

## **Fighting Food Manufacturing Fears: How to Control & Eliminate Listeria**

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When it comes to processing, preparing and manufacturing foods safely, plant managers understand the importance of diligent cleaning, disinfecting and sanitizing. Keeping an entire processing plant clean not only requires specific tools and procedures, but the proper understanding of how to eliminate food-borne pathogens and keep them under control.

By educating cleaning staff about these various pathogens and how to properly clean to control them, managers can have confidence that their food and customers will be safe.

### **Listeria: A lethal liability**

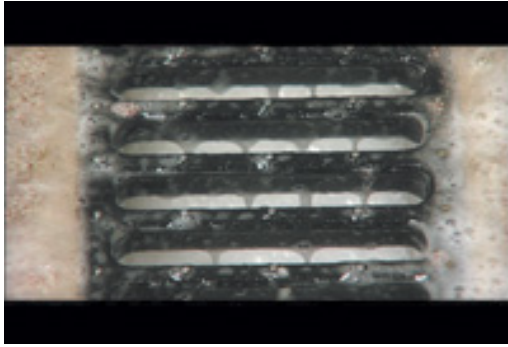
While there are numerous pathogens that affect the food manufacturing industry, one of the most dangerous food-borne pathogens that exists today is Listeria - a bacterium that when present in foods, yields no difference in taste, smell or appearance. Listeria is the cause of the illness listeriosis. Nearly everyone infected with listeriosis is hospitalized, while one in five people or 20 percent will die from the disease.



To help lower the risk for an outbreak, it is important to know that Listeria is a bacterium that can also grow at refrigeration temperatures. This means that if Listeria migrates onto food, it may continue to grow even if the food is held at refrigeration temperatures during shipping, storage, and display, thus increasing the potential for illness. A listeriosis outbreak is devastating, not only to the individuals that became ill but to the food processor that made that food, if the illness can be traced to their facility. Depending on the size of a facility and the size of the outbreak, a food processing plant could be forced to throw out all of their products that may be contaminated with Listeria. The processor may also have to issue a recall of contaminated or potentially contaminated food. The processor will also have to take steps to ensure that the Listeria is eliminated from the processing environment. This may require the processing facility to be shut down for hours or days while the facility is cleaned and processing equipment is disassembled as needed and deep cleaned. Plant closings can cost thousands to millions of dollars in lost time, decreased productivity and reputation damage. In addition to those losses there may be fines and litigation costs that can be even larger.

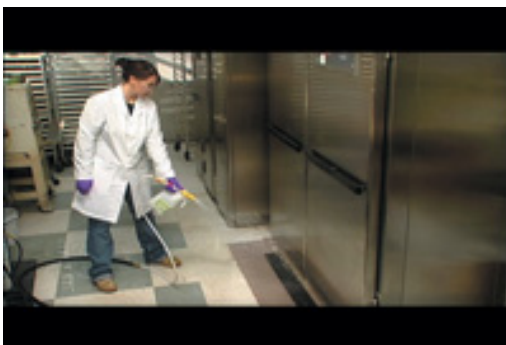
Listeria multiplies by feeding off of organic soils. These soils can be found in many places in a food processing facility including trapped inside of coolers, chillers and drains. Cleaning floor drains is a traditionally unpleasant and complex task that tends to be neglected by cleaning staff. Drains that go uncleaned or are cleaned poorly can become more unpleasant over time, making it almost certain that they will be ignored. As a result of this cycle of neglect, Listeria is frequently found in floor drains. Listeria present in drains may migrate from drains onto surfaces where food is processed and handled, thus contaminating the food itself. Therefore, before Listeria can successfully be controlled and eliminated in a food processing environment, it needs to be eliminated from harborage points like floor drains.

## Scrutinizing the spread



There are many ways Listeria can transfer from floor drains to food. People walking or rolling carts or other equipment over surfaces contaminated with Listeria, as well as high pressure cleaning or vigorous scrubbing, may aerosolize the organism. Equipment left or dropped on the drain, employees' clothing, hands, and gloves and pests such as fruit flies can all provide ways for Listeria to move from a non-food contact surface like a floor drain to food or a food contact surface.

