

EXECUTIVE SUMMARY

The Great Lakes Water Quality Agreement (Agreement), created by Canada and the United States in 1972 to restore and protect the largest body of surface freshwater on the planet, provides an example to the world of how two countries can forge a commitment to restore the integrity of shared bodies of water. The Agreement's stated purpose is to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes basin ecosystem. It is this purpose, the integrity of the lakes and, by extension, the environmental integrity of both countries, that this *Twelfth Biennial Report on Great Lakes Water Quality* addresses.

The Agreement requires the International Joint Commission (Commission) to assess progress and assist both governments in achieving this commendable goal. As stated in our Declaration, issued at the conclusion of the Biennial Meeting in Ann Arbor, Michigan in September 2003, the Agreement has served as a blueprint for cooperation and coordination of largely successful stewardship of the Great Lakes for more than 30 years. Vigorous public participation and dialogue among all interested parties has and must remain a cornerstone of Agreement implementation.

The U.S. and Canadian governments, the Parties to the Agreement, must perform a comprehensive review of the Agreement after every third biennial report from the Commission. This Twelfth Biennial Report marks the beginning of the next required review process. We urge the Parties to be thorough, visionary and far-reaching as they review the Agreement, and as they address critical questions regarding its scope, the Commission's role, and emerging issues not included in the Agreement. In the September 2003 Declaration, the Commission commits to assisting the Parties in this review process and engaging the public in active dialogue to ensure input from all who care about the health of the Great Lakes basin ecosystem. The Commission will provide detailed advice to governments on the Agreement's review later in 2004.

Key Findings

The Parties have made progress on developing and implementing best management practices to accommodate the growing pressure of human development in the basin. Our understanding of the potential impacts of climate change on the Great Lakes is improving, and many toxic chemical releases have declined over the past decades. Research has been coordinated to understand Lake Erie's changing dynamics, including: the disappearance of some fish food organisms but the resurgence of others, the invasion of aquatic species, and increases in algae to nuisance levels.

However, natural habitat continues to be lost as our urban areas expand. The governments must address a fundamental question: collectively, are policy, program and management efforts sufficient to protect water quality from the effects of sustained expansion of major urban areas in the Great Lakes basin and to ensure ecosystem integrity?

Notwithstanding decades of research, new aquatic alien species continue to be introduced into the lakes at a rate of one per every eight months via ocean-going vessels, or from bait fish, aquarium fish, aquaculture and connecting tributaries. The Commission urges the governments of Canada and the United States to issue a standing reference to the Commission to coordinate prevention measures to help halt this invasion to the Great Lakes.

Without adequate safeguards, our health can be threatened by pathogens and disease-bearing microorganisms. The governments must focus increased attention on protecting the sources of drinking water supplies. In particular, coordinated action by all those responsible for managing watersheds is required to avoid impacts from expanded land use pressures from agriculture, development, industry and urban centers.

Chemical contamination continues to endanger human health and restricts the number of fish we can safely eat. Several adverse health effects associated with exposure to methyl mercury, a highly toxic substance, have been identified in human and animal studies. In the Great Lakes basin, people are exposed to methyl mercury almost exclusively by eating fish. The Commission urges the governments to implement programs that reduce mercury emissions from the coal-fired utility sector, to make the risks associated with eating

mercury-contaminated fish clear and understandable to the public, and to further research health risks to the Great Lakes basin from exposure to mercury.

Because of their complex nature, addressing the overlapping and interacting issues affecting Lake Erie requires a greater level of binational communication and cooperation than ever before. The Commission urges the governments to determine the cause of recent ecological degradation in Lake Erie and to take appropriate steps to restore its ecological integrity.

Many of these findings were reflected in public testimony at the Commission's Biennial Meeting, held in Ann Arbor, Michigan, in September 2003. The very real threats we discuss in this report, and the public voice we heard at our Biennial Meeting, cause the Commission to urge that the governments of Canada and the United States take a precautionary approach to better face future threats and address current needs in order to enhance and protect the global treasure that is the Great Lakes.

IN LIGHT OF THE ABOVE FINDINGS, THE COMMISSION MAKES THE FOLLOWING RECOMMENDATIONS

Physical Integrity

1. The Parties take binational actions to address the impact of urban land use on Great Lakes water quality by:
 - evaluating under what circumstances best management practices¹ are effective in managing urban runoff;
 - ensuring that information on urban best management practices reaches local authorities and implementers; and
 - assessing the cumulative effects of management actions to minimize the impacts of urbanization on the Great Lakes, using the Lake Erie basin as an example.

Biological Integrity

2. The governments should take the following measures to eliminate the threat and impacts of aquatic alien invasive species in the Great Lakes:

Take immediate action to:

- in the United States, pass the National Aquatic Invasive Species Act (NAISA) reauthorizing the National Invasive Species Act (NISA);
- in Canada, implement the National Action Plan to address the threat of aquatic alien invasive species; and
- ratify and implement the International Maritime Organization's Convention for the Control and Management of Ships' Ballast Water and Sediments, and pursue more stringent measures and rapid timelines.

3. Issue a reference on aquatic alien invasive species to the International Joint Commission to:

- help to identify the most effective ways to coordinate binational prevention efforts and harmonize national plans, particularly those dealing with residual ballast water and sediment in ballast tanks;
- evaluate the effectiveness of current institutional arrangements;
- assist with the establishment of a regional standard stronger than the minimum required by the International Maritime Organization Convention;
- ensure that economic analyses carried out for projects with potential environmental effects include the environmental and societal costs of aquatic alien invasive species control, damage, and mitigation, and the costs and benefits of prevention measures; and
- assist with public education and communications.

4. All levels of governments should create and implement coordinated planning actions to fully protect drinking water from increased pressures from industry, urban expansion, aging infrastructure and agriculture, including ecosystem and human health protection from large-scale animal operations.

Chemical Integrity

The Commission recommends that the two federal governments, in conjunction with the states and provinces and institutions:

5. Undertake retrospective and prospective epidemiological studies, in Areas of Concern and other pertinent locations of the Great Lakes basin, to better understand potential neuro-developmental effects associated with methyl mercury and PCBs.
6. Make fish advisories clear, simple, and consistent, and ensure that they are reaching the intended audiences.
7. Select and promptly implement programs in both the United States and Canada that would substantially reduce the deposition of mercury in its reactive gaseous form in the Great Lakes region; also pursue multi-lateral strategies for further control of this persistent toxic substance on a global basis.

Ecosystem Integrity

8. The Commission recommends that governments continue to fund binational research efforts begun in 2002 and 2003 to better understand positive and negative changes in the Lake Erie ecosystem and take appropriate action. The institutional model provided by the Lake Erie Millennium Network² should be considered for adaptation and adoption to the other Great Lakes to foster enhanced binational cooperation and communication.