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Listeria monocytogenes:

Hazards and Hygiene Protocol in the Food Industry and Nutrition Sector

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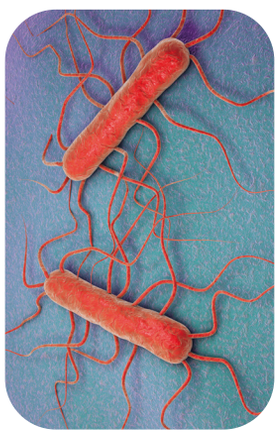
Introduction



Listeria monocytogenes is a Gram-positive bacterium and one of the most significant pathogens in the food industry. It can lead to listeriosis, a disease that poses a particular risk to pregnant women, newborns, the elderly, and individuals with weakened immune systems. Understanding the hazards associated with Listeria and implementing effective hygiene protocols is essential to ensuring the safety of food products.

Hazards Posed by Listeria monocytogenes

Listeria monocytogenes is characterized by its ability to survive at low temperatures, making it difficult to eliminate during food production and storage processes. It can persist on production surfaces, posing a risk of contamination to food products such as meat, dairy, fish, and seafood.

Symptoms and Health Effects

Listeriosis may present with flu-like symptoms, but in more severe cases it can lead to meningitis, sepsis, or even death. For the industry, this not only poses a threat to consumer health but also carries the risk of product recalls, financial losses, and a damaged company reputation.

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Hygiene Protocol:

Surfaces and Hands

Hand Hygiene

- **EN 1500**
  relates to the procedure for hygienic hand disinfection using disinfectant products.
  The standard defines the effectiveness of microbial reduction on the skin of the hands.

Surface Hygiene

Production surfaces should be regularly disinfected using biocidal products registered with the Office for Registration of Medicinal Products and Biocidal Products for use in the food industry. The products used should comply with the following standards confirming their effectiveness:

- **EN 1276:**
  Concerns the bactericidal efficacy of products used to disinfect surfaces in areas where food is stored or processed.
- **EN 13697:**
  Relates to disinfectant products used without mechanical action, evaluating their bactericidal and fungicidal activity.
- **EN 1650:**
  Specifies the effectiveness of disinfectant products against fungi, including yeast-like fungi.
- **EN 1372*:**
  Detailed standard for the bactericidal activity of disinfectants used in medical and industrial sectors.
- **EN 13623:**
  Specifies test methods and requirements for efficacy against Legionella spp. bacteria.

Additional Elements of a Continuous Program:

Employee Training
Regular training for employees on proper handwashing techniques and the use of protective gloves.

Disinfection Stations
Placement of disinfection stations at the entrances to production areas.

Monitoring and Evaluation
Ongoing monitoring of hygiene practices and conducting audits to assess their effectiveness.

Program for Limiting the Growth of Listeria in the Production Environment

a. Production Environment Management

The building and production processes should be designed to allow thorough cleaning, and any damage should be repaired immediately. Listeria bacteria can accumulate in cracks and crevices, which is why proper maintenance is essential.

b. Production Equipment Management

Production equipment should be designed to enable effective cleaning. Regular maintenance and repairs are crucial. Bactericidal lubricants should be used on equipment to prevent the accumulation of Listeria bacteria.

Use Regularly:

Product Name	**proSAVE RTU 20 – Powerful Foam Disinfection Effective Against Bacterial Biofilm**
Description	**Foam. High-performance foam disinfectant for wiping, spraying, or soaking. Foam formulation designed for surfaces and equipment exposed to bacterial biofilm. Contains no ethanol.**
Packaging / Catalog Number	

Trigger Foam 1 L

Packaging:
Long-neck bottle Trigger Foam 1 L
Catalog Number:
IS2000A7B7X6

Canister 5 L

Packaging:
5 L screw-cap canister
Catalog Number:
IS2000A4B2X6

IBC Tank 1000 L

Packaging:
IBC tank 1000 L
Catalog Number:
IS2000A5B4X6

c. Water Control

Water is a primary carrier of Listeria bacteria, which is why maintaining dryness in the facility during production is crucial. If wet cleaning is required, using brushes helps prevent aerosol formation, and regularly removing water from the floor with a squeegee helps prevent puddle formation.

d. Hygiene Program

An organized hygiene program is critical for preventing cross-contamination. This program must be implemented using chemical agents at recommended concentrations, optimal temperatures, and required contact times.

Use Regularly:

Product Name	**proSAVE RTU 20 – Powerful Liquid Disinfection Effective Against Bacterial Biofilm**
Description	**Liquid. High-performance disinfectant for wiping, spraying, or soaking surfaces and equipment exposed to bacterial biofilm. Contains no ethanol.**
Packaging / Catalog Number	 **Trigger Spray** 1 L **Packaging:** Long-neck bottle Trigger Spray 1 L **Catalog Number:** IS2000A7B6X5
	 **Canister** 5 L **Packaging:** 5 L screw-cap canister **Catalog Number:** IS2000A4B2X5
	 **IBC Tank** 1000 L **Packaging:** IBC tank 1000 L **Catalog Number:** IS2000A5B4X5

e. Cleaning and Disinfection of Cleaning Equipment

Cleaning equipment should be designed and maintained in a way that prevents it from becoming a source of Listeria contamination. After use, it must be cleaned, disinfected, and then stored above floor level.

