US EPA ARCHIVE DOCUMENT

108801

(13)

EEE BRANCH REVIEW

DATE: IN 6/13/80 OUT 6/30/80 IN _____ OUT _____ IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 100-597

PETITION OR EXP. PERMIT NO. _____

DATE DIV. RECEIVED 6/13/80

DATE OF SUBMISSION _____

DATE SUBMISSION ACCEPTED _____

TYPE PRODUCTS(S): I, D, H, F, N, R, S Herbicide

DATA ACCESSION NO(S). _____

PRODUCT MGR. NO. Stone (23)

PRODUCT NAME(S) Dual 8E Herbicide

COMPANY NAME Ciba-Geigy

SUBMISSION PURPOSE Incremental risk assessment for proposed use on ornamentals

CHEMICAL & FORMULATION Metolachlor...86.4%

Pesticide Name: Dual 8E
2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl) acetamide

100.0 Pesticide Label Information

100.1 Pesticide Use

For weed control in commercially grown woody ornamentals.

100.2 Formulation Information

Dual 8E contains 86.4% active ingredient.

100.3 Application Methods, Directions, Rates

General Directions

Dual 8E alone and combined with Princep is a selective herbicide recommended for use before weeds emerge or after removing existing weeds to control the following weeds for approximately 60 days in field and liner grown woody ornamentals.

Dual 8E: Barnyardgrass, fall panicum, giant foxtail, goosegrass, green foxtail, large crabgrass, redroot pigweed, smooth crabgrass, yellow foxtail, yellow nutsedge, and other weeds listed for Dual 8E alone on this label.

Dual 8E + Princep Formulations: Galinsoga, lambsquarters, purslane, ragweed, smartweed, yellow nutsedge, Venice mallow and other species listed for Dual 8E alone above and elswhere on this label.

Broadcast or band Dual 8E alone or in combination with Princep at rates shown below in a minimum of 15 gals. of water per acre towards the base of established ornamentals or those transplanted a minimum of 10 days. Apply before weeds emerge or after removing existing weeds. Use the higher rate of Dual alone on fine textured soil and where heavy infestations of grass weeds are expected. Use the lower rate of Dual on coarse textured soil and where light infestations of grass weeds are expected. Use the higher rate of Dual + Princep on fine textured soils and where broadleaf weeds are expected to form a significant part of the infestation. Use the lower rate of Dual + Princep on coarse textured soil and where light infestations of broadleaf weeds are expected.

Broadcast Rate Per Acre*		
Dual 8E Alone	or	Dual 8E + Princep 4L**
2-3 pts.		2-3 pts. + 1.6-2 pts.

* For band applications, use proportional amount of herbicide.

** When using Princep 80W or Princep Caliber 90, use equivalent rates; 2 pts. of 4L equals 1.25 lbs. of 80W or 1.1 lb. of Caliber 90.

100.4 Precautionary Labeling

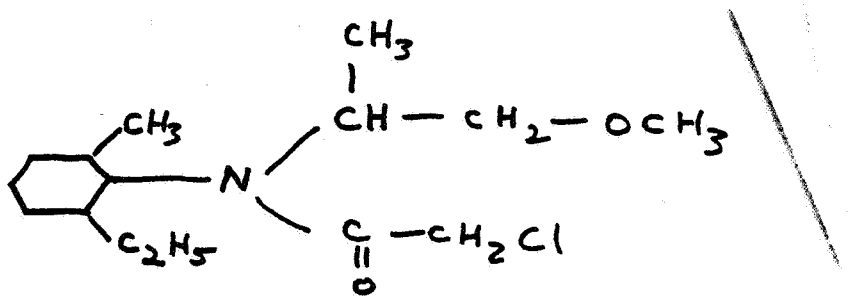
Keep out of any body of water. Do not apply where runoff is likely to occur. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not apply when weather conditions favor drift from areas treated.

101 Physical and Chemical Properties

101.1 Chemical Name

2-chloro-N-(2-ethyl-6-methylphenyl)-N-(2-methoxy-1-methylethyl) acetamide

101.2 Structural Formula



101.3 Common Name

Dual
Metolachlor

101.4 Molecular Weight

283.80

101.5 Physical State

Liquid/white to tan/odorless.

