

US EPA ARCHIVE DOCUMENT

RECORD NUMBER: 218,333

SCHAUGHNESSEY NO: 105001

REVIEW NO:

EEB REVIEW

DATE IN: 4-12-88 OUT: 4-19-88

FILE OR REG. NO: 88-ND-06

PETITION OR EXP. NO:

DATE OF SUBMISSION: 3-14-88

DATE RECEIVED BY HED: 4-8-88

RD REQUESTED COMPLETION DATE: 4-20-88

EEB ESTIMATED COMPLETION DATE: 4-20-88

RD ACTION CODE/TYPE OF REVIEW: 510

TYPE PRODUCT(S): Insecticide

DATA ACCESSION NO(S):

PRODUCT MANAGER AND NO: D. Stubbs (41)

PRODUCT NAME(S) Counter 5G

COMPANY NAME: North Dakota Department of Agriculture

SUBMISSION PURPOSE: Proposed Section 18 for use on rape and mustard seed

SHAUGHNESSEY NUMBER	CHEMICAL AND FORMULATION	% A.I.
105001	Terbufos	5

46 pages

ECOLOGICAL EFFECTS BRANCH REVIEW

100 SUBMISSION PURPOSE AND LABEL INFORMATION

100.1 SUBMISSION PURPOSE AND PESTICIDE USE

The Department of Agriculture, State of North Dakota has requested an Emergency Exemption, under Section 18 of FIFRA, for the use of Counter 5G (Terbufos) for the control of flea beetles in rape and mustard seed fields. The range of use, according to the submission, will be approximately 100,000 acres (20,000 in mustard and 80,000 in rape) and includes the "Entire eastern half of North Dakota". This area could include the counties of: Barnes, Benson, Cass, Cavalier, Dickey, Eddy, Foster, Grand Forks, Griggs, Kidder, La Moure, Logan, McIntosh, Nelson, Pemoina, Pierce, Ramsey, Ransom, Richland, Rolette, Sargent, Steele, Stutsman, Towner, Traill, Walsh and Wells.

The estimate is that 75 to 80 percent of the crop will be affected with a valuation of \$11,450,000.00. Counter 5G will be applied once, at planting, by mixing it with the seed in the drill box by a certified applicator (farmer).

Alternative measures (Sevin and malathion for mustard; ethyl parathion, methyl parathion and Thiodan for rape) which are foliar treatments, are said to last for only a few days and would be prohibitively expensive. Further, it is stated that, because of the economic unfeasibility and impracticality, foliar treatments to control the flea beetle are not being used in North Dakota at present. The State maintains that, by using Counter 5G at planting, there will be a "...high chemical titer in the seedlings at emergence, which persists for several weeks during the early, critical period of stand establishment."

100.2 FORMULATION INFORMATION

<u>Ingredient</u>	<u>Percent (w/w)</u>
<u>Active Ingredient</u>	
S-[[[1,1 Dimethylethyl)Thio]Methyl] O,O-Diethyl Phosphorodithioate	5
<u>Inert Ingredients</u>	95
	Total 100

100.3 APPLICATION METHODS, DIRECTIONS, RATES (excerpted from submission)

Counter 5G will be applied as a drill box planting time treatment at a rate of 5 to 10 lbs (0.25 to 0.5 lbs active ingredient per acre). It will be mixed with seed in the drill box with a mixing stick. After application, the seed and insecticide will be covered with soil. The submission refers to additional application instructions and restrictions on the proposed label, however, no proposed label accompanied this submission.

100.4 TARGET ORGANISM

Flea beetle (Phyllotreta sp.)

100.5 PRECAUTIONARY LABELING

No ecological effects precautionary labeling was included.

101 HAZARD ASSESSMENT

101.1 DISCUSSION

Terbufos is an organophosphorous insecticide and is the active ingredient in Counter 15G, currently registered. Counter 5G, the subject of this Emergency Exemption, has no registration in this country. The Department of Agriculture, State of North Dakota, would like to use this insecticide for protection of rape and mustard seedlings from flea beetles.

The area of use is the eastern half of North Dakota and will cover some 100,000 acres in approximately twenty-eight counties, although the submission also states that this product will also be available to farmers in other parts of the state. It is expected that the total amount of active ingredient to be used will be 25,000 to 50,000 pounds.

