Chemical Code: **128997** Date Out: 5/26/93

ENVIRONMENTAL FATE AND GROUND WATER BRANCH

Review Action

To: R. Cool/ S. Stanton, PM # 41
Registration Division (H7505C)

From: Akiva Abramovitch, Section Chief
Chemical Review Section 3
Environmental Fate & Ground Water Branch/EFED (H7507C)

Thru: Henry Jacoby, Chief
Environmental Fate & Ground Water Branch/EFED (H7507C)

Attached, please find the EFGWB review of...

DP Barcode:	D174263, D178316, D178322, D178326, D178331, D178334, D178345, D178355, D183415, D183419, D183421, D183429, D183431, D183432, D183434, D183433, D184805, **D189222**		
Common Name:	Tebuconazole, Folicur	**Trade name:**	Elite
Company Name:	Miles Inc.		
ID #:			
Purpose:	various		

Type Product:	Action Code:	EFGWB #(s):	Review Time:
fungicide	various	92-0530, 92-0897, -0898, -0899, -0900, -0901, -0902, -0903, 93-0039, 93-0040,-0041, -0042, -0043, -0044, -0045, -0046, 93-0167, 93-0518	

STATUS OF STUDIES IN THIS PACKAGE:

Guideline #	MRID	Status[1]
165-4	424875-01	A

STATUS OF DATA REQUIREMENTS:

	Status[2]
161-1	S
161-2	S
161-3	S
162-1	S
162-2	S
163-1	S
164-1	S
165-1	S
165-2	S

[1]Study Status Codes: A=Acceptable U=Upgradeable C=Ancillary I=Invalid.
[2]Data Requirement Status Codes: S=Satisfied P=Partially satisfied N=Not satisfied R=Reserved.

Chemical Code: **128997** Date Out: _____

ENVIRONMENTAL FATE AND GROUND WATER BRANCH

Review Action

To: Susan Lewis/Ben Chambliss, PM # 21
Registration Division (H7505C)

From: Akiva Abramovitch, Section Chief
Chemical Review Section 3
Environmental Fate & Ground Water Branch/EFED (H7507C)

Thru: Henry Jacoby, Chief
Environmental Fate & Ground Water Branch/EFED (H7507C)

Attached, please find the EFGWB review of...

DP Barcode:	D174263, D178316, D178322, D178326, D178331, D178334, D178345, D178355, D183415, D183419, D183421, D183429, D183431, D183432, D183434, D183433, D184805, D189222		
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Company Name:	Miles Inc.		
ID #:			
Purpose:	various		

Type Product:	Action Code:	EFGWB #(s):	Review Time:
fungicide	various	92-0530, 92-0897, -0898, -0899, -0900, -0901, -0902, -0903, 93-0039, 93-0040,-0041, -0042, -0043, -0044, -0045, -0046, 93-0167, 93-0518	

STATUS OF STUDIES IN THIS PACKAGE:

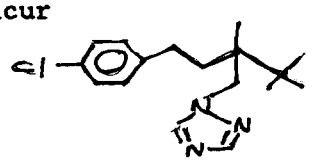
Guideline #	MRID	Status[1]
165-4	424875-01	A

STATUS OF DATA REQUIREMENTS:

	Status[2]
161-1	S
161-2	S
161-3	S
162-1	S
162-2	S
163-1	S
164-1	S
165-1	S
165-2	S

[1]Study Status Codes: A=Acceptable U=Upgradeable C=Ancillary I=Invalid.
[2]Data Requirement Status Codes: S=Satisfied P=Partially satisfied N=Not satisfied R=Reserved.

1. CHEMICAL:

chemical name: a-[2-(4-Chlorophenyl)ethyl]-a-(1,1-dimethylethyl)-1H-1,2,4-triazole-1-ethanol
common name: tebuconazole, folicur
trade name: Elite
structure:

CAS #: unknown
Shaughnessy #: 128997

2. TEST MATERIAL: discussed in DER

3. STUDY/ACTION TYPE:

EFGWB# 92-0530, barcode D174263 -- new use on wood, no data

EFGWB#s 92-0897, -0898, -0899, -0900, -0901, -0902, -0903
barcodes D178316, D178322, D178326, D178331, D178334, D178345, D178355
-- submission of additional data on fish bioaccumulation related to a previous study

