

Deposition of Airborne Toxic Substances to Lake Erie.

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The Great Lakes Water Quality Agreement includes Annex 15, which requires Canada and the United States to operate a network of atmospheric sampling sites within the basin. The purpose is to provide data to assess the atmospheric loadings of toxic chemicals to the lakes. The Lake Erie station is at Sturgeon Point, 40 km southwest of Buffalo, NY. Air samples have been collected there since 1992 (1:12 d) along with wet deposition (rain/snow, 4 week cycle). Some 20 organochlorine pesticides and nearly 100 PCB congeners are determined. An early mass balance assessment for Lake Erie with pre-1986 data indicated that wet plus dry deposition loadings of PCBs and DDT were 182 and 33 kg/year, respectively; the vapour phase contribution was a net loss from the lake of 1100 and 213 kg. Data quality at the time was debatable. More recent estimates place total deposition at 58 and 71 kg with the volatilization of PCBs at 390 kg and absorption of DDT at 39 kg. These two analytes are presented here only as representational of the data although earlier databases are weak. These loadings will be discussed in the context of the total loadings to the lake and compared with other Great Lakes for which the data bases are more complete.