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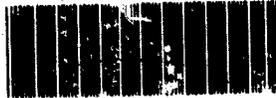
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U.S. DOCUMENT RECEIPT 01010

Attn: 8(e) Coordinator

Dear Sir or Madam:

Union Carbide Corporation ("Union Carbide") supplies the following information on Triethylene Glycol (TEG: CASRN 112-27-6) which EPA may regard as being reportable under the provisions of Section 8(e) of TSCA. The information includes the results of a short-term repeated aerosol exposure study with rats, which by itself may not be significant with respect to previously known use patterns for TEG. However, Union Carbide was recently made aware of some of the operating conditions for equipment and fluids used in the generation of artificial "smoke", described below, which could result in uncontrolled human exposures to aerosols of TEG. This submission is based on a consideration of the findings of a laboratory toxicology study in the light of the discovered relatively uncontrolled use of TEG for "smoke" generation. To the best of our knowledge, this is the only application of TEG where potential inhalation exposures could reach high concentrations.

REPEATED AEROSOL EXPOSURE STUDY

Study Design

Groups of male and female Sprague-Dawley rats were exposed to target TEG aerosol concentrations of 0 (air-alone), 500, 2000 and 5000 mg m⁻³. Exposures were for 6 hr per day for 9 days over an 11-day period. Ten male and ten female rats from each group were sacrificed the day following the final exposure. Additionally, 5 male and 5 female rats were added to the control and high concentration groups for use as postexposure recovery groups for planned sacrifice at 2 weeks after the final exposure.

Monitors for toxicity were as follows:

1. **Daily observations for signs of toxic and/or pharmacologic effects.**
2. **Ophthalmoscopic examination before the first exposure and following the final exposure.**
3. **Body weights before exposure; on the second, fifth, and seventh exposure days; and immediately before sacrifice.**
4. **Food and water consumption were measured following the eighth (males) and ninth (females) exposures.**
5. **Prior to sacrifice, blood was collected by retro-orbital sinus puncture, and used for the following measurements:**

Hematology: erythrocyte count, hematocrit, hemoglobin concentration, MCV, MCH, MCHC, leucocyte count (total and differential), platelet and reticulocyte counts.

Clinical chemistry: glucose, urea N, creatinine, total protein, albumin, globulin, bilirubin (total, conjugated, unconjugated), phosphorus, Cl⁻, Na⁺, K⁺ and Ca⁺⁺; aspartate and alanine aminotransferases, creatinine kinase, lactate dehydrogenase, γ -glutamyl transferase, sorbitol dehydrogenase and alkaline phosphatase.

6. **Urinalysis was conducted on samples collected following the eighth exposure (males) and ninth exposure (females). Measurements and observations were for total volume, color and appearance, specific gravity, pH, microscopic elements, blood, protein, glucose, ketones, bilirubin, urobilinogen, and N-acetyl- β -D-glucosaminidase (NAG) activity.**
7. **Necropsy, to examine for signs of gross pathology, was conducted on animals that died and survivors sacrificed the day following the final exposure. The liver, kidneys, spleen, brain, lungs, adrenal glands, and testes were weighed from all sacrificed animals. A variety of tissues and organs were fixed in 10% neutral buffered formalin for subsequent histological examination.**

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Results

1. Concentrations of TEG aerosol for the various exposure groups were as follows:

Concentration	Group and Concentration (mg m ⁻³ as Mean ± SD)		
	Low	Mid	High
Target	500	2000	5000
Analytical	494 ± 14.2	2011 ± 94.4	4824 ± 182.9
Nominal	1436 ± 52.7	5404 ± 232.7	31773 ± 943.9

Thus, the analytical concentrations for the TEG aerosols were close to the target. The low A/N ratios are due to precipitation and absorption of larger TEG droplets.

The MMAD for the aerosols (as mean ± geometric standard deviation) were 1.92 ± 1.56, 2.57 ± 1.65 and 2.94 ± 1.70 μm respectively for the low, mid and high concentration groups.

2. All rats of the 4824 mg m⁻³ group died between the second and fifth exposure days. There were no mortalities in the low and mid concentration groups.
3. Signs before death in the high concentration group included ataxia, prostration, labored breathing (males), ocular discharge, swollen periocular tissues, blepharospasm, and perinasal and periocular encrustation. For the mid concentration group signs were limited to swollen periocular tissues, blepharospasm and perinasal encrustation. Only a few animals of the low concentration group had signs, which included perinasal encrustation and swollen periocular tissues.
4. Body weight and body weight changes are shown in attachments 1-4. It can be seen that the following statistically significant effects were noted:

4824 mg m⁻³: Decreased body weights and body weight gains before death.

