles.)
Campylobacter jejuni (*Campylobacteriosis*)	Contracted from untreated drinking water, infected pets and when contaminated meat, poultry, milk or shellfish is eaten raw or undercooked.	Onset: 2-10 days; severe diarrhea (possibly bloody), cramps, fever and headache lasting 1-10 days.	Don't drink untreated water or unpasteurized milk. Wash hands, utensils and surfaces that touch raw poultry or meat. Thoroughly cook meat, poultry and seafood.

BACTERIA (Disease)	SOURCE	SYMPTOMS (after eating)	PREVENTION
Listeria monocytogenes (*Listeriosis*)	Common in nature, food processing environments and intestinal tracts of humans and animals. Spread in untreated water, unpasteurized milk and dairy products, raw meat and seafood, plus raw vegetables fertilized with infected manure.	Onset: 2-30 days. Adults can develop fever, chills and intestinal flu-like symptoms. Infants may vomit, refuse to drink or have trouble breathing. Possible complications - meningitis, meningo-encephalitis, blood poisoning, spontaneous abortion, stillbirths. Rare, but can be fatal. Pregnant women, newborns, the elderly, infirm and immune-compromised are most at risk.	Avoid raw milk and cheese made from unpasteurized milk. Follow "keep refrigerated" labels, observe "sell by" and "use by" dates and thoroughly reheat frozen or refrigerated processed meat and poultry products before eating.
Shigella bacteria (*Shigellosis*)	Spread when human carrier with poor sanitary habits handles liquid or moist food that is not thoroughly cooked afterwards. Shigella multiply at room temperature. Susceptible foods include poultry, milk and dairy products, salads and other foods that require a lot of mixing and handling and no further heat treatment.	Onset 1-7 days; abdominal pain, diarrhea, fever, sometimes vomiting and blood, pus or mucus in stool; lasts 5-6 days. Most serious in infants, the elderly, infirm or immune-compromised.	Practice good personal hygiene and sanitary food handling (wash hands thoroughly and frequently). Also, avoid leaving perishable foods unrefrigerated over 2 hours and cook food thoroughly (reheat to at least 165ºF). Do not prepare food when ill with diarrhea or vomiting.
Escherichia coli 0157:H7 (*Hemorrhagic colitis*)	Serotype 0157:H7 toxin contracted by drinking water which contains raw sewage (usually during travel). Also, can occur in raw or rare ground beef and unpasteurized milk.	Onset: 3-4 days; severe abdominal cramps followed by diarrhea (often bloody), nausea, vomiting, fever lasting to 10 days. May require hospitalization. Possible complication - Hemolytic Uremic Syndrome (HUS), a urinary tract infection capable of causing kidney failure in children.	Don't drink untreated water or unpasteurized milk. Thoroughly cook food and reheat it to at least 165ºF. Don't leave perishable food unrefrigerated over 2 hours.

PARASITES	SOURCE	SYMPTOMS (after eating)	PREVENTION
Trichinella	A parasite whose larva is found primarily on the muscle of pigs, horses.	Infection in humans results in flu-like symptoms (diarrhea, fever,, stiffness, muscle pain, respiratory distress). Heavy infection may lead to death.	Thorough cooking kills the larvae.

Sanitation Concerns and Self-Monitoring System

Sanitation Concerns

The following are common sanitary problems that occur during the handling of meat and poultry products.

The **safety of water** used in retail processing is usually not difficult to maintain if the supply is from a municipal source. Private sources or well water will require more frequent approval and monitoring. The water supply must be checked to account for -

- safety in contact with foods and food contact surfaces;
- safety in production of ice; and
- no cross-connections between the potable and non-potable water.

The **condition and cleanliness of food contact surfaces** must consider any surface that comes in direct or indirect contact with the foods. Typical food contact surfaces may include utensils, knives, tables, cutting boards, cutting equipment, holding trays, stuffers, wraps, ice makers, ice storage, gloves, aprons, etc. Routine checks should monitor for the condition, cleanliness and sanitation of the surfaces, type and concentrations for detergents and sanitizers used to clean and sanitize the surfaces and the condition and cleanliness of clothing (i.e. gloves and outer garments that may contact the foods).

The **prevention of cross-contamination** should address employee practices, separation of raw and ready-to-eat foods and design of the processing operations and facilities. The intent is to prevent contamination of the food, particularly any ready-to-eat foods. Proper and frequent hand-washing is an essential measure to prevent cross-contamination.

The **maintenance of hand-washing, hand-sanitizing and toilet facilities** is self-explanatory. The facilities should be maintained in proper working order in easily accessed areas with all necessary supplies (i.e. soaps, towels, tissue, etc.).

The **protection from adulteration** involves protecting the food from any possible microbial, chemical or physical contaminants such as lubricants, fuel, pesticides, cleaning compounds, sanitizing agents, condensation, floor or table splashes, insanitary materials, etc.

The **proper labeling, storage and use of toxic compounds** is necessary to prevent adulteration or contamination of the foods or food contact surfaces. Original containers should be properly labeled and any working containers must show the original compound name or solution in the container and instructions for proper use. Such containers should be stored in a separate designated area with limited access and security. Containers used to hold cleaners or sanitizers must not be food containers.

The **control of employee health conditions** is necessary to prevent persons who are diagnosed with or have symptoms of an illness, wounds or other afflictions that could be a source of microbial contamination when handling foods.

The **exclusion of pests** is a very broad concern to prevent any pests (insects, rodents, birds, pets, etc.) from entering or being in the food handling or storage areas. The prevention can involve action in and about the processing areas.

