SUPPLIERS

FIBRE FRAGMENTATION IN WASTEWATER

Fibre fragmentation refers to the phenomenon in which fibre fragments, often referred to as microfibres, are lost from textiles at various stages of a product's lifecycle. These stages encompass the manufacturing process, consumer usage, and the eventual disposal. All fibres, natural, man-made cellulosic and synthetic can fragment from textiles, and be released into the environment through a number of pathways, including wastewater systems and the air. Due to their shape and/or added chemicals fibre fragments can cause harm when ingested by organisms. Fragments have been found in humans, consumed through food, drink and air. Microfibres have a persistent nature and their impact is not yet known.

Fibre fragmentation in industrial wastewater

The Microfibre Consortium (TMC) and ZDHC have joined together to conduct research and develop industry guidelines. The Microfibre Consortium (TMC) is a research-led sustainable textiles NGO, working to convene the global textiles sector through The Microfibre 2030 Commitment and Roadmap. ZDHC is an organisation dedicated to leading global value chains to achieve the highest standards for sustainable chemical management across the fashion industry and beyond.

A task team, consisting of ZDHC and TMC signatories, has been set up to focus on microfibre release from wet processing facilities and intends to set maximum allowable limits for microfibres in discharged effluent.
Existing regulatory standards for Total Suspended Solids (TSS) cover all types of solids in discharge effluent. A proportion of TSS is made up of microfibres but the exact amount requires further investigation, TSS compliance should be followed until specific microfibre test methods and limits are developed.

Actions to be taken now

Reducing microfibres created in processing and/or the amount of solids discharged in treated effluent will reduce the amount of microfibres entering waterways. The only proven method, close to achieving zero discharges, is the use of appropriate filtration and should be considered for facilities.
There are three complementary approaches that you can take now:

- Communicate and build awareness within your value chain about fibre fragmentation.
- Reduce the formation of fibre fragments.
- Reduce emissions, considering both concentration in mg/l AND total emissions.

Communication and awareness

- Share this one-pager that you are reading now.
- Check for the upcoming training and ensure your value chain has access to the preliminary manufacturing guidelines from TMC on appropriate wastewater treatment techniques and technologies
- Use the TMC Test Method (quantification of fibre release from fabrics during domestic laundering) to select fabrics that demonstrate low shedding. TMC advice on fibre, yarn and fabric construction is being developed follow here for updates.

Reduced Formation

- Use dyeing/laundry machines with low abrasion.
- Use process bath lubricants that reduce fibre-to-fibre and fibre-to-metal friction.
- Reduce process times.
- Use clean yarns and implement singeing rather than biopolishing.

Reduced emissions in effluent

- Check your TSS result meets at a minimum the Foundational Level requirement of the ZDHC Wastewater Guidelines. If you do have a high TSS result perform a root cause analysis and carry out corrective actions.
- Minimise water consumption to increase dwell times in the ETP and specifically in gravitational settlement.
- If flocculation is used to remove colour – examine options that can potentially aggregate other solids including microfibres.
- Ensure clarifier exits are clear and perfectly horizontal to avoid channelling, a situation where localised high flow rates carry solids out of the clarifier.
- Consider ultrafiltration, nanofiltration or reverse osmosis to remove all solids (consider MBR design with integral filtration for new build ETPs). And consider on-machine filtration.
- Avoid land spreading of sludge when possible.

CONTACT

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BRANDS & RETAILERS

FIBRE FRAGMENTATION IN WASTEWATER

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Actions to be taken now

Reducing microfibres created in processing and/or the amount of solids discharged in treated effluent will reduce the amount of microfibres entering waterways. The only proven method, close to achieving zero discharges, is the use of appropriate filtration and should be considered for facilities.
There are three complementary approaches that you can take now:

- Communicate and build awareness within your value chain about fibre fragmentation.
- Reduce the formation of fibre fragments.
- Reduce emissions, considering both concentration in mg/l AND total emissions.

Communication and awareness

- Share this one-pager that you are reading now.
- Check for the upcoming training and ensure your value chain has access to the preliminary manufacturing guidelines from TMC on appropriate wastewater treatment techniques and technologies
- Use the TMC Test Method (quantification of fibre release from fabrics during domestic laundering) to select fabrics that demonstrate low shedding. TMC advice on fibre, yarn and fabric construction is being developed follow here for updates.

Reduced Formation

- Request/research the use of dyeing/laundry machines with low abrasion as the preferred choice.
- Request the use of process bath lubricants that reduce fibre-to-fibre and fibre-to-metal friction.
- Request/research to reduce process times.
- Use clean yarns and implement singeing rather than biopolishing

Reduced emissions in effluent

- Check the TSS result from your suppliers to ensure that it meets at least the Foundational Level requirement of the ZDHC Wastewater Guidelines, if they have a high TSS result request a root cause analysis and corrective actions.
- Request to minimise water consumption to increase dwell times in the ETP and specifically in gravitational settlement.
- If flocculation is used to remove colour – examine options that can potentially aggregate other solids including microfibres.
- Ensure that your suppliers' clarifiers are clear and perfectly horizontal avoiding channelling, where localised high flow rates carry solids out of the clarifier.
- Request suppliers to ensure that their clarifiers are clear and horizontal to avoid channelling.
- Consider requesting ultrafiltration, nanofiltration or reverse osmosis to remove all solids (consider MBR design with integral filtration for new build ETPs).
- Encourage suppliers not to land spread

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