

US EPA ARCHIVE DOCUMENT

Shaughnessy No. 031301  
Date Out of EAB: MAR 17 1988

To: Lois A. Rossi  
Product Manager #21  
Registration Division (TS-767C)  
From: Emil Regelman, Supervisory Chemist  
Review Section #3  
Exposure Assessment Branch



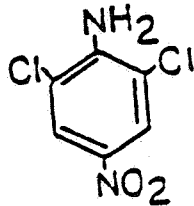
Chemical Name: Dichloran  
Type Product : Fungicide  
Product Name : BOIRAN 75W  
Company Name : NOR-AM CHEMICAL COMPANY  
Purpose : Request for waiver of volatility data.

ACTION CODE: 656  
Date Received: 11/13/87  
Date Completed: MAR 17 1988  
Monitoring study requested:         
Monitoring study voluntarily:         
Deferrals to:        Ecological Effects Branch  
       Residue Chemistry Branch  
       Toxicology Branch

EAB #(s) : 80026  
Total Reviewing Time 0.8 day

1. CHEMICAL: DCNA, 2,6-dichloro-4-nitroaniline

common name: DCNA, Dichloran  
trade name: BOTRAN  
structure:



physical/chemical properties:

molecular formula:  $C_6H_4Cl_2N_2O_2$   
molecular weight: 207.0  
physical state: crystalline solid  
solubility in water: insoluble  
melting point: 192-194°C

2. TEST MATERIAL: N/A No new studies were submitted.

3. STUDY ACTION TYPE: Request for waiver of volatility studies.

4. STUDY IDENTIFICATION: NOR-AM Letter of September 18, 1987 and "Submission of Revised Labeling and Waiver Justification" Volumes 1 and 2 dated September 23, 1987.

5. REVEIWD BY:

Arthur Schlosser  
Chemist  
EAB/HED/OPP

Signature: Arthur O. Schlosser

Date: March 17, 1988

6. APPROVED BY:

Emil Regelman  
Supervisory Chemist  
Review Section #3, EAB/HED/OPP

Signature: [Signature]

Date: MAR 17 1988

7. CONCLUSION: Based on the data available it does not appear that DCNA would pose a significant inhalation hazard from its use as a fungicide. However, the vapor pressure value reported has not been accepted by RCB to fulfill data requirements. See Section 10 DISCUSSION.

8. RECOMMENDATIONS: EAB can concur with the request for a waiver of volatility data if the reported vapor pressure of 0.00000196 mm of Hg at 25°C is found to be acceptable by RCB. However, volatility data may be required at any time in the future if this is warranted by adverse new toxicology or use information or other reconsiderations. If the reported vapor pressure value is found to be unacceptable then volatility data will be required.

9. BACKGROUND: Volatility studies were required for DCNA in the registration standard issued in December 1983.

10. DISCUSSION OF INDIVIDUAL TESTS OR STUDIES: The registrant presented several arguments to support the request for a waiver of volatility data. These are summarized below.

(1) Volatile DCNA was not detected in closed flow-thru system studies of aerobic soil degradation and photodegradation on soil. Carbon dioxide, however, was detected.

(2) The vapor pressure of DCNA is reported as 0.00000196 mm Hg at 25°C. However, this value has not been accepted as yet by RCB as the data are still under review.

Soil adsorption coefficients ( $K_d$ ) are reported as 46 for a sandy loam and 8 for a sand soil.

(3) A theoretical volatility half-life based on water solubility, vapor pressure and  $K_{oc}$  has been calculated as 20 days for DCNA.

DCNA falls in Toxicity Category III for acute inhalation. Subchronic inhalation data are not yet available, and no exposure data were requested.

DCNA is a fungicide registered for use on a number of fruit and vegetable crops and on cotton, and for use in greenhouses on vegetables and ornamentals.

11. COMPLETION OF ONE-LINER: Not applicable.

12. CBI APPENDIX: No claim is made that the data included with this submittal are CBI.

JUSTIFICATION FOR A WAIVER OF REQUIREMENT TO  
PERFORM A SOIL VOLATILITY STUDY WITH DCNA

In the EPA's Pesticide Assessment Guidelines for environmental fate, section 163-2 indicates that soil volatility studies are required for end-use products intended for commercial greenhouses, orchard, or field-vegetable crop uses that involve significant inhalation exposure to workers. We believe that available data demonstrate that DCNA is not a volatile product and that it does not pose a significant inhalation hazard to workers.

Following are interim results from a number of laboratory studies that we are currently running with DCNA which demonstrate the low volatility of this product:

- i) In the soil degradation study under aerobic conditions, we have applied DCNA to soil at a typical field rate and have monitored the production of volatile components using a flow-through systems. To date, this study has run 9 months and the total volatiles accumulated are: 1% for a sandy loam soil and 3% for a sand soil. For both soils the volatility fraction has been confirmed as carbon dioxide and not DCNA. An interim statement on this study is attached (Appendix 1).
- ii) Furthermore, we are undertaking an investigation of the photodegradation of DCNA on soil. This experimental system again involves a sealed chamber with an air flow which is trapped to monitor volatiles. In the dark, no volatile products were formed over a total time period of 44 hours, while in the irradiated system only 4.6% volatiles were produced. The latter are clearly a consequence of photodegradation. A brief summary of the current results from this study are attached (Appendix 2).
- iii) The vapor pressure of DCNA has been measured in our laboratory at  $1.96 \times 10^{-6}$  mm Hg at 25°C. This would indicate that in comparison with other chemicals DCNA is of low volatility (see Appendix 3 attached). We have also derived a soil adsorption coefficient (Kd), using data generated within an aged leaching study, which has not yet been reported (Appendix 4). This indicated a Kd value of approximately 46 for a sandy loam and 8 for a sand (see Appendix 5 attached).
- iv) Utilizing relevant information from the above, and the known water solubility of DCNA (7 mg/l water), the theoretical volatility of DCNA has been calculated using the "DOW equation" to be  $t_{1/2} = 20$  days. As can be seen from Appendix 6 attached, the theoretical volatility for several standard chemicals have been shown to be in good agreement with laboratory derived values. Consequently, we believe that the low volatility indicated for DCNA is realistic.

- v) Also, the acute inhalation toxicity of DCNA has been determined in rats with the formulated product BOTRAN 75W. The conclusion from the study is that "On the basis of an exposure of rats to an aerosol of BOTRAN 75W at a concentration of 21.6 mg/l for one hour and using as criteria, behaviour, growth, mortality and gross necropsy findings, it is concluded that exposure to BOTRAN 75W for short periods of time does not constitute a marked hazard". (Appendix 7)

In summary, therefore, it would appear that all available data point to DCNA's being of low volatility. This, coupled with DCNA's known low inhalation toxicity, would suggest that there is little to be gained by undertaking a further soil volatility study.