

## UK Government require factory fitted washing machine microfibre filters

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- By January 2025, introduce legislation that requires washing machine manufacturers to fit microfibre filters in all new domestic and commercial machines based on a BSI PAS standard.
- The UK government to support development of BSI PAS standard for microfibre filters, which includes the requirement that the filters remove at least 80% of all microplastics

Globally, more than 840 million domestic washing machines are used<sup>1</sup>. During every wash, microfibres are lost from our clothes. In fact, at least 9.4 trillion fibres are released each week from washing in the UK alone<sup>2</sup>, with many of these fibres ending up in the ocean and on our beaches. The advent of technological solutions, in particular the fitting of filters within washing machines, can stop the microfibres getting in the wastewater and ultimately into the ocean.

Currently, it is estimated that 12.2 million tonnes of plastic enter the ocean globally every year, with 0.95 million tonnes of this entering as primary microplastics<sup>3</sup>. Primary microplastics are those which are produced as 5 mm or less, unlike secondary microplastics which are the result of larger items breaking down. Models have estimated that 15–31% of all microplastics in the ocean are primary, with the laundry of textiles accounting for up to 35%.<sup>4</sup> This modelled contribution of fibres is likely to be a severe underestimation, as fibres accounted for 70–100% of all microplastics in deep sea sediments.<sup>5</sup>

In the North Sea, 63% of shrimp have been found to contain synthetic fibres.<sup>6</sup> The ingestion of microplastics by organisms shows that it negatively impacts feeding behaviour, growth, development, reproduction and lifespan.<sup>7</sup> Natural and semi-synthetic fibres also pose environmental concerns due to the chemicals associated with them. The MICRO project<sup>8</sup> made a first attempt at defining economic impacts of microplastics on UK aquaculture (oyster) industry in the Channel region and indicated a cost of between £1.5M – £500 million.<sup>9</sup>



MCS / Paul Naylor

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Legislating to reduce microplastic pollution in this way would also align with the UN Sustainable Development Goal 14 (Target 14.1), of which the UK are a signature. Evidence on the impact of microplastics on human health is still in its infancy, but the annual consumption of microplastics is estimated to be 55,000 per year via seafood.<sup>10</sup> The World Health Organisation has called “for a reduction in plastic pollution to benefit the environment and reduce human exposure”.<sup>11</sup>

## Why isn't wastewater treatment solving the problem?

Wastewater treatment works are very efficient in removing microplastics from final treated effluent. A recent Chemicals Investigation Programme paper found typical removals of over 99% by number and 99.5% by estimated mass.<sup>12</sup> This would mean that between 42 and 48kg of microplastics are released in treated effluent across England and Wales each day.<sup>13</sup>

Despite being captured in the process, the overwhelming majority of microplastics end up back in the environment.<sup>14</sup> This is because solid materials, including microplastics, are captured and remain within the final treated sewage sludge. Many fibres are high density and therefore, likely to settle out in the sludge capture stages, with analyses from Norwegian sludge of the microplastics, 28.9% were fibres (alongside 37.6% microbeads, 31.8% fragments and 1.7% glitter).<sup>15</sup> It would be expected that fibre contribution is higher in the UK due to the existing UK microbead ban. There is currently no way to remove microplastics from this treated sludge.<sup>16</sup> In the UK, the majority of sludge (around 87%)<sup>17</sup> is then applied to agricultural land with repeated applications on soils leading to the accumulation of microplastics over time, resulting in high concentrations.<sup>18</sup>



Microfibres settle out in the sludge capture phase, going back into the environment

Sludge spreading has the potential to epitomise the circular economy, whereby an unavoidable waste product containing valuable nutrients and organic matter is utilised as an important resource for agriculture. However, sludge needs to be fit for purpose and for use as a product within the circular economy.

## How can we use washing machines to reduce microfibre pollution?

Washing machines provide a point source of pollution at which microfibres can be removed. Filter options for the washing machine include Arcelik<sup>19</sup> with an internal filter, and companies offering post-purchase external filters such as fitrol<sup>20</sup>, LINT-LUVR<sup>21</sup> and PlanetCare<sup>22</sup>, as well as those such as XFiltera by Xeros, internal filters which can be licensed.<sup>23</sup> The Xfiltera, an internal microfibre filter, which would be factory fitted removes 78% of microfibres in a wash.<sup>24</sup>

## Feasibility of washing machine filters

In April 2023, the UK Government published its Plan for Water for England which stated that they “expect industry to develop low cost, effective microfibre filters on washing machines and encourage their effective use”.<sup>25</sup> However, no timeline was given, nor has the UK Government so far helped to provide consistent guidance to the industry on this. We therefore call upon the UK government to develop the world’s first standard (via the UK BSI PAS standard) to describe the requirements of a microfibre filter. This would facilitate early adoption, and significantly lower the barrier to engagement with washing machine manufacturers on this issue.

In early 2020, France passed legislation that will require all new domestic and commercial machines to be fitted with a microfibre filter by January 2025. A YouGov survey commissioned by the Marine Conservation Society<sup>26</sup> found 81% of GB adults said they would support government legislation which would require all new domestic washing machines to be fitted with microfibre filters. Furthermore, a quarter (26%) of GB adults said they would be willing to pay an additional £50 or more and over half (56%) willing to pay an additional £5 or more for a washing machine that included a microfibre filter compared to one that didn't.

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26. Total sample size was 2136 adults. Fieldwork was undertaken between 9th - 10th March 2020. The survey was carried out online. The figures have been weighted and are representative of all GB adults (aged 18+)