There will be a one-time application of this product, during planting. The product will be applied in-furrow along with the seed and covered over with soil. The planting depth has not been stated. The requested duration of this Emergency Exemption is from April, 1988 to October, 1988,

101.2 LIKELIHOOD OF ADVERSE EFFECTS TO NONTARGET ORGANISMS

Ecological Effects Branch has the following toxicity information on Terbufos and formulated product containing 15% active ingredient:

Technical/ Product	% a.i.	Test Organism	Type Test	LC/LD50
Terbufos	86	Bobwhite Quail	Dietary	128 ppm
Terbufos	86	Mallard Duck	Dietary	761 ppm
Terbufos	89.6	Bobwhite Quail	Acute Oral	28.6 ppm
Terbufos	86.3	Bluegill	Acute	3.8 ppb
Product	15	Bluegill	Acute	12.3 ppb
Terbufos	86	Brown trout	Acute	20.1 ppb
Product	15	Rainbow trout	Acute	60 ppb
Terbufos	88.6	<u>Daphnia magna</u>	Acute	7.9 ppb
Product	15	<u>Daphnia magna</u>	Acute	6.2 ppb
Terbufos	88.6	Crayfish	Acute	8.1 ppb

Terrestrial Species

The data show that Terbufos is highly toxic to avian species on an acute basis and moderately to slightly toxic on a subacute basis, depending on species. Although granular pesticides are particularly inviting to birds, the application method in this Emergency Exemption includes covering the pesticide with soil. Thus, it is not expected that the pesticide will be available to birds. Therefore, EEB does not expect that there will be a hazard to avian species from the use of this product.

Aquatic Species

Runoff of pesticides from agricultural fields generally occurs in the top half-inch of soil. Although a planting depth was not specified in this submission, review of planting depth information indicates that the recommended planting depth for mustard is 1/4 to 1/2 inch. Since rape seed is of similar size and planting depth is related to seed size, it is not unreasonable to assume that rape seed will be planted at approximately the same depth.

Thus, all of the terbufos applied to the furrow will reside in the top 1 centimeter of soil and will be available for runoff. An estimated environmental concentration (EEC) in aquatic systems may be determined by the following formula:

$$EEC = \frac{(A.R.) (RUNOFF) (DRAINAGE BASIN SIZE)}{(P.S.) (P.D.) (43560 \text{ SQ. FT./A}) (62.36 \text{ LB/CU FT})}$$

Where: A.R. = Max. Application Rate of a.i. in pounds
 RUNOFF = Percent runoff expressed in decimal form
 DRAINAGE BASIN SIZE = 10 Acres
 P.S. = POND SIZE IN Acres
 P.D. = POND DEPTH in feet

$$\begin{aligned}
 \text{EEC} &= \frac{(0.5 \text{ lb}) (0.05) (10 \text{ Acres})}{(1 \text{ Acre})(6 \text{ feet}) (43560 \text{ sq ft/A})(62.36 \text{ lb/cu ft})} \\
 &= \frac{0.25}{16298410} \quad 15.4 \text{ ppb expected in aquatic ecosystems}
 \end{aligned}$$

As one can see, the expected environmental concentration exceeds the LC50 for bluegill sunfish and aquatic invertebrates.

Thus, it can be expected that this use of Terbufos near aquatic ecosystems will have adverse effects on some species of fish. There is expected to be significant impact on freshwater aquatic invertebrates in nearby ecosystems and may lead, at least temporarily, to aquatic invertebrate population reductions.

101.3 ENDANGERED SPECIES CONSIDERATION

There are no endangered aquatic species in North Dakota. There are, however, two endangered avian species, the Piping Plover and Interior Least Tern. The Piping Plover occurs in the following counties where Terbufos is proposed for use: Benson, Eddy, Foster, Kidder, McIntosh, Nelson, Pierce, Ramsey, Stutsman, Towner and Wells.

The Plover feeds on invertebrates associated with aquatic habitats in those counties and may be affected by severe reductions in its food supply, such as may occur from this use. Thus, EEB has determined that there will be a "may effect" situation for the Piping Plover in counties where it feeds in aquatic systems adjacent to mustard of rape fields treated with Terbufos.

EEB recommends that Terbufos not be applied as a furrow treatment within 20 yards of aquatic ecosystems.

101.4 ADEQUACY OF THE TOXICITY DATA

A Final Registration Standard and Tolerance Reassessment for products containing Terbufos was completed in October, 1987. The following studies on Terbufos are necessary to complete the Ecological Effects toxicity data base for this chemical:

	<u>Test Type</u>	<u>Guideline Reference No.</u>
1.	Acute LC50 Toxicity Test for Estuarine and Marine Organisms	72-4
2.	Fish Early Life Stage and Invertebrate Life Cycle Test	72-5

101.5 PRECAUTIONARY LABELING

Any label containing Terbufos as the active ingredient should contain the following Ecological Effects labeling:

"This pesticide is toxic to fish and wildlife. Do not apply directly to water or wetlands (swamps, bogs, marshes and potholes). Do not contaminate water when disposing of equipment washwaters."

