Preliminary International Joint Commission Recommendations on Microplastics in the Great Lakes

On April 26-27, 2016, the IJC hosted a workshop on microplastics to address concerns posed by the presence of microplastics in the Great Lakes and their potential to cause impacts to the Great Lakes ecosystem and human health. The workshop was attended by 33 experts representing a broad range of sectors including Federal, State, Provincial and Municipal governments, industry, non-profit organizations, and academia. A workshop report was developed that reflects the workshop proceedings and findings and is posted on the IJC web site.

The workshop report includes ten recommendations that were developed through a series of brainstorming sessions followed by a voting process by participants. These workshop recommendations reflect the overall views of the group but do not represent a consensus. The IJC has considered the ten workshop recommendations and the entire workshop report to develop four preliminary recommendations. The IJC will request public input on these recommendations from October 11 to November 10, 2016 on its website at www.ijc.org. This input will be considered in developing final recommendations to be issued to the governments.

It is critical to properly manage plastic materials so they do not enter the environment. Prevention of plastic debris in the Great Lakes could be accomplished through a combination of approaches and tools. The IJC recommends that **the Parties develop a binational plan to prevent microplastics entering the Great Lakes using a combination of approaches and tools including, science and research, policy, market-based instruments and education and outreach.** Furthermore, IJC proposes three additional recommendations, which support the broad recommendation and reflect each of the three themes of the workshop (i.e., Science, Pollution Prevention, and Public Education and Outreach).

Science

IJC Recommendation: **The Parties should jointly undertake monitoring, science and research initiatives for a binational assessment of microplastics in the Great Lakes to inform decision-making by (1) developing and/or adopting standardized sampling and analytical methods (2) developing a transport model to determine the sources and fate of microplastics (3) assessing potential ecological and human health impacts and (4) investing in research for source reduction, improved recycling, and reduced release of plastic pollution.**

Several knowledge gaps exist. These include, sources, abundance and distribution of microplastics in the environment; the rates and mechanisms by which different plastic debris degrades; understanding

of the bioaccumulation of plastics and associated contaminants in food webs and their potential eco-toxicological consequences; and the potential impact on human health from fish consumption.

All of the microplastics science and research is underpinned by the need to develop and/or adopt standardized sampling and analytical methods for microplastics. The use of standard methods would improve the understanding of the levels of microplastics in the Great Lakes and allow policy makers to take meaningful action and identify what constitutes measurable success. For example, the National Oceanic and Atmospheric Administration (NOAA) has developed sampling and analytical protocols for microplastic particles in the size range of 0.333 mm – 5 mm that could be promoted for use in microplastics sampling and research. There is also a need to develop/utilize sampling and analytical methods able to measure plastic particles at sizes smaller than 0.333 mm. Innovative product development, and research to reduce the shredding of microplastic fibers from textiles through modifications to the manufacturing, recycling, or disposal process or materials used should be encouraged and supported.

Fate and transport models help to better understand the exposure of microplastics: Their sources (e.g., fibers, pre-production pellets); their entry and concentration in the environment (e.g., wastewater effluent, overland runoff, sewage sludge application); and their fate in the environment (i.e., distribution and uptake among environmental compartments and biota). Once the exposure is determined, the ecological and human health impacts and eventually the risk of microplastics in the Great Lakes can be determined. The workshop revealed a lack of knowledge in the risk determination of microplastics in the Great Lakes. Governments need to invest in the necessary scientific investigations in order to determine the risk posed by the ubiquitous presence of microplastics in the Great Lakes and take the necessary measured actions relative to other stressors in the Lakes. Notwithstanding this, governments should abide by the precautionary principle.

<u>Pollution Prevention</u>

IJC Recommendation: **The Parties should compare and analyze existing programs and policies for the reduction and prevention of plastic and microplastic in the Great Lakes, promote those that are good models for plastics management, and provide funding and support for such programs.**

There are several programs that currently exist that could serve as models for plastics (and ultimately microplastics) management in the Great Lakes, including the NOAA Marine Debris Program (and associated Great Lakes Marine Debris Action Plan), the EPA's Trash Free Waters Program and industry initiatives such as Operation Clean Sweep and the Responsible Care Program (Chemical Industry Association of Canada). By comparing and analyzing existing programs and policies, good models for plastics management can be highlighted and promoted in the Great Lakes region. Improvements in waste management can include actions as simple as municipalities providing lids for recycling bins or seeking tools and opportunities to support harmonized waste management. Various waste management tactics employed at municipal and regional levels (e.g., covered recycle bins, single-stream recycling) should be explored and those that are most effective promoted. For example Multi-Material

British Columbia seeks to expand materials collected for recycling as well as to expand the access to recycling programs in the province. Other instruments, such as market-based bans and fees for single-use plastic items (e.g., bags, water bottles), may be another useful tool to reduce marine plastic debris. The governments should also explore the requirement for industry to use an Extended Producer Responsibility (EPR) program to promote the prevention of microplastics in the Great Lakes. EPR is an environmental policy approach in which the producer's responsibility for a product extends beyond the manufacturing stage to the management of the products at their end-of-life stage. These pollution prevention efforts may help reduce other forms of pollution.

Investments in the implementation of best practices at the local/regional level could be accomplished through co-sponsoring with industry or other stakeholders or relevant organizations.

Education and Outreach

IJC Recommendation: **The Parties should provide funding support for local programs and organizations that provide education and outreach to promote the reduction and prevention of plastics/microplastics in the Great Lakes.**

Supporting education and outreach to improve environmental literacy of plastic/microplastic issues, including the promotion of proper disposal and recycling of plastic materials, can lead to changes in behavior to reduce and prevent plastics from entering the Great Lakes. Research, education and outreach programs and best management practices for preventing microplastic pollution should be shared broadly with the Great Lakes community. The goal would be to enhance environmental literacy to make informed decisions, leading to positive actions and changes in behavior to reduce the amount of plastics (and ultimately microplastics) entering the waters of the Great Lakes. There are several organizations and programs that can help to promote this sharing, including the International Association of Great Lakes Research, NOAA's Sea Grant Program and Marine Debris Program, EPA's Trash Free Waters, Great Lakes Beach Association, and other Great Lakes NGOs.

The plastics industry in the U.S. and Canada, through the American Chemistry Council and the Canadian Plastics Industry Association, are involved in a number of national and international programs and initiatives to prevent and reduce marine plastics debris. These broader programs and initiatives potentially contain a wealth of best practices and lessons learned that can be shared and promoted in the Great Lakes region. Creating a collaborative environment for the plastics industry and Great Lakes stakeholders, would assist in this sharing effort and encourage continuous improvement for plastics and microplastics management through reduce, reuse and recycle programs. The value of carryover or spillover effects into other areas of pollution should also be considered, that is, behaviours to reduce plastic pollution may facilitate behavior to reduce other forms of pollution.