

Performing a Hazard Analysis

The first purpose of the hazard analysis is to identify potential food safety hazards associated with the production process or with incoming materials. Hazards are classified into three types which are outlined in the table below.

Hazard Type	Examples for Meat Production
Biological	<p>Excessive growth of microorganisms from improper refrigeration of meat products and ingredients or failure to observe shelf-life guidelines.</p> <p>Contamination of meat products and ingredients from uncovered sores and cuts or the presence of contagious diseases in food handlers, e.g. Hepatitis A and Norwalk related illness</p> <p>Presence of hazardous levels of pathogenic microorganisms from improper sanitation of food contact surfaces, pest activity or improper meat production practices, e.g. <i>Staphylococcus aureus</i>, <i>Escherichia coli</i>, <i>Salmonella spp.</i>, <i>Campylobacter spp.</i>, <i>Listeria monocytogenes</i>, and <i>Clostridium perfringens</i>.</p>
Chemical	<p>Presence of hazardous chemicals due to antibiotic and hormone residues or contamination from cleaning, pest control or maintenance related chemicals.</p> <p>Excessive levels of phosphate, nitrite or nitrate compounds, or any other restricted ingredient.</p> <p>Failure to declare potential allergens in list of ingredients such as milk (including lactose), cereals containing gluten and sulphites.</p>
Physical	<p>Foreign objects such as pieces of metal, plastic or wood from improperly maintained equipment, broken needles or use of damaged pallets during storage.</p> <p>Failure to remove bone chips or cartilage from meat materials before grinding.</p>

Potential biological, chemical or physical hazards are identified by review of the *Product Description Form*, *Incoming Ingredients and Packaging Materials Form*, *Process Flow and Operation Schematic Diagram* by the HACCP team. The results of the hazard analysis are then recorded on the *Hazard Analysis Form* as shown in the example on page 70.

Performing a Hazard Analysis *(continued)*

Once all potential hazards have been identified the next step is to indicate on the *Hazard Analysis Form* how they will be controlled. There are three ways to control hazards as outlined below.

- 1. Prerequisite Programs** – Control hazards which are common to many production processes and provide the foundation for the HACCP plan.
- 2. Standard Operating Procedures in the HACCP Plan** – Controls hazards which are specific to a production process and are less significant.
- 3. Critical Control Points in the HACCP Plan** – Controls significant hazards which can be prevented, eliminated or reduced to acceptable levels through actions which are under the control of the operator.

Some hazards may be uncontrollable by the operator and can only be addressed through the actions of others. When this occurs the *Hazard Analysis Form* should indicate where the hazard could be controlled outside of the system.

To determine where Critical Control Points (CCP) exist, the decision check list at right should be utilized. For each hazard identified on the *Hazard Analysis Form*, answer questions 1 to 4 to determine if a CCP is present.

The number and nature of the CCPs will often vary from operation to operation. If prerequisite programs are well developed there will be fewer CCPs which makes the HACCP system easier to manage.

An example of a completed Hazard Analysis Form for ground meat and cut production is shown on page 70. This example assumes that all prerequisite programs discussed in the first section of this manual have been implemented.

Performing a Hazard Analysis *(continued)*

CRITICAL CONTROL POINTS* (CCP) DECISION CHECK LIST

1.	Could a control measure(s) (C.M.) be used by the operator at any process set?
<input type="checkbox"/> Yes. <i>C.M.(s) exist</i>	<input type="checkbox"/> No. <i>C.M.(s) exist</i>
	<i>Not a CCP. Identify how this hazard will be controlled before or after the process and proceed to the next identified hazard.</i>
2.	Is it likely that contamination with the identified hazard could occur in excess of the acceptable level or could increase to an unacceptable level?
<input type="checkbox"/> Yes.	<input type="checkbox"/> No.
	<i>Not a CCP. Proceed to the next identified hazard.</i>
3.	Is this process step specifically designed to eliminate or reduce its likely occurrence to an acceptable level?
<input type="checkbox"/> No.	<input type="checkbox"/> Yes. <i>(This is a CCP).</i>
4.	Will a subsequent step eliminate the identified hazard or reduce its likely occurrence to an acceptable level?
<input type="checkbox"/> Yes.	<input type="checkbox"/> No. <i>(This is a CCP).</i>

* Sourced from the *FSEP Implementation Manual* produced by the Canadian Food Inspection Agency

