Best Practices for Retailer Operations Producing Raw Ground Beef

Developed By:

Beef Industry Food Safety Council
National Cattlemen's Beef Association

Edited by:
Kerri B. Harris
International HACCP Alliance
College Station, Texas

August 2004

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Introduction

Producers of raw ground products, including ground beef, recognize that these products have an inherent food safety risk due to the nature of the process and the lack of a sufficient "kill" step for biological hazards in the process. Therefore, it is extremely important that retail operations producing raw ground beef implement Best Practices to produce the safest products possible by increasing total process control throughout the process. This document focuses on retail operations that are grinding beef in the store, not the handling of ground product that is purchased in the final packaged form. For detailed information on developing a total food safety program the Food Marketing Institute (FMI) has developed a document entitled, "A Total Food Safety Management Guide: A Model Program for Category: Raw, Sold Ready to Cook Product: Ground Beef."

This document provides guidelines for grinding and can be used by retail operations to develop store specific programs. The guidelines are designed to provide a recommended set of practices and procedures that retail operations may want to adopt in their entirety or part to ensure optimal quality and food safety. It also addresses the issues of designing an effective lotting system and reprocessing ground products. These recommendations focus solely on the production of raw ground beef.

It should be noted that the following items are not addressed in this document, but they should be covered by existing retail operating procedures and/or other store-specific processing programs.

- Personnel — disease control, hygiene, clothing, training, etc.
- Retail Facility — construction and design, product flow, drainage, etc.
- Sanitary operations — general maintenance, cleaning and sanitizing, pest control, etc.
- Sanitary facilities and controls — water supply, plumbing, sewage disposal, rubbish and offal disposal, etc.
- Freezer and coolers — monitored and maintained to ensure temperature control, recording devices, alarms, etc.
- Equipment maintenance and calibration — adequate frequency for thermometers, recording devices, compressed air equipment, etc.

A training document (Attachment 1) developed by Costco is included in this document as an example, but it is recommended that each store develop store-specific information. Many of the items listed above are also addressed in 21 CFR Part 110 – Current Good Manufacturing Practices in Manufacturing, Packing, or Holding Human Food (Attachment 2) – which was developed by the Food and Drug Administration and can be used as a resource if more information on any of these areas is needed.

LOTTING

All retail grinding operations should have a lotting mechanism for coding and recording finished ground products to allow for tracing the product back through the system for tracing the product forward through the chain to determine when it was sold and how much was sold vs. disposed of at the store. Some retail operations may develop computerized bar codes or tracking systems that are very elaborate and detailed, and others may have simple handwritten documentation and box/package codes. Lotting is usually driven by some time factor (i.e., hour, shift, day, etc.) or by raw materials (i.e., sirloin, chuck, etc.) and is given a specific identification code. Creating smaller lots or utilizing a sub-lotting system for tracking information may help demonstrate/document process control and could possibly help minimize the economic impact of a recall from product that is ground in the store.

Regardless of the mechanism each store should have a record keeping system, and the following items may be considered for each identified lot/sub-lot.

- Raw material source(s) by vendor, including vendor lot identification, time used
- Data collected during process (product and/or storage temperatures, microbial data, etc.)
- Metal detector records, if used
- Equipment evaluation records (i.e., grinder checks)
- Bone collection records, if applicable
- Date placed in the case/date removed from the case and disposed of at the store, if applicable

If any abnormal condition(s) (odor, off color, etc.) are found during the grinding process then it is recommended that the product be segregated, that the grinder and all other equipment be cleaned and sanitized prior to reinitiating grinding process, and that a new lot /sub-lot is started when product begins. It is best if information can be documented to show what the problem was, the product(s) that were involved, how the product was handled, and that the equipment was cleaned and sanitized appropriately.

While retail operations may grind small or limited amounts of beef in the store, it is still important that retailers fully understand the importance of product identification and lotting. The concept of lotting systems in ground beef productions is a complex and detailed issue. The existing USDA definition for a lot, when there is a positive result for *E. coli* O157:H7, is “from full sanitation to full sanitation.” In most federally established commercial grinding operations this definition may impact a full day’s production of ground beef. However, proper documentation and controls (including product testing) may allow finished products to be sub-lotted under this definition to minimize the amount of affected products. For example, sampling product every 15 minutes and testing specifically for *E. coli* O157:H7 may allow the day’s production to be broken into sublots.

