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TOXICOLOGICAL TESTING OF SELECTED HAZARDOUS MATERIALS FOR TRANS--ETC(U)
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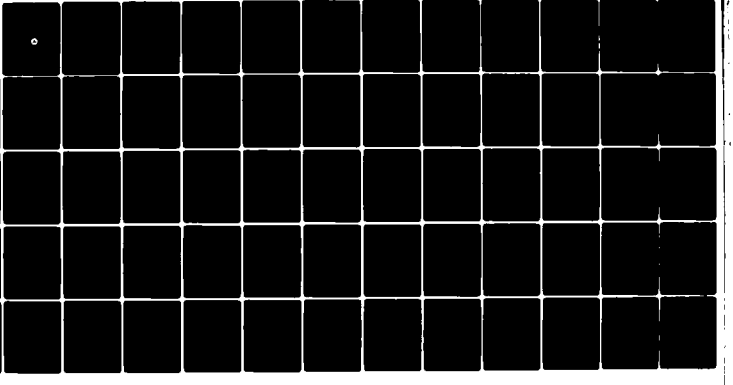

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TOXICOLOGICAL TESTING OF SELECTED HAZARDOUS MATERIALS FOR TRANSPORTATION PURPOSES

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APRIL 1976
INTERIM REPORT

U.S. DEPARTMENT OF TRANSPORTATION
Materials Transportation Bureau
Office of Hazardous Materials Operations
Washington, D.C. 20590

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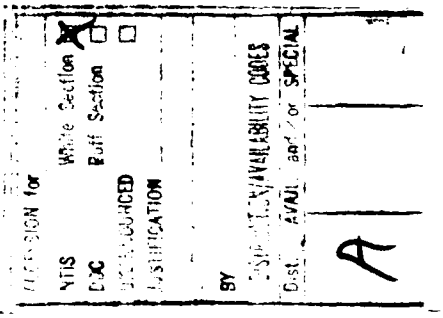
16. Abstract

A number of organic chemicals were subjected to selected toxicological tests prescribed for classification purposes in the Department of Transportation Hazardous Materials regulations. Some of these materials were also examined for skin corrosivity. Aqueous solutions of several common inorganic acids and bases were tested to establish dividing line between corrosive and non-corrosive concentrations.

Test results are reported.



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TOXICOLOGICAL TESTING OF SELECTED HAZARDOUS MATERIALS FOR TRANSPORTATION PURPOSES

A series of acute toxicity studies were conducted on industrial chemicals under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory. These studies were conducted by the Toxic Hazards Research Unit of the Department of Community and Environmental Medicine of the University of California, Irvine. The information obtained in these studies was used to classify these compounds into categories which might help define shipping and handling requirements related to the acute toxicity hazard associated with each chemical compound. The materials were classified according to a system described in Department of Transportation Report No. TES-20-72-3. The classification system used is shown below:

	Extremely Toxic	Highly Toxic	Toxic
Inhalation, 1 Hour LC_{50}	500 mg/m^3 or less (50 ppm or less)	>500-2000 mg/m^3 (>50-200 ppm)	>2000-200,000 mg/m^3 (>200-20,000 ppm)
Oral, 14-Day Single Dose LC_{50}	5 mg/Kg or less	>5-50 mg/Kg	>50-5000 mg/Kg
Skin Absorption (Dermal) LD_{50}	20 mg/Kg or less	>20-200 mg/Kg	>200-20,000 mg/Kg

Since the new classifications were based solely on acute toxicity, all forms of a material (concentrates, solutions, mixtures, etc.) have been assigned to the same toxicity categories regardless of concentration of the active ingredients. No consideration was given to hazard potential of the materials reclassified. For purposes of uniformity all inhalation toxicity data was converted to mg/m^3 if given in other units of measurement. These values may be converted to parts per million by use of the following formula:

$$ppm = \frac{24.50 \times mg/m^3}{\text{mol. wt.}}$$

Conversion of units from mg/m^3 to ppm may, in certain instances change the classification in which borderline compounds may fall. In those instances where this happens the mg/m^3 unit should take precedence.

Toxicity data sheets are presented in Appendix A for all compounds on which requested studies are complete. Each compound has been assigned a code number and the data are presented in numerical order using the coded system.

For a number of compounds the only determination requested by the Department of Transportation was skin corrosion which cannot be used for toxicity classification. Therefore, data sheets could not be prepared and the results of these studies are presented in Table 1 which include all material examined in this manner. The classification of the compounds studied is shown in Table 2. Information concerning the source, lot number and purity or grade of the individual compounds is given in Appendix B.

The test results reported herein are only for those materials actually tested and should not be assumed to represent all materials of the same generic name, because different raw materials and processing may result in variation as to purity of the substance and the nature of impurities.

