

US EPA ARCHIVE DOCUMENT



R.E.D. FACTS

Pesticide Reregistration

Mineral Acids

All pesticides sold or distributed 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 unreasonable risks to human health or the environment.

When a pesticide is eligible for reregistration, EPA announces this and explains why in a Reregistration Eligibility Decision (RED) document. This fact sheet summarizes the information in the RED for the case mineral acids, which contains the active ingredients hydrogen chloride, phosphoric acid, sodium bisulfate, and sulfuric acid.

Use Profile

The four pesticide active ingredients that comprise the mineral acids reregistration case are used as tuberculocides, disinfectants, sanitizers, virucides, fungicides, desiccants and antimicrobials. **Hydrogen chloride** is used as a disinfectant for bathroom, commercial, industrial, institutional, hospital, laboratory, morgue, refuse, cafeteria and veterinary premises, on surgical instruments, animal cages, swimming pool tile and drinking fountains, and for dishes, glassware and utensils. **Phosphoric acid** is used as an antimicrobial in industrial processing water, empty mushroom houses, food and dairy premises and processing plant equipment, animal kennels, hospitals and morgues, and bathroom premises. **Sodium bisulfate** is used as a disinfectant for toilet bowls. **Sulfuric acid** is used as a desiccant on potato crops, and as a sanitizer for food processing and dairy facilities, equipment and utensils. Sulfuric acid is the largest volume chemical produced in the United States, and is used primarily for non-pesticidal purposes.

These active ingredients are formulated as emulsifiable, soluble and solid concentrates, ready-to-use liquids, pellets/tablets, solids and impregnated material.

Regulatory History

The mineral acids were first registered as pesticides in the United States during the 1950s. Currently, 212 products are registered which contain the mineral acids as active ingredients.

Human Health Assessment

Toxicity

All four of the mineral acids are corrosive to the eyes and all except sodium bisulfate are corrosive to the skin; they have been placed in Toxicity Category I indicating the greatest degree of acute toxicity for eye and dermal irritation effects. Sulfuric acid also is extremely acutely toxic by the inhalation route, and has been placed in Toxicity Category I for inhalation effects. The mineral acids otherwise are moderately acutely toxic, and are placed in Toxicity Category III (on a scale of I to IV) for acute oral and dermal effects. (Sulfuric acid, however, is placed in Toxicity Category II for acute oral toxicity.)

Dietary Exposure

Sulfuric acid is the only mineral acid that has a registered food use, that is, application to potato vines five or more days prior to harvest to desiccate the vines and make harvesting less difficult. Sulfuric acid is exempt from the requirement of a tolerance for this use. Sulfuric acid was granted an exemption from tolerance requirements because it is rapidly degraded in the environment to sulfate salts, which are of no toxicological concern and are Generally Recognized as Safe (GRAS) by the Food and Drug Administration. There are no human dietary concerns associated with the potato vine use of sulfuric acid.

Occupational and Residential Exposure

Hydrogen chloride and phosphoric acid, which are used mainly as antimicrobials to sanitize food and dairy processing plants, are applied as wipe-on surface treatments, sprays, and circulate in place (CIP) treatments. Sodium bisulfate, used as a disinfectant, is a solid soluble concentrate which is brushed/swabbed onto the interior surfaces of toilet bowls. Sulfuric acid, like the first two chemicals, is used to sanitize milk lines and food processing surfaces by wipe-on and CIP treatments. In addition, concentrated sulfuric acid (93%) is used to desiccate potato vines prior to harvest. A Restricted Use Pesticide, it is applied by certified applicators using special ground boom type equipment.

When the four mineral acids are used as antimicrobials, only dilute solutions are applied to surfaces. Because the chemicals are applied at low concentrations, mixer/loader/applicator exposure both during and post-application is likely to be negligible.

The use of concentrated sulfuric acid as a potato vine desiccant may result in dermal and inhalation exposure of workers, during and after treatment, potentially causing severe irritation to mucous membranes and skin. To avoid these effects, product labels must be updated to require

adequate personal protective equipment. In addition, the registrant must explain the basis for the existing 5-day reentry interval, and demonstrate that it is sufficiently protective to post-application workers.

Human Risk Assessment

The four mineral acids pose no human dietary risks. People may be exposed to these chemicals when they are used as antimicrobials, however this exposure involves such dilute solutions that it is believed to be inconsequential. The use of concentrated sulfuric acid as a potato desiccant results in high potential for worker exposure and risk. EPA is maintaining the existing 5-day reentry interval into treated potato fields, and is requesting a rationale for this interval. In addition, labels must be updated to require use of adequate personal protective equipment and clothing, as specified in the Worker Protection Standard.

Environmental Assessment

EPA has predicted the environmental fate of the mineral acids in the environment using commonly available sources of information, as well as basic chemistry. The Agency is not able to determine, at this time, if the use of sulfuric acid as a desiccant on potato vines is eligible for reregistration. The Agency is concerned about the risk to terrestrial wildlife, and is not aware of any acceptable methods to mitigate the risk. In order to determine its eligibility, the Agency will be assessing the benefits of sulfuric acid for this use. Once this is done, the Agency will make a finding of whether this use is eligible for reregistration and whether any further regulatory action is required.

