UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

file
128701

DEC 29 1987

Regional Director
U. S. Fish and Wildlife Service
The Richard B. Russell Federal Building
75 Spring Street, SW
Atlanta, Georgia 30303

Attn: Agustin Valido

Dear Mr. Valido,

The Office of Pesticide Programs, EPA, is requesting formal consultation for the use of fenoxaprop-ethyl on rice. This was formerly discussed with Agustin Valido, December 23, 1987.

Based on our information and assessment, we have concluded that it is unlikely this use will have an adverse effect on endangered species. The reason EPA is requesting formal consultation for a "no effect" situation is that the use has already been permitted. Although no consultation on this registration was initiated previously, opinions on other rice/pesticide uses were referenced as justification for the label restriction. As part of the initial registration, and as a preliminary preventative measure, a label statement was required prohibiting the use of Whip in counties where the endangered fat pocketbook pearly mussel occurred (see attached label). Since then EEB has performed a more thorough analysis of the potential hazard to this mussel and has determined that no effects are likely. The EEB wishes to consult with the USFWS before we recommend that the restriction be removed from the label.

The active ingredient of WHIP 1EC (emulsifiable concentrate) is fenoxaprop-ethyl (12.5%). The proposed use rate on rice is 0.148 lb. ai/acre. This was calculated based on the formulation containing 1 lb. ai per gallon and the maximum use rate being 19 fl. oz. per acre. (1 lb./128 fl. oz. per gallon X 19 fl. oz per acre = 0.148 lb. ai/gallon). Two applications are permitted per season for a maximum seasonal application rate of 0.25 fl oz per acre (.195 lb. ai/acre).

The following summarizes the known toxicity of fenoxaprop-ethyl:

CONCURRENCES								
SYMBOL	B-769C							
SURNAME	Reds							
DATE	12-29-87							

EPA Form 1320-1 (12-70) OFFICIAL FILE COPY

Species	Test Type	Test Mat.	Test Results
Rat	Acute Oral	Technical	LD50=2357 mg/kg
Mouse	Acute Oral	Technical	LD50=4670 mg/kg
Bobwhite quail	Acute Oral	96.6% pure	LD50>2510 mg/kg
Japanese quail	Acute Oral	Technical	LC50>5000 mg/kg
Mallard duck	8-day dietary	96.6% pure	LC50>5620 ppm
Bobwhite quail	8-day dietary	96.6% pure	LC50>5620 ppm
Brown trout	96-hour acute	96.0% pure	LC50=480 ppb
Bluegill	96-hour acute	95.8% pure	LC50=310 ppb
Pumpkinseed sunfish	96-hour acute	96.0% pure	LC50=360 ppb
Sheepshead minnow	96-hour acute	96.5% pure	LC50=>1 ppm
Rainbow trout	96-hour acute	12.5% formulation	LC50=3.38 ppm
Pumpkinseed sunfish	96-hour acute	12.5% formulation	LC50=3.34 ppm
Fathead minnow	96-hour acute	12.5% formulation	LC50=7.12 ppm
Daphnia magna	48-hour acute	96.0% pure	LC50=3.18 ppm
Daphnia magna	48-hour acute	12.5% formulation	LC50=11.15 ppm
Procambarus simulans (juvenile crayfish)	96-hour	96.5% pure	LC50=1.1 ppm
Mysid shrimp	96-hour acute	96.5% pure	LC50=98 ppb
Eastern Oyster	48-hour acute	96.5% pure	EC50=250 ppb
Apis mellifera	acute contact	Technical	no significant mortality when exposed to 100 micrograms/bee which means test material is relatively nontoxic to bees.

Behavior in the Environment and Chemical Characteristics

Molecular Weight: 361.8
Density: 1.3 gm/cm^3 at 20^{0}C
Solubility in Water: 0.9 mg/l (pH-7; temp-25^{0}C)
Octanol water partition coefficient: 19100 (18800-19300)
Soil adsorption coefficient (K_d): 0.187×10^{-7} mbar at 20^{0}C
0.406×10^{-6} mbar at 40^{0}C
0.609×10^{-5} mbar at 60^{0}C
0.672×10^{-4} mbar at 80^{0}C
0.573×10^{-3} mbar at 100^{0}C

Aerobic soil metabolism studies indicated halflives for parent fenoxaprop-ethyl of <1 day and 5 to 14 days for the major metabolite. It was found to be immobile to intermediately mobile with respect to its capacity to leach in silt loam and silty clay. Fenoxaprop is found to be stable to hydrolysis at 20^{0}C in pH 5 and pH 7, but rapidly hydrolyzes at pH 9.

