UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

002805

DATE: March 16, 1982

SUBJECT: EPA Registration Number: 2204-12
Nopocide N-96

FROM: Deloris F. Graham DFG 3/22/82
FHB/TSS
E 3/22/82

TO: Henry Jacoby
Product Manager (21)

Applicant: Diamond Shamrock Corporation
Process Chemicals Division
P.O. Box 2386-R
Morristown, NJ 07960

Active Ingredient:
Chlorothalonil (tetrachloroisophthalonitrile).....96.0%
Inert Ingredients.....4.0%

Background: Submitted Acute Oral, Acute Dermal, Acute Inhalation, Eye Irritation and Primary Dermal Irritation Studies. Studies conducted by Diamond Shamrock, data under accession number 246769. Method of support not indicated. Miscellaneous data, not requested.

Recommendation:

1. FHB/TSS finds these data acceptable to support conditional registration of this product.

2. The appropriate signal word is DANGER.

3. Since the Acute Inhalation data requires a toxicity category I - DANGER, the word poisonous in red and the skull and crossbone motif must appear on the label in close proximity to the signal word.

Label:

1. Precautionary Statements must be revised to read similar to the following:

> "Corrosive, causes irreversible eye damage. Fatal if inhaled. Do not breathe dust. Wear a mask or pesticide respirator jointly approved by the Mining Enforcement and Safety Adminstration, and the National Institute for Occupational Safety and Health. Do not get in eyes on skin or on clothing. Wear goggles, face shield, or safety glasses when handling."

EPA FORM 1320-6 (REV 3-76)

2. The "First Aid" statement must be revised similar to the following:

> "In case of contact with eyes, flush with plenty of water immediately for at least 15 minutes and get medical attention. If inhaled, remove victim to fresh air. If not breathing, give artificial respiration, preferably mouth-to-mouth. Get medical attention. If on skin, wash with plenty of soap and water."

Review:

1. Acute Oral Toxicity Study: Diamond Shamrock; Report #DS-2787; February 7, 1980.

Procedure: Five groups consisting of 5M and 5F Sprague-Dawley rats received one of the following doses: 6.33, 8.01, 10.14, 12.83 and 16.25 g/kg. Observations were made at 4 and 6 hours after dosing, then daily thereafter for 14 days. Necropsy performed on all animals.

Results: No mortalities. Toxic signs included lethargy, diarrhea, ptasis, piloerection, chromodacryorrhea and chromorhinarrhea. Necropsy revealed bloated intestines in most animals. LD_{50} greater than 16.24 g/kg.

Study Classification: Core Guideline Data.

Toxicity Category: IV - CAUTION

2. Acute Dermal Toxicity Study: Diamond Shamrock; Report #DS-2787; February 6, 1980.

Procedure: Five groups consisting of 3 M and 3F rabbits each received one of the following doses at abraded skin sites under occlusive wrap for 24 hour exposure: 6.76, 8.13, 9.77, 11.75 and 14.13 g/kg. Observations were made frequently for first hour, at 4 and 6 hours and then daily for 14 days. Necropsy performed on all animals.

Results: At 6.76 g/kg, 1 F died; at 9.77 g/kg, 1M died; at 14.13 g/kg, 1 M died. Slight to severe erythema and edema from day 1 through day 14. Skin flaking, slight eschar formation, cracking, sloughing and pustules also observed. Toxic signs included diarrhea, ataxia, lethargy, adypsia, anorexia, few feces, mucus in stool, tachypnea, yellow nasal discharge, yellow discharge around eyes, some animals seemed agitated. Necropsy revealed stomach and intestines distended with gas, adrenals pale gray, lung irregularly congested, lung area dark, heart dilated, intestines red and bloated, exudate around nose/mouth anogenital area. LD_{50} greater than 14.13 g/kg.

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Study Classification: Core Guideline Data

Toxicity Category: III - CAUTION

3. Acute Inhalation Toxicity Study: Diamond Shamrock; Report #DS-2787; April 28, 1980.

Procedure: A series of four-hour inhalation exposures were done using six groups of Sprague-Dawley rats (5M and 5F/group). Nominal concentrations were 0.13, 0.17, 0.28, 0.28, 0.85, and 1.79 mg/l. Airborne concentrations were 0.03, 0.04, 0.06, 0.10, 0.25 and 0.39 mg/l. As a control, 5M and 5F rats were exposed to dry air in an exposure chamber for four hours. Average mass median diameter ranged from 0.92 to 2.65 micrometers. Relative humidity ranged from 76-88%. Temperature ranged from 18-21°C. Observations were made at 15, 30 and 45 minutes and hourly during exposure period. Necropsy performed on all animals.

