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Environmental fate and properties of pyriproxyfen

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Abstract:

Pyriproxyfen is a broad-spectrum insect growth regulator (IGR) with insecticidal activity against public health insect pests such as houseflies, mosquitoes and cockroaches. In agriculture and horticulture, pyriproxyfen has registered uses for the control of scale, whitefly, aphids and fire ants. It is used extensively worldwide, particularly in developing countries, although it has no significant uses in California. Pyriproxyfen acts on the endocrine system of insects by mimicking the juvenile hormone, thereby hindering molting and subsequently inhibiting reproduction. IGRs are unique in that they are specific for insects and have very low mammalian toxicity. As such, pyriproxyfen has received U.S. EPA status as a Reduced Risk insecticide and an organophosphate alternative and is the only pesticide approved by the World Health Organization (WHO) for treatment of potable water against mosquito. However, concerns about its environmental persistence and latent toxicity to nontarget organisms have been recently raised and discussed. In this context, a detailed review of the environmental fate and physicochemical properties of pyriproxyfen from the available scientific literature and from data gathered in its development and testing is needed. This paper gathers, combines, and abridges important environmental fate and property data on pyriproxyfen for academics, environmental scientists and agricultural professionals needing ready access to this information.

Keywords:

Pyriproxyfen, physicochemical properties, environmental fate, abiotic degradation

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