

LISTERIA

Action Plan for Retailers



Listeria control is an ongoing challenge for retailers in the deli and any department where fresh foods are stored and foods are prepared. FMI and our members are committed to finding ways to control the growth and if possible, eliminate the presence of *Listeria* at retail to reduce the risk in the retail environment. Retail delis provide an ideal environment for *Listeria* growth due to the type of food (ready to eat [RTE] meats, cheeses, and salads), the moist environment, and temperatures that support the growth of *Listeria*. As retailers increase the RTE and prepared foods they offer to customers, *Listeria* control plans need to be in place to offer the appropriate food safety controls. For the purposes of this document, the organism we are concerned about is *Listeria monocytogenes* which we will abbreviate as *Listeria*. It is commonly found in the environment and when ingested, it can cause serious disease in humans and has been associated with a significantly higher hospitalization and fatality rate than other foodborne pathogens.

FMI Food Protection Committee have expanded upon the advice and recommendations of the *Listeria* Action Plan for Retail Delis to include additional recommendations in order to assist retailers in developing food safety plans to help control the growth of *Listeria* beyond the deli.



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Recommendations

1. Product handling to limit *Listeria* growth



Time and temperature are the two most fundamental factors in bacterial growth. *Listeria* is one of very few bacteria that can grow at cold temperatures. However, the lower the temperature, the slower the growth. Maintaining temperatures of refrigerated foods at 41°F or below is essential to minimize the growth of *Listeria*. Since many display cases are not designed to lower the temperature of food, all food that supports the growth of *Listeria* should be cooled to 41°F or below prior to being placed in the display case or being merchandized. The FDA *Food Code* requires ready-to-eat foods that support the growth of *Listeria* be held at a temperature of 41°F or below. The FDA *Food Code* also requires date marking for RTE products that are Time/Temperature Control for Safety Food (TCS). This helps control *Listeria* growth by limiting the shelf life of the product. Holding products below 41°F will also extend the shelf life and could improve the quality of the product.

ACTION

Maintain all coolers, display, and storage cases to keep internal temperatures below 41°F at all times.

- ◆ If possible, adjust cooler temperature setting to allow for busy times of the day when the cooler and case doors may be opened more frequently.
- ◆ Employees and management should monitor the holding units and internal product temperatures to verify that the products are being maintained at the correct temperature.
- ◆ Air flow should not be blocked and cases should not be overstocked in order to maintain temperatures below 41°F.
- ◆ Precool products before placing in display cases.
- ◆ Properly date mark items to meet regulatory requirements and to limit time temperature exposure.

2. Sanitary Design of Equipment

According to the CDC, contaminated equipment has been identified as one of the most commonly reported food safety practice contributing to foodborne illness outbreaks. Often, sanitary design is strongly emphasized in manufacturing environments for preventing and controlling *Listeria*. Retailers can apply many of these sanitary design concepts in their stores for *Listeria* prevention and control. Sanitary design is “the application of design techniques which allow the timely and effective cleaning of the entire manufacturing asset.”¹

¹Meat Institute (2014) Sanitary Equipment Design Checklist and Glossary.
<https://forms.consumerbrandsassociation.org/forms/store/ProductFormPublic/facility-design-checklist>

Facilities, equipment and utensils should not contaminate products. In order to protect products from contamination, sanitary design principles should be taken into consideration and applied to retail facilities, equipment and utensils to reduce the likelihood of contamination. It may be difficult to prevent contamination when equipment or a facility are poorly designed; therefore, equipment and facility design are essential for effective cleaning and minimizing the harborage of microorganisms.

The equipment and tools used in retail food establishments need to be safe, smooth and durable. Surfaces that are smooth and durable are easy to clean and are resistant to pitting and chipping. Equipment and utensils must be designed and constructed so that the functionality and cleanability is maintained under normal use throughout the entire life of the equipment. Under the 2017 FDA *Food Code*, equipment that has been certified for sanitation by an American National Standards Institute (ANSI) accredited certification program, such as NSF International, are considered to meet the minimum requirements for food protection and sanitation.

