Food Authority

NSW GOVERNMENT

Food Safety Scheme Manual

Appendix 4: Environmental swabbing

A guide for conducting *Listeria* spp. environmental sampling

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Environmental sampling

Environmental swabs can be taken from Zone 1 or Zone 2 areas within the plant and can be taken over any size area with any suitable implement as long as the implement is sterile and clean.

The area to be swabbed should not contain any chemical residues that may inhibit or interfere with the growth of *Listeria* spp. If the presence of chemical residues is suspected, the sampling should either be cancelled, or the sample should be submitted along with a note outlining the suspected presence of residues.

Locations in the processing area most prone to contamination by *Listeria* spp. should be identified and procedures implemented to control the occurrence and spread of *Listeria* spp.

Equipment for environmental sampling

The aim in sampling contact surfaces is to extract as many bacteria as possible, so it is important to use absorptive materials such as sponge swabs or gauze squares, stick swabs or cotton buds, which are available in sterile packs. The location of the sampling site determines which material should be used. The surface area swabbed will vary according to the size of the area to be examined.

Most small to medium size businesses would only need the following material to take environmental samples:

- Sterile sponge swabs (preferably pre-moistened),
- Stick swabs, and
- A medium such as a neutralising broth that contains agents to neutralise sanitiser (10ml bottles should suffice).

The above items are available from distributors of microbiological testing equipment.

Sponge swabs

Use sponge swabs to sample tables, floors, door handles, seals on chiller doors, conveyors, air conditioning units and drip trays, and any other flat surfaces. Sponge swabs can also be used on slicers, dicers, packing machines and other processing equipment. If the surface is dry the sponge can be moistened with sterile peptone water. If the surface is already wet, such as a drip tray or a conveyor, it is best to rehydrate the sponge using the moisture on the surface being tested.

Sponge swabs allow large areas to be sampled with up to $5m^2$ of contact surface able to be sampled if both sides of the sponge are used. Sponge swabs can be rubbed quite vigorously over surfaces to remove particles of dust and organic material containing bacteria.

Stick Swabs

Stick swabs are used for sampling inside plant and equipment, for example fins on cooling units, motor housings, bearings on conveyors and inside hollow rollers. Stick swabs are not as absorptive as sponge swabs and can get overloaded if used to sample more than $100cm^2$. Stick swabs should be used carefully so as not to break them by rubbing too hard.

Rapid test kits

There are a number of test kits containing sponge or stick swabs available for in-house testing. Irrespective of which one is used, it is important to read and understand all the instructions pertaining to the testing procedure, storage and transport of samples.

Rapid test kits are only useful as a screening method. Any positive *Listeria* spp. test results must be confirmed using the reference test method at a laboratory.

Only rapid microbiological kits that have been approved by independent bodies such as The Association of Official Analytical Chemists (AOAC) shall be used. Businesses that do not use a laboratory must validate their test kits when testing commences and every twelve months thereafter by submitting comparative samples to a laboratory.

Swabbing techniques

Wherever possible swabs should be taken during full production or before equipment clean-up. Swabs must not be taken immediately after equipment has been cleaned as residues of detergents and sanitisers will reduce the viability of any *Listeria* present or interfere with the testing. If samples must be taken during non-production time, wait for several hours after cleaning or sanitising.

Using a sponge or gauze swab

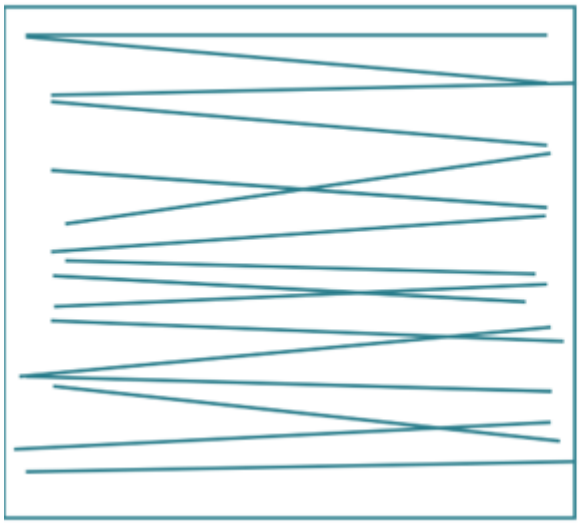
a. Sterile sponge swab or gauze can be used to swab large surface areas.
b. Aseptically open the individually wrapped sponge swab/gauze pad. Open a vial of rinse solution and moisten the sponge swab/gauze pad with 10ml of solution.
c. Holding the sponge swab/gauze pad aseptically with sterile gloves, swab the surface by vigorous rubbing. An area of several square metres can be effectively swabbed.
d. After sampling, aseptically place the swab/pad into a sterile container for transport.
e. All swabs should be held at 4°C during transportation.

Using an environmental stick swab

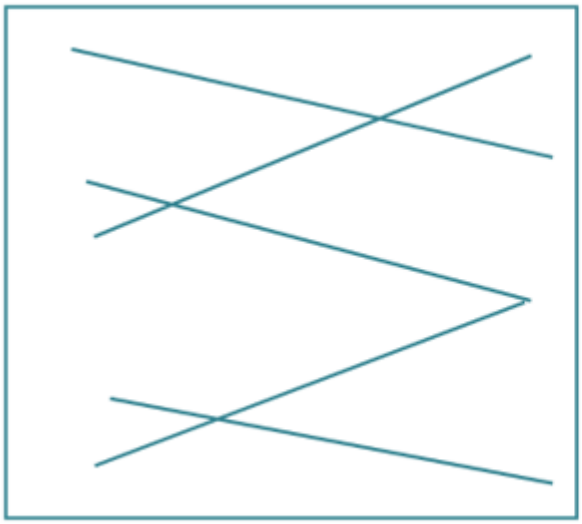
a. Use one jar of nutrient broth or 0.1% peptone per sampling. Open the broth jar and place lid, face up, on a clean bench.
b. Remove the swab from its tube and lightly touch the end of the swab to the surface of the solution. Do not immerse the swab completely in the solution.
c. Rub the swab slowly over/in the surface to be sampled. A surface area of up to 50cm^2 can be swabbed.
d. Return the swab to the transport medium container.
e. Use one jar of broth per sampling. Once you have taken all swabs needed discard the broth. Do not re-use.
f. All swabs should be held at 4°C during transportation.

To swab correctly, wipe the swab in a zig zag motion across the surface area. The zig zags should be close together to cover as much of the surface area as possible, as illustrated below. If using a cotton bud for a swab, the bud should be rotated as it is wiped across the area. Once the swab has been drawn over the surface area once, re-swab at a 90° angle to the original swab and place the cotton bud in the transport vessel.

Figure A4.1 The correct and incorrect swabbing techniques



Correct swabbing method
(up to 50cm^2)



Incorrect swabbing method

More information

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