245529
RECORD NO.

031301
SHAUGHNESSEY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 07-26-89 OUT AUG 10 1989

FILE OR REG. NO. 89-OK-04

PETITION OR EXP. NO.

DATE OF SUBMISSION 05-18-89

DATE RECEIVED BY EFED 07-26-89

RD REQUESTED COMPLETION DATE 08-11-89

EEB ESTIMATED COMPLETION DATE 08-11-89

RD ACTION CODE/TYPE OF REVIEW 510

TYPE PRODUCT(S) Fungicide

DATA ACCESSION NOS.

PRODUCT MANAGER NO. D. Stubbs (41)

PRODUCT NAME(S) Botran

COMPANY NAME State of Oklahoma

SUBMISSION PURPOSE Proposed Sec. 18 for use on peanuts

SHAUGHNESSEY NO.	CHEMICAL AND FORMULATION	% AI
031301	Botran 75W	

EEB REVIEW

Chemical: Botran 75W

100 Submission Purpose and Label Information

100.1 Submission Purpose and Pesticide Use

The State of Oklahoma is requesting an emergency exemption (Section 18) for the use of Botran fungicide to control Sclerotinia blight in peanuts. No new data were submitted with this request.

100.2 Formulation Information

Active Ingredient (Botran 75W):	
2,6-Dichloro-4-nitroaniline	75%
Inert Ingredients	25%

100.3 Application Methods, Directions, Rates

Application would be made at rates of 2-4 lb of product (1.5-3.0 lb ai) per acre. Material may be applied by air or ground equipment, or by overhead irrigation equipment. Maximum dosage is not to exceed 6 lb ai per acre per season. The proposed use period is July 1 to October 30, 1989.

100.4 Target Organism

Target organism is Sclerotinia blight, *Sclerotinia* spp.

101 Hazard Assessment

101.1 Discussion

The State of Oklahoma is requesting an emergency exemption for the use of Botran 75W to control Sclerotinia blight in peanuts. Botran is currently registered for use on a number of crops, including deciduous fruits, vegetables, and ornamentals. The maximum foliar application rate is 5.0 lb ai/acre; the maximum soil application rate is 30 lb ai/acre. Oklahoma is requesting a maximum of 6.0 lb ai/acre per season, applied at 1.5-3.0 lb ai/acre. Although it is estimated that 35,000 acres will become infected with Sclerotinia, it is estimated that a maximum of 12,000 acres will require fungicide treatment in 1989. The treated acreage will probably be in Atoka, Beckham, Blaine, Bryan, Caddo, Canadian, Carter, Choctaw, Cleveland, Coal, Comanche, Creek, Custer, Garvin, Grady, Greer, Harmon, Haskell, Hughes, Jackson, Jefferson, Johnston, Kiowa, Lincoln, Love, McClain, McCurtain, McIntosh, Marshall, Muskogee, Murray, Okfuskee, Oklahoma, Okmulgee, Payne, Pittsburgh, Pontotoc, Pottawatomie, Seminole, Stephens, Tillman, and Washita Counties.

101.2 Likelihood of Adverse Effects on Nontarget Organisms

Terrestrial Organisms

According to data in EEB files, Botran is no more than slightly toxic to birds on a dietary basis (bobwhite LC50 = 2600 ppm ai; mallard LC50 > 5000 ppm). The available data on rats suggest that the chemical also has a low mammalian acute toxicity. Data from an avian single-dose oral LD50 study are not available.

Following application at the maximum rate of 3.0 lb ai per acre, maximum estimated residues on avian food items would range from 22 ppm on fruit to 720 ppm on short grass. These residues exceed the trigger value (1/5 X bobwhite LC50 = 520 ppm) only on short grass. Typical estimated residues (as opposed to maximum) will not exceed the avian hazard trigger on any food item. Thus, significant hazards to populations of nontarget terrestrial organisms are not anticipated from the proposed use at 3 lb ai/acre.

Studies with honey bees exposed via direct application indicate that Botran is low in toxicity to bees. Thus, hazard to bees is not anticipated from the proposed use.

