Environmental monitoring questions for food processors

Proactive, preventative, environmental monitoring can often be overlooked in food processing facilities. Shifting priorities from finished product testing to a more strategic approach, can identify contamination sources and enhance overall food safety and quality.

by Dr Martin Wiedmann, Gellert Family Professor in Food Safety, Cornell University. www.3M.com/foodsafety

Following a series of environmental monitoring webinars, participants had the opportunity to attend a question and answer session. Some of the common questions are listed here, along with the answers.

Q. What is the best way to define limits for some of the various types of tests used in environmental monitoring, such as ATP testing and pathogen testing?
A. Setting goals for environmental monitoring programmes can be challenging; unlike finished product, there are typically no regulatory requirements with specific goals or limits. Therefore, individual facilities will need to set their own environmental monitoring goals to drive improvement. While 100% negative results would be the ideal, this may not be feasible and does not lend itself to continuous improvement. For example:

- For ATP testing, starting limits will be set based on initial guidance, for example, from the test manufacturer. As the facility and equipment is monitored, continuous improvement targets should be set below the starting limits.
- For pathogen testing, the overall objective is to reduce the number of positives. This will depend on zones within the facility; for example, in zone 1 (food contact surfaces), the ultimate goal would be 0%, while the goal may be higher in other zones.

With the aim of continuous improvement, limits will change over time and become more stringent, and triggers for corrective actions will also get more stringent.

Q. What is the relevance of allergen testing as part of an environmental monitoring and control programme?
A. Allergen testing is part of a comprehensive environmental programme. Testing for allergens should occur if there are allergens present in the food product being manufactured, or if contamination from the environmental or cross-contact are possible. A robust allergen testing programme can be used to verify and validate cleaning and sanitation procedures.

Good Manufacturing Practice and many retailers also require allergen preventive controls, and therefore verification activities such as environmental monitoring are needed to ensure the preventive controls are consistently implemented.

Q. How stringent should an environmental monitoring programme be for low risk food, such as raw vegetables?
A. First, perform a risk assessment to determine if the food is low or high-risk.

It is also important to remember that environmental monitoring programmes manage not only food safety risks, but also business risks. For example, if a company exports product to the USA and it is tested positive for listeria or Listeria monocytogenes, there is a huge business issue even if illness is not caused.

In summary, perform a risk assessment, considering both food safety and business risks. Based on these factors, as well as how customers may use the food product, decide the optimum level of environmental testing that is appropriate.

Q. Is environmental sampling for listeria required in plants that produce non-ready-to-eat (RTE) foods?
A. While the food safety risk for listeria in non-RTE foods may be considered low due to the intended use of the food, some environmental testing should still be performed.

The scale of the programme – number of samples and frequency of collection – should be determined using a risk-based approach considering the type of food.

For example:

- For food products that are contained in a bag labelled with cooking instructions, such as frozen vegetables. In this case, the cooking instructions are validated to kill listeria, so one can argue that environmental monitoring is not needed in this case.

However, food safety and business risks still exist as you cannot ensure consumers will use this product according to instructions. For example, the food could be used to create smoothies and, if contaminated with Listeria monocytogenes, represents a public health hazard. A listeria environmental monitoring programme, while not necessarily at the same stringency as a high-risk food, is still needed.

- For raw meats, for example raw chicken and raw beef meat, the risk is typically low.

However, customers in certain markets may require the finished product to be tested for listeria. In this case, testing for listeria in the environment should also be performed to ensure safe processing conditions.

We are also seeing a shift driven by regulatory agencies – a raw meat product contaminated with listeria might still fail internal approvals even if the final product is to be cooked.

Q. Root-cause analysis (RCA) was designed to identify the true cause of contamination to prevent it from reoccurring. Is there a baseline for how frequently the contamination must occur for it to be considered an event that requires RCA?
A. It is important to recognise that you do not need persistent contamination to use RCA. A single positive in a zone 1 can and should trigger a RCA.

For example, if a facility that has not had a positive result in a specific room for three to four weeks finds a single positive, this should trigger a RCA.

Events that trigger an RCA can include:

- More than three linked positives – such as two consecutive positives from a site (subsequent samplings) and one positive from an environmental swab.
- Sporadic positives from the same site, for example three consecutive positives from the same site over six months.
- If overall frequency of positives increases without it being a specific site – from 1% positives, to 2%, to 3%.

Initiate the RCA as soon as possible. As your team becomes familiar with managing RCAs, closer inspection of the system will be possible with the opportunity to discover important factors influencing contamination. ■