Use Regularly:

Product Name	**proSAVE Prontech RTU 800 ppm – Universal Disinfection in the Food Industry Sector**
Description	**Universal disinfection of all surfaces, equipment, and furnishings in the food industry, in social areas, and for hygienic hand disinfection. Contains no ethanol.**
Packaging / Catalog Number	 **Trigger Spray** 1 L **Packaging:** Long-neck bottle Trigger Spray 1 L **Catalog Number:** IS800A7B6X9
	 **Canister** 5 L **Packaging:** 5 L screw-cap canister **Catalog Number:** IS800A4B2X9
	 **IBC Tank** 1000 L **Packaging:** IBC tank 1000 L **Catalog Number:** IS800A5B4X9

f. Preventing Cross-Contamination

Listeria bacteria can easily spread throughout the facility if proper preventive measures are not taken. Contamination can originate from multiple sources, including raw materials, packaging, equipment, cleaning aerosols, poor hygiene conditions, and improper staff behavior.

g. Adhering to Personal Hygiene Practices

The use of disinfectants is essential. Compliance with established procedures must be monitored. To ensure that employees wash their hands before entering the production area, entry control systems can be implemented. Visual aids should be used to remind and support adherence to hygiene protocols.

Use Regularly:

Product Name	**proSAVE Prontech 400 ppm – Bactericidal Liquid for Hand Disinfection**
Description	**Bactericidal preparation for hygienic hand disinfection, suitable for sensitive skin.**

Packaging / Catalog Number

Pocket Spray
50 ml

Packaging:
50 ml PET
Pocket Spray
Catalog Number:
IS400A2B9X1

Pump
500 ml

Packaging:
500 ml PET
Pump
Catalog Number:
IS400A3B1X1

Canister
5 L

Packaging:
5 L screw-cap
canister
Catalog Number:
IS400A4B2X1

h. Disinfection of Personal Protective Equipment

One of the main sources of contamination transfer—and one of the highest risks—is facility personnel. Employees' clothing, footwear, and aprons should be cleaned and disinfected to reduce the risk of Listeria contamination.

Use Regularly:

Product Name	**proSAVE Prontech RTU 800 ppm – Liquid for Hand Disinfection**
Description	**Ethanol-free liquid for hygienic hand disinfection.**
Packaging / Catalog Number	

Pocket Spray 50 ml

Packaging:
50 ml PET
Pocket Spray
Catalog Number:
IS800A2B9X2

Pump 500 ml

Packaging:
500 ml PET
Pump
Catalog Number:
IS800A3B1X2

Pump 1 L

Packaging:
1 litr
Pump
Catalog Number:
IS800A1B1X2

Canister 5 L

Packaging:
5 L screw-cap canister
Catalog Number:
IS400A4B2X1

i. Maintenance of Refrigerators and Evaporators

Refrigerators and evaporators provide ideal conditions for the growth of Listeria bacteria due to their cold and humid environment. It is essential to ensure that all condensate is drained directly into the sewage system via a proper piping system, and products must never be stored near these units. Using a disinfectant specifically for refrigerators helps reduce the risk of contaminated aerosols.

Use Regularly:

Product Name	**proSAVE One Step RTU 1000 – Fast-Acting Disinfection in the Food Industry Sector**
Description	**Fast-acting disinfection of surfaces and equipment in the food industry. Contains no ethanol. Disinfectant in liquid form for spraying, wiping, soaking, or immersion.**
Packaging / Catalog Number	

Trigger Spray 1 L

Packaging:
Long-neck bottle
Trigger Spray 1 L
Catalog Number:
IS1000A7B6XX1

Canister 5 L

Packaging:
5 L screw-cap canister
Catalog Number:
IS1000A4B2XX1

IBC Tank 1000 L

Packaging:
IBC tank 1000 L
Catalog Number:
IS1000A5B4XX1

j. Floor and Drainage Management

Floors and drains often contain standing water and food residues, making them ideal environments for the growth of Listeria bacteria. Combining good hygiene practices—such as avoiding the placement of food-contact equipment above drains, avoiding direct water streams into drainage openings, and performing regular maintenance of equipment—helps reduce the potential risk of bacterial growth.