A retail operation may also consider sub-lotting under the context of the definition described above. If so, then the following types of documentation are useful:

- Batching records — These records should identify the types of raw materials used by its tracking codes; the amount used in each batch of formulated product, the time it was used and the grinder that it was ground in, if there is more than one grinder.
- Packaged product tracking systems — The finished products should be coded with the actual times they are packaged and placed in the retail case.
- Microbiological testing and tracking — If a retail store is sampling and testing finished formulated raw materials from each batch for potential microbial adulterants, then it should include the batch number samples, the time of the sample and a protocol tracking form for submission to the laboratory used for analysis. It is extremely important that a retail store clearly identifies what lots/sub-lots are represented by the sample being tested.
- Finished Product "Test and Hold" Programs — If a retail store is testing finished ground product for potential microbial adulterants, then it should place all of the product on hold until the laboratory testing is completed and the results are available.

Utilizing the guidelines provided above will allow retailers to better identify and document the amount of suspect or affected product. For example, if one composite sample for formulated products tested positive for *E. coli* O157:H7 during a day's production where all other composites tested negative, then the information discussed above may provide added assurance that sufficient controls were in place to minimize the amount of product affected and the impact of a recall.

Sub-lotting can also be used for other potential contamination such as a physical contaminant. Sub-lotting for physical contamination will require the following:
Batching records — These records should identify the types of raw materials used by its tracking codes, the amount used in each batch of formulated product, grinder head, the time the batch was formulated, the cleaning and inspections by authorized representatives.
In-process Control Records — These records should identify the types of control checks performed on metal detectors and other control instruments, the time checks were performed and the line and/or product code information.

REPROCESSED PRODUCT

During the development of the guidelines for grinding operations, the issue of reintroducing broken/mis-shapen patties or ground product, over-run at the end of the day, rework, etc. back into the processing flow was identified as an area that should be fully addressed by grinders. These issues have been slightly modified for retail store grinding operations. For the purpose of the best practices, a lot was defined as the finished product and a batch was defined as material that is in-process. The following categories are recommended to help distinguish between the types of raw materials being reintroduced and the points of entry into the grinding operation.

1. Intrabatch materials — These are raw materials that are maintained within the same batch. It should be covered by the actual flow diagram and a specific SOP should be written to document the procedure(s) for these activities. For example, the formulation of ground beef requires that raw materials be analyzed for chemical composition (%fat-lean). This is a part of the actual process of making the ground beef; therefore, the raw materials used for the analysis should remain within the same batch.

2. Product over-run — These are excess raw materials at the end of a grinding period that are not in the final product form. The optimal situation is to eliminate product over-run by controlling the amount of raw materials needed to meet the desired production levels. Unfortunately, this is not always a realistic option. Therefore, the following recommendations are being provided to address product over-run:
    - If it is a limited amount of product, you may want to destroy it to prevent carry-over into another grind.
    - Utilize the product to produce a designated batch/lot — Combine the raw materials and other intrabatch or over-run ground product for a specified time-period and process them separately. (If this option is utilized, then one must accept the risk that if a problem is found in the designated batch/lot then all of the batches/lots that contributed to the designated batch/lot are subject to review. It will be imperative that a very detailed and accurate record keeping system is developed to document amounts and identify all of the batches/lots that were used in the designated batch/lot.)

3. Returned product — Retailers should dispose of all product that is returned by a customer.

4. Interlot reprocessing. This allows the store to reprocess a batch over a designated time period (i.e. – day's production) to allow an out-of-spec batch or other ground product to be used on the same day's production. If product is added from an out-of-spec batch into other batches/lots during the day, then all products produced that contain the out-of-spec product are subject to review if a problem is found with any of the final batches because it may be impossible to distinguish if the problem is from the out-of-spec batch or from the batch that it was added to. Therefore, it will be imperative that detailed and accurate records documenting the amount of out-of-spec

product used, the batches/lots that it is used in, and clear breaks in the process (i.e., clean-ups) are maintained.

The recommendations provided above should help a retailer make decisions relating to the reprocessing of products. Each store will need to carefully consider the options and determine which one works best within their process based on amount of production, opportunities for further processing, etc. Each retailer is encouraged to develop written procedures for how it will handle and document these issues.

BEST PRACTICES

The following guidelines for developing best practices for retail store that are grinding beef are recommended for voluntary consideration and use in developing store-specific procedures. These are not designed to control specific food safety hazards, but are intended to provide useful information to help stores produce safe and wholesome products. For detailed information on developing a total food safety program the Food Marketing Institute has developed a document entitled, "A Total Food Safety Management Guide: A Model Program for Category: Raw, Sold Ready to Cook Product: Ground Beef."

