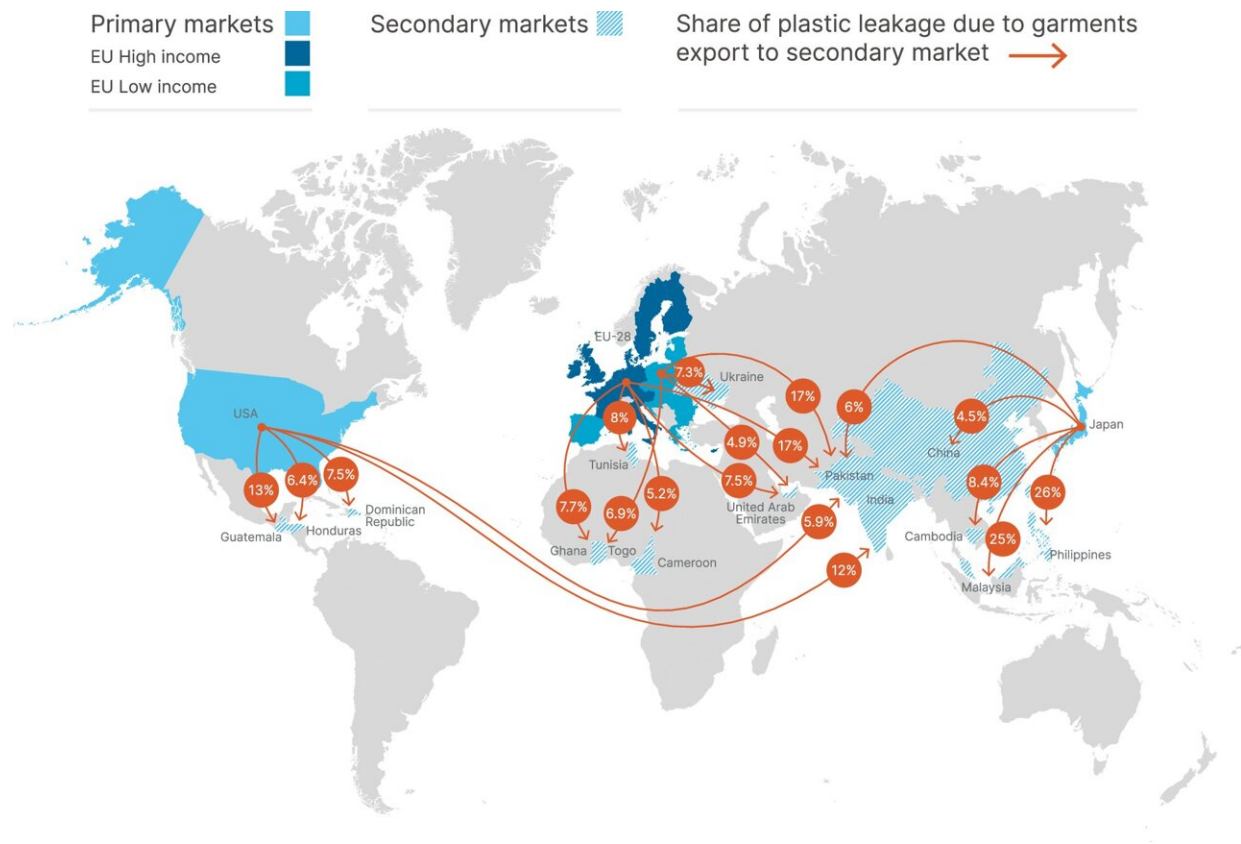


Apparel industry leaks millions of tons of plastic into environment each year, study finds

July 16 2024, by Joey Pitchford



Influence of second-hand apparel exports on the location of synthetic apparel plastic leakage from EU28 high and low income countries, U.S., and Japan. Credit: *Nature Communications* (2024). DOI: 10.1038/s41467-024-49441-4

A study has found that waste from the global apparel industry is leaking millions of tons of plastic into the environment each year—an overlooked pollution source which may be getting worse over time.

The findings are detailed in a recent study from North Carolina State University researchers, which found that global apparel consumption resulted in over 20 million tons of [plastic waste](#) in 2019. Around 40% of that waste may have been improperly managed and become [environmental pollution](#), a process known as "plastic leakage."

