



PROJECT TITLE: Development of portable filter for removing microfibers from domestic laundering effluent

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PROJECT SUMMARY:

Microfibers MFs, which are tiny threads of polyester, nylon, acrylic, and other synthetic textiles mainly released from the process of laundering of diameter less than 10 micrometer and approximately 1/100th of the diameter of the human hair. These fiber particles are categorized under secondary microplastics which are mainly released from synthetic garments during washing but do not have any other use. MFs are emerging pollutants with widespread distribution in the environment and have adverse ecological impacts. The major source of MF pollution is domestic laundering. Approximately 2 million tons of microfibers are released to ocean every year from various sources from which 700,000 micro fleeces are released for each garment through domestic laundry. It is anticipated that till now 1.4 million trillion of microfibers are currently present in our ocean. The generation of synthetic microfibers is increasing dramatically, which creates a problem across the globe. The largest microfiber releasing countries are India, Asia, America, Europe China, South America, Africa and the Middle East. Despite huge generation of synthetic microfiber and pollution, there are of no documented impacts of these pollutants on ecosystems is known yet. Currently, very little evidences are available regarding the impact of MF pollution on humans. The presence of microfibers in the environment poses a great threat to the entire ecosystem and has received much attention lately as the presence has greatly impacted oceans, lakes, seas, rivers, coastal areas and the whole food chain. The mechanisms for ecological and human health effects of microfibers are also generally poorly understood. Washing machine lint filters, physical separation filters and current developed treatment technologies are unable to sieve these micro sized particles. Comparing the limited water sources with its daily high demand, as well as its high degree of pollution, it is obvious that urgent steps have to be taken to ensure that this highly demanded Earth resource is purified, and continues to be available in the quantity and quality for which it is needed. In India, only few of the water purification methods are currently being used, for removing water pollutants which are not efficient enough. Identifying the main sources of microfibers pollution in the environment and developing a suitable filtration technology for removal of these synthetic fiber pollutants will enable to tackle this problem and control microfiber pollution.