

MICHIGAN STATEWIDE INLAND WATERS POLYCHLORINATED BIPHENYL (PCB) TOTAL MAXIMUM DAILY LOAD (TMDL)

Michigan Statewide PCB TMDL Fact Sheet



Introduction

Due to the widespread impairment of Michigan's waters from polychlorinated biphenyls (PCBs), a statewide TMDL has been developed for inland waters primarily impacted by atmospheric deposition by providing the pollutant reductions necessary to attain water quality standards (WQS). Section 303(d) of the Federal Clean Water Act requires states to develop Total Maximum Daily Loads (TMDLs) for waters not meeting WQS. PCBs are now banned due to their toxic properties, but previously were used for insulation and chemical stability. PCBs concentrate in fatty tissues of organisms and bioaccumulate in living tissues. Overall, PCB concentrations in fish tissue and air are decreasing across Michigan; however, PCBs remain in the environment in soil, water, air, animal tissue, and vegetation (Figure 1).

Michigan Inland Waters

This TMDL focuses on inland waters impaired by atmospheric deposition of PCBs and does not include the Great Lakes, waters influenced by the Great Lakes, or PCB legacy sites.

Numeric TMDL Target

TMDLs are established to ensure attainment of the applicable WQS, including designated uses, numeric and narrative criteria, and antidegradation policy. A fish tissue residue value (0.023 mg/kg) is used as the target for this TMDL since the consumption of fish by humans and wildlife is the most significant route of exposure. Lake trout were selected to determine PCB load reductions, and resulting compliance since they are a top predator fish and a preferred sport fish in Michigan.

PCB Reductions

The current statewide average atmospheric PCB concentration is 0.115 ng/m³, while the allowable PCB load is 0.007 ng/m³. A reduction of 94% in anthropogenic emissions is required to achieve this goal. This reduction equates to a 45% reduction for in-state sources and a 55% reduction for out-of-state sources. The current wasteload allocation is 1.57E-06 lbs/day and the maximum daily load allocation is 0.034 ng/m³ (Table 1).

TMDL Components

Target Fish Tissue Residue Value:

0.023 mg/kg

Current Statewide PCB Concentration:

0.115 ng/m³

Allowable PCB Load:

0.007 ng/m³

Required PCB Reduction:

94%

Next Steps

The TMDL implementation will occur through existing programs within the DEQ including National Pollutant Discharge Elimination System (NPDES) permits for point source discharges, the Integrated Atmospheric Deposition Network (IADN) for nonpoint source control programs to achieve the necessary pollutant reductions, and the clean-up of legacy sources.

*For more information,
the Michigan Statewide PCB TMDL is available at*

www.michigan.gov/tmdl

or contact Marcy Knoll Wilmes

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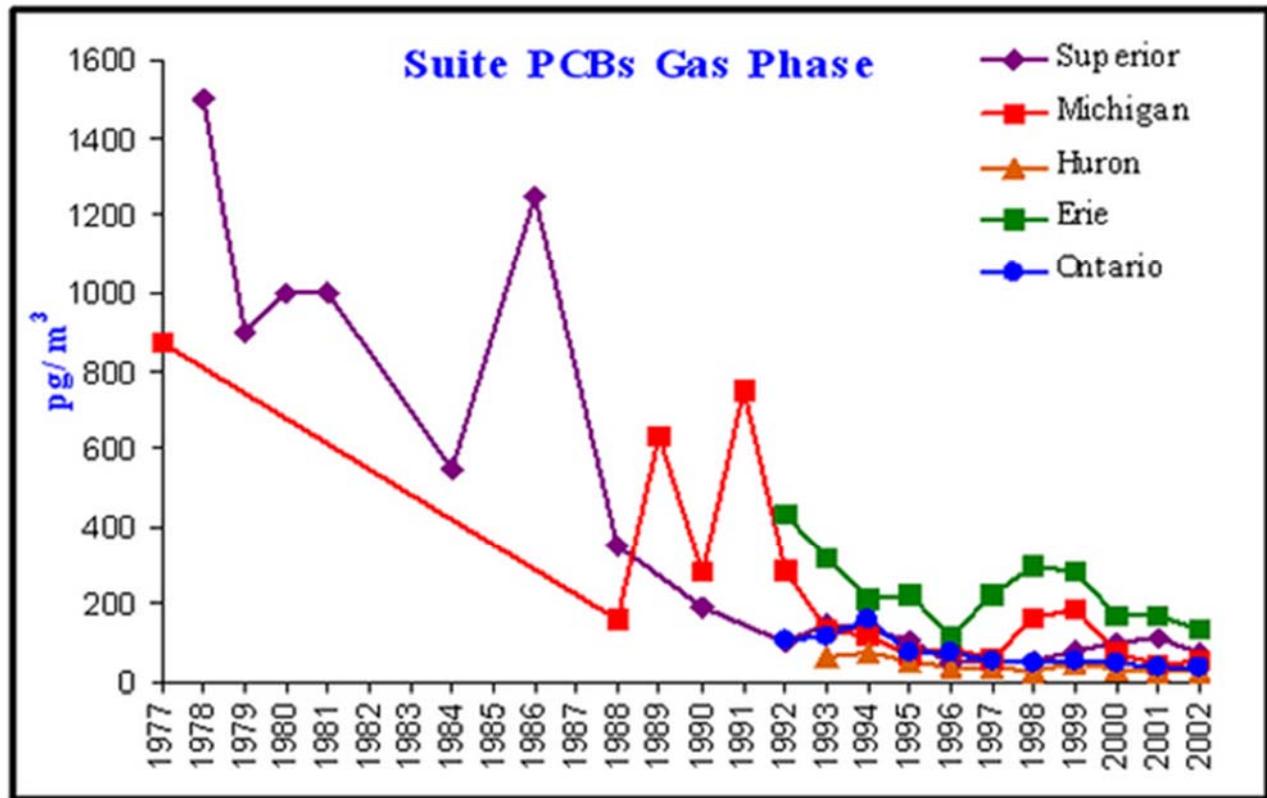


Figure 1. Time Trend of PCB gas phase atmospheric concentrations at Great Lakes IADN Stations (Source: USEPA, 2012)

Table 1. Summary of Michigan's Statewide PCB TMDL

TMDL Components	Units	Statewide
Target Level and Reduction Factor		
Target Fish PCB Concentration (Fish Tissue Residue Value)	mg/kg	0.023
Current PCB Concentration for Standard Length Lake Trout	mg/kg	0.378
Reduction Factor	94%	
PCB Load for Baseline Year 2010		
Point Source Load	lbs/day	1.57E-06
Maximum Daily Nonpoint Source Concentration	ng/m ³	0.571
Final TMDL		
Margin of Safety	Implicit	
Wasteload Allocation (WLA)	lbs/day	1.57E-06
Load Allocation (LA) (Maximum Daily Concentration Used as a Surrogate)	ng/m ³	0.034
PCB Load Allocation for In-State and Out-of-State Deposition Sources		
In-State Contribution to LA	45%	
Out-of-State Contribution to LA	55%	
Necessary Reduction from Anthropogenic Emission Sources for both In-State and Out-of-State Contribution	94%	