Raw Material Source

Retail stores should encourage/support further actions at all sectors of the industry (from animal production to consumer) to reduce microbial contamination and foodborne illness. This is especially important for ground beef and the control of *E. coli* O157:H7. The responsibility for safe food depends upon all sectors working together to produce the safest food possible for consumers. Stores that produce ground beef are responsible for outlining the requirements for raw material suppliers and for establishing a procedure to verifying that all of the requirements are implemented and working as designed. From a retail store's perspective, there are three basic points that could be considered in selecting suppliers for raw materials for ground product(s).

A. Process Interventions and/or Controls for Food Safety
   1. HACCP
      Ensure that the supplier has a HACCP program that meets all regulatory requirements and has been validated to control the food safety hazards identified as reasonably likely to occur. Retail operations may want to verify that these programs are in place and implemented appropriately.
   2. For Beef, the following items are specific to *E. coli* O157:H7
      a. Suppliers of beef should have validated process interventions and/or validated Critical Control Points (CCPs) in place to prevent, eliminate or reduce *E. coli* O157:H7 to a non-detectable level. Validation may include scientific literature and/or store specific validation using indicator organisms, and it should be specific to the process(es) being applied at the store. This can be incorporated into the retail store's purchase specifications or other store programs to ensure that all raw materials are produced using validated CCPs or process interventions. This is true for both domestic and imported suppliers of raw beef to be used in ground product(s).
      b. If the retail store is operating under a HACCP based approach then it may have specific data on *E. coli* O157:H7. These data may relate to the raw materials and/or finished product(s).

B. Foreign Material Contamination:

Retail stores should track unacceptable inclusions, indigenous and foreign materials, found in raw materials to help identify trends in suppliers. These findings should be shared with the supplier to help them improve their process, and may be a factor in supplier selection for future orders. This should be included in specifications to the supplier outlining items that are not acceptable in the raw materials.

C. Testing / Prescreening Requirements:

1. Sampling and testing for *E. coli* O157:H7 (by supplier or retail store)
   There should be a written protocol for sample collection, lab analysis and proficiency testing, as well as the procedures for reporting the results. It is very important that the supplier and the customer fully understand what the sample represents (i.e., a single combo, a composite of 5 combos, an entire trailer load, etc.), and the steps to be taken in the event of a positive. Communication is extremely important for reporting the test results if the product is being transported to the customer while the test is pending to ensure that all positive product is handled according to the store's written protocol.
2. Other microbiological Testing (Salmonella, APC, TPC, coliforms, etc.)
   As above, there should be a written protocol for sample collection, lab analysis and proficiency testing, as well as the procedures for reporting the results. It is important to establish how the results will be used before data are collected. Most of these microbiological tests are used for tracking supplier trends over time; however, each store must clearly define how they are going to use the information and the consequences of failing to meet the testing requirements.
3. In-store microbiological testing
   If a retail store elects to conduct its own testing of raw materials and/or finished product, then it should notify the supplier because the results may impact the supplier's production and distribution of product.

Supplier Evaluations

Raw material suppliers are critical to both food safety and quality aspects of producing ground products. Therefore, it is important that each new supplier is approved prior to using their products, and that there is a procedure for evaluating on-going suppliers. The following guidelines can be utilized to help design a system for evaluating suppliers.

A. New Supplier Approval:

1. Each new supplier should provide written acknowledgement of the retailer's purchase specifications and willingness to comply.
2. Each supplier should meet the guidelines outlined in the purchase specifications for microbial testing and profiling. For new suppliers a retail grinder may want to establish an intensified sampling program to determine if the supplier can consistently meet the specifications.
3. Each supplier should have a store audit conducted on a specified frequency to ensure compliance with the purchase specifications and other programs. The audits may be conducted by the retail grinder or by a third-party auditor. The

audit requirements should be provided to the supplier as part of the purchase specifications.

4. Retailers should conduct quality inspections of incoming materials to ensure that they are acceptable. For new suppliers a retailer may want to intensify the sampling frequency to ensure consistency in meeting the requirements.