Self-Monitoring Sanitation Program

As a retail processing operator, you should consider a two-part self-monitoring approach for sanitation and HACCP. In both cases, the monitoring activity documents the actual practices and serves as a record or evidence for the firm's commitment to food safety. Likewise, monitoring can be a useful guideline for employee practices, internal training and management.

Why Self-Monitoring for Sanitation and HACCP

- ✔ Describe the sanitation procedures to be used in your establishment;
- ✔ Provide a schedule of these sanitation procedures;
- ✔ Provide a foundation to support a routine monitoring program;
- ✔ Encourage prior planning to ensure that corrections are taken when necessary;
- ✔ Identify trends and prevent recurrent problems;
- ✔ Ensure that everyone, from management to production workers, understands sanitation;
- ✔ Provide a consistent training tool for employees;
- ✔ Demonstrate commitment to buyers and inspectors; and
- ✔ Lead to improved sanitation practices and conditions in the plant.

For example, a simple self-monitoring form is provided for routine retail processing of specialty meats. This form adheres to the eight key sanitation concerns and provides room to customize the monitoring to suit a particular process or retail operation. This monitoring has been condensed to allow daily monitoring for an entire week and the reverse side can be used to document any necessary corrective actions during the same week. It is recommended that a narrative should be prepared to explain the actual procedures for each listed items, Operations no. 1-16 and Personnel no. 1-5. The narrative provides a training guideline and reference for the employees.

The self-monitoring form should be completed before beginning processing (PreOp). Daily records would be completed using a "✔" or "**X**" response. Marking an item with a "✔" means compliance. Marking with an "**X**" means a problem that may require corrective action. The problems and corrections can be documented on the reverse side of the form. Additional sheets can be needed to document additional problems in the same week.

It is recommended to complete the self-monitoring form before processing, followed by continuous checks after breaks and through the work day. An initial marked "✔" can be easily changed to an "**X**" when a problem occurs and the corrective action can document when the problem occurred and was fixed.

Also, this simple form can be expanded to record additional information such as the important storage temperatures used in refrigeration of the foods.

SANITATION CHECK — PreOp & Continuous

OPERATIONS	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
TIME							
1. Work area and surfaces in good order, not cluttered, clean and properly sanitized. Area I / Area II / Area III							
2. Work surfaces cleaned and sanitized between handling different foods or ready-to-eat and raw foods.							
3. Equipment and facilities in good operating condition.							
4. Floor well drained, clean and free of debris or trash.							
5. Separate brushes, wiping cloths and containers used for cleaning and sanitizing. Restrict use of wiping cloths.							
6. Utensils and food machines cleaned and sanitized after each operation and each work day. Properly stored and protected .							
7. Food containers, packaging and dry storage area clean and with good housekeeping for package integrity and identity.							
8. Foods and ingredients properly labeled, protected and stored.							
9. Ready-to-eat foods handled and stored separated or segregated from raw foods and raw food containers and packaging.							
10. Coolers and freezers clean and not cluttered.							
11. All food transport equipment cleaned and sanitized.							
12. All cleaners, sanitizers, pesticides and other potentially toxic chemicals properly labeled and stored separate from foods and processing area.							
13. Dry and wet waste materials properly contained and removed from the processing area. No accumulation of waste materials.							
14. Disposal area maintained to avoid odor and pest problems.							
15. Outside areas properly maintained to avoid pest problems.							
16. Thermometers available, calibrated and used.							
Others:							

PERSONNEL	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
1. Only authorized persons in the food processing area.							
2. No person with illness, open or infected wounds allowed in contact with foods or food operations.							
3. Persons with clean uniform, gloves and hair covers (as necessary).							
4. Restrict exposure of food to tobacco, jewelry, cosmetics, medication, perspiration, eating and drinking.							
5. Hand wash facilities and toilets functioning correctly and properly supplied and used.							
Others:							

Food Temperature Checks	DAY 1	DAY 2	DAY 3	DAY 4	DAY 5	DAY 6	DAY 7
AM							
PM							

CORRECTIVE ACTIONS

Sanitation No.	Date/ Time	PROBLEM	Date/ Time	CORRECTION

FIRM: **SIGN:**

INTERNAL COOKING TEMPERATURES

PRODUCT	ºF
Egg and Egg Dishes	
Eggs	145
Egg casseroles	145
Egg sauces, custards	145
Ground Meat and Meat Mixtures	
Turkey, Chicken	165
Beef, Veal, Lamb, Pork	160
Fresh Beef, Veal, Lamb	
Medium Rare	145
Medium	160
Well Done	170
Fresh Pork	
Medium	150
Well Done	170
Ham	
Fresh (raw)	150
Fully cooked (to reheat)	145
Roast Beef	
Cooked commercially, vacuum sealed and ready-to-eat	145

PRODUCT	ºF
Poultry	
Chicken, Turkey - whole	165
Chicken, Turkey - dark meat	165
Poultry - breast	165
Duck and Goose	165
Stuffing	
Cooked alone or in bird	165
Sauces, Soups, Gravies, Marinades	
Used with raw meat, poultry or fish	145
Leftovers	***165***

HAZARD ANALYSIS CRITICAL CONTROL POINT SYSTEMS

HACCP - A Food Safety Preventive and Corrective Program

Hazard Analysis and Critical Control Points (HACCP) is a process control system designed to identify and prevent microbial and other hazards in food production. It includes steps designed to prevent problems before they occur and to correct problems as soon as they are detected. Such preventive control systems, with documentation and verification are widely recognized by scientific authorities and international organizations as the most effective approach available for producing safe food.

