3M MicroMessenger

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Test More Than Ever Before Without Increasing Your Budget!

Currently, there is a great deal of pressure for food manufacturers to increase *Listeria* testing—from regulators, from customers, from the public. At the same time, in order to remain competitive, there is tremendous pressure to keep testing costs down. As a result, food manufacturers are not always able to test as much as they would like. They may choose to test less often, allowing long periods of time without monitoring their environment for *Listeria*, or composite their samples, leaving them with vague answers in determining where the *Listeria* contamination is, if and when they get a positive result.

3M™ Petrifilm™ Environmental Listeria Plate

The 3M™ Petrifilm™ Environmental Listeria (EL) Plate is a solution to either of those two situations. The Petrifilm EL Plate is cost-effective, allowing customers to test more places more often. The Petrifilm EL Plate requires minimal training and has an easy-to-use procedure with fewer steps, minimizing variability and providing a more consistent test result. ●

3M™ Petrifilm™ Environmental Listeria Plate

A proven and cost-effective tool for the detection of environmental *Listeria*.

- Test more often without increasing your budget.
- Identify hot spots and contamination sources in the plant and track your progress against *Listeria* over time with quantitative results.
- Take action more quickly with rapid results that are ready in 29 ± 2 hours from sample collection.
- Reduce labor costs with an easy-to-use procedure and a familiar 3M™ Petrifilm™ Plate method.
- Safer method—no enrichment, therefore no transfers of enrichment broth are needed, less cross-contamination risks.

Now, with the availability and cost-effectiveness of the Petrifilm Environmental Listeria Plates, tracking and managing *Listeria* is easy!

Testing. Testing. Testing... and More Testing?

You bet. *Listeria* is back in the news and aggressive testing is needed to keep this pathogen in check or the consequences could be serious.

Listeriosis is an illness caused by the presence of *Listeria* in processed foods. This illness is potentially fatal to the elderly, children, fetuses or those with immune deficiencies. Food manufacturers are under public pressure to ensure their products reach the market free from *Listeria* contamination. That's not an easy task.

Listeria is extremely resilient. Although a warm, moist environment is especially hospitable to the pathogen, it can withstand dryness and extreme temperatures. It survives and grows slowly at refrigerated temperatures, thrives in a broad pH range and tolerates salt well. Not only that, it can be found in seemingly unexpected locations throughout the food facility and has several and varied sources. Healthy humans and animals can be carriers. How do you combat something as tenacious as this? With Sanitation Standard Operation Procedures (SSOPs), of course.

In 1996, the Pathogen Reduction/ Hazard Analysis and Critical Control Point (HAACP) Rule was issued by the USDA. Since then, plant managers must document their SSOPs, explicitly describing their planned pathogen control measures and their procedures for cleaning and sanitizing their facilities. Implementing a regular and thorough *Listeria* testing program can assist to make compliance with this mandate easier. So, how do you pursue this organism and ensure that you have adequate procedures for sanitation in place? You may be surprised by the where and when.

Wet operations are the obvious place to start. Surfaces and equipment that contact cooked products directly should be a primary focus — for example, rollers under conveyor belts, packaging equipment, slicer blades and cleaning cloths. From there, proceed to the rest of the environment — beyond the obvious. Such places as overhead pipes, floor drains, high-pressure

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hoses, floors and walls (especially in high-traffic areas), and even the tires on forklift trucks are some likely hosts for *Listeria*. That's the where. The when is regularly enough — before, during and after production operations — to provide enough data for a thorough analysis and an awareness of the plant's sanitation status.

Good Manufacturing Practices (GMPs) are essential for maintaining a high level of sanitation and thus reducing risk of *Listeria* in food facilities. Keeping raw and ready-to-eat areas separated can decrease risk of cross contamination, too. But the best weapon is to have an SSOP that includes frequent testing of the environment so that any presence of *Listeria* can be identified and eradicated as quickly as possible. ●

Customer Testimonial:

Microbac Saves Preparation Time, Provides Faster Results with 3M™ Petrifilm™ Environmental Listeria Plates

When Microbac Laboratories, Inc. needed a faster method for environmental *Listeria* testing, they chose 3M™ Petrifilm™ Environmental Listeria Plates.

As an independent testing laboratory, Microbac conducts both environmental and food safety testing for a variety of customers. "One of our long-standing clients needed *Listeria* testing results more quickly than the conventional USDA method that takes approximately four days," explained Mindy Suter, Microbiologist. "Their business is very important to us so we looked for an alternate method of testing."

"We had already been using 3M™ Petrifilm Plates. We like them and know they save time because we don't need to make media," she continued. "3M was the first place we went looking for a faster *Listeria* testing system and we selected Petrifilm Environmental Listeria Plates."

