

INTRODUCTION

This is the sixth Biennial Progress Report to the International Joint Commission (IJC), Congress, and the citizens of the Great Lakes Basin on actions taken by the United States (U.S.) to protect and restore the Great Lakes ecosystem. This report reviews some principal challenges facing the ecosystem; outlines approaches taken by Basin stakeholders to address these challenges; highlights some historic and recent actions by Federal, State, and Tribal agencies, as well as their non-governmental partners, to implement these approaches; and outlines future activities on behalf of the Great Lakes.

Formed by the melting and retreat of mile-thick glaciers 10 to 12 thousand years ago, the Great Lakes system is, by area, the world's largest body of surface freshwater. The deep network of 5 lakes contain nearly 20 percent of the world's freshwater, representing 95 percent of the surface freshwater of the U.S. If the Great Lakes' 6 quadrillion gallons of water was poured over the land-mass of the continental U.S., the entire landmass of the lower 48 States would be covered to a depth of almost 10 feet.

The Great Lakes Program

Innovative partnerships, projects, and research are the norms in the Great Lakes. We are working smarter and more efficiently to deliver on the promises made under the Great Lakes Water Quality Agreement (Agreement) via the Lakewide Management Plan (LaMP), remedial action plan (RAP), and other Agreement programs. New challenges and opportunities will continue to

present themselves as the U.S. Great Lakes Program continues to make steady progress toward improving the Great Lakes ecosystem for all of its inhabitants. Environmental protection and natural resource agencies are working together in pursuit of the common goals of reducing the levels of toxic contaminants in the environment, protecting and restoring vital habitats, and protecting the health of the ecosystem's living resources. These goals drive the majority of actions highlighted in this report.

Integrating the Ecosystem Management Approach Across the Basin

The Great Lakes Program is a nested structure of activities, managed and implemented by an alliance of Federal, State, Tribal, and nongovernmental agencies.

This nested structure is meant to parallel the natural boundaries found in the Great Lakes ecosystem: from local landscapes to subwatersheds to individual lake basins to the entire Great Lakes Basin and beyond. Places are stressed over programs, with environmental and natural resource programs applied along naturally-occurring borders

instead of jurisdictional boundaries. And because the inter-actions between ecosystem levels are very complex, the structure of the program is intended to be flexible in order to respond to the evolving needs of the ecosystem.

The goal of these various programs and efforts is to achieve significant environmental improvements through the implementation of a multimedia, ecosystem-based approach in the Great Lakes. This management structure must



Figure 1. The Great Lakes region encompasses parts of eight states and the Province of Ontario.



foster cross-program and cross-agency integration at a variety of scales: from the local level to issues of lakewide and basinwide concern.

A Strong Foundation: Local Planning and Implementation

Any structure must have a strong foundation. The foundation for the Great Lakes Program resides with the many sub-lake basin, geographically focused efforts, including RAPs, throughout the basin, and special geographic initiatives in Chicago, Northwest Indiana, Southeast Michigan, Northeast Ohio, and the Niagara River frontier.

RAPs are developed and implemented through an ecosystem-based, multimedia approach for assessing and remediating impaired uses. RAPs provide a process for individuals, organizations, and local governments to become actively involved in restoring their part of the Great Lakes ecosystems. States approach RAPs in different ways. Some have a “hands-on” style of involvement in the process, while others delegate much of the decision-making to local groups or agencies within the area of concern (AOC). These approaches are complemented by Federal and State technical and financial support and

where necessary, the application of Federal and State statutes and authorities. It is important to note that solutions for problems in AOCs and other local, geographically-focused efforts do not fall into the “one size fits all” category. Each of these areas have a unique blend of circumstances and solutions based upon the complexities of the issues that are being addressed.

Managing Activities on a Lakewide Scale

While the RAPs and other sub-basin processes are crucial for restoring the ecosystems in the AOCs and other localized areas, the beneficial effects of these efforts extend well beyond their boundaries. Remedying problems at these levels provide lakewide benefits by reducing pollutant loadings and protecting vital habitats. Integrating the activities of all the sub-basin projects on a given lake, where necessary, falls under the LaMP programs, comprised of representatives of Federal, State, Provincial, Tribal, and non-governmental organizations, including public forums.