MANAGEMENT TOOL

HACCP systems must be based on the following seven principles: (1) Hazard Analysis; (2) Critical Control Point Identification; (3) Establishment of Critical Limits; (4) Monitoring Procedures; (5) Corrective Actions; (6) Recordkeeping and (7) Verification Procedures.

The Seven HACCP Principles

Principal 1: Conduct a hazard analysis.

Plants determine the food safety hazards reasonably likely to occur and identify the preventive measures the plant can apply to control these hazards.

Principal 2: Identify critical control points.

A critical control point (CCP) is a point, step or procedure in a food process at which control can be applied and, as a result, a food safety hazard can be prevented, eliminated or reduced to an acceptable level. A food safety hazard is any *biological, chemical* or *physical* property that may cause a food to be unsafe for human consumption.

Principal 3: Establish critical limits for each critical control point.

A *critical limit* is the maximum or minimum value to which a physical, biological or chemical hazard must be controlled at a critical control point to prevent, eliminate or reduce to an acceptable level the occurrence of the identified food safety hazard.

Principal 4: Establish critical control point monitoring requirements.

Monitoring activities are necessary to ensure that the process is under control at each critical control point. Each monitoring procedure and its frequency should be listed in the HACCP plan.

Principle 5: Establish corrective actions.

These are actions to be taken when monitoring indicates a deviation from an established critical limit. The final rule requires a plant's HACCP plan to identify the corrective actions to be taken if a critical limit is not met. Corrective actions are intended to ensure that no product injurious to health or otherwise adulterated as a result of the deviation enters commerce.

Principle 6: Establish recordkeeping procedures.

HACCP requires that all processors maintain certain documents, including hazard analysis and written HACCP plan and records documenting the monitoring of critical control points, critical limits, verification activities and the handling of processing deviations.

Principle 7: Establish procedures for verifying the HACCP system is working as intended.

Validation ensures that the plans do what they were designed to do, that is, they are successful in ensuring the production of safe product. Plants will be required to validate their own HACCP plans.

Verification ensures the HACCP plan is adequate, that is, working as intended. Verification procedures may include such activities as review of HACCP plans, CCP records, critical limits and microbial sampling and analysis. The HACCP plan should include verification tasks, such as microbiological testing be performed.

Developing an Effective HACCP System

Before developing the HACCP system it is important to ensure that an adequate sanitation system is in place. Good Manufacturing Practices (GMPs) and Standard Operating Procedures (SOPs) are also important because they establish basic operational parameters for the production of safe food.

Preliminary steps to developing a HACCP system are as follows:

1. Assemble a HACCP team.
2. Describe the food and its method of distribution.
3. Identify the intended use and consumers of the food.
4. Develop a flow diagram which describes the process.
5. Verify the accuracy of the flow diagram.

Assembling the HACCP team: An important step in developing a plan is to gain management commitment and assemble a HACCP team. Management must be fully

committed to product safety through HACCP to make the program effective. After commitment is obtained, the HACCP team should be assembled. The team should consist of individual(s) from all aspects of production and should, if possible, include at least one HACCP trained individual.

Product Description: The description should include the products within the process, their distribution, intended use and potential consumers. This step will help ensure that all areas of concern are addressed. If a particular area on the example form is not applicable to your process, then eliminate it from your description.

Flow Diagram: The HACCP team should develop and verify a flow diagram for production of the product(s). A simple flow diagram which includes every step of production is necessary. The flow diagram should be verified for accuracy and completeness by physically walking through each step in the diagram on the plant floor. The purpose of the flow diagram is to provide a clear, simple description of the steps in the process which are directly under the control of the facility. Verifying the accuracy of the flow chart is essential. This requires that the team actually walk through the operation to assure that every step is included.

Principle 1: Hazard Analysis

Hazard Analysis: A hazard has been defined as any biological (B), chemical (C) or physical (P) property that may cause a food to be unsafe for human consumption.

The hazard analysis is one of the most critical steps in the development of a HACCP plan. The HACCP team must conduct a hazard analysis and identify every step in the process where significant hazards can occur or are "reasonably likely to occur." Significant hazards must be "of such a nature that their prevention, elimination, reduction or control to acceptable levels is essential to the production of safe food."

The team should focus on risk and severity as criteria for determining whether a hazard is significant or not.

Risk, as defined, is "likelihood of occurrence." "The estimate of risk is usually based on a combination of experience, epidemiological data and information in the technical literature." Severity is the potential magnitude of the consequences to the consumer if the hazard is not adequately controlled.

Hazards that are not significant or not likely to occur will not require further consideration in the HACCP plan.

The hazard analysis and identification of associated preventive measures accomplishes the following:

Identifies hazards of significance and associated preventive measures.

The analysis can be used to modify a process or product to further assure or improve food safety.

The analysis provides a basis for determining CCPs.

Hazard Analysis Worksheet

In the back of this section, generic model Hazard Analysis Worksheets are available. The Hazard Analysis Worksheet format is for demonstration only and may not work for your process.

Alternative forms can be used for the hazard analysis.

This worksheet should be used in two steps.

The first step is to review each process step listed in the Process Flow Diagram and identify all potential hazards that can be introduced or enhanced at this step. Chemical, physical and biological hazards should all be addressed. It is recommended that you list all potential hazards for each process step before moving to column three.

