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EEB REVIEW

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FILE OR REG. NO. 707-215, 707-221

PETITION OR EXP. NO. _____

DATE OF SUBMISSION 9-29-89

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TYPE PRODUCT(S) fungicide

DATA ACCESSION NO(S) _____

PRODUCT MANAGER, NO. S. Lewis (21)

PRODUCT NAME(S) Rally 40W: 707-215

Nova 40W: 707-221

COMPANY NAME Rohm and Haas Company

SUBMISSION PURPOSE Proposed registration of use on Pome fruits: apples, crabapples, loquats, pears and quinces.

SHAUGHNESSEY NO.	CHEMICAL	% A.I.

ECOLOGICAL EFFECTS BRANCH REVIEW

Myclobutanil

100.0 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

Rohm & Haas Company, is requesting a section 3 registration for Rally 40W and Nova 40W, to be used on pome fruits: apples, crabapples, loquats, pears, and quinces. Nova/Rally is a fungicide. No additional data was submitted with this request.

100.2 Formulation Information

Rally/Nova 40W fungicide is 40% myclobutanil.

ACTIVE INGREDIENT:
-butyl- -(4-chlorohpenyl)-1H-1,24-triazole-1-propanenitrile -- 40%

INERT INGREDIENTS: -- 60%

100.3 Application Methods, Direction, Rates

The application rate is .0625-.525 lbs ai / acre, depending on height of trees and the extent of pruning. Treatment may be repeated as needed every 7-10 days before harvest and not exceeding 2 lbs. ai per acre per growing season.

100.4 Target Organisms

Fungus

100.5 Precautionary Labeling

Do not apply directly to water or wetlands. Do not contaminate water when disposing of equipment washwaters. Do not apply when weather conditions favor drift of runoff from areas treated.

101 Hazard Assessment

101.1 Discussion

According to the label, application should be made by ground equipment only.

Maximum use rate is .0625 - .525 lb. ai./acre (no more than 2 lbs. ai. per acre per growing season), with multiple application per season every 7-10 days.

Data from Environmental Fate and Ground Water Branch describe myclobutanil hydrolysis as stable in pHs of 5,7, and 9 and to photolysis in water. Photolysis in soil indicate an extrapolated $t_{\frac{1}{2}}$ ca. 143 days. Aerobic soil metabolism exhibit a $t_{\frac{1}{2}}$ of 61-71

days and anaerobic soil metabolism show no detectable degradation after ca. 60 days. Also, leaching tests determined that myclobutanil is moderately mobile and its degradates are highly mobile.

101.2 Likelihood of Adverse Effects to Nontarget Organisms

Toxicity Information

Myclobutanil is slightly toxic to practically nontoxic to birds with an LD_{50} of 510 mg/kg (bobwhite) and LC_{50}'s of >5000 ppm for both bobwhite quail and mallard ducks.

Myclobutanil is slightly toxic to mammals with a lowest oral LD_{50} of 1360 mg/kg rats. The systemic and reproductive NOEL for rats was 50 and 200 ppm, respectively, in a two-generation reproduction test. The reproduction study concluded an increased number of stillborns and a decreased weight gain in pups during lactation.

Myclobutanil is moderately toxic to fish with LC_{50}'s of 4.2 and 2.4 ppm for rainbow trout and bluegill sunfish, respectively. An LC_{50} of 11 ppm for Daphnia magna indicates slight toxicity.

The avian reproduction tests showed no adverse effects at 60 ppm (highest level tested) to bobwhite and mallards.

The fish early life stage test indicated that the fish MATC for development and survival is >2.2 <4 ppm.

TERRESTRIAL EXPOSURE

Below are the maximum expected residues on vegetation after one application of 0.525 lbs ai/A.

short rang grasses	long range grass	leaves & leaf crop	forage, insects	pods with seeds	fruits
125 ppm	57 ppm	65 ppm	30 ppm	6.3 ppm	3.8 ppm

At this rate, 0.525 lbs ai/A, a maximum of four applications could be used in a minimum of 28 days. The maximum residue that may occur on forage and insects during that time period is 107 ppm and the average residue may be 70 ppm (see attached fate model).

The maximum estimated residues do not exceed the avian LC_{50}'s (5000 ppm) nor the mammalian reproductive NOEL (200 ppm). The maximum residues do exceed the avian reproductive NOEL (60 ppm). Previous EEB reviews have indicated this in the past also and have found minimal risk. But, for this review there is an increase in the amount of active ingredient per acre and a decrease in the

number of days between applications. Also, past EEB reviews reported a half life of 12.4 days. However, according to the most recent EFGWB review (January 30, 1990; E.Brinson Conerly - petition for permanent tolerance on pome fruits) aerobic soil metabolism for myclobutanil was $t_{½}$ 61-71 days. Terrestrial field dissipation studies have been deemed unacceptable. In light of the above; increased ai, decreased time intervals, and new environmental fate data, avian reproduction studies with the mallard and bobwhite should be reconducted indicating a NOEL and a LOEL.