2011 mg m⁻³: Decreased absolute body weights in males from day 5.
5. Statistically significant increases in food consumption were measured in females of the 494 and 2011 mg m⁻³ groups. Statistically significant increases in water consumption were also measured at 494 mg m⁻³ (females) and 2011 mg m⁻³ (males and females). See attachments 5 and 6.

6. The only statistically significant hematological effects were a slight increase in erythrocyte count (RCC) and slight decrease in MCV and a slight increase in total lymphocyte count in females of the 2011 mg m⁻³ group, as follows:

Measurement	Group (mg m ⁻³) ^a		
	0	494	2011
RCC (10 ⁶ μl ⁻¹)	7.7 ± 0.29	7.7 ± 0.19	8.0 ± 0.29 ^b
MCV (μm ³)	56.5 ± 0.85	56.3 ± 0.95	55.1 ± 1.79 ^b
Lymphocytes (cells μl ⁻¹)	8109 ± 1793	NYA ^c	10096 ± 2331 ^b

^aResults as Mean ± SD (for N = 10)

^bp < 0.05 compared to controls

^cNYA = Not yet available

7. Clinical chemistry findings of statistical significance were as follows:

Measurement	Sex	Group (mg m ⁻³) ^a		
		0	494	2011
Glucose (g l ⁻¹)	M	1.44 ± 0.12	1.45 ± 0.10	1.38 ± 0.06 ^b
	F	1.30 ± 0.07	1.36 ± 0.11	1.21 ± 0.10
Urea N (mg l ⁻¹)	M	237 ± 29.2	239 ± 33.6	256 ± 32.0
	F	151 ± 20.7	168 ± 22.5	198 ± 34.2 ^c
ALA ^d (IU l ⁻¹)	M	41 ± 4.8	40 ± 4.5	51 ± 4.0 ^c
	F	34 ± 5.7	37 ± 4.7	44 ± 3.4 ^c
Alk P-ase (IU l ⁻¹)	M	345 ± 36.2	387 ± 50.5	384 ± 77.5
	F	198 ± 66.5	289 ± 51.0 ^c	319 ± 60.3 ^c
Inorganic P (mg l ⁻¹)	M	92 ± 5.0	93 ± 5.3	92 ± 7.6
	F	81 ± 7.7	89 ± 9.0 ^b	91 ± 7.0 ^c

^aResults as Mean ± SD (for N = 10)

^bp < 0.05 compared to controls

^cp < 0.01 compared to controls

^dALA = Alanine aminotransferase

The most biologically notable effects common for males and females were increases in ALA activity (2011 mg m⁻³) and a statistically significant increase or trend for alkaline phosphatase activity (484 and 2011 mg m⁻³).

8. Urinalysis findings of note were as follows:

Measurement	Sex	Group (mg m ⁻³)		
		0	494	2011
Total Volume (ml)	M	7.6 ± 1.97	9.1 ± 1.79	17.1 ± 6.21 ^c
	F	8.0 ± 4.29	9.9 ± 2.64	16.8 ± 5.54 ^c
Osmolality (mOSMO kg ⁻¹)	M	1894 ± 612.5	1695 ± 320.1	1696 ± 296.9
	F	2153 ± 341.9	2047 ± 331.4	1771 ± 279.2 ^b
pH	M	7.2 ± 0.88	6.9 ± 0.21	6.2 ± 0.26 ^c
	F	6.9 ± 0.39	6.8 ± 0.24	6.2 ± 0.26
NAG Activity (U l ⁻¹)	M	18.95 ± 3.68	15.96 ± 3.64	11.78 ± 3.00
	F	7.74 ± 3.11	7.05 ± 1.70	6.00 ± 2.17

^aResults as Mean ± SD (for = 10)

^bp < 0.05 compared to controls

^cp < 0.01 compared to controls

Thus, there was a statistically significant or trend for increased urine volume, decreased osmolality, decreased pH, and decreased NAG activity for both the low and m. concentration groups.

9. Statistically significant organ weight changes were as follows:

Liver: increased absolute weight (females) at 2011 mg m⁻³; increased relative to body weight (males and females) at 2011 mg m⁻³; increased relative to brain weight (females) at 2011 mg m⁻³.

