

Hurdle Approach to Food Safety

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A hurdle race is defined as a race in which obstacles are placed at intervals along the track that the runners must jump over on their way the finish line. The Pathogen Control Equation defines 6 of these hurdles that ice cream manufacturers must put in place so that environmental pathogens cannot “finish the race”.

A race we (ice cream manufacturers) want to make impossible to win!! The “Pathogen Control Equation” has become a food safety mainstay and is widely accepted across the food industry. The pathogen control model is a holistic and disciplined approach to model a combination of preventive plans (i.e. hurdles) that reduce risk.

The goal is to avoid failures in environmental pathogen control programs that otherwise may result in pathogen-related recalls and potential foodborne illness outbreaks.

Hurdle #1: Separate Raw from Ready-to-Eat (RTE) It is a well-accepted fact that there is a greater likelihood of pathogens in uncontrolled or raw manufacturing areas than in controlled production or RTE areas. Therefore, the raw mix making area must be separate from the RTE ice cream production area. Controlling the flow of personnel, supplies and equipment reduces the potential for cross-contamination.

Additionally, since we add many, sweet, rich, and flavorful variegates to our ice cream we need to ensure they are pathogen free.

Hurdle #2: Compliance to Good Manufacturing Practices (GMPs) Following GMPs is one of the most fundamental expectations in the food industry, yet it can be one of the most difficult to reach 100% compliance. The basis of GMP compliance is establishing a culture that has a firm grasp on food safety.

Employees must understand why it is important to follow personal practices (e.g. washing your hands and/or changing gloves) to maintain food safety as well as those practices they must follow during the production of the product (e.g. removal of stagnant product during product production).

Hurdle #3: Controlled Floor Conditions A dairy production facility can be wet from manufacturing conditions which creates a prime environment for supporting the growth of pathogenic bacteria. Additionally, floors with dairy brick, epoxy or tile may also provide harborage areas where organisms can grow. Therefore, maintaining floors in good condition can be one of those “high hurdles” in the mitigation steps.

Hurdle #4: Sanitary Equipment and Facility Design: Just as with floor maintenance, equipment and facility design is an important “high hurdle” in environmental pathogen control. Equipment that is difficult to clean is equipment that will not get properly cleaned resulting in microbial harborage. Equipment must be fully accessible (i.e. easy to disassemble) to ensure a thorough cleaning.

Hurdle #5: Effective Sanitation Procedures and Controls: This hurdle is one that is generally recognized as a “preventive control” within your food safety plan. Effective cleaning procedures are critical to maintaining a clean ice cream production facility. This is a critical area of focus where attention to detail is imperative; well written procedures instructing and inspecting of the sanitation process ensures microbial harborage areas are controlled.

The frequency and level of cleaning may vary, depending upon the area of production; e.g. high-hygiene areas (area where finished product is produced and exposed to the environment) is deep cleaned daily while a storage area is cleaned weekly.

Hurdle #6: Environmental Monitoring Environmental Monitoring Program (EMP) is not necessarily a hurdle for control, rather is a verification that all the previous hurdles have been effective. A robust monitoring program is one that aggressively seeks out environmental pathogen harborage sites so that we get to know the environment of your production facility and destroy/eliminate those sites.

Monitoring is one aspect of this hurdle; the other is corrective and preventive actions. When a positive result is detected (i.e. indicator or pathogen is detected), actions must be taken in a timely manner to prevent certain organisms from establishing a biofilm or niche which will be more difficult to eliminate. Additionally, documentation of these actions is an important component of the EMP as this allows one to tell their story of actions taken when you have positives.

Summary: Environmental pathogens such as *Listeria monocytogenes* are ubiquitous (i.e. found everywhere in the environment) and can easily contaminate our ice cream production facilities attempting to set up permanent residency.

The Pathogen Control Equation provides a holistic hurdle approach. When applied, it controls the potential for environmental pathogen cross contamination into our ice cream products and allow us to bring joy to our customer’s everyday life because of their love of ice cream.

Be sure to look at attending the Food Safety Planning workshop before the NICRA convention on the 4th of November in Charleston South Carolina. You can register on this link [You can also see the full agenda on the Food Safety tab on the \[www.nicra.org\]\(http://www.nicra.org\) website.](#)