United States Environmental Protection Agency | Prevention, Pesticides And Toxic Substances (7508W) | EPA-738-F-94-007 May 1994

R.E.D. FACTS

Pronamide

Pesticide Reregistration

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 pronamide, also known by the trade name Kerb.

Use Profile

Pronamide is a selective, systemic, pre- and post-emergence herbicide that acts by inhibiting plant cell division. It is used to control grasses and broadleaf weeds in food and feed crops including lettuce (the largest use site), endive, alfalfa, rhubarb, pome and stone fruits, artichokes, berries, grapes and legumes, as well as on woody ornamentals, Christmas trees, nursery stock, lawns, turf and fallow land. Formulations include a wettable powder and a granular. Pronamide may be applied using ground spray equipment, by soil incorporation or by aircraft.

Regulatory History

Pronamide was first registered as a pesticide in the U.S. in 1972. Between 1977-1979, EPA conducted a Special Review based on a study indicating that pronamide caused cancer in mice. In concluding this review, the Agency required: 1) restricted use classification for the 50% active ingredient end-use products; 2) use of protective clothing during mixing and application of the wettable powder formulations; 3) water-soluble packaging for the wettable powders; and 4) lowering of the tolerance on lettuce from 2 ppm to 1 ppm, to reduce dietary exposure.

EPA issued a Registration Standard for pronamide in April July 1986 (NTIS #PB87-103735), requiring additional generic data. A Data Call-In issued in 1990 required additional product chemistry, residue chemistry, plant protection and environmental fate data. The RED reflects EPA's assessment of all data received, to date.

Currently, 18 products are registered which contain the active ingredient (ai) pronamide. The 13 wettable powder products (each containing 50% ai) are registered for food, feed and outdoor residential uses. The 3 granular products (each containing up to 1% ai) are registered only for use on lawns and turf. A formulation intermediate and a technical grade manufacturing product also are registered.

Human Health Assessment

Toxicity

In acute toxicity studies, pronamide technical is practically non-toxic by the oral route, and has been placed in Toxicity Category IV (the lowest of four categories) for this effect. It is slightly toxic by the dermal and inhalation routes, and has been placed in Toxicity Category III for these effects. In subchronic toxicity studies using rats, the liver, thyroid and pituitary appear to be the target organs.

In chronic feeding studies, pronamide causes an increased incidence of liver cancer in male mice, and benign testicular and thyroid tumors in rats. EPA has classified pronamide as a Group B2 (probable human) carcinogen.

Pronamide appears to be a toxicant to the liver and several endocrine organs including the thyroid, testes and pituitary. Pronamide is related to the organochlorine class of chemicals, many of which disrupt the endocrine system. Pronamide is not mutagenic.

Dietary Exposure

Some of the residue chemistry studies on pronamide were generated by Craven Laboratories, which has been convicted of producing fraudulent data. EPA has extrapolated information to draw satisfactory conclusions about pronamide residues in food. However, several confirmatory residue studies must be provided--for example, on alfalfa seed, dried winter peas and early season use on artichokes.

Tolerances or maximum residue limits are established for residues of pronamide in or on a number of food and feed crops, meat and milk (see 40 CFR 180.317(a)). Crop group tolerances must be proposed for residues in/on forage and hay of the non-grass animal feeds group, and for the stone fruits group. The tolerance for endive must be reduced from 2.0 ppm to 1.0 ppm. Certain animal organ tolerances must be raised from 0.2 ppm to 0.4 ppm, due to improved efficiency of enforcement residue detection methods.

Based on the anticipated residue contributions of red meat and milk (which contribute the most to anticipated residues in the diet) and reassessed tolerances, EPA estimates that the overall U.S. population is exposed to 0.04% of the Reference Dose (RfD) or amount believed not to cause adverse effects if consumed daily over a 70-year lifetime. Dietary exposure to pronamide is associated with an estimated upper bound cancer risk of 5 x 10-7, or five extra incidences of cancer per 10,000,000. This assessment still overestimates the actual degree of risk, which is likely to be less.

Occupational and Residential Exposure

Pesticide handlers (mixers, loaders and applicators) may be exposed to pronamide sprays and dusts via skin and inhalation during ground boom, aerial and hand-spray applications. The major route of exposure is the dermal route, and exposure is estimated for use of the wettable powder formulation in water-soluble pouches.

Workers and homeowners also may be dermally exposed post-application to pronamide residues on treated foliage and soil. To reduce exposure and risk, EPA is imposing a restricted entry interval following commercial food, feed and turf uses. However, the Agency is unable to estimate risks associated with use of pronamide on residential lawns, and cannot impose a reentry interval for residential situations. Therefore, EPA is unable to make a reregistration eligibility decision about pronamide use on residential lawns, pending the results of several exposure studies.

Similarly, post-application reentry data are required for pronamide use on lettuce because of the potential for significant hand contact.

Human Risk Assessment

Pronamide is of relatively low acute toxicity, but has been demonstrated to cause liver cancer in male mice and is classified as a B2 "probable" human carcinogen. People may be exposed to residues of pronamide in a number of food crops, meat and milk. However, chronic exposure to pronamide in the diet is at a very low level (only a small fraction of the RfD), and is not a cause for concern at this time.

There is a concern for cancer associated with lifetime exposure of mixers/loaders/applicators and homeowners to pronamide. The combined risk for mixer/loader/applicators wearing personal protective equipment (PPE) is estimated to be 3 x 10-5. However, this estimate is conservative and actual risk is likely to be lower.

Environmental Assessment

Environmental Fate

Pronamide is stable to hydrolysis, and to photolysis in water and on soil. It is very persistent in soil under aerobic conditions, and even more persistent under anaerobic conditions (with an estimated half-life greater than 13 months). Pronamide has a relatively low vapor pressure and is relatively mobile in soil. Leaching appears to be its major route of dissipation.