Retailers should evaluate the sanitary design of equipment beyond certification when purchasing equipment and tools that have been identified to have a greater risk to food safety. Sanitary design should be taken into consideration and routinely evaluated throughout the entire life of the equipment, from purchasing, and installation to operation and maintenance. All levels of management should be supportive of food safety, including equipment and facility sanitary design, and allocate resources proactively for the replacement of equipment and utensils to ensure sanitary conditions are maintained throughout its lifespan.

ACTION

Evaluate sanitary design of facilities, equipment and tools.

Specific considerations:

- ◆ Food safety professionals should be involved in equipment purchasing and facility design and re-design.
- ◆ Retailers should work with equipment suppliers to purchase equipment that facilitates cleaning.
- ◆ Purchase equipment that is constructed using acceptable materials and is the appropriate size and construction for the intended use (See Appendix A).
- ◆ Equipment surfaces need to be durable, nonporous and maintained free of cracks or any other condition that would make cleaning difficult.
- ◆ During purchasing, evaluate equipment and utensil life cycle and determine the end of life date for use. Prior to this predetermined date, use of the equipment or utensil should be discontinued and the equipment or utensil should be replaced.
- ◆ Install equipment in locations that will facilitate cleaning, maintenance, and proper operations.



- ◆ Ensure areas where equipment will be installed are free from contamination prior to installation.
- ◆ Facility design should reduce the risk of cross contamination and should take into consideration both product and people flow, as well as any potential environmental risks that could contribute to contamination of food.
- ◆ Facilities and equipment should be kept clean and in good repair to prevent contamination.
- ◆ Floors should be designed to allow for adequate drainage and prevent the pooling of water which could attract pests or contribute to environmental contamination from pathogens such as *Listeria*.
- ◆ Equipment must be routinely inspected (recommend pre and post operation) for signs of wear, degradation, or missing parts such as bolts, seals, and gaskets. These conditions may lead to contamination and need to be replaced.
- ◆ Equipment must be adequately maintained according to manufacturer's specifications to ensure equipment operates as designed throughout its use.
- ◆ During renovations and remodels, companies should develop a plan to proactively protect equipment from becoming contaminated and ensure equipment is cleaned and sanitized prior to use.
- ◆ If sanitary conditions cannot be maintained, equipment and utensils need to be replaced.

See Appendix A for additional actions to improve the sanitary design of specific equipment and sites as well as additional actions that can be done to improve current practices/processes for food contact surfaces, non-food contact surfaces, and transfer points associated with the specific equipment and sites.



3. Control Product and People Flow to Reduce the Risk of Cross Contamination

Delis, bakeries and other retail grocery departments with RTE food are open environments with a number of employees who have access to the departments. The production volumes are high and traffic flows can be high. To minimize the risk of cross contamination, it is strongly encouraged to map the traffic flow to determine if some of the potential for cross contamination can be eliminated. This should include restricting access of non-departmental employees to this

area. Retailers should evaluate if some higher risk operations can be moved to other departments or effectively separated to minimize the risk for cross contamination of product. For example, raw meat preparation should be moved away or effectively separated from RTE products to avoid cross contamination from poorly designed equipment and facilities.

Equipment maintenance, remodels and construction are activities that increase the risk of contamination of *Listeria* due to environmental contamination. Food safety professionals should be assigned on all equipment procurement; remodel and design work in retail settings to reduce the risk of contamination.

The goal is to think differently about people flow and product flow when it comes to the food preparation areas and determine if changing a practice might reduce the risk of *Listeria* contamination.

ACTION

Evaluate traffic patterns and product flow.

- ◆ Consider ways to prevent/eliminate the potential for cross contamination by mapping the process flow and by shifting tasks based on risk.
- ◆ Reduce the traffic in food preparation area by limiting entry to authorized individuals only.
- ◆ Assign food safety professionals to remodel, construction and equipment evaluation projects to evaluate the food safety hazards and minimize risks.