EFGWB# 93-0039, barcode D183415 -- replant interval, no data

EFGWB#s 93-0040, -0041, -0042, -0043, -0044, -0045, -0046
barcodes D183419, D183421, D183429, D183431, D183432, D183434, D183433
-- submission of a new fish bioaccumulation study

EFGWB# 93-0167, barcode D184805 -- new use on bananas, no data

EFGWB# 93-0518, barcode D189222 -- emergency exemption, no data

4. STUDY IDENTIFICATION:

Leimkuehler, W.M. and Moore, K.S., Identification of Radioative Residues of Triazole-3,5-[^{14}C] Tebuconazole in the Nonedible Fraction of Bluegill Sunfish (Lepomis macrochirus), project No. FR030301. performed by Miles Inc. Agricultural Division, Stilwell, KS. received 9/24/92 under MRID# 424875-01.

supplemental information on previously reviewed fish bioaccumulation studies (MRID #s 409959-05, 409959-06, and 409959-07)

5. REVIEWED BY:
Typed Name: E. Brinson Conerly-Perks
Title: Chemist, Review Section 3
Organization: EFGWB/EFED/OPP
E. B Conerly-Perks 5/20/93

6. APPROVED BY:

Typed Name: Akiva Abramovitch
Title: Section Head, Review Section 3
Organization: EFGWB/EFED/OPP
Akiva Abramovitch 5/25/93

7. CONCLUSIONS:

EFGWB# 92-0530, barcode D174263
new use on wood -- Based on the labelling included in the package, this use does not involve significant outdoor application. Therefore, EFGWB does not have any adverse comments on this new use.

EFGWB#s 92-0897, -0898, -0899, -0900, -0901, -0902, -0903
barcodes D178316, D178322, D178326, D178331, D178334, D178345, D178355
submission of additional data on fish bioaccumulation related to a previous study -- The applicant has submitted correspondence and data (not new) to upgrade the original studies. This data requirement is satisfied by the original study together with the study reviewed in this document.

EFGWB# 93-0039, barcode D183415
replant interval - new use on peanuts -- EFGWB knows of no adverse data which would indicate that this use should be denied, but we strongly recommend that TOX and Chemistry Branch HED be consulted on this matter. A 120-day replanting interval has been shown to be adequate for tested crops with the single exception of wheat straw. Peanuts have not been specifically tested.

EFGWB#s 93-0040, -0041, -0042, -0043, -0044, -0045, -0046
barcodes D183419, D183421, D183429, D183431, D183432, D183434, D183433
fish bioaccumulation -- The current study completes the requirement for fish bioaccumulation data. No additional data related to this guideline are required at this time. Observed transformations preserved the basic "skeleton" structure of tebuconazole, but included oxidation and conjugation. A proposed metabolic scheme is attached.

EFGWB# 93-0167, barcode 184805
new use on bananas -- EFGWB has no adverse comments on this proposed new use.

EFGWB# 93-0518
emergency exemption -- EFGWB can concur with the requested emergency exemption. The applicant is requesting the use of 108,000 lb of active ingredient over 120,000 acres of peanut growing land in Alabama from July 1, 1993 to Sept 7, 1993. The label includes a restriction against replanting crops intended for harvest or grazing sooner than 120 days after the last treatment.

8. RECOMMENDATIONS:

EFGWB# 92-0530, barcode D174263
new use on wood -- EFGWB does not have any adverse comments on this new use.

EFGWB#s 92-0897, -0898, -0899, -0900, -0901, -0902, -0903
D178322, D178326, D178331, D178334, D178345, D178355
submission of additional data on fish bioaccumulation related to a previous study -- The applicant should be informed that this data requirement is satisfied by the original study together with the study reviewed in this document.

EFGWB# 93-0039, barcode D183415
replant interval - new use on peanuts -- EFGWB knows of no adverse data which would indicate that this use should be denied, but we strongly recommend that TOX and Dietary Exposure branches be consulted on this matter.

EFGWB#s 93-0040, -0041, -0042, -0043, -0044, -0045, -0046
barcodes D183419, D183421, D183429, D183431, D183432, D183434, D183433
fish bioaccumulation -- The registrant should be informed that the previously reviewed study together with the current study complete the requirement for fish bioaccumulation data. No additional data related to this guideline are required at this time.

EFGWB# 93-0167, barcode D184805
new use on bananas -- EFGWB has no adverse comments on this proposed new use.

EFGWB# 93-0518, barcode D189222
emergency exemption -- EFGWB can concur with the requested emergency exemption.

