

FOR DUPONT USE ONLY

HASKELL LABORATORY REPORT NO. 180-85



Approximate Lethal Concentration by Inhalation (ALC) of



E. I. du Pont de Nemours and Co., Inc.
Haskell Laboratory for Toxicology and Industrial Medicine
Elkton Road, P. O. Box 50
Newark, Delaware 19714

Company Sanitized. Does not contain TSCA CBI

Date Issued: April 18, 1985

Approximate Lethal Concentration by Inhalation (ALC) of

Summary

[REDACTED] Groups of 6 male Crl:CD¹(SD)BR rats were exposed to dust atmospheres of [REDACTED] for a single, 4-hour period. No deaths occurred following exposure to up to 2100 mg/m³. Under the conditions of this test, [REDACTED] is considered to have very low acute toxicity by inhalation.

Work by: Laura A. Kinney for T.A. Regelman 4/12/85
Thomas A. Regelman
Technician

Supervised by: Laura A. Kinney 4/12/85
Laura A. Kinney
Chemist

Approved by: Nancy C. Chromey 4/18/85
Nancy C. Chromey, Ph.D.
Study Director
Section Supervisor
Acute Investigations

Acknowledgements: Bruce A. Burgess also participated in this study.

Company Sanitized. Does not contain TSCA CBI

LAK:HLR 9.3

Haskell Laboratory Report No. 180-85

[REDACTED] Haskell No. 15,388

Material Tested:

[REDACTED]

Sponsor:

Polymer Products Department
E. I. du Pont de Nemours and Co., Inc.
Wilmington, Delaware

Material Submitted by:

[REDACTED]
Polymer Products Department
E. I. du Pont de Nemours and Co., Inc.
Wilmington, Delaware

Test Facility:

Haskell Laboratory for Toxicology and
Industrial Medicine
E. I. du Pont de Nemours and Co., Inc.
Elkton Road, P. O. Box 50
Newark, Delaware 19714

Study Initiated/Completed: 6/21/84 - 7/6/84

[REDACTED]

There are 6 pages in this report.

Distribution:

[REDACTED]

Company Sanitized. Does not contain TSCA CBI

INTRODUCTION

[The purpose of this study was to determine a 4-hour inhalation ALC for [redacted] in male rats. The ALC was defined as the lowest atmospheric concentration tested that caused the death of 1 or more rats either on the day of exposure or within 14 days post exposure.

MATERIALS AND METHODS

A. Animals

Young adult male CrI:CD®(SD)BR rats were received from Charles River Breeding Laboratories, Kingston, New York. Each rat was assigned a unique 6-digit identification number which was recorded on a card affixed to the cage. Rats were quarantined for one week prior to testing, and were weighed and observed twice during the quarantine period. During the test, rats were in housed pairs in 8" x 14" x 8" suspended, steel-mesh cages in rooms maintained at 25-51% relative humidity and 20-26°C on a timer-controlled 12 hour/12 hour light/dark cycle. The rat assigned the lower number in each cage was identified by a slash in the right ear. Rats' tails and cage cards were color-coded with water-insoluble markers so that individual rats could be identified after exposure. Except during exposure, Purina Certified Rodent Chow® #5002 and water were available ad libitum.

B. Exposure Protocol

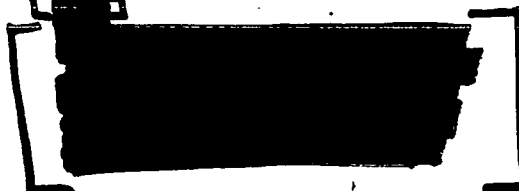
Groups of 6 rats, 8 weeks old and weighing between 218 and 261 grams, were restrained in perforated, stainless steel cylinders with conical nose pieces. Each group was exposed nose-only for a single, 4-hour period to a dust atmosphere of [redacted] in air. Rats were weighed prior to exposure, and were observed for clinical signs during exposure. Surviving rats were weighed and observed daily for 14 days post exposure, weekends and holidays excluded except when deemed necessary by the rats' condition.

C. Test Material

Physical Form:
Purity:
Composition:

White to tan powder

Synonyms:



Stability:

The test material was assumed to be stable throughout the exposure phase of the study. The amount of contact of the test material with room air was minimized throughout the test.

D. Atmospheric Generation

Dust atmospheres of [REDACTED] in air were generated with a 2-stage, vertical glass generator. A round flask served as a dust reservoir. A cyclone-shaped flask, inserted above the reservoir, served as an elutriator. A motorized stirring rod with plastic paddles agitated dust in the generator. Air introduced at the reservoir blew dust particles upward to the elutriator. Air introduced at the elutriator swept dust particles into the exposure chamber. The atmospheric concentration was controlled by varying the 2 airflows.

E. Analytical

The atmospheric concentration of [REDACTED] was determined at approximately 30-minute intervals by drawing calibrated volumes of chamber atmosphere through preweighed glass fiber filters. Filters were weighed on a Cahn model 26 Automatic Electrobalance¹. The atmospheric concentration of particulate was determined from the filter weight differential before and after sampling.

Particle size distributions (mass median diameter and percent respirable) were determined with a Sierra Cascade impactor during each exposure¹. Chamber temperature was monitored with a mercury thermometer, relative humidity was measured with a Bendix model 566 psychrometer, and chamber oxygen content was monitored with a BioMarine model 225 oxygen analyzer.

F. Records Retention

All raw data and the final report will be stored in the archives of Haskell Laboratory for Toxicology and Industrial Medicine, Newark, Delaware, or in the DuPont Hall of Records, E. I. du Pont de Nemours and Co., Wilmington, Delaware.

¹ Calculation described in Sierra Instruments, Inc., Bulletin 7-79-219IM, Instruction Manual: Series 210 Ambient Cascade Impactors and Cyclone Preseparators.

RESULTS

A. Exposure Conditions and Associated Mortality

Dust atmospheres were visible in the chamber during each exposure. Chamber temperature ranged between 26-28°C, relative humidity ranged from 57-60%, and chamber oxygen content was maintained at 21%. Atmospheric characterization and associated mortality data are presented below.

Atmospheric Characterization of TBSA and Associated Rat Mortality

<u>Concentration (mg/m³)</u>			<u>% Respirable^a</u>	<u>MMD^b</u>	<u>Mortality (# deaths/# exposed)</u>
<u>Mean</u>	<u>S.D.</u>	<u>Range</u>			
820	160	610-1100	74	5.5 um	0/6
2100	1100	1000-4000	53	9.5 um	0/6

^a Percent by weight of particles with aerodynamic diameter less than 10 um.

^b Mass median aerodynamic diameter.

No additional exposures to higher atmospheric concentrations were tested due to a limited quantity of test material available for testing.

B. Clinical Observations

During or immediately following exposure, rats exhibited nasal and ocular discharges, labored breathing, gasping, lethargy, and had test material on their faces and heads. Rats were still lethargic 1 hour post exposure. Rats exposed to 820 mg/m³ had a diminished startle response when the chamber was tapped.

During the postexposure period, rats lost approximately 1-8% of initial body weight 1 day after exposure, followed by normal weight gain. No significant adverse clinical signs were observed during the 14-day postexposure period.

CONCLUSION

Under the conditions of this test, the inhalation ALC for [] was greater than 2100 mg/m³. This material is considered to have very low acute toxicity by inhalation (ALC greater than 2000 mg/m³).