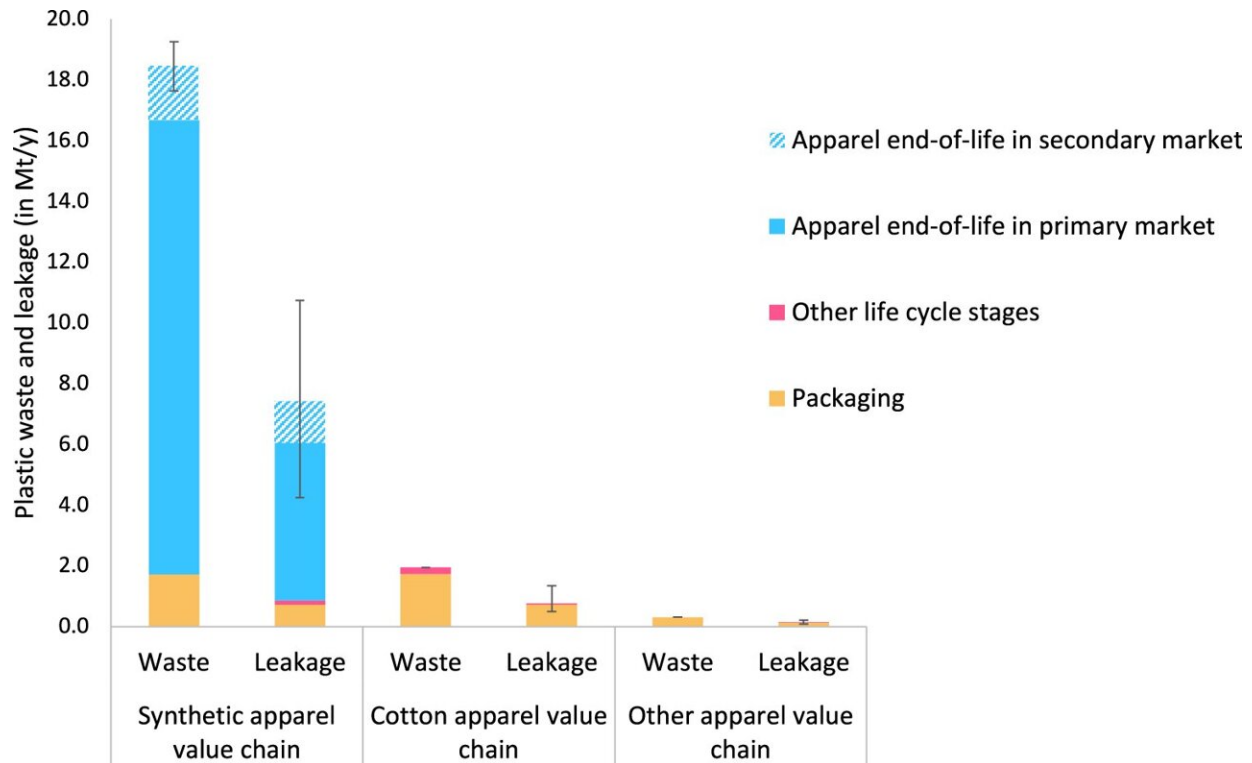
Textile waste was divided between two sources; clothing made from [synthetic materials](#) like polyester, nylon and acrylic, and clothing made from cotton and other [natural fibers](#). Researchers looked at plastic waste generated across an apparel product's "value chain," which refers to the entire lifecycle of a product—including, for example, not only the piece of apparel itself, but the plastics used to wrap it.

"We analyzed data on imports, exports and apparel production in countries all over the world," said Richard Venditti, professor of paper science and engineering at NC State and co-author of the study. "Then we compared that to existing global information on different stages of the apparel value chain to estimate how much plastic leaks into the environment at each of those points."

"Much of the plastic waste that leaks into the environment comes from clothes that are thrown away, especially synthetic apparel," Venditti said. "There is also waste from manufacturing, packaging and even from tire abrasion during transport, as well as microplastics which get pulled into the water when we wash our clothes."

Researchers found that synthetic apparel was by far the largest source of plastic waste. The synthetic value chain accounted for 18 million tons of waste in 2019, making up 89% of all plastic waste from the global

apparel industry that year. Of that, researchers estimated that around 8.3 million tons may have leaked into the environment.



Overview of apparel macroplastic waste and macro- and microplastic leakage. Credit: *Nature Communications* (2024). DOI: 10.1038/s41467-024-49441-4

Meanwhile, cotton clothing accounted for 1.9 million tons of plastic waste, with the final 0.31 million tons coming from fibers other than synthetic textiles or cotton. As opposed to the [end-of-life](#) plastic waste created by discarded synthetic apparel, plastic waste from cotton and other fibers came almost entirely from the plastic used in packaging.

Researchers found that where apparel was sold is not necessarily where plastic waste leaks into the environment. For apparel originally sold in

high-income countries like the United States, Japan and many others, most of the resulting pollution happened in lower-income countries where these pieces of clothing might be sold in the secondary market.

This finding points to a major concern with how people in higher-income countries consume apparel.

"What we're seeing is that in countries like the United States, we have a 'fast fashion' culture where we buy a lot of clothes and don't keep them for very long," Venditti said.

"When we discard those clothes, they either go into landfills or, more often, they end up in thrift stores. Some of the clothes that go to these stores are sold in the U.S., but often they end up going to other countries that do not have waste management systems robust enough to handle that kind of volume. That is where you end up with a large amount of plastic leaking into the environment."

The study concludes that significant changes in the apparel sector need to be made to move the industry toward a more circular framework, where materials are recycled and do not become waste. The study also recommends increasing the use of renewable, non-synthetic textiles.

The paper, "[The global apparel industry is a significant yet overlooked source of plastic leakage](#)" appears in the journal *Nature Communications*.

More information: Anna Kounina et al, The global apparel industry is a significant yet overlooked source of plastic leakage, *Nature Communications* (2024). [DOI: 10.1038/s41467-024-49441-4](https://doi.org/10.1038/s41467-024-49441-4)

Provided by North Carolina State University

Citation: Apparel industry leaks millions of tons of plastic into environment each year, study finds (2024, July 16) retrieved 16 July 2024 from <https://phys.org/news/2024-07-apparel-industry-leaks-millions-tons.html>

This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.