A LaMP, and indeed the entire LaMP process, is a multi-faceted undertaking that requires close integration of all parties involved to make the best use of resources and to deliver environmental protection, restoration, and remediation programs most effectively. They represent a marked increase in scale and complexity for implementing ecosystem management. The goal of a LaMP is to restore and protect beneficial uses in the

open waters of a given Great Lake from both existing and potential impairments. They serve as the platforms for addressing a variety of ecosystem stressors, such as critical pollutants, habitat loss, nutrient loadings, and invasive species, which are impacting, or have the potential to impact, beneficial uses. In addition to the work being done on four of the Great Lakes, there is now a Lake Huron Initiative. There is a strong effort being led by the Michigan Department of Environmental Quality (DEQ) in conjunction with the U.S. Environmental Protection Agency (EPA) and a variety of other partners to ensure that the Lake Huron Basin is fully protected. A management plan has been developed and a suite of actions formulated for Lake Huron.

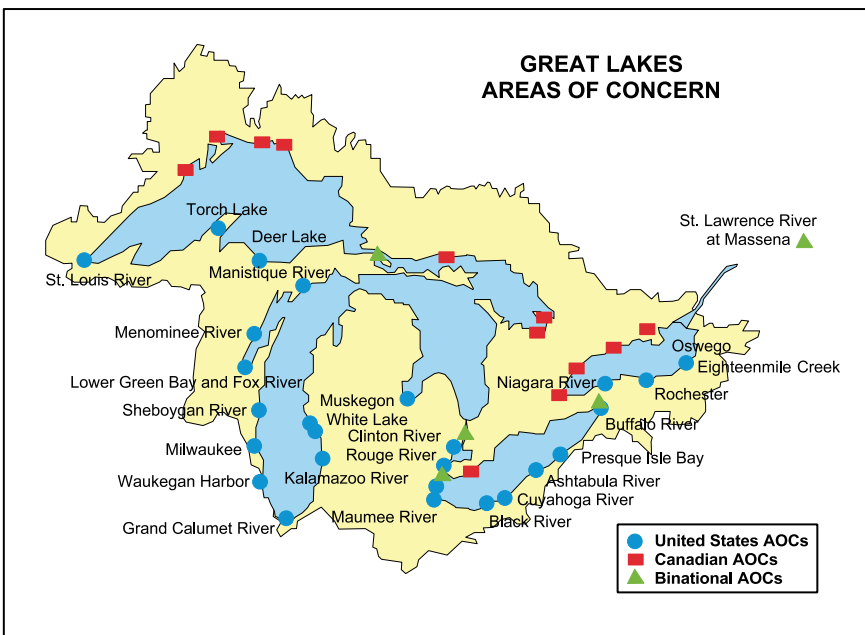


Figure 2. There are 42 AOCs; 26 in the U.S., 11 in Canada, and 5 located binationally.



Status of Areas of Concern (AOCs)

Areas of Concern	State	Report to IJC			Latest Update	No. of Use Impairments	Impact from Superfund Site	Toxic Sediments
		Stage 1	Stage 2	Stage 3				
Ashtabula River	OH	1991				6	Y	Y
Black River	OH	1994			1997	10	Y	Y
Buffalo River	NY	1989	1989		1999	5	N	Y
Clinton River	MI	1988	1995		1998	8	Y	Y
Cuyahoga River	OH	1992			1996	10	N	Y
Deer Lake	MI	1987					N	Y
Eighteenmile Creek	NY	1997	1997			3	N	Y
Fox River*	WI	1988				10	N	Y
Grand Calumet River	IN	1991				14	Y	Y
Kalamazoo River	MI		1998		1998	8	Y	Y
Lower Menominee River	MI/WI	1991	1996		1996	6	Y	Y
Manistique River	MI	1987	1997		1997	5	Y	Y
Maumee River	IN/OH	1992			1997	10	N	Y
Milwaukee Estuary	WI	1994				10	N	Y
Muskegon Lake	MI	1987	1994		1994	10	Y	Y
Oswego	NY	1990	1991		1999	4	Y	Y
Presque Isle Bay	PA	1993			1995	2	N	Y
River Raisin	MI	1987					Y	Y
Rochester Embayment	NY	1993	1997			12	Y	Y
Rouge River	MI	1989	1994		1998	13	Y	Y
Saginaw River/Bay	WI	1988				12	Y	Y
Sheboygan River	WI	1989			1995	8	Y	Y
St. Louis Bay / River	MN/WI	1992	1995			9	Y	Y
Torch Lake	MI	1987					Y	Y
Waukegan Harbor	IL	1993	1995	1999		5	Y	Y
White Lake	MI	1987	1995		1995	10	Y	Y
Binational Areas of Concern								
St. Marys River	MI	1992			1999	10	Y	Y
St. Clair River	MI	1991	1995		1997	9	N	Y
Detroit River	MI	1991	1996		1996	9	Y	Y
Niagara River, NY	NY	1994	1994			5	Y	Y
St. Lawrence River, Massena	NY	1990	1991		1996	3	Y	Y
Total							22	31

