EEE BRANCH REVIEW

DATE: IN 11/10/78 OUT 1/12/79 IN ____ OUT ____ IN ____ OUT ____

FISH & WILDLIFE ENVIRONMENTAL CHEMISTRY EFFICACY

FILE OR REG. NO. 3125-GRI/GEN/GRO

PETITION OR EXP. PERMIT NO. ____

DATE DIV. RECEIVED ____

DATE OF SUBMISSION ____

DATE SUBMISSION ACCEPTED ____

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

DATA ACCESSION NO(S). 236624

PRODUCT MGR. NO. 21

PRODUCT NAME(S) BAYLETON

COMPANY NAME Chemagro

SUBMISSION PURPOSE Registration: azaleas and manufacturing use

CHEMICAL & FORMULATION 1-(4-chlorophenoxy)-3,3-dimethyl-1-(1H-1,2,4 triazol-1-yl)-2-butanone

100.0 Pesticidal use

This review is for a resubmission of three Bayleton formulations: (1) Bayleton technical (92%) for manufacturing use, (2) Bayleton 25% wettable powder, and (3) Bayleton 50% wettable powder. The wettable powders are proposed as fungicides for use on azaleas. This specific submission contains additional and corrected information on fish and wildlife studies previously reviewed by R.W. Felthousen (4/13/78).

100.1 Application methods/directions

Bayleton 25 and 50% wettable powders are rapidly absorbed and work systemically to give effective control for four weeks. Good coverage and wetting of the foliage is necessary for effective control. Control may be less effective on plants suffering from drought stress.

Mix specified dosage in 100 gallons of water and apply as a full coverage spray to point of runoff. Application should be made in the expanded bud stage (color showing). Early and late blooming varieties may require treatment on different dates. If such varieties are closely interplanted, two applications may be made to the entire planting.

Use the high/rate for maximum protection. A second application may be made if needed.

100.2 Application rates

Use 4-8 ounces of Bayleton 50% WP or 8-16 ounces of Bayleton 25% WP in 100 gallons of water for full coverage spray. Spray to run-off.

In a conversation with Dr. Frank Goin of the University of Maryland horticulture department, it was learned that typically 50-60 gallons of spray per acre would suffice for three foot high plants and 30 gallons would likely be enough for 18-inch high plants. For larger plants, presumably 100 gallons per acre would be the maximum rate. At 100 gallons/acre, application rate would be 2-4 ounces a.i./acre.

100.3 Precautionary labeling

(1) Technical Bayleton: "Keep out of lakes, streams, and ponds. Do not contaminate water by cleaning of equipment or disposal of wastes."

(2) Bayleton 25 WP and Bayleton 50 WP: "Do not use on crops grown for food or forage. Keep out of lakes, streams, and ponds. Do not contaminate water by cleaning of equipment or disposal of wastes. Apply this product only as specified on this label. "Do not make applications when weather conditions favor drift from target area."

101.0 Chemical and physical properties

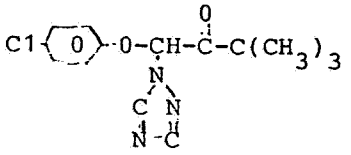
101.1 Chemical name

1-(4-chlorophenoxy)-3,3-dimethyl-1-(1H1,2,4triazol-1-yl)-2-butanone

101.2 Common name

Bayleton™, triadimefon, BAY 8364, MEB 6447

101.3 Structural formula



$C_{14}H_{16}N_3O_2Cl$

101.4 Molecular weight

293.7

101.5 Physical state

White to tan crystals, odorless to mild aromatic

101.6 Solubility

260 ppm in water at 20°C.

102.0 Behavior in the environment

Reference: Environmental Fate review by K. Sampson/ R.E. Ney, 8/8/78.

102.1 Soil

In laboratory studies, the half-life of Bayleton was six days in aerobic soil and 15 days in anaerobic soil. Since there was no degradation in sterile soils,

microbial action on Bayleton seems a likely route of degradation. In field studies the average half-life was five days, but the half-life of Bayleton plus its primary degradate (KWG-0519) was 225 days. KWG-0519 is considered persistent.

Bayleton leaches moderately fast.

102.2 Water

Bayleton is stable to hydrolysis at pH 3,6, and 9 and temperatures of 25°, 35°, 45°C. It will photolyze in water with a half-life of 10-12 hours.

102.3 Plant

There is little inhibition of soil microbes by Bayleton.

102.4 Animal

Bayleton accumulated in 28 days in catfish to a modest level of 6.5-7.6x.

103.0 Toxicological properties

103.1 Acute toxicity

103.1.1 Mammal

Reference: Toxicology memo by J.D. Doherty, 2/15/78.

rat acute oral LD_{50}	(25% WP)	=	2828 mg/kg male
rat acute oral LD_{50}	(25% WP)	=	3668 mg/kg female
rat acute oral LD_{50}	(50% WP)	=	812 mg/kg male
rat acute oral LD_{50}	(50% WP)	=	1470 mg/kg female
rat acute oral LD_{50}	(92% tech)	=	568 mg/kg male
rat acute oral LD_{50}	(92% tech)	=	363 mg/kg female
mouse acute oral LD_{50}	(92% tech)	=	987 mg/kg male
mouse acute oral LD_{50}	(92% tech)	=	1071 mg/kg female
rabbit acute oral LD_{50}	(tech)	=	500 mg/kg female
dog acute oral LD_{50}	(tech)	=	500 mg/kg female

103.1.2 Bird

Reference: EEB review by R.W. Felthousen, 4/13/78. Mallard duck acute oral LD_{50} (tech) > 4000 mg/kg.

