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**FATE AND TRANSPORT OF PCBs AND OTHER ORGANOHALIDES IN THE
LOWER MIDDLE GILA RIVER AND PAINTED ROCKS BORROW PIT LAKE**

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ABSTRACT: The Phoenix Metropolitan Area and the cotton growing regions to the southwest of it drain into the Lower Middle Gila River. Painted Rocks Reservoir Dam near Gila Bend, Arizona is an earthen flood control structure built from a downstream borrow-pit that formed Painted Rocks Borrow Pit Lake (PRBPL). PRBPL retained water for years and became a recreation site until the Arizona Department of Environmental Quality (ADEQ) determined that fish and other aquatic organisms in the lake were highly contaminated with organohalide pollutants. These organohalides included PCBs, DDT and other pesticides that had been common to cotton agriculture in the area. In 1992-1994, the ADEQ initiated a study to assess the lake and watershed sources of the organohalide-contaminated PRBPL biota. The ADEQ contracted with The Earth Technology Corporation (TETC) to conduct a fate and transport study on organohalides in the lake and in the Lower Middle Gila Water watershed upstream. The author was employed by TETC and directly participated in the whole study. This study simultaneously became the author's practicum project for his Masters degree in Environmental Technology from Arizona State University. The study showed that the many PRBPL sediments samples collected all across the lake with a Vibrocore system nearly all had non-detectable levels of organohalides. The study also showed that nearly all of the many sediments samples collected with hollow stem auger drilling rigs and other near surface sampling techniques at many locations in the upstream watershed had only non-detectable levels of organohalides. The few sediment samples that had only very low levels of organohalides below method detection limits (estimated "j" values) were several orders of magnitude lower than the levels in biota tissues. This suggested that the biota had strongly biomagnified contaminant levels in their tissues, especially in their lipids (fats). Organohalides such as PCBs are lipophilic and hydrophobic.

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