101.6 Solubility

Metolachlor is soluble in water at the rate of 530 ppm at 20°C. It is miscible with xylene, toluene, dimethyl formamide, methyl cellusolve, butyl cellusolve, ethylene dichloride cyclohexanone. It is insoluble in ethylene glycol and propylene glycol.

102.0 Behavior in the Environment (From review by R. Balcomb, February 13, 1978).

Metolachlor has been shown to be persistent in soil (half-life 4-14 weeks depending on soil type) and in water (half-life over 200 days under normal environmental conditions). This chemical is mobile by leaching in soils with the exception of silt loam and muck.

For a detailed review, see N. Cook, 100-EUP-38 (January 24, 1976).

102.4 Special Note: Fish Accumulation (From review by R. Balcomb, February 13, 1978).

The behavior of Metolachlor in bluegill sunfish, as reported by one study, is summarized by the following table.

	Mean measured concentation of ^{14}C residues in water	
	0.00931 mg/l	1.1317 mg/l
Maximum mean measured concentration of ^{14}C residue in fish		
a) edible portion	0.184 mg/kg	21.23 mg/kg
b) viscera	4.74 mg/kg	585.05 mg/kg
Biological magnification (relative to ^{14}C residues in water)		
a) edible portion	20X	19X
b) viscera	509X	517X
Residue elimination after 28 days depuration		
a) edible portion	56%	46%
b) viscera	97%	98%

103.0 Toxicological Properties

103.1 Acute Toxicity

103.1.1 Mammal

Albino rats Oral LD_{50} = 2780 mg/kg

103.1.2 Bird

2. Mallard acute LD_{50} = 1750 mg/kg

103.1.3 Fish

Ictalurus punctatus	96 hr LC_{50} = 4.9 ppm
Lepomis macrochirus	96 hr LC_{50} = 15.0 ppm

103.1.4 Aquatic Invertebrates

Daphnia magna	48 hr LC_{50} = 25.1 ppm

103.2 Additional Terrestrial Laboratory Tests

103.2.1 Avian Reproduction Studies

Mallard duck showed no impairment at any test level - 10, 300, or 1,000 ppm.

Bobwhite quail experienced a significant decline in number of viable embryos, number of eggs hatched, and number of chicks surviving to 14 days when exposed to 300 ppm. No effect was seen at 1,000 ppm.

104.0 Hazard Assessment

104.1 Discussion

Mr. Dwayne Jelinek, of the American Association of Nurserymen, estimated the total U.S. acreage of woody ornamentals grown for production to be 137,000 acres. Approximately 30% of the total production is in California, Oregon and Washington.

Label directions call for broadcast or band application towards the base of ornamentals, which would reduce the likelihood of drift and thereby minimize hazard to non-target organisms.

Proposed application rates of 2.0-3.0 lb a.i./A would result in the following approximate residue levels:

leaves and leafy crops	380 ppm
pods containing seeds	36 ppm
fruits	21 ppm

Given the low toxicity of metolachlor to birds and mammals and the rates and methods of application, little contamination of food or habitat is expected.

104.2 Likelihood of Adverse Effects to Non-Target Organisms

The proposed use pattern is not expected to result in any unreasonable adverse effects to wildlife.

104.3 Endangered Species Considerations

The application of this product according to label directions and precautions should not adversely affect any endangered species.

107.0 Conclusions

107.1 The Ecological Effects Branch does not object to the proposed use of Dual 8E. However, the registrant should be reminded that an avian acute oral LD_{50} is required to meet guideline requirements for registration of Metolachlor.

Mary L. Gessner Mary L. Gessner 6/26/80
Section 3
Ecological Effects Branch, HED

Dave Coppage Dave Coppage 6/26/80
Head, Section 3
Ecological Effects Branch, HED

Clayton Bushong Clayton Bushong 6/28/80
Branch Chief
Ecological Effects Branch, HED