Results: At control, 0.03 and 0.06 mg/l, no mortalities; at 0.04 mg/l, 1/10 died; at 0.10 mg/l, 5/10 died; at 0.25 mg/l, 10/10 died; at 0.39 mg/l, 9/10 died.

Toxic signs included respiratory disfunction, labored breathing, gasping, excessive ocular, nasal and oral secretions, eyes partially and completely closed, decreased activity, wet rales, dry rales.

Necropsy revealed mottled lung, discoloration of lung and/or dark red foci on lungs, cloudy and slightly vascularized right and left corneas.

LC_{50} (airborne concentration) was 0.11 mg/l with confidence limits between 0.09 and 0.14. LC_{50} (nominal concentration) was 0.35 mg/l with confidence limits between 0.25 and 0.50 mg/l.

Study Classification: Core Guideline Data.

Toxicity Category: I - DANGER

4. Eye Irritation Study: Diamond Shamrock; Report #DS-2787; February 7, 1981.

Procedure: Twelve rabbits received 100 mg of the test material in one eye each. The eyes of 6 rabbits were washed with lukewarm water 20 to 30 seconds post-treatment. Observations were made at 24, 48, 72 hours and 4, 7, 10, 13 and 14 days.

Results: At day 1, 2/6 animals of the unwashed group had corneal opacity (1/6 = 10, 1/6 = 15) and 4/6 could not be scored due to severe chemosis and corneal opacity; 6/6 redness (6/6 = 3), chemosis (6/6 = 4), and discharge (6/6 = 3).

At day 4, 6/6 had corneal opacity (1/6 = 2, 2/6 = 40, 2/6 = 45, 1/6 = 60); 3/6 iris irritation (1/6 = 5, 2/6 = 10), 3/6 could not be scored; 6/6 had redness (6/6 = 3), chemosis (6/6 = 4) and discharge (6/6 = 3). At day 4, 6/6 had corneal opacity (1/6 = 2, 2/6 = 40, 2/6 =45, 1/6 = 60); 3/6 iris irritation (1/6 = 5, 2/6 - 10), 3/6 could not be scored; 6/6 had redness (6/6 =3), chemosis (3/6 = 3, 3/6 =4), discharge (1/6 = 2, 5/6 =3). At day 7, 6/6 corneal opacity (3/6 = 40, 3/6 = 60); 3/6 iris irritation (2/6 = 5, 1/6 = 10); redness (1/6 = 2, 5/6 = 3), chemosis (4/6 = 3, 2/6 = 4), discharge (1/6 = 2, 5/6 = 3). At day 14, 6/6 corneal opacity (1/6 = 40, 3/6 = 60, 2/6 = 80); 2/6 iris irritation (1/6 = 5, 1/6 = 10); redness (5/6 = 2, 1/6 = 3); chemosis (5/6 = 3, 1/6 = 4) and discharge (3/6 = 2, 3/6 = 3).

At day 1, 1/6 of the washed group had corneal opacity (1/6 = 10); 3/6 iris irritation (3/6 = 5); 6/6 redness (1/6 = 2, 5/6 = 3), chemosis (2/6 = 2, 3/6 = 3, 1/6 = 4) and discharge (4/6 = 2, 2/6 = 3). At day 4, 2/6 corneal opacity (1/6 = 10, 1/6 = 20); redness (2/6 = 2, 3/6 = 3), chemosis (4/6 = 2, 1/6 = 3), and discharge (1/6 = 1, 5/6 = 2). At day 7, 2/6 corneal opacity (1/6 = 10, 1/6 = 20); redness (4/6 = 1, 1/6 = 2); chemosis (2/6 = 1, 3/6 = 2), and discharge (5/6 = 1). At day 14, 1/6 corneal opacity (1/6 = 10), chemosis (2/6 = 1) and discharge (1/6 = 1).

Study Classification: Core Guideline Data.

Toxicity Category: I - DANGER

4. Primary Dermal Irritation Study: Diamond Shamrock; Report #DS-2787; February 6, 1980

Procedure: Six New Zealand rabbits received 0.5g of the test material at 2 abraded and 2 intact skin sites per animal under occlusive wrap for 24 hour exposure. Observations made at 24 & 72 hours after application.

