# NOSB NATIONAL LIST FILE CHECKLIST

#### **CROPS**

MATERIAL NAME: #21 Vitamin D3

**\_** 

**NOSB Database Form** 



References



MSDS (or equivalent)



TAP Reviews from: Gregg Young

(Additional TAP Review expected from: Donald

**Blakeney**)

## NOSB/NATIONAL LIST COMMENT FORM CROPS

Material Name: #21 Vitamin D3
Please use this page to write down comments, questions, and your anticipated vote(s).
COMMENTS/QUESTIONS:
1. In my opinion, this material is: Synthetic Non-synthetic.
<ol> <li>This material should be placed on the proposed National List as:</li> <li>Prohibited NaturalAllowed Synthetic.</li> </ol>

## TAP REVIEWER COMMENT FORM for USDA/NOSB

Use this page or an equivalent to write down comments and summarize your evaluation regarding the data presented in the file of this potential National List material. Complete both sides of page. Attach additional sheets if you wish.

This file is due back to us by: <u>September 19, 1995</u>
Name of Material: Vitamin D3
Reviewer Name:
Is this substance Synthetic or non-synthetic? Explain (if appropriate)
If synthetic, how is the material made? (please answer here if our database
form is blank)
This material should be added to the National List as:  Synthetic Allowed Prohibited Natural
or, Non-synthetic (This material does not belong on National List)
Are there any use restrictions or limitations that should be placed on this material on the National List?  FOLLOW LABEL - USE OUT OF REACH!  Please comment on the accuracy of the information in the file:  ADD & USE ON GOPHERS PONDING (1996)
Any additional comments? (attachments welcomed)
Do you have a commercial interest in this material? Yes; No
Signature Juga Ho Date 9/13/95

# Please address the 7 criteria in the Organic Foods Production Act: (comment in those areas you feel are applicable)

(1) the potential of such substances for detrimental chemical interactions with other

materials used in organic farming systems;

NOT LIKELY - A	BAIT	NOT	0
(2) the toxicity and mode of action of the substance any contaminants, and their persistence and area environment; LOOKS BETTER	and of its bass of concent	ration in the	ducts or
OTHER CHEMICAL RODE =STRYCHNINE	ENTICIPE	7 + 25	ORGANIC
(3) the probability of environmental contamination or disposal of such substance;			
(4) the effect of the substance on human health;  NOT LIKELY TO	2AUSE	PROBLE	ems
(5) the effects of the substance on biological and charagroecosystem, including the physiological effect organisms (including the salt index and solubility)    USED (N BATE STA	ts of the sub ty of the soil	stance on soil ), crops and li	ivestock;
FOR TARGET SPECIES SHOW (6) the alternatives to using the substance in terms	of practices		
materials; and TRAPPING STRYCHNINE (!)			
(7) its compatibility with a system of sustainable a	griculture.		•

LOOKS COMPATIBLE

#### **NOSB Materials Database**

### **Identification**

Vitamin D3 Common Name

Chemical Name 1-alpha-hydroxy ergocalciferol

Other Names

Cholecalciferol, Quintox

Code #: CAS

54573-75-0

N. L. Category

Synthetic Allowed

Code #: Other

MSDS

n o

### **Chemistry**

**Family** 

Composition

**Properties** 

How Made

Made from cholesterol isolated from natural sources. The cholesterol is converted chemically into 7-dehydrocholesterol, which is then irradiated with ultraviolet light to form cholecalciferol. This is the same reaction that occurs in the skin upon exposure to sunlight.

### Use/Action

Type of Use Crops

Use(s)

Rodent bait for mice and rats. GOPHERS + MOLES REGISTRATION

PENDING 2 9/96

Action

After ingestion, it induces mobilization of calcium resulting in hypercalcemia and mineralization of major organs.

#### Combinations

#### **Status**

OFPA

N. L. Restriction Allowed as a rodent bait

EPA, FDA, etc

Safety Guidelines

Registration

Historical status

Internation | status

**Directions** 

State Differences

## **NOSB Materials Database** OFPA Criteria

2119(m)1: chemical interactions

2119(m)2: toxicity & persistence

Cholecalciferol breaks down readily by the same metabolic pathways as Vitamin D. While its toxicity to a variety of target species is known; there are few data on the effects of cholecalciferol on non-target species.

