

SUSTAINABILITY IN THE GREAT LAKES/ST. LAWRENCE RIVER ECOSYSTEM

**Presentation to the
Standing Committee on the
Environment and Sustainable Development**



Since/depuis 1970

**CANADIAN INSTITUTE FOR
ENVIRONMENTAL LAW AND POLICY**

**L'INSTITUT CANADIEN DU
DROIT ET DE LA POLITIQUE
DE L'ENVIRONNEMENT**

Sustainability in the Great Lakes/St. Lawrence River Ecosystem

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Standing Committee on the Environment and Sustainable Development**

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SUMMARY

Founded in 1970 the Canadian Institute for Environmental Law and Policy is an independent research and education organization whose mission is to provide leadership in the research and development of environmental law and policy that promotes the public interest and sustainability.

The Great Lakes Water Quality Agreement, first signed in 1972, and later renewed in 1978, was based on two simple principles (or assumptions). One, clean the pollutants already present in the Great Lakes System, and second, prevent pollutants from entering the Great Lakes System. We have succeeded in neither of these objectives.

We have not been successful because our approach has been curative and not preventative. There is a need for integrated planning and rigorous implementation to restore the Great Lakes/St Lawrence ecosystem. This would include watershed-based source protection planning on a long-term basis (as initiated by the Government of Ontario, thanks to the Walkerton tragedy), strict regulations on conservation of energy and natural resources and a strong national policy to encourage innovative restoration technologies. As well, public education on the economic benefits of prevention compared to remediation.

CIELAP has a long history of working on Great Lakes issues. In recent years our publications on water have included Troubled Waters? Liquid Assets – Monitoring Water Quality in Ontario; a series of annual reports on Ontario's environment. Our current work related to the Great Lakes is on preparing two research reports on best practices in other jurisdictions on financing and public engagement. We are also preparing a series of fact sheets for politicians on current issues related to the Great Lakes.

ABOUT THE CANADIAN INSTITUTE FOR ENVIRONMENTAL LAW AND POLICY (CIELAP)

Founded in 1970, the Canadian Institute for Environmental Law and Policy is an independent, not for profit, research and education institute whose mission is to provide leadership in the research and development of environmental law and policy that promotes the public interest and sustainability. Our vision is a world in which basic human rights include a safe and healthy environment achieved through respect for, and preservation of, nature's integrity and diversity. We currently have two main goals that guide our work: to promote an effective and accountable environmental legal and policy framework; and to enhance and promote environmental action on the public and political agenda.

Our current strategic plan has four program areas: sustainable policy solutions (SPS), decision-making for sustainability, public engagement and youth leadership. Our SPS program area includes water issues, biotechnology, hazardous waste, energy and pollution prevention. Our decision-making program includes an on-going discussion on Sustainable Development in Canada and the need for a federal plan and federal leadership. Our public engagement program includes citizens' guides and other educational tools for Canadians. And our Youth Leadership program includes providing internship and other forms of training for young people. We see ourselves as a launching pad for many young people who may continue their professional careers in the environmental field. This program will encourage youth and student interns, who have received formative training at CIELAP, to take on the challenge of building a more sustainable society.

The research that we do is presented in a manner that assists public interest groups, governments, industry and individuals in their daily decision-making. Through various publications our research will become more accessible, interactive and more engaging. We want to create a dynamic and innovative process of research and policy development.

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We are also actively engaged in the sustainability debate. Prior to the World Summit we prepared a discussion paper titled *Sustainable Development in Canada: A New Federal Plan*. We are doing some background research on partnerships and on May 13 and 14 we will be hosting our second *Partnering for Sustainability* conference.

My remarks today are based on a work-in-progress – the preparation of a paper by CIELAP Researcher, Satya Mohapatra, for the Managing our Waters: The Great Lakes/St Lawrence River Conference, Cornwall, May 18-20, 2004.

INTRODUCTION

Great Lakes Water Quality Agreement

The Great Lakes Water Quality Agreement, signed in 1972, committed Canada and the United States to control pollution in the Great Lakes and clean up waste waters from industries and communities. The agreement was later renewed in 1978, when the two countries pledged their determination *to restore and maintain the chemical, physical, and biological integrity of the waters of the Great Lakes Basin Ecosystem*. The agreement was based on two simple principles (or assumptions). One, clean the pollutants already present in the Great Lakes System, and second, prevent pollutants from further entering the Great Lakes System.

THE STATE OF THE GREAT LAKES

Remediation of Contaminated Sediments

The 1987 protocol to the agreement introduced provisions to develop Remedial Action Plans (RAPs) and Lakewide Management Plans (LaMPs) to improve the environmental quality of the Great Lakes, and identified Areas of Concern (AOCs) for priority action. Remediation of contaminated sediments was given top priority.

