



Our Fresh Water Is Seeing More Plastic Litter due to COVID-19:

Here's what Canada should do about it

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Key Messages

- Plastic pollution is widespread in freshwater systems across Canada and leads to harmful environmental effects.
- Some COVID-19 measures have led to increased plastic litter, much of which ends up in our freshwater systems.
- The impact of the pandemic on plastic usage adds to the urgency to better understand and educate the public about the effects of plastics on fresh water and for the Government of Canada to continue its efforts to achieve zero plastic waste.

Plastics in Canada

Plastics are one of the most popular materials in existence, given that they are relatively inexpensive to produce, durable, and can be used in a diverse range of products. In Canada, less than 10% of plastics are recycled, contributing to over 3 million tonnes of plastic being thrown into landfills or into the environment each year.¹ Over a third of plastics produced in Canada are for single-use packaging or products—such as plastic bags, take-out containers, and bottlecaps—which constitute one of the largest sources of plastics found in fresh water.² The unsustainable production, consumption, and management of plastic, combined with its durability and ubiquity, threatens the health of our fresh water.

What We Know About the Impact of Plastics on Fresh Water

In aquatic environments, organisms of all types—from algae to fish to birds—ingest or interact with plastics. The ingestion of plastics by animals may cause reproductive issues, behaviour changes, and starvation. Animals can also become entangled in plastic debris, causing physical harm and, in some cases, death.³ Plastic debris of all sizes can also accumulate chemicals and leach them into the environment with potentially toxic effects on wildlife.⁴



Until recently, researchers have focused primarily on the effects of plastics in oceans rather than fresh water. However, up to 80% of the plastics found in marine systems originate from rivers that transport plastics from land to ocean, and recent studies suggest that the levels of plastic pollution in freshwater sources are comparable to those found in oceans.⁵

Plastics are released into our freshwater systems in many different shapes and sizes, and through various means—including wastewater treatment plants, landfill leakage, storm drainage, agricultural runoff, effluent and scraps from industry, inadequate waste management procedures, and litter.

Pieces of plastic waste larger than 5 mm are called macroplastics and come primarily from sources such as food wrappers, beverage bottles and lids, and bags. Over time, environmental conditions—such as wind, rain, waves, and sun—cause macroplastics to break down into smaller pieces (< 5mm) called microplastics. These tiny pieces of plastic can also enter the water in micro form through sources such as microbeads from personal care products, particles from tires and road wear, and microfibres from our clothes.

There are a wide variety of sizes, shapes, polymer types, concentrations, and chemical properties of microplastics, which means they constitute a diverse suite of contaminants rather than a single type.⁶ Over the past few years, the study of microplastics has grown immensely, but much is still unknown about their short- and long-term ecological effects. What we do know is that microplastics are everywhere—from population-dense cities to the remote corners of the Arctic. Due to their small size, microplastics can easily travel long distances across watersheds and are ingested by fish, birds, and other animals—including

humans.⁷ As an emerging threat to freshwater environments with potential human health implications, further scientific research on the sources, fate, and effects of microplastics is critical.

How Has COVID-19 Impacted Plastics Usage and the Health of our Fresh Water?

The COVID-19 pandemic has prompted many people to adjust their day-to-day habits and practices as we all work to ensure the safety and health of our fellow citizens. As part of these changes, Canadians' reliance on certain types of single-use plastics has increased, and policy-makers are facing pressure to reverse or suspend legislation that would address plastic waste and pollution, such as Canada's proposal to ban harmful single-use plastics by 2021. For example, at the height of the outbreak, some provincial health officials advised against using reusable bags and containers in grocery stores, with a number of chains banning them outright in favour of plastic bags. Although many of these restrictions are now being lifted, it may still be a while before consumers return to reusable bags and coffee cups.

COVID-19 has also brought a new source of plastic pollution in the form of single-use personal protective equipment (PPE), such as masks and gloves. Single-use PPE is a necessary and effective public health measure, but these products are not always discarded properly and may end up as litter that enters our waterways. Indeed, a recent study identifies plastic face masks as a potential source of microplastic fibres in the environment.⁸ Although research is already underway to develop biodegradable or recyclable masks, even a temporary surge in plastic litter can lead to long-term impacts for freshwater environments.