This study was previously considered invalid by R.W. Felthousen because test conditions, food consumption, and body weight data were not reported. These data

has been reported in this submission, although no food consumption data was taken because of the inherent inaccuracy of food consumption values with ducks. These data have been added to EEB files and this study has been reclassified as core.

103.1.3 Fish

Reference: EEB review by R.W. Felthousen, 4/13/78.
Bluegill 96 hour LC_{50} (tech) = 11 ppm — core
Channel catfish 96 hour LC_{50} (tech) = 15 ppm — core
Rainbow trout 96 hour LC_{50} (tech) = 14 ppm — invalid

The rainbow trout study was classified as invalid by R.W. Felthousen because of an error in the mortality data originally submitted. This error has been corrected with the current submission. A statistical analysis was performed on the corrected data and resulted in LC_{50} values of 13.69 ppm according to method of Weil and 12.97 ppm according to Finney probit method. Both of these values fall within the reported 95% confidence limits of 12-16 ppm. This study has been reclassified as core.

103.1.4 Aquatic invertebrate

Reference: EEB review by R.W. Felthousen, 4/13/78.
Daphnia magna 48-hour LC_{50} (tech) = 1.6 ppm — invalid

The daphnia study was classified as invalid by R.W. Felthousen because the temperature, pH, D.O., and hardness of the water and the method of statistical analysis were not reported. Registrant was contacted and this data was supplied over the telephone (see attached telephone record sheet) with written confirmation to follow. Since a Finney probit analysis done by Felthousen closely matched the registrant's LC_{50}, no attempt was made to analyze the data according to Weil.

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This study has been reclassified as core.

103.3 Subacute toxicity

Reference: EEB review by R.W. Felthousen, 4/13/78.
Bobwhite dietary LC_{50} (93%) > 4640 ppm — core
Mallard dietary LC_{50} (93%) > 10,000 ppm — core

104.0 Hazard assessment

Although manufacturing use registration is included in this review, the following hazard assessment addresses only the azalea use pattern.

104.1 Discussion

Bayleton 25% and 50% wettable powders are proposed for use on azaleas to control Azalea petal blight. Assuming a maximum application rate of 100 gallons of spray per acre (see section 100.2), then 2-4 ounces a.i. will be applied per acre. This would result in foliar residues of 15-31 ppm (reference: leaves and leafy crops column of residue profile chart). A second application can be made at an unspecified interval. Because the soil half-life of Bayleton is 5-15 days, it would not be expected that residues following the second application would be twice those following the first. It should be noted that the primary degradate of Bayleton is KWG-0519 which has an unknown toxicity and a persistence half-life in soil of 225 days.

104.1.1 Likelihood of exposure to non-target organisms

Azaleas are grown commercially throughout the moist areas of southern U.S., western U.S., and moderate climates of the northern U.S. The acreage devoted to azaleas is unknown, but cannot be considered extensive in any given area. The proposed submission is apparently not oriented to homeowner use, but extensive ornamental plantings (e.g. arboretums, parks, gardens, etc.) could be treated. Young nursery stock would not be treated until it is old enough to start forming flowers. In many nurseries, the stock is sold before it reaches the flowering stage. Thus, retail nurseries would be more likely to use Bayleton than would production nurseries. A substantial amount of greenhouse use could occur in more northern areas, but this is an indoor use.

Bayleton appears to have low toxicity to bird, with a mallard acute oral LD_{50} > 4000 mg/kg and avian dietary LC_{50} values of > 4640 and > 10,000 ppm. It is only slightly toxic to fish with LC_{50} values of 11-15 ppm. This reviewer concludes that no adverse acute or subacute effects are expected from the proposed use pattern on azaleas. There is some concern about the persistence and lack of toxicity data of KWG-0519, the primary degradate of Bayleton. But this does not seem important for an azalea use pattern.

104.1.2 Endangered species considerations

It is not expected that an azalea use pattern will expose any endangered species. If any are exposed, the low toxicity should preclude any adverse effects.

104.1.3 Adequacy of toxicity data

All of the minimum required studies have been submitted and have been validated as core.

104.1.4 Data requests

No additional data are required for this use pattern. For other use patterns it is likely that additional data will be required for KWG-0519, the primary degradate of Bayleton. This additional data would include a rat acute oral LD_{50} and quite possibly an avian reproduction study because of the long persistence of KWG-0519.

107.0 Recommendations

107.1 Environmental fate and toxicology

Toxicology data were obtained from Toxicology Branch memo by J. Doherty, 2/15/78. Environmental Fate data were obtained from Environmental Fate Branch review by K. Sampson/R. Ney, 8/8/78.

107.2 Classification

The use pattern on Azaleas for Bayleton is classified as general. Other use patterns that would involve no more than ten times the application rate would also be classified as general. (See attached classification sheets.)

107.3 Precautionary labeling

The precautionary labeling on the proposed labels is adequate.

107.4/5 Data adequacy/requests

See sections 104.1.3 and 104.1.4.

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107.7 Conclusions

The Ecological Effects Branch has completed a hazard assessment for the proposed use of Bayleton on azaleas. It is expected that adverse effects to non-target organisms will be negligible or none. Ecological Effects has no objections to either the manufacturing or azalea use.

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Ecological Effects Branch, Section 1
January 12, 1979

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2/9/79