4. Training and Execution of Proper Cleaning and Sanitation as well as Employee Practices

Training employees on proper food safety practices are essential, particularly related to personal health and hygiene, open food handling, avoiding cross contamination, proper chilling, and proper sanitation, including but not limited to the use of Sanitation Standard Operating Procedures (SSOPs) to address high risk areas in retail food grocery departments that handle ready to eat foods. Retail team members should be trained on what to do and why they should do it. Store management teams should be trained on the importance of supporting team members in this process. On-going training should be conducted at a frequency adequate to ensure team members remain up-to-date and current with the above food safety practices as it relates to their assigned job tasks. Training should be a top down approach in that senior management should support the allocation of resources and labor necessary to execute this critical training at the appropriate frequency.

Improper execution of cleaning and sanitation procedures will not be effective at reducing *Listeria*. A proactive food safety culture, which provides sufficient training allowing for the proper execution of cleaning and sanitation, will be the ultimate driver of success. Senior management commitment is essential to this process.



ACTION

Train and re-train employees on the essentials of food safety focusing on proper cleaning and sanitation of food contact surfaces, touch points (scale trays, keypads, door handles), and non-food contact surfaces.

- ◆ Apply additional focus on areas that have been identified as higher risk with SSOPs or with specific protocols in your stores. Make sure that daily cleaning and sanitation procedures are being executed properly.
- ◆ Involve retail management with this training to reinforce expectations and create senior management support for the sanitation programs.
- ◆ Employees should have access to the proper tools, chemicals, and time along with education and training to be successful with their cleaning and sanitation program.
- ◆ If possible, involve sanitation chemical provider representatives to assist and supplement refresher training and reinforcement during their service visits.

- ◆ Training should include information about *Listeria* and why it is important to control this foodborne pathogen in retail environments.



5. Cleaning and Sanitizing

Following ongoing and daily cleaning procedures is fundamental in the proper sanitization of a surface. Cleaning involves the removal of visible soil from surfaces. Cleaning is essential to disrupt biofilms that might exist. (A biofilm is an invisible buildup of soil and bacteria over time.) More intensive cleaning might be necessary in delis and other retail departments with increased food preparation activities. Take care to not re-contaminate the environment during the cleaning process. Cleaning tools should be properly maintained in good condition, cleaned and sanitized after each use, and should not be a source of contamination. Floors and drains should be cleaned and sanitized on a daily basis. They should also be maintained in good repair and should be free from any standing water. Any pooling of water should be removed. *Listeria* thrives in wet environments and floors that remain wet, providing a perfect home for *Listeria* to grow, in particular, in hard to reach areas such as under equipment. Floor drains can be a harborage point for *Listeria* as it collects debris and remains wet for extended periods of time. Some cleaning and chemical service providers have developed cleaning and sanitizing foaming agents specially formulated for use in floor drains to break down the organic material and more effectively clean and sanitize the drain.

Evaluate current cleaning and sanitizing processes and the frequency of cleaning for food contact, non-food contact surfaces and the retail environment. Thoroughly clean all food preparation areas paying close attention to harborage areas (niches) where food debris and residues are difficult to reach. Senior management support is critical to ensure that the necessary allocation of labor resources is considered to ensure proper training and execution of these processes.

There are some items that deserve extra attention when cleaning and sanitizing:

- a. Thorough cleaning of floors and drains is necessary to remove debris and reduce biofilms. Pay special attention to floor-wall junctures.
- b. Eliminate standing water. Flooring that is not sloped properly to a drain should be repaired.
- c. Sanitize the floor properly and allow for adequate contact time according to the sanitizer label instructions.
- d. Maintain a clutter free environment to allow for thorough cleaning.
- e. Sanitize cleaning tools and make sure cleaning tools are not a source of contamination.
- f. Have a plan in place for replacement or repair of equipment or facility that ensures prompt response and minimizes the potential for contamination to occur.