The second step is to determine if the potential hazard is significant (or likely to occur). The significant hazards must be of such a nature that their prevention, elimination, reduction or control to acceptable levels is essential to the production of safe food. The HACCP team should focus on risk and severity as criteria for determining whether a hazard is significant or not. Risk is defined as likelihood of occurrence. The estimate of risk is usually based on a combination of experience, epidemiological data and information in the technical literature. Severity is the potential magnitude of the consequences to the consumer if the hazard is not adequately controlled. Hazards that are not significant or not likely to occur will not require further consideration in the HACCP plan.

It is important that you justify your decision for determining if a hazard is or is not significant (column labeled "Basis"). This will help you document your rationale for making decisions and is an extremely useful tool when you revalidate or revise your HACCP plan.

The fifth column addresses preventive measures. For each significant hazard, identify preventive measures, if they exist. A preventive measure is a physical, chemical or other means which can be used to control an identified food safety hazard.

Principle 2 - Identifying Critical Control Points

A CCP is any point, step or procedure at which control can be applied so that a food safety hazard can be prevented, eliminated, reduced or controlled to acceptable levels.

It is recommended that you complete columns 1 through 5 before starting on column 6. Column 6 asks, "Is this step a critical control point (CCP)?" A CCP is any point, step or procedure at which control can be applied so that a food safety hazard can be prevented, eliminated, reduced or controlled to acceptable levels. Information developed during the hazard analysis should enable the HACCP team to identify which steps in the process are CCPs. A decision tree, such as the NACMCF Decision Tree,

may be useful in determining if a particular step is a CCP for an identified hazard. The team members subjected the hazards identified during the development of this model to a decision tree.

CCPs must be carefully developed and documented and must be for product safety only. Different facilities preparing the same product can differ in the risk of hazards and the points, steps or procedures, which are CCPs.

The CCPs identified in these models are for illustrative purposes only. Individual plant's process, product and end-user will determine the CCPs identified for plant-specific plans.

Critical Control Point (CCP): A CCP is any point, step or procedure at which control can be applied so that a food safety hazard can be prevented, eliminated, reduced or controlled to acceptable levels. Information developed during the hazard analysis should enable the HACCP team to identify which steps in the process are CCPs. A decision tree, such as the NACMCF Decision Tree may be useful in determining if a particular step is a CCP for an identified hazard.

The CCPs discussed in this generic model should be considered as examples. Different facilities preparing the same product can differ in the risk of hazards and the points, steps or procedures which are considered CCPs. This can be due to differences in each facility layout, equipment, selection of ingredients or the production process that is being used. Plant-specific HACCP plans may include additional or fewer CCPs than this model based on their individual process.

Principle 3 - Establishing Critical Limits

A critical limit is a criterion that must be met for each preventive measure associated with a CCP.

Therefore, there is a direct relationship between the CCP and its critical limits that serve as boundaries of safety. Critical limits may be derived from sources such as regulatory standards and guidelines, scientific literature, experimental studies and advice from experts. The HACCP worksheet provided in this model summarizes the critical limits for each CCP. Critical limits must be based on the best information available at the time to provide a safe product and yet must be realistic and attainable.

Establishments must keep in mind that any product, which does not meet the critical limit, must have a Corrective Action taken. Corrective actions may be as simple as re-processing or repackaging or may require destroying the product.

Principle 4 - Monitoring

Monitoring is a planned sequence of observations or measurements to assess whether a CCP is under control and produces an accurate record for future use in verification. Monitoring serves three purposes:

1. Monitoring is essential to food safety management in that it tracks the systems operation.

2. Monitoring is used to determine when there is a loss of control and a deviation occurs at a CCP, exceeding the critical limit. Corrective action must then be taken.

3. Monitoring provides written documentation for use in verifying the HACCP plan.

Because of the potential serious consequences of a critical defect, monitoring procedures must be effective. Continuous monitoring is possible with many types of equipment and it should be used when possible.

Individuals monitoring CCPs must:

1. Be trained in the technique used to monitor each preventive measure;

2. Fully understand the purpose and importance of monitoring;

3. Have ready access to the monitoring activity;

4. Be unbiased in monitoring and reporting; and

5. Accurately report the monitoring activity.

All records associated with monitoring must be signed or initialed, dated and the time recorded by the person conducting the monitoring activity.

Principle 5 - Corrective Actions

Corrective actions are procedures to be followed when a deviation occurs.

Because of variations in CCPs for different products and the diversity of possible deviations, specific corrective action plans must be developed for each CCP. The actions must demonstrate that the CCP has been brought under control and that the product is handled appropriately.

Corrective actions must be very specific, complete and understood totally by the individual who is responsible for enacting them when a deviation occurs.

Principle 6 - Recordkeeping

Records must be accurate and reflect the process, the deviations, the corrective actions, etc. Lack of accurate, current records may be cause for withholding or suspension of inspection from the plant.

It is also important that all HACCP records dealing with CCPs and corrective actions taken be reviewed on a daily basis by an individual who did not produce the records and

who has completed a course in HACCP or the responsible establishment official who must sign or initial, date and record the time all records are reviewed. The HACCP plan and associated records must be on file at the meat and/or poultry establishment.

Principle 7 - Verification

Verification consists of the use of methods, procedures or tests in addition to those used in monitoring to determine that the HACCP system is in compliance with the HACCP plan and whether the HACCP plan needs modification.

There are three processes involved.*

1. The scientific or technical process to verify that critical limits at CCPs are satisfactory - review of critical limits to verify that the limits are adequate to control hazards that are likely to occur.

2. Process verification to ensure that the facility's HACCP plan is functioning effectively.

3. Documented periodic reassessment, independent of quality audits or other verification procedures, that must be performed to ensure the accuracy of the HACCP plan.