Hazard Analysis Form

example

GROUND MEAT AND CUT PRODUCTION (GMCP)		CCP (Y/N)
Describe any (B)iological, (C)hemical or (P)hysical Hazard associated with Ingredients or Process Step	Describe Measures to Control the Hazard	
Ingredients and Packaging Materials		
<u>Meat</u>		
(B) – Presence of Hazardous Levels of Microbial Pathogens (C) – Presence of Residues (pesticide, cleaning or (P) – Presence of Foreign Material sanitizing chemicals, maintenance chemicals)	Externally controlled by HACCP/food safety plan of establishment supplying meat products. Receiving Prerequisite indicates purchase of meat products from only approved establishments noted in the <i>Food and Ingredient Supplier List</i> .	No
<u>Packaging Materials</u>		
(C) – Unapproved packaging causes chemical hazards to food products (BCP) – Improper handling/manufacturing of packaging at supplier causes biological, chemical or physical hazards.	Use of CFIA approved packaging as recorded on <i>Incoming Ingredients and Packaging Materials Form</i> Controlled by <i>Letter of Guarantee</i> from supplier indicating measures to control hazards.	No No
Process Flow		
<u>Receiving (including transport)</u>		
(B) – Loss of temperature control during transport results in excessive growth of microorganisms on meat products. (BCP) – Presence of incompatible materials (cleaning chemicals, etc.) or unsanitary conditions in trailer causes biological, chemical or physical hazards to packaging or meat. (BCP) – Absence of proper labeling makes knowledge of production dates and supplier information unavailable for use in the event of a recall.	Controlled by Receiving Prerequisite – Inspection of product condition, labeling, temperature and trailer recorded on <i>Receiving Log</i> .	No
<u>Storage</u>		
(P) – Foreign materials enter product due to loose or broken boards or protruding nails on pallets. (B) – Improper storage temperature, expired product or failure to use spacers to facilitate cooling (when needed) permits excessive growth of microorganisms. (BCP) – Unsanitary conditions in storage areas and/or failure to adequately protect meat products results in biological, chemical or physical hazards.	Controlled by Storage Prerequisite – Inspection of pallets, storage areas, stored products and temperature measurements recorded on <i>Storage Log</i> .	No
(C) – Storage areas for food are not separate from storage areas for chemicals used for cleaning, pest control or maintenance resulting in chemical contamination.	Controlled by Sanitation, Pest Control and Maintenance Prerequisites – Placement of chemicals in approved locations as per <i>Chemical Storage Map</i> and recorded on <i>Storage, Sanitation and Pest Control Logs</i> .	No

Hazard Analysis Form *(continued)*

GROUND MEAT AND CUT PRODUCTION (GMCP)

Describe any (B)iological, (C)hemical or (P)hysical Hazard associated with Ingredients or Process Step	Describe Measures to Control the Hazard	CCP (Y/N)
Process Flow <i>continued.</i>		
Product Inspection		
(B) – Expired meat ingredients or contamination caused from ripped or torn packaging causes biological contamination of product.	Controlled by GMCP Standard Operating Procedures – Employees are trained to check production dates, discard products with off-odours and inspect packaging before using ingredients. Recorded on <i>SOP Training Form</i> .	No
Cut Fabrication		
(B) – Unclean cutting boards, bins and tables or food contact surfaces which are in poor condition making cleaning difficult resulting in microbial contamination of meat.	Controlled by Sanitation and Premises Prerequisites – Cutting surfaces are cleaned and sanitized and inspected for excessive wear. Recorded on <i>Preoperational Inspection Report</i> and <i>Sanitation Log</i> .	No
(BP) – Bone fragments, cartilage, bruises, dropped product or any other condition which might seriously affect product use.	Controlled by GMCP Standard Operating Procedures – Employees are trained to remove defects or destroy product. Recorded on <i>SOP Training Form</i> .	No
(B) – Unsanitary equipment (mesh gloves, scabbards, bone scrapers, knives).	Controlled by GMCP Standard Operating Procedures – Employees are trained to clean equipment a minimum of once per day. Recorded on <i>SOP Training Form</i> .	No
Trim Production		
(B) – Trim produced during cut fabrication for ground meat production is left in bins in warm cutting room for extended periods permitting excessive growth of microorganisms.	Controlled by CCP 1B (See HACCP written plan for details.)	Yes
Grinding		
(P) – Clips from chubs of coarse ground beef or bone chips from trim enter product creating a physical hazard.	Controlled by GMCP Standard Operating Procedures – Employees are trained to account for all clips before grinding and to inspect trim. Recorded on <i>SOP Training Form</i> .	No
(P) – Grinder has excessive rust, loose, excessively worn or missing parts which lead to meat particles or objects entering product.	Controlled by Maintenance and Premises Prerequisite – Grinder is inspected and results of inspection are recorded on <i>Maintenance Log</i> and <i>Preoperational Inspection Report</i> .	No
(B) – Meat used for grinding has been stored improperly permitting excessive growth of microorganisms or contamination.	Controlled by Storage Prerequisite – Storage conditions and temperatures are monitored and recorded on <i>Storage Log</i> .	No
(B) – Materials selected for rework into ground meat products are left in bins in warm cutting room for extended periods permitting excessive growth of microorganisms.	Controlled by CCP 1B (See HACCP plan for details.)	Yes
(B) – Grinder improperly cleaned following end of production or in-between species.	Controlled by Sanitation Prerequisite – Grinder is cleaned as per SSOP and cleanliness monitored and recorded on <i>Preoperational Inspection Report</i> and <i>Sanitation Log</i> .	No
Packaging/Labeling		
(BC) Packaging has become contaminated due to failure to cover packaging materials during cleaning and sanitation activities.	Controlled by Sanitation prerequisite – Packaging materials is protected during cleaning and sanitation activities. Recorded on <i>Sanitation Log</i> .	No
(B) Improper or missing “best before” or “packaged on” dates on packages results in excessive microbial growth.	Controlled by Display Prerequisite – All packages are checked for correct dates. Recorded on <i>Display Log</i> .	No