Results: At 24 and 72 hours, slight to well defined erythema and edema (scores 1 and 2). Primary Irritation Score was 1.12.

Study Classification: Core Guideline Data.

Toxicity Category: IV - CAUTION

Net Contents 100 Pounds/45.4 Kilograms

Diamond Shamrock

Nopcocide® N-96

Technical Microbicide
For Manufacturing Use To Control Mildew On Paint Film

Active Ingredient: Chlorothalonil (tetrachloroisophthalonitrile)*	96.0%
Inert Ingredients:	4.0%
Total	100.0%

*Covered under U.S. Patent No. 3,290,353 and No. 3,331,735.

Keep Out Of Reach Of Children

Danger

See skin panel for additional precautionary statements

Diamond Shamrock Corporation
Process Chemicals Division
Morristown, New Jersey 07960
EPA Reg. No. 2204-12

Storage And Disposal

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

Storage

Store in a dry place.

Pesticide Disposal

Pesticide or rinsate that can not be used according to label instructions must be disposed of according to Federal, State or local procedures under the Resource Conservation and Recovery Act.

Container Disposal

Triple rinse (or equivalent) and dispose of in a sanitary landfill or by incineration if permitted by State and local authorities.

Warranty And Limitation Of Damages

Seller warrants that this material conforms to its chemical description and is reasonably fit for the purposes stated on the label when used in accordance with directions under normal conditions of use and Buyer assumes the risk of any use contrary to such directions. **Seller makes no other express or implied warranty, including any other express or implied warranty of Fitness or of Merchantability, and no agent of Seller is authorized to do so except in writing with a specific reference to this warranty.** In no event shall Seller's liability for any breach of warranty exceed the purchase price of the material as to which claim is made.

EPA Est. No. 35982-TX-1 Made in U.S.A.

ACCEPTED

OCT 2 2 1981

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No.

R0001, 9/81-000

Nopcocide® N-96

Precautionary Statements

Hazards To Humans And Domestic Animals

Danger

Corrosive, causes severe eye damage.

Do Not get in eyes, wear goggles or eye shield when handling this product.

First Aid: In case of contact with eyes, flush with plenty of water immediately for at least 15 minutes. Seek medical attention for eyes immediately.

Avoid contact with skin or clothing. Wash exposed areas of skin with soap and warm water after handling or using.

Do Not take internally.

Avoid breathing dust.

Note: Nopcocide N-96 may produce temporary allergic side effects characterized by redness of the eyes, mild bronchial irritation and redness or rash on exposed skin areas. Persons having allergic reaction should contact a physician. Affected persons respond to treatment with antihistamines or steroid creams and/or systemic steroids.

Environmental Hazards

This product is toxic to fish. Do not apply directly to water. Do not contaminate water by cleaning equipment or disposal of waste.

Directions For Use

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

Refer to product bulletin PAD-8 Rev. for use directions.

Process Chemicals Division
Diamond Shamrock Corporation
300 Union Commerce Building
Cleveland, Ohio 44115

Nopocide N-96

002805

Diamond Shamrock

Technical Microbicide for Manufacturing Use to Control Mildew on Paint Film

ACCEPTED

OCT 2 2 1981

Under the Federal Insecticide, Fungicide, and Rodenticide Act, as amended, for the pesticide registered under EPA Reg. No.

Product Bulletin

PAD-8 Rev.

Nopcocide N-96 is a broad spectrum microbicide for control of fungi. Its high degree of activity provides excellent performance characteristics for use as a mildewcide in –

- latex exterior and interior emulsion paints. For exterior paints, use 5-10 pounds per 100 gallons. For interior paints, use 2.5-5 pounds per 100 gallons.
- solvent-based paints at levels of 5-12 pounds per 100 gallons.

Nopcocide N-96 has several desirable properties which are important in manufacturing fungus resistant paint:

- extremely low water solubility
- low vapor pressure
- fine particle size
- excellent pH stability

Recommendations for Using Nopocide N-96

Latex Emulsion Paints

Nopcocide N-96, a micromilled powder, is best dispersed during the pigment grinding operation. Grinding equipment normally used in the paint industry is entirely satisfactory.

Generally, 5-10 pounds of **Nopcocide N-96** per 100 gallons of exterior paint are sufficient for effective mildew control in the paint film. In extreme mildew areas, such as the Gulf Coast, levels of up to 10 pounds are recommended. Levels of 2.5-5 pounds have been found effective in interior latex paint.