"Do We Say What We Do"

"Do We Do What We Say"

This should be done when your plan is first implemented and periodically, at least once a year.

This encompasses many potential tasks, all of which should answer the question,

"Is what we are doing the Right Thing To Do?"

Key components of a validation include scientific studies, which validate critical limits and/or CCPs. Regulatory requirements and internal studies or trend data.

Microbial testing for indicator organisms can also be used to validate CCP effectiveness and to establish in-plant trend analysis. Microbial testing should be part of a sanitation program in order to validate effectiveness. Microbial testing does not indicate that the product is safe, but it is used to verify that the process was in control.

PRODUCT DESCRIPTION

1. **PRODUCT NAME:**
   Hams, Pork Loins, Pork Tenderloins, Beef Pastrami

2. **PRODUCT DESCRIPTION:**
   Fully cooked, not-shelf-stable cured beef and pork products

3. **INTENDED USE OF PRODUCT:**
   Retail sale for general public consumption.

4. **TYPE OF PACKAGE:**
   Vacuum packaged, if chilled and stored. For catered events, no packaging required; transported in insulated/heat controlled containers.

5. **WHERE WILL IT BE SOLD?**
   Retail sales area.

6. **LABELING INSTRUCTIONS:**
   Keep refrigerated.

7. **INGREDIENTS USED TO PRODUCE PRODUCT:**

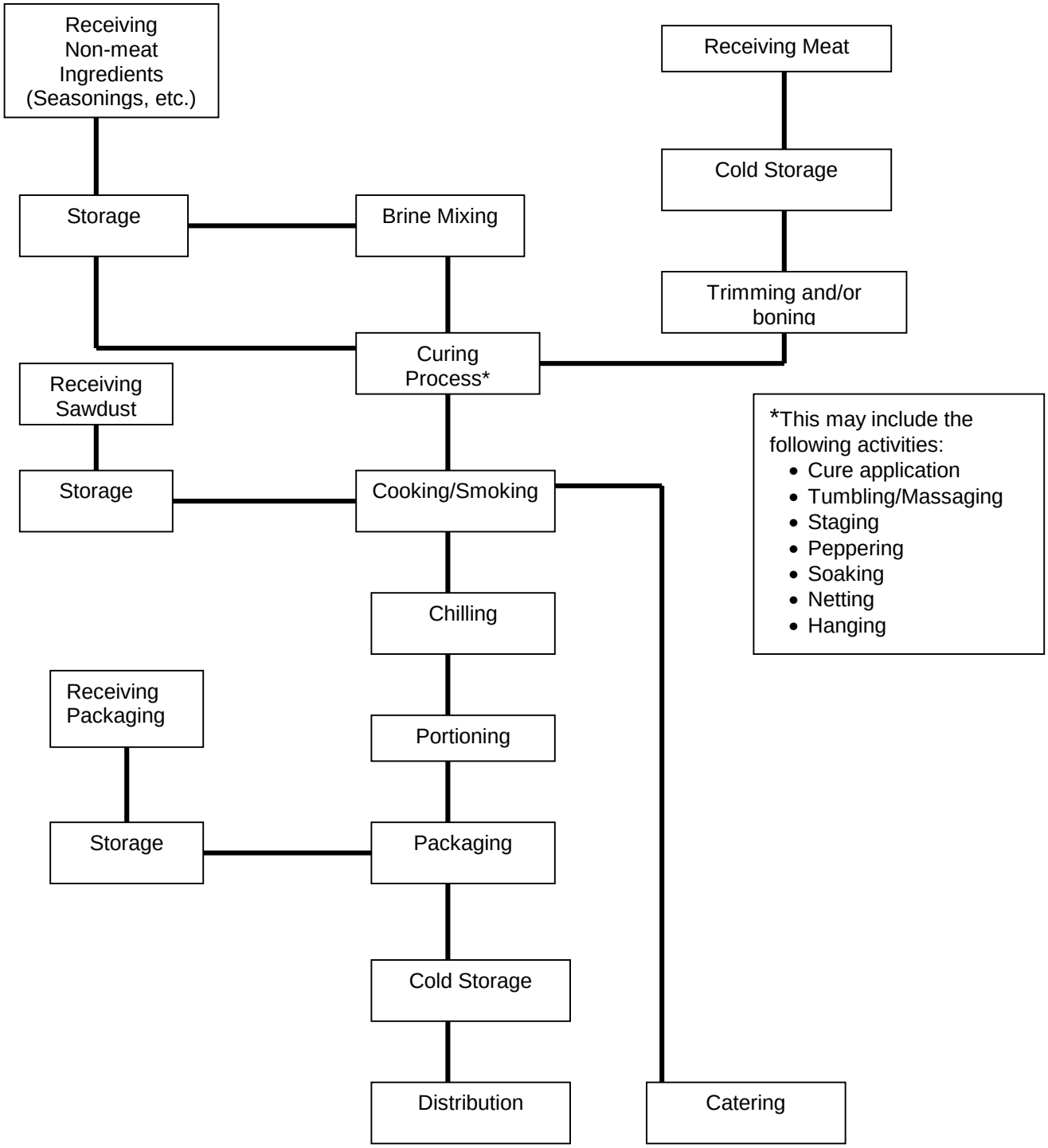
   a) <u>Meat/Poultry and Byproducts</u>
   Pork
   Beef

   b) <u>Spices/Flavorings</u>
   Seasonings

   c) <u>Restricted Ingredients</u>
   Sodium Nitrite
   Sodium Erythorbate
   Alkaline Phosphates

   d) <u>Other</u>
   Potable water
   Packaging materials
   Netting

Flow Chart
(Hams, Pork Loins, Pork Tenderloins and Beef Pastrami)



