



Food Safety and Inspection Service
U.S. DEPARTMENT OF AGRICULTURE



Sanitation in the RTE Environment

Objectives

Upon completion of this training, you will be able to:

1. Identify why establishments producing RTE products have a special responsibility for adequate sanitation in the RTE processing environment.
2. Describe effective methods of sanitation in RTE processing environments.
3. Identify potential sanitation issues in RTE processing environments.

Agenda

- Introduction
- *Listeria monocytogenes (Lm)* in the Establishment Environment
- Sanitation Programs to Prevent *Lm*
- Assessing the Effectiveness of Sanitation Programs
- Relationship Between Sanitation and HACCP in RTE Production Processes
- Workshop

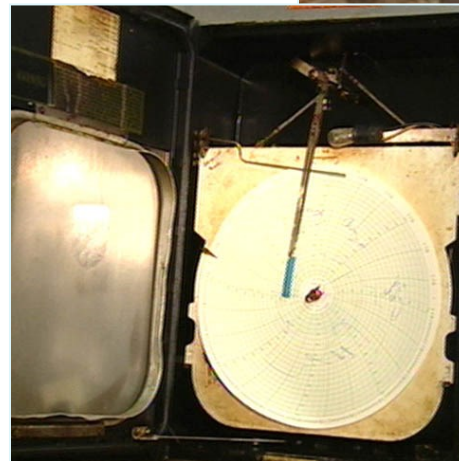
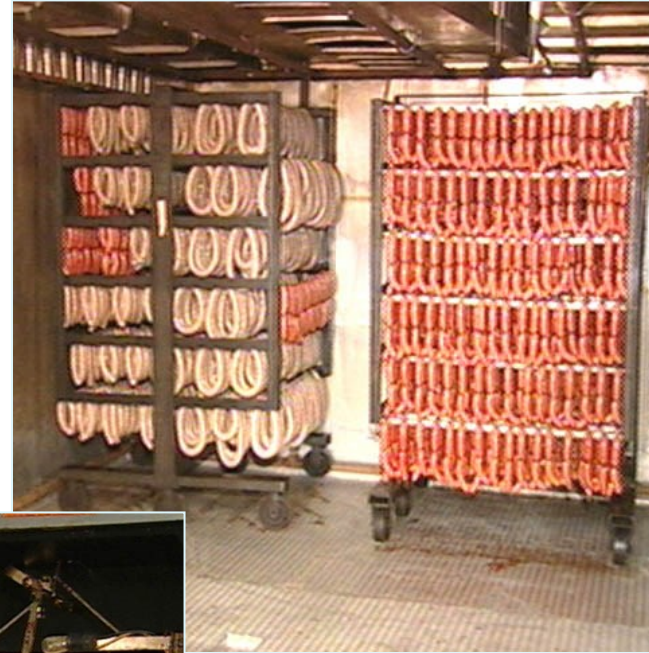
Introduction

Sanitation is essential to production of safe RTE products



Terminology

- Ready-to-eat
- Lethality



Terminology

- Post-lethality exposure
- Cross-contamination



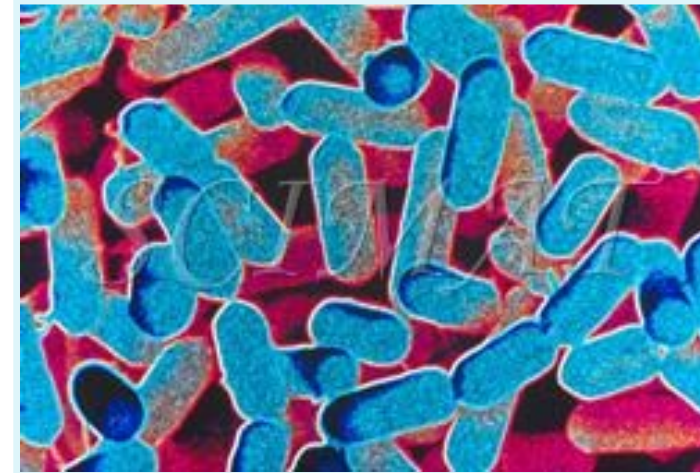
Terminology

- Consumed as packaged
- Risk of foodborne illness



Listeria Monocytogenes

- Potentially fatal
- High risk populations
- Sources:
 - Healthy animals
 - Soil
 - Water
 - Establishment environment



