

## **Great Lakes Regional Collaboration PBT Reduction Strategy**

### **I. Problem Statement**

While persistent toxic substances (PTS) have been significantly reduced in the Great Lakes over the past 30 years, PTS continue to be present in the Great Lakes ecosystem at levels high enough to warrant fish consumption advisories and to pose threats to human and wildlife health. The continuing presence of these PTS is the result of atmospheric deposition, release from contaminated bottom sediments, releases from various industrial processes, releases from non-point sources, and continuous cycling of PTS within the Great Lakes themselves. Significant sources of PTS must be brought under adequate control in order to restore the Great Lakes ecosystem. More recently, researchers have documented the presence of new chemicals of emerging concern that may also pose a threat to the Great Lakes Basin Ecosystem. Characteristics of these substances, such as sources, fate, transport, persistence, bioaccumulation, and toxicity, must be better understood.

### **II. Goals**

Accomplishing the following goals is necessary to establish and maintain chemical integrity within the Great Lakes Basin Ecosystem, as called for in the Great Lakes Water Quality Agreement.

- Virtually eliminate the release of any or all persistent toxic substances to the Great Lakes Basin Ecosystem.
- Prevent the release 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 both aggressive 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 persistent toxic substances.
- Identify and fill the gaps in our scientific understanding that are central to our ability to effectively manage the risks of toxic substances found in the Great Lakes.
- Prevent degradation of high quality waters in the Great Lakes Basin from toxic substances.

### **III. Current PTS Programs**

There are a wide variety of existing programs that address a diverse set of issues associated with management of PTS in the Great Lakes Basin Ecosystem. This Strategy acknowledges and builds on these programs.

With regard to regulatory programs, there is the regulatory review and approval of substances in commerce through the Toxic Substance Control Act (TSCA), regulations governing releases of

PTS to the environment through permitting programs such as National Pollutant Discharge Elimination System (NPDES) and Maximum Available Control Technology (MACT), proper disposal of PTS waste through the Resource Conservation and Recovery Act (RCRA), and remediation of PTS contaminated soils and lake bottom sediments through Superfund and RCRA.

Supplementing regulatory program efforts are new and innovative voluntary programs in various stages of implementation at Federal, State and Local levels that seek to reduce the generation of PTS in various industrial sectors. These include Design for the Environment, Green Chemistry, Green Suppliers Network, Environmentally Preferable Purchasing, and State-run programs that provide pollution prevention technical assistance to businesses.

With respect to education and outreach, there are a number of programs that provide advice to the public about lifestyle choices that protect their own health and help protect the environment, such as state fish consumption advisories. Finally, information and assessment programs, which include monitoring, modeling, and toxicological research, inform Great Lakes managers about sources and movement of PTS and their effects.

In particular, this strategy incorporates and builds on the principles, tenets and concepts embodied in the Great Lakes Binational Toxics Strategy (GLBTS); indeed, we consider the GLBTS to be the starting point for the PBT Strategy. This Strategy will also build on the efforts of the Lakewide Management Plans (LaMPs) and help with the implementation of high priority chemical reduction actions. The LaMPs, in turn, will serve as the lake-specific implementers of PBT recommendations and activities. The Strategy will also build on recommendations from Remedial Action Plans to address beneficial uses impaired by PTS in Areas of Concern.

A full discussion of current programs may be found in appendix X.

#### **IV. Building on Successful Existing Programs and Considering New Approaches**

Much progress has been made over the past two decades to address PTS in the Great Lakes basin through the current suite of programs, as evidenced by significant drops in levels of organic toxic substances such as PCBs and DDT in Great Lakes wildlife. Notwithstanding these successes, recent scientific advances can and should significantly improve our ability to manage PTS risks, especially from chemicals of emerging concern. For example, advances in computational methods and models to predict chemical toxicity, bioaccumulation, persistence, movement through the environment, and potential exposure can enhance our ability to take a more preventative approach to risk management by identifying potentially harmful chemicals before they enter commerce and opting for less harmful alternatives. Industries are more capable today of employing pollution prevention practices to provide products and services with reduced environmental impact. Improved education and more effective outreach programs are also needed to convey PTS risks and ways citizens can reduce their contributions to PTS releases. Continuing to adopt new approaches to chemical management combined with enhanced implementation of existing activities will help Great Lakes stakeholders more effectively deal with PTS contamination.

## V. Key Recommendations

The recommendations below are guided by a number of important principles. Historically, Great Lakes PTS reduction efforts have served as a model for statewide, nationwide, and international efforts. The collaborative efforts within the GL Basin provide a strong foundation for addressing PTS into the future. PTS reduction requires both regulatory and non-regulatory programs to be adequately resourced so that they perform as they are intended. It is important that existing regulatory programs be adequately funded and implemented. In addition, non-regulatory approaches can sometimes achieve results quickly and are encouraged to the maximum extent practicable. Where non-regulatory approaches are not able to achieve desired results, new regulatory approaches must also be considered, as necessary. While in-basin efforts are critical to the restoration and maintenance of the Great Lakes, significant amounts of PTS are delivered to the Great Lakes from outside the basin via the atmosphere, and reducing PTS loads will require reductions in these emissions as well.