6. Environmental Monitoring Plans

After robust cleaning and sanitation procedures have been implemented and employees are trained properly, some retailers are verifying the effectiveness of their plans with environmental monitoring plans. There are a number of methods and sampling procedures available to verify that sanitation programs are effective. It is best to consult with a food safety professional or a microbiologist prior to implementation. It is generally recommended that indicator organisms be used in any sampling in food production areas.

Rapid sanitation tests include Adenosine triphosphate (ATP) and glucose tests to identify the presence of organic matter, debris or sugars. A variety of microbiological tests are available ranging from rapid testing to culture methods.

With all tests, a detailed plan should be in place prior to testing outlining the SOPs including the corrective actions if the desired results are not obtained.

Regulatory sampling plans

In addition to monitoring as a verification step, some regulatory jurisdictions are sampling for pathogens including *Listeria* to determine regulatory compliance. In this case, FMI recommends working closely with the regulatory agency and understanding the sampling plans, the methodology and the actions that will be taken pending the results. In some cases changes to production schedules might be necessary after samples are taken for regulatory purposes.

ACTION

Have a plan for sampling before starting an environmental monitoring program.

- ◆ Make sure that monitoring as a verification step meets your intended goals.
- ◆ Have a recall plan in place.
- ◆ Have a deep clean remediation plan in place.
- ◆ If a regulatory agency is performing regulatory sampling, have a plan in place for dealing with positive samples and discuss the action steps with the regulatory officials in advance.



7. Incoming Ingredient Management

Retailers often have thousands of suppliers. Managing suppliers and their food safety programs is an enormous challenge. With recent food safety regulations, the task is becoming easier, but small business exemptions place the burden of ensuring food safety programs are in place on retailers. It is imperative that retailers know who they are purchasing from and that food safety programs are in place for all suppliers.

The following are some best practices for supplier programs for retailers:

- ◆ Only buy from approved sources that have food safety programs in place.
- ◆ Have a policy for direct purchases at the store level.
- ◆ Food safety should be a part of supplier specifications and requirements and the purchasing requirements.
- ◆ Any changes in formulations, ingredients, and labeling should be immediately communicated by suppliers.
- ◆ FMI recommends that retailers work with suppliers to have strong food safety programs in place and are continuously working to improve food safety programs by achieving certification under the SQF Program (or an equivalent GFSI-recognized program).
- ◆ Work with suppliers to better understand their pathogen prevention systems as well as environmental monitoring programs to ensure all food safety hazards are controlled.

ACTION

Have supplier verification programs in place for all foods purchased by corporate and stores. Food safety is an essential part of supplier programs and should be communicated by the procurement department.

References and Resources for Additional Information

American Frozen Foods Institute (AFFI) Food Safety Zone

<https://affifoodsafety.org/>

Baking Industry Sanitation Standards Committee

<http://www.bissc.org/about.html>

Conference for Food Protection Guidance Documents

<http://www.foodprotect.org/guides-documents/>

FDA *Food Code*

<http://www.fda.gov/Food/GuidanceRegulation/RetailFoodProtection/FoodCode/ucm374275.htm>

FMI *Listeria* Action Plan for Retail Delis

<http://www.fmi.org/docs/food-safety-best-practice-guides/Listeria-action-plan-for-retail-delis.pdf?sfvrsn=9>

North American Meat Institute, January 2014. Sanitary Equipment Design Principles

<https://www.meat institute.org/index.php?ht=a/GetDocumentAction/i/97261>

Guidance on Environmental Monitoring and Control of *Listeria* for the Fresh Produce Industry

<https://www.freshproduce.com/siteassets/files/reports/food-safety/guidance-on-environmental-monitoring-and-control-of-listeria.pdf>

Centers for Disease Control and Prevention. Surveillance for Foodborne Disease Outbreaks, United States, 2016 Annual Report. Retrieved from

https://www.cdc.gov/fdoss/pdf/2016_FoodBorneOutbreaks_508.pdf

Simmons, C., M. Stasiewicz, E. Wright, S. Warchocki, S. Roof, J. R. Kause, N. Bauer, S. Ibrahim, M. Wiedmann, and H. F. Oliver. 2014. *Listeria monocytogenes* and *Listeria* spp. Contamination Patterns in Retail Delicatessen Establishments in Three U.S. States. *J. Food Prot.* 77:1929-1939.