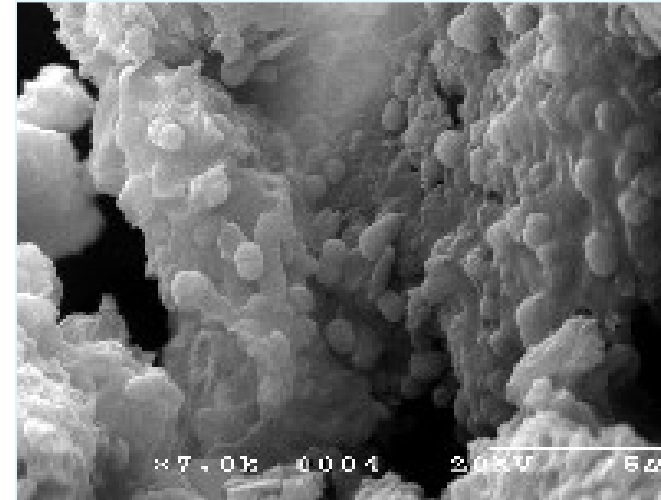
Listeria Monocytogenes

- Spread by direct food contact with contaminated surface
- Grows in cool, damp environments
- Product debris provides nutrients
- Biofilms



Bacteria Biofilms

- Thin layer of microorganisms
- Glued together
- Adhere to surfaces
- Difficult to remove
- Protected from sanitizers



University of Utah

Lm in Finished Products

- Hardy, can survive in refrigerated packaged product
- Resists salt, nitrite, acid
- Illnesses and deaths linked to products adulterated with *Lm*
- Adulteration occurred through cross-contamination from environmental sources after cooking



Pop Quiz

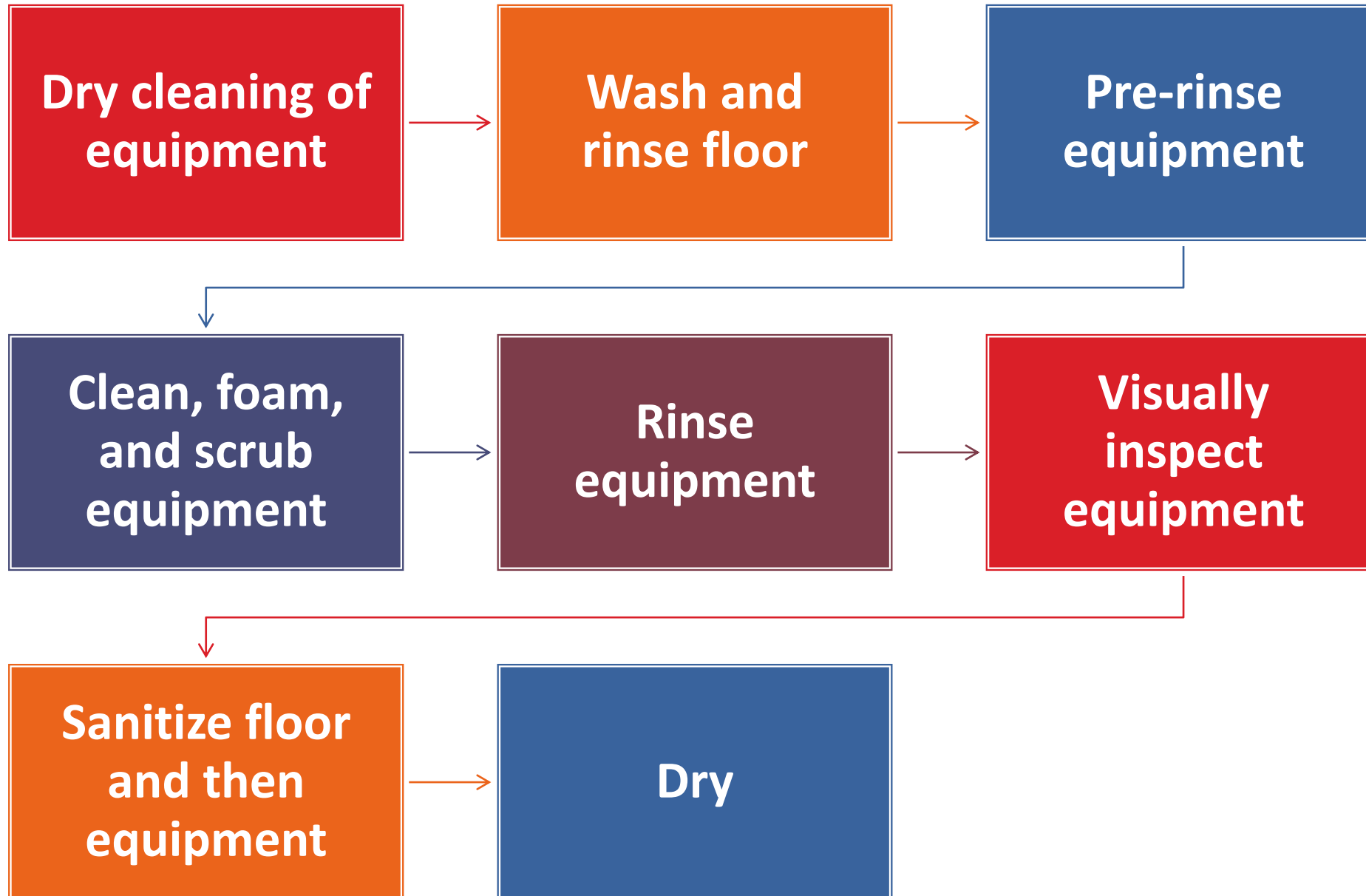
What are some conclusions we can draw about the significance of *Listeria monocytogenes* in RTE processing environments?



