

Let's get (L'O)REAL about the sources of microplastics

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LETS GET PAST THIS IDEA THAT JUST BANNING MICROBEADS CAN SAVE OUR OCEANS

SUMMARY

Microplastics were partially banned in Canada when microbeads were classified as toxic. They do not degrade for up to 1000 years and when ingested, cause blockages and release toxins. Regardless of lifestyle, they accumulate in every single Canadian and are tied with cardiovascular disease and cancer.

Most microplastics in Canadian waters are microfibers, those that erode from textiles, and are just as bad as microbeads. However no steps are currently being taken to address this issue facing Canadians and their oceans.

PROGRESS SO FAR

Bill C-680 was proposed in 2015 for Canada to ban the sale of cosmetic microbeads. Microbeads were later listed as toxic substances under the Environment Protection Act, passing unanimously⁶.

MICROFIBERS & SOCIETY

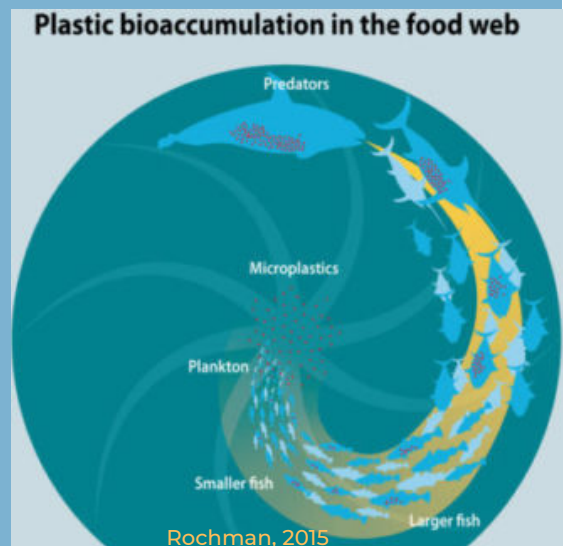
Microbeads are a type of petroleum based "microplastics"¹⁵, defined as 1-5mm on its longest dimension³. Common types include polyvinylchloride (PVC), nylon, and polyester.⁷ Nylon and polyester make up 70% of clothing materials worldwide².

Microplastics accumulate in the environment because it takes <1000 years to decompose¹². Clothing microfibers are **secondary microplastics** (those that erode from larger plastics)¹⁰. Up to **1 million microfibers** are shed in a laundry load², much greater than 90,000 microbeads per use of a face scrub⁹.

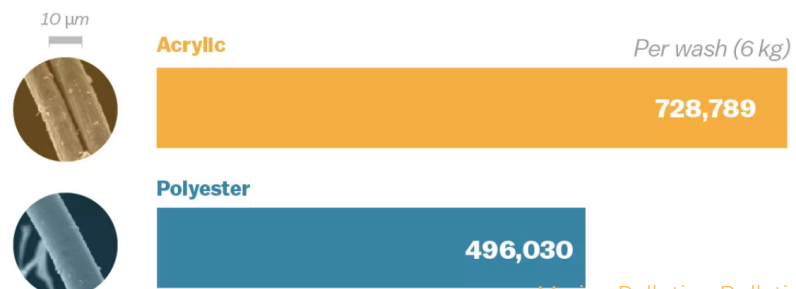
ENVIRONMENTAL PROBLEMS

Microfibers all **end up in the ocean**. Microfibers are introduced into the food chain when consumed by filter feeders like mussels. Plastic substances bioaccumulate in these organisms, and when consumed by predators these plastics are **drawn up the food chain** and stored in tissue².

Microplastics in species that are important to ecosystems (providing oxygen), such as algae (*Scenedesmus obliquus*) showed **reduced growth** and chlorophyll content⁶. Juvenile fish, *Onchorhynchus tshawytscha* - otherwise known as **Chinook salmon** are also impacted by microfibers (>90% of plastics in salmon habitats are microfibers)⁵. Microplastics can **alter digestion, liver toxicity, and increased mortality** in salmon^{11,14}. Microplastics equally prevalent in farmed and wild caught fish⁵.