B. Ongoing Suppliers:
   1. Retail grinding operations should periodically provide an update of the purchase specifications to each supplier and request on updated acknowledgement of receipt of the specifications and a willingness to comply.
   2. Data should be collected and tracked on the following items to identify supplier trends and help make purchasing decisions:
      a. Microbial profile data — may include, but not limited to: *Salmonella*, *E. coli* O157:H7, generic *E. coli*, Total Plate Count (TPC), Aerobic Plate Count (APC), and coliforms.
      b. Foreign object contamination
      c. Defect(s) (unacceptable indigenous inclusions)
      d. Store Audits Results
      e. Age of Product at receipt
      f. Temperature of Product at receipt
      g. On-time Delivery
      h. Other store specific requirements

Pre-Receipt of Raw Material(s) Verification

Based on all of the purchase requirements and store specifications, it is important that a system of checks and balances are put in place to verify that the supplier is conducting their program as planned. This verification process will help minimize problems and increase the integrity of the entire supplier purchasing program.

A. Negative Pre-Screen for *E. coli* O157:H7

The best practice is to have a negative *E. coli* O157:H7 test result from the laboratory or the supplier prior to opening the trailer or receiving the product. This should include all documents related to product identification, written notification of the test results, bill of lading, seal number on load, if applicable, and other identification and tracking information.

If the product must be removed from the trailer prior to receiving the written negative test result, the retailer should have written and documented procedures for off-loading, tagging and holding all of the product to ensure that it is not used prior to receiving the negative test result for *E. coli* O157:H7. This will require good tracking documentation procedures and sufficient training of all employees involved in both receiving and production to prevent the use of the product. The retail store should also have a procedure for handling the product if the test result is positive.

B. Seal integrity (security)
The optimal process is to seal the truck and have one delivery stop; however, this is not always possible. If the delivery will include multiple stops, then there should be a procedure for re-sealing the load and a tracking system for each seal placed on the truck. This process will help maintain product integrity and security.

Receipt of Raw Material(s)

Receiving Meat

Incoming raw meat materials should be evaluated to ensure that they meet the store-established purchase specifications. Trucks, containers and carriers of raw materials should be evaluated upon receipt to ensure that the conditions meet store requirements for transporting meat. All containers/cartons should be intact. All incoming meat should be coded/identified for store use and for the in-store tracking system. Retailer should verify that the received product is identified on invoice and the product identified on microbiological test results, if applicable.

Specific items to consider:

1. Designated employee(s) should verify that the raw material is from a store approved supplier. Each retailer should set supplier requirements and maintain a list of approved suppliers.

2. Designated employee(s) should evaluate and document on a product receiving log the condition of the trailer, shipping container(s), and carriers of raw materials upon arrival, and should document the time the inspection was conducted. Items for evaluation may include:
   - Cleanliness of trailer — no foreign materials, dirt, free of debris, free of off odors
   - Temperature of trailer —temperature of the trailer must be acceptable to maintain product temperature. Retailer may set a specific temperature for the product and/or the trailer as part of the purchasing specifications. If specific temperatures are set, then there should be a written procedure that defines the action(s) that will be taken if the temperature does not meet the specification.
   - General trailer condition — void of cracks, insulation in good condition, trailer door is sealed properly, paper on floors for carcass carriers, etc.

3. If the truck condition is acceptable, the designated employee should verify that the incoming material matches the store purchase specifications and/or required documentation is provided with the load. The following items may be included:
   - Species identity and/or origin (bull, cow, etc.)
   - Domestic vs. foreign supply source
   - Institutional Meat Purchase Specifications (IMPS) or other product identity
   - Boning date/ slaughter date
   - No foreign objects

- Verification of intended use — verify product and box/combo identification matches the product ordered and the bill of lading, including the proper match for product and test results.
- Supplier microbiological testing results, if required. If the supplier is required to test for *E. coli* O157:H7, then the material should not be used until the test results are received. If the supplier is testing for generic *E. coli*, coliforms, TPC or other microorganisms that can be used to establish supplier trend data, then the product does not have to be held until the results are received. However, if specific accept/reject levels are set for any specific microorganism then the product should not be accepted or it can be place on hold until the test results are received.
- Packaging/pallet requirements — i.e., no metal fasteners or bands, pallets in good usable condition, slip sheets, covers on combos, plastic pallets, etc. It is important that package integrity is maintained and documented.
- Age of raw material — recommend fresh products be used within ≤5days from fabrication; and frozen meat no more than 6 months from fabrication.