SQF Food Safety Codes

<https://www.sqfi.com/sqf-code-downloads/>

USDA FSIS Resources

<https://www.fsis.usda.gov/inspection/compliance-guidance/microbial-risk/listeria-monocytogenes>

This document will be updated as science advances.

Appendix A

Sanitary Design Considerations for Specific Areas and Equipment *(based on known contamination patterns)*

Actions to improve the sanitary design of specific equipment and sites as well as additional actions that can be done to improve current practices/processes for food contact surfaces, non-food contact surfaces, and transfer points associated with the specific equipment and sites.

To help identify ways to improve sanitary design and reduce the risk of contamination for specific high risk for food contact surfaces, non-food contact surfaces, and transfer points, the following information was developed taking into consideration the North American Meat Institute's 10 principles of Sanitary Design¹, GMA's Facility Design Checklist² as well as what makes equipment/site at risk for contamination³, with a specific focus on: Equipment/site material, Processes (flow of food), People (employee practices), Cleaning and Sanitation practices, Equipment maintenance, etc.



- ◆ **Service Cases:** All parts (i.e., case doors and tracks, gaskets, removable interior parts, etc.) should be smooth and easily cleanable. They should be removed for cleaning and sanitation on a regular frequency.
- ◆ **Floor/Wall Juncture:** Consider fixed coving between the floors and walls to help minimize splash during cleaning with a coving height of 12 inches with a radius of one inch. Stainless steel provides the most durable and easily cleanable surface for walls, especially in areas where food splash may occur (i.e., behind slicers and cutting tables). Various types of floor coatings exist to help mitigate the microbiological concerns, including epoxy flooring with anti-microbial epoxy coating. The design of the floor and wall juncture is an important consideration during new store construction and remodels.
- ◆ **Cart Wheels:** Deli carts have the potential to be used for many purposes, including raw and ready-to-eat areas of the deli. For this reason, carts should be designated for use in a specific area, raw vs. ready-to-eat. The wheels of carts should be easily cleanable and easily replaced. Deli carts and their

²Grocery Manufacturers Association (2010) Facility Design Checklist. <https://forms.consumerbrandsassociation.org/forms/store/ProductFormPublic/facility-design-checklist>

³Simmons, C., M. Stasiewicz, E. Wright, S. Warchocki, S. Roof, J. R. Kause, N. Bauer, S. Ibrahim, M. Wiedmann, and H. F. Oliver. 2014. *Listeria monocytogenes* and *Listeria* spp. Contamination Patterns in Retail Delicatessen Establishments in Three U.S. States. *J. Food Prot.* 77: 1929-1939. <https://doi.org/10.4315/O362-028X.JFP-14-183>

wheels should be cleaned and sanitized on a regular frequency. Replace cart wheels when they become damaged or beyond repair. Do not use shopping carts in food preparation areas, as these have traveled outside the store.

- ◆ **Inside the Sinks:** There are three type of sinks commonly used in a deli department: hand wash sinks, two-bay food preparation sinks, and a three-bay compartment sinks for cleaning and sanitation. Regardless of the type of sink, it is always important maintain sinks that have been cleaned and sanitized, especially before use. Whether washing hands, pouring raw chicken juice down sinks or cleaning utensils and equipment, it is important to maintain the sanitary condition of all sinks throughout the day, especially the interior condition of the sink.



- ◆ **Squeegee Floor Cleaning Tools:** Squeegee heads should be constructed as a smooth single blade that is sturdy with a tight-fitting thread. The device should be flexible to push and pull, being effective at both removing liquid and drying. There should be no wooden handles or parts, and the device should be designed with handling capabilities. When not in use, floor tools should be stored away from food and off the ground. The squeegees used in a ready-to-eat environment should be cleaned and sanitized throughout the day. The squeegee head and handle should be replaced if damaged or if no longer effective for the necessary job.