Key recommendations are presented below in two major categories<sup>1</sup>:

- 1) Reduction activities to continue to remove PTS from the GL Basin; and
- 2) Information and assessment activities to help environmental managers make strategic decisions about how to manage risks presented by PTS in the Great Lakes Basin.

### A. Reduction Actions

#### i. National

Programs that affect entire states or the nation are also important to the protection and restoration of the Great Lakes Basin Ecosystem.

- Fully fund and implement existing statutory programs to address nation-wide emissions of PTS through permitting, compliance and enforcement.

*Result: Use existing authorities to further reduce levels of PTS in the Environment.*

- Discontinue use of PCB electrical equipment, consistent with the Stockholm Convention.

*Result: Reduce PCB inputs to the Great Lakes Basin. EPA Region 5 (Great Lakes region) has more remaining in-service PCB transformers than any other Region.*

- Promote, improve, and expand national non-regulatory pollution prevention programs such as the Resource Conservation Challenge, Green Chemistry and Engineering, Design for the Environment, the Green Suppliers Network, and Environmentally Preferable Purchasing.

*Result: Limit the introduction of new PTS into commerce by targeting PTS in manufacturing and the supply chain.*

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<sup>1</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.

- Assure adequate funding for remediation of Superfund Sites and other legacy (i.e., historically contaminated) sources both within and outside the Great Lakes Basin.

*Result: Reduce releases from key sources of PTS to the Great Lakes Basin.*

## **ii. Great Lakes Basin**

In the Great Lakes Basin, ongoing sources of PTS such as household waste burning and contaminants from wastewater treatment plants must be systematically addressed. This requires adequate infrastructure and funding of existing programs. It is critical to broaden the scope of pollution prevention activities targeting PTS throughout the Great Lakes Basin so that releases of new PTS can be prevented. Coordination of such programs between federal, state, tribal, local and non-governmental parties must be strengthened.

- Provide capacity funding to agencies and organizations that carry out Great Lakes PTS reduction activities.

*Result: Assure consistent and effective PTS reductions in the Great Lakes Basin.*

- Ensure collection and proper disposal of household garbage in all Great Lakes communities.

*Result: Prevent burning, burying, and dumping of solid waste. Trash burning is the principle source of dioxin emissions in the Great Lakes Basin.*

- Ensure that household hazardous waste collection and recycling programs, including electronic waste, mercury clean sweeps, and pesticide clean sweeps are routinely available to all Great Lakes communities.

*Result: Reduce PTS/hazardous waste releases to the Great Lakes Basin.*

- Institute a Great Lakes Basin-wide surveillance program to assess the presence and significance of contaminants in final wastewater treatment plant effluent, sewage sludge, and affected tributaries. [Note: OW working on this. Recommended response activities under consideration – TBD]

*Result: Systematically assess unknown risks and reduce PTS releases from wastewater treatment discharge.*

- State EPAs/Mercury Air Rule Options [placeholder]
  - GLB Trading Scheme
  - State rules with deeper cuts (e.g., New England Governors Agreement)
  - Meeting to determine how cuts will be made

*Result: Reduce a key source of mercury deposition in the Great Lakes Basin.*

- Promote, improve, and expand national non-regulatory pollution prevention programs such as the Resource Conservation Challenge, Green Chemistry and Engineering, Design for the Environment, the Green Suppliers Network, and Environmentally Preferable Purchasing.

*Result: Limit the introduction of new PTS into commerce by targeting PTS in manufacturing and the supply chain.*

- Encourage mercury product reduction pilot projects and adoption of successful pilots throughout the basin  
*Result: Continue Great Lakes leadership on addressing mercury reductions. Develop new ideas for managing mercury in products that can be scaled up beyond the Great Lakes basin.*

- Develop a Great Lakes Pollution Prevention and Education Outreach Fund, to support critical State PTS programs, including:
  - Pollution Prevention/Energy Efficiency (P2/E2) Technical Assistance Providers
  - Education and Outreach To Schools
  - Fish Consumption Advisories
  - Household Hazardous Waste, Electronic Collection and Recycling, and pesticide clean sweeps.

*Result: Critical in-basin State PTS programs will help small and medium size businesses reduce PTS, provide education and outreach to protect public health, and collect PTS-containing waste materials, thereby reducing PTS releases and exposure in the Great Lakes Basin.*

- Provide “bundled” State technical assistance services to small and medium size businesses for compliance assistance, pollution prevention audits, and energy efficiency audits in a “one stop shop” program.

*Result: State technical assistance to small and medium businesses will be more accessible, and therefore PTS releases from these businesses will be decreased.*

- Develop a P2/E2 Revolving low interest loan fund to help finance pollution prevention and energy efficiency projects (how about tax credits for energy efficiency and P2 project investments?).

*Result: Improved ability of companies to make "green investments" in manufacturing facilities that will reduce the formation and release of PTS.*

- Establish a Great Lakes Toxics Reduction Exchange, patterned after the Climate Exchange, for companies to trade and purchase “environmental credits”.

