

Great Lakes Regional Collaboration Toxic Pollutant Strategy

I. Problem Statement

While 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 high enough to warrant fish consumption advisories and to pose threats to human and wildlife health. PTS loadings from atmospheric deposition, releases from contaminated bottom sediments, various industrial processes, and non-point sources, and continuous cycling of PTS within the Great Lakes themselves, all contribute to this ongoing problem. In order to restore the Great Lakes Basin Ecosystem, significant sources of PTS must be brought under adequate control. More recently, researchers have documented the presence of new chemicals of emerging concern that may also pose threats to the Great Lakes. Characteristics of these substances, such as sources, 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:

- Virtually eliminate the release of any or all persistent toxic substances (PTS) 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 PTS.
- 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. Key Recommendations

This Strategy seeks to comprehensively address PTS issues in the Great Lakes, to 1) reduce 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, and provide a strong foundation moving forward. In particular, the 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. While in-basin and national efforts to reduce PTS are critical to the restoration and maintenance of the Great Lakes, significant amounts of PTS come from international sources via the atmosphere, and must be reduced as well. Five key recommendations are presented below¹:

1) Finish the Job on Priority Pollutants: Mitigate the principal sources of mercury, PCBs, dioxin, pesticides and other toxic substances that threaten the Great Lakes Basin Ecosystem, through coordinated intergovernmental strategies.

Principal sources of priority pollutants such as mercury and PCBs, which continue to threaten the health of the Great Lakes and drive fish consumption advisories, should be systematically reduced and eliminated:

Mercury

Coal fired electric utilities constitute the largest remaining domestic source of mercury emissions, and utility sources must implement control measure to reduce these emissions. A Federal Rule promulgated under Section 111 of the Clean Air Act requires that the cumulative mercury emissions to be reduced 21% by 2010, from 48 tons to 38² tons per year and 70% by 2018, to 15 tons per year². This rule also provides the flexibility for Great Lakes States, individually or collectively, to implement deeper cuts in mercury emissions, as warranted. 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.

Dioxin

Uncontrolled burning of household garbage constitutes the largest source of dioxins and furans to the Great Lakes. Where deficiencies exist in any communities the Great Lakes Basin either in

¹ 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.

² 1999 baseline

the infrastructure to support garbage collection or enforcement to stop illegal burning, these should be addressed.

Cancelled Pesticides

State, tribal and local clean sweep 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 pesticide clean sweep program.

Implementation: The GLBTS Forum in a coordinating role, EPA, State environmental agencies; municipalities, and industry.

Results: At least 70% Reduction in mercury emissions from coal utilities by 2018.
Full phase-outs of mercury bearing thermometers, thermostats, manometers and other products, as possible in the basin by 2015.
Phase out of all PCB equipment in the basin by 2025.
X% Reduction in Basin-wide burning by 2010
X % Reduction in TEQ formation by 2010
X Lbs pesticides collected per year basin-wide starting in 2008.

Costs over the next 3-5 years: \$20M

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 prevents new PTSs from entering commerce under TSCA and FIFRA, through chemical screening methods. 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 Preferrable 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 .

These programs should be aggressively marketed and made available to Businesses, their suppliers and customers throughout the Great Lakes Basin through manufacturing assistance providers such as the Department of Commerce Manufacturing Extension Partnerships, State P2 technical assistance providers, and municipal environmental officials. 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 audits, and energy efficiency audits, in “one-stop-shop” programs. To promote investments in energy efficiency upgrades and pollution prevention projects, EPA should award assistance for states to authorize or enhance low-interest revolving loan funds to finance P2/E2 (“lean and green”) projects. Federal and State agencies should ensure that traditional regulatory programs, including enforcement, provide incentives to conduct pollution prevention and energy efficiency projects.

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

Results: -Increase use of the Sustainable Futures Framework by businesses and suppliers in the Great Lakes Basin by 20% over 5 years.

- Develop a consistent strategy to “bundle” State technical assistance services to customers within the Great Lakes Basin.

- Increase Basin-wide energy efficiency implementation efforts with measurable associated reduction of Greenhouse Gases/Toxics Emissions for small to medium sized businesses by 20% over 5 years.

3) Fill in the Knowledge Gaps to Manage Current and Future Problems: Institute a Comprehensive Great Lakes Surveillance and Forecasting Capability to Help Identify and Manage chemical threats to the Great Lakes Basin Ecosystem

Great Lakes lawmakers, program managers, and stakeholders must be able to plan and assess progress from actions taken to reduce PTS. This requires a framework that demonstrates past and current environmental conditions, tracks actions that have taken place, projects future trends in exposure and effects, and uses this information to provide guidance for continuing or new actions required to achieve goals.

To provide this information, a Great Lakes basin-wide coordinated program should be created that will be the locus of all Great Lakes PTS monitoring (sources and environmental media concentrations), research (chemical properties and process experimentation on exposure and effects), modeling (model development and application), and information management. This program should include the following four components: a Great Lakes toxics database as a central repository of existing and future toxics data, models that predict exposure and effects through coordinated research, monitoring, and modeling programs such as the Lake Michigan Mass Balance Study, coupling exposure and effects models to provide predictions of the status of the Lakes in response to reduction actions, and efficient monitoring/surveillance of sources, fate and transport pathways, environmental receptor concentrations, and ecological and human health effects of chemicals of concern, including especially a surveillance program to assess the presence and significance of substances found or suspected to be of concern in wastewater treatment plant effluent and sewage sludge but not currently the focus of pollution prevention or formal regulatory programs that reduce their presence in the environment.³ These models can be used for both existing and emerging chemicals of concern⁴.

³ Examples may include pharmaceuticals, personal care products, and endocrine-disrupting chemicals. If threat to human health or the environment is presented by releases of these materials, appropriate tools and programs (e.g. treatment requirements, effluent limitations guidelines, pollutant minimization programs, water quality standards) should be developed to reduce their releases

⁴ 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.

Lead Implementation: Great Lakes Binational Toxics Strategy
Results:
Cost of the Center: Estimated at \$4-5 M per year.

4) Provide the Public with Healthy and Environmentally Friendly Choices: Protect the public health from contaminated food and provide lifestyle choices to help reduce toxic releases, with consistent and easily accessible basin-wide messages.

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 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 should be developed with consistent and easily accessible basin wide messages regarding how habits of individuals, households, the workplace, and schools have a significant impact on PTS use and release into the Great Lakes Basin Ecosystem. 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. 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.

Lead implementation: Great Lakes Sport Fish Advisory Task Force, National Sea Grant Program, State and Tribal Departments of Public Health, Great Lakes Human Health Network, EPA, FDA.

Results: By 2006, adopt uniform fish consumption advice to citizens in the Great Lakes Basin,

Something about personal behavior?

Cost: 7.5 Million/ per year

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 and restoration 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 help develop and provide adequate funding for 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. Support for the GLBTS, a multistakeholder US/Canada Strategy to reduce priority pollutants to the Great Lakes Basin, track trends in the environment, and determine contributions from long-range transport, should be increased. This program has also been the "incubator" for many successful PBT reduction initiatives that have been scaled up geographically, as well as studies on chemicals of emerging concern.

Lead Implementers: Federal Agencies, Congress.

Results/Benefits: Improved international coordination on PTS within 3 years; Reduced PTS inputs from long-range transport in the mid- to long-term.

Cost: \$3 million/year