HAMS, PORK LOINS, PORK TENDERLOINS AND BEEF PASTRAMI
HAZARD ANALYSIS

Ingredient/Process Step	Potential hazard introduced, controlled or enhanced at this step	Is the potential food safety hazard significant?	Justification for decision	What control measures can be applied to prevent the significant hazards?	Is this step a critical control point (CCP)?
Receiving Meat – Carcasses and Boxed Product	**Physical:** Buckshot Metal or plastic eartags Hypodermic needles …… **Chemical:** Antibiotic residues Pesticides Growth promotants …… **Biological:** Enteric pathogens (i.e. *Salmonella, Campylobacter,* and verotoxigenic *E. coli*), *Listeria monocytogenes* and for pork only, the parasites: *Trichinella spiralis* and *Toxoplasma gondii*.	No …… No …… Yes	Unlikely to occur. No reported incidences of these hazards have been made at this facility. …….. Unlikely to occur. …… Raw meat is a potential source of pathogens. Raw pork is a potential source of parasites.	…… …… Proper cold storage and cooking temperatures will reduce the potential growth of pathogens and control parasites. Subsequent cooking.	…… …….. No

Ingredient/Process Step	Potential hazard introduced, controlled or enhanced at this step	Is the potential food safety hazard significant?	Justification for decision	What control measures can be applied to prevent the significant hazards?	Is this step a critical control point (CCP)?
Cold Storage	**Physical:** None identified at this time. …… **Chemical:** None identified at this time. …… **Biological:** Potential pathogen growth.	…… …… Yes	…… …… Improper storage temperatures could result in pathogen growth.	…… …… Proper cold storage and cooking temperatures will reduce the potential growth of pathogens and control parasites. Subsequent cooking.	…… …… No
Trimming and/or Boning	**Physical:** Meat hooks Knife blades Dead lock hooks …… **Chemical:** None identified at this time …… **Biological:** None identified at this time.	No …… ……	Unlikely to occur. No reported incidences of these hazards have been made at this facility. …… ……	…… …… ……	…… …… ……

Ingredient/Process Step	Potential hazard introduced, controlled or enhanced at this step	Is the potential food safety hazard significant?	Justification for decision	What control measures can be applied to prevent the significant hazards?	Is this step a critical control point (CCP)?
Curing Process	**Physical:** Injector needles …… **Chemical:** None identified at this time. …… **Biological:** None identified at this time.	No …… ……	Unlikely to occur. No reported incidences of these hazards have been made at this facility. …… ……	…… ……	…… ……
Cooking/ Smoking	**Physical:** None identified at this time. …… **Chemical:** None identified at this time. …… **Biological:** Pathogens	…… …… Yes	…… …… Proper time/temperature relationship during cooking will reduce potential pathogen survival. Heating will destroy parasites.	…… …… Cooking	…… …… Yes

Ingredient/Process Step	Potential hazard introduced, controlled or enhanced at this step	Is the potential food safety hazard significant?	Justification for decision	What control measures can be applied to prevent the significant hazards?	Is this step a critical control point (CCP)?
Distribution	**Physical:** None identified at this time. …… **Chemical:** None identified at this time. …… **Biological:** Potential pathogen growth	…… …… No	…… …… Most products sold at on-site retail facility. Limited distribution; times and distances are minimal.	…… …… 	…… ……
Receiving Non-Meat Ingredients	**Physical:** Metal fragments, wood splinters, plastic and foil …… **Chemical:** Chemical contaminants in seasoning …… **Biological:** Enteric pathogens	No …… No …… No	Unlikely to occur. …… Letters of guarantee from seasoning manufacturers on file. …… Letter of guarantee for irradiation or fumigation of seasonings on file.	…… …… ……	…… ……
Storage of Non-Meat Ingredients	**Physical:** None identified at this time. …… **Chemical:** Pesticides …… **Biological:** None identified at this time.	…… No ……	…… Only food-grade approved pesticides are used in the facility. ……	…… ……	…… ……

Ingredient/Process Step	Potential hazard introduced, controlled or enhanced at this step	Is the potential food safety hazard significant?	Justification for decision	What control measures can be applied to prevent the significant hazards?	Is this step a critical control point (CCP)?
Brine Mixing	**Physical:** None identified at this time. …… **Chemical:** **Sanitizers** Sodium Nitrite …… **Biological:** None identified at this time.	…… No ……	…… Only food-grade, approved sanitizers are used. Sodium Nitrite is used in a pre-blended brine mix (salt, sugar, .81% Sodium Nitrite) or a combined salt/nitrite form (93.75% salt; 6.25% Sodium Nitrite) ……	……	……
Receiving Sawdust	**Physical:** None identified at this time. …… **Chemical:** Treated wood …… **Biological:** None identified at this time.	…… No ……	…… Letter of guarantee from the supplier on file. ……	……	……

Ingredient/Process Step	Potential hazard introduced, controlled or enhanced at this step	Is the potential food safety hazard significant?	Justification for decision	What control measures can be applied to prevent the significant hazards?	Is this step a critical control point (CCP)?
Storage of Sawdust	**Physical:** None identified at this time. …… **Chemical:** None identified at this time. …….. **Biological:** None identified at this time.	……...	……	……	……...
		……...	……	……	……...
Receiving Packaging Materials	**Physical:** None identified at this time. …… **Chemical:** Deleterious chemical contaminants …….. **Biological:** None identified at this time	…….. No ……...	…… Only food-grade packaging materials are used. Letters of guarantee from packaging company on file. ……	…… …….	…….. ……...
Storage of Packaging Materials	**Physical:** None identified at this time. …… **Chemical:** Pestcides …….. **Biological:** None identified at this time	…….. No ……...	…… Only food-grade, approved pesticides are used ……	…… …….	…… …….