Critical Time Savings

Petrifilm Environmental Listeria Plates produce results in 29 ± 2 hours after sample collection. "The 3M system saves critical time because it provides results the next day," said Suter. "Using Petrifilm Environmental Listeria Plates also saves time because they eliminate the need to make media."

Quantitative Results, Safer to Use

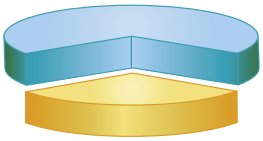
Petrifilm Environmental Listeria Plates detect the most prevalent environmental *Listeria* species, including *Listeria monocytogenes*. Rather than producing qualitative (positive/negative) results, Petrifilm Environmental Listeria Plates give quantitative results. This provides testing laboratories and their clients better information to use in the detection, management, and prevention of *Listeria*.

In addition, unlike traditional methods for *Listeria* testing, Petrifilm Environmental Listeria Plates do not require enrichment or culture transfers, so the risk of cross-contamination within a laboratory is reduced.

"Our client is sending us approximately 60 samples per month for testing so the total time savings is significant," said Suter. "They are satisfied with the rapid results that Petrifilm Environmental Listeria Plates produce and so are we."

Did you know . . .

1/3 of those customers who have started to use the



3M™ Petrifilm™ Environmental Listeria Plate have increased their level of environmental Listeria testing by an average of 50%, allowing them to better manage and control Listeria in their plants!

Starting or Expanding Your Environmental Monitoring Program

Creating or maintaining a comprehensive environmental monitoring program is becoming increasingly critical in the food industry today. Programs that effectively monitor and manage areas of microbiological risk in the plant environment can serve as "early warning systems" to identify and eliminate sources of potential contamination.

A good environmental monitoring program will include testing to verify that cleaning and sanitizing procedures are keeping indicator organisms, and any organism of particular concern, in check. Indicator organisms are used to show when conditions permit levels of troublesome organisms to flourish. Organisms of concern may be pathogens or may be spoilage organisms common to the particular food being produced by that plant. While important, testing for specific pathogens alone can be costly and may not be sufficient to determine the actual risk of product contamination.

Producers that use ATP bioluminescence equipment should also incorporate indicator testing into their programs. ATP results can be compromised by some sanitizers, are less reliable when fewer than 10^3 to 10^4 bacteria are present, and cannot differentiate living cells from dead cells. For more information on the importance of indicator testing in monitoring or verification programs, see Compendium of Methods for the Microbiological Examination of Foods, American Public Health Association, Chapter 3.

Because areas that do not come into direct contact with food may still be a source of contamination, a comprehensive plan to enhance product quality, shelf life and safety will include testing:

- Equipment and environment
- In-process sampling
- Finished product sampling

Sampling should be conducted on both food contact surfaces and nonfood contact surfaces. Areas to sample may include conveyor belts, sprayer heads, rollers, walls, drains or even air. There are many means of migration from a nonfood contact surface to food, including by aerosol or worker contact.

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Any areas on equipment that can hold moisture or food particles, such as cracks or crevices, may provide a haven for microbial contamination and should be considered potential trouble spots and closely monitored. Also, as equipment wears and ages, physical and chemical changes of exposed surfaces may require additional care and improved sanitation procedures.

Overall objectives for environmental monitoring programs may include:

- To find possible indicator or spoilage organisms and/or pathogens.
- To determine the effectiveness of cleaning and sanitizing procedures.
- To determine cleaning frequency.
- To reinforce employee training programs.

To meet these objectives, many processors are interested in implementing an environmental monitoring program but are unsure how to get started. There are several resources available to help design and implement a program that makes sense for your plant.

In addition, processors may wonder about standards for acceptable counts in their environmental testing program. Adequate cleaning and sanitizing should be sufficient to keep counts low.

The Compendium of Methods references the U.S. Public Health Service recommendation that "adequately cleaned and sanitized food service equipment have not more than 100 colonies per utensil"[1] and also states, "Generally, the level of microorganisms should not exceed more than a few colonies per sampling site."[1]

Because counts may vary depending on the operation or type of product being processed, it is difficult to give a one-size-fits-all standard. What may be "normal" for one product or process may not be "normal" for another. For instance, an incoming area for food which comes directly from a farm field may have higher counts than an area containing a highly processed frozen food. Both count levels may be acceptable based on the expected microbial load of the food being processed.

Programs that test and monitor a variety of environmental sources for microbial contamination can give the most comprehensive view of microbiological risks in the plant. Initially, a large number of tests will need to be performed to get a thorough understanding of the plant environment, cleaning effectiveness, and locations of any trouble spots.

Another purpose of gathering many test results is to determine a baseline. This will provide an understanding of what is normal for your process after adequate cleaning and sanitizing. Once a baseline is developed, it will be easier to track trends.

