Grinding

Bone fragments, metal filings, rust and other extraneous materials are examples of physical contaminants. Grinders should be checked before and after each use for possible physical hazards. The grinding plate, auger or bowl may also become rusty, which can cause the meat to become contaminated. Rust should be removed from food contact surfaces using an approved food-grade mineral oil. The grinding knife may break, causing metal pieces to go into the product during grinding. When grinding, staff should listen for any noises that could indicate problems (metal on metal, etc.) and stop, inspect and disassemble the grinder if any unusual noise is heard.

Injecting

Injected products may be subject to product contamination by pieces of broken injector needles that could end up in the muscle of the meat. Therefore, needle integrity checks are required on a regular basis. The frequency of your checks will depend on the likelihood of the hazard occurring and the quantity of product that might be affected in the case of a product recall.

Preventive Maintenance Program

An effective Preventive Maintenance Program can optimize equipment performance and reduce the likelihood of problems occurring during production. It can also improve the quality of meat. For example, a regularly sharpened grinder knife can produce a better quality of ground meat (compared to that produced by a dull blade, which results in meat emerging as paste). Complete evaluation includes a breakdown of the equipment (e.g. grinder, plate and blades) on a regular basis; the date/time and results of each evaluation should be recorded.

A metal detector can locate and subsequently reject product containing metal fragments that exceed a certain size (depending on the sensitivity of the detector). However, most provincial facilities do not have a metal detector, so process controls must be in place to help ensure the final product does not contain physical contaminants.

Undeclared Allergens in Ground and Tenderized Products

Some products are formulated with added seasoning, spices and fillers. They may contain allergens such as soy protein concentrates or toasted wheat crumbs (used in seasoned beef patties). Non-allergen-containing products may be cross-contaminated with allergens, creating a risk of undeclared allergens in your product. To prevent this from happening, products that contain allergens should be scheduled last in the production process. Tub, containers and utensils must be kept separate for these two types of products. Where production of non-allergen products after processing allergen-containing products is necessary, all equipment, containers and utensils must be fully disassembled and cleaned prior to production of non-allergen products.

References


In this issue of the Food Safety Sentinel, we will focus on identifying potential hazards associated with these processes. We will also discuss the best practices used to prevent, eliminate or reduce the potential hazards identified.
CHEMICAL HAZARDS
ASSOCIATED WITH
GRINDING

In the food industry, chemical contamination from a lubricant refers to the unintentional presence of lubricants and greases in food. All non-food chemicals, including lubricants used in a food-processing plant, must be approved by the Canadian Food Inspection Agency (CFIA). Even though all lubricants used in your facility may be listed as approved, make sure you are using the right product for the right application. Some food-grade lubricants are approved for incidental contact with food only; some are approved as hydraulic oils; and some are approved as protective oils.

Lubricants used on equipment such as grinders and mixers have incidental contact with food and therefore must be accepted as lubricants for food contact use. These lubricants are generally low-hazard, odourless and tasteless. For example, mineral oil for greasing grinder plates and parts must be approved by the CFIA for food contact use.

A list of approved chemicals can be found on the CFIA website at: http://active.inspection.gc.ca/scripts/fssa/reference/reference.asp?lang=e

Best Practices to Control Biological Hazards

Raw Materials

Fresh sausages and other ground products are produced from both fresh and frozen meat. All meat must be stored at a proper temperature and in a manner that reduces the possibility of contamination before, during and after the grinding process. Inspection of raw material must take place prior to production. Trimmings that appear to be in spoiled condition based on smell (rotten), sight (off-colour) and feel (slimy) should not be used.

If raw meat is purchased from a supplier, it is a good idea to use a facility that has programs in place to control E.coli@. When choosing a supplier, look for assurance that they have food safety systems in place to control this dangerous strain of bacteria.

Tempering and Thawing

Proper tempering and thawing can discourage the growth of bacteria in raw materials. Ideally, frozen meat should be thawed in a cooler where product temperature is maintained between 1°C - 4°C. If thawing takes place at room temperature, the room temperature should be below 10°C. Thawing must be done as quickly as possible to reduce the time that internal product temperature is above 4°C. The product surface temperature should be monitored to ensure it does not become warmer than 7°C. When using circulating water, the water must be cold, potable and exchanged continuously.