4. If the product meets the purchase specifications, then the designated employee should evaluate the actual condition of the raw materials. The following items are recommended for evaluation:
   - Temperature of raw materials (i.e., frozen ≤10°F; fresh ≤41°F or less). Each retailer should have a separate procedure for taking the temperature of incoming product and calibrating thermometers. Recommend both core and surface temperatures of the product.
   - Organoleptic evaluation of raw material for off odor, discoloration, improper appearance.
   - Material must have supplier code information and proper lot/load identification on materials.

5. If incoming raw materials pass the receiving inspection, then all raw materials should be placed into inventory and receive any retailer specific tracking/coding information prior to entering the storage area or being used in the grinder.

Use of Trimming Generated In-Store

Some retail stores may decide to not use trimmings generated in the retail store in the production of ground beef, and to use the trimmings in a fully cooked product or to dispose of them as inedible.

However, it trimmings are going to be used in the production of ground beef, then the retailer should develop and implement a tracking system to properly identify the source of the trimmings, the conditions of handling in the store (days of storage, temperatures, etc.), and a tracking system to document all sources of raw materials, including the in-store trimmings that are in the ground beef.

Non-meat Items

Retailers will also need to make sure that all non-meat items, such as packaging materials, seasonings/spices, etc. meet the store-established specifications. After the retailer accepts the non-meat items, then these items should be store, handled and used in a manner that will maintain the integrity of the items.

Storage of Raw Material(s)

Raw materials should be used on a First-In/First Out (FIFO) basis or according to a store specified product rotation/inventory control schedule. Raw materials should be stored at temperatures that maintain proper product condition – temperature, integrity, etc. Frozen materials should be kept frozen, unless tempering or thawing is required prior to use. The packaging/pallet integrity must be maintained throughout the storage period to maintain the condition of the raw materials. Product identity in storage should allow for proper in-store tracking system.

Specific items to consider:

1. For shelf-life purposes place fresh raw materials into cold storage (i.e., $\leq$41°F or less) and frozen product into freezers (i.e., $\leq$10°F or less).

2. Develop retailer specific storage records or product identification, so product will be used on a FIFO basis or according to store product rotation/inventory control schedule.

3. Store raw materials to maintain package/pallet integrity. Boxed product should remained in closed box and combo bins should be covered during storage.

4. Storage conditions should be maintained according to pre-requisite program requirements to ensure product integrity during storage.

5. Individual store security should address raw material and finished product storage areas.

Raw Material Processing

Tempering/Thawing of Frozen Materials

If tempering or thawing is required prior to use, then it should be done in a time/temperature controlled manner which is adequately monitored and documented and verified. The product package integrity is important during this process. The product's traceability should be maintained throughout the tempering/thawing process. It is advisable to have a written program that outlines specific guidelines or procedures.

Specific items to consider:

1. Place frozen product in a tempering room that is ≤41°F and allow product to reach desired level of tempering or thawed state; actual time will vary depending on amount of product and type of packaging. (If the room temperature is higher than 41°F then one must evaluate the time/temperature relationship to reduce the risk of potential microbial growth on the surface of the product.) You may want to consider air temperature and velocity to ensure proper thawing.

2. The product should be monitored on a scheduled basis to prevent degradation of the package integrity and minimize product drip.

3. The product temperature should be monitored on a scheduled basis to ensure that the desired end temperature is not exceeded.

4. All of the products should maintain the store-specific tracking/coding information to ensure proper traceability of product from receiving through to final end products.

Grinding/Processing Records

These documents includes weighing, mixing, blending, coarse and final grinds, forming, packaging, and labeling and other specific aspects of the process. Throughout all of these steps the temperature of the product should be maintained. Steps should be taken to prevent species cross-contamination and proper labeling to maintain end-product identity. An organoleptic evaluation of the raw material ingredients should be completed during pre-grind and prior to adding the ground meat to the batch. The ingredients should be evaluated for chemical composition (%fat and lean) to formulate product to desired endpoint. Procedures for ensuring proper endproduct characteristics (i.e., weights, size, shape, quantity, etc.) should be in place. The in-store tracking mechanism should allow for batch identification and time of batch production.

Specific items to consider for grinding:

1. Prior to initiating the grinding process, retailers should ensure that negative *E. coli* O157:H7 results have been received, if the raw material was subjected to testing.

2. Formulation of the product should utilize a batch sheet to document batch identification and includes raw materials used, specific weights and amounts, fat percent, etc. The formulation documentation should address quality characteristics, product specifications, and traceability both forward and backward in the production system.

3. Temperature monitoring of the backroom and the product to ensure integrity. The room temperature should be controlled and the actual time of processing should be as fast a possible to maintain product integrity during production. A target of ≤50°F for the room is most often used and records of actual room temperatures should be maintained.

