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SHAUGHNESSY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 4-05-89

DATE: OUT 4/13/89

FILE OR REG. NO. 89-PR-04

PETITION OR EXP. NO. _____

DATE OF SUBMISSION 3-23-89

DATE RECEIVED BY HED 4-05-89

RD REQUESTED COMPLETION DATE 4-20-89

EEB ESTIMATED COMPLETION DATE 4-20-89

RD ACTION CODE 510

TYPE OF PRODUCT(S) : I,D,H,F,N,R,S INSECTICIDE

DATA ACCESSION NO(S). _____

PRODUCT MANAGER (NO.) D. STUBBS (41)

PRODUCT NAME(S) AMDRO

COMPANY NAME Puerto Rico

SUBMISSION PURPOSE Section 18 for use on fire ants in coffee.

SHAUGHNESSY NO.	CHEMICAL & FORMULATION(S)	% A.I.
_____	_____	_____
_____	_____	_____
_____	_____	_____

ECOLOGICAL EFFECTS REVIEW

Chemical: Amdro

100.0 Submission Purpose

The United States Department of Agriculture's Agricultural Service Administration (USDA-ASA) has submitted an Section 18 Emergency Exemption request for the use of Amdro to control fire ants (Solenopsis invicta) in coffee in Puerto Rico. As proposed, coffee growers will use the pesticide under the supervision of the Crop Protection Program (CPP) of the USDA-ASA. Trained personnel from the CPP will be responsible for the application of the pesticide and control of inventories.

101.0 Nature of Program

Application Rates/Methods/Timing

AMDRO baits should be applied to individual mounds and/or broadcast by ground equipment at the rate specified on the products label. Single mounds should be treated at the rate of 5 level tablespoons per mound or 1.5 lbs. per acre on approximately 28,000 acres for a total of 42,000 pounds of product. Baits should be applied in the late afternoon or early morning when ants are actively foraging. For best results, two applications per year are recommended. The first application should be made during November to February and the second from June to September (See attached labeling for specific use directions and label precautions).

Treatment Area

The municipalities proposed for treatment are located on the western-central part of Puerto Rico and include: Moca, Anasco, San Sebastian, Mayaguez, Las Marias, Maricao, San German, Sabana Grande, Yaucu, Guayanilla, Penuelas, Juana Diaz, Adjuntas, Jayuya, Coamo, Aguas Buenas, Morovis, Ciales, Utuado and Lares.

Mode of Action

AMDRO is formulated as a bait which is highly attractive to fire and harvester ants. Worker ants carry the bait into the mound and pass it along to the queen and other ants in the mound. AMDRO is a slow acting insecticide and is especially active against the queen. Typically in 1-4 weeks the queen and a number of other ants will be killed. Very large mounds may require a retreatment.

102.0 Description of Problem

The ant was introduced onto the island in the early 1970s and currently occupies a large section of the central mountain area and southern coast covering at least half the island. The USDA-ASA estimates that there is approximately 30,000 acres of coffee plantations in Puerto Rico that are infested with the fire ant. It is anticipated that the fire ant will spread to all coffee production areas in the next three years and will infest the entire island in about 5 years despite control attempts.

103.0 Hazard Assessment

Toxicity Evaluation

AMDRO is considered to be only slightly toxic to birds (LD50s range from 1828-2510 mg/kg for the bobwhite and mallard duck, respectively) and mammals (rat LD50 = 825 mg/kg) on an acute oral basis and slightly toxic to birds on a dietary basis (1136-4355 ppm for the bobwhite and mallard, respectively). Toxicity data show that 96-hour LC50 values for fish range from 0.09 (channel catfish) to 1.7 (bluegill sunfish) ppm. These data suggest that AMDRO is moderately to very highly toxic to fish. Toxicity data for Daphnia magna indicate that the chemical is moderately toxic to aquatic invertebrates (LC50 is 1.14 ppm).

Terrestrial Exposure Assessment

The pesticide is formulated as a bait that consists of [REDACTED]. The bait is yellow to tan in color. One bait weighs approximately 1.4 mg or 0.0122 mg a.i./bait. The size of the bait ranges from 1.18 -2.36 mm in length. Apparently, the bait emits a rancid smell after prolonged exposure (See EEB review by C. Bowen dated 4/7/82).

Non-target birds may be exposed to AMDRO treated baits from direct ingestion as food. Based upon label directions, one application of 1.5 lbs of product/acre should result in approximately 0.21 oz. (5.95g)/acre. This application should result in approximately 11 baits/sq.ft. (equivalent to 0.137 mg a.i./sq.ft.).

