

A Comparison of Domestic Dryer Contributions to Previous Domestic Washer Data of Microplastic Fiber Emissions in Waste Water Generated from Synthetic Textiles

Kinsey, Heidi (School: Fort Myers High School)

A major source of microplastic pollution is in the form of synthetic fabrics that emit fibers through the laundering process and enter Earth's waterways through wastewater. Existing research is primarily focused on the washing process while little is known about the emission of microfibers from clothes dryers. I chose a continuation project to expand on last year's research and explore how microplastic fibers emitted from a domestic dryer compare to the fibers discharged from a domestic washer. After testing, the best procedure was employed to maximize the capture of microfibers and to closely resemble last year's washer collection process. Each wash cycle represented 100% synthetic materials that were previously washed. Then each load was processed in the dryer which vented into a bucket containing approximately one liter of water. Water contents were then filtered through four different-sized sieves. Sixteen samples were collected in sterile containers. Contents were processed to eliminate organic matter and unravel fibers for purposes of viewing under a microscope. Particles collected were manually counted on magnified slide grids. The data were not well-distributed in the results, but results tended to show that more smaller microplastics were emitted from the dryer as compared to the washer. The washer and dryer data were combined to reflect a total cycle revealing thousands of microplastics emitted from each load. A larger data set would have been beneficial to the project. This study suggests that dryers along with washing machines need to be part of the research on microplastic pollution emissions.

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