Appendix A - What is the problem with single-use plastic?

On a global scale, single-use plastics are widely used for their versatility, convenience, light weight for shipping and low production costs.

Of the 6,300 metric tonnes of plastic waste estimated to have been produced globally as of 2015, a mere 9% was recycled, 12% was incinerated, and the remaining 79% accumulated in landfills or the natural environment.[1] Recycling rates in Canada are shown to be relatively consistent with this trend.[2]

Single-use plastics are designed to be used once, often away from home, and disposed of after a brief use.[3] These items include packaging for food and other consumer products such as plastic bags, disposable cups, lids, straws, cutlery, and beverage bottles.

Different types of plastic materials make up single-use plastics, and the ability to recycle these items varies between jurisdictions.

Single-use plastics as litter

A survey of large litter conducted by the City of Toronto in 2016 found that littering in the city is on the rise.[4] Plastics represented about 31.1% of all large litter found, with water bottles at 2.5% and plastic lids and straws at about 6.4%. By weight, recyclable polyethylene terephthalate (PET) beverage bottles made up 15.4% of all litter collected in the study. To tackle Toronto's litter problem, the report recommended that the city enhance litter abatement programs, review its waste management practices and policies, and launch a public awareness campaign focusing on the most commonly found items.

Plastic debris and marine environments

Much of the literature regarding single-use plastics focuses on the impact plastics have on marine environments. Plastic litter enters waterways through drains, rivers and creeks and eventually reaches larger bodies of water such as the Great Lakes and oceans. The presence of plastics in a marine ecosystem can negatively impact the

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[1] Geyer, R., Jambeck, J.R., & Law, K.L. (2017). Production, use, and fate of all plastics ever made. *Science Advances*, 3 (7). Retrieved from: https://advances.sciencemag.org/content/3/7/e1700782.full

[2] Environmental Defence. (2018, October). Talking Trash: Canada's Plastic Pollution Problem. Retrieved from: https://environmentaldefence.ca/canadas-plastic-pollution-problem/

[3] European Commission. (2018, May 29). Commission Staff Working Document Impact Assessment - Reducing Marine Litter: action on single use plastics and fishing gear. Retrieved from: https://data.consilium.europa.eu/doc/document/ST-9465-2018-ADD-2/en/pdf

[4] AET Group. (2016, October 27). Toronto Litter Audit Summery Report. Prepared for the City of Toronto. Retrieved from: https://www.toronto.ca/wp-content/uploads/2017/10/8ed5-Toronto-Litter-2016-Final-Report_App_Final.pdf

living things that inhabit it. Marine animals may mistakenly ingest plastics or become entangled in plastic debris, resulting in injury or death.[5]

It is estimated that 10,000 metric tonnes of plastic end up in the Great Lakes each year.[6] While Toronto is not located in close proximity to an ocean, plastic litter from the city enters Lake Ontario, eventually reaching the Atlantic Ocean by way of the St. Lawrence River. This in turn, contributes to global marine plastic debris. In Europe, plastics represent more than 80% of all marine litter, and this has provided the basis for action on banning select single-use plastics across the European Union[7].

As plastics break down, eventually turning into microplastics, they are more likely to interfere with food webs.[8] Although research is still emerging regarding the effects of microplastics on living organisms, studies have found that microplastics that are ingested or inhaled by humans can cause harm to cells and tissues.[9]

[5] National Oceanic and Atmospheric Administration (2016, June). Marine Debris Impacts on Coastal and Benthic Habitats. Retrieved from: https://marinedebris.noaa.gov/sites/default/files/publications-files/Marine_Debris_Impacts_on_Coastal_%26_Benthic_Habitats.pdf

[6] Rochester Institute of Technology. (2016, December 19). Researchers estimate 10,000 metric tons of plastic enter Great Lakes every year, Retrieved from: https://www.sciencedaily.com/releases/2016/12/161219151752.htm

[7] European Commission. (2018, May 28). Single-use plastics: New EU rules to reduce marine litter. Retrieved from: https://europa.eu/rapid/press-release_IP-18-3927_en.htm

[8] Nature. (2013, Feb 13). Classify plastic waste as hazardous. Retrieved from: https://www.nature.com/articles/494169a

[9] Nature. (2013, Feb 13). Classify plastic waste as hazardous. Retrieved from: https://www.nature.com/articles/494169a