Pop Quiz

- *Lm* may establish environmental growth niches in and around RTE processing environments.
- *Lm* is introduced through cross-contamination of food contact surfaces.
- Establishments must ensure effective sanitation, especially in those areas where RTE products is stored or handled after a lethality treatment has been applied.

Pre-Op Sanitation in the RTE Environment



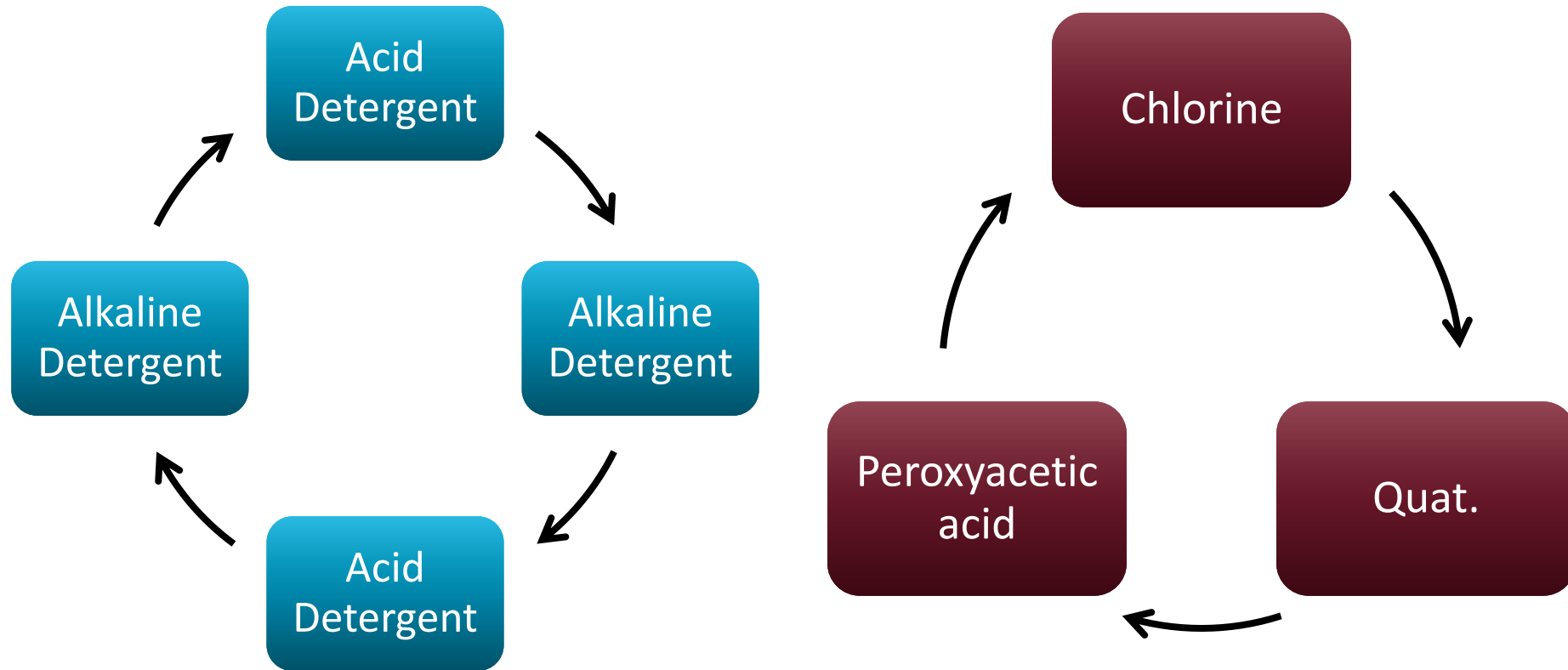
Cleaning vs Sanitizing

- Cleaning – removing soil from equipment and environment
- Sanitizing – application of chemicals or heat to reduce microbes



Rotating Detergents and Sanitizers

Helps maintain effectiveness



Operational Sanitation in the RTE Environment

