

CAS 13674-87-8

Substance Name Tris (1,3-dichloro-2-propyl) phosphate (TDCPP)

Toxicity

Tris (1,3-dichloro-2-propyl) phosphate (TDCPP) is considered a carcinogen by California Environmental Protection Agency (EPA), Office of Environmental Health Hazard Assessment.¹ Evidence of carcinogenicity includes increased incidence of liver and kidney tumors in male and female rats, and testicular tumors in male rats.² TDCPP is metabolized in the body to several compounds that are also considered carcinogenic.² TDCPP is associated with other health effects including: kidney and testicular abnormalities, changes in blood parameters, and an increase in thyroid, kidney, and liver weights in rodents.³

Exposure

TDCPP is a widely used chemical and is added to polyurethane foams as a flame retardant.³ Frequent detection of TDCPP was reported in a study of children's products, including car seats, changing table pads, portable mattresses, nursing pillows, and high chairs.⁴ Testing by the Dutch government detected TDCPP in one out of seven samples of polyurethane in children's toys.⁵ TDCPP is not chemically bound to polyurethane foam and over time it can escape and contaminate indoor air and house dust. TDCPP was detected in 96% of house dust samples in a study of 50 homes in Boston⁶ and detected in 100% of 16 homes tested in San Francisco in 2006 and again in 2011.⁷ Children may be exposed to TDCPP directly by touching or sucking treated products or indirectly by inhaling or ingesting house dust.

References

1. California EPA, Office of Environmental Health Hazard Assessment. List of Chemicals Known to the State to Cause Cancer or Reproductive Toxicity. March 16, 2012.
2. California EPA, Office of Environmental Health Hazard Assessment. Evidence on the Carcinogenicity of Tris (1,3-dichloro-2-propyl) phosphate. July 2011.
3. U.S. DHHS, Agency for Toxic Substances & Disease Registry, Toxicological Profile for Phosphate Ester Flame Retardants. September 2012.
<http://www.atsdr.cdc.gov/toxprofiles/tp.asp?id=1119&tid=239>
4. Stapleton, H. et al. (2011) Identification of flame retardants in polyurethane foam collected from baby products. *J Environ Sci Technol* 45: 5323 – 5331.
5. Dutch inspectorate for Health Protection and Veterinary Public Health (VWA/KvW). Screening of Plastic Toys for Chemical Composition and Hazards, Report ND05o610/01, July 2005.
6. Stapleton, H. et al. (2009) Detection of organophosphate flame retardants in furniture foam and U.S. house dust. *J Environ Sci & Technol* 43(19): 7490-7495.
7. Dodson, R. et al. (2012) After the PBDE phase-out: a broad suite of flame retardants in repeat house dust samples from California. *J Environ Sci & Technol* 46: 13056-13066.