Progress in sediment remediation has been slow. In more than fifteen years, two of the 17 Canadian AOCs have been delisted. It may be noted that the delisted AOCs (Collingwood and Severn Sound) are on the Georgian Bay and the highly contaminated sites on Lake Ontario are far from remediation.

Several studies conducted recently by research teams have reported sediment contamination in both AOC and non-AOC locations throughout the Great Lakes. Hamilton Harbour (Brassard *et al.*, 1997), Whitby Harbour (Villeneuve *et al.*, 1999), Cornwall (Richman and Dreir, 2001), Lake Erie (Pinter *et al.*, 2001), Lakes Ontario and Erie (Marvin *et al.*, 2003).

Toxic Discharges

Pesticides, persistent organic pollutants (POPs), and heavy metals, such as mercury still find their way to the Great Lakes system. Research finding contamination of water and sediments in the St. Lawrence River include (Regoli *et al.*, 1999) and (Curran *et al.*, 2000). Community groups have complained about the PCB leak into the St. Lawrence River at the Technoprac landfill site in Montreal (Waterkeeper, 2003). Chemical spills into rivers have become a common phenomenon in the Great Lakes basin. There are several reports of chemical spills recently (Currie, 2004).

New Chemicals

Canadian waters are contaminated with a range of pharmaceutical drugs, turning rivers and streams into a toxic soup with unknown dangers to people and wildlife, as noted by Mark Stevenson (Stevenson, 2002). The list of new chemicals of concern is expected to be dynamic with changes expected as commercial practices change over time. Quoting the research carried out at Trent University, Peterborough and at the National Water Research Institute, Burlington, he worries about people with allergies to drugs, the effect of mixing drugs and developing antibiotic resistance. Identifying new substances of concern will depend on the ability to identify impacts of substances to human health through consideration of new health endpoints. Examples are substances that impair or disrupt the endocrine system. This will have an impact on development, reproduction and growth in certain species.

Sewage Treatment/CSO

Municipal effluents are a serious source of contamination and hinder the progress in restoring the Great Lakes. Yet, many municipalities have not set discharge limits for most regular contaminants. In a recent study by CIELAP it has been observed that there is no uniformity of discharge limits for the toxic compounds within the municipalities, which have specified discharge limits. There is also difference in the compliance methods, monitoring requirements and amount of fines for similar violation. The discharge limits set by municipalities are not designed in a manner as to meet the province's stated goal of virtual elimination of toxic substances entering the waterways and to meet Ontario's obligations under national and international agreements.

At many places, sewage pipes flowing into the rivers and lakes continue to carry bacteria, metals and other chemicals. Combined sewer overflows greatly impact the beaches, most of which fail to meet the safety standards in the bathing season. A study by Lake Ontario Waterkeeper carried out in 2002-2003 (Waterkeeper, 2004) found that 79% of surface water samples collected from six different cities in the Great Lakes basin did not meet Provincial Water Quality Objectives. At places, E.coli levels were 2,000 times higher than the Provincial Water Quality Objectives.

Many municipal water and wastewater treatment facilities are aging, and the growing population is adding stress to these facilities (Statistics Canada, 2003).

Water Level/ Climate Change Considerations

Although climate change is now widely recognized as a serious environmental threat, it is yet to be included in the management strategy for the Great Lakes.

The navigability of the St. Lawrence Seaway is at risk because of low water levels. In the early part of the 1900s, water levels in the port of Montréal averaged two metres above the

long-term average low-water mark. At the turn of the millennium, this margin had declined to less than one metre (Statistics Canada, 2003).

Invasive species

Invasive alien species have rapidly spread in Canada's environment, particularly the Great Lakes, affecting the national economy, society, and human health. However, we are yet to adopt a national policy in this regard.

Human and Environmental Health

There is strong medical and scientific evidence of a direct effect between environmental contaminants and health disorders among adults, children, and wildlife. Traditionally, environmental issues have been dismissed as important political issues in Canada while giving prominence to health issues. However, recently the link between environment and health has been taken seriously at the federal level (McKenzie, 2002).

The International Joint Commission, in their 11th Biennial Report (IJC, 2002), expressed concern over the serious risks to human health posed by toxic pollutants in the Great Lakes. In addition to injury to health, there are also economic and social impacts of toxic pollution.

In spite of the determination of the federal government to reduce nitrogen oxide emissions by 2004 and fight smog, the number of smog advisory days has increased in recent years. According to Health Canada estimates, persistent organic pollutants, such as PCBs, dioxins and furans, and DDT pose a great threat to human health through large-scale exposure through food.

DESIRED APPROACH

Approach – Curative Vs. Preventative

We have not been successful because our approach has been curative and not preventative. We need to change this approach. While it is important to clean the mess we have already created, it is a smarter idea to take preventive steps to protect the Great Lakes Ecosystem in view of the impending threat due to the emergence of invasive species, new chemicals and climate change implications.

