

1-Octen-3-ol (069037) Fact Sheet

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Summary

As a pesticide active ingredient, 1-Octen-3-ol (octenol) is used in attracting certain species of mosquitoes and biting flies (e.g., no-see-ums) but the chemical itself does not kill insects. Octenol may also be used in conjunction with carbon dioxide together with electronic devices that in turn kill the trapped insects. Note that both pest and non-pest insects may be attracted and killed by some devices. The devices themselves are not regulated by the EPA. Octenol, when released into air, is not harmful to humans, to other non-target organisms, or to the environment. There is the potential for toxicity if ingested. Therefore, the amount of octenol accessible to children is evaluated for each product before an octenol containing product is registered by the EPA.

I. Description of the Active Ingredient

Active Ingredient Name: 1-Octen-3-ol (octenol)

OPP Chemical Code: 069037 (CAS # 3391-86-4)

II. Use Sites, Target Pests, And Application Methods

- **Use Sites:** Outdoor, non-food, use.

- **Target pests:** Certain species of mosquitoes and biting flies.

- **Application Methods:** Octenol is contained in lures, cartridges, or other carrier products that are placed in or on electronic bug killer stations (device).

III. Assessing Risks to Human Health

A. Toxicology

The Agency waived the requirements for toxicity studies based on the packaging methods; small amount of the octenol that evaporates; widespread occurrence in plants, animals, and edible fruits and vegetables; approval by the US Food and Drug Administration for use in food; and status as Generally Recognized as Safe.

Testing data indicates octenol falls into: Toxicity Category II for acute oral toxicity with an LD₅₀ of 340 mg/kg; Toxicity Category III for acute dermal toxicity with an LD₅₀ of 3300 mg/kg; and that octenol is not irritating to the skin (based on a report published in Food and Chemical Toxicology (formerly Food and Cosmetics Toxicology), Volume 14, page 681 (1974)). Other non-published summary information on octenol indicate that the acute inhalation is Toxicity Category IV (LC₅₀ is 3.72 mg/L) and that dermal and eye contact may cause irritation. No published studies investigating respiratory toxicity or eye irritation were submitted.

Octenol is a component of some perfumes up to levels of 1% and there is no evidence of eye or respiratory effects caused by the evaporation of the perfume.

B. Product Availability and Regulation

At present, there is one company, Bedoukian Research, with a manufacturing-use registration (that is, the technical grade active ingredient) and the following companies that produce end-use products: American Biophysics Corporation (e.g., Mosquito Magnet™ Octenol Biting Insect Attractant), Armatron International (e.g., Flowtron® Octenol Mosquito Attractant), Biosensory Corporation (e.g. Dragonfly™ octenol lure), and Hercon Environmental Corp. (e.g., Mosquito Attractant Emitter Strip). Furthermore, Armatron, Biosensory, and Hercon also supply end-use products that are sold by other distributors with their insect killing devices (e.g., Coleman, Kaz, Sears).

Note that octenol by definition is a pesticide and as such is subject to EPA regulation. Electronic and non-electronic devices, when they meet EPA's

definition of a 'device,' are not subject to registration as a pesticide. (Devices must be consistent with 40 CFR 156.10.)

C. Child Resistant Packaging

With the range of octenol in current products, from 150 mg to 3 g, the EPA requires information demonstrating that these products do not meet or exceed the oral toxicity criterion for Child Resistant Packaging (CRP). With an acute oral toxicity LD₅₀ of 340 mg/kg, octenol would be toxic to children in the amounts contained in certain end-use products (e.g., 1.66 to 3 g). However, saliva solubility, crush, and bite tests conducted on the products as manufactured for sale have demonstrated, *on a case-by-case basis*, an acceptable margin of safety. This finding, along with suitable product construction and packaging materials, lead the Agency to conclude that CRP requirements are not warranted for registered products.

When octenol-based products are used according to label specifications, no adverse effects to humans are known or expected.

IV. Assessing Risks to the Environment

. Ecological Effects

The Agency does not expect a risk to non-target organisms, plants or animals, from the uses of octenol due to low exposure (i.e., low rate of octenol release from the product) and because the end-use products are attached to electronic insect traps. Therefore, the potential risk is low.

However, other than the species known to be attracted by octenol, it is unclear what non-target insects would also be attracted to an electronic bug killer by the presence of octenol. Non-target insect exposure to the electric shock of the bug killer may be limited to small flying insects depending upon the design of a device. To date, due to current device designs, the non-target insect study requirement has been waived. Because of the expected lack of adverse non-target organism effects, EPA believes registration of this pesticide will have no effect on listed endangered species.

A. Efficacy (Product Performance)

Various octenol efficacy studies have been submitted to EPA and are published in scientific articles. The reported results indicate variability, that is, some insect species were repelled, some were attracted, and some were

unaffected by octenol. Product label claims state that the octenol makes electronic devices more effective in killing certain mosquitoes and biting flies. The statements do not claim to control mosquitoes, only to make the electronic insect killers more effective. This kind of limited claim is appropriate for the products. The EPA also received data to indicate products effectively release octenol up to the number of days specified on a label.

Octenol is offered alone or sometimes in conjunction with other attractants (e.g., carbon dioxide, heat). Consumers should note that environmental conditions (e.g., air temperature, wind), placement of a device (with its chemical attractants) in various parts of an outdoor area, or other factor are likely to determine the effectiveness or lack thereof and thus determine the user's overall experience with any particular device.

V. Regulatory Information

Year active ingredient was initially registered (licensed for sale): **1997**

Number of end use products (March 2001): **6**

VI. Registrant Information

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A Subsidiary Health-Chem Corp
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American Biophysics Corp
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East Greenwich, RI 02818

VII. Additional Contact Information

[Ombudsman, Biopesticides and Pollution Prevention Division](#) (7511P)

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