Kidney: increased absolute weight (females) at 2011 mg m⁻³; increased relative to body weight (males and females) at 2011 mg m⁻³; increased relative to brain weight (females) at 2011 mg m⁻³. A statistically significant decrease in kidney weight relative to body weight was noted in males of the 494 mg m⁻³ group.

[See Attachments 7-12.]

10. Notable histological findings were as follows:

4284 mg m⁻³: Pituitary gland - congestion and occasional hemorrhage.
Nares - congestion and occasional hemorrhage.
Brain - congestion and hemorrhage.
Lungs - congestion, intraalveolar debris, alveolar histiocytosis and hemorrhages.
Kidney - congestion and tubular proteinosis.

2011 mg m⁻³: Nares - occasional hemorrhage.
Lungs - Intraalveolar debris, alveolar histiocytosis, occasional hemorrhage.

494 mg m⁻³: Lungs - a few instances of alveolar debris and alveolar histiocytosis.

0 mg m⁻³: Lungs - a few instances of alveolar histiocytosis.

There was no histological evidence of liver injury in any group, and no indication of renal histopathology in the mid and low concentration groups.

Summary and Comment

Major findings following short-term (9-days) repeated exposure of rats to a respirable aerosol of TEG were as follows:

4284 mg m⁻³

- Mortality after 2-5 exposures.
- Signs (principally irritant in nature).
- Premortem decrease in body weight and body weight gain.
- Congestion and occasional hemorrhage of the nares, pituitary gland and brain.
- Pulmonary congestion and hemorrhages, alveolar debris and histiocytosis.

2011 mg m⁻³

- Swollen periocular tissues, blepharospasm and perinasal encrustation.
- Decrease in body weight (M).
- Increased food and water consumption.
- Slight decrease in erythrocyte count and MCV, with lymphocytosis (F).
- Slight decrease in glucose (F), increase in urea N (F), increase in ALA and alkaline phosphatase activities.
- Increase in urine volume with decreased osmolality, pH and NAG activity.
- Increased absolute and relative kidney and liver weights.
- Alveolar debris and histiocytosis.

494 mg m⁻³

- Low incidence of swollen periocular tissues and perinasal encrustation.
- Increased food and water consumption (F).
- Trend for increased alkaline phosphatase activity (F).
- Trend for increased urine volume with decreased osmolality, pH and NAG activity.
- Alveolar debris and histiocytosis.

The above findings indicate that recurrent prolonged exposure to high atmospheric concentrations of TEG respirable aerosol produces significant lethality. At nonlethal concentrations, the urinary changes (volume, osmolality, pH and NAG activity with increased water consumption) are consistent with an osmotic diuresis resulting from excretion of absorbed TEG and metabolites; there was no biochemical or morphological evidence for renal injury. The increased ALA and alkaline phosphatase activities, in the absence of histological evidence of liver injury, are compatible with a minimal effect on liver function, which is threshold at 494 mg m⁻³. Irritant effects on the eye and upper respiratory tract were evident at 2011 mg m⁻³, and marginal at 494 mg m⁻³. The source of the alveolar debris is unknown, and alveolar histiocytosis was also present in controls.

RELATIONSHIP OF EXPERIMENTAL FINDINGS TO USE PATTERNS

Although Union Carbide sells TEG for industrial applications, we have learned of a potential non-industrial use. TEG is being considered (with other glycols) as a component of a fluid used in an equipment which generates artificial "smoke." This equipment could be used in such non-industrial settings as theatrical or motion picture productions, discotheques, amusement parks or other areas where artificial smoke is desired, including simulated smoke conditions for fire fighting or fire escape training. To the best of our knowledge, this is the only application of TEG where potential inhalation exposures could reach comparatively high concentrations. Based on the knowledge of this new application, we recently initiated a series of laboratory animal studies to learn of any potential toxicity issues from exposure to liquid aerosols of TEG.

While we have no data on atmospheric concentrations from actual use, we have recently learned that the fluid delivery rates in the "smoke" generating equipment can be 3ml/second, and the TEG concentration of the fluid can be 30%. Estimation of human exposure may be impractical due to the many variables that could potentially effect the actual atmospheric concentration, including aerosol particle size, room ventilation rate, duration and frequency of exposures, and aerosol distribution. Without knowledge of the upper boundaries of control for these variables, we have determined that the results of our nine-day study should be submitted to the EPA and viewed in the light of the above summarized short-term repeated exposure study.