Hazard Analysis Form *(continued)*

GROUND MEAT AND CUT PRODUCTION (GMCP)

Describe any (B)iological, (C)hemical or (P)hysical Hazard associated with Ingredients or Process Step	Describe Measures to Control the Hazard	CCP (Y/N)
Process Flow <i>continued.</i>		
<u>Display</u>		
(B) – Display case temperature is above 4°C or product is above the load line resulting in excessive microbial growth.	Controlled by Display Prerequisites – Display case temperatures, sanitation, segregation of raw and cooked, and product condition are monitored and recorded on <i>Display Log</i> .	No
(B) – Microbial contamination occurs due to unsanitary display cases and/or leaking packages.		
(B) – Microbial contamination occurs due inadequate separation of raw and cooked products.		
<u>Finished Product Storage</u>		
(BCP) – Unsanitary conditions in storage areas and/or failure to adequately protect meat products results in biological, chemical or physical hazards.	Controlled by Storage Prerequisite – Storage conditions and temperatures are monitored and recorded on <i>Storage Log</i> .	No
(B) – Improper storage temperature permits excessive growth of microorganisms.		
<u>Rework Selection</u>		
(B) Use of product with inadequate remaining shelf-life or previously ground meat materials from the display case as rework results in the presence of excessive levels of microorganisms.	Controlled by CCP 2B (See HACCP plan for details.)	Yes
(C) – Selection of meat materials with spices or seasoning for fresh ground meat production results in undeclared ingredients.	Controlled by GMCP Standard Operating Procedures – Employees are trained to select only cuts without spices or seasoning for use as rework. Recorded on <i>SOP Training Form</i> .	No
(B) – Materials selected for rework into ground meat products are left in bins in warm cutting room for extended periods permitting excessive growth of microorganisms.	Controlled by CCP 3B (See HACCP plan for details.)	Yes
<u>Disposal</u>		
(B) – Failure to dispose product found outside of display case results in excessive microbial growth.	Controlled by Display Prerequisite – Product found outside of display case or returned is destroyed. Recorded on <i>Display Log</i> .	No
(B) – Failure to dispose returned product results in potential chemical, physical or biological hazards.		
<u>Consumer Distribution</u>		
(B) – Failure to bag raw meats so they are separate from other items results in microbial contamination.	Controlled Externally – Hazard controlled by training of cashiers to bag meat separately.	No

Hazard Analysis Form *(continued)*

GROUND MEAT AND CUT PRODUCTION (GMCP)

Describe any (B)iological, (C)hemical or (P)hysical Hazard associated with Ingredients or Process Step	Describe Measures to Control the Hazard	CCP (Y/N)
Process Flow <i>continued.</i>		
All Process Steps		
(PC) – Improperly maintained equipment or uncontrolled maintenance procedures causes foreign material or maintenance chemicals to enter product.	Controlled by Maintenance Prerequisite – All equipment is maintained as per written maintenance program and recorded on the <i>Maintenance Log</i> .	No
(B) – Poor Employee Hygiene causes microbial contamination of meat, ingredients, packaging or food contact surfaces. Failure to destroy contaminated material(such as dropped product) and/or clean and sanitize affected food contact surfaces.	Controlled by Hygiene Training prerequisite – Employees are trained in hygienic practices and record of training is made on <i>Hygiene Policies and Procedures Form</i> .	No
(B) – Failure to destroy or trim contaminated material such as dropped product and/or failure to clean and sanitize contaminated food contact surfaces.		
(B) – Improper sanitation causes microbial contamination of product.	Controlled by Sanitation Prerequisite – Facilities and equipment are cleaned as per <i>Sanitation Standard Operating Procedures Form</i> and recorded on <i>Sanitation Log</i> .	No
(BCP) – Inadequate or improperly maintained premises creates biological, chemical or physical hazards in food products.	Controlled by Premises Prerequisite – Premises are inspected to ensure they are adequate for food production. Recorded on <i>Premises Log</i> and <i>Preoperational Inspection Report</i> .	No
(B) – Water supply does not meet Canadian Drinking Water Standards resulting in microbial contamination of food contact surfaces and meat products.	Controlled by Premises Prerequisite – Water is tested on a semi-annual basis. Recorded on <i>Premises Log</i> .	No
Operation Schematic (Employee and Product Flow)		
(B) – Employees entering the meat department should change or clean dirty shoes to avoid tracking excessive soil onto cutting room floor.	Controlled by GMCP Standard Operating Procedures – Employees are trained to clean or change footwear. Recorded on <i>SOP Training Form</i> .	No
(B) – Rendering personnel should not be permitted to enter the meat department to avoid microbial contamination of meat or food contact surfaces.	Controlled by GMCP Standard Operating Procedures – Employees are trained that meat products for disposal should be placed outside of the door for pickup. Recorded on <i>SOP Training Form</i> .	No