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## Welcome to TOXNET ON THE WEB

This free-of-charge search interface provides access to the TOXNET system of databases on toxicology, hazardous chemicals, and related areas.

TOXNET is sponsored by the National Library of Medicine, through the Toxicology and Environmental Health Information Program of its Specialized Information Services Division.

Comments? Questions? Problems? - E-Mail TOXNET User Support.

Toxicology Data Search - Select and search any of the following files containing factual information related to the toxicity and other hazards of chemicals: HSDB (Hazardous Substances Data Bank), CCRIS (Chemical Carcinogenesis Research Information System) from the National Cancer Institute, and GENE-TOX (Genetic Toxicology/Mutagenicity Data Bank) and IRIS (Integrated Risk Information System) both from the Environmental Protection Agency (EPA).

Toxic Releases (TRI) Search - Select and search any of the Environmental Protection Agency's (EPA) TRI series of files (beginning with TRI87) containing data on the estimated quantities of chemicals released to the environment or transferred off-site for waste treatment, as well as information related to source reduction and recycling.

Toxicology Literature Search - Select and search any of the following bibliographic files, consisting of citations to the scientific literature: DART (Developmental and Reproductive Toxicology) and its backfile ETICBACK, and EMIC (Environmental Mutagenesis Information Center) and its backfile EMICBACK.

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**Related Information** - Provides links to other World Wide Web resources containing information relevant to toxicology and environmental health.

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**Last Updated: 6 August 1998**

## Search Results

Redisplay

Results As:

Full Record(s)

Your search found 1 record in Database: HSDB  
Query: ((NAME) "2,4,6-TRINITROTOLUENE")

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### ECOTOXICITY VALUES

LC50 Daphnia magna >4.4 mg/l/48 hr at 20 deg C /Flow through Bioassay/ [Liu DHW et al; Toxicity of TNT Wastewater to Aquatic Organisms Vol I (Final Report) (1983) AD A142 144 as cited in Ryon MG; Water Quality Criteria for 2,4,6-Trinitrotoluene (TNT) (Final Report) p.27 (1987) AD-ORNL-6304] \*\*PEER REVIEWED\*\*

### ECOTOXICITY VALUES

LC50 Daphnia magna 11.7 mg/l/48 hr at 20 deg C /Static bioassay/ [Liu DHW et al; Toxicity of TNT Wastewater to Aquatic Organisms Vol I (Final Report) (1983) AD A142 144 as cited in Ryon MG; Water Quality Criteria for 2,4,6-Trinitrotoluene (TNT) (Final Report) p.27 (1987) AD-ORNL-6304] \*\*PEER REVIEWED\*\*

### ECOTOXICITY VALUES

LC50 Hyabcella azetia 6.5 mg/l/48 hr at 20 deg C /Static Bioassay/ [Liu DHW et al; Toxicity of TNT Wastewater to Aquatic Organisms Vol I (Final Report) (1983) AD A142 144 as cited in Ryon MG; Water Quality Criteria for 2,4,6-Trinitrotoluene (TNT) (Final Report) p.27 (1987) AD-ORNL-6304] \*\*PEER REVIEWED\*\*

### ECOTOXICITY VALUES

LC50 Lepomis macrochirus (bluegill sunfish) is 2.7 mg/l with a mean weight of 0.39 g in a 96 hr at 10 deg C /Static Bioassay/ [Pederson GL; Evaluation of Toxicity of Selected TNT Wastes on Fish, Phase I (Final Report) p.35 (1970) as cited in Ryon MG; Water Quality Criteria for 2,4,6-Trinitrotoluene (TNT) (Final Report) p.27 (1987) AD-ORNL-6304] \*\*PEER REVIEWED\*\*

### ECOTOXICITY VALUES

LC50 Pimephales promelas (fathead minnow) 2.58 mg/l/96 hr at 20 deg C /Flow through bioassay/ [Smock LA et al; Water Res 10: 537-43 (1976) as cited in Ryon MG; Water Quality Criteria for 2,4,6-Trinitrotoluene (TNT) (Final Report) p.28 (1987) AD-ORNL-6304] \*\*PEER REVIEWED\*\*

### ECOTOXICITY VALUES

LC50 Pimephales promelas (fathead minnow) 0.46 mg/l/ 96 hr at 24 deg C /Flow through, immobilization test/ [Smock LA et al; Water Res 10: 537-43 (1976) as cited in Ryon MG; Water Quality Criteria for 2,4,6-Trinitrotoluene (TNT) (Final Report) p.28 (1987) AD-ORNL-6304] \*\*PEER REVIEWED\*\*

### IARC SUMMARY AND EVALUATION

Evaluation: There is inadequate evidence in humans for the carcinogenicity of 2,4,6-trinitrotoluene. There is inadequate evidence in experimental animals for the carcinogenicity of 2,4,6-trinitrotoluene. Overall evaluation: 2,4,6-Trinitrotoluene is not classifiable as to its carcinogenicity to humans (Group 3). [IARC. Monographs on the Evaluation of the Carcinogenic Risk of Chemicals to Man. Geneva: World Health Organization, International Agency for Research on Cancer, 65 468 (1996)] 1972-PRESENT. (Multivolume work). 65 468 (1996)] \*\*QC REVIEWED\*\*

