

Hydrogen peroxide (Hydrogen dioxide) (000595) Fact Sheet

Summary

Hydrogen peroxide, well known as an ingredient in disinfectant products, is now also approved for controlling microbial pests on crops growing indoors and outdoors, and on certain crops after harvest. This active ingredient prevents and controls bacteria and fungi that cause serious plant diseases. Hydrogen peroxide breaks down rapidly in the environment to oxygen and water, and is not expected to cause adverse effects to humans or the environment when users follow label directions.

I. Description of the Active Ingredient

Hydrogen peroxide is a clear colorless liquid that is infinitely soluble in water. Agricultural pesticide products usually contain no more than 35% hydrogen peroxide, which is then usually diluted to 1% or less when applied as a spray or a liquid. In its more concentrated form, hydrogen peroxide is extremely corrosive and irritating to skin, eyes and mucous membrane, and can be explosive if not stored under proper conditions. (CAS # 7722-84-1)

II. Use Sites, Target Pests, And Application Methods

- **Use Sites:** Many non-food and food crops (e.g., fruits, nuts, and vegetables) indoors and outdoors, before and after harvest; food storage facilities.
- **Target pests:** Microbes, including fungi and bacteria, that cause plant diseases.
- **Application Methods:** To prevent and control plant pathogens, methods include application as a spray on foliage, a dip on cuttings and roots, a pre-planting soil treatment.

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 adverse effects to the public are expected from these agricultural uses of hydrogen peroxide because 1) it is used at low concentrations, 2) it decomposes rapidly and harmlessly to water and oxygen, leaving no residue, 3) it is used in manufacturing and processing certain foods, and 4) the U.S. Food and Drug Administration (FDA) considers it GRAS (generally recognized as safe) for food use. However, personal protective equipment is required for individuals handling concentrated end-products, which can be corrosive and irritating to eyes and skin.

IV. Assessing Risks to the Environment

If users follow label directions, no risks to the environment are expected from use of pesticide products containing hydrogen peroxide because 1) the substance readily decomposes to water and oxygen gas, leaving no residue; 2) it is effective at low concentrations where no toxic effects are expected. Label instructions tell users not to spray where bees are active.

V. Pesticidal Regulatory Background

1977 First hydrogen peroxide pesticide product registered (licensed for sale) for disinfectant and related uses on surfaces.

1998 Pesticide products with hydrogen peroxide registered for use on plants (e.g., ornamentals and turf) and subsequently on many fruit and vegetable crops; also on certain foods in storage.

2002 As of September, six pesticide products with hydrogen peroxide registered for use on plants and certain stored food commodities.

VI. Registrant Information

Several companies have registered pesticide products containing hydrogen peroxide for agricultural uses.

VII. Additional Contact Information:

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