Under ideal conditions, tempering/thawing would take place in a refrigerated area, separate from the grinding area. When this is not possible, specific procedures such as monitoring product temperature on a regular basis, should be developed to minimize the risk associated when food is not held at the proper temperature.

Grinding

To minimize growth of microorganisms that may be present in the meat from initial contamination, grinding should be done as soon as possible after cutting. Raw materials and ground products should not remain in processing rooms.

If a delay in processing is unavoidable, meat should be stored in a temperature-controlled environment. Failure to do so could lead to spoilage of the product or an increase in numbers of pathogens in the product.

If the grinding area is not refrigerated, a control procedure such as product temperature monitoring must be in place to ensure that biological hazards resulting from an increase in product temperature (bacterial growth) are minimized. The written procedure must be kept on file at the facility.

If equipment used in the operation is not properly cleaned and sanitized before use, it may become a source for cross-contamination. Proper disassembly of equipment, cleaning and sanitizing are critical in eliminating this hazard. All processing equipment and parts must be cleaned and sanitized following the steps specified in the written sanitation procedures. These procedures should specify the concentration of chemicals used in cleaners/sanitizers, the frequency of cleaning, which employees are responsible for the cleaning/maintenance of the equipment and how the cleaning will be verified.

Inspection of equipment is an important step to ensure that there is no visible chemical scum or soil remaining prior to operating. Environmental swabbing can tell you how effective your sanitation procedures are in removing and killing bacteria.

(For more on environmental swabbing, refer to the May 2008 issue of the Food Safety Sentinel.)

Tenderizing/Injecting

As with grinding, tenderizing and injecting should take place as soon as possible after cutting and cooling.

An analysis of recent E.coli@ outbreaks linked to tenderized beefsteaks suggested that unsanitary tenderizing equipment was the main cause. Needle sanitation is critical. All needles should be removed at least once daily and soaked in a soapy solution before inspection and reassembly of the needle injector.

Special attention must be paid when cleaning and sanitizing these pieces of equipment, as their design in general makes them difficult to clean. Small brushes may be needed to clean difficult-to-reach areas.

Steps for cleaning and sanitizing the injector:

• Open the needle assembly. Rinse the housing and needles completely to remove any brine residues.
• Remove all needles and carefully place them in a clean container.
• Rinse housing to ensure that all areas of the head are free of visible residue.
• Add cleaning solution to the container to a level that completely submerges all needles in the container. Needles must soak for a minimum of six hours or as recommended by the sanitation chemical supplier.
• Use clean air to blow out each needle.
• Sanitize and, if applicable, reassemble the injector assembly before using.

Best Practices to Prevent Foreign Material Contamination

Raw Materials

Visual inspection of raw materials for defective or extraneous materials prior to processing is very important for the removal of bone, gristle and other unpalatable connective tissue. It helps not only in eliminating physical hazards, but also in protecting your equipment from costly damage and improving the quality of your product.

If raw materials are purchased from suppliers, it is important to track unacceptable inclusions such as foreign materials. Keeping records helps identify the best suppliers; telling suppliers about issues may help them to improve their process. Include specifications in your orders, specifying items that are not acceptable in the raw materials. Photos of foreign material contamination are helpful to suppliers to pinpoint problems.

OTHER CONSIDERATIONS

• It is important that employees follow Good Manufacturing Practices. Through proper hygiene and technical training, your staff will understand the potential hazards and food safety risks that are related to the process they are involved in. Following proper processing practices can significantly reduce the risk of contamination while improving productivity and quality.
• Prompt processing and maintaining proper storage temperatures for both raw materials and finished product can minimize the risk of microbial growth. If possible, eliminate carry-over (reworking of a product). As a best practice, carry-over from one day’s production should not be reintroduced into later production batches as this could also increase the amount of product implicated in a recall.
• Facility owners and staff must understand deviation procedures and corrective actions must be strictly followed. For example, if a piece of a blade goes missing, that is a critical food safety concern. All product associated with the affected production batch must be placed on hold until all pieces of the blade are accounted for; otherwise, the batch must be condemned.
• Keep appropriate records of all batches, including the names of suppliers, raw material package dates, quantity used, temperature of raw material and product, and in-process controls (cooked temperature).

(For more on environmental swabbing, refer to the May 2008 issue of the Food Safety Sentinel.)