Table 1 summarizes the acute oral hazard to eight avian species from AMDRO treated baits. (Note: This information was taken directly from C. Bowen's review of 4/7/82). These calculations indicate that the potential for non-target birds to be exposed to lethal quantities of the pesticide is very remote.

inert ingredient information is not included

Aquatic Exposure Assessment

The greatest hazard to fish and other aquatic organisms would occur if, during treatment, AMDRO treated baits were applied directly to water. Table 2 shows the estimated environmental concentrations (EECs) of AMDRO that could occur from direct application to 6" of water. This estimation shows that direct application of 1.5 lbs/A (worst case situation) of AMDRO could produce residues in 6 inches of water that just barely exceed 1/10 the warm water fish trigger of 0.009 ppm (i.e., 1/10 of 0.09 ppm for the channel catfish). However, because, for the most part, application methods (i.e., hand treatment and broadcast application with ground equipment) preclude the possibility for direct application to aquatic environments, the potential for exposure, and resulting hazard to aquatic organisms from the proposed treatment, is very low.

104.0 Endangered Species

Although Federally protected endangered species could be exposed to AMDRO residues from the proposed action, it is very doubtful, for those reasons listed previously under Section 103.0, that they will be impacted from the proposed action.

105.0 Summary

The EEB has reviewed the Section 18 Specific Exemption, submitted by the USDA-ASA for the use AMDRO to control fire ants on coffee plantations in Puerto Rico. Because the available data show that; AMDRO is only slightly toxic to birds and mammals, the chemical degrades rapidly (Half-life of 3-5 days), application rates are very low and methods of application (i.e., hand treatment and broadcasting with ground equipment) are likely to greatly reduce exposure to both aquatic and terrestrial environments, USDA-ASA trained personnel only will apply the product, and because only two applications will be made approximately six months apart, it is EEB's opinion that this use will not likely produce serious adverse impacts to non-target fish and wildlife species including endangered species.

The EEB recommends, however, that the following additional use directions and label precautions be followed to further reduce any potential for adverse effects:

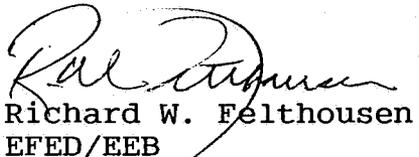
- 1.) the method of application should be limited to hand treatment within three feet of active mounds. Although this method tends to concentrate the amount of bait, (as opposed to the broadcast method) because of the fire ants

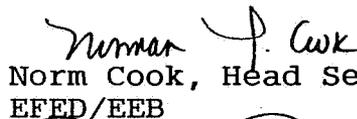
propensity to remove most of the bait in less than an hour, the EEB believes this will greatly reduce exposure to non-target insects (ants) as well as other fish and wildlife species.

2. The USDA-ASA keep a complete record of the amount of bait applied and the number of acres treated. In addition, the USDA-ASA should make some attempt (simple walk through of the treated should be adequate) to monitor for any adverse impacts to non-target insects (ants) as well as other fish and wildlife species. The EEB requests that such records are submitted to the Branch for review and inclusion into our files.

3. Treatment should not take place if it is likely to rain within an hour of application.

4. Any uneaten bait remaining after three days posttreatment should be collected and disposed of properly.

 4/11/89
Richard W. Felthousen, Wildlife Biologist
EFED/EEB

 4-11-89
Norm Cook, Head Section 2
EFED/EEB

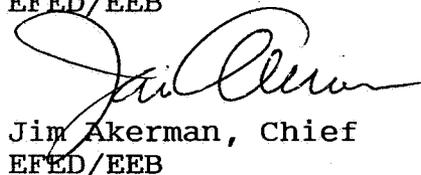
 4/13/89
Jim Akerman, Chief
EFED/EEB

TABLE 1. Amdro's Hazard to Four Species of Non-Target Mammals.

Species	Body Weight (g)	MG/Animal \$\$	Number of Granules equal ^{1/}	
			1/5 LD50	LD50
Rat -++	200	170.4	2,793	13,967
Eastern Cottontail (Adult)	1100	937.2	15,363	76,819
Weaned Young 20 Days Old	85	72.42	1,186	5,934
Grey Squirrel (Adult-Female)	520	443.0	1,185	36,311
Weaned Young 10 Weeks Old	200	170.4	2,793	13,967
Delmarva Fox Squirrel (Adult-Female) ^{2/}	795	677.34	11,103	55,516
Weaned Young 8-10 Weeks Old	454	386.8	6,340	31,704

FOOTNOTES

++-Male Rat LD₅₀=852 mg/kg (Empirical Data).

^{1/} Weight one (1) Amdro bait = 1.4 mg (Dr. Don Linkfield 3/23/82).

©-Weight of toxicant/bait = 1.4 mg x 0.88% = 0.012 mg/Amdro/bait.