4. Defect inspection and elimination systems should be used when possible for bones, metal, etc.

5. Rework, reprocessing of intra-batch or product over-runs must at all times have appropriate identification and tracking for traceability purposes.

6. Target end-product temperatures commonly used for ground products are: ≤32°F for forming fresh products; ≤35°F for spiral/tunnel freezing chubs, and ≤10F for IQF patties. During processing, these temperatures may be exceeded for brief time periods, but each retail store should carefully evaluate and control time and temperature.

7. Retail employees should complete an evaluation of the equipment (grinders – plates and blades, defect eliminators, metal detectors, etc.) on a scheduled basis and the time of each evaluation should be recorded. It is important that this is performed during the production of ground beef, and that this information is reviewed prior to placing the packaged product in the retail display case. This will help minimize the risks associated with equipment malfunctions that can impact the product.

Packaging/Labeling

It is important that the finished product is properly packaged and labeled to protect the integrity of the product and to provide appropriate handling and cooking instructions to the consumer.

Specific items to consider:

1. Package material must be approved for use with food.
2. Package material must protect the finished product.
3. The product identification/tracking mechanism should identify specific processing lines used to produce this finished product. This may help narrow the product impacted if there is a problem with a particular processing line that does not impact the other lines.
4. Packaging and labeling employees are responsible for properly labeling end-products with product identity and code dates that include an expiration date, sell-by-date, use-by-date, production date and time, using a dating system according to company procedures.
5. Packaging and labeling employees are responsible for including all safe handling and storage information according to each product's requirements, as well as specific cooking instructions.
6. Bar coding is an option that can be used to help with the product identification and tracking.

Storage of Finished Product and Products Displayed in Retail Case

Finished products should be stored or placed in a retail case designated to maintain temperatures over time to ensure product shelf-life and product safety. A FIFO or a store specified product rotation/inventory control schedule should be maintained for finished products. The package integrity should be maintained throughout the storage period to

protect the condition of the finished product. Product identity in storage and during case display should allow for the in-store tracking system to be used for recall and/or market withdrawal purposes. A tracking system should also ensure that product that is pulled from the retail display case is documented (date pulled, amount, reason for pull, etc.)

Specific items to consider:

1. For shelf-life purposes place fresh product into cold storage and frozen product into freezers.
2. Utilize products in a specified time-period to maintain shelf-life requirements. Shelf-life of the product is dependent upon the type of product, type of package, temperature of storage, condition of incoming materials, etc. Therefore, each retailer should have specific guidelines for storing/displaying and utilizing finished products.

3. Store/Display products to maintain package and lot integrity to help minimize customer risk.

4. Storage/display conditions should be maintained according to pre-requisite program requirements to ensure product integrity during storage and display.

SYSTEM CHALLENGES TO MEASURE EFFECTIVENESS

Recall Program and Mock stock recovery drills

All retailers that grind beef should develop a recall program. The program should include mock recalls conducted on a periodic basis to ensure that the program works as planned. The recall program should include identification and tracking of raw materials, packaging, and finished products. The program must be able to cover all raw materials (meat, non-meat ingredients), packaging materials to the finished product. The program should identify all suppliers, customers, distributors and everyone involved in the process. The more details that are put in place prior to having a problem, the easier the recall or withdrawal will be if there is a problem.

Store Security

Store security systems should address the security of the raw meat and the finished packaged product prior to being placed into the retail case. Access should be controlled as part of the security program.

HACCP IN A GRINDING OPERATION

As we all know, HACCP is a process control system designed to prevent, eliminate or reduce to an acceptable level food safety hazards. The retailer should consider biological, physical, and chemical food safety hazards. This a raw process that has no scientific CCP for preventing, eliminating or reducing to an acceptable level microbial food safety hazards, such as *E. coli* O157:H7. Therefore, retailers that grind must focus on what can realistically be applied during the process to minimize the potential for growth of pathogens, if present on the raw material. These steps often involve time and

temperature controls (i.e., raw material and finished product temperature during processing cold storage or other steps) to minimize the potential for growth.

All retailers that grind beef should be able to support the decisions that are made in the HACCP program and to use the documentation generated from the program to demonstrate product safety. For detailed information on developing a total food safety program the Food Marketing Institute has developed a document entitled, "A Total Food Safety Management Guide: A Model Program for Category: Raw, Sold Ready to Cook Product: Ground Beef."