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E. I. du Pont de Nemours and Company
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HASKELL LABORATORY REPORT NO. 58-81 MR NO [redacted]

	Material Tested	Haskell No.	Other Codes
1	[redacted]	13,673	[redacted]
2	[redacted]	13,674	[redacted]

Study Initiated/Completed
10/6/80-12/15/80

Material Submitted by
[redacted]
Chemicals & Pigments Department
Technical Laboratory

INHALATION APPROXIMATE LETHAL CONCENTRATION (ALC)

Introduction: The purpose of this study was to determine inhalation ALC's for [redacted] in male Crl:CD® rats. After conducting initial [redacted] experiments, a marked difference was observed between the ALC's for [redacted] and [redacted] dispersion determined at their respective process temperatures of 250 and 100°C. Further experiments were conducted to evaluate the temperature-toxicity relationship of these materials.

Procedure: Groups of 6 male Crl:CD® rats, 7-8 weeks old and weighing 236-291 grams, were exposed to either [redacted] vapors for single 4 hour periods. Prior to and post-exposure, rats were housed in suspended stainless steel, wire mesh cages. Except during exposure, Purina Certified Rodent Chow® #5002 and water were supplied ad libitum. During exposure rats were observed and clinical signs noted. Following exposure rats were weighed and observed daily (excluding weekends) for a 14-day recovery period.

Generation:

[redacted] Vapors of [redacted] were generated at 2 temperatures - 250 and 300°C. First, the sample was melted at 100°C and loaded into a heated syringe (90°C). It was then syringe driven into a heated quartz tube furnace (250 or 300°C). Houseline air circulated through the furnace and carried the vapors directly into the top of a 30-liter glass exposure chamber.

[redacted] is a [redacted] Vapors of [redacted] were generated at 2 temperatures - 100 and 250°C. First, the test material was syringe driven through a Spraying Systems nebulizer onto the heated (100°C) surface of a three-neck flask. Houseline air carried the vapors directly into the top of a 30-liter glass exposure chamber. Second, [redacted] was syringe driven into a heated quartz tube furnace (250°C) and houseline air, circulated through the furnace, carried the vapors directly into the top of a 30-liter glass exposure chamber.

Chamber temperature was monitored continously and maintained at $\leq$28°C. Chamber air was exhausted through a MSA charcoal filter.

Analytical: Chamber atmosphere samples were collected at 1/2 hour intervals. Known volumes of atmosphere were drawn through Gelman glass fiber filters (Type A/E, 25 mm). Filters were weighed, dried overnight in $CaSO_4$ dessicators, and weighed again. The atmospheric concentration of test material was determined from the dry weight gain of the filters.

Oxygen (O_2) concentration was monitored and maintained at $\geq$20%.

Results: Dose-response data for [redacted] and [redacted] are presented below:

Chamber Concentration (mg/l)			Dose-Response
Mean	Range	Standard Deviation	(# Deaths/# Exposed)
[redacted] at 100°C			
0.08	0.03-0.17	0.05	0/6
0.25 = ALC	0.05-1.09	0.35	5/6
0.27	0.10-0.51	0.13	6/6
0.41	0.19-0.75	0.18	6/6
[redacted] at 250°C			
0.40	0.20-0.72	0.15	0/6
0.74	0.33-1.77	0.45	0/6
0.74 = ALC	0.45-1.25	0.27	4/6
2.00	1.47-2.64	0.50	5/6
[redacted] at 250°C			
0.32	0.01-0.47	0.23	0/6
0.60 = ALC	0.34-1.2	0.23	6/6
0.64	0.14-1.41	0.54	4/6
1.20	0.79-1.58	0.29	6/6
[redacted] at 300°C			
0.72	0.53-0.99	0.54	0/6
0.91	0.67-1.04	0.11	0/6
1.30	0.69-3.39	0.98	0/6
1.54	0.85-1.98	0.64	0/6
3.12 = ALC	0.48-6.80	2.46	5/6

Clinical Signs: Clinical signs increased with dose and were essentially the same for both test materials. During exposure rats exhibited ocular and nasal discharge, gasping, salivation, spasmodic movement, reduced response to sound and labored breathing. Post-exposure signs included dark red eyes, weakness, lethargy, pallor, wet perineal area, and brown stained fur. Negligible to severe weight loss was observed 24-48 hours post-exposure, followed by resumption of a normal rate of gain in the surviving rats.† Deaths occurred during exposure and up to 72 hours post-exposure.

† One rat had weight loss until death at the 13th day post-exposure.

Summary: Groups of 7-8 week old male Sprague-Dawley:CD® rats were exposed to vapors of [redacted] or [redacted] in air for single 4-hour periods. Approximate Lethal Concentrations for the materials were determined at various temperatures:

Material	Generation Temp. (°C)	ALC (mg/l)
[redacted]	100	0.25
	250	0.74
	250	0.60
	300	3.1

Clinical signs observed during exposure were ocular and nasal discharge, gasping, salivation, spasmodic movement, reduced response to sound and labored breathing. Post-exposure signs included dark red eyes, weakness, lethargy, pallor, wet perineal area, and brown stained fur.

* Composition: 1 [redacted]

2 [redacted]

Synonyms: 1 [redacted]

2 [redacted]

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