*Results: Provide an incentive to reduce PTS emissions in the basin.*

## **B. Information-Related Actions**

Improved management of PTS also requires improved information: for residents to make informed decisions, for better screening of chemical threats, and for monitoring progress in the environment.

### **i. Personal Responsibility: The Need for Outreach and Education**

It is increasingly obvious that the habits of individuals and households have a significant impact on the Great Lakes ecosystem. This is true for PTS—for example, some household activities such as burning trash are significant sources of dioxins and furans. With better knowledge, residents of the Great Lakes basin can make better decisions as citizens and consumers that impact the health of the Great Lakes as well as their own health.

- Develop and provide a consistent and easily accessible basin-wide message regarding the presence and possible health effects of PTS and ways to reduce their output. Topics would include mercury-containing devices, energy conservation, and trash burning.

*Result: Reduced inputs of mercury, dioxins, and other PTS from households.*

- Develop and provide fish consumption advice that is consistent across the Basin and issue advice to citizens and health care workers in multiple languages.

*Result: Widespread awareness of the risks attributed to consumption of contaminated fish and reduced body burdens of PTS and consequent health risks to Great Lakes residents.*

### **ii. Knowledge to Improve Decision-Making**

Just as residents of the Great Lakes must be provided with knowledge in order to make informed decisions, the lawmakers, program managers and stakeholders must have knowledge for decision-making. This more technical information includes models of how PTS move through the environment, assessing the toxicity of PTS, and screening new chemicals in commerce for potential problems.

- Create and maintain a central body or clearinghouse for chemical screening information from various screening programs in the Integrated Risk Information System (IRIS) or another appropriate database.

*Result: A centralized location, where the most recent and authoritative information can be found, for EPA and other partners to consult in making decisions regarding management of PTS.*

- Utilize predictive chemical screening programs such as the PBT Profiler and Quantitative Structure Activity Relationships (QSARs) to inform Great Lakes pollution prevention and monitoring programs regarding potential chemicals of concern.

*Result: A systematic way to identify potential chemicals of concern so that monitoring efforts and pollution prevention actions can be prioritized and implemented in a timely manner.*

- Develop a Great Lakes basin-wide, multi-media exposure model (transport, fate, and bioaccumulation) framework and apply to chemicals of emerging concern as identified with screening tools and/or monitoring programs.

*Result: Permit further prioritization of chemicals of emerging concern and gain insights on important sources (including in-basin vs. out-of-basin) and exposure pathways.*

- Apply existing mass balance models on a lake-wide basis to assess progress and program effectiveness in reduction of BTS and LaMP priority chemicals.

*Result: Ability to compare predicted decreases in levels of PTS, based on program implementation predictions as well as a no-action scenario, with actual decreases following reduction efforts. This will help prioritize ongoing reduction efforts and remediation efforts aimed at remaining contaminated sites.*

- For selected priority chemicals of emerging concern, develop water quality standards (including water quality criteria) and fish tissue criteria for protection of human health, aquatic life, and wildlife.

*Result: Limit the discharge of chemicals of emerging concern to the Great Lakes basin, and protect human and wildlife health.*

### **iii. Information for Accountability: Monitoring and Indicators**

Great Lakes lawmakers, program managers, and stakeholders must be able to assess progress. In some cases, this means monitoring the environment for contaminant levels in fish, other wildlife, humans, air, water, and sediment. However, such monitoring may not fully assess progress of programs within the Great Lakes since inputs from the air, which can contain contaminants transported from longer distances, are so significant for the Great Lakes. Therefore, PTS emission and release information is needed in addition to environmental monitoring.

- Institute a Great Lakes human biomonitoring program including analysis of chemicals of emerging concern in human tissue and enhanced monitoring of sensitive populations.

*Result: A database that can be used to inform and set priorities in PTS reduction programs to protect human health.*

- Expand and improve federal, state, and local emissions inventory programs to: provide greater information accuracy and consistency; improve and expand the specification of emissions; increase standardization and transparency of collection methods; and evaluate and address additional source categories and chemicals.

*Result: Ability to better target sources of PTS for reduction actions and track reductions.*

- Provide resources for adequate monitoring, including geographic coverage and continuity over time, for chemicals of concern for each of the State of the Lakes Ecosystem Conference (SOLEC) PTS indicators including contaminants in a air, water, fish, and other biota.

*Result: Better understanding of trends in levels of PTS in the environment.*

- In partnership with other countries and international agencies, help develop and provide adequate funding for international and national PTS monitoring programs, including through coordination with the Commission for Environmental Cooperation (CEC) and the United Nations Environment Programme (UNEP).

*Result: Monitoring on a broad geographic scale and improved emissions inventories of PTS outside the Great Lakes Basin will help to accurately identify relative contributions of atmospheric PTS from local, regional, and global sources and target significant sources for reduction.*

## **VI. Connecting PTSs to Other Great Lakes Issues**

Contaminated sediments, disposal sites, and other legacy sources are important sources of PTS in the Great Lakes, particularly for PCBs. Therefore, the PBT Team has a strong interest in ensuring that the AOC Team's recommendations are implemented.

[Insert text on cross cutting (e.g., AOC), sustainability, human health and tribal issues.]