**Aerosols** If cleaning staff use traditional drain-cleaning methods which typically include disassembling drains and brushing drain parts with brushes and pads, droplets of organic soil from the drain (possibly containing Listeria) can easily be released into the air. Once aerosolized, those droplets may settle onto food or food contact surfaces. A high pressure spray, as is often used for environmental cleaning in food processors, may also generate aerosols of soil from floor drains or other non-food contact surfaces. In addition, shoes, carts and other objects that move across the processing floor can also pick up droplets from the floor and send them to other areas of the facility or create aerosols as they splash through standing water. Equipment that is accidentally dropped or placed onto a drain can also pick up traces of Listeria and transfer them to food.



**Employees & clothing** Whether it is during food preparation or cleaning, Listeria can accidentally end up on workers' hands, gloves or protective clothing. If staff are not careful and do not take proper care in removing their soiled garments and washing their hands with hot soapy water after touching drains, they could potentially spread Listeria or other bacteria from one area to another, as well as onto food. Ironically, even the utensils used to clean drains might themselves become sources of contamination. Drain brushes, scrub pads, old cracked hoses,

and other cleaning utensils may spread microorganisms if they are not cleaned and sanitized after each use.

**Flies & cockroaches** Finally, drains that go uncleaned can easily become breeding grounds for fruit flies, drain flies and cockroaches who feed off of leftover food remains. These insects carry diseases and can spread bacteria from one area to another as they move about a processing plant.

## A three-step solution



To control Listeria in a food-processing environment, it is crucial to follow three critical steps -- identification, elimination and control.

**Identification** The first step towards controlling Listeria is to identify if a problem exists. Facilities that fall under the USDA Control of Listeria monocytogenes in Ready-to-Eat Meat and Poultry Products; Final Rule (9 CFR part 430) already are required to sample for Listeria at a frequency that varies depending on what is being manufactured, the size of the facility and the way that the processor is controlling Listeria. If a processor does not fall under the USDA regulations they may want to do environmental testing to determine if they have Listeria in their facilities. If environmental testing is conducted, non-food and food contact surfaces should be sampled. Areas such as floor and sink drains as well as conveyers, slicers, utensils, and other food contact surfaces should be individually swabbed. If the food processor does not have an internal laboratory capability to analyze the samples, swab kits are readily available that can be used to collect samples that are then sent to an independent laboratory for testing.

**Elimination** An important step in controlling Listeria or any pathogen is a good cleaning and sanitation (C&S) program. Although the C&S program needs to include

all parts of the food processing environment, because drains are so frequently contaminated with Listeria they need to receive special attention to control that organism. Cleaning and sanitation needs to be a two-step process that includes cleaning followed by sanitizing or disinfecting. Sanitizers alone will not remove organic soils, the food source for the organism and soils can interfere with sanitizers and prevent them from functioning. Therefore, Listeria will not be eliminated if the drains are not cleaned to thoroughly remove organic soils. The best type of cleaner to use is one that clings to any traces of soil and separates them from the sides of the drain. These soils can then be flushed down the drain. A cleaner that contains alkalinity and chlorine will have the best performance against soil containing fat and protein as is typically found in floor drains.



With the use of a properly formulated cleaner, brushes and pads are not required to clean drains. An effective cleanser can work with a no-touch cleaning process that can greatly reduce the risk aerosolizing soils from the drains. A no-touch procedure is also simple enough and removes enough of the unpleasantness associated with traditional drain cleaning that food processor employees are more likely to clean the drains than ignore them. A final characteristic that a good drain cleanser should possess is that it should not be harmful to the soft metals used to make drains, such as brass, and should be able to be used on any drain type.

**Control** After the drain has been cleaned and sanitized, the final step in keeping Listeria out of a food processing environment is to follow the above two steps regularly. Cleaning and sanitation of food and non-food contact surfaces needs to occur at least every day, and in some cases more frequently. To help train staff and offer reminders throughout the day, wall charts and instructions with easy-to-read images can help staff understand cleaning and hygiene practices. Finally, managers can design auditing surveys to keep track of all the cleaning practices required to make sure each area of concern is being properly attended to on a regular basis.

Listeria monocytogenes is a very dangerous food borne pathogen, and its presence in a food processing facility can lead to high costs, illness and even death. Plant managers need to be familiar with how Listeria contaminates food and pass this information along to their entire staff. With the proper education and the proper tools, staff should understand how to identify Listeria problem areas, reduce the risk of listeriosis with proper cleaners and cleaning practices, and keep their work environment controlled against future outbreaks.

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