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:
  o IARC (1996) genetic toxicity summary table
  o Frameshift mutagen in *Salmonella* strain TA-98 & TA100 (Won et al., 1976; Tan et al., 1992)
  o Mouse lymphoma gene mutation assay (Styles and Cross, 1983)
  o Chinese hamster ovary cell mutation assay (Kennel et al., 2000).
  o Chromosomal aberrations in exposed workers carrying the *NAT1* rapid acylator genotype (Sabbioni et al., 2007)

- Hemoglobin adducts
  o Health effects in exposed workers (Sabbioni et al., 2005)
  o Biomarkers of exposure (Liu et al., 1995; Sabbioni et al., 2006)

- Reviews
  o Bolt et al. (2006)
  o 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).]
References


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.


