

Washing fabrics by hand reduces microplastic release compared with machine washing

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From tiny plankton to massive whales, microplastics have been found throughout the ocean food chain. One major source of this pollution are fibers shed while laundering synthetic fabrics. Although many studies show microfibers are released during machine washing, it's been less clear how hand washing contributes. Now, researchers reporting in *ACS Environmental Science & Technology Water* report that hand washing can drastically cut the amount of fibers shed compared with using a machine.

When clothing made from plastic [fibers](#), such as polyester and nylon, are laundered, the [fabric](#) sheds microscopic fibers that eventually end up in wastewater and the environment. Though researchers have investigated the amount and types of [microplastic](#) fibers shed while laundering clothing, most studies have focused on washing machines. In many countries, however, it is still common to manually launder clothing. A team has previously reported on the effects of washing fabric by hand, but the study was not comprehensive. So, Wang, Zhao, Xing and colleagues wanted to systematically investigate microplastic fiber release from synthetic textiles with different methods of [hand washing](#) in contrast to machine washing.

The team cleaned two types of fabric swatches made from 100% polyester and a 95% polyester-5% spandex blend with hand washing methods and a washing machine. The researchers found that:

- Manual methods released far fewer fibers. For example, the 100% polyester fabric shed an average of 1,853 microplastic pieces during hand washing compared with an average of 23,723 pieces from the same fabric that was machine laundered.
- By weight, machine laundering released over five times more microplastics than the traditional method.
- The fibers released from hand washing tended to be longer.
- Adding [detergent](#), pre-soaking the fabrics and using a washboard increased the number of released fibers with manual methods,

but still not to the same extent as using a machine.

- In contrast, they found that temperature, detergent type, wash time and the amount of water used had no meaningful effects on the amount of microplastics shed while hand washing.

The researchers say that these results will help clarify the sources of microplastic pollution in the environment and can provide guidance for "greener" laundering methods.

More information: Chunhui Wang et al, Microplastic Fiber Release by Laundry: A Comparative Study of Hand-Washing and Machine-Washing, *ACS ES&T Water* (2023). [DOI: 10.1021/acsestwater.2c00462](https://doi.org/10.1021/acsestwater.2c00462)

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