Table 1. Corrosiveness of DOT Selected Compounds on Albino Rabbit Skin

Code	Compound		1	2	3	4	5	6	Result
107	Perchloromethylmercaptan		o	o	o	o	o	o	Noncorrosive
165	Ethyl Chloroformate		o	o	o	o	o	-	Noncorrosive
180	Methyl Chloroformate		o	o	o	o	o	-	Noncorrosive
183	Nitric Acid, Aq. Sol.	8%	o	+	o	o	o	+	Corrosive
	Nitric Acid, Aq. Sol.	6%	o	o	o	o	o		Noncorrosive
	Nitric Acid, Aq. Sol.	4%	o	o	o	o	o		Noncorrosive
251	Phenol, Solid		+	+	-	-	-	-	Corrosive
252	Propionic Acid, Aq. Sol.	15%	o	o	o	o	o	-	Noncorrosive
	Propionic Acid, Aq. Sol.	1%	o	o	o	o	o	-	Noncorrosive
253	Hydrochloric Acid, Solution	20%	+	+	-	-	-	-	Corrosive
	Hydrochloric Acid, Solution	17%	o	+	o	+	-	-	Corrosive
	Hydrochloric Acid, Solution	15%	+	o	o	o	o	o	Noncorrosive
	Hydrochloric Acid, Solution	10%	o	o	o	o	o	-	Noncorrosive
	Hydrochloric Acid, Solution	5%	o	o	o	o	o	-	Noncorrosive
	Hydrochloric Acid, Solution	1%	o	o	o	o	o	-	Noncorrosive
	Hydrochloric Acid, Solution	0.1%	o	o	o	o	o	-	Noncorrosive
	Hydrochloric Acid, Solution	0.01%	o	o	o	o	o	-	Noncorrosive

Code	Compound		1	2	3	4	5	6	Result
254	Sodium Hydroxide, Solution	4%	+	+	+	o	-	-	Corrosive
	Sodium Hydroxide, Solution	2%	+	o	o	+	+	-	Corrosive
	Sodium Hydroxide, Solution	1%	o	o	o	o	o	-	Noncorrosive
	Sodium Hydroxide, Solution	0.1%	o	o	o	o	o	-	Noncorrosive
	Sodium Hydroxide, Solution	0.01%	o	o	o	o	o	-	Noncorrosive
255	Sulfuric Acid, Aq. Solution	4%	o	o	o	o	o	-	Noncorrosive
	Sulfuric Acid, Aq. Solution	0.1%	o	o	o	o	o	-	Noncorrosive
	Sulfuric Acid, Aq. Solution	0.01%	o	o	o	o	o	-	Noncorrosive
256	Hydrofluoric Acid, Aq. Solution	4%	o	o	o	o	o	-	Noncorrosive
	Hydrofluoric Acid, Aq. Solution	0.1%	o	o	o	o	o	-	Noncorrosive
	Hydrofluoric Acid, Aq. Solution	0.01%	o	o	o	o	o	-	Noncorrosive
258	Cresol (Coal Tar)		+	+	-	-	-	-	Corrosive
259	Cresol (Petroleum)		+	o	+	+	+	+	Corrosive
260	o-Cresol, Practical		+	+	-	-	-	-	Corrosive
261	m-Cresol, Practical		+	+	-	-	-	-	Corrosive
262	p-Cresol, Practical		+	+	-	-	-	-	Corrosive
263	Sodium Trichloro-s-triazinetrione		o	o	o	o	o	-	Noncorrosive

Code	Compound		1	2	3	4	5	6	Result
264	Fumaric Acid		o	o	o	o	o	-	Noncorrosive
265	Maleic Anhydride		+	o	+	+	-	-	Corrosive
266	Ammonium Hydroxide	20%	+	+	-	-	-	-	Corrosive
	Ammonium Hydroxide	15%	o	+	o	o	o	+	Corrosive
	Ammonium Hydroxide	12%	+	+	-	-	-	-	Corrosive
	Ammonium Hydroxide	10%	o	o	-	o	o	o	Noncorrosive
	Ammonium Hydroxide	5%	o	o	o	o	o	-	Noncorrosive
	Ammonium Hydroxide	1%	o	o	o	o	o	-	Noncorrosive
267	Oxalic Acid	5%	o	o	o	o	o	-	Noncorrosive
268	Sodium Sulfide, Aq. Solution	26%	+	+	-	-	-	-	Corrosive
269	Sodium Sulfhydrate, Aq. Solution	45%	+	+	-	-	-	-	Corrosive
270	3-Methylbutyric Acid		o	o	o	o	o	-	Noncorrosive
271	Tris-2-Hydroxyethylisocyanurate		o	o	o	o	o	o	Noncorrosive
273	p-Cresol, 98+% (Sherwin-Williams)		+	+	-	-	-	-	Corrosive
274	Potassium Hydroxide, Aq. Solution	4%	+	+	-	-	-	-	Corrosive
	Potassium Hydroxide, Aq. Solution	2%	+	+	-	-	-	-	Corrosive
	Potassium Hydroxide, Aq. Solution	1%	o	o	o	o	o	o	Noncorrosive

Code	Compound		1	2	3	4	5	6	Result
275	Acetic Acid, Aq. Solution	100%	o	o	o	o	o		Noncorrosive
	Acetic Acid, Aq. Solution	80%	o	o	o	o	o		Noncorrosive
	Acetic Acid, Aq. Solution	40%	o	o	o	o	o		Noncorrosive
	Acetic Acid, Aq. Solution	20%	o	o	o	o	o		Noncorrosive
286-a	Carburetor Cleaner "Pennzoil Gumout"		o	o	o	o	o		Noncorrosive
286-b	Carburetor Cleaner "DuPont No. 7 Carburetor Cleaner"		o	o	o	o	o		Noncorrosive
286-c	Carburetor Cleaner "Berryman B-12 Chemtool"		o	o	o	o	o		Noncorrosive
288	Chromic Nitrate		o	o	o	o	o		Noncorrosive
289	Calcium Chromate		o	o	o	o	o		Noncorrosive

+ = Caused visible destruction or irreversible alteration in skin tissue after 4 hours contact.

o = Did not cause visible destruction or irreversible alteration in skin tissue after 4 hours contact.

