Industry Perspective on Environmental Monitoring for *Listeria*

This document was prepared based on the dialogue within round table discussions of the United Fresh Food Safety & Technology Council held January 10, 2017.

Why is environmental monitoring important?

- Environmental monitoring can serve as a verification of sanitation within a facility
- Monitoring for pathogens can help identify a potential harborage so that it can be eradicated before product is contaminated

What should be tested for as part of an environmental monitoring program?

- Generally, the presence of *Listeria spp.* is evaluated, as an indicator for *L. monocytogenes*
- Some companies test for ATP as an indicator of general sanitation, although it only detects the presence or organic material and is not specific for bacteria
- Aerobic or total plate count is also sometimes used as a general hygiene indicator
- Environmental monitoring may take a different form in dry facilities that don't extensively handle product, such as distribution centers. Testing for generic *E. coli, Salmonella* or other organisms is performed by some members
- Testing directly for *LM* vs. testing for *Listeria spp*. may prevent unnecessary follow up cleaning efforts (positive for *Listeria spp*. does not necessarily mean positive for *LM*).

How often should swabs be taken? From where?

- Each facility needs to decide the frequency and the locations of the swabs, based on the risk analysis of the environment. There is a recommendation by FDA on this subject in the "Draft Guidance for *Listeria*". (www.fda.gov/fsma)
- The frequency of testing is lower in facilities that are not processing product (e.g., cooling operations, packing houses) compared to fresh-cut facilities
- The use of software to randomly select sites for sampling and track results is not widely used in the produce industry; only a few members were familiar with or used these tools

Should zone 1 be tested?

- Currently industry rarely tests zone 1 product contact surfaces
    - Note: subsequent to this meeting FDA released draft guidance on testing for *Listeria* which may change industry practice.
- When zone 1 is tested, some use a designated raw lot, production is performed under control and finished product is put on hold without distribution, until the results are known
- One supplier reported taking 10-20 % of 300 swabs per week from zone 1 during pre-op.

When should swabs be taken?

- Taking samples during pre-op is most common

- Very few companies take samples during production and when they do it does not include zone 1
- Some take swabs mid-shift
    - Note: FDA's guidance document recommends that swabs be taken several hours into production

What are common corrective action procedures?

- As a corrective action, generally enhanced sanitation is initiated to achieve 3 consecutive negative results
- Increasing sampling around the area where a positive is found is a leading practice. Vectoring out in 3 dimensions, possibly to include zone 1 surfaces, should be done as part of an investigation
- As a corrective action or as a preventive measure, periodic deep cleaning of equipment including disassembly on a scheduled basis can be an effective part of a sanitation program
- Sometimes the investigation reveals that issues extend beyond sanitation deficiencies, including poorly designed equipment, facility/ infrastructure deficiencies, unusual events such as construction, etc.
- Some view documenting positive results as exposing the company for future scrutiny

Should speciation or whole genome sequencing be considered?

- Almost all test for *Listeria* but do not determine if it is *monocytogenes*
- Industry in general does not do WGS. No benefit is being recognized in performing WGS, however, we are aware that regulatory agencies are aggressively using it.