Protecting exposed RTE product after the initial lethality step as it moves throughout the establishment is an important consideration in preventing post-lethality contamination.



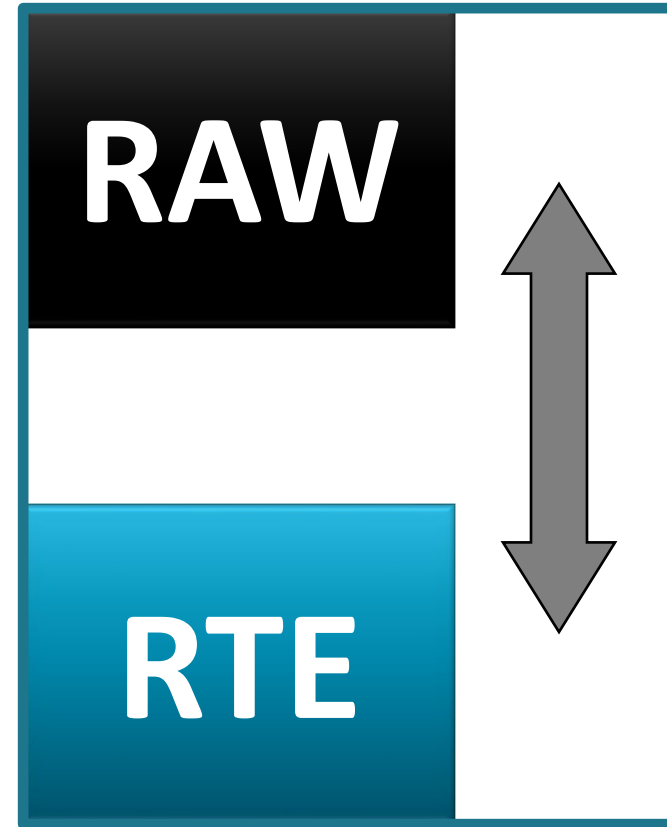
SPS and Environmental Reservoirs for *Lm*

SPS compliance is important to protect against environmental reservoirs for *Lm*



Considerations in Establishment Design

- Air flow
- Ventilation
- Layout and traffic flow



Lm and Construction

- *Lm* contamination has been linked to disruptive construction
- Construction generates dust



***Lm* and Construction**

- Dust contaminates food contact and environmental surfaces
- Increased sanitation and monitoring recommended

