Integrated Food Safety
Centers of Excellence

MARYLAND
Department of Health

Listeriosis Prevention in Retail Food Service Facilities

Retail food service facilities must understand the dangers of the bacterium, *Listeria monocytogenes* (*Lm*). People can become ill with a potentially serious infection called listeriosis after eating food that is contaminated by *Lm*. The following information is provided to help food service facilities identify ways to reduce the risk of patrons contracting infection from this foodborne illness.

Listeria monocytogenes

Lm is found in moist environments, soil, animal feces, and decaying vegetation. Foods often contaminated with *Lm* include ready-to-eat (RTE) refrigerated foods, unpasteurized (raw) milk, foods made with unpasteurized (raw) milk, animal meat, deli items and raw vegetables contaminated by soil or manure used as fertilizer. *Lm* thrives in a refrigerated environment. Foods unknowingly brought into the food service facility contaminated with *Lm* can also contaminate refrigeration and other non-food contact areas of the food service facility via flow of the food through the facility.

Listeriosis

The Centers for Disease Control and Prevention estimates that every year about 1,600 people get listeriosis. Listeriosis primarily affects pregnant women, newborns, older adults and people with weakened immune systems. Most people with invasive listeriosis (i.e., when the bacteria spreads beyond the gut) require hospital care, and about one in five people with the infection die. Listeriosis results in fetal loss in approximately 20 percent of cases and in newborn death in about 3% of the cases.

Cross Contamination Prevention Strategies for *Listeria monocytogenes*

Cross-contamination occurs when microorganisms are transferred from one surface to another, possibly leading to contamination of otherwise safe food or clean equipment. Utilizing the following best practices can help reduce the likelihood of patrons contracting Listeriosis from your facility.

Product Handling

- Use products from approved suppliers that are produced to include antimicrobial agents (e.g., acetic acid, sodium diacetate, lactic acid, citric acid) or that have received other treatments to eliminate or prevent the growth of *Lm* in RTE products
- Ensure refrigeration maintains foods at 41 degrees Fahrenheit or below. *Lm* growth can still occur at 41 degrees Fahrenheit or below, but it is greatly reduced. Minimize the amount of time, the product is removed from refrigeration. Lunch meats should be sliced to order, not pre-sliced
- Label all food items prepared or opened with a date that the product must be used by or discarded. According to Food and Drug Administration's (FDA) guidelines, potentially hazardous foods (foods that must be refrigerated for safety) that are prepared or opened at the retail establishment and held at 41 degrees Fahrenheit or below must be discarded within

seven days. For products that have not been opened, do not exceed manufacturers' recommended shelf life code dates or manufacturers' "use by" date
- Remove products that are filthy, putrid, decomposed, slimy, rancid or in off-condition from the deli area as soon as possible and thoroughly clean and sanitize areas that were contacted by the product
- Store and handle RTE products in separate areas from raw products that can contaminate the RTE items
- Thoroughly cook raw food from animal sources such as meat, poultry and seafood to a safe internal temperature
- Thoroughly rinse raw fruits and vegetables in running water prior to preparation

Cleaning and Sanitizing
- Ensure sanitary practices are maintained within food operation and utensil washing areas. Develop written sanitation procedures that describe how utensils and equipment will be cleaned and sanitized prior to, during, and after use. Clean and sanitize equipment and utensils that are in frequent contact with food at least every four hours or sooner to prevent contamination
- Develop a cleaning and sanitation schedule for the places that *Lm* may hide such as drains; the inside of display cases including fans, grates, dividers and other items inside the case; slicers; utensils; preparation surfaces and packaging equipment. Items that are used in multiple areas of the facility, such as carts and racks, should be included in the cleaning schedule as they can bring contaminants into the facility on the wheels and undersides of equipment
- Disassemble RTE food processing equipment when cleaning and sanitizing to ensure hard to reach areas where *Lm* can hide are addressed
- Scrub surfaces during cleaning to prevent biofilms (i.e., an invisible accumulation of bacteria, slime, and/or food on environmental or food-contact surfaces) from occurring
- Follow the manufacturer's recommendations for sanitizer strength and application, including exposure time
- Consider rotating sanitizers to provide more effective bacterial control
- Develop a cleaning and sanitizing procedure for cleaning aids such as cloths or scrub brushes or have single use items that are discarded after each use
- Use low water pressure methods when cleaning to minimize splashing and overspray, and to keep water from pooling in the facility. Also, prevent pooling of water outside of the facility, at entrances, loading docks, and storage areas

Employee Practices
- Train employees in sanitation practices and safe food handling procedures. This includes implementing proper hand washing and donning of gloves to prevent cross contamination. Barehand contact with RTE foods is not allowed
- Implement a policy to restrict ill employees from handling or serving food and working with food contact surfaces
- Limit traffic through the food operation and utensil washing areas to on-duty personnel conducting pertinent job-related functions
- Develop practices to prevent outer clothing from spreading contamination such as wearing disposable aprons

Sources
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Listeria Fact Sheet

What is *Listeria monocytogenes*?

