VERMONT DEPARTMENT OF HEALTH

Tris(2-chloroethyl) Phosphate (TCEP)

C₆H₁₂Cl₃O₄P

Summary of Health Effects

Tris(2-chloroethyl) phosphate (TCEP) may cause cancer in humans and can affect the reproductive system of animals.

How is TCEP used?

It is used as a flame retardant, and as plasticizer in materials including polyvinyl chloride (PVC), polyurethane, and polyesters.¹

Toxicity: What are its health effects?

TCEP is listed as a carcinogen on California's Proposition 65 list.²

Based on available animal data, the European Union has identified TCEP as a reproductive toxicant that poses significant risk to fertility.³ Studies have shown that TCEP is well absorbed and distributed in rats following oral administration.³

Exposure: How can a person come in contact with it?

A person can come in contact with TCEP by breathing it in, swallowing contaminated food,

drinking contaminated water, or from skin contact with consumer products.¹

As a result of abrasion, products—such as foam, rubber, carpets, plastic materials—that have been treated with flame retardants can release TCEP into the air or onto contact surfaces, and ultimately accumulate in house dust. ³

Monitoring data indicate that the general population may be exposed to TCEP via inhalation, ingestion, drinking water, and skin absorption.¹

The 2014 National Health and Nutrition Examination Survey (NHANES) report did not include data for TCEP.

Other Information

Vermont currently prohibits the manufacture, sale, or distribution of any children's product or residential upholstered furniture with concentrations of TCEP higher than 0.1% (1,000 parts per million) by weight.⁴

References

- 1. U.S. National Library of Medicine (2015). *Hazardous Substances Data Bank (HSDB) for Tris(2-chloroethyl) phosphate (CASRN 115-96-8).* Retrieved October 16, 2018, from toxnet.nlm.nih.gov/newtoxnet/hsdb.htm
- 2. California Environmental Protection Agency, Office of Environmental Health Hazard Assessment. *List of chemicals known to the state to cause cancer or reproductive toxicity*. Retrieved May 25, 2018, from oehha.ca.gov/proposition-65/proposition-65-list
- 3. European Chemicals Agency (2009). European Union risk assessment report: Tris(2-Chloroethyl) phosphate, TCEP. Retrieved from echa.europa.eu/documents/10162/2663989d-1795-44a1-8f50-153a81133258
- 4. Vermont General Assembly. Vermont Statutes Online. 9 V.S.A. Chapter 80 §2974. Retrieved from legislature.vermont.gov/statutes/fullchapter/09/080