

Time and Temperature Control

Listeria monocytogenes (*Lm*) is unlike most other foodborne pathogens due to its ability to multiply under refrigeration temperatures. *Lm* can grow in temperatures ranging from 31° F to 113°F. The growth rate is optimum between 70° F and 100° F and slows down considerably at lower temperature such as those used in refrigeration. It is important to get foods cold quickly and to keep them cold. If low levels of *Lm* are accidentally present in a ready to eat (RTE) food item that supports growth, over time the organism can multiply to higher numbers and pose a significant risk of illness. A system of controls should be in place to limit the cold storage time for foods that support growth of *L. monocytogenes*.

Temperature Control for Receiving

Temperature checks should be made of refrigerated deliveries. Frozen food should be solidly frozen and cold food should be 41° F or below, unless a higher temperature is permitted under other laws. Report any high temperature problems to management immediately.

Consider using temperature -monitoring devices or time-temperature indicators (TTI) to ensure proper temperature control during shipment and storage.

Minimize the time that delivered food remains un-refrigerated. Potentially hazardous foods should be placed into cold storage immediately. The goal is to ensure that food products remain at temperatures that minimize growth of pathogens such as *Lm*.

Refrigeration and Freezer Units

All refrigeration units should have adequate capacity and sufficient air circulation to maintain product temperatures of 41° F or below. Freezers should be capable of keeping foods frozen solid.

Cold holding units for storage and display must be equipped with at least one permanently affixed accurate thermometer that is located to allow for easy viewing by food employees. The temperature of the warmest part of the refrigeration unit should be monitored. Larger food establishments might consider using temperature recording devices and refrigeration alarm systems.

Cold holding units should not be loaded beyond the designated display load line, nor should vents be blocked to prevent proper air- flow in the cold holding units. Do not alter any shelving without verifying that proper air- flow and temperatures are not adversely affected.

Keep all refrigerated units and freezer doors closed whenever possible. Keeping the doors open will result in higher temperatures and increase the potential for growth of *Lm*.

Improper sanitation/maintenance, accent lighting, warm air currents within the store and loading the case with warm product may affect the ability to maintain proper product temperatures within refrigerated cases.

Time/Temperature Controls

During cold storage, refrigerated units must be set low enough to keep potentially hazardous foods at temperatures of 41° F or below.

Maintain a product rotation system based on the manufacturer's date code or recommended shelf life, using the product with the shortest remaining shelf life first.

FDA guidelines recommend that potentially hazardous foods that require time/temperature control for safety be date marked with a storage time of 7 days or less once opened or prepared in a food establishment and is stored at 41° F or below for more than 24 hours. (See the FDA Food Code Section 3-501.17) **Check with your state or local regulatory authority for specific requirements on Date Marking.**

Minimize the time refrigerated foods are kept at room temperature. For temperature control during preparation, work with only small batches, and limit the time potentially hazardous foods are held at room temperature in order to minimize growth of pathogens such as *L. m.*

FDA guidelines allow for a working supply of potentially hazardous food (PHF) that is displayed or held for service for immediate consumption to be safely kept out of temperature control for a limited time. The food must be marked with the time it was removed from temperature control and cooked or discarded within 4 hours. Written procedures must be maintained in the food establishment. (See the FDA Food Code Section 3-501.19) **Check with your state or local regulatory authority for specific requirements for the use of Time as a Public Health Control.**

Active Managerial Controls

A system should be in place to monitor temperatures along every step in the process using accurate and appropriate temperature measuring devices. Follow FDA Food Code guidelines for proper cold holding, thawing, cooking, hot holding and cooling requirements. The system should include taking corrective actions immediately when foods exceed required temperatures. Consider developing written Standard Operating Procedures (SOP's) for these activities. The SOP's can be useful to train all food employees.