US Environmental Protection Agency
Office of Pesticide Programs

Insect Growth Regulators: S-Hydroprene (128966), S-Kinoprene (107502), Methoprene (105401), S-Methoprene (105402) Fact Sheet

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Summary

These active ingredients prevent insect larvae from developing into adults. The chemicals interfere with the normal function of insect juvenile hormone, which controls the growth, development, and maturation of insects. Methoprene and S methoprene show some toxicity to certain fish and aquatic invertebrates in laboratory tests. However, none of the four active ingredients is expected to have harmful effects on wildlife, humans, or the environment when used as specified on the product labels.

I. Description of the Active Ingredient

The four active ingredients are structurally related to insect juvenile hormone, as well as to each other. Levels of insect juvenile hormone vary as an insect progresses from larva to pupa to adult. The presence of these chemical analogues during larval stages allows the larva to grow and become a pupa, but the pupa never emerges as an adult.

S methoprene has an interesting use as an addition to cattle feed. When cattle ingest S methoprene, they do not break it down during digestion. Therefore, S methoprene is found unchanged in the manure. There, the S methoprene acts as an imitation insect juvenile hormone in preventing maturation of horn flies, a serious cattle pest.

II. Use Sites, Target Pests, And Application Methods

See Table.

III. Assessing Risks to Human Health

No harmful effects to humans are expected from using products containing these active ingredients.

IV. Assessing Risks to the Environment

S Kinoprene and S hydroprene are currently used indoors, and therefore are not expected to pose a risk to the environment. Methoprene, including S methoprene, has been extensively tested with many kinds of organisms. The methoprenes are not harmful to birds or mammals, but can be somewhat toxic to some fish and aquatic invertebrates. Risk assessments show that the concentrations of active ingredient in aquatic environments, if the products are used according to label directions, should be well below the levels that are harmful in laboratory toxicity tests.

V. Regulatory Information

See Table.

VI. Producer Information

See Table.

VII. Pesticides for Use Against Public Health Pests

EPA defines a public health pest as any organism that can cause or transmit human disease, or can cause human discomfort or injury. Examples include mosquitoes, roaches, ticks, and rats. To help protect the publicÂ's health, EPA requires registrants of products used against public health pests to demonstrate that the products meet specific standards for effectiveness as well as for safety. The pesticide products currently registered with S hydroprene, methoprene, or S methoprene for use against public health pests have met these stringent standards.

VIII. 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

Active ingredient (OPP ID #)	Chemical name (CAS #)	Use sites and application method	No. of products. Year first product registered/ year of RED*
S Hydroprene (128966)	Ethyl(2E,4E,7S) trimethyl 2,4 dodecadienoate (CAS # 65733 18 8)	Use indoors as fogger, spray, impregnated disc, including in food handling establishments. Not for direct application to food. (Roach is a major target pest)	9 products. 1986
S Kinoprene (107502)	2 Propynyl (S (2E, 4E)) 3,7,11 trimethyl 2,4 dodecadienoate (CAS # 65733 20 2)	Use indoors (e.g., greenhouses, atriums) to control whiteflies, gnats, aphids, mealybugs, and scales on ornamentals.	1 product. 1975/1996

Methoprene (105401)	Isopropyl (2E, 4E) 11 methoxy 3,7,11 trimethyl 2,4 dodecadienoate (CAS # 40596Â 69 8)	Many insects (e.g., beetles, flies, mosquitoes, ants, moths), mites, ticks, spiders, etc. Food/nonfood crops, ornamentals, livestock, mammalian pets. Indoors, outdoors	13 products 1975/1991
S Methoprene (105402)	Isopropyl (2E, 4E, 7S) 11 methoxy 3,7,11 trimethyl 2,4 dodecadienoate (CAS # 65733 16 6)	Many insects (e.g., beetles, flies, mosquitoes, ants, moths), mites, ticks, spiders, etc. Food/nonfood crops, ornamentals, livestock, mammalian pets. Indoors, outdoors	57 products 1985