Lm and Construction

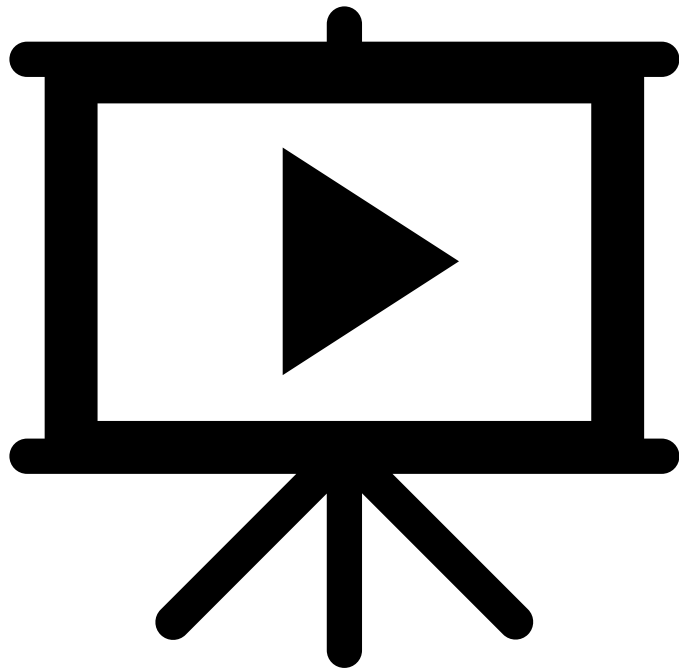
- Disruptive construction:
 - Removal of drains, floors, walls
 - Movement of materials
 - Exposure of areas not typically cleaned
- Establishment is responsible for controlling food safety issues resulting from construction

Construction Examples

Review examples of guidelines in your handout an establishment might follow to reduce the potential for *Lm* contamination during construction



RTE Sanitation Video

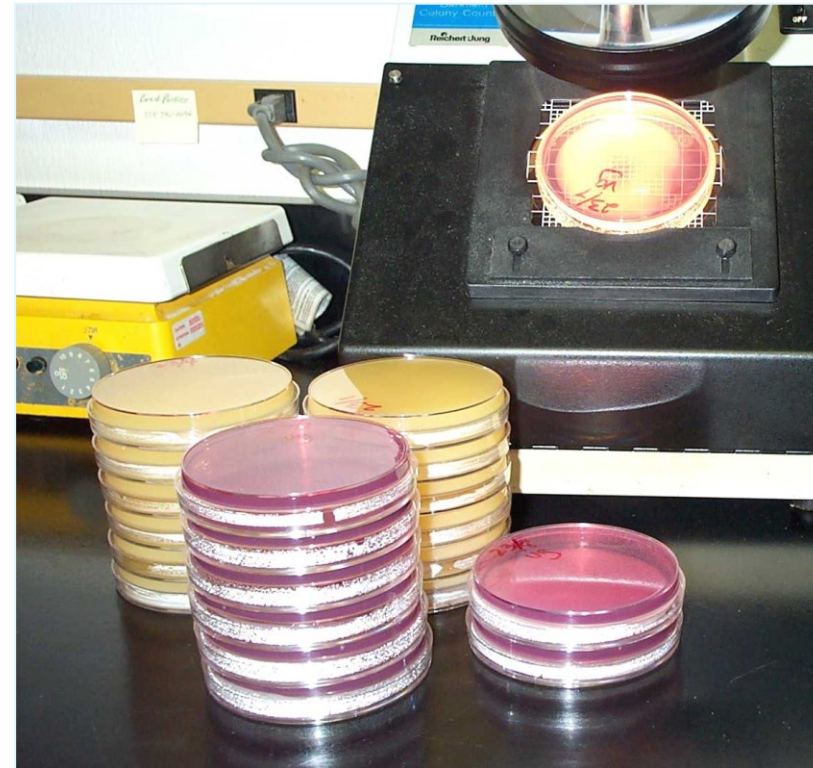


Assessing Sanitation Effectiveness

- Confirms controls are effective
- Measures effectiveness of sanitation
- Includes:
 - Monitoring implementation of Sanitation SOPs
 - Observation of employee hygiene practices
 - Good recordkeeping
 - Reevaluating and modifying Sanitation SOPs as needed

