



# FACT SHEET

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## ENVIRONMENTAL MONITORING

### INTRODUCTION

For every food manufacturer of open and ready-to-eat products, it's important to have an effective Environmental Monitoring program in place as part of their Quality and Food Safety program. When implemented effectively, pathogens, food spoilage organisms, allergens and sanitation deficiencies can be monitored and controlled by the presence or absence of indicator proteins or microorganisms in the environment. Environmental Monitoring can indicate a failure in one or more co-existing pre-requisite programs in place, such as allergen control, cleaning and sanitation, pest control and sanitary maintenance. It can also indicate a state of control.

Environmental Monitoring can use many different indicator tests, for example - ATP swabbing, total plate count (swabbing, settle plates), pathogen testing (swabbing, rapid testing), allergen testing, air sampling (food spoilage organisms) and rinse water testing (indicator organisms) to monitor and identify issues. Monitoring considers all areas of the production area and facility. These areas are classified into the following four zones:

Zone	Definition
<b>Zone 1</b>	Direct food contact surfaces post lethal processing, e.g. fillers, knives, screens, food contact conveyors, hoppers, food contact utensils, etc.
<b>Zone 2</b>	Non-food contact surfaces adjacent to food and food contact surfaces, e.g. production equipment, non-food contact conveyors, utility tables, control panels, aprons, etc.
<b>Zone 3</b>	Non-food contact surfaces located in or near the production area, e.g. floors, walls, drains, doors, hoses, carts, etc.
<b>Zone 4</b>	Non-food contact surfaces located remotely outside of the production areas, e.g. cafeteria, warehouse areas, maintenance areas, locker room, office areas, etc.

By looking at all areas, all daily activities that have the potential to introduce environmental contaminants into the production area and finished product are considered, which enables identification and resolution of any issues.



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## IMPLEMENTING AN ENVIRONMENTAL MONITORING PROGRAM

- 1. Hazard Identification** – Complete an onsite review of the facility, creating a list of sample sites for each area and the zone where the site is included. If there is uncertainty on which zone a site falls under, complete a risk analysis, taking into account the risk level of the zone (zone 1 – high, zone 2 and 3 – medium, zone 4 – low) and the cleanability of the site/area (easy to clean – low, harder to clean – medium, difficult to clean – high) to help determine the appropriate zone. A visual risk matrix can be developed to assist with this.
- 2. Determine the type of sampling and testing to be completed** – Take into consideration the target organisms for the site and area to be sampled, determine which type of sampling will indicate whether or not the site/area is satisfactory or a risk.
- 3. Set a frequency for sampling and testing** – Frequency of sampling is essential to be adequate to manage risk to the consumer/customer; this may or may not be set by regulatory or third parties. Include reasons and supporting documentation for frequencies set.
- 4. Record keeping** – Keep a record of all environmental monitoring results, actions taken, etc. Ensure results are communicated as appropriate, evaluated as satisfactory or unsatisfactory and monitored.
- 5. Perform a trend analysis for results on a regular basis** – A trend analysis assists in visually identifying increases in indicators that an issue is arising, trends for certain areas/fillers/zones, seasonal trends, etc.
- 6. Corrective Actions** – Implement a corrective action plan for non-conforming test results (e.g. complete root cause analysis, including immediate and preventative measures).

## THINGS TO CONSIDER

- Complete a baseline assessment to learn the current environmental status of the facility. This will also assist with setting limits for a pass or fail sampling completed during routine production and assist in determining the frequency in which sampling should take place. For example, if the baseline assessment indicates control or satisfactory results, sampling could take place on a monthly frequency, if the baseline assessment indicates unsatisfactory results, the sampling should be completed on a more frequent basis along with a corrective action plan.

- It's important to re-evaluate the Environmental Monitoring Program annually or when there are:
  - » Product failures (e.g. product with positive results)
  - » Failures to identify and address significant issues (e.g. results identifying positive results which the site program did not, re-occurring and unresolved positive results)
  - » Changes in production and sanitation conditions, process flow, new equipment
  - » Changes in regulatory or third-party requirements
  - » New developments in scientific information
  - » Consistently negative results (consider whether the correct parts of the facility are being tested, is the testing being completed correctly? Is the appropriate test being performed?)
- Rotate sample site schedules at a minimum annually to ensure the environmental conditions are captured throughout different seasons (e.g. summer, winter, high and low production volumes, etc.) to help identify and manage any risks that may go unidentified.

It's important to implement an effective Environmental Monitoring Program to be proactive, to monitor and control pathogens, food spoilage organisms, allergens and sanitation deficiencies. What is unknown could have a negative impact on the food safety of the finished product and the health of consumers.

## FOR MORE INFORMATION CONTACT:

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## RESOURCES

3M Food Safety (2019). 3M Environmental Monitoring Handbook. Retrieved June 8, 2020 from [www.3M.com/EnvironmentalMonitoring](http://www.3M.com/EnvironmentalMonitoring)

Health Canada (2011). Policy on Listeria monocytogenes in Ready-to-Eat Foods. Retrieved June 8, 2020 from <https://www.canada.ca/en/health-canada/services/food-nutrition/legislation-guidelines/policies/policy-listeria-monocytogenes-ready-eat-foods-2011.html>