Table 1. Status of 31 U.S. and Binational AOCs as of June 1999.

Please note: The state of Michigan no longer uses a staged approach to AOCs. In addition, the Fox River RAP was accepted by the IJC as both a Stage 1 and a partial Stage 2 when it was submitted.



During this past year, the U.S. Great Lakes Program has worked to accelerate the LaMPs from the planning phase to one that is focused on implementation. This culminated in an April 2000 release of a LaMP 2000 document for each of the lakes. These documents will provide a blue-print for action over the next few years (see discussion regarding the Binational Executive Committee (BEC) position on LaMPs for more details). Information on the LaMPs can be found at:

www.epa.gov/glnpolgl2000/lamps/

Supporting Basinwide Policy Coordination

Certain environmental problems in the Great Lakes are basinwide in scale and require a basinwide response. A number of basinwide programs have been undertaken as the most efficient and technically feasible scale for addressing these (and other) stressors. Examples include: the Binational Toxics Strategy, the IADN, which is a monitoring program, and SOLEC, which develops suggested monitoring and reporting objectives. The impetus for these programs comes from a number of areas: the Agreement, congressional mandates, recommendations from the LaMPs and RAPs, and agreements between Federal and State agencies. In this regard, these activities are the next step in the nested structure of the Great Lakes Program, expanding to the next level of natural boundaries of the ecosystem.

Basinwide programs can encompass up to eight states, two Provinces, Tribes, First Nations, and a number of Federal agencies from both the U.S. and Canada. The coordinating body for the U.S. side of the basin is the U.S. Policy Committee (USPC). The USPC sets strategic goals and directions for U.S. Great Lakes ecosystem management and protection, and represents these views in a variety of binational forums. The blueprint for the USPC's activities is contained within the Great Lakes Strategy, which is currently undergoing an update.

The main binational forum for discussing Great Lakes issues at the basinwide level is the Binational Executive Committee (BEC), which is comprised of selected USPC members and their Canadian counterparts. The BEC addresses binational, basinwide issues of concern and provides strategic direction to the LaMPs, RAPs, and other Great Lakes programs. As an example of its role, the BEC, at its July 22, 1999 meeting, called for a significant refinement of the process, substance, and schedule of the LaMPs. Specifically, a resolution called for the *significant acceleration* of the LaMP process so that a "LaMP 2000" document would be completed by Earth Day in April 2000 for each lake. It was envisioned that "LaMP 2000" will be a working document with iterative updates reflective of current knowledge and ecosystem status. This April 2000 target was successfully met.

Beyond the Basin

Environmental impacts to the Great Lakes extend beyond political and natural borders and are truly global in scale. A number of initiatives under the aegis of the United Nations (U.N.), the Commission for Environmental Cooperation (CEC), and other international bodies are dealing with issues regarding toxic contaminants, exotic species, and global warming, to name a few. The U.S. Great Lakes Program is well-represented at most of these venues and its representatives are working to ensure that Great Lakes environmental protection is on the agenda of these multilateral negotiations.

