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SHAUGHNESSY NO.

REVIEW NO.

EEB REVIEW

DATE: IN 4-05-89

DATE: OUT 4/13/89

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PETITION OR EXP. NO. _____

DATE OF SUBMISSION 3-29-89

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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 State of Hawaii

SUBMISSION PURPOSE Section 18 for use on ants in pineapples

SHAUGHNESSY NO.	CHEMICAL & FORMULATION(S)	% A.I.
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ECOLOGICAL EFFECTS REVIEW

Chemical: Amdro

100.0 Submission Purpose

The State of Hawaii's Department of Agriculture's Division of Plant Industry (DPI) has submitted a Section 18 Emergency Exemption request for the use of Amdro to control big headed (Pheidole megacephala) and Argentine ants (Iridomyrex humilis) in pineapple plantations.

101.0 Description of Problem

Ants are involved in the spread of mealybugs and the subsequent development of mealybug wilt. Ant populations have developed resistance to other pesticides (i.e., diazinon and malathion) and are infesting wide areas in the state. The increased use of traditional control agents has also reduced parasite and predator populations of mealybugs thus enabling the mealybug populations to "explode" in many areas.

Various ant species tend, protect (from predators) and spread mealybugs. Mealybugs feeding on pineapples cause a wilt, thought to be caused by a virus. Losses resulting from the uncontrolled spread of wilt are economically damaging and were responsible for the near demise of the Hawaii pineapple industry in the early 1920s.

In pineapple culture, AMDRO is effective in minimizing ant infestation from outside a field when the boundary is a non-crop boundary. However, when the boundary is another field, infested with ants, or when populations of ants remain in the field at planting, there are no effective means of controlling the insect under the existing registration.

AMDRO is currently applied to non-crop field perimeters (i.e., field borders, grass-lined terraces, basins, rock piles, etc.) annually at 5.99 grams a.i./acre (1.5 lbs. product) for a total of up to 4 applications per year.

AMDRO has given essentially complete control in all experiments conducted during the last two years on pineapple plantations in Hawaii. This one year program will slow down the spread of ant and mealybug wilt infestation and make it possible to reestablish the efficacy of AMDRO border treatments.

102.0

Application Rates/Methods/TimingTreatment Area

The proposed program is to be conducted in Honolulu and Maui counties and includes the use of 38,251 lbs (8,947 and 29,304 lbs. in Honolulu and Maui counties, respectively) of formulated product (337 lbs. active ingredient). The bait will be broadcast using ground equipment at an application rate of 1/4 - 1/2 lb/10,000 sq. ft. for big-headed ants and 1-3 lbs./acre for the Argentine ant. The program plans to treat the following areas:

1. fallow fields
2. all field borders adjacent to uncultivated areas, 50 feet into first field blocks from border roads.
3. All infield roads separating clean and infested fields and 50 feet into the infested field blocks along these roads.

The total acreage planned for treatment involves approximately 5,000 acres in fallow areas and 3,750 acres in border and uncultivated areas (See attached labeling).

103.0

Hazard AssessmentToxicity 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 3.0 lbs of product/acre should result in approximately 0.42 oz. (11.9g)/acre. This application should result in approximately 22 baits/sq.ft. (equivalent to 0.274 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. Bowens 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.

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 3.0 lbs/A (worst case situation) of AMDRO could produce residues in 6 inches of water that 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 the application method (i.e., broadcast application with ground equipment), would for the most part, 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 State of Hawaii's Department of Agriculture for the use of AMDRO to control big-headed and Argentine ants in pineapple plantations. 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 the method of application (i.e., broadcasting with ground equipment) would, for the most part, preclude contamination of aquatic environments as well as reduce exposure to terrestrial environments, it is EEBs opinion that this use will not likely produce serious adverse

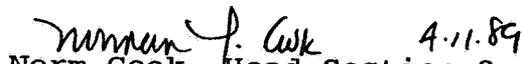
impacts to non-target fish and wildlife species including endangered species.

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

1. No more than two applications/year should be made.
2. The State Department of Agriculture should keep a complete record of the amount of bait applied and the number of acres treated. In addition, the Department 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.

 4/11/89

Richard W. Felthousen, Wildlife Biologist
EFED/EEB

 4.11.89
Norm Cook, Head Section 2
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 4/13/89
Jim Akerman, Chief
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TABLE 1. Andro'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 (Emperical Data).

