

# Controlling Listeria contamination in your meat processing plant

## Infosheet

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### WHAT IS LISTERIA?

Listeria is the name given to a particular group of species of bacteria. Within this group, *Listeria monocytogenes* is a bacterium that is found widely in the environment including in soil, vegetation, water, animal feed, and many other places. It is also found in the intestines of both animals and humans.

*Listeria monocytogenes* can make people sick, and is especially dangerous to high-risk populations including newborns, pregnant women, the elderly and people with weakened immune systems. The disease it causes, called listeriosis, can be fatal in vulnerable people. That's why it is so important to control Listeria contamination in your meat plant.

The problem with *Listeria monocytogenes* is that it is more resistant than most disease-causing food-borne bacteria to freezing, drying, high salt levels, nitrite and acid. It can also grow at low temperatures and with low oxygen levels such as those found on vacuum packaged meats.

### WHERE CAN LISTERIA BE FOUND IN MY PLANT?

Listeria can be just about everywhere. There are many potential sources of contamination in a meat plant, including:

- **the environment:** airborne bacteria from disturbance of reservoirs (for example hose spray, condensation, disassembly of equipment, etc.)
- **employees:** clothing, gloves, boots or coming into direct contact with the product
- **equipment:** if it is improperly cleaned and sanitized
- **live animals** entering the plant for slaughter
- **raw products** and ingredients
- **solutions** used to chill or cure foods (for example brine solutions)
- **returned products**

In addition to these potential sources of contamination, there are "reservoirs" to watch for in the plant. Since Listeria needs moisture to grow, the following areas are potential reservoirs:

- floors and drains
- standing water
- ceilings and overhead pipes
- refrigeration and condensation units
- wet insulation
- overhead rails and trolleys
- wooden pallets
- cracked or pitted hoses, door seals, walls, inadequately sealed surface panels
- vacuum pumps, lines, hoses, rollers, switch boxes, motor housings
- ice makers, air filters, open bearings

### HOW DOES READY-TO-EAT MEAT BECOME CONTAMINATED WITH LISTERIA?

Raw foods that become contaminated with Listeria and then are properly processed should be free of Listeria. However, contamination may occur after cooking and before packaging.

Contamination can be caused through direct or indirect contact with something, including:

- slicers, dicers, saws, casing peelers
- shelves and racks
- tubs, containers
- hand tools, gloves, aprons,
- packaging materials
- tables
- conveyor belts
- sponges and brushes for cleaning
- employees

## HOW CAN I CONTROL LISTERIA CONTAMINATION IN MY PLANT?

You can control Listeria in your plant by ensuring that proper procedures are in place and are followed by staff at all times. Controlling Listeria contamination can be accomplished with proper:

- sanitation, including a pre-operational inspection
- handling of ready-to-eat products
- plant design and maintenance
- temperature control in all phases of handling and transportation

### Sanitation

Sanitation is critical for ensuring that ready-to-eat products do not become contaminated.

You should establish a written cleaning and sanitizing procedure for your plant as required by the Meat Regulation (Ontario Regulation 31/050) under the Food Safety and Quality Act, 2001.

Effective sanitation steps include:

- dry cleaning
- pre-rinsing equipment
- foaming and scrubbing
- cleaning walls, floors and drains
- rinsing
- visually inspecting of equipment
- sanitizing
- drying

Your meat inspector can help you develop a plan that is suited for your operation. In addition, cleaning product suppliers and sanitation professionals can help you select the right detergents and sanitizers.

The following are some sanitation and cleaning tips to control Listeria:

- **ensure** a thorough, independent pre-operational inspection is conducted before operations commence
- **sanitize** equipment and tools dedicated for use with ready-to-eat products before and after use; pay particular attention to meat slicing equipment: these should be disassembled and aggressively cleaned and sanitized, including all internal non-electronic parts, on a regular basis
- **clean** at the right frequency — determine frequency based on type of products and the risk involved
- **dry** after sanitation — keep floors free of standing water and as dry as possible