Aquatic Organisms

Data from previous EEB reviews indicate that Botran is moderately to highly toxic to fish. Reported LC50's are 1.08 ppm for bluegill and 0.56 ppm for rainbow trout. No data are available on the toxicity of Botran to aquatic invertebrates.

Rough calculation of an aquatic EEC (see attached) provides a value of 36.6 ppb in a pond 6 feet deep, residues being derived from drift and runoff. Calculation is based on a single application at 3 lb ai per acre. This EEC value is below the hazard trigger for freshwater organisms (1/10 trout LC50 = 56 ppb). Thus, use under the proposed exemption is not expected to adversely affect freshwater fish. Hazard to freshwater aquatic invertebrates cannot be evaluated.

101.3 Endangered Species Considerations

Discussion of FWS and NOR-AM Positions

Attached is a letter from the USFWS Tulsa office, dated May 23, 1989, reviewing potential hazard to endangered species under the proposed exemption. Also attached is a letter of response from the producer of Botran, NOR-AM Chemical Company, which refutes several points in the FWS letter. The three main points of disagreement will be discussed here, followed by EEB's own endangered species assessment.

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1) The FWS letter states that Botran has been shown to be "particularly lethal" to fishes. The letter goes on to establish buffer zones to protect the federally threatened leopard darter. The NOR-AM letter counters that "particularly lethal" is misleading terminology, and notes that FWS did not provide toxicity data to support its claim. NOR-AM cites a rainbow trout LC50 of 1.6 ppm and calculates a freshwater EEC of 40.2 ppb from use under the proposed exemption. Based on NOR-AM's figures, risk triggers for freshwater fish would not be exceeded, even for endangered species.

EEB has data showing a rainbow trout LC50 of 0.56 ppm. NOR-AM was not aware of these data. In the terminology commonly used by EEB, Botran is classified as "highly toxic" to freshwater fish. On the basis of EEB's calculations (EEC = 36.6 ppb), and using the lower LC50 value, the risk trigger for freshwater fish would be exceeded only for endangered species. Detailed hazard assessment will be covered later in this document.

2) The FWS letter indicates concern for the piscivorous, federally listed least tern. The basis for this concern is Botran's toxicity and bioaccumulation in fishes. The letter goes on to establish buffer zones on several river systems, to protect the least tern.

The NOR-AM letter counters that a bioconcentration factor of 46X is generally regarded as negligible with respect to bioaccumulation in fish. NOR-AM's response is valid and reflects current scientific opinion in this area.

3) The FWS letter expresses concern for two endangered species of insectivorous birds, the black-capped vireo and the whooping crane. This concern is based on the assumption that, "if bioaccumulation occurs in fishes, it likely occurs in insects as well." The letter goes on to establish restrictions to protect the two avian species.

The NOR-AM letter refers to the above as "unsubstantiated speculation." Like NOR-AM, EEB is not aware of a basis for extrapolation of bioaccumulation data from fish to insects, as was undertaken by FWS. In any case, since 46X is considered a negligible bioaccumulation factor, bioaccumulation in insects is not a valid concern.

Hazard to Listed Species: Terrestrial

According to the FWS letter, there are three avian species which might be exposed to Botran via use under the proposed exemption: least tern, black-capped vireo, and whooping crane. EEB's trigger for hazard to endangered birds is 1/10 X LC50 of the most sensitive test species (1/10 X 2600 ppm (bobwhite LC50) = 260 ppm).

According to EEB's calculations, the trigger will be exceeded only on short rangegrass, long grass, and leaves/leafy crops. EEB does not anticipate hazard to the least tern (piscivorous) or the whooping crane (omnivorous: fish, amphibians, insects, waste

grains, etc.). EEB's reasoning is that grasses and leaves will not make up a significant part of the diet of either of these species.

At the proposed application rate, residues on insects would be expected in the range of 100 to 175 ppm. Although this is below the trigger level for endangered birds, EEB is still concerned with possible hazard to the black-capped vireo. Two factors are involved here which complicate the hazard assessment for this species.