COMMENT

While the experimental findings with an aerosol of TEG have little relevance to most accepted use patterns for TEG, the discovery that TEG may be used to generate "smoke" for use in relatively uncontrolled situations requires a more detailed evaluation of the findings in relation to this practice. EPA may consider the findings reportable under Section 8(e) of TSCA against the background of the use of TEG in "smoke" generation.

A copy of the complete toxicology report will be sent to the Agency promptly after we receive it.

Please contact the undersigned with questions, if any, at 203/794-5230.

Very truly yours,



William C. Kuryla, Ph.D.
Associate Director
Product Safety

WCK/cr
Attachments

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TABLE 3
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF BODY WEIGHT (GRAMS)

1

GROUP: mg/m3	MALES			
	0	500	2000	5000
DAY 1				
MEAN	287.8	288.2	248.8	253.0
S.D.	8.92	10.88	9.05	10.02
N	15	10	10	15
DAY 2				
MEAN	288.1	280.9	250.1	247.8*
S.D.	8.59	10.92	11.43	12.63
N	15	10	10	15
DAY 5				
MEAN	276.2	277.6	265.8*	205.8**
S.D.	10.41	11.40	11.22	11.55
N	15	10	10	2
DAY 8				
MEAN	288.4	288.1	275.6*	
S.D.	11.64	13.90	13.16	
N	15	10	10	
DAY 9				
MEAN	292.1	293.8	278.5*	
S.D.	12.18	14.74	14.25	
N	15	10	10	
DAY 12				
MEAN	299.8	302.1	286.6*	
S.D.	13.08	15.18	16.77	
N	15	10	10	

* Significantly different from control group (p < .05)
 ** Significantly different from control group (p < .01)

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TABLE 4
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF BODY WEIGHT GAIN (GRAMS)

GROUP: mg/m ³	MALES			
	0	500	2000	5000
DAY 1 TO 2				
MEAN	0.4	2.7	1.3	-10.2**
S.D.	3.14	2.89	3.70	11.90
N	15	10	10	15
DAY 1 TO 5				
MEAN	18.7	19.4	17.1	-57.1**
S.D.	2.93	4.36	5.95	0.20
N	15	10	10	2
DAY 1 TO 8				
MEAN	30.9	29.9	26.8	
S.D.	4.73	6.75	6.66	
N	15	10	10	
DAY 1 TO 9				
MEAN	34.6	35.5	29.7	
S.D.	5.74	9.27	8.85	
N	15	10	10	
DAY 1 TO 12				
MEAN	42.3	43.6	37.9	
S.D.	7.22	9.94	12.41	
N	15	10	10	

** Significantly different from control group (p < .01)

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TABLE 5
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF BODY WEIGHT (GRAMS)

		FEMALES			
GROUP: mg/m3	0	500	2000	5000	
DAY 1					
MEAN	189.1	184.6	183.2	186.5	
S.D.	8.98	7.52	13.75	10.71	
N	15	10	10	15	
DAY 2					
MEAN	185.0	180.2	178.7	166.5**	
S.D.	8.75	7.66	14.40	9.98	
N	15	10	10	13	
DAY 5					
MEAN	191.6	187.6	188.5		
S.D.	10.22	6.17	17.16		
N	15	10	10		
DAY 8					
MEAN	200.3	184.3	188.3		
S.D.	17.69	6.54	15.81		
N	15	10	10		
DAY 9					
MEAN	198.1	193.6	197.7		
S.D.	12.31	6.20	16.23		
N	15	10	10		
DAY 12					
MEAN	204.1	201.1	204.5		
S.D.	10.69	9.32	18.55		
N	15	10	10		

** Significantly different from control group (p < .01)

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TABLE 6
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF BODY WEIGHT GAIN (GRAMS)

FEMALES				
GROUP: mg/m3	0	500	2000	5000
DAY 1 TO 2				
MEAN	-4.1	-4.3	-4.5	-20.6**
S.D.	3.81	2.43	3.32	9.26
N	15	10	10	13
DAY 1 TO 5				
MEAN	2.5	3.0	5.3	
S.D.	4.67	3.47	5.15	
N	15	10	10	
DAY 1 TO 8				
MEAN	11.2	8.7	10.1	
S.D.	6.67	3.91	4.48	
N	15	10	10	
DAY 1 TO 9				
MEAN	9.0	9.0	13.5	
S.D.	7.33	4.64	5.91	
N	15	10	10	
DAY 1 TO 12				
MEAN	15.0	16.5	21.3	
S.D.	5.87	6.30	8.61	
N	15	10	10	