\$\$-Example = Rat LD₅₀ x Animal Weight(kg) = 852 mg/kg x 0.085 kg = 72.42 mg/animal

$$\text{Number of Amdro baits required to equal LD}_{50} = \frac{72.42 \text{ mg/animal}}{0.0122 \text{ mg/Amdro/bait}} = 5,936 \text{ baits}$$

^{2/} Weight data obtained via telephone conversations with Gary Taylor (301-827-8612) and Dr. Vagan Flyger (454-4641) of the Delmarva Squirrel Recovery Team.

TABLE 2. Amdro's Acute Oral Hazard to Eight Species of Non-Target Birds.

Species	Body Weight (g)	MG/Animal ()§§	Number of Granules equal to <u>1/</u>	
			<u>1/5 LD50</u>	<u>LD50</u>
Mallard ^{⊗⊗} (14-day)	200	502.0	8,229	41,147
Mallard (adult)	1200	3012	49,377	246,885
Bobwhite ^{⊗⊗} (14-day)	30	54.8	899	4,495
Bobwhite (adult)	170	310	5,094	25,472
Robin	80	146.2	2,396	11,983
Mourning Dove	100	182.8	2,996	14,983
House Sparrow	20	36.5	598	2,991
Redwing-Blackbird	50	91.4	1,498	7,491
Grasshopper Sparrow	13.9	25.4	416	2,081
Attwater's ^{2/} Prairie Chicken (adult)	1000	1828	29,967	149,836
(14-day)	50	91.4	1,498	7,491

FOOTNOTES

- ⊗⊗ - Mallard LD₅₀ = 2510 mg/kg (Emperical Data)
- ⊗⊗ - Bobwhite LD₅₀ = 1828 mg/kg (Emperical Data)

1/ Weight of one (1) Amdro bait = 1.4 mg (Dr. Don Linkfield 3/23/82).
 Weight of toxicant/bait = 1.4 mg X 0.88% = 0.122 mg/Amdro/bait.

Corrected on 4/11/89 by R.W.F.

§§-Example = Bobwhite LD₅₀ x Animal Weight (kg) = 1828/kg x 0.030 kg = 54.8 mg/animal

$$\text{Number of baits required to equal species LD}_{50} = \frac{54.8 \text{ mg/Animal}}{0.0122 \text{ mg/Amdro/Bait}} = 4,495 \text{ baits}$$

2/ Weight data supplied by Wayne Shifflet (713-234-3021) refugen manager of Attwater's Prairie Chicken Refuge, Aransas, Texas.

Table 3. Estimated Environmental Concentrations (EECs) from the application of AMDRO treated baits directly to aquatic environments.

<u>Application Rate (a.i./A)</u>	<u>Water Depth (in.)</u>	<u>EEC(ppm)</u>
1.5 lbs./A (0.21 oz./A)	6	.0096
1.5 lbs./A (0.21 oz./A)	12	.0048
3.0 lbs./A (0.42 oz./A)	6	.0192
3.0 lbs./A (0.42 oz./A)	12	.0096

A M D R O*

fire ant insecticide

EMERGENCY EXEMPTION USE FOR CONTROL OF FIRE ANTS
IN COFFEE IN PUERTO RICO FOR USE ONLY BY CROP PROTECTION PROGRAM
OF THE AGRICULTURAL SERVICE ADMINISTRATION OF THE
DEPARTMENT OF AGRICULTURE

Supplemental labeling and use directions for the emergency use of AMDRO* to control fire ants in Puerto Rico.

For use only during one year under EPA emergency exemption issued pursuant to Section 18 of the Federal Insecticide, Fungicide, Rodenticide Act as amended.

Use of this product other than as approved under the emergency exemption issued by EPA is considered a misuse and is subject to criminal and civil penalties.

Before applying this pesticide, consult your state agricultural authority for the provisions of the emergency exemption program.

All unused, unopened containers of AMDRO* involved in this program must be returned to the manufacturer at the end of the approved year. This specific exemption expires on expiration date.

Active Ingredient:

Hydramethylnon: Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone {3-[4-(trifluoromethyl)phenyl]-1-{2-[4-(trifluoromethyl)phenyl]ethenyl}-2-propenylidene hydrazone.....	By wt. 0.88%
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Inert Ingredients..... 99.12%

