



SILVERHILL INSTITUTE OF ENVIRONMENTAL
RESEARCH AND CONSERVATION

WATER QUALITY IN THE GREAT LAKES

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OUR GREAT LAKES AND WATER QUALITY

The Great Lakes' water quality has greatly improved since the 1970s. This may be in part the result of increased government funds and efforts to monitor and clean-up the Lakes as well as more environmentally-friendly practices by industry and municipalities (International Joint Commission 2006). As a result, total polychlorinated biphenyl (PCB) concentrations in sport fish found in the Great Lakes have declined by 90% (Ministry of the Environment 2011). Moreover, there has been a 50-80% reduction in dioxin levels in lake trout, and a 75% reduction in mercury levels in fish (Ministry of the Environment 2011).

These successes stem from a ban on dichloro-diphenyl-trichloroethane (DDT), the implementation of strict regulations for pollution discharge, stringent emissions' standards, and government action. Additionally, in 1987, the United States and Canada signed the Great Lakes Water Quality Agreement (International Joint Commission 2006). This Agreement binds both countries to eliminate toxic chemicals through zero discharge, and to work cooperatively to reduce pollution levels (International Joint Commission 2006).

WATER QUALITY MONITORING AND INTERESTING INITIATIVES

To determine an increase or decrease of water quality, fish are often used as indicators because of the process of bioaccumulation of toxins in fish over time. This type of biological monitoring is an important complement to chemical monitoring of pollution concentration in water (Toronto Region Conservation Authority, 2011).

To encourage consumers to eat fish from Ontario waters, an interactive map has been created to retrieve data on fish species and test locations. This is an interactive supplement to the Ontario Guide to Sport Fishing. The way it works is that consumers can input the location of the sport-fish catch and the size of the

fish in order to obtain the recommended intake levels based on body size and contaminant levels found in the tested fish (Ministry of the Environment 2011). This interactive map is being used to alleviate concerns about water quality and contaminant levels in fish, including those found in the Great Lakes. Mercury, PCBs and dioxins account for most contaminant advisories (Ministry of the Environment 2011).

CONCLUDING REMARKS

Despite government and industry efforts, areas of concern still remain in some parts of the Great Lakes. This concern is caused by point and non-point sources of contaminants entering the water in bays and harbors. Figure 1 (produced in 2008) shows areas of concern in the Great Lakes-St. Lawrence River Basin (Environment Canada 2008). There are over 40 areas of concern listed for the United States and Canada. On a positive note, Severn Sound, Wheatley and Collingwood Harbours have been de-listed as Canadian areas of concern, and Spanish Harbour is in recovery. Although Hamilton Harbour is an area of concern in Canada, research conducted in 2009 by Véronique Hiriart-Baer et al. provides a slightly more complicated picture. Data shows that for certain contaminants, water quality has improved since 1987. Total phosphorus (TP) has decreased by 36%; soluble reactive phosphorus has decreased by 16%; and total ammonia has decreased by 26% (Hiriart-Baer et al. 2009).

Overall, water quality has improved in the past 40 years with advanced research and monitoring. That said, the Great Lakes still remain a concern as the size of the water body and the extensive shorelines provide a significant challenge for clean-up efforts, regulation, and scientific monitoring (Shear 2006).



Figure 1: Areas of Concern in the Great Lakes-St Lawrence River Basin

Source: <http://www.ec.gc.ca/raps-pas/default.asp?lang=En&n=96A7D1F1-0>

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