



R.E.D. FACTS

Barium Metaborate

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 Decision (RED) document. This fact sheet summarizes the information in the RED document for barium metaborate monohydrate, referred to as barium metaborate.

Use Profile

Barium metaborate is a microbiocide/microbiostat used as an industrial preservative in the manufacturing process of paints, paper/paper products, industrial adhesives and coatings. Barium metaborate products are formulated as soluble concentrates and ready-to-use solutions. They are added to paints, paper/paper products, adhesives and coatings during the manufacturing process using a method that involves open pouring into a metering pump.

A newly registered product which contains a mixture of barium metaborate and another pesticide active ingredient, and is used as a fungicide to protect walls, ceilings and pipes from mold and bacteria using a brush or airless spray, is not subject to this RED.

Barium metaborate is a compound of boron, which is ubiquitous in the environment and occurs naturally in soils, water, food and forage crops. Boron is an essential nutrient for plants as well as an essential element for many organisms.

Regulatory History

Barium metaborate was first registered in the United States in 1960 as broad spectrum bactericide and fungicide. Currently, four end use products (three of which are covered by this RED) and no technical or manufacturing use pesticide products are registered which contain barium metaborate as an active ingredient.

In April 1983, EPA issued a Registration Standard for barium metaborate (NTIS #PB84-168376). In February 1991, EPA issued a Data Call-In (DCI) for this chemical, requiring product chemistry, ecological effects and toxicity data.

Initially, the barium metaborate reregistration case also contained the active ingredient sodium metaborate. Since sodium metaborate is more similar to boric acid, however, it was included in the Boric Acid RED, completed in September 1993.

Human Health Assessment

Human Toxicity

Since only indoor, non-food uses are covered by this RED, EPA did not require the submission of chronic toxicity, carcinogenicity or reproductive toxicity studies.

Barium metaborate generally is of moderate to low acute toxicity, and has been placed in Toxicity Category III for most acute effects including oral and dermal toxicity, acute inhalation, and eye irritation. It has been placed in Toxicity Category IV (indicating the lowest degree of acute toxicity) for dermal irritation.

An acute neurotoxicity study using rats showed no treatment-related effects. A combined subchronic toxicity and neurotoxicity study using rats showed a treatment-related decrease in forelimb grip strength in high dose males, and increased ambulatory activity in high dose males and mid- and high dose females.

A developmental toxicity study using rabbits showed a maternal toxicity no observed effect level (NOEL) of 10 mg/kg/day, and a lowest observed effect level (LOEL) of 20 mg/kg/day. The NOEL for developmental toxicity was 20 mg/kg/day, the highest dose tested. Barium metaborate shows no evidence of mutagenicity.

Dietary Exposure

Barium metaborate has no registered food or feed uses. Therefore, no dietary exposure is expected to occur as a result of its pesticide uses.

Occupational and Residential Exposure

The barium metaborate products subject to this RED are added to paints, paper/paper products, adhesives and coatings during the manufacturing process, using a method that involves open pouring into a metering pump. During this process, dermal exposure to mixers, loaders and applicators could be significant. However, EPA's assessment indicates that the margin of exposure (MOE) for factory workers involved in these activities is 190, which is well over the 100-fold acceptable margin. The risk to mixers/loaders/

applicators is considered minimal. Post-application exposure also is expected to pose minimal risks.

Human Risk Assessment

No food uses of barium metaborate are registered; therefore no dietary risks are posed. The industrial preservative uses, which involve open pouring application methods, could involve significant worker exposure. However, the risks posed are minimal.

Environmental Assessment

Environmental Fate

Barium metaborate is one of the boron-containing salts (borates), which are ubiquitous in the environment. Surface soil, unpolluted waterways and seawater all typically contain significant amounts of boron as borate. In some areas such as the American Southwest, boron occurs naturally in surface waters in concentrations that have been shown to be toxic to commercially important plants.

EPA is not requiring any environmental fate data for barium metaborate. The Agency does not believe that the pesticide uses covered by this RED add significantly to the amount of boron already present in, or pose any unreasonable risk to, the environment.

Ecological Effects

Barium metaborate is slightly toxic to bobwhite quail on an acute oral toxicity basis, but is practically non-toxic to birds on a subacute basis. It is practically non-toxic to bluegill sunfish but slightly toxic to rainbow trout and aquatic invertebrates.

Ecological Effects Risk Assessment

Barium metaborate applied indoors is not likely to be released to the environment in significant amounts in effluent. Any minor amounts that are released would dissociate rapidly to naturally-occurring ionic components. Any exposure to fish, wildlife or endangered species would be regulated under the National Pollutant Discharge Elimination System (NPDES) permit program. Therefore, risk to fish, wildlife and endangered species is minimal.

Additional Data Required

EPA is requiring product-specific data including product chemistry and acute toxicity studies, revised Confidential Statements of Formula (CSF), and revised product labeling for reregistration of barium metaborate industrial preservative products.

Product Labeling Changes Required

The labeling of all end-use products containing barium metaborate must comply with EPA's current pesticide labeling requirements. In addition:

Personal Protective Equipment (PPE) Requirements

Since exposure to mixers/loaders/applicators during open pouring methods could be significant, the following PPE is required for all industrial preservative end-use products:

- Long-sleeved shirt and long pants;
- Socks and shoes;
- Chemical-resistant gloves.

b Environmental Hazard Statement

The following effluent discharge statement must appear on the labels of all end-use products:

"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."

Regulatory Conclusion

The use of microbiocide industrial preservative products containing barium metaborate, registered prior to July 1, 1993, 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, Confidential Statements of Formula and revised labeling are received and accepted by EPA.

The newly registered barium metaborate product, which also contains another active ingredient, will be reregistered after the other active ingredient is determined to be eligible for reregistration.

For More Information

EPA is requesting public comments on the Reregistration Eligibility Decision (RED) document for barium metaborate 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 document 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 barium metaborate RED document 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 barium metaborate RED, or reregistration of individual products subject to this RED, 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, 8:00 am to 6:00 pm Central Time, Monday through Friday.