MS DS SHOWS VERY LOW ACUTE TOX. TO MACLARD DUCK

2119(m)3: manufacture & disposal consequences

2119(m)4: effect on human health A NATURAL OCCURRING VITAMEN WHICH COULD BE TOXIC ONLY IF CONSUMED IN 1 ARGE AMOUNTS

IF USED IN BATT STATIONS DESIGNED FOR THE TARGET SPECIES SHOULD BE SAFE TO NON-TARGETS 2119(m)5: agroecosystem biology

2119(m)6: alternatives to substance

TRAPPINGS STRUCTHINE (1)

2119(m)7: Is it compatible?

#### References

Evaluation of Quintox for control of feral house mice. Twigg, L.E.; Kay, B.J. Journal of Wildlife Management, Wildlife Society, Bethesda, MD. January 1992, v. 56 (1) pp 174-185.

Marsh, R.E., and A.E. Koehler. 1990. A study of the potential secondary hazards of cholecalciferol when treated mice are consumed by gopher snakes. Bell Lab., Madison, WI 11pp.

Marsh, R.E. and A. Tunberg. 1986. Characteristics of cholecalciferol. Rodent Control: other options. Pest Control Tech. 14:43-45.

AU: Nowicki,-H-G; Myrtle,-J-F; Norman,-A-W

TI: Effects of organochlorine insecticides on metabolism of cholecalciferol (vitamin D3) in rachitic cockerel

SO: J-Agr-Food-Chem, Mar/Apr 1972, 20 (2): 380-384. Ref.

CN: DNAL 381-J8223

# Quintox® RAT& MOUSE BAIT

## A Stop-Feed Rodenticide

QUINTOX Rat and Mouse Bait contains the active ingredient, Cholecalciferol, better known as Vitamin D, which takes a completely different biological pathway to killing rodents, including anticoagulant-resistant rodents.

Unlike anticoagulants, once a rodent eats a lethal dose of QUINTOX, all feeding stops. The toxicant mobilizes calcium from the rodent's bones into its bloodstream, producing hypercalcemia and heart failure. QUINTOX acts faster than anticoagulants, causing death in 2 to 4 days.

Rodents can consume a lethal dose of QUINTOX in a single day's feeding or accumulated in smaller, multiple feedings over a period of days. Just 1/10 oz. (2.8 grams) of QUINTOX can kill a mouse, while 1/4 oz. (7 grams) is a lethal dose for most rats. Bait shyness is not a problem with QUINTOX because toxic symptoms do not start until after a lethal dose is consumed.

Tests also show that no secondary hazards exist with QUINTOX. It is approved for use in and around homes, farms and commercial establishments.

Packaging: 5 1/2 lb. bulk plastic pails

pails of 50 x 30 g. place pacs - EPA REG. NO. 3240-42-12455



## Specimen Label

#### DIRECTIONSFOR USE

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

USE RESTRICTIONS: Treated baits must be placed in locations not accessible to children, pets, domestic animals, wildlife or placed in tamper-proof bait stations. Do not place baits in areas where there is a possibility of contaminating food or

areas where there is a possibility or contaminating root or surfaces that come in direct contact with food.

For control of Norway rats, roof rats, and house mice in and around homes, industrial, commercial, agricultural, and poultry buildings, and similar manmade structures. QUINTOX may also be used incide transport unbider (chine, transport agricult) and in be used inside transport vehicles (ships, trains, aircraft) and in and around related port or terminal buildings.

SELECTION OF TREATMENT AREAS: Determine areas where rats and/or mice will most likely find and consume the bait. Generally, these areas are along walls, by gnawed openings in or beside burrows, in corners and concealed places, between floors and walls or in locations where rodents or their signs have been observed. Protect bait from rain or snow. Remove as much food as possible.

#### **APPLICATION DIRECTIONS**

RATS: Apply 2 to 8 ounces of bait (usually at intervals of 15 to 30 feet) per placement. Maintain an uninterrupted supply of fresh bait for 15 days or until signs of rat activity cease

HOUSE MICE: Apply 1/4 to 1/2 ounce of bait at intervals of 8 to 12 feet per placement. Larger placements (up to 1 ounce) may be needed at points of high mouse activity. Maintain an uninterrupted supply of fresh bait for 10 days or until all signs of mouse activity cease

RATS & MICE: Replace contaminated or spoiled bait immediately. Collect and dispose of all dead animals and unconsumed bait properly. To prevent reinfestation eliminate food, water,

## **Quintox**®

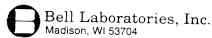
RAT & MOUSE BAIT

KILLS RATS AND MICE

ACTIVE INGREDIENT: Cholecalciferol 0.075% **INERT INGREDIENTS** TOTAL

#### KEEP OUT OF REACH OF CHILDREN CAUTION

(See right for additional precautionary statements.)