TOTAL..... 100.00%

AMERICAN CYANAMID COMPANY
AGRICULTURAL DIVISION
VPC VENTURES
WAYNE, NJ 07470

EPA Reg. No. 241-260
EPA Est. No. 5905-AR-1

*Registered Trademark of American Cyanamid Company

Net Weight: 1 LB
0.454 KG

Product Code 24564-09

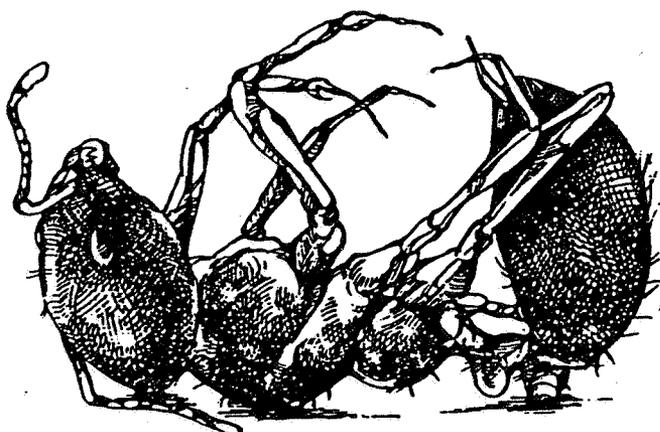
AMDRO[®]

fire ant insecticide

Active Ingredient:

Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone (3-[4-(trifluoromethyl)phenyl]-1-(2-[4-(trifluoromethyl)phenyl]- ethenyl)-2-propenylidene)hydrazone	By wt. 0.88%
Inert Ingredients	99.12%
Total	100.00%

SPECIMEN



Keep Out of Reach of Children

CAUTION

See Back Panel for Other Cautions

EPA Reg. No. 241-260

EPA Est. No. 5905-AR-1

® Registered Trademark of American Cyanamid Company

In case of an emergency endangering life or property involving this product, call collect, day or night, Area Code 201-835-3100.

Net Wt.: 1 lb. 0.454 kg.

Product Code 24564-09 D-42



American Cyanamid Company
Agricultural Division
Wayne, N.J. 07470

READ ENTIRE LABEL. DO NOT USE THIS PRODUCT FOR ANY USES OTHER THAN THOSE SPECIFIED ON THIS LABEL. OBSERVE ALL PRECAUTIONARY STATEMENTS AND DIRECTIONS ON LABEL BEFORE USE. It is a violation of Federal Law to use this product in a manner inconsistent with its labeling.

DIRECTIONS

AMDRO is for use in lawns, turf, pasture, range grass and nonagricultural lands.

Treatment	Rate	Comments
Individual mound treatment: fire ants harvester ants	5 level tablespoons	Distribute bait uniformly around the base of the mound. Do not disturb ant mounds. Do not apply directly to the top of the mound. Do not apply more than 1.5 lbs of bait per acre. Do not contaminate kitchen utensils by use or storage.
Broadcast treatment: fire ants harvester ants	¼-⅓ lb/10,000 square feet 1-1 ½ lb/acre	Broadcast bait uniformly with ground equipment (spinning disk types).

NOTE: Do not use on vegetable or other food crops.

Apply when ants are active (typically when soil temperature is greater than 60°F).

AMDRO is a bait which is highly attractive to fire ants and harvester ants. It works by becoming part of the ant food chain. Worker ants will find the AMDRO bait, carry it back to the mound and pass it along to the queen and the other ants in the mound.

An effective ant insecticide must be slow acting so that it can be passed by the workers throughout the ant mound and eventually to the queen. AMDRO is a slow acting insecticide and is especially effective against the queen. Typically, in 1-4 weeks the queen and a number of ants are killed. Within 2-8 weeks, a visible reduction in mound activity is observed. Very large mounds may continue to be active for a period of time even though the queen is dead and no young are being produced. Retreatment may be desirable under these circumstances.

Further information regarding ants may be obtained from your Cooperative Agricultural Extension Service.

Precautionary Statements

Hazards to Humans: May be harmful if swallowed. Avoid any prolonged contact to skin or eyes. Wash thoroughly after handling.

FIRST AID: If swallowed, drink one or two glasses of water and induce vomiting by touching back of throat with finger. Do not induce vomiting or give anything by mouth to an unconscious person. Get medical attention.

Hazards to Animals: This product may be an attractant to pets and rodents. Store in a secure place. Keep pets away from treated areas for at least 24 hours after application.

Environmental Hazards: This product is toxic to fish. Do not apply directly to lakes, ponds or streams.

Storage and Disposal

Storage: STORE IN A COOL, DRY SECURE PLACE AND KEEP CONTAINER TIGHTLY CLOSED. AMDRO is formulated in an oil bait that functions as an attractant to ants. Prolonged exposure to air may turn oil rancid and reduce the attractiveness of the bait. USE WITHIN 3 MONTHS AFTER OPENING.

Disposal: Do not reuse empty container. Wrap container and put in trash collection.

DISCLAIMER: American Cyanamid Company warrants only that the material contained herein conforms to the chemical description on the label and is reasonably fit for the use therein described when used in accordance with the directions for use. American Cyanamid Company makes no other express or implied warranty, including any other express or implied warranty of FITNESS or of MERCHANTABILITY.