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REVIEW NO.

EEB REVIEW

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SRRD/RD ACTION CODE/TYPE OF REVIEW 575 COND REG REQ DATA

MRID #(S) 417739-02 123-2 AQUATIC PLANT GROWTH

DP TYPE 001

PRODUCT MANAGER, NO. ROBERT TAYLOR 25 VICKIE WALTERS

PRODUCT NAME(S) ALLY HERBICIDE

TYPE PRODUCT

COMPANY NAME DUPONT

SUBMISSION PURPOSE REVIEW TIER II AQUATIC PLANT DATA AND DETERMINE IF DATA REQUIREMENTS FOR CONDITIONAL REGISTRATION HAVE BEEN FULFILLED

COMMON CHEMICAL NAME ALLY

REVIEWER: CHARLES LEWIS

ECOLOGICAL EFFECTS BRANCH REVIEW

Chemical: Ally/Escort

100 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

A Lemna minor study has been submitted by DuPont de Nemours in response to an EEB review dated November 1, 1989. The previous review was conducted in order to evaluate the impact of the addition of rangeland and pasture use to the Escort label. The conclusions of the review were as follows:

> "Data currently available indicate that the hazard to avian, aquatic, and mammalian species will be minimal. However, the hazard to nontarget plants including endangered or threatened species is expected to be increased from use of this herbicide.
>
> Tier II terrestrial plant data have triggered Tier III terrestrial plant testing. Based on an extrapolation of terrestrial data, a Tier III aquatic plant test is also required. Submission of data for an aquatic macrophyte, preferably Lemna gibba, may eliminate the need for aquatic plant growth testing at the Tier III level."

100.2 Formulation Information

Escort/Ally

ACTIVE INGREDIENTS:----------60.0%
Methyl 2-[[[(4-methoxy-6-methyl-1,3,5-triazin-2-yl)-amino] carbonyl]-sulfonyl] benzoate
INERT INGREDIENTS:----------40.0%

100.3 Application Methods, Directions, Rates

Use rate in the November 1, 1989 review was 0.12 to 0.45 oz ai/A depending on weed species. Ground application only. No new label information was provided with this submission.

100.4 Target Organisms

In the November 1, 1989 review the following weed species were listed: broom snakeweed, bahiagrass in established bermudagrass, broadleaf weeds, and brush. No new label information was provided with this submission.

100.5 Precautionary Labeling

No label was provided with this submission.

101 Hazard Assessment

101.2 Likelihood of Adverse Effects on Nontarget Organisms

Terrestrial Organisms

Metsulfuron methyl has been characterized by Environmental Fate and Ground Water Branch (EFGWB) in a review dated June 22, 1990 as "mobile, particularly in soils with high-sand content/low organic matter content; it is also somewhat persistent in soils and has been determined to be a potential leacher." The chemical is stable to hydrolysis at Ph 7 and 9 and has a T1/2 of 3 weeks at Ph 5 (25 C). For a complete list of available EFGWB data see attached One Line Summary.

Data from previous reviews indicate that metsulfuron methyl is practically nontoxic to birds on both an acute oral basis and a dietary basis (mallard duck LD50 >2510 mg/kg, LC50 >5620 ppm, bobwhite quail LC50 >5620 ppm). The available data on rats suggest that the chemical also has a low mammalian toxicity (LD50 >5000 mg/kg - male and female). The dermal LD50 for the rabbit was reported to be >2000 mg/kg. A 90-day dietary test using the rat showed a NOEL of 1000 ppm.

For the honey bee, the acute contact LD50 was estimated to be >25 ug/bee and may be characterized as practically nontoxic.

Assuming a maximum application of 0.45 oz ai/a (0.028 lb ai/A), the following residues were calculated using the nomograph of Kenaga and Hoerger (1972):

Substrate	Residue (ppm)
Short range grass	6.72
Long grass	3.08
Leaves and leafy crops	3.50
Forage	1.62
Pod containing seeds	0.34
Fruit	0.20

These levels are all well below calculated or laboratory determined toxicity values for both mammals and birds. Based on the data currently available, the hazard to birds and mammals from the use of Ally/Escort for weed control in pasture and rangeland is considered minimal.

Metsulfuron methyl would not be expected to impact honey bees.