** Significantly different from control group (p < .01)

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TABLE 7
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF FOOD CONSUMPTION (GRAMS/ANIMAL/DAY)

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MALES				
GROUP: mg/m ³	0	500	2000	5000
DAY 10 TO 11				
MEAN	18.8	20.0	21.4	
S.D.	2.46	2.41	1.93	
N	10	10	10	

None significantly different from control group

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TABLE 8
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF FOOD CONSUMPTION (GRAMS/ANIMAL/DAY)

FEMALES				
GROUP: mg/m ³	0	500	2000	5000
DAY 11 TO 12				
MEAN	13.7	15.8*	18.0**	
S.D.	1.93	1.73	3.32	
N	10	10	10	

* Significantly different from control group (p < .05)
** Significantly different from control group (p < .01)

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TABLE 9
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF WATER CONSUMPTION (GRAMS/ANIMAL/DAY)

MALES				
GROUP: mg/m3	0	500	2000	5000
DAY 10 TO 11				
MEAN	21.9	25.7	37.2**	
S.D.	4.88	3.08	5.67	
N	10	10	10	

** Significantly different from control group (p < .01)

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TABLE 10
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF WATER CONSUMPTION (GRAMS/ANIMAL/DAY)

FEMALES				
GROUP: mg/m3	0	500	2000	5000
DAY 11 TO 12				
MEAN	20.9	25.1*	35.9**	
S.D.	5.08	3.29	5.07	
N	10	10	10	

* Significantly different from control group (p < .05)
** Significantly different from control group (p < .01)

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TABLE 21
 Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
 SUMMARY OF ORGAN WEIGHTS (GRAMS)
 ANIMALS SACRIFICED AT DAY 12

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GROUP: mg/m ³	MALES			
	0	1500	2000	5000
FINAL BODY WEIGHT				
MEAN	297.8	302.1	296.6	
S.D.	13.69	15.18	16.77	
N	10	10	10	
LIVER				
MEAN	12.220	12.938	13.189	
S.D.	0.9011	1.0778	1.3853	
N	10	10	10	
KIDNEYS				
MEAN	2.301	2.216	2.344	
S.D.	0.1610	0.1430	0.2226	
N	10	10	10	
LUNGS				
MEAN	1.385	1.404	1.343	
S.D.	0.1040	0.0872	0.0852	
N	10	10	10	
PROSTATE				
MEAN	1.726	1.738	1.712	
S.D.	0.0901	0.0588	0.0771	
N	10	10	10	
ADRENAL GL				
MEAN	0.042	0.040	0.042	
S.D.	0.0043	0.0042	0.0047	
N	10	10	10	
SPLEEN				
MEAN	0.593	0.691	0.663	
S.D.	0.0736	0.0690	0.0930	
N	10	10	10	
TESTES				
MEAN	3.491	3.376	3.441	
S.D.	0.2517	0.2364	0.2926	
N	10	10	10	

* significantly different from control group

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TABLE 22
 Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
 SUMMARY OF ORGAN WEIGHTS AS % OF FINAL BODY WEIGHT
 ANIMALS SACRIFICED AT DAY 12

GROUP: mg/m3	MALES			
	0	500	2000	5000
LIVER				
MEAN	4.107	4.281	4.585**	
S.D.	0.2460	0.2490	0.2921	
N	10	10	10	
KIDNEYS				
MEAN	0.773	0.733*	0.817*	
S.D.	0.0451	0.0293	0.0516	
N	10	10	10	
LUNGS				
MEAN	0.465	0.464	0.470	
S.D.	0.0274	0.0115	0.0387	
N	10	10	10	
BRAIN				
MEAN	0.581	0.576	0.598	
S.D.	0.0376	0.0268	0.0355	
N	10	10	10	
ADRENAL GL				
MEAN	0.014	0.013	0.015	
S.D.	0.0012	0.0011	0.0017	
N	10	10	10	
SPLEEN				
MEAN	0.233	0.229	0.231	
S.D.	0.0258	0.0230	0.0260	
N	10	10	10	
TESTES				
MEAN	1.173	1.118	1.201	
S.D.	0.0597	0.0723	0.0840	
N	10	10	10	

* Significantly different from control group (p < .05)
 ** Significantly different from control group (p < .01)

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TABLE 23
 Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
 SUMMARY OF ORGAN WEIGHTS AS % OF BRAIN WEIGHT
 ANIMALS SACRIFICED AT DAY 12

