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Pesticides: Regulating Pesticides

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Chitosan; Poly-D-glucosamine (128930) Fact Sheet

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Summary

Chitosan is used primarily as a plant growth enhancer, and as a substance that boosts the ability of plants to defend against fungal infections. It is approved for use outdoors and indoors on many plants grown commercially and by consumers. The active ingredient is found in the shells of crustaceans, such as lobsters, crabs, and shrimp, and in certain other organisms. Given its low potential for toxicity and its abundance in the natural environment, chitosan is not expected to harm people, pets, wildlife, or the environment when used according to label directions.

I. Description of the Active Ingredient

Chitosan (poly-D-glucosamine) is one of the most common polymers found in nature. Structurally, it is related to cellulose, which consists of long chains of glucose molecules linked to each other. In chitosan, the building block of the chains is a slightly modified form of glucose. [For another pesticide active ingredient structurally related to chitosan and cellulose, see [chitin](#), also called poly-N-acetyl-D-glucosamine.] Like chitin, chitosan is present in the shells of all crustaceans and insects, and in certain other organisms including many fungi, algae, and yeast. Commercially, chitosan is prepared from chitin, which is isolated from the shells of crustaceans after the edible parts have been removed.

OPP Chemical Code: 128930 ; (CAS# 9012-76-4)

II. Use Sites, Target Pests, And Application Methods

- **Use Sites:** Many field crops, ornamentals, and turf grown in fields, home gardens, nurseries, and other sites.
- **Uses:** Plant defense booster; plant growth regulator (enhancer).

- **Target pests:** Helps plant defend against certain fungal diseases, including early and late blight, downy and powdery mildew, and gray mold.
- **Application Methods:** Spray on leaves throughout growing season, with applications every one to two weeks as needed.

III. Assessing Risks to Human Health

No risks to humans are expected when products containing chitosan are used according to label directions. In toxicity tests, the only effect seen was slight skin irritation after chitosan was applied to skin.

IV. Assessing Risks to the Environment

Risks to the environment are not expected because chitosan has not shown toxicity in mammals, it is abundant in nature, and it is used in tiny amounts.

V. Regulatory Information

Year registered (licensed for sale) as active ingredient: 1986

Number of end products, February 2001: 4

VI. Manufacturers

August Bjornson, DCV, Inc., 3521 Silverside Rd., Wilmington, DE
19810

SafeScience Products, Inc, 31 St James Avenue, 8th floor, Boston, MA
02116-4101

Agent: Bruce Jaeger, ph 301-261-8491

VII. Additional Contact Information

Ombudsman, Biopesticides and Pollution Prevention Division (7511P)
Office of Pesticide Programs
Environmental Protection Agency
1200 Pennsylvania Avenue, NW
Washington, D.C. 20460