11401

(2)

EEE BRANCH REVIEW

DATE: IN 10/31/75 OUT 11/21/75 IN _____ OUT _____ IN _____ OUT _____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. _____

PETITION OR EXP. PERMIT NO. 707-EUP

DATE DIV. RECEIVED October 14, 1975

DATE OF SUBMISSION October 13, 1975

DATE SUBMISSION ACCEPTED _____

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

PRODUCT MGR. NO. N/A

PRODUCT NAME(S) RH-2915

COMPANY NAME Rohm and Haas

SUBMISSION PURPOSE EUP

CHEMICAL & FORMULATION 2-chloro-1-(3-exthoxy-4-nitrophenoxy) 4 (trifluoromethyl) benzene 24.3%

(1)

Environmental Safety Review
707-EUP

100.0 Pesticidal Use: RH-2915 is proposed in this permit for development as a selective herbicide in various tree fruits (including grapes) in California.

RH-2915 herbicide is an emulsifiable formulation containing 2 pounds per gallon of the active ingredient. The active ingredient is described as follows:

2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-trifluoromethyl benzene

Temporary tolerances for this herbicide were established on corn and soybeans (PP 5G1581). Experimental permits for field studies on these crops are still valid (707-EXP-82G and 707-EXP-83G).

The petition proposes tolerances for RH-2915 on certain tree fruits to permit field tests on these crops in California. RH-2915 herbicide offers substantial promise as a single application (per season) herbicide in a total program involving other herbicides cleared on these crops.

This proposed experimental permit on tree fruits is solely for trials within the state of California. Tests involving 100 gallons of RH-2915 (200 lbs. AI) on 174 acres of fruit crops are proposed as follows:

Crop	No. of Tests	Acreage	RH-2915 lbs. AI	RH-2915 gallons
Grapes	21	42	48	24 ~~24~~
Almonds	21	42	48	24
Peach/ nectarine	17	34	40	20
Plum/prune	14	28	32	16
Apricots	14	28	32	16
	87 tests	174 acres	200 AI	100 gallons

100.1 Application methods/directions and rates:

Directions for proposed - as proposed

2

Grape, Almond, Peach, Plum, Apricot, Prune and Nectarine

(Grown in California Only)

RH-2915 2EC is a selective herbicide suggested for trial use in certain fruit and nut crops. RH-2915 2EC is an emulsifiable concentrate containing 2.0 pounds of active ingredient per gallon of product. RH-2915 2EC provides effective preemergence and postemergence control of many annual grass and broadleaf weeds. The most effective postemergence weed control is obtained when RH-2915 2EC is applied to seedling weeds less than 2 inches tall. RH-2915 2EC will not control perennial weeds or large established annual weeds.

Mixing and Application

Mix RH-2915 2EC in water and apply uniformly with a standardslow pressure herbicide sprayer with flat fan nozzles at 10 to 100 gallons per acre. Spray equipment should be carefully calibrated before each use. Surface applications are most effective if followed by rainfall or overhead irrigation (1/2 to 1 inch) within 2 weeks after application.

RH-2915 should be applied as a ground spray directed at the base of crops plants. Direct contact with foliage should be avoided as RH-2915 has a high level of contact activity.

Applications may be made to nonbearing or established plantings in late fall through early spring for the control of susceptible weed species. Applications to newly planted grapes should be delayed until the plants are staked.

Recommended Rate and Timing

Grape, Almond, Peach, Plum, Apricot, Prune and Nectarine

RH-2915 2EC is recommended for preemergence and postemergence control of susceptible weed species.

Where RH-2915 2EC is to be used preemergence to susceptible weeds, rates of 4.0 to 8.0 pints per acre for broadcast application are recommended. The higher rates should be used where dense annual grass populations are expected or where longer residual is desired.

Where RH-2915 2EC is to be used postemergence to susceptible weeds, rates of 4.0 to 8.0 pints per acre for broadcast application are recommended. The higher rate should be used on weeds larger than 1.0 inch tall.

101.0 Chemical and Physical Properties

100.1 Chemical Name: 2-chloro-1-(3-ethoxy-4-nitrophenoxy)-4-trifluoromethyl benzene. This nomenclature is consistent with the "9th Collective Index of Chemical Abstracts".

Other Names: 2-chloro-4-trifluoromethyl-3'-ethoxy-4'-nitrodiphenylether.

or 2-chloro-α,α,α,-trifluoro-p-tolyl-3-ethoxy-nitrophenyl ether

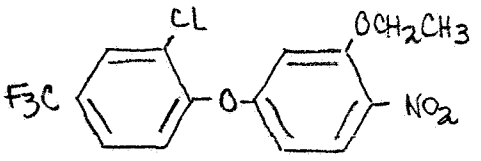
or RH-2915

or RH-915

Proprietary Name: None at present

101.2 Common Name: None at present

101.3 Structural Formula:



Empirical Formula: $C_{15}H_{11}ClF_3NO_4$

101.4 Molecular Weight: 361.72

101.5 Form: Crystalline solid at room temperature

Color: Orange

Odor: Faint

Melting Point: 84 - 85°C

Vapor Pressure: 2×10^{-6} Torr at 25°C

Boiling Point: 358.7°C (calculated)

101.6 Solubility: <0.1 ppm in water at 25°C
Soluble in most organic solvents

Hydrolysis: No significant hydrolysis of RH-2915 occurred when placed in buffered aqueous solutions of pH 5, 7, and 9 and maintained at 25°C for 28 days. ([redacted])

Photolysis: RH-2915 undergoes rapid photochemical degradation upon exposure to artificial sunlight under laboratory conditions. ([redacted])

Composition: The purity of a typical production grade RH-2915 technical is generally greater than 90% active ingredient. The average composition of a RH-2915 technical including the identity of the inerts is listed below.

