

CAS 115-96-8

Substance name Tris (2-chloroethyl) phosphate (TCEP)

Toxicity

Tris(2-chloroethyl) phosphate is classified as a carcinogen by the state of California and a reproductive hazard by the European Union.^{1,2} TCEP caused kidney tumors and cancers in rats and mice in studies conducted by the National Toxicology Program.³ In studies reviewed by the European Union, TCEP caused significant impairment of fertility and adverse effects in male reproductive organs and sperm parameters.²

Exposure

TCEP has been used as an additive plasticizer and viscosity regulator with flame-retarding properties for polyesters, polyurethane, polyvinyl chloride and other polymers.⁴ TCEP can be released from items treated with TCEP flame retardant such as foam rubber, carpets, and plastic materials as a result of abrasion.² TCEP was detected in the foam and covering fabric of a foam play cube in testing of toys by the Danish EPA.⁵ In a study by the Netherlands Government, TCEP was detected in ethylene vinyl acetate and polyurethane plastics in toys that are likely to be sucked by children under two years old.⁶ TCEP production and use have reportedly declined since other flame retardants were adopted for rigid and flexible polyurethane foams.²

References

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2. European Commission Joint Research Centre: Institute for Health and Consumer Protection, European Union Risk Assessment Report for TRIS (2-CHLOROETHYL) PHOSPHATE, TCEP. July 2009.
http://ecb.jrc.ec.europa.eu/DOCUMENTS/Existing-Chemicals/RISK_ASSESSMENT/REPORT/tcepreport068.pdf.
3. NTP (1991). National Toxicology Program: Technical report series No. 391. "Toxicology and carcinogenesis studies of tris(2-chloroethyl)phosphate (CAS No. 115-96-8) in F344/N rats and B6C3F1 mice (gavage studies)", US Department of Health and Human Services.
4. National Institutes of Health, National Library of Medicine Hazardous Substances Data Bank
<http://toxnet.nlm.nih.gov/cgi-bin/sis/htmlgen?HSDB> Accessed May 2010.
5. Danish Ministry of the Environment, Environmental Protection Agency. Surveys on Chemicals in Consumer Products. Report. http://www.mst.dk/English/Chemicals/Consumer_Products/Surveys-on-chemicals-in-consumer-products.htm.
6. 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.