Nopcocide N-96 is compatible with zinc oxide in latex paints.

Nopcocide N-96 can be used with either unmodified or alkyd modified acrylic, vinyl acrylic or polyvinyl acetate latexes.

If a can preservative is used in combination with **Nopcocide N-96**, its compatibility with **Nopcocide N-96** should be examined first. Our studies indicate that certain can preservatives appear to react with **Nopcocide N-96** to produce a yellowing in the can.

Solvent-Based Exterior Paints

Nopcocide N-96 can be used to aid in protecting solvent-based exterior paint films from mold growth at treatment levels of 5-12 pounds per 100 gallons. Again, dispersion is readily accomplished during the pigment grinding operation. As in the case of latex paints, zinc oxide can be used with **Nopcocide N-96.**

Our technical service representatives are available to assist in solving your specific problem. Our phone number is (201) 267-1000.

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Use Precautions

The following precautions should be observed in handling and using **Nopcocide N-96**:

Do not get in eyes. **Nopcocide N-96** is corrosive and capable of causing severe eye damage. Do not take internally. Avoid breathing dust. Avoid contact with skin or clothing.

Nopcocide N-96 may produce temporary allergic side effects characterized by redness of the eyes, mild bronchial irritation and redness or rash on exposed skin areas. Persons having allergic reaction should contact a physician. Affected persons respond to treatment with antihistamines or steriod creams and/or systemic steroids.

Nopcocide N-96 is toxic to fish. Do not apply directly to water. Do not contaminate water by cleaning of equipment or disposal of wastes.

Store **Nopcocide N-96** in a dry place. Do not contaminate water, food or feed by storage or disposal. Open dumping is prohibited. Do not reuse empty container.

Pesticide or rinsate that cannot be used according to label instructions must be disposed of according to Federal, State or local procedures under the Resource Conservation and Recovery Act. Containers should be triple rinsed (or equivalent) and disposed of in a sanitary landfill or by incineration if permitted by State and local authorities.

Personal Protective Equipment

Wear goggles or eye shield when handling **Nopcocide N-96** to protect eyes.

Use protective barrier cream on exposed skin areas.

Wear gloves and protective clothing when handling or using **Nopcocide N-96** to minimize skin contact.

Do not inhale dust - wear a respirator if necessary.

Launder outer garments if exposed to dust or spills. Discard footwear which cannot be decontaminated.

First Aid Procedures

Contact with eyes: Flush eyes with plenty of water immediately for at least 15 minutes. Seek medical attention immediately.

Contact with skin: Wash exposed areas of skin with soap and warm water after handling or using **Nopcocide N-96**. Contaminated clothing including footwear should be thoroughly cleaned before reuse.

Inhalation: Remove to fresh air.

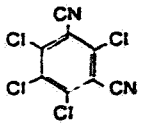
Ingestion: Do not induce vomiting. If vomiting occurs spontaneously, keep airway clear. Never give anything by mouth to an unconscious person. Get medical attention.

Allergic reactions: Contact a physician immediately for treatment with antihistamines or steroids.

Container

Nopcocide N-96 is shipped in 100 pound net weight plastic lined fiber drums.

Typical Properties

Chemical	Tetrachloroisophthalonitrile*
Active content, %	96
Structural Formula	
Empirical Formula	$C_8Cl_4N_2$
Molecular Weight	265.9
Melting Range, °C	250-251
Boiling Point, °C	350 at 760 mm Hg

Vapor Pressure

Temperature, °C	Pressure, mm Hg
40	< 0.01
170.4	9.2
190.8	17.4
211.5	27.3
229.5	43.3

Hydrolysis Rate	Does not hydrolyze in either moderate alkaline or acidic aqueous media
Physical State	3-5 micron micromilled powder
Color	Gray
Odor	Pure - Odorless Technical - Slight pungent odor
Stability	Thermally stable under normal temperature of storage. Chemically stable in alkaline or acidic aqueous media. Stable to ultraviolet radiation.
Corrosivity	Noncorrosive to metals
Bulking Factor, gal/lb	0.0367
Specific Gravity (H_2O = 1)	1.8

*U.S. Patents 3,290,353 and 3,331,735
EPA Reg. No. 2204-12

PAD-8 Rev.
8 61 Rev.