FINAL

**Acute Neurobehavioral Toxicity of Flame Retardant Replacement Compounds in Zebrafish Larvae.** Rachel M. Shaffer[1,2], Kimberly A. Jarema[2], Deborah L. Hunter[2], and Stephanie Padilla[2], [1]Curriculum in Toxicology, UNC-CH, School of Medicine, Chapel Hill, NC, USA; National Health and Environmental Effects Research Laboratory, U.S. Environmental Protection Agency, Research Triangle Park, NC, USA.

As polybrominated diphenyl ethers (PBDEs) are phased out, numerous compounds are emerging as potential replacement flame retardants for use in consumer and electronic products. Little is known, however, about the neurobehavioral toxicity of these replacements. This study evaluated the acute neurobehavioral effects of *t*-butylphenyl diphenyl phosphate (BPDP), 2-ethylhexyl diphenyl phosphate (EHDP), isodecyl diphenyl phosphate (IDDP), isopropylated phenyl phosphate (IPP), tricresyl phosphate (TMPP), triphenyl phosphate (TPHP), tetrabromobisphenol A (TBBPA), tris (2-chloroethyl) phosphate (TCEP), tris (1,3-dichloroisopropyl) phosphate (TDCIPP), tri-*o*-cresyl phosphate (TOCP), and 2,2-,4,4'-tetrabromodiphenyl ether (BDE-47) in zebrafish (*Danio rerio*) larvae. Larvae were exposed to test compounds (dose-response; varying doses between 0.4 - 120 μM ; n≈24 larvae per dose per compound) at 6 days post fertilization, and locomotor activity was assessed using automated video tracking in 96-well microtiter plates during three sequential dark/light/dark test periods beginning 30 minutes after chemical exposure. All compounds produced changes in activity, usually manifested as hypoactivity in the dark periods and hyperactivity in the light periods. Across all doses and time periods, PBDE-47 and TCEP produced the weakest acute effects, while EHDP, IPP, EPHP, and TBBPA produced the strongest effects. These data indicate that acute exposure to selected flame retardant replacement candidates alters swimming behavior in young zebrafish. *This abstract may not necessarily reflect official Agency policy.*