This progress report on U.S. Great Lakes activities highlights success stories at all levels of the Basin. There are stories to tell at the local, regional, basinwide, and international levels. Through these examples, this report provides a sense of the scope and scale of these actions as a way of informing the public about the multitude of activities being implemented by a broad spectrum of public and private partners, working towards the protection and restoration of the Great Lakes Basin.



ONGOING AND EMERGING ISSUES

Low Lake Levels

Due to a variety of factors, Great Lakes water levels are at a 30-year low, 3 to 9 inches below their long-term averages. While providing wider beaches for swimmers and those living along the shore, lower water levels are causing problems for some boat owners who need to seek deeper water for docking and recreational boating or increase the need for dredging harbors and channels. Lower water levels also mean that lake freighters cannot travel fully loaded because of the low water levels in the harbors and connecting channels.



Although the water levels seem quite low, they remain close to their historical average levels and are significantly higher than the recorded extreme low levels.



Water levels affect the amount of cargo Great Lakes Ships can carry.



These two views (photograph on the left was taken in June 1997 and the photograph on the right was taken in March 1999) of the same southern Lake Michigan shoreline illustrate the changing lake levels that are now taking place in the basin.

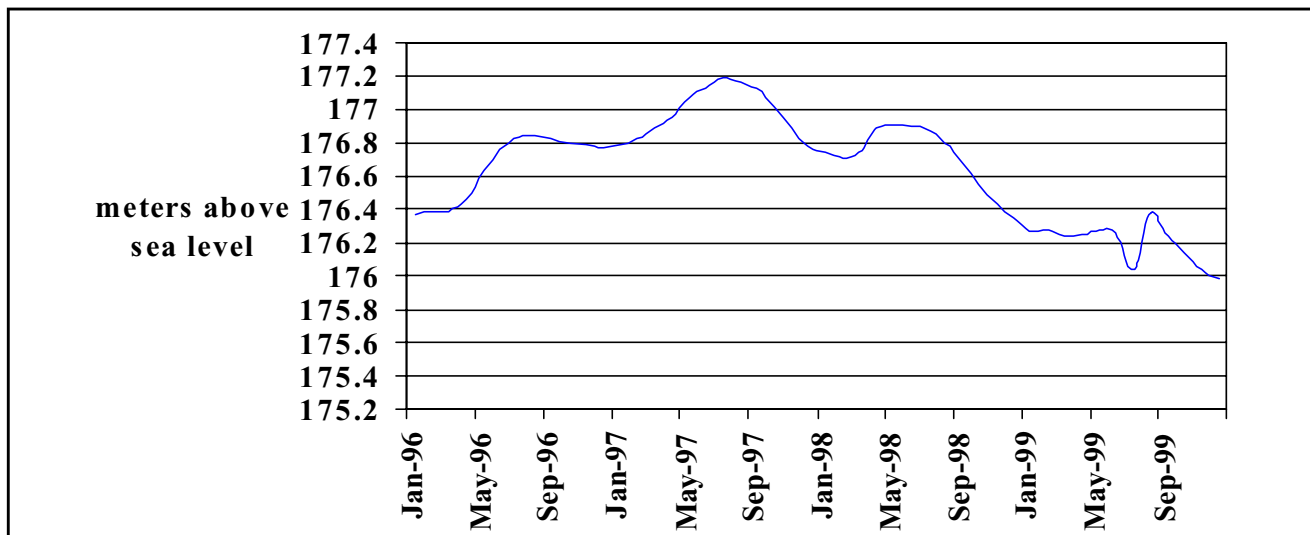


Figure 3. Average lake levels for Lakes Michigan and Huron . This chart provides an example of how Great Lakes water levels can fluctuate over time (Source: U.S. Army Corps of Engineers - Detroit District Office).



Water Diversions/Export

The diversion of water from the Great Lakes Basin has become a hotly debated issue, both nationally and internationally, over the last 2 years. The most notable story centered around a Canadian company's 1998 proposal to export Lake Superior water to markets overseas. Throughout the basin, concerns were voiced over the lack of consultation and the environmental implications of the withdrawal. The request was subsequently withdrawn. This situation brought water diversion issues to the top of the Great Lakes agenda.

