

US EPA ARCHIVE DOCUMENT

ANN 2f  
7/19/82

F  
REVIEW N

011301  
SHAUGHNESSEY NO.

EEB BRANCH REVIEW  
*Ecological Effects*

DATE: IN 7.19.82 OUT 7/19/82

FILE OR REG. NO. 82-SC-07

PETITION OR EXP. PERMIT NO. \_\_\_\_\_

DATE OF SUBMISSION 6.18.82

DATE RECEIVED BY HED 7.13.82

RD REQUESTED COMPLETION DATE 7.29.82

EEB ESTIMATED COMPLETION DATE 7.25.82

RD ACTION CODE/TYPE OF REVIEW S10 / SECTION 18

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

DATA ACCESSION NO(S). \_\_\_\_\_

PRODUCT MANAGER NO. D STUBBS (41)

PRODUCT NAME(S) NEMATOCIDE EM 12.1

COMPANY NAME THE STATE OF SOUTH CAROLINA

SUBMISSION PURPOSE PROPOSED SECTION 18 FOR USE ON PEACH ORCHARDS

SHAUGHNESSEY NO.	CHEMICAL, & FORMULATION	% A.
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

F

100.1 Pesticide Use

To control nematodes in peach orchards in South Carolina.

100.2 Formulation Information

Nematocide EM 12.1

A.I.—1,2-dibromo-3-chloropropane (DBCP)

12.1 lb A.I./gallon

100.3 Application Methods, Directions, Rates

Full label directions are attached.

- A. Number of applications—one per year.
- B. Rate—a maximum of 5 gallons of Nematocide EM 12.1 per acre (60.5 lb A.I./A).
- C. Application method—standard chisel soil injection equipment, with the chisel channels in the soil sealed immediately to prevent escape of DBCP vapors into the air. Application will be made only in established peach orchards.
- D. Duration of treatment period— September 1 to November 15.
- E. Total pesticide quantity needed— A broadcast treatment of all 20,000 infected acres would require 100,000 gallons of Nematocide EM 12.1. Anticipating that half of the infected acreage will require strip treatments of 50% of the surface area only, it is estimated that 75,000 gallons (907,500 lb A.I.) is needed.
- F. Qualifications of applicators—Those applying the material will be certified Pesticide Applicators or under their direct supervision.
- G. Areas of the state for anticipated use—Nematocide EM 12.1 is needed in all peach-growing sections of the state. Counties where most of the material would be used are Edgefield, Saluda, Lexington, Spartanburg, Cherokee, Greenville, Orangeburg, Chesterfield, York, Sumter, and Allendale. A map showing the location of these counties is attached.

100.4 Target Organisms

Ring nematode (Criconemella xenoplex)

Root-knot nematode (Meloidogyne spp.)

## 100.5 Precautionary Labeling

DBCP is toxic to wildlife. Birds and other wildlife in treated areas may be killed. Keep out of lakes, streams or ponds. Do not apply where runoff to water sources is likely to occur. Apply only as specified in this guide.

## 102.0 Behavior in the Environment

(From "Summary Report—DBCP in Ground Water in the Southeast," Stuart, Cohen, HED, August 12, 1981)

Neutral organic compounds such as DBCP leach faster in soils with low concentrations of organic carbon. Also, high nitrate levels in ground water can be correlated with levels of pesticides in ground water. DBCP leaches downward at the rate of 5 to 10 feet per year in low organic soils. Confirmation of DBCP residues in California and Arizona led to the cancellation of all uses of DBCP in the continental U.S. in 1981 by the EPA.

DBCP has also been found in ground water in South Carolina and Maryland but not in Georgia and Florida. Generally, the concentrations of contaminated samples ranged from the low parts per trillion to the low parts per billion. Much of the agricultural area in Florida and Georgia overlies confined (artesian) aquifers which are less likely to be contaminated by pesticides. Other agricultural areas in the Southeast overlie unconfined (water table) aquifers. The combination of unconfined aquifers and soils of low organic carbon content create a situation where pesticide contamination of ground water is more likely, as in South Carolina and Maryland. There is a likelihood of ground water contamination in some peach-growing areas of South Carolina.

DBCP is a very mobile and very persistent pesticide, and it is very resistant to biodegradation. The estimated half-life for conversion of DBCP to MBCP in distilled water at 15°C and pH 7 is 141 years. The half-life may be shortened under alkaline conditions.

## 103.0 Toxicological Properties

(From EEB review of 2/25/80)

<u>Organism</u>	<u>Test</u>	<u>Result</u>
Rat	LD <sub>50</sub>	173 mg/kg
Mouse	LD <sub>50</sub>	257 mg/kg
Mallard	LD <sub>50</sub>	66.8 mg/kg
Clam larvae	Acute 24 hr.	90% mortality $\geq$ 1 ppm

## 104.0 Hazard Assessment

### 104.1 Discussion

The state of South Carolina is requesting a specific exemption under section 18 to use Nematocide EM 12.1 (DBCP) to control nematodes in established peach orchards during the fall of 1982. There are no nematocides registered for use after peach trees have been planted. DBCP had been used as part of an integrated pest management program until the registration of DBCP on peaches was withdrawn in 1979. The percentage of orchards having nematode populations at injurious

levels increased from 15% in 1979 to 50% in 1981.

104.2 Likelihood of Adverse Effects to Non-Target Organisms

The toxicity data indicate that DBCP is moderately toxic to terrestrial organisms. There are no significant data concerning its toxicity to aquatic organisms.

DBCP is a fumigant that is injected into the soil. Furthermore, the precautionary statements warn that it is toxic to fish and wildlife and cannot be applied where runoff to water sources is likely to occur. Therefore, exposure of fish and wildlife to DBCP is minimal.

107 Conclusions

A full risk assessment on the use of DBCP in peach orchards to non-target organisms cannot be made due to the paucity of toxicity data. However, the injection of DBCP into the soil minimizes exposure of fish and wildlife to this pesticide.

*Ann Stavola 7/19/82*

Ann Stavola  
Aquatic Biologist  
Ecological Effects Branch

*David Coppage 7/19/82*

David Coppage  
Section Head  
Ecological Effects Branch

*Clayton Bushong 7/19/82*

Clayton Bushong  
Branch Chief  
Ecological Effects Branch