

Chapter 5

Human Health Information

Insert at the beginning of LaMP 2004 Chapter 5.



Smelting, Lake Superior, Minnesota
Photograph by Minnesota Sea Grant

Lake Superior Lakewide Management Plan
2004

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Chapter 5

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5.0 INTRODUCTION

The Lake Superior LaMP seeks to restore and protect the beneficial uses of the Great Lakes, such as safe beaches, clean drinking water and healthy fish and wildlife populations. Awareness of the underlying causes of these beneficial use restrictions from chemical and microbial contaminants, and the associated health consequences, will allow public health agencies to develop societal responses protective of public health.

The beneficial uses related to human health include ‘Swimmability’, ‘Fishability’, and ‘Drinkability’. Swimmability means that all beaches are open and available for public swimming. Fishability means that all fish are safe for human consumption. Drinkability means that treated drinking water is safe for human consumption.

Chemical and microbial pollutants enter the human body through three major routes: ingestion (water, food, soil), inhalation (airborne), and dermal contact (skin exposure). Within the scope of the LaMP 2004 update, exposure to pollutants through water contact is highlighted. The major areas of health concern in the Great Lakes basin are pollutant exposure from ingestion of contaminated fish, incidental ingestion of water while swimming, and ingestion of contaminated drinking water.

5.1 LaMP 2002 TO 2004 ACCOMPLISHMENTS

5.1.1 Formation of the Great Lakes Human Health Network

The Lake Superior Workgroup took the initiative to recommend that the Binational Executive Committee (BEC) form a basin-wide Great Lakes Human Health network. As a result of the Workgroup’s efforts, the Great Lakes Human Health Network (Network) was established in December 2002. The Network, formed under the guidance of the BEC, has created a forum to discuss human health issues directly related to Great Lakes water quality. The Network addresses health issues related to the ecosystem of the Great Lakes basin, including drinking and recreational water quality and fish consumption.

The Network is a voluntary partnership of representatives of both U.S. and Canadian governments and their agencies whose purpose is to exchange information, facilitate communication, and support the coordination of public health and environmental agencies.

The Network holds regular conference calls to exchange information. The members transmit the

shared information to their organizations and the communities they serve. The network also supports the LaMP and RAP processes.

Currently, the Network has representatives from six federal government agencies, five tribal government agencies, eleven state and provincial government agencies, and one county government agency. We anticipate that the membership will continue to grow as the Network becomes more widely known. Current information on the Network and its work may be found at www.epa.gov/glnpo/health.html.

5.1.2 Accomplishments/Activities Related to Fish Consumption Advisories and Contaminants in Fish

- States, tribes and the province of Ontario continue to provide advice to the public on making choices about which fish to eat and how often to reduce exposure to contaminants in fish. New outreach materials continue to be developed and distributed to the public, particularly targeted to women of childbearing age.
- As reported in the Chemical Chapter of this document, concentrations of routinely monitored contaminants such as PCBs, are declining in fish. U.S. EPA's Great Lakes National Program Office (GLNPO) Trend Monitoring Program recently began monitoring additional contaminants, such as polybrominated diphenylethers. The trends, human health exposure, and effects from these contaminants will continue to be assessed.
- Results from the Centers for Disease Control and Prevention (CDC) National Health and Nutrition Examination Survey (NHANES) 1999-2000 survey indicate that 8% of U.S. women of childbearing age may have exposures to methylmercury above a level that the U.S. EPA considers safe. Human exposure to methylmercury is mainly a result of fish consumption.
- The Wisconsin Environmental Public Health Tracking Collaborative (WEPHTC) is streamlining and centralizing access to existing environmental, agricultural, and health data systems specific to Wisconsin. This will create a user-friendly Wisconsin Public Health Tracking System. WEPHTC began a pilot project in January 2004 to examine the link between fish consumption and methylmercury exposure in men.
- The Lake Superior Binational Program sponsored a workshop in Thunder Bay in June 2003. Entitled "Mercury in Our Lives: A Workshop on Mercury reduction for the Lake Superior Community," the workshop was a resounding success. The workshop began with a presentation on human health issues including mercury in fish.
- The Great Lakes Indian Fish and Wildlife Commission presented a summary of

chemical contamination in Lake Superior fish for the Great Lakes Fishery Commission State of Lake Superior Conference.

- The Food and Drug Administration (FDA) and U.S. EPA released a joint advisory on fish consumption and methylmercury. The revisions represented the first unified FDA and EPA revised advisory on fish consumption for populations at risk from exposure to high mercury levels (i.e., pregnant and nursing women, women of child-bearing age, and young children).