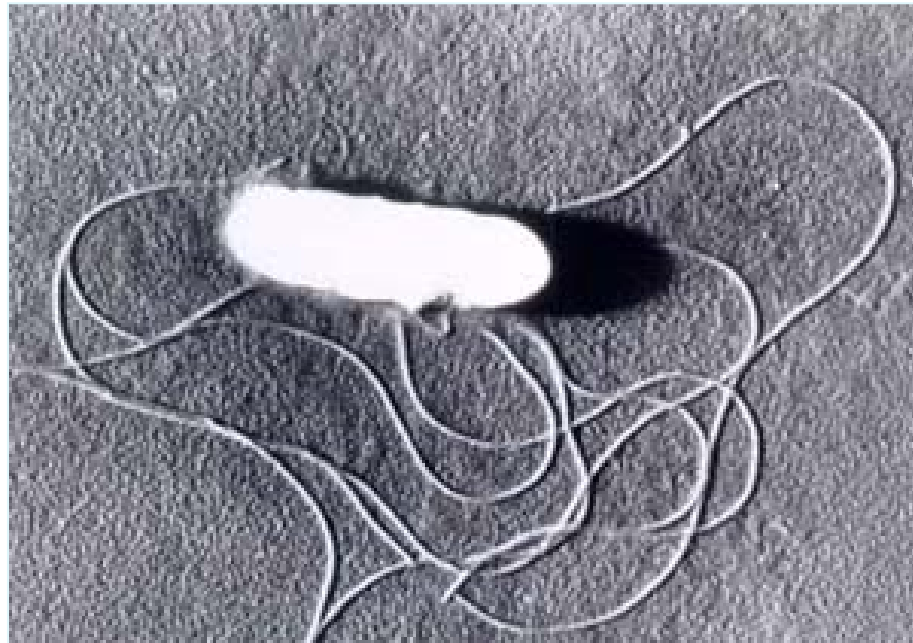
Establishment Testing Programs

- Purpose
- Microorganism
- Type of testing
- Sampling method
- Time



Testing for *Lm* versus *Listeria* spp.

- *Listeria monocytogenes* = pathogen
- *Listeria* spp. = indicator organism



Types of Establishment Testing

- Environmental surfaces
- Food contact surfaces
- Product



Environmental Surface Testing

- Information about sources
- Extent of pathogen contamination
- Information about equipment design
- Probable cross-contamination sites

Environmental Surface Testing

Positive test—post-lethality processing environment

- Indicates problem may exist
- May have been transferred to product
- Followed up by cleaning and FCS/product testing

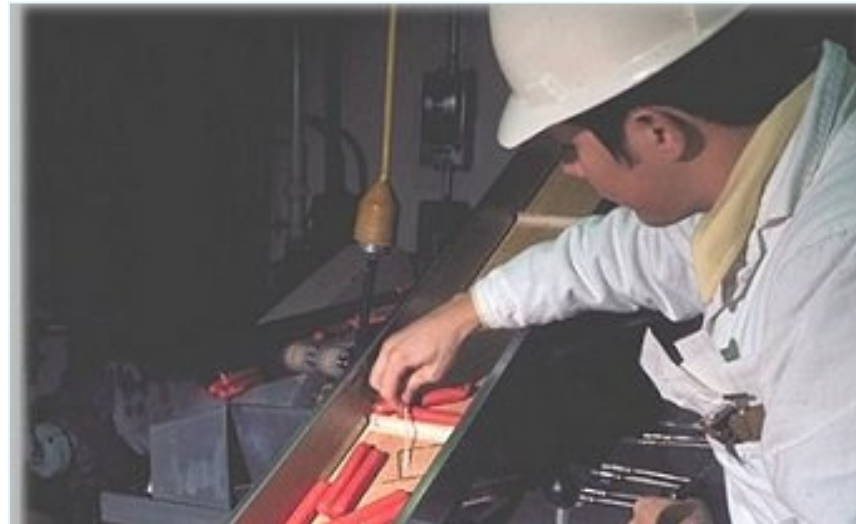
Recordkeeping

- Results may not be available until after production
- Accurate records essential to utilize results
 - Identification of site samples
 - Visible condition of site

Food Contact Surface Testing

Positive test—food contact surface

- *Listeria* spp. – Implies that product **may** have become contaminated.
- *Lm* – Product that has contacted the food contact surface is adulterated.



Product Testing

Positive test—product, Lm

- Product is adulterated
- Evidence that Lm may be a food safety hazard reasonably likely to occur

Other Testing Methodologies

- Total Plate Counts
- ATP Bioluminescent Swabs



Relationship Between General Sanitation Measures and HACCP

- Initial lethality step is probably a CCP
- CCP to address prevention of post-process contamination may be needed
- Sanitation issues may be included in HACCP plan

Workshop



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Questions

