EEB FILES
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239671
RECORD NO.

105001
SHAUGHNESSEY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 2/13/89 OUT FEB 27 1989

FILE OR REG. NO 89-MT-04

PETITION OR EXP. NO

DATE OF SUBMISSION: 2/6/89

DATE RECEIVED BY EFED: 2/9/89

RD REQUESTED COMPLETION DATE: 2/24/89

EEB ESTIMATED COMPLETION DATE: 2/24/89

RD ACTION CODE/ TYPE OF REVIEW: 510

TYPE PRODUCT(S): Insecticide

ACCESSION NUMBER(S):

PRODUCT MANAGER: D. Stubbs (41)

PRODUCT NAME(S): COUNTER 5G (Terbufos)

COMPANY NAME: State of Montana

PURPOSE OF SUBMISSION: Section 18 use on rape and mustard in triangle region of Montana.

SHAUGHNESSEY NO.	CHEMICAL AND FORMULATION	%A.I.
105001	Terbufos	5

6 pages w/ 2 page Draft label

ECOLOGICAL EFFECTS BRANCH REVIEW

Chemical: COUNTER 5G (Terbufos)

100 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

The Montana Department of Agriculture is requesting an emergency exemption (Section 18) for the use of COUNTER 5G (terbufos) as a planting time drill box treatment for rapeseed and tame mustard to control flea beetles. The Department of Agriculture proposes that up to 20,000 acres of rapeseed and 10,000 acres of mustard (30,000 acres total) could be treated in Montana during 1989 using a maximum total of 15,000 lbs of active ingredient.

100.2 Formulation Information

Active Ingredient:	
Terbufos (S-[[(1,1-Dimethylethyl)Thio]Methyl]0,0-Diethyl Phosphorodithioate)	5%
Inert Ingredients	95%
Total	100%

Granular Formulation

100.3 Application Methods, Directions, Rates

Refer to attached copy of proposed label.

100.4 Target Organism

Flea beetles (Phyllotreta spp.)

100.5 Precautionary Labeling

Refer to attached copy of label.

101 Hazard Assessment

101.1 Discussion

Terbufos is the active ingredient in COUNTER 15G, a 15% granular formulation systemic organophosphate insecticide currently registered for use in corn, grain sorghum, and sugar beets (EPA Registration Number 241-238). These crops are grown on more than 100,000 acres of cropland in Montana each year.

COUNTER 5G has no registration in the U.S. The primary area of production identified in the emergency exemption request is the "triangle" region of Montana (Cascade, Choteau, Glacier, Hill,

Liberty, Pondera, Teton, and Toole Counties), although several other regions will produce a limited quantity of mustard seed or rapeseed.

Similar exemption requests were reviewed by EEB 5/4/88 (Record No. 218333) and 2/6/89 (Record No. 238228) for COUNTER 5G use in North Dakota. It was determined in these reviews that use of COUNTER 5G on rape and mustard in North Dakota would cause adverse effects to some species of fish and significant impact on aquatic invertebrates to nearby aquatic ecosystems, thereby adversely affecting food supplies of waterfowl and shorebirds.

101.2 Likelihood of Adverse Effects to Nontarget Organisms

Terrestrial Species

Terbufos is characterized as extremely toxic to bobwhite quail based on avian acute oral studies. One acute oral test (MRID No. FEOTERO2) using the technical grade active ingredient determined the bobwhite LD_{50} to be 28.6 mg/kg. Another study using the technical grade concluded the bobwhite LD_{50} was 15 mg/kg (Hill and Camardese 1984). Using the 15G formulated product, Hill and Camardese (1984) determined the bobwhite LD_{50} to be 26 mg/kg on an active ingredient basis. Another study (Balcomb et al. 1984) utilizing graduated doses of the 15G formulated product resulted in 100% mortality of 5 male red-winged blackbirds orally administered 10 COUNTER granules; a 5 granule dose resulted in no mortalities. Assuming proportional results would be obtained from testing with a 5G product, the LD_{50} equivalent for songbirds would be between 15 and 30 5G granules.

Terbufos is also considered to be highly toxic to bobwhite quail based on avian dietary studies. Two acceptable avian dietary tests determined the bobwhite LC_{50} to range from 143 ppm (MRID No. 00087717) to 157 ppm (MRID No. 160387).