HACCP Plan
(Hams, Pork Loins, Pork Tenderloins and Beef Pastrami)

CCP	Hazard	Critical Limits	Monitoring				Corrective Action	Verification	Records
			What	How	Frequency	Who			
Cooking	Pathogens	Temperature/Time 148ºF internal temperature for 115 sec.	Product Temperature _____ Time at specified temperature	Smokehouse data logger _____ Smokehouse data logger	Continuous _____ Continuous	Smoke-house operator _____ Smoke-house operator	1. Identify & eliminate cause of deviation. 2. Bring the CCP under control after corrective action is taken. 3. Measures to prevent recurrence are established. 4. No product that is injurious to health or adulterated enters commerce	Visual observation of employee conducting monitoring activities. Weekly calibration of temperature recording device.	Time/ Temperature Log Deviation/ Corrective Action Log Temperature Recording Device Calibration Log

CCP	Hazard	Critical Limits	Monitoring				Corrective Action	Verification	Records
			What	How	Frequency	Who			
Chilling	Pathogens	During cooling, the product's maximum internal temperature shall not remain between 130ºF and 80ºF for more than 1.5 hours nor between 80ºF and 40ºF for more than 5 hours.	Room temperature _____ Time at specified temperature	Recording thermometer _____ Cooler temperature recorder	Continuous _____ Continuous	Cooler operator _____ Cooler operator	1. Identify & eliminate cause of deviation. 2. Bring the CCP under control after corrective action is taken. 3. Measures to prevent recurrence are established. 4. No product that is injurious to health or adulterated enters commerce.	Weekly product temperature in cooler. Weekly calibration of temperature recording device.	Time/ Temperature Log Deviation/ Corrective Action Log Temperature Recording Device Calibration Log

CCP	Hazard	Critical Limits	Monitoring				Corrective Action	Verification	Records
			What	How	Frequency	Who			
Cold Storage	Pathogens	≤41ºF Internal product temperature	Product Temperature	Thermometer	Daily	Store Manager	1. Identify & eliminate cause of deviation. 2. Bring the CCP under control after corrective action is taken. 3. Measures to prevent recurrence are established. 4. No product that is injurious to health or adulterated enters commerce.	Weekly internal product temperature in cooler. Weekly calibration of temperature recording device.	Temperature Log Deviation/ Corrective Action Log Temperature Recording Device Calibration Log

Time/Temperature Log

Processing Date:_____

CCP – Cooking/Smoking			
Temperature	Performed By	Time	Comments
CCP Verification			

Pre-shipment
Review Signature:_____

Approved Date:_____ **Time:**_____

Time/Temperature Log

Processing Date:_____

CCP – Cold Storage			
Temperature	Performed By	Time	Comments
CCP Verification			

Pre-shipment
Review Signature:_____

Approved Date:_____ **Time:**_____

NEW YORK STATE DEPARTMENT OF AGRICULTURE AND MARKETS CAUTIONS PROCESSORS OF REDUCED OXYGEN PRODUCT

The New York State Department of Agriculture and Markets is recommending that processors using processing techniques which involve placing raw, partially cooked or cooked products or ingredients into an airtight plastic pouch, then removing the air or modifying it with a gas flush, exercise extreme caution. Fresh produce in an airtight container will, through the normal respiration process, use up the oxygen in the container and replace it with carbon dioxide. Advocates of reduced oxygen, refrigerated products of this kind suggest the process provides a longer shelf life and improved quality. The growth of most aerobic (those needing air) spoilage bacteria is inhibited, however, the growth of anaerobic bacteria (those which grow in the absence of air), is usually enhanced under these conditions.

Because most spoilage bacteria will not grow under air-free, refrigerated conditions, typical signs of spoilage are substantially reduced or eliminated. However, several significant disease causing species of anaerobic bacteria will grow under these conditions and their presence is likely to go unnoticed by the consumer. The most significant of these disease causing bacteria is the deadly **Clostridium botulinum** which is responsible for the disease botulism.

In addition, several species of disease-causing bacteria will grow below typical refrigeration temperatures of 45ºF, therefore, foods placed in air-free packages must provide some additional safeguard(s) to prevent the growth of these bacteria. These safeguards can include acidification, moisture reduction, chemical preservatives or heat treatment. Controlled atmosphere packaging where a carefully controlled level of oxygen is maintained in the package, can also be an acceptable safeguard. However, processes which include safeguards of this nature must be established by qualified food scientists as the levels of acidification, moisture reduction and heat application, as well as the nature and quantity of the preservative used, are critical. For example, ordinary cooking or pasteurization temperatures will not destroy **Clostridium botulinum** spores and will only serve to shock these spores into growing and producing deadly toxin, while eliminating competing strains of bacteria.

As you can see from the foregoing, a **"Keep Refrigerated"** label, while important, is no guarantee of safety on foods which rely on vacuum or modified atmosphere packaging and refrigeration exclusively to maintain product wholesomeness. The scientific community generally agrees that reduced oxygen processing is a risky proposition which requires careful control of processing, packaging and marketing conditions to ensure its safety.