EPA EST. NO. 12455-WI-1

EPA REG. NO. 12455-39

and harborage as much as possible. If reinfestation does occur, repeat treatment. Where a continuous source of infestation is present, establish permanent bait stations and replenish bait as

#### PRECAUTIONARY STATEMENTS HAZARDS TO HUMANS AND DOMESTIC ANIMALS

CAUTION: Keep away from humans, domestic animals, and pets.

STATEMENT OF PRACTICAL TREATMENT: If swallowed, drink 1 or 2 glasses of water and induce vomiting by touching back of throat with finger. Avoid use of all oils.

NOTICE TO PHYSICIAN: If serum calcium levels are elevated, treatment with Calcitonin is effective in reducing calcium to normal levels. Continue monitoring serum calcium and treat as necessary for hypercalcemia (Reference, AMA Drug Evaluations, Third Edition (1977), Chapter 16, pp. 248-251).

#### **ENVIRONMENTAL HAZARDS**

Keep out of lakes, streams or ponds

#### STORAGE AND DISPOSAL

STORAGE: Store only in original container, in a dry area inaccessible to children and pets.

DISPOSAL: Do not reuse empty container. Securely wrap original container in several layers of newspaper and discard in

WARRANTY: Seller makes no warranty, expressed or implied, concerning the use of this product other than indicated on the label. Buyer assumes all risk of use and/or handling of this material when such use and/or handling is contrary to label instructions

#### **QUINTOX®**

MSDS Date of Issue: AUGUST 199

QUALIT 011	•				AUGUST 1992
MANUFACTURERS ADDRESS:		Prepared by:	TELEPHONE NO.:		NCY PHONE NO.:
BELL LABORATORIES, I 3699 KINSMAN BLVD., M		VJD	(608) 241-0202		t your local Control Center.
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NA	Insoluble in v		NA	1	NA
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NA					
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PRIMARY ROUTE OF ENTRY:	MEDICAL CONDITIONS GENERA	LLY AGGRAVATED BY EXPOSUR	E: SIGNAL WORD:
☐ Ingestion ☐ Skin & eye contact ☐ Inhalation ☐ Skin absorption	n No	ne	Caution
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MERGENCY FIRST AID PROCEDURES:			
•	Wash with soap &water. Inhala vater and induce vomiting by touching	ition: Non-hazardous. g back of throat with finger. Avo	id use of all oils.
	nent with calcitonin is effective in in and treat as necessary for hyper pp. 248-251).		
. A	TROL & PROTECTIVE	MEASURES OF PRO	DUCT
RESPIRATOR TYPE: None			
EYE PROTECTION:	GLOVES:	VENTILATION:	
None	Rubber gloves	None	
OTHER PROTECTIVE MEASURES: Wash hands after use.			
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#### LIQUA-TOX II®

MSDS
Date of Issue:

€						OVEMBER 199
MANUFACTURERS ADDRESS:		Prepared b	TELEPHONE N			PHONE NO.:
BELL LABORATORIES, IN		VID	(608) 241-0		Contact you	
3699 KINSMAN BLVD., M PRODUCT NAME:	ADISON WI 53704					strol Center.
LIOUA-TOX II'					AS NO.:	
CHEMICAL FAMILY:		CUENICALN	AME & SYNONYMS:		82-66-6	
Indandione			enylacetyl -1, 3-1		Sodium 9	Salt
CHEMICAL FORMULA:			4 SYNONYMS:	mandione,	Jooitin .	
C_H,O,Na			Salt of Diphacia	none		
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NA			NA		1	NA
EXTINGUISHING MEDIA:						
Extinguish w	ith water, foam or i	nert gas.				
SPECIAL FIRE FIGHTING PROCE	DURES:					
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STABILITY:	CONDITIONS TO A	OID:		_		
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POLYMERIZATION:	CONDITIONS TO AV	OID:				
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[Rat] 3.0 mg/kg	[Rabbit] >			[Rat] > 5.1		
FISH, LC50 (LETHAL CONCENTR	ATION): SKIN IRRITA	TION:	(.2% Al)	EYE IRRITATI	DN:	(.2% A