5.1.3 Accomplishments/Activities Related to Drinking Water

Water Quality Tracking -- A key action item in the 2002 Great Lakes Strategy stated that, "Beginning in 2002, the US Environmental Protection Agency (USEPA), in cooperation with local utilities, will track water quality at the intake points of selected drinking water treatment plants around the Lakes. Findings will be reported to the public through the biennial State of the Lakes Ecosystem Conference (SOLEC) State of the Lakes report." The web site may be found at <http://www.epa.gov/glnpo/gls/gls04.html>.

5.1.4 Accomplishments/Activities Related to Beaches Safe to Swim

Background. The Great Lakes Water Quality Agreement (IJC1994) calls for recreational waters to be substantially free from bacteria, fungi, and viruses. These microbial organisms of fecal origin have the potential to cause relatively mild illnesses (e.g., gastroenteritis) to more serious illnesses (e.g., hepatitis, typhoid fever) from a single exposure.

Lake Superior's myriad recreational activities do present opportunities for contamination to occur (i.e., swimming, water-skiing, sail-boarding, and wading). Apart from the risks of accidental injuries, the major human health concern for Lake Superior recreational waters is microbial contamination by bacteria, viruses, and protozoa (Health Canada, 1998; WHO, 1998).

To improve water quality testing at the beach and to help beach managers better inform the public when there are water quality problems, Congress passed the Beaches Environmental Assessment and Coastal Health Act (BEACH Act) in October 2000. U.S.EPA has established guidelines on the maximum level of pollution acceptable for fresh water use.

The BEACH Act authorizes U.S.EPA to award grants to eligible states, tribes, and territories to develop and implement beach water quality monitoring and public notification programs at coastal and Great Lakes beaches. These grants also support the development and implementation of programs to inform the public about the risk of exposure to disease-causing microorganisms in the waters at the Nation's beaches. This year, U.S.EPA awarded \$9.9 million in grants to eligible states and territories for beach program implementation.

Progress on Developing and Implementing Beach Monitoring and Notification Plans. The Great Lakes Strategy calls for states to establish water quality monitoring and public notification programs that comply with the BEACH Act requirements at 95% of all high priority Great Lakes beaches. All of the Lake Superior states have beach monitoring and public notification programs in place at most of their coastal beaches.

Minnesota: In the 2003 season, 100% of Minnesota's beaches in the Lake Superior basin had beach monitoring and public notification programs in place.

Wisconsin: In the 2003 season, 100% of the high priority and medium priority Lake Superior beaches had monitoring and notification programs in place. Thirty-six percent of the low priority beaches are being monitored. Very small beaches with little or no use are not being tested.

Michigan: In the 2003 season, 59% of Michigan's beaches in the Great Lakes basin had beach monitoring and public notification programs in place.

Determine Pollutant Sources Linked to Beach Closings. The Great Lakes Strategy calls for States to evaluate Great Lakes beaches that are closed more than 5% of the swimming season to determine pollutant sources. States are beginning to identify pollution sources at their coastal beaches. U.S.EPA is working closely with the state beach programs coordinators to identify beaches affected by wet weather. U.S.EPA is developing a wet weather strategy to plan remediation efforts at these beaches.

Minnesota: At 12 beaches (out of 35), potential sources of pollution either on the beach or nearby have been identified. These sources are storm water discharges or streams with storm water discharges into them. The city of Duluth and the Western Lake Superior Sanitary District have conducted dye testing in the sewer lines and storm water pipe tanks to eliminate them as potential sources of bacteria at the New Duluth Boat Club site. They have also conducted a limited amount of spatial testing to determine if there is one specific point of discharge. The District has also been pursuing DNA fingerprinting. The sources of bacteria are as yet unknown but further investigation will take place this monitoring season.

Wisconsin: Many Lake Superior counties will begin to look at sources of pollution. Thus far, no sources have been identified.

Michigan: MDEQ is in the process of identifying the sources of contamination for all Great Lakes and inland beaches via its Total Maximum Daily Load (TMDL) program, its Combined Sewer Overflow (CSO) and Storm Sewer Overflow (SSO) Strategies, and local health department sanitary surveys.

Adoption of Bacteria Criteria that meet National Standards. As a requirement of accepting BEACH Act grants, states must adopt bacteria criteria at least as protective as U.S.EPA's published criteria at their coastal waters.

Minnesota: Minnesota currently monitors recreational waters for *E. coli* and will likely adopt U.S. EPA's bacteria criterion by 2005.

Wisconsin: Although Wisconsin currently monitors for *E. coli*, Wisconsin has not adopted U.S.EPA's bacteria criterion as the state's standard. Wisconsin is in the process of adopting U.S. EPA's bacteria criterion but it will probably not adopt the standard until 2005.

Michigan: Michigan has already adopted U.S.EPA's ambient water quality criterion for bacteria.

Meet Bacteria Standards at Great Lakes Beaches. The Great Lakes Strategy states that by 2010, 90% of monitored, high priority Great Lakes beaches will meet bacteria standards more than 95% of the swimming season.