First, the vireo is a much smaller bird than the reference species, bobwhite quail. As such, the vireo would be expected to consume a greater amount of food in relation to its body weight than would the quail.

Second, according to the Standard Evaluation Procedure document for Ecological Risk Assessment, EEB's techniques "cannot be applied to insectivorous bird exposure because insects can be expected to contain considerably different residues than vegetation because they will inhale, walk upon, ingest, metabolize, and otherwise be exposed to greater amounts of pesticide than would vegetation."

In view of the factors outlined above, EEB will defer to FWS regarding restrictions necessary to protect the black-capped vireo. These restrictions are outlined in detail in the attached FWS letter.

Hazard to Listed Species: Aquatic

EEB's trigger for hazard to endangered fish species is 1/20 X the LC50 of the most sensitive test species. For Botran, this figure is 1/20 X 0.56 ppm, or 28 ppb. EEB's calculated aquatic EEC of 36.6 ppb exceeds the trigger value, indicating potential hazard to endangered fish.

EEB will defer to FWS regarding restrictions necessary to protect the leopard darter. These restrictions (buffer zones along certain river systems) are outlined in detail in the attached FWS letter.

101.4 Adequacy of Toxicity Data

The existing database is adequate to assess hazards to nontargets under the proposed exemption, with the exception of freshwater aquatic invertebrates.

103 Conclusions

EEB has reviewed the proposed emergency exemption for the use of Botran on peanuts in Oklahoma. EEB concludes that the proposed use will not result in hazard to nonendangered birds, mammals, and fish. Due to lack of toxicity data, hazard to freshwater aquatic invertebrates cannot be assessed.

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With regard to listed endangered/threatened species, the attached letter from FWS outlines restrictions to protect four species: leopard darter, least tern, black-capped vireo, and whooping crane. EEB's calculations, based on avian toxicity and estimated residues on food items, do not indicate hazard to the least tern and the whooping crane. EEB's calculations do indicate potential hazard to the leopard darter and the black-capped vireo. As such, EEB defers to FWS regarding restrictions necessary to protect these two listed species. These restrictions are detailed in the attached letter from FWS, Tulsa.

Allen W. Vaughan 8.10.89
Allen W. Vaughan, Entomologist
Ecological Effects Branch
EFED (H7507C)

Norman J. Cook for 8.10.89
James W. Akerman, Chief
Ecological Effects Branch
EFED (H7507C)

Norman J. Cook 8.10.89
Norman J. Cook, Supervisory Biologist
Ecological Effects Branch
EFED (H7507C)

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Botran $18 - Oklahoma

Attachment A

EEC CALCULATION SHEET

I. For un-incorporated ground application

A. Runoff

3 lb(s) x 0.02 (2% runoff) x 10 (A) (from 10 A. drainage basin) = 0.6 lb(s) (tot.runoff)

EEC of 1 lb a.i. direct application to 1 A. pond 6-foot deep = 61 ppb

Therefore, EEC = 61 ppb x 0.6 (lb) = 36.6 ppb

II. For incorporated ground application

A. Runoff

___lb(s) ÷ _____ (cm) (depth of incorporation) x 0.0_ (_% runoff) x 10 (A) (10 A d.basin) = _____lb(s) (tot.runoff)

Therefore, EEC = 61 ppb x _____(lbs) = _____ppb

III. For aerial application (or mist blower)

A. Runoff

3 lb(s) x 0.6 (appl. efficiency) x 0.02 (2% runoff) x 10 (A) (10 A. d.basin) = 0.36 lb(s) (tot.runoff)

B. Drift

3 lb(s) x 0.05 (5 % drift) = 0.15 lb(s) (tot. drift)

Tot. loading = 0.36 lb(s) (tot. runoff) + 0.15 lb(s) (tot. drift) = 0.51 lb(s)