Aquatic Organisms

Metsulfuron methyl is practically nontoxic to freshwater fish and aquatic invertebrates (LC50's >150 ppm for rainbow trout, bluegill sunfish, and Daphnia magna). Assuming an inadvertent direct application to a pond 6 feet deep, the estimated environmental concentration (EEC) could be 1.7 ppb. In a pond 6 inches deep the concentration could be 20.6 ppb. These values are considerably less than the lowest aquatic LC50 and do not exceed the 1/10 LC50 trigger for restricted use classification. On the basis of these figures, the proposed use of Ally/Escort will not result in an increased hazard to aquatic organisms.

Nontarget Plants

The potential exists for herbicides to move from the site of application through drift, volatilization, and runoff. Metsulfuron methyl has been characterized as nonvolatile (vapor pressure 2.5×10^{-12} mm Hg @ 25C) but soluble in water (9,500 ppm @ Ph 6.7, 25C). The initial request to add this new use was for ground application only. However, based on a past history of registrants initially submitting request for ground application only and later requesting aerial application, EEB has included a hazard assessment for aerial application. EEB's primary concern is from drift during aerial application and runoff following aerial or ground application.

Runoff/Drift - Aquatic Plants

Assuming an aerial application of 0.45 oz ai/a (0.028 lb ai/a) with 5% drift, 0.0014 lb ai could drift into an adjacent one acre pond. In addition, runoff would add 0.0084 lb ai resulting in a pond loading of 0.0098 lb ai [1/] or a water concentration of 0.6 ppb in 6 feet and 7.2 ppb in 6 inches of water [2/].

Data for Selenastrum capricornutum indicate the 5-day EC50 is 285.6 ppb. Available data for the aquatic macrophyte Lemna minor indicate the 14-day EC50 is 0.36 ppb. The EC50 value for the most sensitive species tested exceeds the calculated EEC. Therefore, aquatic nontarget plants could be adversely affected from the use of Ally/Escort.

1/ 0.028 lb ai/A x 0.6 application efficiency x 5% runoff x 10 acres = 0.0084 lb ai + 0.028 lb ai/A x 5% drift = 0.0014 lb ai + 0.0084 lb ai = 0.0098 lb ai
2/ 0.0098 lb ai x 61 ppb = 0.6 ppb; 0.0098 lb ai x 735 = 7.2 ppb

Runoff - Aquatic Plants

Assuming a ground application of 0.45 oz ai (0.028 lb ai/A) with 5% runoff, 0.014 lb ai could runoff into an adjacent pond.[3/] This could result in a water concentration of 0.85 ppb in 6 feet of water and 10.29 ppb in 6 inches of water[4/]. Both of these values exceed the EC50 for Lemna minor. Aquatic nontarget plants could be adversely affected from the ground application of Ally/Escort.

Runoff/Drift - Terrestrial Plants (Preemergence)

Drift during application of 0.028 lb ai/A with subsequent runoff could result in 0.0098 lb ai (11.21 gms ai) being deposited on a one hectare site adjacent to a treated field[5/]. This value exceeds the preemergence EC25 values for soybean, cocklebur, cotton, morningglory, wild buckwheat, sugar beet, corn, and rice (0.46, 0.54, 0.41, 0.01, 0.39, 0.05, 1.02, and 0.79 gms ai/ha, respectively). Consequently, based on currently available data, the germination/emergence of nontarget terrestrial plants could be adversely affected following an aerial application of Ally/Escort Herbicide.

Drift - Terrestrial Plants (Postemergence)

Postemergence data for metsulfuron methyl indicate EC25 values for soybean, cocklebur, cotton, morningglory, and nutsedge were 0.02, 0.14, 0.60, 0.36, and 0.29 gms ai/ha, respectively. Assuming 5% drift, 1.57 gms ai[6/] could be deposited on a one hectare site adjacent to the treated field which would exceed the EC25 values for these species. Consequently, based on currently available data, the vegetative vigor of nontarget terrestrial plants could be adversely affected following an aerial application of Ally/Escort.