		MALES			
GROUP: mg/m3	0	500	2000	5000	
LIVER					
MEAN	708.305	745.048	769.889		
S.D.	66.2187	66.6368	82.3119		
N	10	10	10		
KIDNEYS					
MEAN	133.390	127.485	137.025		
S.D.	7.7806	7.0834	12.1952		
N	10	10	10		
LUNGS					
MEAN	80.422	80.760	78.984		
S.D.	7.3681	4.4327	6.5460		
N	10	10	10		
ADRENAL GL					
MEAN	2.437	2.305	2.447		
S.D.	0.3093	0.2094	0.2997		
N	10	10	10		
SPLEEN					
MEAN	40.272	39.732	38.759		
S.D.	4.9266	3.6438	5.3770		
N	10	10	10		
TESTES					
MEAN	202.699	194.110	200.824		
S.D.	17.2922	9.4064	11.4170		
N	10	10	10		

None significantly different from control group

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TABLE 24
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF ORGAN WEIGHTS (GRAMS)
ANIMALS SACRIFICED AT DAY 12

GROUP: mg/m ³	FEMALES			
	0	500	2000	5000
FINAL BODY WEIGHT				
MEAN	201.3	201.1	204.5	
S.D.	10.85	9.32	18.55	
N	10	10	10	
LIVER				
MEAN	6.886	7.107	7.869*	
S.D.	0.5243	0.5225	1.0877	
N	10	10	10	
KIDNEYS				
MEAN	1.512	1.501	1.639**	
S.D.	0.0789	0.0954	0.1079	
N	10	10	10	
LUNGS				
MEAN	1.138	1.142	1.164	
S.D.	0.0852	0.0576	0.0740	
N	10	10	10	
BRAIN				
MEAN	1.643	1.645	1.616	
S.D.	0.0623	0.0491	0.0592	
N	10	10	10	
ADRENAL GL				
MEAN	0.059	0.056	0.063	
S.D.	0.0057	0.0047	0.0061	
N	10	10	10	
SPLEEN				
MEAN	0.538	0.516	0.560	
S.D.	0.0403	0.0380	0.0707	
N	10	10	10	

* Significantly different from control group (p < .05)
** Significantly different from control group (p < .01)

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TABLE 25
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF ORGAN WEIGHTS AS % OF FINAL BODY WEIGHT
ANIMALS SACRIFICED AT DAY 12

19

GROUP: mg/m3	FEMALES			
	0	500	2000	5000
LIVER				
MEAN	3.418	3.534	3.836**	
S.D.	0.1303	0.1652	0.2401	
N	10	10	10	
KIDNEYS				
MEAN	0.751	0.747	0.804**	
S.D.	0.0195	0.0360	0.0399	
N	10	10	10	
LUNGS				
MEAN	0.565	0.569	0.571	
S.D.	0.0265	0.0340	0.0355	
N	10	10	10	
BRAIN				
MEAN	0.817	0.819	0.785	
S.D.	0.0383	0.0376	0.0598	
N	10	10	10	
ADRENAL GL				
MEAN	0.029	0.028	0.031	
S.D.	0.0027	0.0028	0.0032	
N	10	10	10	
SPLEEN				
MEAN	0.267	0.257	0.274	
S.D.	0.0149	0.0120	0.0201	
N	10	10	10	

** Significantly different from control group (p < .01)

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ATTACHMENT 12
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TABLE 2b
Triethylene Glycol: Nine-Day Aerosol Inhalation Study in Rats
SUMMARY OF ORGAN WEIGHTS AS % OF BRAIN WEIGHT
ANIMALS SACRIFICED AT DAY 12

		FEMALES			
GROUP: mg/m3	0	500	2000	5000	
LIVER					
MEAN	419.027	432.368	486.523**		
S.D.	26.3808	33.8409	60.5476		
N	10	10	10		
KIDNEYS					
MEAN	92.027	91.257	101.488**		
S.D.	4.2146	5.2265	6.9208		
N	10	10	10		
LUNGS					
MEAN	69.265	69.497	72.083		
S.D.	4.4719	4.5694	4.1806		
N	10	10	10		
ADRENAL GL					
MEAN	3.583	3.409	3.901*		
S.D.	0.3756	0.2480	0.3610		
N	10	10	10		
SPLEEN					
MEAN	32.753	31.386	34.628		
S.D.	2.2535	2.1469	4.1178		
N	10	10	10		

* Significantly different from control group (p < .05)
** Significantly different from control group (p < .01)

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(Month) (Day) (Year) Camera Operator

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(City) (State)

