

EcoShield™

Introduction

EcoShield™ is an all-natural, non-chemical antimicrobial preparation for controlling the foodborne bacterial pathogen *Escherichia coli* O157:H7. The active ingredients of **EcoShield™** are naturally occurring lytic bacteriophages that selectively and specifically kill *E. coli* O157:H7. **EcoShield™** is specifically designed for treating foods that are at high risk for *E. coli* O157:H7 contamination.

Bacteriophages

Bacteriophages (or phages) are nature's way of destroying bacteria. A bacteriophage is a virus that is harmless to humans, animals, and plants but is very effective in killing bacteria. Specific phages kill specific bacteria. Bacteriophages are *the* most ubiquitous organisms on Earth, with their numbers estimated to be in the 10^{30} – 10^{32} range. They are naturally occurring and are commonly found almost everywhere, including in the water we drink and fresh foods we eat.

Bacteriophages provide an all-natural, nontoxic, safe and effective means for significantly reducing or eliminating disease-causing bacteria that are sometimes present in foods or in food processing environments. For example, for direct food applications, the approach of using phage-containing food safety products is based on adding the appropriate concentration of lytic bacteriophages active against the pathogenic bacteria contaminating the foods. If the foods are contaminated with pathogenic bacteria targeted by the bacteriophage preparations, the phages will eliminate or significantly reduce the concentrations of those bacteria in the foods, thus making them safer to eat. For more information, please see our short video: <http://www.youtube.com/intralytix>



EcoShield™ is *the* choice for eliminating or significantly reducing contamination of food with specific pathogenic bacteria because it:

- Is FDA-cleared, through a "Food Contact Notification" or FCN, for use on red meat parts and trim intended to be ground (FCN No. 1018).
- Is FSIS-listed as safe and suitable for use in the production of red meat parts and trim prior to grinding as processing aid with no labeling requirements (FSIS Directive 7120.1).
- Is Health Canada approved for use on red meat parts and trim prior to grinding (iLONO).
- Is National Food Service of Israel approved as food processing aid for the treatment of meat immediately before grinding (Ref: 70275202).
- Is certified both Kosher and Halal.
- Requires no labeling ("clean label").
- Does not contain preservatives.
- Is cost effective and cost competitive.
- Is effective under a wide range of food storage conditions (e.g. 2°C – 42°C).
- Is all natural and not genetically modified (non-GM).
- Does not alter food flavor, aroma, or nutritional value.

Product Information

EcoShield™ is a unique and proprietary blend of three individual lytic phages that provides broad protection against pathogenic strains of *E. coli* O157:H7. **EcoShield™** is a clear-to-opalescent, odorless liquid with a pH of 6.5 - 7.5.

EcoShield™ significantly reduces contamination levels of its targeted, susceptible *E. coli* O157:H7 strains in various foods, including ground beef.

EcoShield™ is an all-natural product. It does not alter the general composition, taste, aroma, or color of foods.

EcoShield™ is non-corrosive to processing equipment. It requires low or no upfront investment in machinery and is cost-competitive when compared to alternative technologies.

A Material Safety Data Sheet for **EcoShield™** is available at www.intralytix.com and can also be requested directly from Intralytix.



Application

EcoShield™ is marketed as a concentrated, aqueous, phage preparation that must be stored refrigerated (2-8°C) and then diluted with clean water prior to application. The packaging is labeled with clear instructions for use; bilingual instructions (e.g., English and Spanish) are also available upon request. Usage instructions are laminated and can be easily displayed in the food-processing environment (e.g., attached to the walls in the food processing plant).

An industrial sprayer may be required for large direct food applications. In cases of smaller bench-scale food applications, a handheld sprayer may be appropriate.

For direct food applications, the diluted working solution is typically applied directly on food surfaces by spraying at a concentration of 1 - 4 mL per pound of food product.

Intralytix works closely with all customers to identify the optimal intervention spots and treatment regimens for each individual customer/ production facility and provides an ongoing assistance with product use and applications.

Storage

EcoShield™ should be stored refrigerated (at 2-8°C) in the original unopened container. Once opened, the contents should be used within two weeks. The expiration date of **EcoShield™** may be sequentially extended in 6 months intervals if its potency, is found to meet the specifications at the end of the expiration date. Intralytix can assist with potency determination if required.

All packaging is recyclable and is specifically designed to withstand the moderately humid and cold environment recommended for storage.