PRIMARY ROUTE OF ENTRY:		ENERALLY AGGRAVATED BY EXPOSURE:	SIGNAL WOR
☐ Ingestion ☐ Skin & eye co ☐ Inhalation ☐ Skin absorption	ontact	None	Caution
HEALTH HAZARDS:	SIGNS & SYMPTOM	S OF EXPOSURE:	
1 - Caution: May be irritating		lotting ability of the blood and cau	ise bleeding.
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*	etings of programme to more ma-	VE MEASURES OF PROI	
	INTROU & PROTECTI	IVE MEASURES OF PROI	oucr
RESPIRATOR TYPE:			
None			
EYE PROTECTION:	GLOVES:	VENTILATION:	
None	None	None	
OTHER PROTECTIVE MEASURES:			
None			
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#### **NOSB Materials Database**

## **Identification**

Common Name

Vitamin D3

Chemical Name 1-alpha-hydroxy ergocalciferol

Other Names

Cholecalciferol, Quintox

Code #: CAS

54573-75-0

Code #: Other

N. L. Category

Synthetic Allowed

MSDS no

### **Chemistry**

**Family** 

Composition

**Properties** 

How Made

Made from cholesterol isolated from natural sources. The cholesterol is converted chemically into 7-dehydrocholesterol, which is then irradiated with ultraviolet light to form cholecalciferol. This is the same reaction that occurs in the skin upon exposure to sunlight.

#### **Use/Action**

Type of Use Crops

Use(s)

Rodent bait for mice and rats.

Action

After ingestion, it induces mobilization of calcium resulting in hypercalcemia and mineralization of major organs.

#### Combinations

#### **Status**

**OFPA** 

N. L. Restriction Allowed as a rodent bait

EPA, FDA, etc

Safety Guidelines

**Directions** 

Registration

State Differences

Historical status

Internation! status

# NOSB Materials Database

#### OFPA Criteria

2119(m)1: chemical interactions

2119(m)2: toxicity & persistence

Cholecalciferol breaks down readily by the same metabolic pathways as Vitamin D. While its toxicity to a variety of target species is known; there are few data on the effects of cholecalciferol on non-target species.

2119(m)3: manufacture & disposal consequences

2119(m)4: effect on human health

2119(m)5: agroecosystem biology

2119(m)6: alternatives to substance

2119(m)7: Is it compatible?

#### References

Evaluation of Quintox for control of feral house mice. Twigg, L.E.; Kay, B.J. Journal of Wildlife Management, Wildlife Society, Bethesda, MD. January 1992, v. 56 (1) pp 174-185.

Marsh, R.E., and A.E. Koehler. 1990. A study of the potential secondary hazards of cholecalciferol when treated mice are consumed by gopher snakes. Bell Lab., Madison, WI 11pp.

Marsh, R.E. and A. Tunberg. 1986. Characteristics of cholecalciferol. Rodent Control: other options. Pest Control Tech. 14:43-45.

AU: Nowicki,-H-G; Myrtle,-J-F; Norman,-A-W

TI: Effects of organochloring insecticides on metabolism of cholecalciferol (vitamin D3) in rachitic cockerel

SO: J-Agr-Food-Chem, Mar/Apr 1972, 20 (2): 380-384. Ref.

CN: DNAL 381-J8223

United States
Environmental Protection
Agency

Office of Postcades and Toxic Substances
Office of Postcade Programs (TS-700C)
Washington, DC 20460

## **SEPA**

# Pesticide Fact Sheet

PB87-115622

Name of Chemical:

VITAMEN D3

Reason for Issuance:

Date lasued: December 1, 1984

Fact Sheet Number:

42

#### 1. Description of chemical:

Generic name: Cholecalciferol, Activated 7-dehydrocholesterol, oleovitamin D<sub>3</sub>, 9,10-secocholesta-5,7,10(19)-trien-3B-ol [NEW CHEMICAL]

Common name:

Trade name: Vitamin D<sub>3</sub>

EPA Shaughessy code: 208700

Chemical Abstracts Service (CAS) number: 434-16-2

Year of initial registration: 1984

Pesticide type: rodenticide

Chemical family: sterol

U.S. and foreign producers: Phillips-Duphar (Netherlands)

Active ingredient

Bell Laboratories (Madison, WI)

Formulated product

#### Use patterns and formulations:

Application sites: in and around buildings, inside of transport vehicles

Pest species: norway rats, roof rats, and house mice

Type of formulations: granular (0.075% bait)

