Microfibers-A Big Threat to Torch Lake

TRUE BLUE News

Do You Know?

Microfibers are a type of microplastic from
fragments of synthetic fibers like fleece, polyester and nylon.

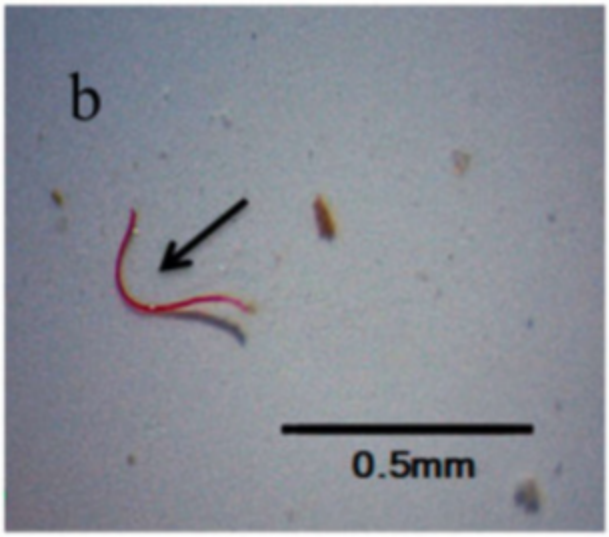
Microfibers are released when synthetic clothing is laundered.

Microplastics are tiny-about the size of a sesame seed, 1/5 inch wide.

Microfibers are the commonest type of microplastic.

Microfibers are detrimental for birds, fish and aquatic life.

Microfibers don’t biodegrade. They just get smaller and smaller.



Microfiber seen under a microscope. Photo: Gambino et al. 2020

A single item of clothing can release 100,000-700,000 fibers in a clothes washer. (Vassilendo, 2021)

Photo: Torch Conservation Center

Key Facts:

Microfibers can be transported to lakes by wind, stormwater,

sewage treatment effluent and potentially from septic systems via groundwater.

Clothes Washers

Top loading machines release 7x more fibers compared to front loaders, because front loaders use less water and tumbling motion. (Hartline et al., 2016)

Fibers detach from clothes during washing and travel with wastewater into septic tanks and sewage treatment plants.

Septic Tanks and Drainfields

Some microfibers stay in the liquid and are carried to the drainfield.

Microfibers in the drainfield can cause problems:

- Clog pores in the drain field causing premature failure
- Filter into the soil and contaminate groundwater

Some microfibers settle to the bottom of the tank and become imbedded in the sludge. Like sludge in sewage treatment plants, when septic sludge is pumped, it can be applied to fertilize fields.

Stormwater can carry microfibers away into rivers and lakes.

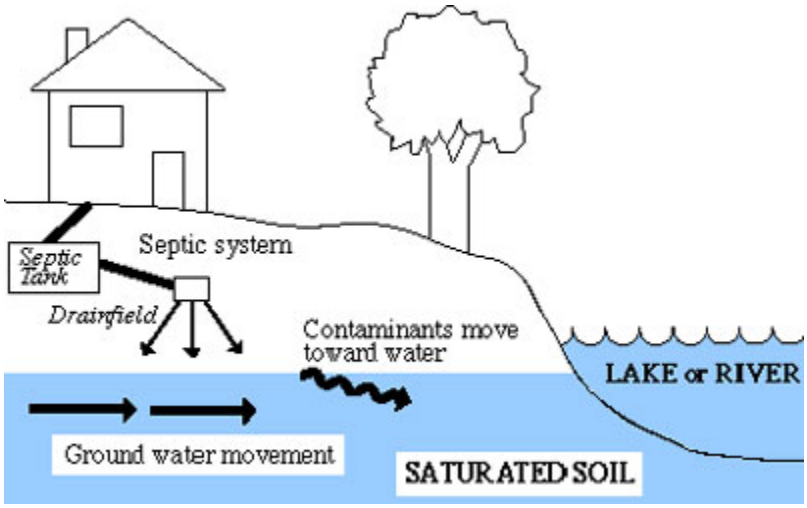


Image: Univ. of Mn Ext.

Sewage Treatment Plants

While most of the microfibers and other microplastics settle into the sludge, 10% remain in effluent released into rivers and lakes. (Iyare et al., 2020; Fuschi et al. 2022)

The Village of Bellaire's sewage treatment plant releases treated effluent into the wetlands in the northeast corner of Lake Bellaire.

If microfibers in the bottom sludge (called biosolids) are applied to farm fields, then they can be carried by stormwater to rivers and lakes.

