

The Fiber Shredder: Professor's machine could make clothing more recyclable

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The textile industry is a major polluter, producing 92 million tons of textile waste globally each year, according to Boston University.

University of Minnesota Duluth associate professor Abigail Clarke-Sather and her team say they have developed a machine that makes textiles more recyclable: The Fiber Shredder, patent pending, has been six years in the making and breaks down waste fabrics into recyclable materials in just 90 seconds.

"It's interesting to be both faculty and an entrepreneur at the same time," Clarke-Sather wrote in a news release. "It makes me really excited to feel like I'm part of a broad coalition of people trying to make our world more sustainable."

Clarke-Sather's background is in civil and [environmental engineering](#), as well as fashion and apparel. Understanding the intersection of those industries inspired her to address fashion industry sustainability issues.

The machine renders fabric into fibers that eventually will become yarn. Although the Fiber Shredder still is undergoing fine-tuning, the aim is to create new garments from the [recycled materials](#).

"Someday, the goal is that you could buy a shirt that is 100% recycled," said Hira Durrani, a master's student working on the project.

In addition to fabrics like polyester, cotton and spandex, the Fiber Shredder can even break down and recycle silicone used in products like rubber car mats, Durrani said.

Other machines typically only cut fibers, but the Fiber Shredder pulls them apart, making the product easier to spin into yarn. Surplus textiles often overwhelm donation-based thrift stores like Goodwill, leading many unsold garments to end up in landfills domestically and internationally.

To help alleviate this issue, Clarke-Sather and her team are partnering

with True North Goodwill to install a fiber-shredding machine to break down excess garments.

"This project just keeps getting bigger and bigger," Durrani said. "It's cool to be a part of it."

Durrani said she hopes the [textile industry](#) will eventually adopt this technology broadly, but the machine will have to process more than textile scraps in a minute and a half.

"The scale of the machine right now cannot handle the amount of textiles that are going into landfills," Durrani said.

"There is a bit of a gap right now. But if we are able to better improve the machine's design to be able to handle a lot more textiles, I have hope that someday we will see lesser amounts of textile waste ending up in landfills."

Clarke-Sather shares Durrani's hopes for the future of the Fiber Shredder and believes her research someday could scale up for commercial use.

"My advice to researchers and students who want to make an impact on the world is to start looking around," Clarke-Sather said in the release. "There are so many problems. Just pick one and try to figure out a solution."

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