The primary route of exposure of granular terbufos to nontarget terrestrial species is through direct ingestion of the granules. Given that the COUNTER 5G granules will be covered with soil along with the rape and mustard seeds at planting, minimal exposure of granules is expected. Although soil-probing birds may ingest granules either as grit or as attached to prey items (e,g, earthworms), it is unlikely that a lethal dose (i.e., 15-30 granules) would be consumed under typical foraging circumstances.

However, due to adverse effects on aquatic invertebrates likely to occur with this use (discussed below), waterfowl rearing broods are likely to be impacted in areas of terbufos use. This is especially critical given that this proposed use includes waterfowl production areas, the already record low waterfowl population levels, and the significant dependence of waterfowl chicks on aquatic invertebrates for growth and survival during

April-June. Similar hazards to shorebirds may also be expected. Adverse effects may be minimized by not using terbufos in watersheds of lakes, ponds, potholes, marshes and other wetlands.

Aquatic Species

Technical terbufos is very highly toxic to bluegill sunfish (LC_{50} values range from 0.77 ppb (MRID No. 00087718) to 3.8 ppb (MRID No. 0037483)), brown trout (LC_{50}= 20 ppb, MRID No. 00087718), rainbow trout (LC_{50} = 9.4 ppb, MRID No. 00037483), and channel catfish (LC_{50}= 9.6 ppb, MRID No. 00085176). COUNTER 15G formulated product is also considered to be very highly toxic to bluegill sunfish (LC_{50}= 12.3 ppb, MRID No. FEOTERO4) and rainbow trout (LC_{50}= 59.7 ppb, MRID No. FEOTERO5).

Terbufos is characterized as very highly toxic to freshwater invertebrates on the basis of acute toxicity data. Daphnia magna were found to have an LC_{50} of 0.31 ppb (MRID No. FEOTERO3) and crayfish an LC_{50} of 8.0 ppb (MRID No. 00085176). An acute LC_{50} study using the 15% granular formulation determined the LC_{50} for Daphnia magna to be 6.2 ppb.

Aquatic organisms may be exposed to terbufos via runoff and soil transport from treated sites. All pesticides applied within the upper 1/2 inch of the soil profile are considered available for runoff. Terbufos load (EEC) to a farm pond (6 feet deep), a pothole marsh (18 inches deep), and a shallow water wetland (6 inches deep) may be estimated by the following scenario:

EEC (load ppb) = application rate (lb ai/acre) X percent available X

0.02 ("average" 2% runoff for intermediate solubility) X 10 acre ("average" watershed) X

concentration factor for water depth (61 ppb/lb for 6 ft; 245 ppb/lb for 18 inches; 734 ppb/lb for 6 inches)

Since rape and mustard seeds are typically planted no deeper than 1/2 inch, all terbufos applied with this use is considered available for runoff. At maximum application rates, the EEC for an average farm pond is then 6.1 ppb; concentrations in a pothole marsh and shallow water wetlands are estimated to be 24.5 ppb and 73.4 ppb, respectively. All aquatic ecosystem EECs exceed the LC_{50} values for bluegill and aquatic invertebrates. Therefore, adverse effects to aquatic organisms, especially invertebrates associated with shallow water habitats, are to be expected with this exemption use.

101.3 Endangered Species Considerations

Information obtained from the U.S. Fish and Wildlife Service (Ron Crete, personal communication, 2/17/89) indicates several endangered species occurring in Montana whose food supplies may be adversely affected by this exemption use. Two species of shorebirds, the piping plover and least tern, feed on aquatic invertebrates and small fish associated with ponds, wetlands, and shallow water shoreline areas. To a lesser extent, peregrine falcons, bald eagles, and migrating whooping cranes may be affected by locally reduced or contaminated aquatic food supplies. Hazard to the piping plover, least tern, and whooping crane may be partially mitigated since these species occur predominantly in the eastern and northeastern parts of Montana and the proposed primary area of COUNTER 5G use is in the northcentral section of the state. In order to minimize adverse effects to endangered species, COUNTER 5G should not be applied in watershed areas of lakes, ponds, potholes, and wetlands.

101.4 Adequacy of Toxicity Data

The basic toxicity data available to EEB are adequate to assess the environmental hazard likely to occur with this exemption use.

101.5 Adequacy of Labeling

Precautionary environmental hazards labeling identified on the COUNTER 15G product adequately addresses the environmental hazards expected to occur with use of the 5G product.

