

## Great Lakes Regional Collaboration Toxic Pollutant Strategy

### I. Problem Statement

While certain persistent toxic substances (PTS) have been significantly reduced in the Great Lakes Basin Ecosystem over the past 30 years, they continue to be present at levels that pose threats to human and wildlife health and warrant fish consumption advisories in all five lakes. PTS releases from contaminated bottom sediments, various industrial processes, and non-point sources, loadings from atmospheric deposition and continuous cycling of PTS within the Great Lakes themselves, all contribute to this ongoing problem. More recently, researchers have documented the presence of additional chemicals of emerging concern that may also pose threats to the Great Lakes. Characteristics of these substances, such as sources, volume of releases, fate, transport, persistence, bioaccumulation, and toxicity, must be better understood.

### II. Goals

To establish and maintain the chemical integrity of the Great Lakes Basin Ecosystem, as called for in the Great Lakes Water Quality Agreement, this Strategy sets forth the following goals<sup>1</sup>:

- Virtually eliminate the discharge of any or all persistent toxic substances (PTS) to the Great Lakes Basin Ecosystem.
- Prevent the discharge of toxic substances in toxic amounts.
- Reduce environmental levels of toxic chemicals to the point that all restrictions on the consumption of Great Lakes fish can be lifted.
- Significantly reduce exposure to persistent toxic chemicals from historically contaminated sources by relying on source remediation and exposure reduction.
- Protect the general public from toxic substances through effective outreach and education, including protective fish consumption advice throughout the Great Lakes Basin Ecosystem.
- Protect the health and integrity of wildlife populations and habitat from adverse chemical and biological effects associated with the release of PTS.
- Identify and fill the gaps in our scientific understanding that limit our ability to effectively manage the risks of toxic substances found in the Great Lakes.

### III. Key Recommendations

This Strategy seeks to comprehensively address PTS issues in the Great Lakes, to 1) reduce and virtually eliminate sources of current priority pollutants, 2) prevent new chemical threats from entering the basin, 3) develop a sufficient knowledge base to address toxic chemicals in the Great Lakes environment, 4) protect public health and engage the public to do its part in reducing PTS sources, and 5) address international sources. The recommendations below are guided by a number of important principles. Historically, collaborative efforts within the Great Lakes Basin to address PTS reduction have served as a model for statewide, national, and international efforts. These efforts provide a strong foundation for further endeavors. In particular, the

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<sup>1</sup> Note that milestones are included as results under each of the five recommendations below.

principles, tenets and concepts embodied in the Great Lakes Binational Toxics Strategy (GLBTS) are incorporated here as the starting point for the Toxic Pollutant Strategy. This Strategy also builds on the efforts of the Lakewide Management Plans (LaMPs) to help implement lake-specific high priority chemical reduction efforts, and on recommendations from Remedial Action Plans to address beneficial uses impaired by PTS in Areas of Concern.

Effective and meaningful PTS reductions require both regulatory and non-regulatory approaches. Existing regulatory programs, particularly Federal and State permitting and enforcement, must be adequately funded and implemented. For example, the Great Lakes Initiative is a critical program to protecting the basin from chemical threats. Non-regulatory approaches can sometimes achieve results quickly and are encouraged to the maximum extent practicable, but where necessary, new regulatory approaches must also be considered. Finally, significant amounts of PTS depose to the Great Lakes from international sources that must be addressed, along with regional sources. Five key recommendations are presented below<sup>2</sup>:

**1) Finish the Job on Priority Pollutants: Under the GLBTS, Reduce and Virtually Eliminate the Principal Sources of Mercury, PCBs, Dioxins and Furans, Pesticides and other Toxic Substances that Threaten the Great Lakes Basin Ecosystem, through Coordinated Intergovernmental Strategies.**

Principal sources of priority pollutants which continue to threaten the health of the Great Lakes and drive fish consumption advisories, should be systematically reduced and virtually eliminated:<sup>3</sup>

***Mercury***

Coal fired electric utilities constitute the largest remaining domestic source of mercury emissions. Utility sources must implement control measures to reduce these emissions.<sup>4</sup> Mercury is still used in numerous products basin-wide. A basin-wide mercury product stewardship strategy should be developed to complete phase-outs of mercury uses, as practicable.

***PCBs***

Consistent with the Stockholm Convention on Persistent Organic Pollutants, PCB-containing electrical equipment should be decommissioned and properly disposed.

***Dioxins and Furans***

Uncontrolled burning of household garbage constitutes the largest known source of dioxins and furans to the Great Lakes. Where deficiencies exist in any communities the Great Lakes Basin either in the infrastructure to support garbage collection or enforcement to stop illegal burning, these should be addressed.

***Cancelled Pesticides***

State, tribal and local waste pesticide collection efforts are very productive in reducing stockpiled sources of cancelled pesticides to the Great Lakes, but these programs are only intermittently supported. Each State should implement a robust and ongoing waste pesticide collection program.