A chemical with these properties is expected to be persistent and mobile in the field. Therefore, a study generated by Craven Laboratories which suggests that pronamide is neither persistent nor mobile must be replaced by a new field dissipation study.

Ecological Effects

Pronamide is practically nontoxic to birds and mammals on an acute basis. It is slightly toxic to freshwater fish and moderately toxic to freshwater invertebrates. Although toxicity to aquatic organisms is not anticipated, confirmatory estuarine studies are required. Pronamide is toxic to green algae. Testing on four other aquatic plants is required, therefore, to assess effects on the aquatic habitat and endangered aquatic plant species.

Ecological Effects Risk Assessment

Use of pronamide as directed by product labeling will have minimal adverse acute effects on insects, birds and mammals. However, chronic risk to aquatic invertebrates is possible, due to pronamide's persistence in water. EPA is requiring an aquatic invertebrate life cycle study to assess this potential risk. Testing on four additional aquatic plant species is required, as mentioned above. Risks to non-target terrestrial plants also will be further explored.

Regarding endangered species, pronamide may not adversely effect endangered birds or aquatic invertebrates, but risk to aquatic plants is uncertain. Terrestrial plants may be adversely affected by pronamide applied at maximum label rates. EPA may require additional labeling and use modifications when implementing the Endangered Species Protection Program.

Additional Data Required

EPA is requiring the following additional generic data for pronamide to confirm its regulatory assessments and conclusions:

Product Identity

Aquatic Invertebrate Life Cycle

Estuarine and Marine Organisms (Mollusc and Shrimp)

Terrestrial Field Dissipation

Field Rotational Crop

Droplet Size Spectrum and Drift Field Evaluation

Foliar Dislodgeable Dissipation

Dermal Passive Dosimetry

Estimation of Dermal/Inhalation Exposure at Outdoor Sites

Residue Analytical Method

Storage Stability

Magnitude of Residue

Processed Food

The following studies which are not part of the target data base also are required:

Seed Germination/Seedling Emergence

Aquatic Plant Growth

The following studies are required to support use of products on residential lawn and turf:

Foliar Dislodgeable Dissipation

Dermal Passive Dosimetry

To support the late season use of pronamide on artichokes, registrants must delete this use from their product labels or submit the following study:

Magnitude of Residue

The Agency also is requiring product-specific data including product chemistry and acute dermal toxicity studies, and revised labeling for reregistration.

Product Labeling Changes Required

All pronamide end-use products must comply with EPA's current pesticide product labeling requirements, and the following:

Worker Protection Standard (WPS) - All pronamide products within the scope of the Worker Protection Standard (WPS) for Agricultural Pesticides (see PR Notice 93-7) must, within the timeframes listed in PR Notices 93-7 and 93-11, revise their labeling to be consistent with the WPS, as directed in those notices and the requirements of the RED.

Entry Restrictions

Uses Within the Scope of the WPS - A 24-hour restricted entry interval (REI) is required on all end-use products, except those intended primarily for home use. The PPE for early entry must be that required for applicators of pronamide except no apron or respirator is required.

- Labels of Sole AI Products - Revise to adopt these entry restrictions. Remove any conflicting entry restrictions on current labeling.

• Labels of Multiple-AI Products - Must bear the more protective of either the entry restrictions set forth here, or those on current labeling.

Uses Not Within the Scope of the WPS - Do not add any entry restrictions, but retain any on current labeling.

Personal Protective Equipment (PPE) Requirements

Uses on Products NOT Primarily Intended for Home Use The PPE requirement for pesticide handlers on all end-use products is:

"Applicators and other handlers must wear:

--Coveralls over short sleeved-shirt and short pants

--Chemical-resistant or waterproof gloves

--Chemical-resistant footwear plus socks

--Chemical-resistant headgear for overhead exposure

--Chemical-resistant apron when cleaning equipment, mixing or loading."

Pronamide products must bear these PPE requirements or those on current labeling, which ever is more protective.

Lawn and Turf Uses - If a registrant chooses to support the residential lawn uses only, he/she must add the following exclusionary statement on the front panel of the product label near the product name, or near the beginning of the Directions for Use section:

"Not for use on turf being grown for sale or other commercial use as sod, or for commercial seed production, or for research purposes."

If the registrant does not support the residential lawn uses, he/she must amend the product label to delete lawn and turf uses.

Fish and Wildlife Hazard - Labels must bear the following statement in the Precautionary Statements section under the subheading Environmental Hazards:

"Do not apply directly to water, or to areas where surface water is present or to intertidal areas below the mean high water mark. Do not contaminate water when disposing of equipment washwaters."

Restricted Use Pesticide Classification - The wettable powder products must maintain the Restricted Use Pesticide classification imposed at the conclusion of the Special Review.

Regulatory Conclusion

The use of all currently registered pesticide products containing pronamide in accordance with approved labeling, except residential lawn and turf uses and late season use on artichokes, will not pose unreasonable risks or adverse effects to humans; however, they may pose adverse effects to terrestrial plants and perhaps to aquatic plants. Products containing pronamide for all uses, except broadcast application on residential lawns

and turf, and the late season use on artichokes, are eligible for reregistration.

EPA has insufficient data at this time to make a reregistration eligibility decision regarding the use of pronamide on residential lawns and turf, or the late season use on artichokes. An eligibility decision cannot be made for broadcast application to residential lawns and turf until post-application/reentry exposure data are submitted and evaluated. A decision cannot be made for late season use on artichokes until residue data are submitted and evaluated.

Products that are eligible will be reregistered once the required confirmatory generic data, product specific data and revised labeling are received and accepted by EPA.

For More Information

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