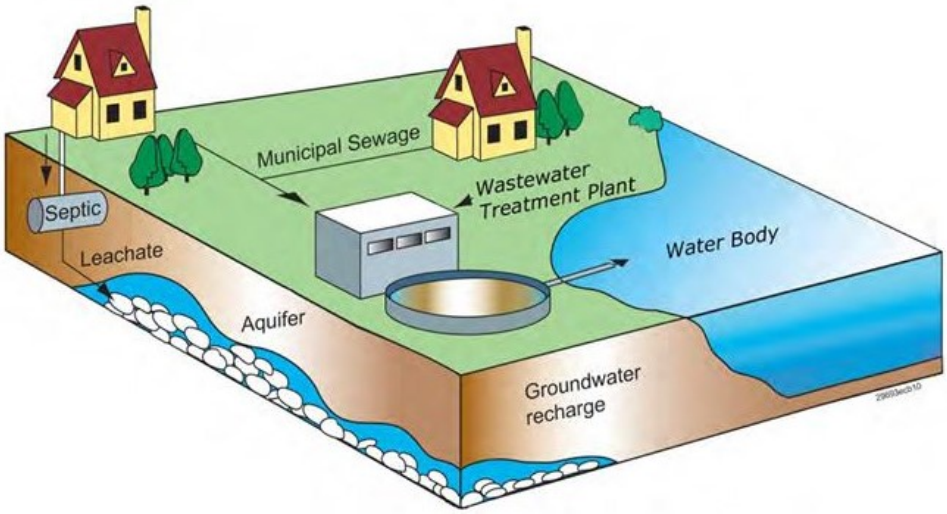


Image: Texas Rural Water Association

Clothes Dryers

A single clothes dryer can discharge from 1.4 to 40 times more microfibers than from a washing machine.

The dryer discharges microfibers out the vent and into the air. (Tao et al. 2022)

Microfibers are carried by the wind into rivers and lakes.

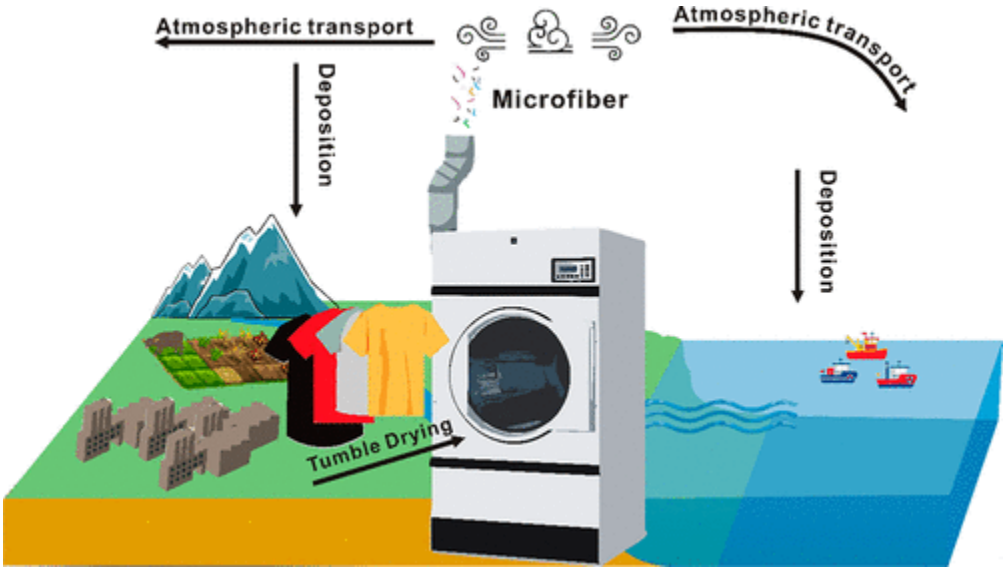


Image: Tao et al. 2022

Microfibers and other microplastics harm aquatic creatures in 2 ways.

- Ingesting and inhaling foreign plastic into their bodies
- Poisoning them with chemicals

All forms of plastic can leach their chemical components into the water or the creature that consumed them.

Plastics absorb and concentrate toxic chemicals found in water and release them in the creature that has consumed them.

Microfibers are found in Great Lakes fish. (McNeish et al. 2021; Munno et al. 2021)

Microfibers can harm small aquatic creatures, not just large ones. (O'Connor, 2018)

They can impair photosynthesis and growth of small aquatic plants called phytoplankton. (Shen et al. 2020)

Zooplankton (small aquatic animals that eat phytoplankton) after eating microplastics exhibited poor development and reproduction. (Shen et al. 2020)

Fish fed microplastics with toxins absorbed from seawater suffered from liver toxicity and other health issues. (Rochman et al. 2013)

Show You Care!

Microfibers are a threat to Torch Lake.
Microfibers CAN NOT be cleaned up once they enter lakes.

Keep microfibers out of Torch Lake.
Lower your microfiber footprint.

Step 1. Change the way you buy clothes.
All materials shed some number of microfibers. But some shed less than others.
Newer clothes shed more fibers than clothes previously worn and washed.
Natural sources fibers are larger than synthetic fibers and do not persist as long.

- Buy fewer new clothes.
- Shop vintage and used clothing stores.
- Buy clothes made from natural materials.

Natural Materials (Buy)	**Synthetic Materials (Avoid)**
Cotton	Acetate
Hemp	Acrylic
Linen	Fleece
Silk	Lycra (Spandex)
Tencel	Nylon
Wool	Polyester

Step 2. Change your laundry practices.

- Use a front-loading washing machine.
- Wash clothes less often.
- Spot clean by hand instead of washing whole garment.
- Use cold water: it leads to less fabric breakdown.
- Air dry clothes on a drying rack indoors OR clothesline outdoors.

Photo: Torch Conservation Center

Click for more information

Reducing your Plastic Footprint

Microplastics

Torch Lake Sandbar Early March **Photo: Brian Apley**

Sources:

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At Torch Conservation Center, we **BELIEVE**

an informed Torch Lake Watershed community cares for Torch Lake

and keeps toxins, nutrients, sediments and invasive species out of the water.

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Helping Torch Lake is just a click away.