- = Not tested, a positive of 2/6 or 0/5 has already been produced.

Table 2. Classification of Compounds Based on Acute Toxicity Tests

Code Number	Compound	Toxicity Classification
107	Perchloromethylmercaptan	Extremely Toxic
143	Boron Trichloride	Toxic
144	Boron Trifluoride	Highly Toxic
165	Ethyl Chloroformate	Highly Toxic
170	Hexamethylene Diamine	Toxic
180	Methyl Chloroformate	Highly Toxic
248	n-Butyl Acrylate	Below Toxic
249	Methyl Acrylate	Below Toxic
250	Monoethanolamine	Toxic
251	Phenol (Solid)	Toxic
257	Ethyl Mercaptan	Below Toxic
258	Cresol (Coal Tar)	Toxic
259	Cresol (Petroleum)	Toxic
260	o-Cresol	Toxic
261	m-Cresol	Toxic
262	p-Cresol	Toxic
263	Sodium Trichloro-s-Triazinetrione	Toxic
264	Fumaric Acid	Below Toxic
265	Maleic Anhydride	Toxic
267	Oxalic Acid, 5%	Toxic
270	3-Methylbutyric Acid	Toxic
271	Tris-2-Hydroxyethylisocyanurate	Toxic
273	p-Cresol (Sherwin Williams)	Highly Toxic
285	Nitrogen Trifluoride	Toxic
287	Phosphotungstic Acid	Toxic
291	Silicon Tetrafluoride	Toxic

APPENDIX A

DATA SHEETS

TOXICITY DATA SHEET

COMPOUND: PERCHLOROMETHYLMERCAPTAN CODE: 107

CLASSIFICATION: EXTREMELY TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat male	84 (11)	1-Hr.	
Rat female	122 (16)	LC_{50}	
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	1782	LD_{50}	
2.	Rabbit	Dermal	-	Noncorrosive	
3.					
4.					
5.					
6					

* Concentration in mg/M^3. Parenthetical values are ppm.
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 107

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat 1-Hour LC_{50}: Male = 84 mg/m^3
95% confidence limits (74-97) or 11 ppm
10-13 ppm

Female = 122 mg/m^3
95% confidence limits (99-168) or 16 ppm
18-22 ppm

Rabbit 14-Day Dermal LD_{50}: 1782 mg/kg
(24 Hour Skin Contact) 95% confidence limits (938-3384)

Perchloromethylmercaptan was found to be noncorrosive to intact rabbit skin.

Data fall in "Extremely Toxic" category.

ACUTE INHALATION TOXICITY OF PERCHLOROMETHYLMERCAPTAN TO RATS

Male		Female	
ppm	Mortality Ratio	ppm	Mortality Ratio
16.9	5/5	43	5/5
14.0	3/5	31	5/5
11.2	4/5	28	4/5
10.8	2/5	20	2/5
9.0	1/5	16	3/5
7.0	0/5	10	1/5

ACUTE DERMAL TOXICITY OF PERCHLOROMETHYLMERCAPTAN TO RABBITS

Dose (mg/kg)	Mortality Ratio
2000	2/3
1000	1/3
500	0/3

TOXICITY DATA SHEET

COMPOUND: BORON TRICHLORIDE CODE: 143

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
male Rat female	12,197(2541) 21,266(4418)	1-Hr. LC50	
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.*	REF.
1.					
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3. Parenthetical values are ppm.
** System for expression of toxicity
***Dose in mg/kg

JUSTIFICATION: 143

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat 1-Hour LC_{50}:

Male = 12,197 mg/m^3
95% confidence limits (10,750-13,780) or 2541 ppm
2243-2878 ppm

Female = 21,266 mg/m^3
95% confidence limits (18,880-23,750) or 4418 ppm
3940-4953 ppm.

Data fall in "Toxic" category.

ACUTE INHALATION TOXICITY OF BORON TRICHLORIDE TO RATS

Male		Female	
ppm	Mortality Ratio	ppm	Mortality Ratio
3742	5 5	5201	4 5
3717	4 5	4370	3 5
3019	4 5	4092	0 5
2627	5 5	3792	2 5
2270	1 5	3443	1 5
2032	1 5	2844	0 5

TOXICITY DATA SHEET

COMPOUND: BORON TRIFLUORIDE CODE: 144

CLASSIFICATION: HIGHLY TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat male	107 (387)	1-Hour	
Rat female	103 (371)	LC50	
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.					
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3. Parenthetical values are ppm.
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 144

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat 1-Hour LC_{50}: Male = 1076 mg/m^3
95% confidence limits (890-1298) or 387 ppm
320-467 ppm

Female = 1031 mg/m^3
95% confidence limits (815-1304) or 371 ppm
293-469 ppm

Data fall in "Highly Toxic" category.

