



# R.E.D. FACTS

## Ethylene

### Pesticide Reregistration

All pesticides sold or used in the United States must be registered by EPA, based on scientific studies showing that they can be used without posing unreasonable risks to people or the environment. Because of advances in scientific knowledge, the law requires that pesticides which were first registered years ago be reregistered to ensure that they meet today's more stringent standards.

In evaluating pesticides for reregistration, EPA obtains and reviews a complete set of studies from pesticide producers, describing the human health and environmental effects of each pesticide. The Agency imposes any regulatory controls that are needed to effectively manage each pesticide's risks. EPA then reregisters pesticides that can be used without posing undue hazards to human health or the environment.

When a pesticide is eligible for reregistration, EPA announces this and explains why in a Reregistration Eligibility Document, or RED. This fact sheet summarizes the information in the RED for ethylene.

### Use Profile

The pesticide ethylene is registered for use as a plant growth regulator and a herbicide. Ethylene is used commercially as a ripening agent for fruits and vegetables, a curing agent for tobacco, and a flower-producing agent in pineapples. It also is used to control witchweed in corn, cotton, peanuts and soybeans.

### Regulatory History

The first pesticide product containing ethylene as an active ingredient was registered in December 1971. In May 1990, EPA designated ethylene as a biorational pesticide because it is naturally occurring and has a nontoxic mode of action in controlling target pests. Currently, eight pesticide products containing ethylene are registered with EPA.

Ethylene is exempt from the requirement of a tolerance (or maximum residue level) when used as a plant growth regulator on fruit and vegetable crops, or when injected into the soil to cause premature germination of witchweed, as part of the U.S. Department of Agriculture (USDA) witchweed control program. (Please see 40 CFR 180.1016.)

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**Human Health Assessment****Toxicity**

EPA used information from the published literature rather than requiring new studies from registrants to assess the toxicity of ethylene.

Ethylene is a gas; therefore, the only exposure of toxicological concern is exposure to the lungs. Ethylene is naturally occurring and has been used widely as an anesthetic since 1923 without reports of significant toxicity. Therefore, EPA concludes that ethylene will be nontoxic to humans under its approved conditions of use as a plant growth regulator and in witchweed control programs.

**Dietary Exposure**

Ethylene is exempt from tolerance requirements, as mentioned earlier. EPA is requiring no residue data for reregistration because ethylene poses no dietary risk concerns.

**Occupational and Residential Exposure**

EPA has waived requirements for applicator and residential exposure studies because ethylene poses no mammalian toxicity concerns. In addition, due to its high volatility, people are not likely to be exposed to ethylene once it has been applied to fruit, vegetables or soil.

**Human Risk Assessment**

The potential risks to people from the pesticide uses of ethylene are considered negligible because ethylene is of low toxicity, high volatility (so exposure to treated foliage and foods as well as skin and lungs is minimal), and has had years of safe use as an anesthetic.

**Environmental Assessment****Environmental Fate**

Since ethylene is a biorational pesticide, environmental fate studies would not be required unless adverse effects on fish and wildlife were noted in ecological effects studies. As explained below, all ecotoxicity studies have been waived. Therefore, environmental fate studies are not required.

**Ecological Effects**

EPA has waived the ecological effects data requirements for both the indoor and outdoor uses of ethylene. Because it is a volatile gas, ethylene used indoors is not likely to result in exposure to nontarget species. The outdoor uses, soil injection and pineapple sprays, will result in only negligible exposure to aquatic and terrestrial organisms. Ethylene is naturally occurring and of low toxicity. Therefore, no data are required for reregistration of the outdoor uses.

**Environmental and Ecological Risk Assessment**

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Ethylene is a naturally occurring, volatile gas, regarded as a biorational pesticide due to its low toxicity. Therefore, EPA finds that the registered uses of ethylene do not pose an unreasonable risk to the environment.

**Additional Data  
Required**

EPA has waived all generic (that is, active ingredient- specific) data requirements for ethylene except for technical chemistry studies, which have been received and reviewed.

**Product Labeling  
Changes Required**

The labels of all registered ethylene products must comply with EPA's current pesticide labeling requirements. A summary of the label additions/changes required for ethylene technical or manufacturing use products appears in the RED.

The following additions/changes are required in the labeling of ethylene end-use products:

- The signal word is "DANGER".
- The Precautionary Statement must read, "Liquefied or pressurized gas can cause frost burns. Do not get in eyes or on skin. Wear long-sleeved shirt, long pants, boots, goggles and chemical-resistant gloves while handling cylinders or any application equipment under pressure. Harmful if inhaled. Avoid breathing vapors. Do not enter unventilated treatment areas unless wearing a respirator approved by NIOSH/MSHA for this use."
- The First Aid Statement of Practical Treatment must read, "IF IN EYES: Flush with plenty of water. Call a physician."  
"IF ON SKIN: Wash with plenty of soap and water. Get medical attention."  
"IF INHALED: Remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention."
- The Physical or Chemical Hazards Statement must read, "Extremely flammable. Contents under pressure. Keep away from fire, sparks and heated surfaces. Do not puncture or incinerate container. Exposure to temperatures above 130 degrees Fahrenheit may cause bursting."

**Regulatory  
Conclusion**

● All registered pesticide products containing the active ingredient ethylene are not likely to cause unreasonable adverse effects in people or the environment, and are eligible for reregistration. These products will be reregistered once the required confidential statement of formula and revised labeling are received and accepted by EPA.

**For More**

EPA is requesting public comments on the Reregistration Eligibility Document (RED) for ethylene during a 60-day time period, as announced in

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**Information**

a Notice of Availability published in the Federal Register. To obtain a copy of the RED or to submit written comments, please contact the Public Response and Program Resources Branch, Field Operations Division (7506C), Office of Pesticide Programs (OPP), US EPA, Washington, DC 20460, telephone 703-305-5805.

In the future, the ethylene RED will be available from the National Technical Information Service (NTIS), 5285 Port Royal Road, Springfield, VA 22161, telephone 703-487-4650.

For more information about ethylene or about EPA's pesticide reregistration program, please contact the Special Review and Reregistration Division (7508W), OPP, US EPA, Washington, DC 20460, telephone 703-308-8000. For information about reregistration of individual ethylene products, please contact PM Team 22, Registration Division (7505C), OPP, US EPA, Washington, DC 20460, telephone 703-305-5540.

For information about the health effects of pesticides, or for assistance in recognizing and managing pesticide poisoning symptoms, please contact the National Pesticides Telecommunications Network (NPTN). Call toll-free 1-800-858-7378, 24 hours a day, seven days a week, or fax your inquiry to 806-743-3094.