



September 7, 2011

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Proposition 65 Implementation
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Submitted via email: coshita@oehha.ca.gov

Re: Comments on the Hazard Identification document entitled, “Evidence of the Carcinogenicity Of Tris(1,3-dichloro-2-propyl) phosphate (TDCPP).”

Dear OEHHA and members of the CIC,

The following comments are submitted on behalf of the Natural Resources Defense Council (NRDC), a non-profit organization with over 1.3 million members and activists, 250,000 of whom are Californians. NRDC has no financial interest in TDCPP or any other flame retardant chemicals.

NRDC would like to commend OEHHA staff on writing a very clear and scientifically robust hazard identification document on TDCPP carcinogenicity. Based on these materials, **we support the listing of Tris(1,3-dichloro-2-propyl) phosphate(TDCPP) on the Prop 65 list as a carcinogen.** TDCPP meets all the necessary criteria for this listing.

Background.

TDCPP is a flame retardant used in polyurethane foam, plastics, resins and in backcoating of fabrics. TDCPP was used briefly in children’s sleepwear but was withdrawn from use for that application in 1977.

However, though TDCPP is no longer used in children’s pajamas, it is now being used a replacement for the banned flame retardants, such as the PBDEs, in furniture foam and other polyurethane products. TDCPP has been detected in about 50% of furniture foam and in over 96% of house dust samples in the Boston, MA area.ⁱ Dust is considered to be a major source of exposure to flame retardants and it is therefore likely that many people are exposed to this chemical. In addition, TDCPP was detected in some water samples from 139 streams across the United States, including some in Californiaⁱⁱ.

OEHHA and the CIC should consider children's products as an additional source of exposure.

In addition to the sources of exposure identified by OEHHA, new research published in May 2011, has found that TDCPP is also widely used in children's products. A copy of this studyⁱⁱⁱ, "Identification of Flame Retardants in Polyurethane Foam Collected from Baby Products" by Stapleton, *et al.*, is attached with our comments. This study analyzed flame retardant content in over 100 baby products such as nursing pillows, baby carriers, car seats, high chairs, strollers, bassinets, portable cribs, walkers, changing pads, bath slings, rocking chairs, and other child care items. TDCPP was the most frequently detected flame retardant, found in 36% of the samples and was found in nearly all categories of children's products.

Though there is limited biomonitoring information available on levels of exposure to TDCPP young children, it is quite likely that the widespread use of TDCPP in children's products, especially those that children spend a significant amount of time in or on, are a major source of exposure to these chemicals. We know that flame retardants like TDCPP are frequently found in house dust as a result of chemical migration from product into air. Because children spend most of their time near the floor or in products where small particles of dust will accumulate, their exposure to TDCPP will be higher than adults. This is deeply concerning considering that children's bodies are rapidly growing and developing and they are more vulnerable to exposure to carcinogens.

TDCPP meets the necessary criteria for listing on Prop 65 as a carcinogen.

As OEHHA staff have clearly laid out in the hazard identification document, TDCPP has evidence of both *in vitro* and *in vivo* carcinogenicity in multiple test systems and should be recognized by the CIC and the state of California as a carcinogen.

TDCPP was found to have genotoxic effects in six different *in vitro* tests of mammalian and non-mammalian test systems. In addition, TDCPP was found to induce pre-neoplastic lesions, benign and malignant tumors in both male and female rats at multiple sites. Finally, several of the metabolic breakdown products of TDCPP are also carcinogenic and four of them (1,3-DCP, 3-MCPD, epichlorohydrin, and glycidol) are already listed on Prop 65 as carcinogens.

Furthermore, TDCPP is structurally similar to two other halogenated phosphate trimeric carcinogens, TDBPP (brominated Tris) and tris (2-chloroethyl) phosphate (TCEP), which are both listed as causing cancer under Proposition 65.

Though the European Union has classified TDCPP as having "limited evidence of a carcinogenic effect", this risk assessment lacked recently measured data on TDCPP exposure, including children's exposure to TDCPP from use of baby products. Therefore, this assessment will be of limited use in the committee's consideration on listing TDCPP.

TDCPP has not previously been evaluated for cancer classification by any authoritative body recognized by Prop 65. This is an excellent example of a chemical where a gap in scientific evaluation exists and where committees with relevant expertise, such as the CIC should step in. OEHHA staff have prepared a clear and scientifically robust document which supports the listing of this chemical as a carcinogen on the Prop 65 list and we encourage you to also support this listing.

Thank you for the opportunity to comment.

Sincerely,

A handwritten signature in black ink that reads "Sarah Janssen". The signature is written in a cursive, flowing style.

Sarah Janssen, MD, PhD, MPH
Senior Scientist
Natural Resources Defense Council

ⁱ Stapleton, H. M., S. Klosterhaus, et al. (2009). "Detection of Organophosphate Flame Retardants in Furniture Foam and U.S. House Dust." Environmental Science & Technology **43**(19): 7490-7495.

ⁱⁱ Kolpin, D. W., E. T. Furlong, et al. (2002). "Pharmaceuticals, hormones, and other organic wastewater contaminants in U.S. streams, 1999-2000: a national reconnaissance." Environ Sci Technol **36**(6): 1202-1211.

ⁱⁱⁱ Stapleton, H. M., S. Klosterhaus, et al. (2011). "Identification of Flame Retardants in Polyurethane Foam Collected from Baby Products." Environ Sci Technol **45**(12): 5323-5331.