ACUTE INHALATION TOXICITY OF BORON TRIFLUORIDE TO RATS

Male		Female	
ppm	Mortality Ratio	ppm	Mortality Ratio
675	5/5	864	5/5
513	3/5	723	5/5
437	3/5	650	3/5
398	4/5	557	3/5
317	1/5	468	4/5
		399	3/5
		312	3/5
		290	0/5
		266	2/5

TOXICITY DATA SHEET

COMPOUND: ETHYL CHLOROFORMATE
(Ethyl Chlorocarbonate)

CODE: 165

CLASSIFICATION: HIGHLY TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
male Rat female	640 (145) 728 (165)	1-Hr. LC_{50}	
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
male Rat female	467 268	LD_{50} LD_{50}	
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	7120	LD_{50}	
2.	Rabbit	Dermal	-	Noncorr.	
3.					
4					
5.					
6.					

* Concentration in mg/M^3. Parenthetical values are ppm.
** System for expression of toxicity
***Dose in mg Kg

JUSTIFICATION: 165

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat 1-Hour LC_{50}: Male = 640 mg/m^3
95% confidence limits (609-671) or 145 ppm
138-152 ppm

Female = 728 mg/m^3
95% confidence limits (654-813) or 165 ppm
148-184 ppm

Rat Oral LD_{50}: (Single Dose) Male = 467 mg/kg
95% confidence limits (313-690)

Female = 268 mg/kg
95% confidence limits (181-396)

Rabbit 14-Day Dermal LD_{50}: (24-Hour Skin Contact) 7120 mg/kg
Confidence limits could not be calculated.

Ethyl chloroformate was found to be noncorrosive to intact rabbit skin.

Inhalation data fall in "Highly Toxic" category.

ACUTE INHALATION TOXICITY OF ETHYL CHLOROFORMATE TO RATS

Male		Female	
ppm	Mortality Ratio	ppm	Mortality Ratio
152	4/5	184	4/5
138	1/5	148	1/5
117	0/5	118	0/5
101	0/5		

ACUTE ORAL TOXICITY OF ETHYL CHLOROFORMATE TO RATS

Male		Female	
Dose (mg/kg)	Mortality Ratio	Dose (mg/kg)	Mortality Ratio
1000	5/5	500	5/5
500	3/5	250	2/5
250	0/5	125	0/5

ACUTE DERMAL TOXICITY OF ETHYL CHLOROFORMATE TO RABBITS

Dose (mg/kg)	Mortality Ratio
8000	3/3
6350	0/3
5040	0/3

TOXICITY DATA SHEET

COMPOUND: HEXAMETHYLENE DIAMINE (1,6-Hexanediamine) CODE: 170

CLASSIFICATION TOXIC

INHALATION TOXICITY

SPECIES		CONC.*	SYS.**	REF.
Man				
Rat	male	Saturated	No	
	female	Vapor	Deaths	
Mouse				
Dog				
Monkey				
Other				

ORAL TOXICITY

SPECIES		DOSE***	SYS.**	REF.
Man				
Rat	male	800	LD50	
	female	746	LD50	
Mouse				
Dog				
Monkey				
Cat				
Guinea Pig				
Other				

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	1114	LD50	
2.					
3.					
4.					
5.					
6.					

Concentration in mg/M^3

* System for expression of toxicity

***Dose in mg/Kg

JUSTIFICATION: 170

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat 1-Hour LC_{50}: Could not be calculated. Male and female rats exposed for 1 hour to saturated vapors of hexamethylene diamine survived the 14-day postexposure observation period.

Rat Oral LD_{50}: Male = 800 mg/kg
95% confidence limits (472-1357)

Female = 746 mg/kg
95% confidence limits (505-1104)

Rabbit 14-Day Dermal LD_{50}: 1114 mg/kg
(24-Hour Skin Contact) 95% confidence limits (600-2115)

Data fall in "Toxic" category.

ACUTE ORAL TOXICITY OF HEXAMETHYLENE DIAMINE TO RATS

Male		Female	
Dose (mg/kg)	Mortality Ratio	Dose (mg/kg)	Mortality Ratio
1600	5/5	1600	5/5
800	2/5	800	3/5
400	1/5	400	0/5

ACUTE DERMAL TOXICITY OF HEXAMETHYLENE DIAMINE TO RABBITS

Dose (mg/kg)	Mortality Ratio
2500	3/3
1250	2/3
625	0/3

TOXICITY DATA SHEET

COMPOUND: METHYL CHLOROFORMATE (Methyl chlorocarbonate) CODE: 180

CLASSIFICATION: HIGHLY TOXIC

INHALATION TOXICITY

SPECIES	CONC. *	SYS. **	REF.
Man			
Rat male	342 (88)	1-Hr. LC_{50}	
Rat female	401 (103)	1-Hr. LC_{50}	
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS. **	REF.
Man			
Rat male	187	LD_{50}	
Rat female	107	LD_{50}	
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS. **	REF.
1.	Rabbit	Dermal	7120	LD_{50}	
2.	Rabbit	Dermal	-	Noncorr.	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3. Parenthetical values are ppm.
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 180

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat 1-Hour LC_{50}: Male = 342 mg/m^3
95% confidence limits (249-478) or 88 ppm (64-123 ppm)

Female = 401 mg/m^3
95% confidence limits (350-460) or 103 ppm (90-118 ppm)

Rat Oral LD_{50}: (Single Dose) Male = 187 mg/kg
95% confidence limits (126-276)

Female = 107 mg/kg
95% confidence limits (73-159)

Rabbit 14-Day Dermal LD_{50}: (24-Hour Skin Contact) 7120 mg/kg
Confidence limits could not be calculated.