Source Protection

The federal government and the provincial government of Ontario have realized the need for an integrated watershed management in the Great Lakes basin. The brightest example is the watershed-based source protection planning announced by the Government of Ontario (MOE, 2004), although it is the sequel to the infamous Walkerton tragedy. The management strategies of the proposed plan include i) preserving and restoring water quality and quantity, ii) restoring the landscape by increasing riparian buffers consisting of natural vegetation, and iii) well head protection and discharge reduction programs among

other provisions. The plan also aims at improving water management science through research and promoting water use efficiency and conservation through basic education and outreach.

Conservation of Natural resources/Energy

While Canada has one of the largest renewable supplies of fresh water in the world, Canadians are also among the highest consumers of water in terms of per capita use. Most recent statistics from the Organization for Economic Co-operation and Development (OECD) show that in 1999, each Canadian on average used 1,471 cubic metres of water. Among OECD member countries, Canada was second only to the United States, where each American used 1,870 cubic metres (Statistics Canada, 2003).

Our water consumption pattern must change in light of the fact that some of Canada's fresh water resources are being threatened. Conservation of energy and use of renewable energy will indirectly help us combat air and water pollution problems.

Monitoring

Although the Canadian Water Quality Guidelines for the Protection of Aquatic Life has listed 180 chemical substances, the number of chemicals actually monitored is often as low as 30. Moreover, monitoring of highly toxic chemicals, such as heavy metals and pesticide residues are monitored at infrequent intervals (IJC, 2002). It is also observed by CIELAP that there is no systematic monitoring of organic contaminants in surface waters of Ontario (Molot *et al.*, 2001)

MOE needs to maintain a registry of contaminant load to the municipal sewer system. This will help implement source control plans. It is also necessary to monitor the wastewater entering the municipal sewer system for new chemicals and develop limits for them as different types of chemicals are introduced to our environment each year.

Restorative Technology

The governments of Canada and Ontario could jointly facilitate the growth of restorative industries that would contribute to the ultimate restoration of the Great Lakes. The Great Lakes Program needs to include both restoration and conservation with elements of sustainability instilled into the program. The success of the program depends on how it integrates with restoration of other ecosystems and watersheds. It also depends to a great extent on restorative agriculture and fisheries.

Converting conventional farms to organic farms and integrating agriculture with ecosystem and watershed restoration by restoring native species, growing forest plants, and joining disconnected forest ecosystems etc. would not only increase biodiversity but would also accrue economic benefits to farmers. The governments can do their part by providing incentives to farmers who commit to restorative agriculture and by eliminating tax incentives and increasing environmental oversight to large conventional farms.

Most of the wastewater treatment plants are old, outdated and undersized. Also the aging, leaking, under-capacity sewers need restoration.

Public Education and Information

The 1987 Protocol to the GLWQA emphasized broad local community involvement. However, limited public and local support was cited as a major setback in sediment project implementations at an IJC workshop held in June 1997 (Zarull *et al.*, 1999). In the recent report, IJC (IJC, 2002) has again emphasized that the Great Lakes region cannot receive support as a national priority without a publicly accepted, comprehensive plan for restoring the Great Lakes. Both the federal and provincial governments need to improve their efforts for educating and informing the public of monitoring results, rationale for selection of methodologies, and on progress in developing and implementing Remedial Action Plans and in restoring beneficial uses (IJC, 2003).

Unfortunately, government efforts on providing relevant information and education on the Great Lakes are dismally low.

SOME SPECIFIC RECOMMENDATIONS

Take all of these issues, concerns and needs into account when considering the renewal of the Federal Great Lakes Program.

Identify opportunities for binational approaches

During the review of the Great Lakes Water Quality Agreement, ensure that it reflects a long-term vision for the Great Lakes Ecosystem.

There is a need for increased capacity of all levels of government – federal, provincial and municipal – to address Great Lakes issues.

Improve the mechanisms to involve the public.

Commit to a green energy future.

Ensure complete remediation in all Great Lakes Areas of Concern by 2015.

Strengthen water and air quality monitoring and enforcement.

Regulate the withdrawal of water from the Great Lakes system.

Support the development of clean production.

Require pollution prevention plans for all industrial discharges to wastewater treatment plants.

Eliminate tax incentives to unsustainable practices, eg factory farms, and provide incentives to sustainable practices.

Encourage anti-sprawl development and smart growth strategies with a high priority on smart transportation networks.

Ensure that First Nations are involved in all plans and projects affecting their traditional lands.

CONCLUSION

The federal government must work to make Great Lakes-St. Lawrence Ecosystem restoration a national priority. This will be possible by adopting a targeted and proactive approach towards Great Lakes restoration, emphasizing public education and information and increasing transparency in the approach, monitoring and evaluation.

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