October 14, 2014

I, Ted Schettler, am writing this statement in support of the Petition to the CPSC to regulate four categories of household products containing non-polymeric additive organohalogen flame retardants.

1. I, Ted Schettler MD, MPH am a physician and the Science Director of the Science and Environmental Health Network. I also serve as Science Director of the Collaborative on Health and Environment (CHE) and am a science advisor to the Health Care Without Harm (HCWH) campaign. I have a medical degree from Case Western Reserve University and a Masters in Public Health from Harvard University. I am co-author of "Generations at Risk: Reproductive Health and the Environment"; "In Harm's Way: Toxic Threats to Child Development"; and "Environmental Threats to Healthy Aging." I am also the author of "The Ecology of Breast Cancer: The Promise of Prevention and the Hope for Healing". I have published a number of articles in peer-reviewed scientific journals. I served on the U. S. Environmental Protection Agency's (EPA) Endocrine Disruptor Screening and Testing Advisory Committee (EDSTAC) and the National Academy of Sciences' committee on defining concerns associated with products of animal biotechnology.

2. In collaboration with organizations in the US and internationally, I have addressed many aspects of the relationship between environmental exposures and human health. I am an active contributor to HCWH's international campaign on improving the environmental performance of healthcare institutions. HCWH has had great success in helping to reduce the emissions of dioxin and mercury from health care institutional materials management practices, and we are working to reduce the use of organohalogen flame retardants in materials and products purchased by those institutions.

3. Organohalogen flame retardants are of considerable concern because of their persistence, toxicity, tendency of many to bioaccumulate, and long-range transport. Many of these chemicals have been incorporated into consumer products and are being released from them into indoor and outdoor environments, resulting in exposures to humans and wildlife.[1] In general, halogenated organic molecules (i) are more resistant to metabolic break down, (ii) cross biologic membranes more readily, and (iii) gain access to cells and tissues more readily than non-halogenated compounds. Because of this, virtually all halogenated flame retardants have adverse impacts when they interact with cells and

tissues of living organisms. Virtually all organohalogen flame retardants studied for their toxic properties have health effects at varying levels of exposure, including adverse impacts on brain development in children,[2] adverse impacts on reproduction,[3] endocrine disruption,[4] immune suppression,[5,6] and/or cancer.

4. Widespread human and wildlife exposures to flame retardants are well documented. Humans are exposed to organohalogen flame retardants mainly through inhalation or ingestion of dust particles containing these chemicals[7] and ingestion of food that has been contaminated with these chemicals[8]. Fetuses are exposed to these chemicals by transplacental transport, and infants are also exposed through ingestion of contaminated breast milk.

5. As a physician, I am particularly concerned about the health effects of organohalogen flame retardants on developing children. In 2010, in invited testimony before the U.S. Senate Committee on Environment and Public Works[9], I described windows of vulnerability and unique susceptibility to hazardous environmental exposures during *in utero* development, infancy, and childhood. Those exposures may result in adverse health outcomes with lifelong consequences. For example, ample scientific evidence confirms the unique susceptibility of the developing brain to chemical exposures that can disrupt one or more of a number of biologic processes that must proceed in an orderly fashion as brain architecture and chemistry are established throughout pregnancy, infancy, and childhood.[10] Studies have shown that exposure to polybrominated diphenyl ethers during critical windows of brain development can result in adverse impacts on multiple measures of brain function in childhood, including impaired learning and memory.[11,12] As replacement organohalogen flame retardants are slowly tested, their toxicity, too, becomes increasingly clear.

6. This combination of circumstances – biologically active compounds, increased resistance to biologic degradation, ready access to biologic tissues, and widespread exposure – justifies evaluation of organohalogen flame retardants as a class and replacement with safer alternatives.

Yours sincerely,

Ted Schettler, MD MPH

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