

**American Chemical Society Green Chemistry Institute**  
*17<sup>th</sup> Annual Green Chemistry and Engineering Conference*

*Proposed Session*

*June 18-20, 2013*

**Elimination of PCB from Pigments, Inks, and Dyes**

The challenge of reducing Polychlorinated Biphenyls (PCBs) at the source is a national, even global issue. PCBs are globally transported, do not easily degrade, and bioaccumulate in the food chain. The EPA National Listing of Fish Advisories lists more than 1200 waterbodies in the United States where the PCB concentrations in fish render it unsafe to eat. There is also mounting evidence that even low levels of persistent chemicals have negative biological impacts of endocrine and neurological systems.

PCBs are ubiquitous in the environment, not only as the result of legacy uses of Aroclors but, significantly, from residual PCBs that are still being legally produced as “inadvertent contaminants” in industrial processes. A specific example is PCBs in pigments used in inks, dyes, and other products.

The EPA water quality standard for PCB under the National Toxics Program is 170 parts per quadrillion and is based on a fish consumption standard. States and Tribes can set stricter standards. For example, the water quality standard for the Spokane River, as set by the Spokane Tribe of Indians, is 3.4 parts per quadrillion. This is 15 billion orders of magnitude smaller than the EPA’s regulatory limit of 50 ppm for inadvertently produced PCB. Until PCB is controlled at the source, the cost of removing PCB from wastewater is borne by industries and the public as expensive end-of-pipe treatment.

The purpose of this session is to provide historical and regulatory context to the issue, describe the changes, challenges, and solutions needed for effective source control of PCB. The goal is to provide insight into the design of PCB free pigments that meet green chemistry principles, and to outline a transition path from research to development to market: the mechanisms, barriers, and implementation.