AQUATIC EXPOSURE

An aquatic half-life is not available for myclobutanil, only that it is stable to photolysis and hydrolysis for 30 days. Since a maximum of 0.525 lbs ai/A can be used in 7 day intervals (up to 2.0 lb ai within 30 days), an aquatic EEC will be calculated using the maximum use per season which is 2.0 lbs. If myclobutanil is applied at 2.0 lbs ai/A, within a 30 day period to a 10 acre orchard which drains into a 1 acre-pond, the following concentrations are expected (these represent maximum EEC's):

2.0 lb ai x 5% runoff x 10 Acre drainage = 1 lb total runoff

Therefore:

6 inch ----- * 734 ppb x 1.0= 734 ppb

1 foot ----- * 368 ppb x 1.0= 368 ppb

6 foot ----- * 61 ppb x 1.0= 61 ppb

* EEC values for 1 lb ai based on runoff to a 1 A pond 6 inches, 1 foot, and 6 feet deep.

The above EEC values are less than the fish and the aquatic invertebrate LC_{50}'s (2.4 ppm, fish; 11 ppm, Daphnia magna) and the NOEL of the fish early life stage test (2200 ppb). Minimal adverse acute or chronic effects are expected to aquatic organisms due to the proposed use of myclobutanil on pome fruits.

101.3 Endangered Species Considerations

The endangered species triggers are:

GROUP	LC_{50}/LD_{50}	TRIGGER
BIRDS	5000 ppm/10	= 500 ppm
MAMMALS*	1454 ppm/10	= 145 ppm
FISH	2.4 ppm/20	= 120 ppb
AQUATIC INVERTEBRATES	11 ppm/20	= 550 ppb

* Based on the LD_{50} of 1600 mg/kg/1.1 (extrapolated to a 1-day LC_{50} for the least shrew which eats 1.1 times its weight per day. The LC_{50} for other mammals would be higher since they eat less per body weight than this insectivore).

The estimated residues on terrestrial food items do not exceed 1/10th the lowest avian or mammalian LC_{50}'s. However, the chronic NOEL for birds (60 ppm) has been exceeded. Avian reproduction studies for bobwhite and quail will be redone since 60 ppm was the highest level tested. Formal consultation with U.S. Fish and Wildlife Service (USFWS) to assess chronic risk to endangered birds are pending these reconducted studies. The aquatic EEC (734 ppb) in water adjacent to treated areas exceeds that for endangered aquatic invertebrates and fish. However, consultation with USFWS regarding the use of this pesticide and possible detrimental effects to federally listed endangered/threatened freshwater fish species is pending the submissions of additional data.

101.4 Adequacy of Data

The available data were sufficient to assess acute hazards to nontarget nonendangered organisms. However, the following studies must be rectified or reconducted:

- avian reproduction studies (2) with mallard and bobwhite, indicating NOEL and LOEL.
- an algae study with Selanastrum sp. as requested in previous review by Jeffery Bigler, 10-23-89.

Further, additional data may be required depending on results of the above.

101.5 Adequacy of Labeling

Labeling is adequate.

103 Conclusion

EEB has reviewed the proposed registration of myclobutanil (NOVA/RALLY 40W) for use on pome fruits; apples, crabapples, loquats, pears, and quinces. Based on available data and use information, EEB concludes minimal acute hazard to non-endangered non-target birds, mammals, and freshwater organisms. A complete assessment of the chronic risk to birds is pending the submission of studies listed in section 101.4 of this review. Also, a formal consultation with USFWS must be initiated regarding the use of this pesticide and possible detrimental effects to federally listed endangered/threatened species of freshwater fish but is pending the submissions of data outlined in section 101.4 of this review. The formal consultation with USFWS should be considered before section 3 registration of myclobutanil.

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A PROGRAM FOR PESTICIDE FATE SIMULATION

DAILY ACCUMULATED PESTICIDE RESIDUES---MULTP. APPL.

Chemical name	myclobutanil
Initial concentration (ppm)	30
Half-life	61
A number of application	4
Application interval	7
Length of simulation (day)	30

DAY	RESIDUE (PPM)
0	30
1	29.66104
2	29.3259
3	28.99456
4	28.66696
5	28.34306
6	28.02282
7	57.70619
8	57.05419
9	56.40954
10	55.77219
11	55.14203
12	54.519
13	53.903
14	83.29396
15	82.35285
16	81.42236
17	80.50239
18	79.59281
19	78.69351
20	77.80437
21	106.9253
22	105.7172
23	104.5227
24	103.3417
25	102.1741
26	101.0196
27	99.87824
28	98.74974
29	97.63399
30	96.53086
Maximum residue	106.9253
Average residue	70.11858

RESIDUES FOUND ON INSECTS AND FORAGE:

These residues represent 4 applications of NOVA/RALLY 40W in a period of 30 days. The applicati interval used was 7 days at a max imum of 0.525 lb ai/acre.