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Thank You for Participating in the 3M™ Petrifilm™ Environmental Listeria (EL) Plate Survey

We would like to thank our dear customers who participated in our telephone survey for the Petrifilm EL Plate. We are happy to report that customers gave the Petrifilm EL Plate an average score of 8.8 (out of a 10-point scale) for ease of use, time to result, accuracy, cost-benefits value and safety.

Starting or Expanding Your Environmental Monitoring Program cont.

The ability to track trends can be enhanced with available software programs. It may then be possible to reduce the amount of testing and move to a rotating schedule. However, it's important to continue frequent monitoring of any trouble spots identified during initial testing.

3M™ Quick Swab

3M Microbiology has many products that can simplify and streamline your environmental monitoring program. The 3M™ Quick Swab is one of the most efficient and cost-effective methods available for environmental swabbing. 3M™ Petrifilm™ Plates are easy to use, and offer consistent, reproducible results to help assess and monitor general microbial risks in the plant environment. Petrifilm Plates are available for aerobic plate count, *Enterobacteriaceae*, coliform, *Escherichia coli*, *Staphylococcus aureus*, and yeast and mold testing. ●

1 George M. Evancho, William H. Sveum, Lloyd J Moberg and Joseph F. Frank, "Microbiological Monitoring of the Food Processing Environment," Compendium of Methods for the Microbioogical Examination of Foods. Ed Frances Pouch Downes and Keith Ito. (Washington, DC: American Public Health Association, 2001) 26.

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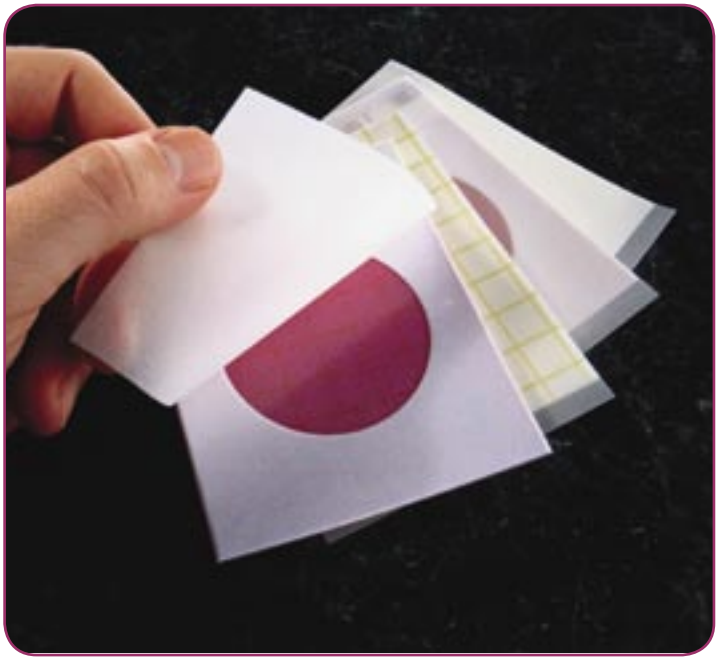
Enterobacteriaceae Testing is Becoming the New Global Standard

Enterobacteriaceae has long been accepted in Europe as a superior indicator organism for general sanitation by food processing plants. Whereas in the United States, coliforms have been used as the standard indicator of sanitation. Now *Enterobacteriaceae* testing is becoming the accepted global standard, and many multinational companies are converting post-processing coliform testing to this method.

The *Enterobacteriaceae* bacterial family presents a broader group of organisms, including coliforms plus glucose-fermenting non-coliforms such as *Salmonella*, *Shigella*, and *Yersinia*.



As a result, *Enterobacteriaceae* testing may provide a more comprehensive picture of potential post-processing contamination than detection of coliforms.

Enterobacteriaceae testing is an excellent sanitation indicator particularly in dry food processing environments where coliform organisms may not survive, but where non-coliform pathogenic organisms such as *Salmonella*, *Shigella*, and *Yersinia* could survive.

The 3M™ Petrifilm™ Enterobacteriaceae Count Plate combines the advantages of testing for *Enterobacteriaceae* with the convenience of 3M™ Petrifilm™ Plates. 3M developed this plate in specific response to requests from its international food processing customers who needed to standardize their operations to *Enterobacteriaceae* testing.

3M™ Petrifilm™ Enterbacteriaceae Count Plate

Petrifilm Enterobacteriaceae Count Plates offer a reliable and sample-ready system for enumerating this family of microorganisms after 24 hours of incubation. *Enterobacteriaceae* produce acid and/or gas from glucose during the metabolic fermentation that identifies their presence.

In the future, major multinational food processing companies that have accepted the global standard for *Enterobacteriaceae* will require their product suppliers to perform it as well. As a result, food processing companies are feeling the push to replace coliform with *Enterobacteriaceae* testing. This trend will likely continue. ●

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