102 Conclusions

EEB has reviewed the proposed emergency exemption for the use of COUNTER 5G on rapeseed and mustard in Montana. EEB concludes that the proposed use will result in adverse impacts to some species of fish and aquatic invertebrates through runoff from treated areas. Further, waterfowl and shorebirds, including the endangered least tern and piping plover, may be adversely affected through contaminated or reduced aquatic food supplies due to runoff. Therefore, COUNTER 5G should not be applied in watershed areas of lakes, ponds, potholes, marshes and other wetlands.

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Literature Cited

Balcomb, R., R. Stevens, and C. Bowen II. 1984. Toxicity of 16 granular insecticides to wild-caught songbirds. Bull. Environ. Contam. Toxicol. 33:302-307.

Hill, E.F. and M.B. Camardese. 1984. Toxicity of anticholinesterase insecticides to birds: technical grade versus granular formulations. Ecotoxicol. Environ. Safety 8:551-563.

COUNTER®

systemic insecticide-nematicide

DRAFT Supplemental Labeling

EMERGENCY EXEMPTION USE IN RAPE and MUSTARD

FOR USE ONLY IN MONTANA

DRAFT

Use of this product other than approved under the emergency exemption issued by EPA is considered a misuse and is subject to chemical and civil penalties. Before applying this pesticide, consult your state agricultural authority for the provisions of the emergency exemption program.

DIRECTIONS FOR USE

Crop	Pests Controlled	Rates of COUNTER 5-G	Application	Remarks
Rape and Mustard	Flea Beetles	5-10 lbs./A	To control root and foliar feeding flea beetles, mix 5-10 lbs. of COUNTER 5-G with enough seed to sow I acre.	COUNTER 5-G and seed should be carefully blended together using a mechanical mixer or by stirring with a stick in the drill box. Destroy stick after use. DO NOT handle COUNTER 5-G with bare hands. Adjust the flow rate to sow the combined weight of seed and COUNTER 5-G. Example: If 5 lbs. of seed per acre is to be sown with 5 lbs. of COUNTER 5-G adjust seeding rate to sow IO lbs. per acre.

DO NOT RE-SELL SEED AFTER MIXING WITH INSECTICIDE.

THIS LABEL SHOULD BE IN THE POSSESSION OF THE USER AT THE TIME OF PESTICIDE APPLICATION.

CYANAMID

Agricultural Division

Crop Protection Chemicals Department

COUNTER®

SYSTEMIC INSECTICIDE – NEMATICIDE

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS AND DOMESTIC ANIMALS

DANGER!

swallowed, inhaled, or absorbed through the to not breathe dust. Do not get in eyes, on on clothing.

rashly laundered long sleeved work clothing While transferring from container to equip- wear a clean cap, gloves (rubber or cotton) rejoes. If cotton gloves are used, they must be ned or discarded after each day's use. Rub- ves should be washed with soap and water ach use. Do not wear the same gloves for ork. Destroy and replace gloves frequently.

e of contact, immediately remove contami- clothing and wash skin thoroughly with soap ater. Launder clothing and decontaminate before reuse. Wash thoroughly with soap and before eating or smoking. Bathe at the end of s day and change clothing.

ot Breathe Dust

emptying bags into equipment, pour down- nd allow as little free fall as possible. Do not face level and do not allow dust to reach the ng zone.

ot Contaminate Food or Feed Products

e bag has been opened, use s completely sure the hoppers are emptied while still in the efer to STORAGE AND DISPOSAL statio- or further instructions.

All Unprotected Persons Out of Oper- Areas.

apply this product in such a manner as to or through drift expose workers or other s.

Out of Reach of Domestic Animals.

or Use or Storage in or Around the s.

NTRY STATEMENT

d enter treated areas without protective g until treatments have been completed.

ENVIRONMENTAL HAZARDS

This product is toxic to fish, birds and other wildlife. Treated granules exposed on soil surface may be hazardous to birds and other wildlife. Do not apply directly to water or wetlands. Runoff from treated areas may be hazardous to aquatic organisms in neighboring areas. Do not contaminate water by cleaning of equipment or disposal of wastes. Cover or incorporate into soil granules that are spilled.

IN CASE OF AN EMERGENCY ENDANGERING LIFE OR PROPERTY INVOLVING THIS PRODUCT, CALL COLLECT, DAY OR NIGHT, AREA CODE 201-835-3100.

STORAGE AND DISPOSAL

Storage
Store pesticide products in a secure locked area where children, unauthorized persons and animals cannot enter. Do not store in the same area with food or feed. Do not store opened bags.

