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ECOLOGICAL EFFECTS BRANCH REVIEW

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TYPE PRODUCT(S): I, D, H, F, N, R, S Fungicide

DATA ACCESSION NO(S). _____

PRODUCT MANAGER NO. S. Stanton (41)

PRODUCT NAME(S) Bravo 720 (chlorothalonil)

COMPANY NAME Oregon Dept. of Agriculture

SUBMISSION PURPOSE Sec. 18 - control of eastern filbert
blight in hazelnuts

SHAUGHNESSEY CODE CHEMICAL AND FORMULATION % A.I.

081901 Tetrachloroisophthalonitrile _____

Ecological Effects Branch
Section 18
Emergency Exemption Request

CHLOROTHALONIL

100.0 Section 18 Application

100.1 Nature and Scope of Emergency

The State of Oregon requests an exemption for the use of Bravo 720 (chlorothalonil) fungicide to control eastern filbert blight on hazelnuts. If the blight is not controlled it could spread throughout the growing area thereby, eradicating almost the entire U.S. production of hazelnuts.

100.2 Target Organism

Eastern Filbert Blight

Anisogramma anomala

100.3 Date and Duration

Application is from leaf bud break (March 15, 1990) through early shoot elongation (April 30, 1990).

100.4 Application Rate and Method

Bravo 720 is to be applied twice during a 2-4 week interval at 5.5 pts./A (4.125 lbs. a.i./A). Preferred method of application is by ground equipment, but aerial application is permitted.

100.5 Treatment Areas

It is anticipated that a maximum of 11,000 acres will be treated in the following counties: Washington, Columbia, Multnomah, Clackamas, Yamhill and Marion.

100.6 Precautionary Labeling

All restrictions and precautions of the registered label will apply.

101.0 Hazard Assessment101.1 Discussion

Non chemical management practices and non commercial mixtures have been unsuccessful in controlling the disease. According to two plant pathologists there are no efficacious pesticides registered for controlling the eastern filbert blight. Chlorothalonil has been shown to be effective at reducing the number of new infections and germinating spores.

101.2 Likelihood of Adverse Effects to Non-Target OrganismsToxicity

Chlorothalonil is practically non-toxic to mammals and birds on an acute basis. Its degradate, SDS-3701, is slightly to moderately toxic.

<u>Species</u>	<u>Product</u>	<u>Test Type</u>	<u>Results</u>
Rat	technical	LD ₅₀	>10,000 mg/kg
Mallard	"	LD ₅₀	> 4,640 mg/kg
Mallard	"	LC ₅₀	21,500 ppm
B.W. Quail	"	LC ₅₀	>10,000 ppm
B.W. Quail	degradate	LC ₅₀	1,746 ppm
Mallard	"	LC ₅₀	2,000 ppm
Mallard	"	LD ₅₀	158 mg/kg

Avian reproduction studies using Chlorothalonil technical produced NOEL's = 10,000 ppm in mallards and = 1,000 ppm in bobwhite quail. The degradate showed reproductive effects at lower concentrations. The NOEL's for mallards and bobwhite quail are 50 ppm and 100 ppm, respectively.

Chlorothalonil is very highly toxic to fish and aquatic invertebrates whereas, SDS-3701 is slightly toxic.

<u>Species</u>	<u>Product</u>	<u>Test Type</u>	<u>Results</u>
R. Trout	technical	LC ₅₀	47 ppb
Bluegill	"	"	51 ppb
<u>D. Magna</u>	"	"	70 ppb
<u>D. Magna</u>	degradate	"	26 ppm
Bluegill	"	"	16 ppb

Aquatic reproduction studies using chlorothalonil produced MATC values > 3 < 6.5 ppb and > 39 < 79 ppb for fathead minnows and D. magna, respectively.

Terrestrial Residues

Applying 5.5 pts./A. (4.125 lbs a.i./A) of Bravo 720 to vegetation is expected to result in the following typical residues (ppm). Based on crop residue studies, the degradate will make up on average, 7.5% of the applied parent.

