

# Ditch the delicate wash cycle to save our seas

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Delicate wash cycles in washing machines found to release more plastic microfibres than other cycles.

New research led by Newcastle University has shown that it is the volume of [water](#) used during the wash cycle, rather than the spinning

action of the washing machine, which is the key factor in the release of plastic microfibrils from clothes.

Millions of plastic microfibrils are shed every time we wash clothes that contain materials such as nylon, polyester and acrylic.

Because these [fibrils](#) are so small, they drain out of our washing [machines](#) and can ultimately enter the [marine environment](#).

Once in the ocean, they are ingested by the animals living there and two years ago Newcastle University scientists showed for the first time these fibrils have now reached the deepest parts of our [ocean](#).

Working with Procter & Gamble in Newcastle, the team measured the release of plastic microfibrils from polyester clothing for a range of cycles and water volumes.

Counting the fibrils released, the team found the higher the volume of water the more fibrils released, regardless of the speed and abrasive forces of the washing machine.

In fact, they found that on average, 800,000 more fibrils were released in a delicate wash than a standard cycle.

Publishing their findings today in the academic journal *Environmental Science and Technology*, Ph.D. student Max Kelly, who led the research, explained:

"Counterintuitively, we discovered that 'delicate' cycles release more plastic microfibrils into the water, and then the environment, than standard cycles.

"Previous research has suggested the speed the drum spins at, the

number of times it changes spinning direction during a cycle and the length of pauses in the cycle—all known as the machine agitation—is the most important factor in the amount of microfibre released.

"But we have shown here that even at reduced levels of agitation, microfibre release is still greatest with higher water-volume-to-fabric ratios.

"This is because the high volume of water used in a delicate cycle which is supposed to protect sensitive clothing from damage actually 'plucks' away more fibres from the material."

## **Plastic pollution in our oceans**

Plastic pollution is one of the biggest challenges facing society today and understanding the key sources is an important process to help reduce our impact on the environment.

Laundry has been recognised as a major contributor of microplastics but until now, precisely measuring the release of these fibres has been difficult due to the fact that it's almost impossible to accurately simulate the reality of what happens in people's machines in a lab setting.

Using a tergotometer—a benchtop device comprising of eight (1000 mL) washing vessels that simulate full-scale domestic washing, the team were able to carry out tests under different conditions, making changes to water volume, spin speed, temperature and time.

A DigiEye camera—digital colour imaging system—was then used to accurately calculate the amount of microfibres released.

To test whether the observations made using the tergotometers were reflective of full-size domestic washing machines, the team then tested

the fabrics on a delicate wash cycle using identical washing machines in the test centre at Procter and Gamble (P&G).

The team showed that previous recommendations by groups to move towards high water volumes and low levels of agitation as a way of reducing the amount of microfibre released was actually making the problem worse.

Neil Lant, Research Fellow at P&G and co-author on the study, said:

"The appliance industry has started to introduce microfibre filters in some new washing machines and the textile industry is looking to reduce the fibre shedding levels of new clothing.

"We hope that the issue will ultimately be solved by such actions, and our work on the mechanistic causes will help in the development of these solutions."

Max Kelly adds:

"Reducing the amount of plastic pollution is everyone's responsibility and often it's the small changes that make a huge difference.

"By avoiding high water-volume-to-fabric washes such as the delicate cycles and ensuring full wash loads then we can all do our bit to help reduce the amount of these synthetic fibres being released into the environment.

"Hopefully, these findings may also be used by manufacturers to influence the design of future washing machines and reduce our [plastic](#) footprint. Over time these changes could also see a global reduction in the amount of energy and water required to wash our clothes."

Provided by Newcastle University

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