Therefore, EEC = 61 ppb x 0.51 (lbs) = 31.1 ppb

NOR-AM

NOR-AM Chemical Company

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June 22, 1989

Ms. Anne Lindsay
OPP/Registration Division (H-7505C)
U.S. Environmental Protection Agency
Crystal Mall #2
1921 Jefferson Davis Highway
Arlington, VA 22202-4501

RE: BOTRAN 75W, EPA Reg. No. 45639-110
Petition to EPA by Oklahoma Department of Agriculture for Section 18 Emergency Exemption for BOTRAN 75W on Peanuts
Request for Comments

Dear Ms. Lindsay:

This letter is a rejoinder to the letter you received from Stephen Forsythe, U.S. Fish and Wildlife Service, Tulsa, OK, dated May 23, 1989.

NOR-AM Chemical Company disagrees with several statements made in the letter to you from Mr. Forsythe concerning BOTRAN 75W, and will cite test data and other scientific evidence here to refute them:

1. Page 1, Paragraph 4

Mr. Forsythe states that "BOTRAN has been shown to be particularly lethal to fishes ..."

Response: In fact, the fish toxicity for BOTRAN is as follows:

Bluegill sunfish 96 hr. LC50	=	37 ppm
Rainbow trout 96 hr. LC50	=	1.6 ppm
Goldfish (carp) 96 hr. LC50	=	32 ppm

The most sensitive species of all representative species tested was the rainbow trout, where BOTRAN is classified as moderately toxic by EPA standards. "Particularly lethal" is misleading terminology as used in the subject letter, without the benefit of LC50 data values. Does U.S. Fish and Wildlife Service have data to support their statement?

Based on the water solubility of DCNA (active ingredient in BOTRAN) of 0.006 g/liter of water at 20°C and an application dosage rate of 3.0 lb ai/acre, the EEC (estimated environmental concentration) using a worst case runoff of 1% to 2% is 18.3 to 40.2 parts per billion (ppb). (See Attachment A). Using a threshold, or trigger level for endangered species of 0.05 X LC50 of 1.6 ppm, or 80 ppb, BOTRAN still has a 2X to 4X safety factor on top of the safety margins already built-in to the environmental risk evaluation process.

2. Page 1, Paragraph 5

Mr. Forsythe states "... because of the chemical's toxicity and bioaccumulation in fishes, restrictions will need to be implemented to prevent a may affect situation on the piscivorous federally endangered least tern ..."

Response: BOTRAN does not bioaccumulate in fish. A bioaccumulation study using bluegill sunfish has shown a bioconcentration factor of 46X overall, which plateaus within one day and was 80% eliminated by the fish within 24 hours in untreated water. The dose used in this study was a constant (chronic) level of 0.4 mg/l DCNA, or 400 ppb, which is 20 times the potential EEC from a predicted acute exposure, which would be short-lived. A factor of 46X bioconcentration is generally regarded as negligible with respect to bioaccumulation in fish.

3. Page 2, Paragraph 2

Mr. Forsythe states "... it can be assumed that if bioaccumulation occurs in fishes, it likely occurs in insects as well ...", and on page 2, paragraph 4 alludes to "... the possible bioaccumulation of the subject chemical in insects ..."

Response: These statements are clearly unsubstantiated speculation. This author knows of no basis for extrapolation from fish to insects or other animals of pesticide bioconcentration using bioaccumulation data in fish (which DCNA does not). Field studies such as those by M. I. Sayed et. al. (1967) have shown that even chlorinated hydrocarbons such as DDT do not accumulate in Heliothis larvae from chronic exposure, pointing to the fact that biodegradation of pesticide residues by insects is potentially a common occurrence.

Finally and most importantly, the avian toxicity of DCNA is categorized as low:

Mallard duck LC50	=	5960 ppm (as a.i.)
Bobwhite quail LC50	=	1435 ppm (as a.i.)

Even given a worst-case acute exposure of BOTRAN 75W and a potential EEC of 20 ppb, and using the most sensitive species tested (bobwhite quail), there is more than a 70,000-fold safety margin for DCNA.