Both the U.S. and Canadian governments remain concerned that existing management principles and conservation measures may be inadequate to ensure future sustainable use of the lakes. The Great Lakes Commission, comprised of delegates from the eight Great Lake states and the Provinces of Ontario and Quebec, unanimously adopted a policy position opposing the withdrawal of Great Lakes water for overseas export at their 1998 Annual Meeting. On February 10, 1999, the two Federal governments formally asked the IJC to examine and report on the use, diversion, and removal of waters along the common border, as well as current laws and policies that may affect the sustainability of the Great Lakes water resources.

In August 1999, the IJC urged the U.S. and Canada to impose a 6-month moratorium on the sale of Great Lakes water until studies determine whether the lakes could withstand the loss. An interim IJC report stated that removing bulk quantities of water reduces the resilience of the Great Lakes to withstand stress. The IJC issued its final report in February 2000 and requested that the U.S. and Canada enforce the moratorium until the recommended studies take place.

Abnormal Growths on Zooplankton

The National Oceanic and Atmospheric Administration's (NOAA) Great Lakes Environmental Research Laboratory's (GLERL) long-term Southern Lake Michigan Monitoring Program recently reported findings of tumor-like anomalies in zooplankton collected from an offshore region of

the lake, specifically several species of copepods and *Cladocera*. Samples collected in 1995 and 1998 contained possible tumor-bearing zooplankton, and preliminary evidence indicates that the anomalies are possibly cancerous and more common nearshore than offshore. Although tumors were reported in 1994 in zooplankton from the Baltic Sea, they were not identified as being cancerous, nor were they photographed. Analyses of additional samples from closer to shore, in collaboration with scientists at the University of Michigan, showed an apparent higher incidence of possible tumors in nearshore zooplankton. Further studies, including a check of archival samples prior to 1994, are being planned.



Two spherical tumor-like anomalies can be seen attached to the ventral (bottom) surface of *Limnocalanus*, a calanoid copepod from Lake Michigan. (Courtesy of NOAA-GLERL)

Concern over Declining *Diporeia*

The work of GLERL and EPA has documented a decline in macroinvertebrates, a major fish prey food, including the small shrimp-like crustacean *Diporeia* throughout the Great Lakes. In 1998, sample analyses revealed that overall, densities of the three major groups, *Diporeia*, worms (*Oligochaeta*), and fingernail clams (*Sphaeriidae*), declined 58 percent at sites located in less than 50-meter water depth. For the first two groups, the decline occurred over the entire southern basin of Lake Michigan and was likely a result of phosphorus abatement programs and declines in pelagic productivity. The decline in *Diporeia* occurred mostly in the south/southeastern portion of the lake and is believed related to food competition with the zebra mussel. The average



decline in *Diporeia* was 82 percent at sites in this portion of the lake. At some sites, *Diporeia* declined from 10,000 per square meter to less than 100 per square meter.

Scientists have now found that the decrease in *Diporeia* is rapidly spreading north and into deeper water, a situation that may eventually affect popular Great Lakes sports fish such as non-native salmon and trout. Other researchers have noted similar declines in Lake Ontario (essentially no *Diporeia* in much of the nearshore waters <100 meters deep) and suspect that numbers are also dropping in Lake Huron.