Minnesota: During the 2003 swimming season, 89% of Minnesota beaches in the Lake Superior basin met bacteria standards more than 95% of the time.

Wisconsin: During the 2003 swimming season, 45% of monitored beaches met bacteria standards more than 95% of the time. (Data include both Lake Superior and Lake Michigan beaches.)

Michigan: During the 2003 swimming season, 73% of Michigan's beaches in the Great Lakes basin met bacteria standards more than 95% of the time.

5.1.5 Accomplishments Related to Communication to the Public

Because it has been shown that people who engage in recreational water sports have a higher incidence of symptomatic illnesses, it has become increasingly more important to make the public aware of the potential health hazards that are associated with recreational waters. Recent progress has been made on the national and local levels to provide the public with useful tools that can provide needed information regarding the use of recreational waters.

- BEACHNET. Provides the opportunity for interested citizens to improve recreational beach water quality in the Great Lakes Basin through networking, collaboration, and information exchange. BEACHNET is sponsored by the Great Lakes Beach Association and brings together members from federal, state, county and local agencies, public health agencies, regulatory agencies, researchers, universities, and environmental groups from Ohio, Michigan, Indiana, Illinois, Wisconsin, Minnesota, New York, Pennsylvania, and Environment Canada. (<http://www.great->

lakes.net/glba)

- BeachCast. Provides Great Lakes beach goers with access to information on Great Lakes beach conditions, including health advisories, water temperature, wave heights, monitoring data, and more. BeachCast is a service of the Great Lakes Commission and its Great Lakes Information Network (GLIN) (<http://www.glc.org/announce/03/07beachcast.html>).
- EMPACT. The National Risk Management Research Laboratory of U.S.EPA's Office of Research and Development initiated the development of this handbook to help interested communities learn more about the beach monitoring projects associated with U.S.EPA's Environmental Monitoring for Public Access and Community Tracking (EMPACT) Program and to give communities the information they need to conduct their own projects (<http://www.epa.gov/ORD/NRMRL/Pubs/625R02017/625R02017.pdf>).
- BEACH Watch. Contains information about U.S.EPA's BEACH Program, links to local beach protection programs, and access to U.S.EPA's national beach water quality database. Provides up-to-date information on beach health protection activities around the country (<http://www.epa.gov/waterscience/beaches/>).

5.2 CHALLENGES AND NEXT STEPS FOR 2004 TO 2006

- Health Canada will formalize their Canadian Great Lakes Human Health Network in Spring 2004;
- Canadian and U.S. Great Lakes Human Health Network will merge in 2004; and
- The Binational Network will develop workplans for 2004 and/or 2005.

5.3 INFORMATION

Web links listed below provide reference material for information cited in beach LaMP updates. In addition, a collection of useful resources has been compiled for future use.

Government Action to Protect the Public Health

Monitoring

<http://www.epa.gov/waterscience/beaches/local/sum2.html>

<http://www.epa.gov/waterscience/beaches/grants/2003/fs.htm>

<http://www.epa.gov/waterscience/beaches/about.html>

Research

<http://www.epa.gov/nerlcwww/neearnerl.htm>

Communication Outreach

<http://www.great-lakes.net/lists/beachnet/beachnet.info>
<http://www.glc.org/announce/03/07beachcast.html>
<http://www.epa.gov/ORD/NRMRL/Pubs/625R02017/625R02017.pdf>
<http://www.epa.gov/glnpo/lakemich/lmlamp2000/LM%20chapter%204.pdf>

Source Reduction

http://www.southholland.org/Tarp_Plan.htm
<http://www.mmsd.com/tunnelfactsheet.html>
http://cfpub1.epa.gov/npdes/home.cfm?program_id=5
<http://www.great-lakes.net/humanhealth/lake/>
<http://www.rougeriver.com/cso/index.html#Summary>

Emerging Issues

http://www.epa.gov/region5/water/pdf/factsheets/R4_G3_RecreationalWQ.pdf
<http://www.epa.gov/ORD/WebPubs/beaches/>
http://www.zwire.com/site/news.cfm?newsid=10320818&BRD=988&PAG=461&dept_id=141265&rfti=8

Resource Information

Great Lakes BeachCast - <http://www.great-lakes.net/beachcast/nr.html>
EPA's BEACH Watch website - <http://www.epa.gov/waterscience/beaches/>
EPA BEACH Act - <http://www.epa.gov/waterscience/beaches/act.html>
NRDC "Testing the Waters 2003" survey -
<http://www.epa.gov/waterscience/beaches/act.html>
EPA's Great Lakes Strategy 2002 - A plan for the new Millennium -
<http://www.epa.gov/glnpo/gls/gls04.html>

5.4 ADDITIONAL INFORMATION

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