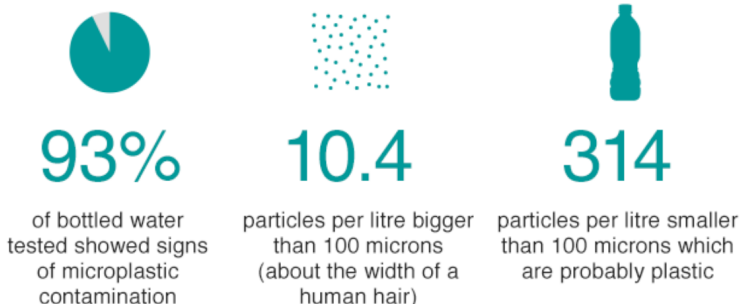
Estimated fibers released from wash



HEALTH PROBLEMS

They cause mechanical stress by blocking the alimentary canal, and its pores absorb runoff **pesticides, flame retardants, motor oil, and more** from the surrounding water¹⁰. Microfibers can be up to **1 million times more toxic** than surrounding seawater¹³.

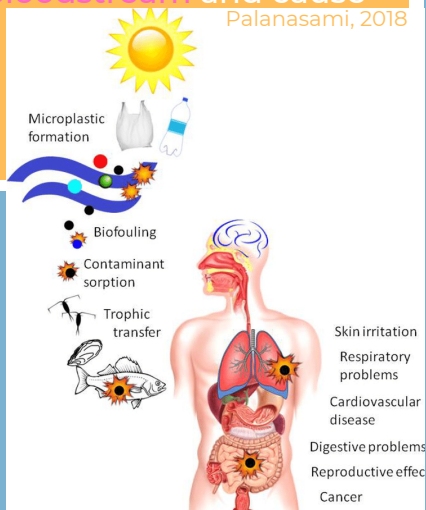
Testing for microplastics in bottled water



WHO, 2016

People consume microfibers from water, seafood, salt, meat and even **beer**⁸. The average person consumes over 11,000 microfibers annually, and nobody is immune, regardless of lifestyle³. Microfibers are small enough to **enter the bloodstream** and cause liver problems, as well as **cardiovascular disease** and even certain **cancers**⁴.

Palanasami, 2018



FAQ'S

- What about compostable plastics as an alternative?
 - Biodegradable plastic break down only **slightly** faster, and only under the **right conditions**. (Not the ocean).
- How does the **manufacturing process** and quality of synthetic textiles affect shedding amount?
 - It has been demonstrated that the higher quality (measured by tightness of weave and grade of material) shed less over time.

CURRENT PROBLEMS WITH IMPLEMENTATION

Filtering out microfibers from wastewater is currently impossible. Microfibers caught in wastewater re-leach into the ocean through being mixed in compost. **Reform wouldn't be necessary with proper filtering of microfibers from laundering.**

There are already millions of laundry systems already in place in Canadian households. Further steps would include ways to get folks on board to fit existing machines with filters. **How can we get people passionate about this topic?**

RECOMMENDATIONS

- Reduce the amount of synthetic textile waste in our communities **acknowledging a low-income bias** for synthetic textile purchases.
 - Encourage clothing recycling.** Social programming campaigns through collaboration with social media influencers to reframe second hand shopping into a trend.
 - Create subsidies for **low cost clothing repair** businesses, brands that have measures to **recycle old material** into new offerings, and natural materials like **cotton or wool**.
 - Encourage synthetic blends. These have been shown to **decrease microfiber emissions by 80%**¹⁰.
- Finetune existing community laundering systems so that less microfibers are emitted into the ocean, and admitted back in drinking water supply.
 - Amend the **Energy Efficiency Act** to create new regulations on minimum filter size (Guppyfriend filters are **capable of trapping 99% of microfibers**) for laundromats, and washers/dryers to be sold.
 - Create limits on dryer speeds and washer capacity (fast movement and lower compaction increase microfiber emissions)¹⁰.
- Educate** communities about the dangers of microfibers in our oceans.
 - Educational campaigns in hospitals, stores, and schools. Get family doctors to educate patients and get it in the curriculum for schools.
- Create a **larger dialogue** on these issues and seek **new technology** to remove microfibers from our oceans.
 - Invest in NSERC grants and scholarships for students interested in researching microplastics in the ocean and creating processes for removing them.
 - Re-frame microplastics as more than an "oceans or environmental concern"**, diversity the range of people that you can seek out and ally yourself with for these issues. Look **beyond** the department of **fisheries and environment** and engage in conversations with experts in health, society, and innovation.

DON'T BUY THIS JACKET

COMMON THREADS INITIATIVE
Together we can reduce our environmental footprint.

TAKE THE PLEDGE

Patagonia Campaign

CITATIONS

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