NEW YORK STATE DEPARTMENT OF AGRICULTURE AND MARKETS

GUIDELINES FOR REDUCED OXYGEN PACKAGING AT RETAIL

1. Reduced oxygen packaging refers to vacuum packaging, modified atmosphere packaging, controlled atmosphere packaging, sous vide or cook-chill.

2. Foods placed in reduced oxygen packaging should be restricted to those which will not support the growth of **Clostridium botulinum**. This would include:

    a) Foods with a water activity (^{a}w) below .93.

    b) Foods with a pH (acidity) of 4.6 or less.

    c) Meat products produced under the auspices of the USDA's Meat Inspection Program in a USDA regulated establishment and cured with a combination of salt, nitrates and nitrites (initially 120 ppm or more sodium nitrite and a brine concentration of 3.5% or more). Such products should be received in an intact package.

    d) Foods with high levels of non-pathogenic competing organisms (harmless bacteria) such as raw meat, raw poultry or fermented natural hard and semi-soft cheeses containing live starter culture organisms. (Ricotta, cottage cheese, cheese spreads and combinations of cheese and other ingredients such as vegetables or meat are examples of cheese products which **should not** be packaged.)

    e) Frozen foods, which do not meet the foregoing criteria, provided they are conspicuously labeled **"Important - Keep Frozen Until Use."**

    Fish and fish products (except frozen product) **should not** be packaged in reduced oxygen containers at retail. In addition, meat or poultry products which are smoked or cured at retail **should not** be packaged in reduced oxygen containers, with the exception of raw product which is cured in compliance with the criteria described under Item 1c. above in a USDA regulated processing plant. Such product may subsequently be smoked in accordance with appropriate time/temperature requirements at retail and packaged in reduced oxygen containers.

    f) Controlled atmosphere packages which maintain reduced level of oxygen sufficient to control the growth of **Clostridium botulinum.**

3. Reduced oxygen packaged foods should be maintained at a temperature of 45ºF. or below (frozen foods at 0º or below) and retail packages should be prominently and conspicuously labeled with those temperature requirements.

4. All refrigerated reduced oxygen packaged product should be given a maximum fourteen day shelf life with a statement on the label which clearly indicates that the product should not be used after the pull date has expired. At no time should the use by date on the retail package exceed the manufacturer's expiration date, as indicated on the original container.

5. Conspicuous signs listing products which may be packaged in reduced oxygen containers (those listed on your license application) and warning against packaging any other products, should be posted in the reduced oxygen packaging area.

6. You should verify that the refrigerated products you package in reduced oxygen containers meet the criteria set forth in Item Number 2 listed above either via written certification from the product manufacturer or independent laboratory analysis of incoming product. Product your firm purchases for the purpose of repackaging should include stringent written product purchase specifications for the **Clostridium botulinum** control parameter, i.e. pH, water activity, nitrites, viable competing microbes, etc., which the original manufacturer of the product should meet.

7. Access to the reduced oxygen packaging equipment should be restricted to persons who understand the equipment, the procedures and the concepts required for safe reduced oxygen packaging.

8. Only entire prepackaged loaves of cold cuts or cheese should be sliced and reduced oxygen packaged. If it is necessary to stop slicing and packaging a particular loaf of product for a period of time exceeding one-half hour, the remainder of that loaf should be diverted for some other use such as a customer service deli counter.

9. Detailed written in-store procedures should be developed, adhered to and monitored. These procedures should include steps to minimize opportunities for product adulteration and cross-contamination.

10. You must have applied for and received an Article 20-C Food Processing License which specifically authorizes your establishment to reduced oxygen package foods.

Failure to adhere to the foregoing guidelines could result in a Department of Agriculture and Markets determination that the product in question is in violation of New York State Agriculture and Markets Law in that it is adulterated as defined in Article 17, Section 200, "Adulteration of Food" and in violation of 1NYCRR, Part 261, "Rules and Regulations Relating to Human Foods; Current Good Manufacturing Practice."

NOTICE

The United States Department of Agriculture has amended the Federal meat and poultry inspection regulations (9 CFR parts 317 and 381). The amendment requires safe handling instructions on the labeling of all raw and partially cooked meat and poultry products going to household consumers, hotels, restaurants or similar institutions.

- Effective May 27, 1994, safe handling instructions are required for all raw and partially cooked comminuted meat and poultry products, i.e. product that is chopped, flaked, ground or minced, such as ground meat or sausage.

- Effective July 6, 1994, safe handling instructions are required for all other raw and partially cooked meat and poultry products.

The following safe handling instructions, in print no smaller than one-sixteenth of an inch in size, must be prominently displayed on all product labels:

Safe Handling Instructions

This product was prepared from inspected and passed meat and/or poultry. Some food products may contain bacteria that could cause illness if the product is mishandled or cooked improperly. For your protection, follow these safe handling instructions.

Keep refrigerated or frozen.
Thaw in refrigerator or microwave.

Keep raw meat and poultry separate from other foods. Wash working surfaces (including cutting boards), utensils and hands after touching raw meat or poultry.

Cook thoroughly.

Keep hot foots hot. Refrigerate leftovers immediately or discard.

Label

Here are highlights of how these regulations impact retailers:

- All raw and partially cooked meat and poultry products packed on or after the effective dates are required to have these safe handling instructions on product labels at the time of delivery to retailers.

- Raw and partially cooked meat and poultry products that are prepared by retailers, such as those that have been cut, sliced, trimmed or otherwise processed or repackaged, are also required to be labeled with these safe handling instructions.

For a complete description of the regulations
see the Code of Federal Regulations, title 9, parts 317 and 381.
(Federal Register, Vol. 59, No. 59, pages 14528 through 14540)