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E. I. du Pont de Nemours and Company
Haskell Laboratory for Toxicology and Industrial Medicine

HASKELL LABORATORY REPORT NO. 131-64 MR NO. 598

Materials Tested	Haskell Nos.	Other Codes
[redacted]	2906 2907 2908 2909	[redacted]

Submitted by: [redacted] Organic Chemicals Department, Jackson Laboratory

ACUTE INHALATION TEST (H-2906)

The [redacted] contained components which had boiling points in the range > 10°C/760 mm Hg to 110°C/50 mm Hg. Because of the difficulty in metering a mixture of constant composition, animals were exposed in two separate tests to two fractions of the mixture, one, an "Upper Fraction", composed of lower-boiling gaseous compounds, the other, a "Bottom Fraction", consisting of higher-boiling liquid compounds.

Procedure: a) "Upper Fraction": the test material was metered as a gas through a glass flowmeter into a measured diluting dried air stream. The diluted mixture was then passed through an 8-liter bell jar containing four young adult male CbR-CD rats.

b) "Bottom Fraction": the test material was metered as a liquid by syringe drive into a dried air stream which, with its vapor, was then passed into an 8-liter bell jar containing four young adult male CbR-CD rats.

In both tests, survivors were sacrificed 14 days after the exposure.

Results:

Nominal Concentration	Exposure Time (hrs.)	Air Flow (liters/min.)	Mortality Ratio	Clinical Signs of Toxicity	Gross Pathologic Changes
			"Upper Fraction"		
40,000 ppm (ca. 400 mg/L)	4	1.92	4/4	During Exposure: rapid, deep, labored and pumping respiration; prostration; liquid from mouth at death; 3/4 died After Exposure: 1/4 died within 1 hour	Lethal Concentrations: marked edema and congestion of lungs with pleural effusion. Survivors of 20,000 ppm exposure showed slightly elevated lung weights 14 days post exposure

Nominal Concentration	Exposure Time (hrs.)	Air Flow (liters/min.)	Mortality Ratio	Clinical Signs of Toxicity	Gross Pathologic Changes
20,000 ppm (ca. 200 mg/L)	4	1.96	2/4	During Exposure: same as at 40,000 ppm After Exposure: 2/4 died 1 day after exposure; labored respiration and weight loss for 2 days	Nonlethal Concentration: none attributable to test material 14 days post exposure
10,000 ppm (ca. 100 mg/L)	4	1.98	0/4	During Exposure: labored respiration; lacrimation with pigmented discharge around eyes and nose After Exposure: recovery within 1 day	
"Bottom Fraction"					
23.4 mg/L	4	2.00	2/4	During Exposure: discomfort; labored respiration; gasping After Exposure: labored respiration up to 9 days; weight loss in one survivor until sacrificed; death of 2/4 at 1 and 9 days	Lethal Concentration: severe lung damage (no pleural effusion); lung weights of survivors elevated 14 days post exposure; weights of liver, spleen, kidneys and testes depressed in survivors 14 days post exposure
13.9 mg/L	4	2.28	0/4	During Exposure: same as at 23.4 mg/L; irritation of nose, mouth and eyes, pigmented discharge from eyes, in addition After Exposure: marked weight loss first day followed by irregular losses and gains; "noisy" respiration for 8 days	Nonlethal Concentration: elevation of lung weights 14 days post exposure; multiple abscesses of lung in 1 rat

SKIN IRRITATION AND SENSITIZATION TESTS

Procedure: In the test for primary irritancy, each material was applied undiluted, and as a solution in f.a.d.*, to the intact and abraded skin of 10 male guinea pigs. In the test to produce skin sensitization, each material was applied undiluted to the abraded skin of 10 male albino guinea pigs, nine times over a three-week period. Approximately two weeks later, the animals were given challenge tests to intact and abraded skin to see whether they had been sensitized.

Results:

Concentration	24-Hour Observation of Irritation	Sensitization
	[redacted] (H-2906)	
100%	Mild to severe irritation on intact and abraded skin	
10%*	Mild irritation on intact and abraded skin	0/8
	[redacted] (H-2907)	
100%	No irritation on intact or abraded skin	
10%*	No irritation on intact or abraded skin	0/10
	[redacted] (H-2908)	
100%	No irritation on intact or abraded skin	
10%*	No irritation on intact or abraded skin	0/10
	[redacted] (H-2909)	
100%	No irritation on intact or abraded skin	
10%*	No irritation on intact or abraded skin	0/10

* 1:1 Acetone-dioxane containing 13% guinea pig fat ** Higher-boiling liquid fraction only

Summary: Both fractions of the crude telomer mixture have relatively low acute inhalation toxicity, but are irritating to the mucous membranes (such as eyes and nose); at high concentrations, they produce a marked irritant reaction in the lungs of rats. The "bottom fraction", consisting of liquid higher-boiling components, appeared to be the more toxic of the two fractions. However, the [redacted] is more toxic than [redacted] which, as a unit, is quoted as containing [redacted]

The liquid fraction of the crude telomer mixture was irritating to the skin of guinea pigs, but did not produce an allergic contact dermatitis.

The other three mixtures were non-irritating to guinea pig skin; neither of them produced an allergic contact dermatitis.

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HS/mfs
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