Prohibitions
Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited.

Pesticide Disposal
Pesticide wastes are acutely hazardous. Improper disposal of excess pesticide, spray mixture, or rinsate is a violation of Federal Law. If these wastes cannot be disposed of by use according to label instructions, contact your state pesticide or Environmental Control Agency, or the hazardous waste representative at the nearest EPA Regional Office for guidance.

Container Disposal
Completely empty bag into application equipment. Then dispose of empty bag in a sanitary landfill or by incineration, or, if allowed by state and local authorities, by burning. If burned, stay out of smoke.

General
Consult federal, state, or local disposal authorities for approved alternative procedures such as limited open burning.

DISCLAIMER

The label instructions for the use of this product reflect the opinion of experts based on field use and tests. The directions are believed to be reliable and should be followed carefully. However, it is impossible to eliminate all risks inherently associated with use of this product. Crop injury, ineffectiveness or other unintended consequences may result because of such factors as weather conditions, presence of other materials, or the use or application of the product contrary to label instructions, all of which are beyond the control of American Cyanamid Company. All such risks shall be assumed by the user.

DIRECTIONS FOR USE

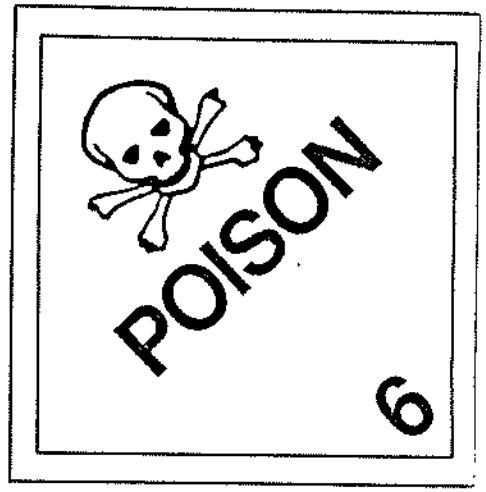
It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

This label must be in the possession of the user at the time of pesticide application.

BEFORE USING, READ PRECAUTIONARY STATEMENTS.

COUNTER should be applied with a granular pesticide applicator properly calibrated to assure accurate placement and proper dosage. Cover granules that may be exposed on the ends of the treated rows and turns and loading areas by deep discing immediately after treating fields.

Crops	Pests Controlled	Rates of COUNTER	Application	Remarks
FIELD CORN, POPCORN, AND SWEET CORN At Planting	Corn rootworms Wireworms[1] White grubs[1] Seedcorn maggots Seedcorn beetles Corn flea beetles Maize billbugs[1] Southern corn[1] billbugs Thrips Symphylans Nematodes[1]: Lance Lesion Root knot Spiral Stunt Sting Stubby root Dagger Suppression of: Cutworms Lesser cornstalk borers	**Banded or In-Furrow** 6 oz. per 1,000 ft. of row for any row spacing. Do Not exceed 17.6 pounds per acre.	**Banded** Place granules in a 7-inch band over the row, in front of or behind the presswheel and lightly incorporate. **In-Furrow** Place granules directly in the seed furrow behind the planter shoe.	For use on conventional and conservation tillage corn, in situations where crop debris or winds can prevent proper placement of granules, in-furrow applications are recommended. In-furrow applications reduce the potential for insecticide runoff resulting from excessive rain. Under dry soil conditions or heavy infestations, it may be necessary to apply an insecticide rescue treatment with another registered insecticide after corn emergence to control surviving cutworm larvae. [1]If especially heavy infestations are expected, banded applications of up to 16 oz. per 1,000 ft. of row may be used.
Post-emergence Incorporated (Same as crops above)	Maize billbugs Southern corn billbugs	**Banded** 12-16 oz. per 1,000 ft. of row for any row spacing (minimum 30-inch row spacing).	Apply in a 7-inch band over the row of seedling corn plants and lightly incorporate into the soil when billbugs or damage are observed, usually in the 5-6 leaf stage of growth. Use cultivators or other suitable implement to lightly incorporate granules into soil.	Only one postemergence incorporated or one cultivation time treatment may be used in addition to treatment at planting time. Do not treat if more than 8 oz. per 1,000 ft. of row were applied at planting.



DOT-E-9277
ORGANIC PHOSPHATE COMPOUND MIXTURE, DRY

NA 2783

SYSTEMI