Methylchloroformate was found to be noncorrosive to rabbit skin.

Data fall in "Highly Toxic" category.

ACUTE INHALATION TOXICITY OF METHYL CHLOROFORMATE TO RATS

Male		Female	
ppm	Mortality Ratio	ppm	Mortality Ratio
101	5/5	128	4/5
92	2/5	120	4/5
78	0/5	110	3/5
42	1/5	97	2/5

ACUTE ORAL TOXICITY OF METHYL CHLOROFORMATE TO RATS

Male		Female	
Dose (mg/kg)	Mortality Ratio	Dose (mg/kg)	Mortality Ratio
400	5/5	200	5/5
200	3/5	100	2/5
100	0/5	50	0/5

ACUTE DERMAL TOXICITY OF METHYL CHLOROFORMATE TO RABBITS

Dose (mg/kg)	Mortality Ratio
8000	3/3
6380	0/3
5040	0/3

TOXICITY DATA SHEET

COMPOUND: n-BUTYL ACRYLATE CODE: 248

CLASSIFICATION: BELOW TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat male	32,325(360)	Partial	
Rat female	26,724(5100)	Lethality	
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat male	6169	LD_{50}	
Rat female	4921	LD_{50}	
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	5657	LD_{50}	
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3. Parenthetical values are ppm.
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 248

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

One hour inhalation exposures to near saturated vapor concentration produced only partial mortality in male and female rats observed for 14 days postexposure. A concentration of 32,325 mg/m^3 (6360 ppm) killed 2 of 5 male rats and a vapor concentration of 26,724 mg/m^3 (5100 ppm) resulted in deaths of 4 of 5 female rats exposed. Because of this very low toxic response it was not possible to obtain LC_{50} values for n-butyl acrylate.

Rat Oral LD_{50}: (Single Dose) Male - 6190 mg/kg
95% confidence limits (4567-8332)

Female - 4921 mg/kg
95% confidence limits (4321-5604)

Rabbit 14-Day Dermal LD_{50}: 5657 mg/kg
(24 Hour Skin Contact) 95% confidence limits (1451-22,050)

Data fall in "Below Toxic" category.

ACUTE ORAL TOXICITY OF n-BUTYL ACRYLATE TO RATS

Male		Female	
Dose (mg kg)	Mortality Ratio	Dose (mg kg)	Mortality Ratio
8000	4 5	6350	5 5
4000	0 5	5040	3 5
2000	0 5	4000	0 5

ACUTE DERMAL TOXICITY OF n-BUTYL ACRYLATE TO RABBITS

Dose (mg/kg)	Mortality Ratio
8000	2/3
4000	1/3
1000	0/3

TOXICITY DATA SHEET

COMPOUND: METHYL ACRYLATE CODE: 249

CLASSIFICATION. BELOW T O X I C

INHALATION TOXICITY

SPECIES	CONC. *	SYS. **	REF.
Man			
Rat	See Justification Section		
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS. **	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS. **	REF.
1.					
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 249

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

One hour inhalation exposures to near saturated vapors of methyl arcylate caused only partial mortality in albino rats. Because of the low toxicity it was not possible to determine a 14-day LC_{50} for one hour exposures. One male rat of five died after exposure to 33.238 ppm and 3 of 5 female rats succumbed to 34,315 ppm.

Data fall in "Below Toxic" category.

TOXICITY DATA SHEET

COMPOUND: MONOETHANOLAMINE (Ethanolamine)

CODE: 250

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat male	1970	LD_{50}	
Rat female	1715	LD_{50}	
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.					
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3

** System for expression of toxicity

***Dose in mg/Kg

JUSTIFICATION: 250

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat Oral LD_{50}: (Single Dose)
Males 1970 mg/kg
95% confidence limits (1431-2712)

Females 1715 mg/kg
95% confidence limits (1159-2537)

Data fall in "Toxic" category.

TOXICITY DATA SHEET

COMPOUND: PHENOL (Solid)

CODE: 251

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC. *	SYS. **	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS. **	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS. **	REF.
1.	Rabbit	Dermal	1403	LD_{50}	
2.	Rabbit	Dermal		Corrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3

** System for expression of toxicity

***Dose in mg/Kg

JUSTIFICATION: 251

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rabbit 14-Day Dermal LD_{50}: 1403 mg/kg
(24-Hour Skin Contact) 95% confidence limits (739-2665)

Phenol was found to be corrosive to rabbit skin.

Data fall in "Toxic" category.