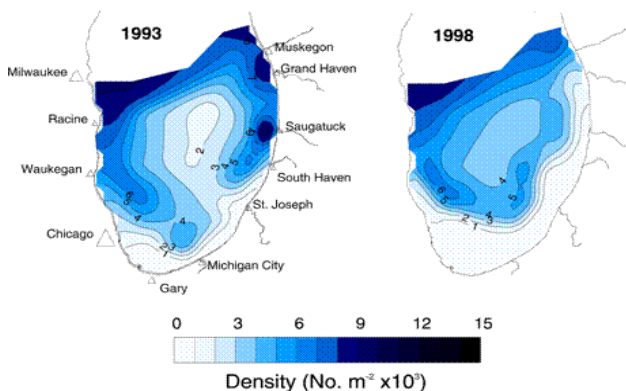


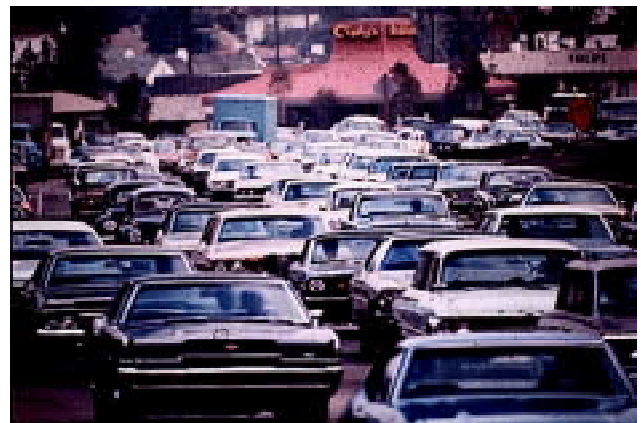
Figure 4. *Diporeia*, a key component of the Great Lakes food chain, is experiencing a disturbing decline in numbers in southern Lake Michigan. (Source: NOAA-GLERL, 1999)

Fish and Wildlife Consumption Advisories Still In Place

The Great Lakes food web remains contaminated by a variety of bioaccumulative toxic substances, causing unacceptable levels of these contaminants in some fish and wildlife. Levels have decreased significantly since the 1970s, but still justify the issuance of public health advisories regarding fish and wildlife consumption. Advisories especially apply to vulnerable consumers, such as children, women who anticipate bearing children, and frequent consumers, such as sport fishermen and Native Americans. EPA's 1998 summary of State-issued fish and wildlife consumption advisories showed, as in prior years, that 100 percent of the Great Lakes waters continue to be under some sort of advisory, most of which are due to mercury and PCBs.

Addressing Urban Sprawl

One of the Basin's most significant cross-cutting issue is the continuing growth of major metropolitan areas and the sprawl of residential areas and other development. This trend is having social, environmental, and economic impacts, many of which may threaten the long-term sustainability of the Basin's ecosystem. Urban sprawl contributes to polluted runoff by replacing green open spaces and farmland with paved surfaces and requiring the building of additional roads and commuter highways; it contributes to air pollution by boosting commuter distances and vehicle miles travelled per person; and it results in the loss of viable habitat for animals and plants. Areas of greatest decrease tend to be either in close proximity to major urban areas or towards fringe areas where farmland makes up less than 40 percent of the total land area. EPA has implemented a variety of projects under its Project XL and Brownfield Redevelopment initiatives, which have the desired results of accelerating cleanups of urban industrial sites while averting increased environmental impacts associated with the development of open spaces as described above.



Urban sprawl can lead to increased air pollution, polluted runoff, and reduced habitats for Great Lakes flora and fauna.

Climate Change Impacts

If climate change occurs as currently predicted, one concern is the probable increase in exotic species due to warmer waters and a lack of capacity to deal with the problem. Exotics are currently considered by some to have caused



more damage to the ecological balance of the Great Lakes ecosystem than have contaminants. Reduction in water supply and levels and flows due to climate change could also pose serious problems, both environmentally and economically. Water exports and diversions that are being discussed would add to these problems.

GLERL is providing the U.S. leadership for the U.S./Canada Binational Great Lakes -- St. Lawrence Basin Climate Change and Variability Project to assess the physical, biological, hydrological, and socio-economic impacts of climate change and variability in the Great Lakes Basin. GLERL is also developing water resources models that couple the Great Lakes hydrologic cycle and atmospheric circulation and simulate moisture storage and runoff from the 121 watersheds draining into the Great Lakes. A major achievement was the implementation of an Advanced Hydrologic Forecast System that produces probable water supply and lake level outlooks based on multiple 1- to 9-month climate projections from the National Weather Service.

