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3 tips for better sample collection in food safety.

3M Food Safety

Food processors around the globe have transformed the way they are testing their products for foodborne pathogen contamination.

Approximately 48 million people in the U.S. get sick from a foodborne illness each year (Centers for Disease Control). Some of the more common causative agents include bacteria like *Campylobacter*, *Escherichia coli* (E. coli), *Listeria*, and *Salmonella*. In the interest of preventing these episodes as opposed to simply reacting to contaminations as they occur, the US Food Safety Modernization Act (FSMA) was implemented. As a result, food processors — not only in the United States, but around the globe — have transformed the way they are testing their products for foodborne pathogen contamination.

“...in order to develop prevention-based systems, you need data and other information to help identify hazards that need to be addressed and minimized.” (FDA)

Developing a prevention-based system is how you work to ensure your plant is operating within FSMA guidelines. This important data comes through the task of Sample Collection.

The standard process is to first determine a product or an environment that you want to test for contamination, then to conduct a sampling process.

The FDA details that there are three types of sampling that can be conducted:

- 1 Product sampling.**
The food product itself is tested directly.
- 2 Environmental sampling.**
The processing environment is tested. This includes areas such as surfaces, equipment, drains, and much more.
- 3 Emergency response sampling.**
A reaction to an outbreak to help determine the source of contamination. This is exactly the approach that FSMA implementation intended to stop, instead promoting a methodology of sampling and testing for prevention.

It's important to remember that how a sample is taken is critical to the outcome, and just like any scientific process, there are best practices that can lead to more accurate results.



Here are three steps you can take in your own plant for better sample collection.

Create a standardised plan.

It's not worth risking the safety of customers and the reputation of your plant. A purposeful, well thought out strategy is central to the success of an effective food safety testing program. Create an operations plan for how often you will test, where you will test, and the supplies you will use for a given area. This plan should meet the Hazard Analysis & Critical Control Points (HACCP) prerequisites for the process and also be validated. Finally, guidelines from relevant local authorities or those from export markets such as the USDA should also be followed.

Additional aspects to consider:

1

Timing.

If you're testing for a specific contaminant like *Listeria* species, it's important to know that the enrichment process will require 24-48 hours. Not waiting the proper amount of time for enrichment can result in an inaccurate result.

2

Transportation and temperature.

It's common to ship samples from the food plant to the laboratory to be analysed. Microbes can be fragile and should remain at refrigerated temperatures to maintain their viability and also minimise growth that may affect quantitative results.

Neutralize the sample.

Food processors regularly clean and sanitize the environment in which their products are produced. However the sanitizers that are routinely used in this process are designed to destroy the very microbes or foodborne pathogens that are being sought during environmental monitoring. The process of sampling from the environment can transfer the sanitizer onto the sampling device and then either kill or stress the collected microbes, so the actions of the sanitizer must be neutralized. It is critical to select, validate and use a suitable neutralizer for the sanitizing agents used in the facility. Common neutralizers used in the food industry include Dey-Engley Neutralizing Broth (D/E), Neutralizing Buffer (NB), Buffered Peptone Water (BPW) and Lethen Broth (LB).

An action to consider during the design of an environmental monitoring plan is the switching of sanitizers to prevent the build-up of resistant organisms in the facility and the subsequent need to ensure the selected neutralizer is still effective. The FDA, USDA, and ISO provide recommendations on which neutralizers to use under different conditions.



Choose the right sampling device.

Quality sampling starts with selecting quality tools. A frequent myth within the topic of environmental monitoring and food safety sample collection is the simple idea that a larger sampling device is better. However, it has been shown that increasing the quantity of samples and individual testing zones, combined with selecting the right size sampling tool for those areas is what provides the best chances for effective recovery.

An environmental monitoring program uses different sampling devices, like cellulose sponges and swabs. Therefore, when sampling:

1

Small and defined surface areas.

Corners, hard-to-reach areas or when testing for quantitative results are best sampled using a swab. Swabs useful for sampling these types of small, defined surface areas include:

- ▶ 3M™ Enviro Swabs
- ▶ 3M™ Swab-Samplers
- ▶ 3M™ Quick Swabs



2

Large and undefined surface areas.

When testing larger easily accessible areas such as food contact surfaces, floors and work benches, it is recommended to use a larger device such as:

- ▶ 3M™ Hydrated-Sponges
- ▶ 3M™ Sponge-Stick

The 3M Sponge-Stick allows sampling without touching the sponge, increasing efficiency and reducing the risk of contamination.



The products listed above are available with a variety of neutralizing formulations to suit various sanitizers and meet regulatory or industry requirements. 3M Sample Collection products provide you with the tools you need to safely collect and transport your samples for testing.

In the food processing industry, no plant is immune to contamination. Microorganisms are generally introduced into the food environment through raw materials, pests, air, water, and employees, and can survive in food processing and handling environments. Therefore, environmental and product sampling are important procedures to verify the sources of contamination and the adequacy of the sanitation process. Implementing an effective sample collection protocol in your plant can reduce errors, lower operational costs, and most importantly, provide the firm conviction that food products being manufactured are made under sanitary conditions.

Consistency from the start.

Better testing begins with better samples – and better samples are obtained when you use the best collection tools. 3M™ Sample Collection, Preparation and Processing solutions provide quality products for every step of your process. Convenient, ready-to-use products. Consistent, reliable results. Every time.



Need more information on the total 3M Food Safety testing solution? Simply reach out and we'll be happy to help you with any questions you have.

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