Shaughnessy Number: 110201

Date out of EFGWB: 10/30/91

To: Susan Lewis, PM 23
Product Manager
Registration Division (H7505C)

From: Akiva Abramovitch, Section Head
Environmental Fate Review Section #3
Environmental Fate and Ground Water Branch
Environmental Fate and Effects Division (H7507C)

Thru: Hank Jacoby, Chief
Environmental Fate and Ground Water Branch
Environmental Fate and Effects Division (H7507C)

Attached, please find the EFGWB review of...

Reg./File #: 55947-UG

Chemical Name: Prodiamine

Type Product: herbicide

Product Name: Technical Prodiamine

Company Name: Sandoz Crop Protection

Purpose: submission of amended label for approval

Date Received: 4/29/91

EFGWB#(s): 90-0567

Total Reviewing Time (decimal days): 0.5

Deferrals to: ___Ecological Effects Branch, EFED

___Science Integration and Policy Staff, EFED

___Non-Dietary Exposure Branch, HED

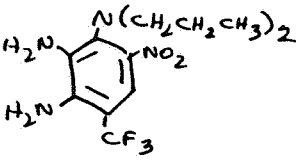
___Dietary Exposure Branch, HED

___Toxicology Branch

bcp

1. CHEMICAL:

chemical name: N^3,N^3-Di-n-propyl-2,4-dinitro-6-(trifluoromethyl)-m-phenylenediamine
common name: Prodiamine
trade name: Endurance
structure:



CAS #: 29091-21-2
Shaughnessy #: 110201

PHYSICAL/CHEMICAL CHARACTERISTICS are as follows:

physical state -- crystalline powder
color -- dark yellow
odor -- odorless
m.p. -- 124-125° C
vapor pressure -- 2.5×10^{-7} mm Hg at 25° C
water solubility -- 0.05 ppm
octanol/water coefficient (k_{ow}) -- 3.3×10^4

2. TEST MATERIAL: n.a.

3. STUDY/ACTION TYPE: submission of amended labels

4. STUDY IDENTIFICATION: n.a.

5. REVIEWED BY:

Typed Name: E. Brinson Conerly-Perks
Title: Chemist, Review Section 3
Organization: EFGWB/EFED/OPP

E. B. Conerly-Perks 10/7/91

6. APPROVED BY:

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

Akiva Abramovitch

7. CONCLUSIONS:

There are no reviewable environmental fate data in the submission. The altered text on the amended label has to do with toxicity to aquatic organisms, and is not under EFGWB's purview.

8. RECOMMENDATIONS:

EFGWB has no additional recommendations at this time. Studies which are required, but have not been submitted, should be furnished as soon as possible.

9. BACKGROUND:
Prodamine is an not-yet-registered herbicide used to control the germination of grasses and broadleaf weeds in ornamentals and turf. Label directions indicate that it may be applied either to a cover crop (established turf) or to bare soil (around ornamental plants and in non-crop areas). The recommended label rate is up to 3.9 lb ai./A (3.9 ppm, 3" soil layer) per single application or 7.8 lb a.i./A/yr.

GROUND WATER ASSESSMENT
Available data indicate that Prodiamine is stable to hydrolysis, but (based on a 1980 review) is highly susceptible to photolysis in aqueous solution. It metabolizes slowly under aerobic conditions and (based on a 1980 review) is not mobile in laboratory studies. A recent field study on turf also seems to indicate that Prodiamine is not mobile. Because of its extremely short

photolytic half life and lack of mobility, Prodiamine does not appear likely to reach ground water. Though it is improbable that it would reach ground water, if somehow it did, it would persist there, since photolysis, the major mode of degradation, would not occur. The mobility of the major degradate (Prodiamine benzimidazole) has still not been defined by acceptable data, and it appears to be persistent. The likelihood of Prodiamine benzimidazole to reach ground water, and its fate under such conditions, is not known.

SURFACE WATER ASSESSMENT
Prodiamine does not appear to be a major threat to surface water since it photolyzes rapidly in water. Although the probability seems very low, any Prodiamine which is present on soil affected by a runoff event could be carried on suspended particles to adjacent bodies of surface water. Once there, it would be expected to remain in the sediment and degrade/dissipate very slowly.

ENVIRONMENTAL FATE DATA BASE ASSESSMENT
The status of data requirements is as follows:

hydrolysis -- **FULFILLED** 6/22/90 [*Bowman and Fenessey*, MRID #'s 406091-01 and 413594-01 -- $t_{1/2}$ > 6 months is indicated at all three pHs

photolysis in water -- **FULFILLED** 5/13/80 [reference not indicated in that review] -- *not done under current Guidelines*. A short half life (ca. 20 min.) is indicated. The fulfilling study has not been rereviewed under current standards.

soil photodegradation -- submitted study [reference not indicated in that review] unacceptable as of 5/13/80, not required for this use

aerobic soil metabolism -- **FULFILLED** 6/22/90 [*Krueger and Butz*, MRID #s 405934-24 and 413594-02]-- half-life ca. 2 mos, one major product

anaerobic soil metabolism -- submitted study unacceptable as of 5/14/80, not required for this use

leaching/adsorption/desorption -- **FULFILLED** 5/13/80 for parent [reference not indicated in that review. A batch adsorption/desorption study (MRID 405934-25, *which was probably not the fulfilling study*) indicated K_d values of 19.5 to 399 for adsorption. **NEW STUDY REQUIRED ON AGED MATERIAL** [as of 6/22/90 -- *Daly*, MRID #s 405934-26 and 413594-03 are not acceptable]. The mobility of primary degradate (Prodiamine benzamidazole) has not been satisfactorily defined at this time, although it is apparently also relatively immobile.

turf terrestrial field dissipation -- **FULFILLED** 6/22/90 [*Bade and Rosas*, MRID# 413594-05] -- no leaching or significant dissipation noted.

confined accumulation on rotational crops -- **FULFILLED** 5/14/80 [reference not indicated in that review] -- *not done under current Guidelines* -- not required for this use -- no significant accumulation except in root crops

fish bioaccumulation -- study submitted [Acc.# 243135] but not acceptable [static system], *not done under current Guidelines* -- significant accumulation and slow depuration

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES: There are no studies in this submission.

11. COMPLETION OF ONE-LINER: no information added.

12. CBI APPENDIX: n.a. A copy of the amended label is attached for information

bcp