Runoff - Terrestrial Plants (Preemergence)

Runoff following a ground application of 0.45 oz ai/A (0.028 lb ai/A) could result in 15.41 gms ai being deposited on an adjacent one hectare site.[7/] This value exceeds the

3/ 0.028 lb ai/A x 5% runoff x 10 acres = 0.014 lb ai
4/ 0.014 lb ai x 61 ppb = 0.85 ppb; 0.014 lb ai x 735 ppb = 10.29 ppb
5/ 0.028 lb ai x 0.6 application efficiency x 5% runoff x 10 acres = 0.0084 lb ai + 0.028 lb ai x 5% drift = 0.0014 lb ai + 0.0084 lb ai = 0.0098 lb ai x 16 ozs = 0.16 oz ai/a x 70.05 (conversion factor) = 11.21 gms ai/ha
6/ 0.028 lb ai/A x 5% runoff = 0.0014 lb ai x 16 oz = 0.0224 oz ai/A x 70.05 (conversion factor) = 1.57 gms ai/ha
7/ 0.028 lb ai/A x 5% runoff x 10 acres = 0.014 lb ai; 0.014 lb ai x 16 oz = 0.22 oz ai/A x 70.05 (conversion factor) = 15.41 gms ai/ha

preemergence EC25 values for soybean, cocklebur, cotton, morningglory, wild buckwheat, sugar beet, corn, and rice (0.46, 0.54, 0.41, 0.01, 0.39, 0.05, 1.02, and 0.79 gms ai/ha, respectively). Consequently, based on currently available data, the germination/emergence of nontarget terrestrial plants could be adversely affected following a ground application of Ally/Escort.

101.3 Endangered Species Considerations

Based on the very low application rate and practically nontoxic characterization of the metsulfuron methyl, endangered/threatened mammals, fish, and birds are not expected to be adversely affected from the use of Ally/Escort for weed control on pasture and rangeland. However, endangered and threatened plants have been identified as occurring in regions where the herbicide could be used. Application of this herbicide by ground or air is expected to adversely affect species growing in close proximity to the site of application. Consequently, EEB will request a formal consultation with the U.S. Fish and Wildlife Service, Office of Endangered Species.

101.4 Adequacy of Toxicity Data

The existing data base is adequate to assess the hazard of this new use to nontarget organisms.

One study was included with this submission. The following is a brief summary of the EEB review conclusions:

Douglas, M.T. and J.W. Handley. 1988. An Assessment of the Inhibitory Effect of DPX-T6376 Technical on the Growth of Duckweed (Lemna minor). HRC Report No. DPT 186(b)/881173. Conducted by Huntingdon Research Center Ltd., Cambridgeshire, UK. Submitted by DuPont de Nemours (France) S.A., Paris, France. EPA MRID No. 417739-02.

The study is scientifically sound but does not satisfy the guideline requirement for a Tier II aquatic nontarget plant test using an aquatic macrophyte. The species tested is not the recommended aquatic macrophyte. Lemna gibba should have been tested rather than Lemna minor. Consequently, the study has been classified as supplemental. However, this study provides sufficient information to conclude that aquatic plants could be adversely affected from the application of 0.45 oz ai/A Ally/Escort. Based on nominal concentrations, the 14-day EC50 was calculated to be 0.36 ug/L with a 95% confidence limit of 0.29 - 0.43 ug/L. The NOEC was 0.16 ug/L.

Results of Tier II terrestrial and aquatic nontarget plant testing have triggered the requirement for testing at the Tier III level for these species. These data are outstanding.

In addition, drift studies (201-1 and 202-1) are required for aerial application. These data outstanding.

101.5 Adequacy of Labeling

No label was provided for review.

103 Conclusions

EEB has reviewed the Lemna minor study submitted in support of the addition of rangeland and pasture to the Ally/Escort label. The study was found to be supplemental. However, sufficient information is available to require aquatic plant testing at the Tier III level. In addition, spray drift testing is required if this herbicide is to be applied aerially. Tier III terrestrial nontarget plant testing has been previously requested and is outstanding.

Mammals, birds, aquatic organisms, and honey bees are not expected to be adversely affected by this new use. However, the potential exists for nontarget terrestrial and aquatic plants to be adversely affected from drift and runoff.

Endangered/threatened species, other than plants, are not expected to be impacted. The potential exists for endangered/threatened plants to be adversely affected from this new use. Consequently, EEB will request a formal consultation with the U.S. Fish and Wildlife Service, Office of Endangered Species.

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