By drawing more attention to our dependence on plastic products and their environmental effects, the pandemic has also underscored the urgency to address existing inefficiencies in our waste management procedures and infrastructure. For instance, in Canada, 86% of plastic waste ends up in landfills rather than being recycled.⁹ This represents a traditional linear approach—where items are made, used, and then disposed of—rather than a circular economy approach, which would keep resources and products in use for as long as possible and then recycle and regenerate them

for new products or purposes. Not only is landfill leakage a source of plastics entering our watersheds, this linear approach to plastic waste management amounts to throwing away nearly CAD 8 billion for the Canadian economy.¹⁰ This economic and environmental loss could be transformed into an opportunity by adopting a more circular approach to plastics, including the implementation of extended producer responsibility schemes and including specifications in public tenders for plastic goods to prioritize recycled and recyclable materials.

What Needs to Happen Now?

In order to reduce the impacts of COVID-19 on plastic pollution in our fresh water, the Government of Canada should:

- 1. Move forward with the Canada-wide strategy on zero plastic waste:** Canada should proceed with implementing its existing strategy and legislation on plastic waste reduction, including a ban on harmful single-use plastic items by 2021.
- 2. Provide educational resources to the public on more sustainable PPE use and disposal:** Raise public awareness about proper disinfection, reuse, and disposal of PPE through social media and traditional marketing campaigns to help ensure we do not produce excess waste and that it does not end up as litter in our environment, including fresh water.
- 3. Invest in research and innovation on plastic pollution in fresh water as part of sustainable recovery measures:** Part of Canada's action plan to ensure a green recovery from COVID-19 should include the implementation of financial programs and incentives for small businesses, entrepreneurs, and researchers to develop innovative and sustainable solutions to reduce and prevent plastic pollution in fresh water, as well as better understand its effects.
- 4. Support and develop sustainable plastic waste management systems:** The federal government needs to work in collaboration with industry, provinces, territories, municipalities, and Indigenous governments to coordinate localized and harmonized waste management procedures, as well as invest in appropriate infrastructure and markets to help implement a circular economy for plastics within Canada.



Endnotes

- ¹ Trudeau, J. (2019). *Canada to ban harmful single-use plastics and hold companies responsible for plastic waste*. Justin Trudeau, Prime Minister of Canada. <https://pm.gc.ca/en/news/news-releases/2019/06/10/canada-ban-harmful-single-use-plastics-and-hold-companies-responsible#:~:text=Every%20year%2C%20Canadians%20throw%20away,short%2Dlived%20products%20and%20packaging>
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- ³ van Emmerik, T., & Schwarz, A. (2019). Plastic debris in rivers. *WIREs Water*, 7(1), e1398. <https://doi.org/10.1002/wat2.1398>
- ⁴ Bucci, K., Tulio, M., & Rochman, C. M. (2020). What is known and unknown about the effects of plastic pollution: A meta-analysis and systematic review. *Ecological Applications*, 30(2), e02044. <https://doi.org/10.1002/eap.2044>
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- ⁶ Rochman, C. M., Bookson, C., Bikker, J., Djuric, N., Earn, A., Bucci, K., Athey, S., Huntington, A., McIlwraith, Munno, K., De Frond, H., Kolomijeca, A., Erdle, L., Grbic, J., Bayoumi, M., Bottrelle, S. B., Wu, T., Santoro, S., Werbowski, L. M., . . . Hung, C. (2019). Rethinking microplastics as a diverse contaminant suite. *Environmental Toxicology and Chemistry*, 38(4), 703–711. <https://doi.org/10.1002/etc.4371>
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- ⁸ Fadare, O. O., & Okoffo, E. D. (2020). Covid-19 face masks: A potential source of microplastics fibers in the environment. *Science of the Total Environment*, 737, 140279. <https://doi.org/10.1016/j.scitotenv.2020.140279>
- ⁹ Wuennenberg, L. & May Tan, C. (2019). *Plastic waste in Canada: A daunting economic and environmental threat or an opportunity for sustainable public procurement?* International Institute for Sustainable Development. <https://www.iisd.org/sites/default/files/publications/plastic-waste-canada.pdf>
- ¹⁰ Trudeau, 2019.