102. CLASSIFICATION


This pesticide is classified as a restricted use pesticide.

103 CONCLUSIONS

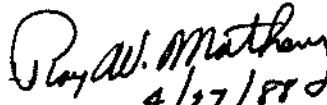
Ecological Effects Branch has reviewed this application for an Emergency Exemption under Section 18 of FIFRA for the use of Counter 5G, a granular product containing 5 percent Terbufos by weight, for ground incorporation, at planting time, in rape and mustard to control flea beetles. It has been determined that use of this product on rape and mustard will cause adverse effects to some species of fish and significant impact on aquatic invertebrates in nearby aquatic ecosystems.

Further, there is expected to be a "may effect" situation for the Piping Plover in feeding areas near treated fields due to a possible reduction in its food supply. It is recommended, therefore, that Terbufos not be applied to areas within a minimum distance of 20 yards of ponds, potholes, streams and marshes in the following counties: Barnes, Benson, Cass, Cavalier, Dickey, Eddy, Foster, Grand Forks, Griggs, Kidder, La Moure, Logan, McIntosh, Nelson, Pemolina, Pierce, Ramsey, Ransom, Richland, Rolette, Sargent, Steele, Stutsman, Towner, Traill, Walsh and Wells.

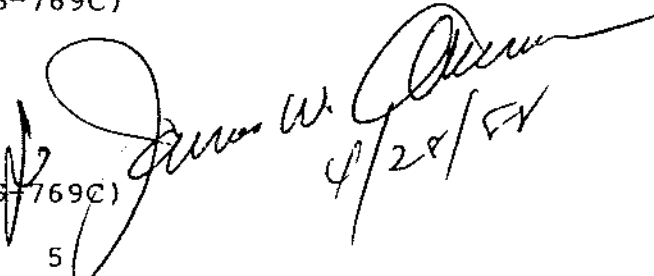
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4/27/88

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4/27/88

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4/28/88

RECORD OF TELEPHONE CALL OR VISITOR

INCOMING CALL OUTGOING CALL VISITOR

DATE 5/3/88 TIME 2 PM

NAME OF PERSON

Mark Dyer

NAME & ADDRESS OF COMPANY

US FWS

Montana

COMPANY TEL NO. (Include Area Code)

ETS 783-4191

REGISTRATION NO. OR FILE SYMBOL

88-ND-06

DATE OF LATEST SUBMISSION

3/25/88

BRIEF SUMMARY OF CONVERSATION

I called Mr Dyer to find out if piping Plover's breed or nest in and around sandparks and potholes in North Dakota. He said they do in North Central North Dakota. I then asked if they would be included in the "eastern half" of N. Dakota and he said they would.

ACTION TAKEN

I will take this into account for the Terkufes Section 18 record.

Robert W. [Signature]

RECORDED BY (Name)

REFERRED TO (Name)

REPORT OF TELEPHONE CALL OR VISITOR			NOTE: Complete this form. Write "NA" where not applicable.
<input type="checkbox"/>	INCOMING CALL	<input type="checkbox"/>	VISITOR
<input checked="" type="checkbox"/>	OUTGOING CALL	<input type="checkbox"/>	CONGRESSIONAL
NAME AND ADDRESS OF CALLER OR VISITOR Stan Szechmoler USFWS, S. Dakota			DATE 4/27/88
			PHONE NO. (include Area Code or EDS No.) (605) 224-8693
			REGISTRATION, ID NO. OR FILE SYMBOL 88-ND-06
			DATE OF LATEST SUBMISSION 3-25-88
BRIEF SUMMARY OF CONVERSATION I spoke with Mr Szechmoler regarding the occurrence of piping plovers around farm ponds and potholes in North Dakota. I explained that I was working on a Section 18 for the use of Terbufos on mustard and rape and that our estimate of the aquatic environmental concentrations in aquatic ecosystems would be sufficient to significantly impact aquatic invertebrates.			
ACTION TAKEN OR RECOMMENDED I was concerned with reduction by the Plover's food source. He said that Plovers were not associated with potholes. Plovers nest mainly around the Missouri River, Lake Williams and a few saline areas. He would like to see a 1/4 mile buffer from the Plover's major habitats, but will settle for 300 yards.			
RECORDED BY (Name) Robert W. [Signature]		REFERRED TO (Name)	