Combined Sewer Overflows and Beach Closings

One example of this basinwide problem of combined sewer overflows is the heart-shaped Lake St. Clair, which straddles the Michigan-Ontario border and is a highly utilized recreational lake with high quality wetlands and a viable fishery. In recent years it has been negatively impacted by numerous environmental threats. These have included high levels of bacteria due to combined sewer overflows and failing septic systems that have led to beach closures and human health issues; chemical contamination of water and sediments; loss of habitat, fish and wildlife; and a decrease in the overall recreational quality of the lake. The *Blue Ribbon Commission Report on Lake St. Clair*, that was released by Macomb County, called on the U.S. government to play a role in bringing the local parties and international partners together. EPA Region 5 sponsored a binational conference, which provided an overview of the state of the lake and promoted information sharing while identifying opportunities for future collaboration.

PROTECTING THE HEALTH OF BASIN RESIDENTS

A variety of potentially harmful compounds are found in the Great Lakes. Humans come into contact with these through consuming Great Lakes fish and wildlife, drinking Great Lakes water, swimming in the Lakes, and breathing Great Lakes air. However, drinking water and air exposure are generally considered to be relatively minor compared to fish consumption. The U.S. is addressing these multiple exposure pathways in order to thoroughly protect all basin residents. Through a large number of programs at all levels of government, protecting human health is given the highest priority in all our work.



A major goal of the Great Lakes program is the lifting of all fish consumption advisories.

Great Lakes Fish Consumption Advisories

Great Lakes fish accumulate contaminants from the water they live in and from the food they eat. All of the Great Lakes states currently have fish consumption advisories in place for one or more species of fish. Two contaminants -- mercury and PCBs -- are the major causes of fish advisories. In high amounts, mercury can cause severe mental and physical retardation in an infant (although such effects have not been observed in Great Lakes populations).

Advisory Trends

According to EPA's 1998 National Listing of Fish and Wildlife Advisories (USEPA-OW-OST, EPA823-F-99-005, July 1999), the number of waterbodies in the U.S. under advisory reported in 1998 (2,506) represents a 9 percent increase



from the number of advisories reported in 1997 (2,299) and a 98 percent increase from the number of advisories issued since 1993 (1,266). The increase in advisories issued by the states generally reflects an increase in the number of assessments of the levels of chemical contaminants in fish and wildlife tissues. These additional assessments were conducted as a result of the increased awareness of the health risks associated with the consumption of chemically-contaminated fish and wildlife.

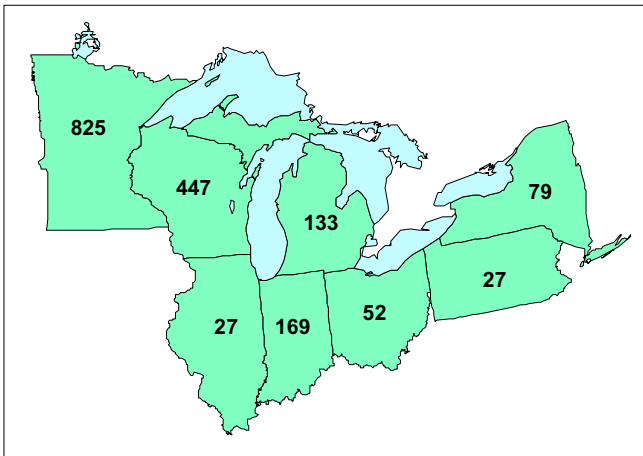


Figure 5. This figure shows the number of fish consumption advisories for each Great Lakes state for 1998. Currently, each state has advisories for one or more species of fish (Source: USEPA-OW-OST, July 1999).

STATEWIDE ADVISORIES

Indiana	Hg, PCBs in Rivers
Michigan	Hg in Lakes
Ohio	Hg in Lakes, Rivers

In addition, all Great Lakes and connecting channels are under advisories:

GREAT LAKES LAKEWIDE ADVISORIES

Superior	PCBs, Hg, chlordane
Michigan	PCBs, Hg, chlordane, dioxins
Huron	PCBs, dioxins, chlordane
Erie	PCBs
Ontario	PCBs, dioxins

Some additional facts about Great Lakes State fish advisories include:

- Advisories are due to mercury, PCBs, chlordane, dioxins, and DDT;
- Of all new PCB advisories issued in 1998, 77 percent were issued in Michigan, Illinois, Indiana, and Minnesota;
- Indiana has issued statewide PCB advisories in freshwater lakes and/or rivers; and
- Consumption advisories for turtles are in place in Minnesota and New York (statewide); New York has a statewide advisory for waterfowl.

