

Kellie R. Teague, M.S.
Regarding Oregon Senate Bill 526
February 18, 2025

Dear Chair Sollman, Vice-Chair Brock Smith, and Senators Golden, Pham, & Robinson,

My name is Kellie Teague and I am a scientist at the Oregon Microplastic Analytical Research Center at Portland State University. I have degrees in both chemistry and marine science, and I have been studying plastic pollution for over 5 years. I am writing today to provide context for OR SB526, proposing that new washing machines sold in Oregon have a filter for microfibers beginning in 2030.

Prior to the 20th century, all textiles were made of natural materials (cotton, silk, wool, etc.) that can naturally degrade over time. However, with the introduction and commercialization of plastics, synthetic fibers have come to dominate the market, making up approximately 70% of textiles today. These synthetic fibers (e.g., polyester, nylon, acrylic) are polymeric in nature and persist much longer in the environment than their natural counterparts. In addition, modern fibers are usually treated with a variety of chemical additives, such as dyes and flame retardants, which have the potential to leach.

Regular laundering of domestic fabrics like clothing and bedding leads to shedding of microfibers, with recent models estimating that nearly 35% of all microplastics released into the environment are caused by washing synthetic textiles (the largest of any one anthropogenic activity, beating out tire wear (28%), urban dust (24%), road markings (7%), maritime coatings (3.7%), personal care products (2%), and pre-production pellets (0.3%)). Microfibers, a sub-category of microplastics, are defined by their long, thin shape. These microfibers are carried in the washing machine effluent to wastewater treatment plants, which are unequipped to capture small fibers in bulk. Research has shown that clean water leaving treatment facilities still contains an abundance of microfibers, creating a primary route for microplastics entering into waterways. Further, sludge from wastewater treatment is often used as an agricultural fertilizer, so any fibers retained in the sludge are also put directly into the environment. Once in the environment, synthetic microfibers pose both physical and ecotoxicological risks to biota, including plants, animals, and people.

Adding a filter to the drainage hose of washing machines has been shown to significantly decrease the number of microfibers that escape into wastewater, with some achieving 98.5% efficiency. This dramatically reduces the burden on wastewater treatment plants (and/or septic systems, depending on where you live). While appliance manufacturers do not currently offer a microfiber filter option, the technology does exist. The following companies offer filtration solutions over a range of prices, sizes, maintenance requirements, and efficacy: [Filtrol](#), [PlanetCare](#), [Environmental Enhancements](#), [CLEANR](#), [Gulp.](#), [GUPPYFRIEND](#), and [Xeros Technology](#), with more in development. Solutions as simple as a fine-mesh sieve or bag over the drain would be effective. The filter will need to be cleaned occasionally, but much like emptying the lint trap on a dryer or getting regular oil changes for your vehicle, this minor additional maintenance step would quickly become habit.

With the trend in plastic consumption and production continuing to increase over time, microplastics entering natural ecosystems will also increase. Especially now when considering the

fast fashion market, synthetic textiles are an important contributor to this issue. Removing microplastics, including microfibers, from the environment is incredibly challenging (if not impossible), requiring a great deal of time, effort, and cost. On the other hand, prevention has been shown to be the best strategy in reducing plastic pollution.

I very much appreciate your time and consideration of this important issue. Oregon is not alone in considering legislation aimed at reducing the input of microplastics into the environment. Washing machine filters have been adopted, or are being considered, by the following states and countries: California, New Jersey, Pennsylvania, Illinois, Canada, France, the United Kingdom, and Australia. I hope the information provided will help your decision-making process. If you would like to contact me directly, my email address is kteague@pdx.edu.

Sincerely,

A handwritten signature in black ink that reads "Kellie R. Teague". The signature is written in a cursive, flowing style.

Kellie R. Teague, M.S.

References

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