- **clean and maintain** floor drains to prevent drain back-up
- **empty, clean and sanitize** coolers regularly when there is no exposed ready-to-eat product present
- **clean** waste containers in ready-to-eat area during daily clean-up and only use these containers in that area
- **keep** hoses cleaned and off the floor after use
- **use** doorway sanitizers for re-entry in ready-to-eat areas
- **use** sanitizers that are most effective against Listeria — quaternary ammonia compounds (or quats) and products containing peracetic acid are the most effective (DO NOT use chlorine and acid-based detergents simultaneously since this could create potential chemical hazards to employees)
- **rotate** sanitizers periodically
- **alternate** alkaline-based detergents and acid-based detergents
- **don't allow** water from the floor splashing onto the product
- **pay** close attention to places that are difficult to clean
- **never place** equipment on the floor for cleaning or sanitizing

The following are additional steps you can take to further decrease the chance of contamination:

- **equip** ready-to-eat area with a dehumidifying cooling unit and drip pan for handling condensation
- **conduct** microbial testing after sanitation to determine the effectiveness of your sanitation program

### Handling of ready-to-eat products

You can reduce the chance of Listeria contamination of your product after processing by:

- **limiting** contacts between the product and surfaces and hands before it is packaged
- **ensuring** all staff have clean gloves, smocks, sleeves, aprons and waterproofed footwear
- **changing** gloves and/or **washing** hands thoroughly after touching an unclean surface
- **having** knives and other equipment dedicated for use only in ready-to-eat areas, and **sanitizing** them
- **instructing and training** new employees unfamiliar with proper handling
- **consider** the possibility of using a thermal treatment after a product has been packaged

## Plant design and maintenance

In ready-to-eat work areas and coolers:

- **eliminate or minimize** traffic flow between ready-to-eat and raw areas — staff should wash hands and change protective clothing when moving from one area to another
- **avoid** any chance of processed product coming in contact with tools, equipment or people that have been in contact with raw ingredients by dedicating equipment and tools for use with either ready-to-eat or raw products
- **store** raw products and ready-to-eat products in different areas
- **ensure** ceiling, floor and walls are smooth, sealed and moisture-free
- **filter** air supply and **keep** processing and storing areas under positive air pressure
- **install** light fixtures designed so as not to harbour dirt or moisture; **remove** difficult-to-clean overhead light fixtures
- **eliminate** condensation or, if that's not possible, **implement** measures to capture condensation, such as wiping it off and **redirect** products away from areas prone to condensation
- **install** equipment that is easy to clean
- **have** floors that slope towards drains to prevent accumulation of water
- **avoid** maintenance activities and repair work during work hours

## Proper temperature control

Ensure that the temperature of the product is well controlled during processing, storage and delivery to inhibit the growth of *Listeria*.

## WHAT SHOULD I DO IF TESTING SHOWS THAT I HAVE LISTERIA CONTAMINATION IN MY PLANT?

If *Listeria* is found, cleanup, sanitation and re-testing efforts should be intensified in the area where it was found. This can be done in consultation with your meat inspector.

OMAFRA, in consultation with the Canadian Food Inspection Agency and the Ministry of Health and Long-Term Care, will be assessing the risk to public health and, if necessary, a product recall may be initiated.

## THE FOLLOWING ARE USEFUL SOURCES OF INFORMATION:

Health Canada's Policy on *Listeria monocytogenes* in Ready-to-Eat Foods

[http://www.hc-sc.gc.ca/fn-an/alt\\_formats/hpfb-dgpsa/pdf/legislation/policy\\_listeria\\_monocytogenes\\_politique\\_toc-eng.pdf](http://www.hc-sc.gc.ca/fn-an/alt_formats/hpfb-dgpsa/pdf/legislation/policy_listeria_monocytogenes_politique_toc-eng.pdf)

Health Canada's Frequently Asked Questions

[http://www.hc-sc.gc.ca/fn-an/alt\\_formats/hpfb-dgpsa/pdf/legislation/listeria\\_faq-eng.pdf](http://www.hc-sc.gc.ca/fn-an/alt_formats/hpfb-dgpsa/pdf/legislation/listeria_faq-eng.pdf)

## REFERENCES

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Henning, Dr. William R. and Cutter, Dr. Catherine. Controlling *Listeria monocytogenes* in Small and Very Small Meat and Poultry Plants. The Pennsylvania State University, September 2001.

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