9. BACKGROUND:

Based on extensive data, tebuconazole is persistent and relatively immobile. It is resistant to hydrolysis, unsensitized photodegradation in water, and soil metabolism. Unaged tebuconazole showed little mobility (k_ds ranged from 7 - 16 in a variety of soils). Aged material was still largely parent compound, and showed little tendency to move beyond the upper 6 cm of soil in laboratory studies. A marginally acceptable field dissipation study indicated that tebuconazole does not leach, and has half-lives of 45 to 161 days. Fish bioaccumulation occurs to a moderate degree, and depuration is rapid.

GROUND WATER ASSESSMENT

Tebuconazole is resistant to most degradative processes in the environment, including hydrolysis, photolysis in water and on soil, and aerobic and anaerobic metabolism. It does not appear to be mobile, based on laboratory studies and on a field dissipation study. Therefore it does not appear to be an obvious threat to ground water under most circumstances. The identity, quantity, and behavior of any degradates has not been defined.

SURFACE WATER ASSESSMENT

As noted above, Tebuconazole is not susceptible to most modes of environmental degradation. Since it is strongly adsorbed to soil, it could be carried with soil particles into bodies of surface water during a run-off event. It could be expected to remain largely associated with the sediment, and would persist there. The identity, quantity, and behavior of any degradates has not been defined.

DATA BASE ASSESSMENT

The status of data requirements is as follows:

hydrolysis -- fulfilled 6/9/89 (MRID# 407009-57), stable at pH 5, 7, and 9 -- no hydrolysis after 28 days incubation

photolysis in water -- fulfilled 6/9/89 (MRID# 407009-58) -- no photodegradation detected; extrapolated $t_{1/2}$ of 600 days

soil photodegradation -- fulfilled 6/9/89 (MRID# 407009-58) -- slow reaction; extrapolated $t_{1/2}$ ca 191 days, producing 2 unidentified degradates (<3% of applied)

aerobic soil metabolism -- fulfilled (MRID# 407009-59) -- additional data on product identification was required 6/9/89, but a reevaluation of available information indicates that the previously submitted study should be accepted -- resistant to metabolism -- extrapolated $t_{1/2}$ 610 days in sandy loam soil. Residues at 1 yr were Tebuconazole at 67.4%, unextractables at 29.1% [ca. 20% of this (3% of the total applied) was parent compound], unidentified extractable material at 2.1%, extractable polar compounds at 1.1%, and CO_2 at < 0.7%.

anaerobic soil metabolism -- fulfilled (see aerobic soil study) -- extrapolated $t_{1/2}$ ca 400 days

anaerobic soil metabolism -- fulfilled (see aerobic soil study) -- extrapolated $t_{1/2}$ ca 400 days

leaching/adsorption/desorption -- fulfilled as of 6/9/89 (MRID# 407009-60) -- in column leaching studies on sand, sandy loam, silt loam, and silty clay loam, little leaching occured below 6 cm.

terrestrial field dissipation -- fulfilled as of 10/9/91 by a study (MRID# 417174-06) deemed to be of marginal quality -- EFGWB has required a turf field dissipation study because of this compound's use pattern.

confined accumulation on rotational crops -- no longer an EFGWB guideline study -- fulfilled (MRID 415958-01; EBC 4/17/91) -- uptake occurs at the exaggerated rates tested

accumulation in field rotational crops -- no longer an EFGWB guideline study -- partially fulfilled (MRID# 409959-23); materials were only analyzed for parent -- spinach, turnips, and wheat or sorghum were planted 30 and 120 days post-treatment in soil which had received seven applications of Tebuconazole at 3.5 ppm at 10 - 25 day intervals. Except for 0.11 ppm of Tebuconazole in straw from wheat planted at approximately 120 days posttreatment, Tebuconazole detected in the crops from the treated plots did not significantly exceed the apparent limits of determination of Tebuconazole in the various plant matrices.

fish bioaccumulation -- fulfilled (MRID #s 409959-05, 409959-06, and 409959-07, reviewed for the 9/90 registration standard together with additional discussion in this review). Accumulation occurs @ ca. 25x, 228x, and 99x for edible, nonedible, and whole fish tissues respectively. The previous review stated that product identification on metabolites was required for the study to become completely acceptable. The current study responds to that review by providing the requested information.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES: see DER

11. COMPLETION OF ONE-LINER: appropriate information added

12. CBI APPENDIX: attached to DER