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EEB REVIEW

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Product Manager, No. Robert Taylor (25)

Product Name(s) Arsenal herbicide

Product Type herbicide

Company Name American Cyanamid Co.

Submission Purpose Amended label.

Include Use(s)

Common Chemical Name Isopropylamine salt of Imazapyr

2055109

(1)

Ecological Effects Branch Review

100.0 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

American Cyanamid Company is requesting a label amendment for the use of Arsenal Herbicide Applicators Concentrate. It is requesting that additional uses be added to the existing label. The existing uses (accepted label 9/24/90) are to control most annual and perennial grasses, broadleaf weeds, vines and brambles, and hardwood trees for forestry site preparation and release from woody and herbaceous competition. It is also recommended for control of undesirable vegetation along forest roads, non-irrigation ditchbanks, and the establishment and maintenance of wildlife openings. Arsenal may also be used as a stump and cut stem treatment for control of unwanted woody vegetation.

Proposed uses on the supplemental label are aquatic use sites in and around wetland areas including but not limited to swamps, bogs, marshes, potholes and intermittently flooded areas/water found in forestry sites. It is stated that applications to irrigation ditches, reservoirs, ponds, lakes, or channeled waters (rivers and streams), and estuaries are prohibited.

100.2 Formulation Information

Active Ingredient: Isopropylamine salt of Imazapyr (2-[4,5-dihydro-4-methyl-4-(1-methylethyl)-5-oxo-1H-imidazol-2-yl]-3-pyridinecarboxylic acid* 53.1%

Inert Ingredients..... 46.9%

*Equivalent to 43.3% or 4 pounds acid per gallon

100.3 Application Methods, Directions and Rating

The accepted label prohibits direct application to water. But the new uses of Arsenal are direct applications to water. Maximum application rates for the various vegetative pest species are from 0.07 lb (1.06 oz) ai/A to 1.33 lbs ai/A. Arsenal may be applied using helicopters, ground operated sprayers, low volume hand-operated spray equipment, and injection equipment. Application by fixed wing aircraft is prohibited. Applications should not be made when wind speeds exceed 5 mph.

100.4 Target Species

grasses, broadleaf weeds, vines and brambles, woody brush and hardwood trees

100.5 Precautionary Labeling

The amended label reads, "Do not apply Arsenal to reservoirs, ponds, lakes or any channeled waters, such as rivers and streams. Do not apply to water in irrigation ditches or to water used for crop irrigation or for domestic purposes. Do not apply Arsenal in estuaries." These restrictions were not listed under an Environmental Hazards heading.

101.0 Risk Assessment

101.1 Likelihood of Adverse Effects to Nontarget Organisms

Terrestrial Organism Toxicity

Imazapyr acid technical is characterized as practically nontoxic to mammals (rat LD50 > 5000 mg/kg), and birds (duck and quail: LD50 > 2,150 mg/kg, LC50 > 5000 ppm). The TEP with the salt is also characterized as practically nontoxic to birds (quail LC50 > 5000 ppm. Imazapyr acid is nontoxic to honey bees at 100 ug/bee.

Aquatic Organism Toxicity

Imazapyr acid technical is characterized as practically non toxic to aquatic invertebrates (Daphnia magna LC50 > 100 ppm) and fish (bluegill and rainbow trout LC50 > 100 ppm). The TEP with the salt is also characterized as practically nontoxic to D. magna (LC50 = 750 ppm) and bluegill sunfish (LC50 > 1000 ppm).

As determined by an aquatic invertebrate life cycle study growth and reproduction of D. magna were not affected at concentrations as high as 97.1 ppm. A fish early life stage study found the MATC for larval survival to be > 43.3 ppm and < 92.4 ppm. Length and weight did not appear to be affected at concentrations as high as 92.4 ppm.

Phytotoxicity

There is currently no core phytotoxicity data for Isopropylamine salt of Imazapyr. Required studies have been listed in the Phase IV Review.

Environmental Fate Data

Isopropylamine salt of Imazapyr is stable to hydrolysis but will photodegrade with a half-life rate of 3 - 5 days. A forestry dissipation study found half-lives to be 14 days in litter, 19 - 34 days in soil, and 12 - 40 days on plants. Isopropylamine salt of Imazapyr shows no bioaccumulation in fish.

