

Lysophosphatidylethanolamine (LPE) (105120) Fact Sheet

Summary

Lysophosphatidylethanolamine (LPE) is a plant growth regulator with several diverse uses. It is approved for outdoor agricultural use to accelerate ripening and improve the quality of fresh produce, and it is approved for indoor use to preserve stored crops and commercial cut flowers. As a breakdown product of a substance found in membranes, LPE is present in cells of all organisms. Given its widespread occurrence and lack of toxicity, LPE is not expected to harm people, pets, wildlife, or the environment when used according to label directions.

I. Description of the Active Ingredient

Membranes in all living organisms contain a class of biochemicals called phospholipids. LPE is a breakdown product of one of the major phospholipids (phosphatidylethanolamine). Commercially, LPE can be prepared from egg yolk. When used as a pesticide active ingredient, LPE speeds up ripening and delays aging in plants, but by different mechanisms.

Ripening agent. LPE apparently increases the rate of ripening by stimulating the plant to produce more ethylene, a natural ripening substance.

Preservative. When specific enzymes break down phospholipids, the resulting damaged membranes can no longer maintain the integrity of the cells and as a consequence, deterioration and aging result. Researchers have found that LPE inhibits one of the major enzymes that breaks down membrane phospholipids. By inhibiting this enzyme and thereby helping to keep the membranes healthy, LPE increases the shelf life of stored produce and cut flowers.

II. Use Sites, Target Pests, and Application Methods

- **Use Sites:** Many fruit and vegetable field crops; crop storage areas; nurseries that produce cut flowers.
- **Uses:** Improves crop quality and accelerates ripening; increases shelf life of stored crops and cut flowers by inhibiting an enzyme that causes aging and deterioration.
- **Application Methods:** As a crop ripener and quality enhancer, spray on crops 7-10 days before harvest, or spray 20 to 30 days before harvest and every 7-10 days thereafter until harvest. As a preservative, apply 1) as a post-harvest dip for produce, and 2) as an additive to maintain cut flowers.

III. Assessing Risks to Human Health

Whether a substance poses a risk to humans or other organisms depends on two factors: how toxic the substance is, and how much of it an organism is exposed to. Therefore, the EPA

considers toxicity data and exposure data in deciding whether to approve a pesticide for use. No risks to humans are expected when products containing LPE are used according to label directions. LPE is normally found in human cells, and is not toxic to mammals. The amounts of LPE that could be found in treated food is not expected to cause any adverse effects.

IV. Assessing Risks to the Environment

Risks to the environment are not expected because LPE has not shown toxicity in mammals or other organisms, is abundant in nature, breaks down naturally, and is used in low concentrations.

V. Regulatory Information

Year LPE was initially registered (licensed for sale) as an active ingredient: 2002

Number of end-use products as of March 2002 1

VI. Registrant Information

Nutra-Park Inc.
8383 Greenway Boulevard, Suite 520
Middleton, WI 53562

VII. Additional Contact Information

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