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<sup>2</sup> Note that there is a matrix of all recommendations of the PBT Team included in the appendix. The recommendations included here are considered first priorities.

<sup>3</sup> A comprehensive list of priority pollutants, sources and reduction activities may be found in the 2004 GLBTS Annual Report.

<sup>4</sup> A Federal Rule promulgated under Section 111 of the Clean Air Act requires that the cumulative mercury emissions be reduced 21% by 2010, from 48 tons to 38 tons per year and 70% by 2018, to 15 tons per year (1999 baseline). This rule also provides the flexibility for Great Lakes States, individually or collectively, to implement deeper cuts in mercury emissions, as warranted.

**Implementation:** The GLBTS in a coordinating role, LaMP chemical committees, EPA, state environment and agriculture agencies; municipalities, and industry.

**Results:** By 2018, at least 70% reduction in mercury emissions from coal utilities.  
 By 2015, full phase-outs of mercury bearing products, as possible.<sup>5</sup>  
 By 2025, full phase-out of all PCB equipment in the basin.  
 By 2010, 50% reduction in Basin-wide burning.  
 By 2008, collect 1MM lbs waste pesticides per year.

**Costs:** \$10M – Garbage Collection, \$8M/year – Clean Sweeps

**2) Prevent New Toxic Chemicals from Entering the Great Lakes Basin: Target Production, Use and Sound Disposal of Toxic Chemicals across the Great Lakes Basin through Strategic Deployment of Pollution Prevention and Waste Minimization Programs.**

Preventing new toxic substances from entering into the Great Lakes is as important to protecting ecosystem health as addressing current priority pollutants. EPA controls new PTSs from entering commerce under TSCA and FIFRA, using chemical screening methods. EPA’s many pollution prevention and waste minimization programs are described online at [www.epa.gov/p2](http://www.epa.gov/p2)<sup>6</sup>. These programs should be aggressively marketed and made available to Great Lakes businesses, their suppliers and customers through manufacturing assistance providers<sup>7</sup>. To provide easier access and broaden dissemination of these programs to small and medium sized businesses, states should “bundle” technical assistance services, such as compliance assistance, pollution prevention (p2) audits, and energy efficiency (E2) audits, in “one-stop-shop” programs. To promote investments in energy efficiency upgrades and pollution prevention projects, EPA should award assistance for states and other eligible entities to authorize or enhance low-interest revolving loan funds that can be coupled with technical assistance efforts to assist in the implementation of P2 and E2 measures for both private and public sector facilities. Federal and State agencies should ensure that traditional regulatory programs, including enforcement, provide incentives to conduct pollution prevention and energy efficiency projects.

**Implementation:** EPA, State Technical Assistance Providers, DOC Manufacturing Extension Partnerships, City Environmental Departments

**Results:** By 2008, include P2/E2 measures in Federal and State rule making.  
 By 2010, implement 200 P2/E2 projects for small to medium sized businesses in the Great Lakes States.

**Costs:** \$16M/yr plus \$50M Fund Capitalization

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<sup>5</sup> Examples include thermometers, thermostats, and manometers.

<sup>6</sup> EPA’s Sustainable Futures program promotes a number of innovative non-regulatory pollution prevention (P2) programs including the The PBT Profiler and Design for the Environment (DfE) which help industry screen out potential toxic substances and design safe non-toxic products, and the The Green Suppliers Network (GSN) and Environmentally Preferable Purchasing which promote PTS-free alternatives in production and purchasing. The Resource Conservation Challenge promotes a number of innovative waste minimization programs such as The Plug-In To eCycling Program, Product Stewardship Partnerships and The WasteWise Partnership Program .

<sup>7</sup> Providers include the Department of Commerce Manufacturing Extension Partnerships, State P2 technical assistance providers, and municipal environmental officials.

**3) Expanding the Knowledge Base to Manage Current and Future Problems: Institute a Comprehensive Great Lakes Research, Surveillance and Forecasting Capability to Help Identify, Manage, and Regulate<sup>8</sup> Chemical Threats to the Great Lakes Basin Ecosystem.**

To manage regulatory and voluntary PTS reduction actions, Great Lakes lawmakers, program managers, and stakeholders need a great deal of well-coordinated information. This requires a framework that monitors PTS sources, environmental conditions, tracks reduction actions, projects future trends in exposure and effects, and uses this information for decision-making. For many PTS, past and existing monitoring and research have given us a good understanding of sources, transport, and exposure pathways. However, in order to make cost-effective decisions, improved understanding of relative contributions of different sources to human exposure is also needed. This information is also needed for various geographic scales—for example, local sources may have a greater effect on exposure in a community than in the basin as a whole. To provide this information, a Great Lakes basin-wide coordinated program that incorporates and augments current efforts should be created to better characterize links between PTS sources and exposure. The multi-party program should preferably be housed within an existing program or organization and call upon the combined resources of federal agencies, States, academia, the private sector, and our Canadian neighbors. To be successful, the effort should include:

- 1. Screening/Monitoring** of PTS sources and concentrations in environmental media, including humans and wildlife. Current monitoring programs should be enhanced and coordinated.
- 2. Research**, . In particular, on chemical properties, exposure, and effects.<sup>9</sup>
- 3. Modeling**, including evaluation and enhancement of current models, to better predict environmental impacts of reduction actions at various geographic scales, examine exposure scenarios, and prioritize chemicals of emerging concern.<sup>10</sup>
- 4. Information management**. An easily-accessible, central Great Lakes PTS database.<sup>11</sup>

**Implementation:** Federal agencies, States, and academia, the GLBTS in a coordinating role.  
**Results:** By 2010, 50% of in-basin wastewater treatment plants will have a surveillance program for emerging pollutants<sup>12</sup>,  
 By 2010, put a Great Lakes human PTS biomonitoring program<sup>13</sup> in place,  
 By 2010, complete an intercomparison for mercury and PCB models,  
 By 2010, a Great Lakes PTS database in place.  
**Cost:** \$5-10 M per year.

<sup>8</sup> Regulations include development support for TMDL, criteria, and water quality standards and permit issuance.

<sup>9</sup> Expert program reviews of current regulatory and monitoring programs have defined some research needs.

<sup>10</sup> For existing GLBTS priority pollutants, models will allow tracking of progress of load reduction programs by comparison of observed system response relative to predicted response based on program-implementation projections and relative to predicted trajectory of the system with no load reduction programs (i.e., reference condition). This effort can also help prioritize ongoing remediation efforts aimed at existing in-place reservoirs of legacy PTS. For chemicals of emerging concern as identified by screening tools and source/exposure monitoring, models will allow prioritization of chemicals of emerging concern and provide insights on important sources and exposure pathways (e.g., determine source-receptor pathways, determine inter-phase and inter-lake transfer pathways, determine importance of out-of-basin sources), and project potential ecological and human health effects.

<sup>11</sup> Including a clearinghouse for toxicity data used to develop GLI criteria.

<sup>12</sup> Examples may include pharmaceuticals, personal care products, and endocrine-disrupting chemicals.

<sup>13</sup> To based on the PTS monitoring component of CDC's National Health and Nutrition Survey (NHANES)

**4) Provide the Public with Healthy and Environmentally Friendly Choices: Protect Human Health through Consistent and Easily Accessible Basin-wide Messages on Fish Consumption and Toxic Reduction Methods and Choices .**

Protecting the public from health effects of PTS exposure through fish consumption, and providing the public with information about lifestyle choices that will help reduce PTS uses and releases to the Great Lakes, requires that Federal, State and local agencies communicate a consistent set of messages. With regard to PTS exposure, the Great Lakes Sport Fish Advisory Task Force should create uniform advice on fish and wildlife consumption to citizens in the Great Lakes Basin, especially to sensitive populations, and to health care professionals, in multiple languages. Current State advisory programs should be fully funded and implemented to adequately protect the entire basin. To help the public do its part to reduce the use and release of PTS, a basin-wide public education and outreach campaign that focuses on habits of individuals, households, the workplace, and schools, should be developed in coordination with existing messages and stakeholder groups.<sup>14,15</sup> Take back programs should be promoted as well.

**Implementation:** Great Lakes Sport Fish Advisory Task Force, National Sea Grant Program, State and Tribal Departments of Public Health, Environmental and Natural Resources, the GL Human Health Network, EPA, FDA.  
**Results:** By 2009, adopt consistent Great Lakes Basin fish consumption advisories, By 2007, commence basin-wide PTS public information campaign.  
**Cost:** \$7.5M/yr

**5) Beyond the Border: Support Efforts to Reduce Continental and Global Sources of PTS to the Great Lakes Basin**

Significant amounts of PTS come to the Great Lakes through air deposition from sources well beyond the US border. International toxics reduction and monitoring programs are therefore essential to the protection of the Great Lakes. As a leader in management of toxic chemicals, the United States should ratify the Stockholm Convention on Persistent Organic Pollutants. The United States should also support international PTS management and monitoring programs, in coordination with the Commission for Environmental Cooperation (CEC) and the United Nations Environment Programme (UNEP), and support capacity building and technology transfer programs, such as those administered by EPA's Office of International Activities. In particular, federal support should be provided to efforts to reduce international sources of mercury, including funding and technical support for UNEP's mercury efforts.

**Implementers:** Congress, Federal Agencies, the GLBTS in a coordinating role.  
**Results:** By 2025, significantly reduce PTS inputs from international sources  
**Cost:** \$6M/yr

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<sup>14</sup> This would include high priority outreach topics such as backyard trash burning, mercury use reduction, energy conservation, personal care product use reduction, (non-toxic household cleaners, and reduction in household pesticide use.

<sup>15</sup> This outreach message should be conveyed through existing communication channels including lake stakeholder forums, human health networks, newsletters, conferences and other existing delivery mechanisms. A consistent outreach message could be included in the biennial LaMP reports and/or the annual public-friendly lake brochures.