ACUTE DERMAL TOXICITY OF PHENOL TO RABBITS

Dose (mg/kg)	Mortality Ratio
2500	3/3
1250	1/3
625	0/3

TOXICITY DATA SHEET

COMPOUND: ETHYL MERCAPTAN (Ethanethiol) CODE: 257

CLASSIFICATION: BELOW T O X I C

INHALATION TOXICITY

SPECIES	CONC. *	SYS. **	REF.
Man			
Rat	See Justification Section		
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS. **	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS. **	REF.
1.					
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 257

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

One hour inhalation exposures of rats to ethyl mercaptan at concentrations below the lower explosive limit did not cause mortality. At 28,400 ppm 5 male rats survived a 1-hour exposure and at 27,700 ppm 3 of 5 female rats died during exposure.

Data fall in "Below Toxic" category.

TOXICITY DATA SHEET

COMPOUND: CRESOL (From Coal Tar)

CODE: 258

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	2000	LD_{50}	
2.	Rabbit	Dermal	-	Corrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 258

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rabbit 14-Day Dermal LD_{50}: 2000 mg/kg
(24-Hour Skin Contact) 95% confidence limits (1470-5860)

Cresol derived from coal tar was found to be corrosive to intact rabbit skin.

Data fall in "Toxic" category.

ACUTE DERMAL TOXICITY OF CRESOL (COAL TAR) TO RABBITS

Dose (mg/kg)	Mortality Ratio
4000	3/3
2000	1/3
1000	1/3

TOXICITY DATA SHEET

COMPOUND: CRESOL (From Petroleum) CODE: 259

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	2000	LD_{50}	
2.	Rabbit	Dermal	-	Corrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 259

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rabbit 14-Day Dermal LD_{50}: 2000 mg/kg
(24-Hour Skin Contact) 95% confidence limits (750-5400)

Cresol derived from petroleum was found to be corrosive to intact rabbit skin.

Data fall in "Toxic" category.

ACUTE DERMAL TOXICITY OF CRESOL (FROM PETROLEUM) TO RABBITS

Dose (mg/kg)	Mortality Ratio
4000	3/3
2000	1/3
1000	1/3

TOXICITY DATA SHEET

COMPOUND: o-CRESOL, PRACTICAL CODE: 260

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	891	LD_{50}	
2.	Rabbit	Dermal	-	Corrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 260

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rabbit 14-Day Dermal LD_{50}: 891 mg/kg
(24-Hour Skin Contact) 95% confidence limits (460-1690)

o-Cresol was found to be corrosive to intact rabbit skin.

Data fall in "Toxic" category.

ACUTE DERMAL TOXICITY OF o-CRESOL TO RABBITS

Dose (mg/kg)	Mortality Ratio
2000	3/3
1000	2/3
500	0/3

TOXICITY DATA SHEET

COMPOUND: m-CRESOL, PRACTICAL CODE: 261

CLASSIFICATION. TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	2830	LD_{50}	
2.	Rabbit	Dermal	-	Corrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 261

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rabbit 14-Day Dermal LD_{50}: 2830 mg/kg
(24-Hour Skin Contact) 95% confidence limits could not be calculated.

m-Cresol was found to be corrosive to intact rabbit skin.

Data fall in "Toxic" category.

ACUTE DERMAL TOXICITY OF m-CRESOL TO RABBITS

Dose (mg kg)	Mortality Ratio
4000	3/3
2000	0/3
1000	0/3

TOXICITY DATA SHEET

COMPOUND: p-CRESOL CODE: 262

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	222	LD_{50}	
2.	Rabbit	Dermal	-	Corrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 262

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rabbit 14-Day Dermal LD_{50}: 222 mg/kg
(24-Hour Skin Contact) 95% confidence limits (117-422)

p-Cresol was found to be corrosive to intact rabbit skin.

Data fall in "Toxic" category.

ACUTE DERMAL TOXICITY OF p-CRESOL TO RABBITS

Dose (mg/kg)	Mortality Ratio
2000	3/3
1000	3/3
500	3/3
250	1/3

TOXICITY DATA SHEET

COMPOUND: SODIUM TRICHLORO-s-TRIAZINETRIONE CODE: 263

CLASSIFICATION. TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat male	406	LD_{50}	
Rat female	466	LD_{50}	
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	20,000	Not Lethal	
2.	Rabbit	Dermal	-	Noncorrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 263

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat Oral LD_{50}: (Single Dose) Male - 406 mg/kg
95% confidence limits (295-559)

Female - 466 mg/kg
95% confidence limits (315-690)

Rabbit 14-Day Dermal LD_{50}: (24-Hour Skin Contact) Could not be calculated. No deaths occurred after skin exposure to 20 g/kg dose.

Sodium trichloro-s-triazinetrione was found to be noncorrosive to intact rabbit skin.

Data fall in "Toxic" category.

ACUTE ORAL TOXICITY OF SODIUM TRICHLORO-s-TRIAZINETRIONE TO RATS

Male		Female	
Dose (mg/kg)	Mortality Ratio	Dose (mg/kg)	Mortality Ratio
1000	5/5	1000	5/5
500	4/5	500	3/5
250	0/5	250	0/5

TOXICITY DATA SHEET

COMPOUND: FUMARIC ACID CODE: 264

CLASSIFICATION. BELOW T O X I C

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES		DOSE***	SYS.**	REF.
Man				
Rat	male	10,720	LD_{50}	
	female	9,330	LD_{50}	
Mouse				
Dog				
Monkey				
Cat				
Guinea Pig				
Other				

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	20,000	Not Lethal	
2.	Rabbit	Dermal	-	Noncorrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 264

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat Oral LD_{50}: (Single Dose) Male - 10,720 mg/kg
95% confidence limits (7,250-15,858)

Female - 9,330 mg/kg
95% confidence limits (6,308-13,800)

Rabbit 14-Day Dermal LD_{50}: (24-Hour Skin Contact) Could not be calculated. No deaths occurred after skin exposure to 20 g/kg dose.

