pma
AUSTRALIA + NEW ZEALAND

Listeria 101
and recognising the risk to your business

Deon Mahoney, Head of Food Safety, PMA A-NZ

Listeria 101

and recognising the risk to your business

Listeria monocytogenes are foodborne bacteria that can cause serious illness and in some cases death, particularly in vulnerable people.

When you talk to food safety experts, they will say that if you haven't found *L. monocytogenes* in your food processing and packing premises then you are probably not looking hard enough. This is because this organism is universally present in the environment, and it is both elusive and persistent. Understanding its quirks is the key to managing the risk to your consumers and your business.

Public health impact

Let's start with why this organism is important. The presence of *L. monocytogenes* in a ready-to-eat food puts vulnerable consumers at risk of serious illness (with a death rate of between 25-30%). Vulnerable persons include the very young, the elderly (typically >65), pregnant women, and those with a range of underlying health conditions (including those who are immunocompromised).

In 2020 there were 44 notified cases of listeriosis reported in Australia (the five year rolling average is 65 cases/annum). Although there is a low rate of illness in Australia due to *L. monocytogenes*, there is a high case fatality rate and substantial economic loss due to food recalls and impacts on consumer confidence.

Where do we find Listeria?

We can find *L. monocytogenes* in almost all environments. It lives in soil, water, silage, and rotting vegetation and may contaminate a wide range of raw foods and food processing environments.

Fortunately, it is easily destroyed by heat and is not resistant to sanitisers commonly used in the food industry (chlorine-based sanitisers, quaternary ammonium compounds, and peracetic acid). But it is a pervasive organism and can contaminate food at any stage of processing. It is also important to acknowledge that this organism is now being found in an ever-increasing range of ready-to-eat foodstuffs, including raw fruits and vegetables.

Keeping this organism out of food is the key to protecting public health and avoiding expensive recalls and damage to your brand – effectively keeping you in business.

Managing Listeria in food production and packing businesses

Understanding the sources and growth requirements of this complex organism are the keys to managing it in food production and processing environments. It may enter your facility on fresh fruits and vegetables, via soil, vermin, water, or workers. It then survives in cold, dark, wet environments, living in cool rooms, on equipment, on floors, and in drains. It may even become established in your facility, as a resident, and easily evade and escape cleaning and sanitation practices currently utilised to control and manage hygiene.

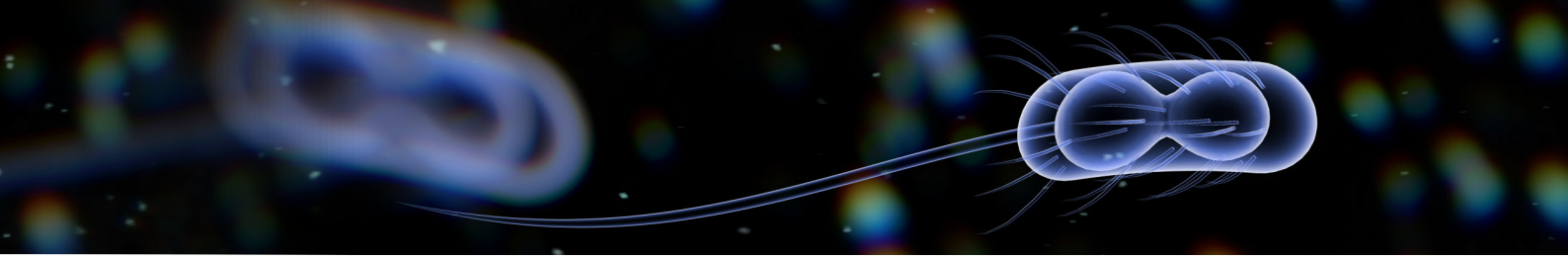
So, what should you be doing to protect your product from contamination and your business?

In the farm environment, *L. monocytogenes* may be found in high numbers in silage and baled hay. When this is fed to ruminants (cows, sheep, goats) it passes through the animal and is deposited in faeces. As the faeces dry, *L. monocytogenes* trapped within the dust can be transported by winds and contaminate crops such as leafy vegetables. Farmers need to be aware of the risk from dust spread by winds on hot days and modify irrigation practices and harvesting to minimise contamination risks.

Nonetheless it is impossible to eliminate *L. monocytogenes* from the growing environment for fruits and vegetables, so control of this organism involves careful attention to post-harvest conditions and practices. These include identifying contamination sources and niches and managing product handling and treatment with the goal of excluding this organism from the final product.

The first step is accepting that this pathogen may be both present on incoming raw materials and exist in your facility. So, control involves managing the efficiency of operations such as washing and cooling raw produce. It also involves establishing effective cleaning and sanitation programs to minimise cross-contamination, reduce surface attachments, and control the spread of this organism during processing and packing operations.

A major factor influencing product safety is the sanitary design/function of equipment in a processing and packing facility. Poorly designed and badly maintained equipment is difficult to clean and sanitise and this can provide harbourage sites for *L. monocytogenes*. Such problems are often encountered with older facilities and equipment, or where there is poor maintenance and a culture of quick fixes.



Contamination can also be spread through air and dust circulation as well as condensation which may drip onto food or food contact surfaces.

Environmental monitoring programs

The efficiency of your cleaning and sanitation practices needs to be verified by a comprehensive environmental monitoring program (EMP). An EMP involves collecting and testing swabs from food contact and non-food contact surfaces, with the goal of identifying potential sources of contamination.

This requires a thorough analysis of your processing and packing facility to identify appropriate sampling sites including niches where *L. monocytogenes* may hide. At the same time, you should develop appropriate corrective action if monitoring results indicate its presence. This includes stopping production, quarantining potentially contaminated produce, undertaking a root cause analysis, and then performing a deep clean of your facility.

Role of workers

Your workers also have a critical role in ensuring product safety. Their knowledge of the risk is critical, as is their commitment to adopt and follow good hygienic practices. It is essential that there is strong management focus on food safety, including the provision of effective training and support for all staff, and adequate resources to enable staff to do their job.

Summary

It is vitally important to manage the risk presented by *L. monocytogenes* during the production, processing, and packing of fresh fruit and vegetables.

Key strategies include:

- Recognising that this organism may be present on raw produce and in your facility.
- Ensuring good hygienic practices are in place within processing and packing facilities.
- Implement, maintain, and monitor an effective food safety program.
- Engaging staff to promote hygienic practices and supporting a positive food safety culture.

If you want more information, check out the resources under the PMA A-NZ Food Safety Pillar.

Resources

Controlling Listeria monocytogenes in the food processing environment.

NSW Government Food Authority, August 2019.
https://www.foodauthority.nsw.gov.au/sites/default/files/2020-01/controlling_listeria_monocytogenes_food_processing.pdf

Listeria monocytogenes: Guidance on environmental monitoring and corrective actions in at-risk foods.

Grocery Manufacturers Association, 2018.
https://forms.consumerbrandsassociation.org/forms/store/ProductFormPublic/LEMP

Listeria monocytogenes produce safety issue brief.

PMA, July 2017.
https://www.pma.com/-/media/pma-files/food-safety/listeria/lm-control-workshop/lm-policy-issue-brief-29-june-2017.pdf?la=en

Reducing Listeria contamination from salad vegetable farms.

Robert Premier Global F.S. Pty Ltd. Project Number: VG07079, July 2010.
https://ausveg.com.au/app/data/technical-insights/docs/VG07079.pdf

PMA Australia-New Zealand Ltd
201 / 838 Collins Street
Docklands VIC 3008

pma-anz.com