In a flow-through bioaccumulation study with pumpkinseed sunfish, fenoxaprop exhibited a bioaccumulation factor (bcf) of 384X. Residues declined after fish were placed in clean water. This bioaccumulation is considered relatively low compared to many pesticides. It would be inappropriate to compare potential body burdens based on this bcf to effect levels such as LC50's derived from ambient exposure tests to assess risk. The route of exposure is different. A high bcf (>1000X) would be used by EPA to determine if further data are needed to assess potential risk from bioaccumulation. Further, the bioaccumulation potential from ambient exposure is substantially higher than that occurring through ingestion. For DDT and Toxaphene, for example, the bcf=70000-10000X and 1500-15000X, respectively. However, the bcf through ingestion was determined to be no more than 135X and 8.5X, respectively. This is based on residues in birds that had been feeding on food items containing known residues of these pesticides[1]. This suggests that ingestion of contaminated food items does not result in a bcf as high as that demonstrated by ambient exposure to fish.

Terrestrial Discussion

These data show that fenoxaprop is practically nontoxic to mammals and birds. The mammalian LD50 can be used to extrapolate 1-day dietary LC50's based on known body weights and daily food consumptions for some representative wild mammals[2].

Species	Feeding behavior	Body Wt(g)	Food Intake (g)	1-Day[3] LC50 (ppm)
Meadow vole	grazing herbivore	46	28.1	3858
Hispid cotton rat	grazing herbivore	100	31.2	7554
Deer mouse	omnivore	18.4	3.6	12046
Least shrew	insectivore	5	5.5	2142

The expected exposure levels to terrestrial organisms are provided below based on 0.148 lb. ai/acre.

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[1] From: Pimentel, David. Ecological Effects of Pesticides on Non-Target Species. 1971. Cornell University Pub.

[2] Information on mammal weight and food consumption taken from Davis, D.E. and F.B. Golly, 1963, Principles of Mammalogy, Reinhold Publishing Corp. N.Y.

[3] Calculated LC50 (ppm) by multiplying LD50 (mg/kg) by body weight (g) and dividing by food consumption per day (g).

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Estimated Residues (ppm)

	short grass	long grass	leafy crops	insects forage	seed pods	fruit
Maximum	36	16	19	9	2	1
Typical	19	14	5	5	<1	<1

Based on the available avian LC50's and extrapolated mammalian 1-day LC50's the expected residues on terrestrial food items are not expected to have an adverse effect on terrestrial organisms. They are far less than 1/10 the lowest avian or mammalian LC50.

Aquatic Discussion

In a previous opinion rendered by the USFWS (Bolero, Rice, March 6, 1981) it was concluded that only one endangered aquatic species was associated with rice, the fat pocketbook pearly mussel. The EEB has estimated that concentrations of fenoxaprop-ethyl in aquatic habitats adjacent to rice fields will not exceed 2.64 ppb. This is less than 1/20th the EC50 for the eastern oyster (250 ppb/20= 12.5 ppb). Therefore, it is unlikely that the use of Whip will adversely effect this endangered species or the fish it attaches to during its early life stages. This residue is also less than 1/20th the lowest fish LC50 of 310 ppb and Daphnia magna LC50 of 3.18 ppm. It is less than 1/20th the shrimp LC50 of 98 ppb.

Calculation of concentration: A rate of 0.148 lb. ai/acre is applied to an unflooded rice field. After five days, the field is flooded. With a halflife of 1 day, there is 0.009 lb. ai/acre remaining. If the field is flooded with 3 inches of water, the concentration is 2.64 ppb (0.009 X 1468 ppb[4] = 13.2 X 0.2[5]/ = 2.64 ppb) in the floodwater. Even if this flowed undiluted into an adjacent water system, no hazard would be expected to any organisms.

The statement on the label, "This pesticide is toxic to fish" is not a statement of expected hazard based on use. Rather it is an statement of relative toxicity based on laboratory test results. Pesticide regulations require this statement if any fish LC50 is less than 1 ppm.

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[4] The 1468 ppb is what would be in the water if 1 lb. was applied directly to 3 inches of water.

[5] It is assumed that no more than 20% of the pesticide bound to the field soil would desorb back into the water column.

Conclusions

The use of Whip on rice at 0.27 lb. ai/acre is unlikely to have an effect on any endangered or threatened species. If you have any questions, please contact Daniel Rieder, FTS 557-1451.

Sincerely,

Henry T. Craven, Acting Chief
Ecological Effects Branch
Hazard Evaluation Division TS-769C

Attachment

cc: Headquarters, OES