POPULATIONS AT SPECIAL RISK

A REPORT ON 3 CASES OF ACUTE HEMOLYTIC DISEASE IN GLUCOSE-6-PHOSPHATE DEHYDROGENASE DEFICIENT WORKERS EXPOSED TO TRINITROTOLUENE ONSET OF THE DISEASE WAS WITHIN 2 OR 4 DAYS AFTER START OF EXPOSURE. [DJERASSI LS, VITANY L; BR J IND MED 32 (1): 54-8 (1975)] \*\*PEER REVIEWED\*\*

ABSORPTION, DISTRIBUTION AND EXCRETION

The disposition and metabolism of 2,4,6-trinitrotoluene (TNT) was studied in rats, mice, rabbits, and dogs following oral, dermal, or intratracheal admin of single doses of (14)C-ring labeled compd. The objective was to determine possible species and sex differences as a function of route of admin as a rationale for the design of chronic studies. TNT was absorbed in all species by all routes of admin with the most extensive absorption occurring after intratracheal instillation. Dermal absorption was the highest in rabbits followed by mice, rats, and dogs. Species differences in the rate of oral absorption could not be accurately assessed. Excretion was primarily in urine and to a lesser extent in feces. Extensive biliary excretion was also noted. Blood and tissue levels in females were generally higher than in males. [El-Hawari AM et al; Govt Reports Announcements & Index (GRA&I) 17 (1982)] \*\*PEER REVIEWED\*\*

ABSORPTION, DISTRIBUTION AND EXCRETION

Trinitrotoluene (TNT) absorption was assessed in workers at two explosives factories by measuring urinary concentrations of dinitroaminotoluene dinitroaminotoluene metabolites. The range of atmospheric concentrations was 0.02-5.73 mg/cu m in static samples and <0.01 to 0.71 mg/cu m in personal samples. In postshift urine samples, the mean concentration of dinitroaminotoluene was 9.7 mg/l (standard deviation: 7.9, n= 219). TNT was shown to be absorbed rapidly during the exposure period. A wide variation among individuals in the rate of clearance of TNT metabolites was seen. For the group as a whole the daily mean urinary total dinitroaminotoluene concentrations in preshift samples were lower than those in postshift samples although in some cases higher concentrations of metabolites were seen in samples taken the morning after exposure. Urine samples collected after 17 days away from the workplace still showed detectable levels of dinitroaminotoluene (mean 0.06 mg dinitroaminotoluene/l) indicating that a proportion of TNT or its metabolites is slowly excreted. [Woollen BH et al; Br J Ind Med 43: 465-73 (1986)] \*\*PEER REVIEWED\*\*

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Results As: Full Record(s)

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### METABOLISM/METABOLITES

The metabolism of 2,4,6-trinitrotoluene (TNT) was studied in rats, mice, rabbits, and dogs following oral, dermal, or intratracheal administration of single doses of (14)C-ring labeled compound. TNT was extensively metabolized in all species; radioactivity was excreted in urine primarily as the glucuronide conjugates. Most metabolites were reduction products including the 2- and 4-hydroxylamine and 2- and 4-monoaminodinitro and 2,6- and 4,6-diaminomononitro derivatives. Trace quantities of TNT, trinitrobenzyl alcohol, and trinitrobenzoic acid were detected occasionally. [El-Hawari AM et al; Govt Reports Announcements & Index (GRA&I) 17 (1982)] \*\*PEER REVIEWED\*\*

### METABOLISM/METABOLITES

At levels of  $1 \times 10^{-4}$  to  $1 \times 10^{-3}$  g 2,6-dinitro-4-aminotoluene, the major known metabolite of TNT, was found in urine samples of munitions workers. [Almog J et al; Arch Toxicol Suppl 6: 351-53 (1983)] \*\*PEER REVIEWED\*\*

### ENVIRONMENTAL FATE/EXPOSURE SUMMARY

2,4,6-Trinitrotoluene (alpha-TNT) may be released to the environment in wastewater and air effluents from its production and use as a military explosive and propellant. Generally alpha-TNT is not expected to hydrolyze, volatilize from water, or bioconcentrate under normal environmental conditions. Based upon an average Koc of 1600, alpha-TNT is expected to maintain low soil mobility and to a certain extent partition to sediments and particulate matter in the water column. Photolysis studies comparing river waters and distilled water have shown that the rate of alpha-TNT photolysis is directly related to increases in pH and organic matter content and increases overtime due to increased products of photolysis. Evidence also suggests that photochemical reactions of alpha-TNT may play a more important role in surface soils and environmental waters than does biotransformation. The vapor-phase reaction of alpha-TNT with photochemically produced hydroxyl radicals should be slow (half-life of about 110 days). Occupational exposure may be possible through inhalation and dermal contact at sites of its manufacture and use as a military explosive and propellant. (SRC) [CITATION] \*\*PEER REVIEWED\*\*

### ARTIFICIAL SOURCES

Clean-up water from trinitrotoluene manufacture or from loading and packing operations is comprised mainly of TNT and a few closely related compounds. This pink water can contain up to 120 mg/l TNT. After exposure to sunlight ... an intensification of color in the red or pink water /from TNT mfr or from loading and packing operations/ occurs that is accompanied by an increase in toxicity and chemical stability. [Parr, J.F., P.B. Marsh, and J.M. Kla (eds.). Land Treatment of Hazardous Wastes. Park Ridge, New Jersey: Noyes Data Corporation, 1983., p. 297] \*\*PEER REVIEWED\*\*

### ARTIFICIAL SOURCES