Fumaric Acid was found to be noncorrosive to intact rabbit skin.

Data fall in "Below Toxic" category.

ACUTE ORAL TOXICITY OF FUMARIC ACID TO RATS

Male		Female	
Dose (mg/kg)	Mortality Ratio	Dose (mg/kg)	Mortality Ratio
20,000	5/5	20,000	5/5
10,000	2/5	10,000	3/5
5,000	0/5	5,000	0/5

TOXICITY DATA SHEET

COMPOUND: MALEIC ANHYDRIDE CODE: 265

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	2620	LD_{50}	
2.	Rabbit	Dermal	-	Corrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 265

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rabbit 14-Day Dermal LD_{50}: 2620 mg/kg
(24-hour skin contact) 95% confidence limits (1930-3550)

Maleic anhydride was found to be corrosive to intact rabbit skin.

Data fall in "Toxic" category.

ACUTE DERMAL TOXICITY OF MALEIC ANHYDRIDE TO RABBITS

Dose (mg/kg)	Mortality Ratio
4000	3/3
3170	3/3
2520	1/3
2000	0/3

TOXICITY DATA SHEET

COMPOUND: OXALIC ACID, 5% Solution CODE: 267

CLASSIFICATION. TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE****	SYS.**	REF.
Man			
male Rat female	475 375	LD_{50} LC_{50}	
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	20,000	Not Lethal	
2.	Rabbit	Dermal	-	Noncorrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg
****Dose in ml/Kg

JUSTIFICATION: 267

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat Oral LD_{50}: Male 9.5 ml/kg
(Single Dose) 95% confidence limits (5.4-12.3)

Female 7.5 ml
95% confidence limits (5.0-11.0)

Rabbit 14-Day Dermal LD_{50}: Could not be calculated.
(24-Hour Skin Contact) No deaths occurred after skin exposure to 20 g/kg dose.

A 5% aqueous solution of oxalic acid was found to be noncorrosive to intact rabbit skin.

Data fall in "Toxic" category.

ACUTE ORAL TOXICITY OF 5% OXALIC ACID TO RATS

Male		Female	
Dose (mg/kg)	Mortality Ratio	Dose (mg/kg)	Mortality Ratio
32	5/5	32	5/5
16	4/5	16	5/5
8	2/5	8	3/5
4	0/5	4	0/5

TOXICITY DATA SHEET

COMPOUND: 3-METHYLBUTYRIC ACID (Isovaleric Acid)

CODE: 270

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	3560	LD_{50}	
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 270

Data generated under contract between the Department of Transportation a and the United States Air Force Toxic Hazards Laboratory.

Rabbit 14-day Dermal LD_{50}: 3560 mg/kg
95% confidence limits (1880-6770)

3-Methylbutyric acid was found to be noncorrosive to intact rabbit skin.

Data fall in "Toxic" category.

ACUTE DERMAL TOXICITY OF 3-METHYLBUTYRIC ACID TO RABBITS

Dose (mg/kg)	Mortality Ratio
8000	3/3
4000	2/3
2000	0/3

TOXICITY DATA SHEET

COMPOUND: TRIS-2-HYDROXYETHYLISOCYANURATE CODE: 271

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES		DOSE***	SYS.**	REF.
Man				
Rat	male	20,000	0/5 - Mort. Ratio	
	female	20,000	3/5 - Mort. Ratio	
Mouse				
Dog				
Monkey				
Cat				
Guinea Pig				
Other				

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	20,000	0/3 - Mort. Ratio	
2.	Rabbit	Dermal	-	Noncorrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 271

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Oral Toxicity: Oral doses of 20,000 mg/kg of tris-2-hydroxyethylisocyanurate were given to albino rats. No male rats died at this maximum achievable dose while only 3 of 5 female rats died. Calculation of LD_{50} values cannot be performed.

Dermal Toxicity: Dose of 20,000 mg/kg placed on the skin of albino rabbits was not lethal. These amounts of 70-75 grams of the compound did not produce any erythema or skin corrosion.

Data fall in "Below Toxic" category.

TOXICITY DATA SHEET

COMPOUND: p-CRESOL (98+%, Sherwin-Williams) CODE: 273

CLASSIFICATION: HIGHLY TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.	Rabbit	Dermal	174	LD_{50}	
2.	Rabbit	Dermal	-	Corrosive	
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 273

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rabbit 14-Day Dermal LD_{50}: 174 mg/kg
(24-Hour Skin Contact) 95% confidence limits (120-270)

Para cresol was found to be corrosive to intact rabbit skin.

Data fall in "Highly Toxic" category.