The Agency for Toxic Substance and Disease Registry's (ATSDR) Great Lakes Human Health Effects Research Program has made significant progress in reporting and evaluating findings about public health for at-risk populations. These populations include sport and subsistence fish anglers, pregnant women, fetuses, nursing infants, young children, the elderly, and urban poor. Some of their recent exposure findings indicate the following:

- Persistent toxic substance (PTS) contaminants in the bodies of individuals in sensitive populations are two to four times higher than those of the general U.S. population;
- Residents in the Great Lakes Basin ate more fish than the 6.5 grams per day often estimated for the U.S. population;
- Men consume more fish than women; and
- Maternal consumption of Lake Ontario Great Lakes fish increases the risk of prenatal exposure to the most heavily chlorinated PCBs.

Research findings in the area of health effects include the following:

- Conception rates and the incidences of a live birth are lower in some women who are fish consumers;
- Reproductive functions may be disrupted by exposure to PTS;



- Significant menstrual cycle reductions were indicated in women who reported consuming more than one meal per month of contaminated Great Lakes sport fish;
- Neuro-behavioral and developmental deficits have been observed in some newborns of mothers who consumed approximately 2.3 meals per month of contaminated Lake Ontario fish; and
- Liver disease, diabetes, and muscle/joint pain may be associated with exposure to PCBs and other contaminants via fish consumption.

These research findings in the areas of exposure, socio-demographics, and health effects are a public health concern. Nursing infants, subsistence and sport anglers, as well as the elderly, are among these sensitive groups because of their elevated exposures.

The reports of neuro-developmental deficits and reproductive effects remain a concern. There is a need to improve the effectiveness of fish consumption advisories. Data indicate that some of those people who are most at risk are the least informed about fish advisories and that health education can be especially valuable in mitigating potential effects and informing individuals who may be at risk. Finally, there is a need to develop strategies for prudent public health interventions and new risk communication tools that are intended to reduce human exposures.

Endocrine Disruptors

The U.S. is actively reviewing information indicating the possibility of impacts on human health and the environment associated with exposure to chemicals or environmental agents that act as endocrine disruptors. At the present time, there is little agreement on the extent of the problem. A major new report by the National Research Council (NRC) on chemicals that affect human hormonal systems has offered few conclusions and no strong recommendations, indicating that EPA should push ahead with its plans to screen a host of chemicals to test their

ability to affect hormones in both people and animals. The scientists agreed EPA's screening and research are key to finding an answer. The report closely follows EPA's own research and report on hormonally active agents (HAAs), which also endorsed the need for more research and the need for a screening process for suspected HAAs.

EPA and its partners have developed the following two-part strategy for dealing with endocrine disruptors: (1) research to understand the basic science and inform the process of risk assessment; and (2) develop a screening program to identify chemicals that act as endocrine disruptors and the effects they cause. Activities in support of this strategy are listed below.

EPA Region 5 and the Great Lakes National Program Office (GLNPO) have initiated investigatory studies to determine whether fish in effluent dominated streams and Great Lakes harbors are being adversely effected by endocrine disruptors. A survey of several large effluents for known endocrine disruptors was recently completed and is currently being expanded to allow for better analytical methods that can measure endocrine disruptors in the low parts per trillion (ppt) range. Also, fish health is being monitored at several locations to determine if endocrine disruption is occurring in fish collected from open Lake Michigan waters as well as from fish in effluent dominated harbors and streams. It is noted that Environment Canada initiated a similar investigation before EPA and has the lead in this effort.

In addition, ATSDR is characterizing exposure to the eleven critical pollutants, identified by the IJC, in susceptible populations. These eleven pollutants include chemicals that have been identified as endocrine disruptors (dioxins, furans, PCBs, mirex, and DDT). Research findings from ATSDR's Great Lakes program indicate neuro-behavioral deficits in newborns exposed *in utero*, and indicate disturbances in reproductive parameters in women who consumed contaminated Great Lakes fish.