	<u>short grass</u>	<u>long grass</u>	<u>leafy crops</u>	<u>insect forage</u>	<u>seed pods</u>	<u>fruit</u>
parent						
950		450	500	230	50	30
degradate						
71		34	37	17	4	2

Aquatic Residues

Chlorothalonil is insoluble in water (.6 ppm) therefore, a 1% runoff will be used in the EEC calculations. The EEC is calculated according to a 6 ft. deep, 1 A. pond with a 10 A. drainage basin.

$$\begin{aligned} & \text{Runoff} && \text{application} \\ & 4.125 \text{ lbs. a.i./A.} \times .6 \text{ efficiency} \times .01 \times 10 \text{ A.} \\ & = .25 \text{ lbs total runoff} \end{aligned}$$

$$\begin{aligned} & \text{Drift} && 5\% && \text{total} \\ & 4.125 \text{ lbs. a.i./A.} \times .05 \text{ drift} = .21 \text{ lbs. drift} \end{aligned}$$

$$\text{EEC} \\ \text{Total loading} = .25 \text{ lbs. runoff} + .21 \text{ lbs. drift} = .46 \text{ lbs.}$$

$$\text{Therefore, EEC} = 61 \text{ ppb constant} \times .46 \text{ lbs.} = 28 \text{ ppb}$$

Risk AssessmentTerrestrial

Based on the maximum expected residues on vegetation, neither the parent product or its degradate exceed the ecological concern level for Restricted-Use Classification (1/5 LC₅₀) or the endangered species concern level (1/10 LC₅₀) for mammalian and avian acute toxicity.

Maximum residue levels of chlorothalonil are below the NOEL's of avian reproduction results for both mallard and bobwhite quail but, the maximum residue of SDS-3701 (71 ppm) exceeds the degradate's reproductive NOEL on mallards (50 ppm).

Aquatic

The estimated environmental concentration (EEC) of chlorothalonil exceeds the Presumption of Unacceptable Risk for non-endangered species ($EEC \geq 1/2 LC_{50}$) and endangered species ($EEC \geq 1/20 LC_{50}$) for freshwater fish. The EEC of Chlorothalonil exceeds the ecological concern level for Restricted-Use Classification ($1/10 LC_{50}$) and endangered species for freshwater aquatic invertebrates (D. magna).

Reproductive effects can be expected in freshwater fish. The EEC exceeds the MATC for fathead minnows. A risk assessment on estuarine or marine organisms was not performed because of the specified use areas.

Environmental Fate Information

Chlorothalonil does not photodegrade on leaf surfaces but degrades at a moderate rate in soils, with a half-life up to 30 days. It is slightly mobile to mobile in most soils. SDS-3701 is persistent in soil, and there is no dissipation within 90 days.

Chlorothalonil is insoluble in water (.6 ppm) and is stable to hydrolysis for 30 days in water. Its half-life in sediment is 5 to 15 days.

102.0 Endangered Species Considerations

Chlorothalonil is not expected to be acutely toxic to avian or mammalian endangered species. There are no endangered fish or aquatic invertebrate species in the treatment area. Because of the northern spotted owl's strict habitat preference it is doubtful that its reproduction will be affected by this use pattern.

103.0 Adequacy of Toxicity Data

The available data were adequate to assess the potential hazard of this proposed Section 18.

104.0 Adequacy of Labelling

Labeling was not provided for review. It should read as follows:

Environmental Hazards

This pesticide is toxic to fish. Drift and runoff may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water when disposing of equipment washwaters.

105.0 Conclusion

EEB has completed a risk assessment of the proposed emergency exemption (Sec. 18) of Bravo 720 for use on hazelnuts in Oregon. The proposed use will have minimal adverse effects on endangered or non endangered avian and mammalian species. Based on chlorothalonil's toxicity and moderate persistence in water, there is a potential hazard to non target aquatic organisms.

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