Terrestrial Residues

Based on the application rate of 1.33 lb ai/A for grass up to 12" in height (long range grass), the maximum residue expected immediately after a single application is 140 ppm . For grass up to 6" in height (short range grass) the expected residue concentration at 1.33 lb ai/A is 320 ppm. These are the highest terrestrial residues expected.

Effects on Terrestrial Organisms

No direct toxicological effects are likely to occur to mammals or birds because the maximum estimated residue concentration of 320 ppm is well below the presumption of risk threshold of 1000 ppm (1/5 LC50).

Aquatic Residue

The proposed use of Poast allows for application to wetlands which is a direct application to water use. The EEC from an application of 1.33 lb ai/A in 6''of water is 0.98 ppb.

Effects on Aquatic Organisms

No direct acute toxicological effects are likely to occur to aquatic invertebrates or fish because the maximum estimated water concentration of 0.98 ppb is well below the presumption of acute risk threshold of 10 ppm (1/10 LC50). The EEC is also well below the chronic effect levels of 97.1 ppm for aquatic invertebrates and 43.3 ppm for fish.

Endangered Species Considerations

Based on the environmental fate data and the low toxicity of arsenal, no significant impact is expected to any endangered terrestrial or aquatic animal species.

However, since Isopropylamine salt of Imazapyr is a broad spectrum herbicide, endangered wetland plant species associated with forestry use sites are expected to be at risk. The proposed use pattern may affect twelve endangered and threatened plant species (as per the 7/15/91 Endangered and Threatened Wildlife and Plants listing 50 CFR 17.11 & 17.12).

There are many other wetland plant species associated with forestry sites, however many of them are currently under management plans directed by federal, state, and private agencies. The following twelve wetland plant species are found on private lands containing wetland sites associated with forests that could receive applications of Arsenal herbicide. The 12 species are listed by state and county:

Beautiful Paw Paw- Florida/ Charlotte, Lee co

Rugel's Paw Paw- Florida/ Volusia co

Chapman's Rhododendron-Florida/Gulf, Liberty, Gadsden, Clay co

Canby's Dropwart- Georgia/ Burke, Lee, Sumter co
S. Carolina/ Bamberg, Richland, Barnwell co

Harperella- Georgia/ Greene co
S. Carolina/ Aiken, Saluda co

Rough-Leaved Loosestrife- N.Carolina/Bladen-Cumberland co line

cooley's Meadowrue- N.Carolina/ Brunswick, columbus, Onslow, Pender co

Mohr's Barbara's Buttons- Alabama/ Cherokee, Etowah, Bibb co

Green Pitcher Plant- Alabama/ Cherokee, Dekalb, Etowah, Jackson, Marshall co
Georgia/ Towns co

Pondberry- Arkansas/ Clay, Woodruff, Lawrence, Jackson co
Mississippi/ Sunflower co
Georgia/ Wheeler co
N.Carolina/ Bladen co

Sacramento Mt. Thistle- New Mexico/ Otero co

Erubia- southeastern Puerto Rico

101.2 Adequacy of Labeling

The following environmental hazard statements are found on the current label:

> "Do not apply directly to water or wetlands (swamps, bogs, marshes, and potholes). Do not contaminate water when disposing of equipment washwaters. This herbicide is phytotoxic at extremely low concentrations. Nontarget plants may be adversely affected from drift."

If wetlands are added to the current use pattern then the term wetlands should be omitted from the previous hazard label statement. The proposed label should also contain rest of the current hazard statements. They were not listed on the proposed label.

101.3 Adequacy of Toxicity Data

There is currently no core phytotoxicity data for Isopropylamine salt of Imazapyr. Required studies have been listed in the Phase IV Review.

101.4 Conclusion

Under the current registered use pattern wetlands are considered nontarget areas; therefore, they are protected by label statements. However, the proposed amendment will change the status of wetlands from a nontarget area to a target area. This will allow direct application of Arsenal Herbicide Applicators concentrate to wetlands.

Adverse effects to fish and wildlife are not expected. Although there is insufficient phytotoxicity data on Isopropylamine salt of Imazapyr, wetland plants are expected to be killed from the proposed use pattern because they will become the target pest species. EEB believes that the acceptance of this amendment will reduce or eliminate wetland vegetation thereby, adversely affecting or destroying wetland ecosystems.

The registration of Arsenal herbicide for use on wetlands may affect 12 endangered plant species. If registration is pursued for the proposed use pattern EEB will request a biological opinion from the U.S. Fish and Wildlife Service according to section 7 of the Endangered Species Act.

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