2-chloro-1-(3-ethoxy-4-nitrophenoxy) -4-trifluoromethyl benzene.	90% AI.
Inert Isomers ([redacted])	10%
	100%

102.0 Behavior in the Environment*: No data readily available at time of review. (1/2 life in soil 35-50 days; 90% dissipation in 125-160 days; no noticeable hydrolysis at pH's 5, 7 and 9; very little leaching beyond surface 1-2 inches of soil; readily photodegraded)

103.0 Toxicological Properties*: (submitted in petition 5G1581)

103.1 Acute toxicity

103.1.1 Mammal

Species	Test Results	Test Material
Rat (2M)	LD_{50} = > 5,000 mg/Kg	Technical
Dog (2F)	LD_{50} = > 5,000 mg/Kg	Technical
rabbits	Acute Dermal = > 10,000 mg/Kg	Technical
rat	LD_{50} = 5.8 ± 0.21 gm/Kg - 24 hr.	24.3% a.i.
rabbits	Acute dermal = > 3,000 mg/Kg	24.3% a.i.
rat	LD_{50} = 5.05 ± 0.11 gm/Kg - 14 day	24.3% a.i.

103.1.2 Bird

Bird	Test Results	Test Material
Mallard	LC_{50} (8 day) = > 4,000 ppm	Technical
Bobwhite	LC_{50} (8 day) = 390 ± 22.70 ppm	Technical

*All data was only referenced in this submission; data appearing in this review was re-abstracted from N. Cooks' review dated 2-5-75 (for corn and soybeans)

5

103.1.3

Fish	Test Results	Duration	Test Material
Bluegill	Dynamic LC_{50} = > 0.32 ppm	24 hr.	Technical
Bluegill	Dynamic LC_{50} = 0.2 ppm	96 hr.	Technical
Rainbow	Dynamic LC_{50} = > 0.75 ppm	24 hr.	Technical
Rainbow	Dynamic LC_{50} = 0.41 ppm	96 hr.	Technical

Bluegill Confidence Limits for 0.2 = 0.130 - 0.310 ppm
Rainbow Confidence Limits for 0.41 = 0.310 - 0.560 ppm

103.1.4 Aquatic Invertebrate: Not available

103.2 Subacute:

90-day feeding study Rats (2M and 2F) dose: 200/1,000/5,000 ppm
No effect level = 1,000 ppm
No signs of toxicological importance at any level.
(only hepatic centrilobular noted at post mortem histopathology)

90-day feeding study Dogs (2M and 2F) dose: 80/400/2000 ppm
No effect level = 400 ppm
No alterations of toxicological significance in body weight gain, food consumption, hematology or clinical chemistry at either 80 ppm or 400 ppm levels. The 2,000 ppm level caused significant depression of weight gain and a slight increase in alkaline phosphatase in both sexes.

NO EFFECT LEVELS

a) Bluegills - 0.056 ppm
b) Rainbow - 0.140 ppm
c) Mallard - appears to be 4000 ppm
d) Bobwhite - appears to be 100 (or less) ppm
e) Rats - 1,000 ppm (feeding study - 90 day)
f) Dogs - 400 ppm (feeding study - 90 day)

103.3 Chronic toxicity

Rats = mutogenicity - cytogenetic study - study revealed no mutagenic effects. (assume technical)

Rabbit = teratology study - 5, 25, 125 mg/Kg/day at these dosage levels; administered on days 6-18 of pregnancy, there was no important incidence of developmental abnormalities (technical)

103.4 Field toxicity: none available

6

104.0 Hazard Assessment

104.1 Discussion

Laboratory studies reveal this material to be toxic to fish and birds at levels low enough to raise concern for the hazard potential under actual use conditions. Observations of effects to fish and wildlife should be conducted in an organized manner during the Experimental Use permit for each area treated. Evaluation of a complete Environmental Chemistry review is necessary for a thorough assessment of the hazard potential. Additional studies may be required at that time. At present, the precautionary statements address the situation adequately, but need slight modification. However, the chemical appears to be relatively persistent - uptake and accumulation studies should address the problems of continued exposure.

104.1.1 Adequacy of toxicity data: satisfactory

104.1.2 Additional data required: The acute (LC_{50}) study for daphnia as required by the section III regulations.

104.1.3 Likelihood of exposure to non-target organisms:

A wide variety of birds from songbirds to gamebirds and mammals all utilize the crop cultures listed on the proposed label. Applications will be made primarily in late fall through early spring.

105.0 Conclusions

The environmental safety review staff finds no objections to the proposed experimental use permit. Observations should be conducted in an organized manner for all use areas for adverse effects upon fish and wildlife. All observations should be properly recorded and reported.

Prior to registration an acute toxicity study (LC_{50}) with daphnia as specified in the section III regulations is required. The complete environmental safety assessment cannot be made until all 70-15 requirements have been submitted.

Note the following modifications for the present fish and wildlife precautionary statements:

a) delete the semicolon following the word "streams," replace with a period and begin a new sentence with "Do not . . ."

b) The drift statement should be modified to read as follows:

Do not apply when weather conditions favor runoff or drift from target areas.

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11/21/75