Type and method of application: topical, hand application

Application rates: 2-8 oz./15-30 ft. (rats)
1/4-1 oz./8-12ft. (mice)

Usual carriers: Confidential Business Information

#### 3. Science findings:

Summary science statement:

Adequate studies are available to assess the acute toxicological hazards of technical and formulated Vitamin  $D_3$ . No toxicological hazards of concern were identified. Available studies indicate that Vitamin  $D_3$  is of low toxicity to birds; studies on fish are inapplicable because Vitamin  $D_3$  is virtually insoluble in water. The registration of this new active ingredient is conditioned on submittal of additional efficacy data by January 1976.

#### Chemical characteristics:

Technical Vitamin  $D_3$  is a solid resin. The empirical formula is  $C_{27}H_{44}O$ , and the molecular weight is 384.62. The melting point is is 84-62°C. Vitamin D3 is practically soluble in water, soluble in the usual organic solvents, and slightly soluble in vegetable oils.

### Toxicological characteristics:

Currently available toxicology studies on Vitamin  $D_3$ 

- Oral LD $_{50}$  in rats: 352 mg/kg and 42 mg/kg for males and 619 mg/kg for females.
- Dermal LD50 in rabbits: >2000 mg/kg.
- Primary dermal irritation: not required because technical is a solid resin.
- Primary eye irritation: not required because technical is a solid resin.
- Inhalation LC50: not required because technical is a solid resin.
- Acute, 60-day, Delayed Toxicity Study in rats: Acute dose, equal to accidental exposure, produced no elevated serum calcium levels and no abnormal long bone growth in young rats.
- Teratology in rats: not required because technical is a solid resin and Vitamin  $D_3$ , is a dietary supplement in the adult female diet.

Adequate studies are available to assess the acute toxicological effects of Vitamin  $D_3$ . No toxicological hazards of concern have been identified in the studies reviewed for this new pesticide.

## Physiological and biochemical behavioral characteristics:

The registrant submitted a volume on the metabolism and function of Vitamin  $D_3$ . However, because Vitamin  $D_3$ is a non-food use, is applied topically, and in small amounts, we did not review this submission of such information.

#### Environmental characteristics:

Because of the use pattern of this chemical (in and around buildings and inside of transport vehicles, we did not request any enviormenal fate data.

#### Ecological characteristics:

Based on studies available to assess hazards to wildlife and aquatic organisms, Vitamin  $D_3$  is characterized as being of low toxicity to birds. Because the chemical is virtually insoluable in water, we requested no aquatic toxicity data.

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Results of currently available studies are as follows:

- avian oral LD50: >2000 mg/kg (mallard duck)
- avian dietary LC50: 4000 ppm (mallard duck)
- 2000 ppm (bobwhite quail)
   fish LC50: not required because technical is virtually insoluable in water.
- aquatic invertebrate LC50: not required because technical is virtually insoluable in water.

## Product Performance characteristics:

Because the Agency had suspended the efficacy requirements for this type of product, the company did not complete all the pre-suspension data. Subsequently, the Agency notified the company that it had re-instituted these data. The company will have a reasonable period of time (until January 1, 1986) to supply the missing laboratory and field data.

## 4. Summary of regulatory position and rationale:

The Agency has placed the one registered formulation in Toxicity Category III (CAUTION) and has classified this use pattern (in and around buildings and inside of transport vehicles for norway rats, roofs rats, and house mice) as "Unclassified". Such a product can be scld over-the-counter. The Agency has not identified a potential for adverse effects for man or the environment, based on the submitted toxicology and fish and wildlife data. Because of re-institution of the efficacy data requirements, the registration will be conditioned on the submittal of additional, acceptable laboratory and field efficacy data within fourteen months.

## 5. Summary of major data gaps:

- -LD-50 tests on target species
- -Laboratory, choice-test, efficacy data for target species
- -Pield efficacy data
- All studies are to be submitted to the Agency by January 1, 1986.

#### 6. Contact Person at EPA

William H. Miller Product Manager (16) Registration Division (TS-767C) Insecticide-Rodenticide Branch Environmental Protection Agency Washington, DC 20460

Tel. No. (703) 557-2600

Disclaimer: The information presented in this Chemical Information Fact Sheet is for informational purposes only and may not be used to fulfill data requirements for pesticide registration and reregistration.