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

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

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

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

^{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 ()SS	Number of Granules equal to <u>1/</u>	
			1/5 LD50	LD50
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.

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

Number of baits required = $\frac{54.8 \text{ mg/Animal}}{0.0122 \text{ mg/Amdro/Bait}} = 4,495 \text{ baits}$
to equal species LD₅₀

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

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

CYANAMID
American Cyanamid Company
Agricultural Division
Wayne, NJ 07470 ©1987

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	¼-½ 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.

AMDRO®

fire ant insecticide

EMERGENCY EXEMPTION USE

FOR CONTROL OF BIG-HEADED ANTS IN PINEAPPLE IN HAWAII

Supplemental labeling and use directions for the emergency use of AMDRO to control fire ants and big-headed ants in sugarcane and pineapple in Hawaii.

For use only during 1989 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 1988 growing season. This specific exemption expires (date).

Active Ingredient:

Hydramethylnon: Tetrahydro-5,5-dimethyl-2(1H)-pyrimidinone(3-[4-(trifluoromethyl)phenyl]-1-(2-[4-(trifluoromethyl)phenyl]ethenyl)-2-propenylidene)hydrazone..... 0.88%

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: 25.0 LB.
11.34 kg.**

Product Code 24564-08

(12 pt type) Keep Out of Reach of Children

(18 pt type) CAUTION

See Back Panel for Additional Precautionary Statements

PRECAUCION

PRECAUCION AL USARIO: Si usted no lee ingles, no use este producto hasta que la etiqueta le haya sido explicada ampliamente.

PRECAUTIONARY STATEMENTS

HAZARDS TO HUMANS

CAUTION

MAY BE HARMFUL IF SWALLOWED

Avoid any prolonged contact with skin or eyes.

Wash thoroughly after handling.

STATEMENT OF PRACTICAL TREATMENT

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.

ENVIRONMENTAL HAZARDS

This product is toxic to fish. Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes. Do not apply when weather conditions favor drift from target areas.

STORAGE AND DISPOSAL DIRECTIONS

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

Storage: STORE IN 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. This product may be an attractant to pets and rodents. USE WITHIN 3 MONTHS AFTER OPENING.

Pesticide Disposal: Wastes resulting from the use of this product may be disposed of on site or at an approved waste disposal facility.

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.

DIRECTIONS

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

DIRECTIONS FOR USE

Approved sites of application:

1. Fallow pineapple fields prior to planting.
2. Field borders adjacent to uncultivated areas, 50 feet into first field block from border roads.
3. Infield roads separating clean and ant infested fields and 50 feet into the infested blocks along these roads.

Restrictions:

Confine infield AMDRO application to ant infested second and third ratoon fields and to only 50 feet into second and third ratoon fields along the treated infield roads. Clean fields are fields in plant crop or first ratoon cycle not yet infested with ants. Do not apply AMDRO to plant crop and first ratoon fields other than in areas specified when adjacent to uncultivated areas.

RATES OF APPLICATION:

Treatment	Rate	Comments
Individual mound treatment: fire ants harvester ants big-headed 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 1/2 lbs of bait per acre. Do not contaminate kitchen utensils by use or storage.

Treatment	Rate	Comments
Broadcast treatment: fire ants harvester ants	1-1 1/2 lb/acre 1/4-1/3 lb/10,000 square feet	Broadcast bait uniformly with ground equipment (spinning disk types) or fixed or rotary wing aerial equipment.
Broadcast treatment: big-headed ants	1-2 lb/acre 1/4-1/2 lb/10,000 square feet	Broadcast bait uniformly with ground equipment (spinning disk types or turbine blower).
Argentine ant	1-3 lbs/acre	

NOTE: - Pineapple: Apply evenly over infested field areas and surrounding gulches and other waste areas, at above rates of application. Do not apply within 14 days of harvest. Do not apply more than six pounds per acre during any twelve-month period.

Worker Protection: Do not apply this product in such a manner as to directly or through drift expose workers or other persons. Applicators must wear trousers, long sleeved shirt, rubber boots, rubber gloves, and dust or mist respirators.

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. 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, subject to the risks referred to above.

Any damages arising from a breach of this warranty shall be limited to direct damages and shall not include consequential commercial damages such as loss of profits or values or any other special or indirect damages.

American Cyanamid Company makes no other express or implied warranty, including any other express or implied warranty of FITNESS or of MERCHANTABILITY.

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