

TOXICOLOGICAL PROFILE FOR  
TRIETHYLENE GLYCOL DINITRATE

Criteria and Standards Division  
Office of Drinking Water  
U.S. Environmental Protection Agency  
Washington, DC 20460

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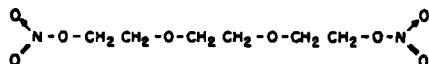
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## TRIETHYLENE GLYCOL DINITRATE

### A. GENERAL

1. CAS Number: 111-22-8
2. RTECS Number: YE5500000
3. General Name/Synonyms: Ethanol, 2,2'-[1,2-ethanediylbis(oxy)]bis-,  
dinitrate  
TEGDN
4. Molecular Formula:  $C_6H_{12}N_2O_8$
5. Molecular Weight: 240
6. Structure:



### B. PHYSICAL AND CHEMICAL PROPERTIES

1. State: No information was found.
2. Vapor Pressure: No information was found.
3. Melting Point: No information was found.
4. Boiling Point: No information was found.
5. Specific Gravity: No information was found.
6. Solubility: No information was found.

7. Log K<sub>ow</sub>: No information was found.
8. UV Absorption: No information was found.

#### C. PHYSICAL/CHEMICAL EQUILIBRIUM FACTORS

1. Bioconcentration Factors (BCF): No information was found.
2. K<sub>wa</sub>: No information was found.
3. K<sub>oc</sub>: No information was found.

#### D. ENVIRONMENTAL FATE

1. Photolysis: No information was found.
2. Leaching: No information was found.
3. Route of Water Contamination: No information was found.
4. Hydrolysis: No information was found.
5. Plant Uptake: No information was found.
6. Microbial Degradation: No information was found.
7. Persistence in Soil/Water: No information was found.
8. Byproducts: No information was found.
9. Vaporization: No information was found.

## E. ACUTE TOXICITY IN MAMMALS

Animal/strain/sex	Route	LD <sub>50</sub> (mg/kg)	Reference
Mice/NMTRI/M	Intra-peritoneal	945 (792-1,126) <sup>a</sup>	Andersen and Mehl (1973)
Rat/Sprague-Dawley/M	Oral	1,000 (733-1,365)	Andersen and Mehl (1973)
Rat/Sprague-Dawley/M	Intra-peritoneal	796 (785-807)	Andersen and Mehl (1973)
Rat/Sprague-Dawley/M	Sub-cutaneous	2,520 (1,720-3,660)	Andersen and Mehl (1973)
Guinea pig/Hartley/M	Intra-peritoneal	700 (586-835)	Andersen and Mehl (1973)

<sup>a</sup>95% confidence limits.

Andersen and Mehl (1973) observed only 30 to 40% methemoglobinemia in groups of four Sprague-Dawley rats given a single subcutaneous injection of 3120 mg/kg TEGDN. Rats given lethal doses of TEGDN exhibited ataxia, lethargy, and violent tremors, and they were hyperreactive to auditory and tactile stimuli.

In another experiment, groups of three to six Sprague-Dawley rats (sex not specified) were given a single intraperitoneal injection of 796 mg/kg TEGDN; survivors were sacrificed at 24, 48, 72, 96, and 168 hours; and plasma enzyme activities were measured. TEGDN caused large, long-lasting increases in all plasma enzyme activities (alkaline phosphatase, aspartate aminotransferase, creatine kinase, and lactic dehydrogenase). The severe tremors observed in rats together with the increases in plasma enzyme activities suggest a neurological toxicity for this dinitrate (Andersen and Mehl, 1973).

Daily dermal applications of 21 mmole/kg (approximately 5 g/kg) caused the death of 9 of 11 male New Zealand white rabbits treated for 3 weeks; the mean

time to death was 17 days. Rabbits lost 20% of their initial body weight and appeared strikingly emaciated (Andersen and Mehl, 1973).

#### F. SKIN AND EYE IRRITATION AND SENSITIZATION IN MAMMALS

No information was found.

#### G. SUBCHRONIC TOXICITY IN MAMMALS

Groups of five male Hartley guinea pigs were given intraperitoneal injections of 0, 100, 200, or 400 mg/kg TEGDN daily for 15 days. Dose-related decreases in both body weight gain and food consumption were observed during the 15-day treatment period. No other parameters or results were reported (Andersen and Mehl, 1973).

#### H. REPRODUCTIVE EFFECTS AND TERATOGENICITY IN MAMMALS

No information was found.

#### I. MUTAGENICITY/GENOTOXICITY

No information was found.

#### J. CHRONIC/CARCINOGENICITY STUDIES IN MAMMALS

No information was found.

#### K. PHARMACOKINETICS IN MAMMALS

No information was found.

L. HUMAN HEALTH EFFECTS

No information was found.

M. EXISTING STANDARDS/CRITERIA

No information was found.

N. REFERENCES

Andersen ME, Mehl RG. 1973. A comparison of the toxicology of triethylene glycol dinitrate and propylene glycol dinitrate. Am. Ind. Hyg. Assoc. J. 34:526-532.