Environmental Fate

The mineral acids generally dissociate and release hydrogen ions in the environment, thus increasing the pH of soil or water.

Ecological Effects

For all mineral acids and uses except the use of sulfuric acid as a potato vine desiccant, adequate information is available to predict the effects on living organisms, so all normally required avian and aquatic studies were waived. If the mineral acids, diluted or undiluted, came into contact with birds, they would cause severe dermal toxicity to areas not covered by feathers. All of the mineral acids pose a potential hazard to the aquatic environment, due to their ability to change the pH of receiving waters. Such changes in pH can have serious adverse effects on fish.

Ecological Effects Risk Assessment

Avian species are at risk from direct exposure to mineral acids, and such exposure must be avoided. Mineral acids also can cause significant changes in pH, which are harmful to aquatic species and also must be avoided. These exposures also may be harmful to endangered species. The risks posed by the mineral acids will be mitigated by product labeling, as specified in the RED document.

The use of sulfuric acid as a desiccant on potato vines, however, poses significant hazard to birds and other terrestrial wildlife. Since there are no known practical mitigation measures, this use is not eligible for reregistration, at this time.

Additional Data Required

EPA is requiring product-specific data, including product chemistry and acute toxicity studies, as well as revised Confidential Statements of Formula (CSF) and revised labeling, for reregistration of products containing the mineral acids.

Product Labeling Changes Required

All end-use mineral acid products must comply with EPA's current pesticide labeling requirements. In addition:

- **Compliance with Worker Protection Standard (WPS)** - Products used in the production of an agricultural plant or on any agricultural establishment (farm, forest, nursery or greenhouse) must comply with the labeling requirements of:

- PR Notice 93-7, "Labeling Revisions Required by the Worker Protection Standard (WPS)," and
- PR Notice 93-11, "Supplemental Guidance for PR Notice 93-7."

Unless specifically directed in the RED, all statements required by these two PR Notices must appear on product labeling exactly as instructed in the Notices. Labels must be revised by April 21, 1994, for products distributed or sold by the primary registrant or supplementally registered distributors, and by October 23, 1995, for products distributed or sold by anyone.

- **Personal Protective Equipment and Reentry Requirements** - Sulfuric acid, when used as a potato vine desiccant, has a potential for dermal and inhalation exposure to mixer/loader/applicators both during and after application. The current label allows for post-application reentry of workers when wearing appropriate personal protective clothing and equipment. Otherwise post-application reentry is not permitted for 5 days. The posting of notices when fields are treated is required.

- **Effluent Discharge Statement** - All end-use and manufacturing use products that may be contained in an effluent discharged to the waters of the United States must bear the following statement:

"Do not discharge effluent containing this product into lakes, streams, ponds, estuaries, oceans or other waters unless in accordance with the requirements of a National Pollutant Discharge Elimination System (NPDES) permit and the permitting authority has been notified in writing prior to discharge. Do not discharge effluent containing this product to sewer systems without previously notifying the local sewage treatment plant authority. For guidance contact your State Water Board or Regional Office of the EPA."

- **Wildlife Protection Statement** - Products containing hydrogen chloride or phosphoric acid and used in swimming pools must bear the following statement:

"This pesticide is toxic to wildlife. Do not contaminate water when disposing of equipment wash water or rinsate."

Regulatory Conclusion

The use of currently registered pesticide products containing mineral acids, except use of sulfuric acid as a desiccant on potato vines, in accordance with approved labeling will not pose unreasonable risks or adverse effects to humans or the environment. Therefore, all uses of these products are eligible for reregistration.

These products will be reregistered once the required product specific data, revised Confidential Statements of Formula and revised labeling are received and accepted by EPA. Products which also contain other active ingredients will be reregistered after the other active ingredients also are determined to be eligible for reregistration.

The use of sulfuric acid on potato vines will be subject to further assessment of its benefits for this use. Once this is done, the Agency will make a finding of whether this use is eligible and whether any further regulatory action is required.

For More Information

EPA is requesting public comments on the Reregistration Eligibility Decision (RED) document for Mineral Acids during a 60-day time period, as announced in a Notice of Availability published in the Federal Register. To obtain a copy of the RED or to submit written comments, please contact the Pesticide Docket, Public Response and Program Resources Branch, Field Operations Division (7506C), Office of Pesticide Programs (OPP), US EPA, Washington, DC 20460, telephone 703-305-5805.

Following the comment period, the Mineral Acids 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 EPA's pesticide reregistration program, the Mineral Acids RED, or reregistration of individual products containing mineral acids, please contact the Special Review and Reregistration Division (7508W), OPP, US EPA, Washington, DC 20460, telephone 703-308-8000.

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, between 8:00 am and 6:00 pm, Central Time, Monday through Friday.