

2, 4, 6-Trinitrotoluene (TNT)

This is a compilation of all positive and null cancer epidemiology studies and animal cancer bioassays identified during the preliminary toxicological evaluation of 2,4,6-trinitrotoluene (TNT), as well as some genotoxicity studies and reviews. TNT is used as a high explosive in military and industrial applications. Exposure to TNT may occur during its production, in munitions manufacture and loading, and during blasting operations. Exposure to water or soil contaminated by discarded munitions or manufacturing waste may also occur.

Epidemiological data

Residential exposure in an area with severe soil and water contamination by TNT due to manufacture of explosives

- Case-control study of leukemia: Kilian *et al.* (2001)
- Descriptive study of leukemia: Kolb *et al.* (1993)

Occupational exposure of male ordnance factory workers

- Case-control study of hematological abnormalities: West and Stafford (1997)

Animal carcinogenicity data

Two-year animal bioassays of TNT in diet

- Fischer 344 rats: Army (1984a)
- B6C3F₁ mice: Army (1984b)

Other relevant data

- Genotoxicity evidence, a review and some examples:
 - IARC (1996) genetic toxicity summary table
 - Frameshift mutagen in *Salmonella* strain TA-98 & TA100 (Won *et al.*, 1976; Tan *et al.*, 1992)
 - Mouse lymphoma gene mutation assay (Styles and Cross, 1983)
 - Chinese hamster ovary cell mutation assay (Kennel *et al.*, 2000).
 - Chromosomal aberrations in exposed workers carrying the *NAT1* rapid acetylator genotype (Sabbioni *et al.*, 2007)
- Hemoglobin adducts
 - Health effects in exposed workers (Sabbioni *et al.*, 2005)
 - Biomarkers of exposure (Liu *et al.*, 1995; Sabbioni *et al.*, 2006)
- Reviews
 - Bolt *et al.* (2006)
 - IARC (1996) [IARC's review did not include the animal bioassays of Army (1984a, 1984b) or the case control studies of West and Stafford (1997) and Kilian *et al.* (2001).]

References¹

Army (1984a). Determination of the chronic mammalian toxicological effects of TNT: Twenty-four month chronic toxicity/carcinogenicity study of trinitrotoluene (TNT) in the Fischer 344 rat. Final report: Phase III. Contract no. DAMD17-79-C-9120. Frederick MD: U.S. Army Medical Research and Development Command, Fort Detrick. Document no. AD-A168 637.

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¹ Copies of these listed references, as either the abstract or the complete publication, have been provided to members of the Carcinogen Identification Committee. The abstracts or papers have been provided in the order in which they are discussed in this document; they have not been ordered alphabetically.

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