In summary, while NOR-AM Chemical Company does take exception to the misinformation contained in Mr. Forsythe's letter, we also are environmentally conscientious and responsibly will cooperate with the U.S. Fish and Wildlife Service and EPA in any reasonable program designed to protect sensitive or endangered species, as we did in 1988.

Thank you for your attention.

Sincerely,

Kenneth Chisholm

Kenneth W. Chisholm
Senior Registration Specialist

KWC/mkg

Attachment

CC: S. W. Forsythe - U.S.F.& W.
K. Holley - OK Dept. of Agric.

Attachment A

EEC CALCULATION SHEET

I. For foliar application

A. Runoff

3 lbs a.i. x 0.01 (1% runoff) x 10 (A) (from 10 A. dranage basin) = 0.3 lb (tot. runoff)

EEC of 1 lb a.i. direct application to 1 A. pond 6-foot deep = 61 ppb

Therefore, EEC = 61 ppb x 0.3 (lb) = 18.3 ppb @ 1% runoff

= 36.6 ppb @ 2% runoff

II. For aereal application

A. Runoff

3 lbs x 0.6 (appl. efficiency) x 0.01 (1% run-off) x 10 (A) (10 A. d. basin) = 0.18 lbs (tot. runoff)

B. Drift

3 lbs x 0.05 (5 % drift) = 0.15 lb (tot. drift)

Tot. loading = 0.18 lb + 0.15 lb = 0.33 lbs

Therefore, EEC = 61 ppb x 0.33 (lbs) = 20.13 ppb @ 1% runoff

= 40.26 ppb @ 2% runoff

United States Department of the Interior
FISH AND WILDLIFE SERVICE
Ecological Services
222 S. Houston, Suite A
Tulsa, Oklahoma 74127

TAKE PRIDE IN AMERICA

May 23, 1989

1989

2-14-889-I-104

Ms. Anne Lindsay
OPP/Registration Division (H7505C)
Environmental Protection Agency
Crystal Mall Building 2
1921 Jefferson Davis Highway
Arlington, VA 22202-4501

Dear Ms. Lindsay:

This letter is in reply to the request for comments on the Oklahoma Department of Agriculture's petition to the Environmental Protection Agency for a Section 18 exemption for the use of 2,6-dichloro-4-nitoaniline fungicide (Botran 75W) on peanuts in Oklahoma.

Oklahoma is asking for a permit to treat up to 35,000 acres of peanuts in Atoka, Beckham, Blaine, Bryan, Caddo, Canadian, Carter, Choctaw, Cleveland, Coal, Comanche, Creek, Custer, Garvin, Grady, Greer, Harmon, Haskell, Hughes, Jackson, Johnston, Kiowa, Lincoln, Love, Marshall, McClain, McCurtain, McIntosh, Murray, Muskogee, Okfuskee, Oklahoma, Okmulgee, Payne, Pittsburg, Ponotoc, Pottawatomie, Seminole, Stephens, Tillman, and Washita Counties. Application will be at a rate of four pounds per acre and will be applied between July 15 and October 30.

We have reviewed the application for impacts on federally listed threatened or endangered species in accordance with Section 7 of the Endangered Species Act, as amended. Effects on other sensitive environmental areas in Oklahoma were also considered. Due to the timing and/or treatment area, no negative effects are expected in Atoka, Creek, or Payne Counties.

However, because Botran has been shown to be particularly lethal to fishes, a no use area (buffer zone) will need to be put into affect in McCurtain County to avoid a may affect situation with the federally threatened leopard darter (Percina pantherina). A 500-foot buffer zone will need to be established along both sides of the following streams and their tributaries:

1) The Glover River and all it's tributaries.

2) The Mountain Fork River above Broken Bow Reservoir including Boktulo Creek, Buffalo Creek, Big Eagle Creek, Dry Creek, Six-mile Creek, Rock Creek, Hurricane Creek, Beech Creek, and Cow Creek.