ACUTE DERMAL TOXICITY OF p-CRESOL (SHERWIN-WILLIAMS) TO RABBITS

Dose (mg/kg)	Mortality Ratio
500	2/3
250	2/3
125	1/3

TOXICITY DATA SHEET

COMPOUND: NITROGEN TRIFLUORIDE CODE: 285

CLASSIFICATION: TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat 1-Hr	19,430 (6700)	LC_{50}	285.1
Mouse 1-Hr	21,750 (7500)	LC_{50}	285.1
Dog 1-Hr	27,840 (9600)	ALC_{50}	285.1
Monkey 1-Hr	29,000 (10,000)	ALC_{50}	285.1
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.					
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3. Parenthetical values are ppm..
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 285

Data fall in "Toxic" category.

REFERENCES:

285.1 Vernot, E. H., C. C. Haun, J. D. MacEwen and G. F. Egan, Toxicol. and App. Pharmacol., 26:1, 1973.

TOXICITY DATA SHEET

COMPOUND: PHOSPHOTUNGSTIC ACID CODE: 287

CLASSIFICATION. TOXIC

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat male	3297	LD50	
Rat female	4925	LD50	
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.					
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 287

Data generated under contract between the Department of Transportation and the United States Air Force Toxic Hazards Laboratory.

Rat Oral LD_{50}: Male - 3297 mg/kg
(Single Dose) 95% confidence limits (2558-4249)

Female - 4925 mg/kg
95% confidence limits (3577-6780)

Data fall in "Toxic" category.

ACUTE ORAL TOXICITY OF PHOSPHOTUNGSTIC ACID TO RATS

Male		Female	
Dose (mg/kg)	Mortality Ratio	Dose (mg/kg)	Mortality Ratio
4000	4/5	8000	5/5
3175	2/5	4000	1/5
2520	1/5	2000	0/5

TOXICITY DATA SHEET

COMPOUND: SILICON TETRAFLUORIDE CODE: 291

CLASSIFICATION: T O X I C

INHALATION TOXICITY

SPECIES	CONC.*	SYS.**	REF.
Man			
Rat	3919 (922)	LC_{50}	.1
Mouse			
Dog			
Monkey			
Other			

ORAL TOXICITY

SPECIES	DOSE***	SYS.**	REF.
Man			
Rat			
Mouse			
Dog			
Monkey			
Cat			
Guinea Pig			
Other			

OTHER ROUTES OF ADMINISTRATION

	SPECIES	ROUTE	DOSE***	SYS.**	REF.
1.					
2.					
3.					
4.					
5.					
6.					

* Concentration in mg/M^3. Parenthetical values are ppm.
** System for expression of toxicity
***Dose in mg/Kg

JUSTIFICATION: 291

Data fall in "Toxic" category.

REFERENCES:

Scheel, L. D., W. C. Lane and W. E. Coleman, Amer. Ind. Hyg. Assoc. J., 29:41. 1968

APPENDIX B

IDENTIFICATION OF CHEMICALS TESTED

Chemical	Purity	Source	Lot Number
Perchloromethyl-mercaptan	Practical	Eastman	A7A
Boron Trichloride	CP	Matheson	-
Boron Trifluoride	CP	Matheson	-
Ethyl Chloroformate	BP 92-93 C	Baker	322609
Hexamethylene Diamine	Practical	Baker	2-3542
Methyl Chloroformate	Practical	MCB	MX 860-500
Nitric Acid	Reagent	Mallinkrodt	ATX
n-Butyl Acrylate	-	MCB	BX 1765-1
Methyl Acrylate	Practical	MCB	18
Monoethanolamine	MP 10-12 C	Baker	315606
Phenol (Solid)	Reagent, ACS	MCB	510
Propionic Acid	BP 140-142 C	Baker	404002
Hydrochloric Acid	Analytical Reagent	Mallinkrodt	WBD P
Sodium Hydroxide	Reagent	MCB	406907
Sulfuric Acid	Reagent	Baker	321040
Hydrofluoric Acid	52%	Mallinkrodt	BEE
Ethyl Mercaptan	Baker	Baker	308901
Cresol (Coal Tar	NF	Koppers	7580151
Cresol (Petroleum)	USP	Productol	9398

Chemical	Purity	Source	Lot Number
o-Cresol	Practical	MCB	34
m-Cresol	Practical	MCB	29
p-Cresol	Practical	MCB	11
Sodium Trichloro-s-Triazinetrione	Technical	Monsanto	KD 095151
Fumaric Acid	99+%	MCB	A 11 E 22
Maleic Anhydride	MP 53-55 C	MCB	48
Ammonium Hydroxide	Reagent ACS	B & A	D J11191
Oxalic Acid	Technical	MCB	26
Sodium Sulfide	Reagent	MCB	39
Sodium Sulfhydrate	Technical	MCB	30
3-Methylbutyric Acid	BP 174-176 C	MCB	VX-30
Tris-2-Hydroxyethyl-isocyanurate	-	Allied	Sample #5061
p-Cresol (Sherwin-Williams)	98%	Sherwin-Williams	CCA 5260
Potassium Hydroxide	Technical	Fisher	744243
Acetic Acid	Reagent ACS	City Chemical	EE 83-2
Gumout	Commercial	Pennzoil	7205
No. 7 Carburetor Cleaner	Commercial	DuPont	3711N
B-12 Chemtool	Commercial	Berryman	B-100
Phosphotungstic Acid	Reagent	MCB	23