Listeria monocytogenes is a bacterium found in the natural environment such as in soil, on sidewalks, and in streams. *Listeria* is small (0.5 um, compared to hair's ~75 um thickness) and therefore can't be seen by the naked eye. It is also odorless and therefore leaves no visible signs of existence. The only way to detect its presence is by microbiological testing. It can survive freezing and can grow beginning at refrigeration temperatures.

Why should we care?

Listeria monocytogenes causes human illness. For healthy people, illness may resemble mild, flu-like symptoms. However, susceptible individuals, such as those who are immunocompromised and the elderly, can suffer much more severe infections with complications including meningitis. Those who are pregnant are also considered susceptible and can suffer from miscarriages and stillbirths if they become infected with *Listeria*. Most importantly, people who get sick from *Listeria* have a 15-20 percent chance of death. Therefore, it is critical that we keep *Listeria* out of the food supply.

How does *Listeria* get into food?

Oftentimes, *Listeria* gets into the food supply at the facility or retail level. It has been shown to survive in food facilities for weeks, months, and years. For example, *Listeria* may be living in the drain of a food facility or in the walk-in cooler at a retail deli. It doesn't take long before the *Listeria* moves its way to a food contact surface, either via employees or another avenue such as on the spray from a high-pressure hose. Once it gets onto a food contact surface, *Listeria* can continue to re-contaminate any food that touches that surface, surviving and growing until the moment the food is consumed by a person.

What should I do to prevent *Listeria* food contamination?

To prevent *Listeria* contaminating food, it's important to understand if your product is a *Listeria* risk. Ask questions such as:

- Do you prepare your food in an environment that's cool or wet?
- Is your food exposed to the outside environment before being packaged or served?
- Has your food been compromised in a *Listeria* outbreak previously?

If your review indicates your product may be at risk, you should set up an environmental monitoring program designed to detect the presence of *Listeria* in the environment. This often includes routinely collecting sponge samples in areas such as drains and floor cracks.

How do I get more information?

Listeria monocytogenes: https://www.cdc.gov/listeria/index.html
Listeria Control Guidance:
https://www.fda.gov/downloads/food/guidanceregulation/guidancedocumentsregulatoryinformation/ucm535981.pdf

Where to collect sponge samples:

General sites:

- Wet, relatively undisturbed areas
- Areas that may trap organic material and are difficult to access (e.g., weld seams, metal cracks, brushes, rollers and along threads of bolts)
- Hollow rollers
- Hollow equipment legs
- Overlapped materials such as metal on metal or plastic bolted to stainless steel
- Partially open electrical conduits
- Electrical or hydraulic junction boxes and equipment that is bagged to protect from water exposure
- Drains
- Fatigue mats and no-slip runners
- Damaged bins/totes or pallets
- Cooling units
- Drip pans
- Condensate on walls or ceilings
- Difficult-to-access or difficult-to-clean pieces of equipment
- Motor or control housings
- Flume covers
- Bearings
- Pallet jacks
- Dump tank areas
- Areas with wax build-up
- Overhead doors
- Fork lifts
- Fork lift stops (floor sandwich juncture)
- Steps/ladders/stands
- Floor cracks/holes
- Squeegees
- Catch pans
- Loading docks
- Employee footwear

Retail Site Examples — For outbreaks linked to deli-related products

- Deli case ("down to the coils")
- Dairy case
- Deli slicer
- Deli sink (interior and exterior)
- Cutting board
- Salad bowls/utensils
- Packaging tables (look for hollow legs, difficult to clean areas, etc.)
- Single-basin sinks
- Drain in deli area
- Drains in other close-by areas (e.g., salad prep area, produce, raw meat, raw seafood)
- Floor mats
- Cold storage room, including the floor and shelves and other structures
- Squeegees
- Cleaning brushes
- Focus on areas with standing water

Retail Site Examples — For outbreaks linked to other products (e.g., cheese, produce)

- Difficult to clean food contact surfaces (e.g. slicers, knives, cutting boards, scales, display cases, packing tables, brushes)
- Sinks (interior and exterior)
- Drains in the area where the implicated food is handled as well as in close-by areas (e.g., salad prep area, produce, raw meat, raw seafood)
- Difficult to clean areas in floors (cracks, areas that have been caulked)
- Floor wall junctures
- Floor mats
- Garbage containers in the area where the implicated food is handled (focus on difficult to clean and access areas)
- Cold storage areas and walk-in coolers, including floors and drains, shelves and other structures, (focus on difficult to clean and wet areas) and condensers
- Cleaning tools (e.g., squeegees, mops, automated floor cleaners, brushes)
- Wheels of carts used in the area where the implicated food is handled
- Areas with standing water