Also, because of the chemical's toxicity and bioaccumulation in fishes, restrictions will need to be implemented to prevent a may affect situation on the piscivorous, federally endangered least tern (Sterna antillarum). A 500-foot buffer zone will need to be established on both sides of the following streams:

1) Red River - Bryan, Choctaw, Harmon, Jackson, Jefferson, Love, Marshall, McCurtain, and Tillman Counties.

2) North Fork of the Red River - Beckham, Greer, Kiowa, Jackson, and Tillman Counties.

3) Washita River - Kiowa, Caddo, Carter, Custer, Garvin, Grady, Johnston, Marshall, Murray, and Washita Counties.

4) Blue River - Bryan and Johnston Counties

5) Canadian River - Blaine, Caddo, Canadian, Cleveland, Coal, Custer, Grady, Hughes, McClain, McIntosh, Pittsburg, Ponotoc, Pottawatomie, and Seminole Counties.

6) North Canadian River - Blaine, Canadian, Hughes, Lincoln, McIntosh, Okfuskee, Oklahoma, Pottawatomie, and Seminole Counties.

7) Arkansas River - Muskogee and Haskell Counties.

As stated in our comments on the 1988 exemption proposal, it can be assumed that if bioaccumulation occurs in fishes, it likely occurs in insects as well. Two insectivorous, federally endangered birds, the black-capped vireo (Vireo atricapillus) and the whooping crane (Grus americanus), occur in the proposed use area during the time proposed for treatment.

Possible conflicts (may affect) with the whooping crane can be averted by altering the proposed time of application. Because whooping cranes begin migrating through Oklahoma in October, the use of Botran shall be halted in Beckham, Blaine, Caddo, Canadian, Carter, Cleveland, Comanche, Custer, Garvin, Grady, Greer, Harmon, Jackson, Jefferson, Kiowa, Love, Marshall, Murray, Oklahoma, Stephens, Tillman, and Washita Counties by September 31.

As in 1988, restrictions will be necessary to protect the black-capped vireo due to the possible bioaccumulation of the subject chemical in insects. The black-capped vireo is found in Comanche, Caddo, Canadian, and Blaine Counties. Like the procedures implemented in 1988, users will be asked to contact the U.S. Fish and Wildlife Service (Service), Tulsa, Oklahoma, for permission to spray specific areas. This is possible and necessary because the vireo is found only in a very limited geographic area and disclosure of the exact locations could prove detrimental to the species. Though the black-capped vireo occurs in Comanche County, users in this county will not need to consult with the Service as the vireo is only found on the Wichita Mountains Wildlife Refuge and Fort Sill Military Reservation. In Caddo County, we have further narrowed the area of possible conflict to the area north of Highway 152, east of Highway 8, and west of Highway 37 north of the town of Cogar. Applicators in this area who received permission to use Botran in 1988 need not request permission in 1989. Only those who plan to use Botran on a field that was not treated in 1988 should contact the Service for permission.

The addition of Canadian and Blaine Counties to the list of counties seeking exemption will require the same type of approval as in Caddo County to prevent a may affect situation with the black-capped vireo. Users in the areas described below will need to contact the Service for permission:

1) Canadian County - south of Highway 37

2) Blaine County - the area bounded on the west by Highway 51a, on the north by Highway 51, on the east by Highway 8, and on the south by Highways 8 and 8a.

Not meeting the above listed conditions will necessitate a may affect determination and require formal consultation under Section 7 of the Endangered Species Act concerning the use of Botran on peanuts in the specified Oklahoma counties.

Finally, applicators should maintain extra caution when treating fields within one-half mile of National Wildlife Refuges (Washita NWR - Custer County; Wichita Mountains Wildlife Refuge - Comanche County; and Tishomingo NWR - Johnston and Marshall Counties) to prevent possible contamination of these environmentally sensitive areas.

Sincerely yours,

Stephen W. Forsythe
Field Supervisor

cc:
Kevin Holley, Oklahoma Department of Agriculture, Oklahoma City, OK
Director, Oklahoma Department of Wildlife Conservation, Oklahoma City, OK
(Attention: Environmental Section)

JAR:dc