

WHY IS IT SO IMPORTANT TO MANAGE LISTERIA?

Listeria is found almost everywhere and the characteristics of the organism mean that it is almost impossible to guard against it. Given the resilience of these organisms, and their ability to survive for long periods in soil, on plants, water, surfaces and food, there is always a significant risk of contamination after processing that needs to be managed and minimised.

The serious effects of Listeriosis means that if food contamination occurs, multiple deaths will likely result – some overseas outbreaks have resulted in over a hundred deaths. Those most at risk are pregnant women and their foetuses, the elderly, immuno-compromised persons and those with underlying chronic health conditions. The number of these susceptible persons in the community is steadily increasing. Also, changes in food production such as ever larger production runs, more widespread distribution, more diverse supply chains and ever longer cold chains; changes in eating habits, such as less food preparation in the home and ever more ready to eat meals purchased that require minimal cooking mean that both the likelihood of Listeriosis and the severity of the consequences are increasing.

MANAGING LISTERIA

Listeria can easily enter your processing plant by a number ways, such as:

- On and in ingredients (both raw and treated).
- On inbound containers, such as crates, packaging and wrapping, even pallets.
- From the external environment, in the air, on dust or on vehicles.
- On personnel, on their shoes and clothing.
- On vermin and insects.

Once inside a plant, Listeria can attach itself and begin growing in the smallest of crevices; it grows in places you can see and places you can't see. Typically it will grow in places that are difficult to clean and sanitise, where food residues are likely to persist over a number of cleaning cycles. Food Standard 1.6.1 Microbiological Limits in Food is the standard that deals with *L. monocytogenes* and each jurisdiction in Australia has its own Listeria Control Guidelines, which need to be consulted. Each food processing facility must have its own Listeria Management Program that will be based on that jurisdiction's control guidelines and will focus on the individual products and processes of that factory and will include, such things as a Listeria-focused HACCP plan; a Listeria-focused staff training programme; total separation of raw and RTE products, production equipment and even personnel; effective cleaning and sanitising procedures; microbiological sampling regimes in line with Foodstd 1.6.1 and also recall procedures.

CRITICAL PLACES

L. monocytogenes can inhabit food processing facilities, including:

- Doors - rubber edge seals – door handles.
- Open bearings in interior of equipment, such as mincers, slicers, strippers. Peelers, casing equipment.
- Hollow implements.
- Rinse water from crates or from carcasses.
- Insulation on equipment.
- Conveyor systems (rollers, skirts, cleaners).
- Fibrous conveyor belts.
- Wherever two surfaces join or abut.

Of particular concern are the following:

- Connections, joins, corners, valves and blind connections in fluid lines, pipes and hoses that transport product or ingredients
- Floor drains.
- Standing water.
- Condensation on walls or equipment.
- Floors.
- Cooling water for cooked product.
- Cleaning lines for seafood.
- Trimming and filleting lines.
- Brine tanks.

FLOORS AND DRAINS

Failure to control *Listeria* on floors and in drains is a major concern since drains have been shown to be a key source of *Listeria* growth. Drains need to be located away from packing lines and (RTE) process areas. Cleaning drains with high-pressure water after washdown can result in spreading contaminants back over washed areas.

Drains should be cleaned without use of high pressure spraying, and any equipment used for cleaning drains should be only used for drains.

Drains need to be checked regularly that they are not blocked and that effluent flows freely. If a drain becomes blocked it should not be cleared while production is in process. High pressure water hoses should not be used to clear a blocked drain because this may result in the distribution of air-borne particles and pathogens. If a blockage occurs during production or packing, production should be paused and product removed from critical areas until the blockage has been removed and affected areas have been cleaned and disinfected.

GENERAL CLEANING AND SANITATION

Effective cleaning and sanitation is a critical aspect of controlling *Listeria* in your food processing environment - use of under strength or inappropriate cleaning chemicals detracts from their effectiveness.

Ideally you should have colour coded cleaning tools to make sure that the same tools are not used in different process areas thus inadvertently transporting pathogens from one part of the factory to another. Cleaning equipment will then be either stored in the area where it is to be used, or stored in colour-coded areas.

Cleaning equipment itself must be physically cleaned and disinfected after each use. Whenever possible, clean disassembled plant equipment in physically segregated in areas physically separated from open food-production areas.

Spray cleaning has been shown to potentially spread *Listeria*. High-pressure water jets should not be used during production or after equipment has been cleaned and sanitised.

The effectiveness of day-to-day cleaning, sanitising and/or disinfection procedures should be monitored and verified by visual inspection, and by ATP or microbial swabbing as appropriate. Rapid tests are now readily available.

BIOFILMS

Listeria biofilms are a major concern during cleaning and sanitising, because biofilm formation can provide protection to the pathogen from the biological and chemical agents used in cleaning. Also, dislodgement of the biofilm and detachment of the organisms from the biofilm can lead to contamination of product and formation of new biofilms.

The critical factors that have been identified as promoting biofilm growth in food processing equipment and environments; wetness, food particles, long periods between cleaning, insufficient cleaning, high pressure hoses spreading the organisms, and poor design of equipment. Biofilm management will be different in each facility and needs to be a collaboration between Operations Managers, Maintenance Managers, Cleaning Managers and QA Managers.