Use Regularly:

Product Name	**proSAVE RTU 20 – Powerful Liquid Disinfection Effective Against Bacterial Biofilm**
Description	**Liquid.High-performance disinfectant for wiping, spraying, or soaking surfaces and equipment exposed to bacterial biofilm. Contains no ethanol.**
Packaging / Catalog Number	 **Trigger Spray** 1 L **Packaging:** Long-neck bottle Trigger Spray 1 L **Catalog Number:** IS2000A7B6X5
	 **Canister** 5 L **Packaging:** 5 L screw-cap canister **Catalog Number:** IS2000A4B2X5
	 **IBC Tank** 1000 L **Packaging:** IBC tank 1000 L **Catalog Number:** IS2000A5B4X5

k. Mapping Listeria Presence Within the Facility

To combat Listeria bacteria, it is essential to know where they are present. Environmental swabs must be collected within the production environment and marked on a facility map. This map, along with an analysis of people and material flow, helps identify and trace the source of Listeria. It also allows for the identification of specific strains, distinguishing them from background environmental strains and determining their sources in the final product.

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DISINFECTANT PRODUCT REGISTRATION

The bactericidal activity of all disinfectant products from Medi-pharm International's proSAVE line, as presented in the table above, has been confirmed against Listeria monocytogenes.

The tests were conducted by accredited laboratories and institutions at the European level. To obtain a copy of the documentation, please contact your local sales representative.

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What Makes proSAVE Products Effective?

Active Substance

The main ingredient in the proSAVE product line is quaternary ammonium compounds.

Quaternary ammonium compounds

are a group of chemical substances characterized by the presence of a nitrogen atom bonded to four organic groups. They have gained popularity due to their strong biocidal properties, showing effectiveness in neutralizing bacteria, viruses, fungi, and algae.

Biocidal Mechanism of Action

The biocidal activity of quaternary ammonium compounds is based on membrane disruption in pathogens. These chemical agents interact with lipid membranes, leading to their destabilization. This process disrupts the vital functions of pathogenic cells, causing cell lysis and death. In the case of viruses, ammonium compounds may affect viral proteins, preventing the virus from infecting host cells.

Advantages of Using Quaternary Ammonium Compounds

The key advantages include their high effectiveness at low concentrations and broad-spectrum activity. They are an important component of disinfection protocols, especially in environments that require strict infection control.

A crucial aspect

of the quaternary ammonium compounds used in proSAVE products is the reduction of dosage to an effective yet very safe level. This allows for application on the skin as well as on non-food-contact surfaces without the need for rinsing.

The quaternary ammonium compounds

used in the proSAVE line have strong penetrating properties. They reduce the surface tension of water, allowing them to reach into microscopic crevices of any surface. This makes them suitable for hard-to-reach areas and ensures efficient coverage of large surfaces. This feature also contributes to odor neutralization.

If you have any questions, we remain at your disposal.

Conclusions

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In summary, contamination with Listeria monocytogenes can be effectively controlled if the following conditions are met:

- Proper organization of work with physical separation of different processes, flows, and production paths.
- Appropriate training and education in hygiene principles for all production staff, with particular emphasis on employee behavior.
- Clear hygiene instructions defined for both general hygiene and personal hygiene, which are consistently followed by employees.
- Scheduled cleaning procedures, including both pre-operational and intermediate cleaning, regularly carried out by operators.
- Use of procedures and disinfectants specifically approved for use against Listeria monocytogenes.
- Focus on maintenance activities and hygiene in drainage, sewage, air conditioning, and refrigeration systems.
- Daily review of results and prompt implementation of corrective actions.

Key Information from the Safety Data Sheet

	proSAVE line ethanol-free	ETANOL
2.1 Classification of the Substance or Mixture	The product is not classified as hazardous to human health, life, or the environment.	The product is classified as hazardous according to Regulation (EC) No 1272/2008, as amended. Skin Corr. 1, H314 Eye Dam. 1, H318 Aquatic Chronic 3, H412
2.2 Label Elements	Hazard pictograms and signal word: **None.** Names of hazardous components listed on the label: **None.** Hazard statements: **None.** Precautionary statements: **None.**	Hazard statements H225 Highly flammable liquid and vapor. H319 Causes serious eye irritation. Precautionary Statements. Precautionary statements – Prevention. P210 Keep away from heat, hot surfaces, sparks, open flames and other ignition sources. No smoking. P233 Keep container tightly closed. Precautionary statements – Response. P305+P351+P338 IF IN EYES: Rinse cautiously with water for several minutes. Remove contact lenses if present and easy to do. Continue rinsing.
2.3 Other Hazards	The components of the product do not meet the criteria for PBT or vPvB in accordance with Annex XIII of the REACH Regulation. The product does not contain any substances listed under Article 59(1) as having endocrine-disrupting properties, nor any substances with endocrine-disrupting properties in accordance with the criteria set out in Regulation (EU) 2017/2100 or Regulation (EU) 2018/605 at a concentration equal to or greater than 0.1%.	Mutagenicity to germ cells. Acute toxicity.
Eye Protection	Not required.	Causes serious eye damage.
Respiratory Protection	Not required with adequate ventilation.	May cause respiratory or skin sensitization.
Thermal Hazards	None identified.	Vapors may form explosive mixtures with air.

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