Next frontier for plastic action lies in clothing, textile industries

By Dr Eunice Ubomba-Jaswa and Dr Nonhlanhla Kalebaila

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In recent years, there has been increasing public awareness of the issue of single-use plastics, which has led to a collective shift of consciousness towards sustainable plastics consumption, bringing about slight changes in our individual choices and the implementation of various plastic waste prevention actions by governments and industry.

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By now, some of us remember to bring our reusable bags along for our grocery shopping. Also, we have probably made peace with paper straws and may even separate our rubbish into various categories to aid recycling. And now, in the era of Covid-19, where disposable masks, gloves and other protective equipment are increasingly being used, we need to make an effort to discard these properly, or use washable / reusable masks. These are all commendable actions that need to be permanently adopted by all ordinary citizens as we wrap up this month's Plastic Free July initiative, a global call to action that asks consumers to reduce, recycle, or refuse to use single-use plastic.

Awareness campaigns, such as Plastic Free July, that inform consumers can both spur behaviour change and demand the industry as a whole to account for the negative impacts of the plastic value chain on the environment. However, to make a significant dent in reducing plastic pollution, as consumers, industry players, and policymakers, we need to broaden our horizons and look towards the consumption patterns that fuel plastic production and the industries that thrive on generating new plastic products.

A much less considered but colossal source of plastic lies in our wardrobes

The average consumer's idea of plastic usually takes the shape of discarded packaging. Occasionally, a clothing label may state "made out of 100% recycled plastic bottle", which indicates plastic use in the manufacturing of that clothing. Recycling plastic waste and turning it into a useful material is very important, as it prevents the leakage of plastics into the environment, boosts innovation and can help create livelihoods.

However, the process of recycling plastic into clothing still needs to be optimised as it can impact the environment too. Furthermore, seldom mentioned and almost hidden from public view, whether intentionally or not, is the amount of virgin or new plastic that goes into making cheap synthetic material that is heavily used in the production of "fast fashion". In fact, two-thirds of clothing contains petroleum-based synthetic fibres such as polyester, acrylic, elastane and nylon which are all essentially plastic.

Top fashion brands remain reliant on synthetics, guilty of greenwashing - report

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Fast fashion is fuelling environmental decline

The volume of plastic and potentially harmful additives used in the clothing and textile industry is immense and adds to the already heavy environmental toll of the industry.

When it comes to the clothing industry impact on water, the volume of water used in the production of garments is staggering. According to the United Nations Environmental Programme, 2,700 litres of water is required to produce one t-shirt – enough drinking water for one person for more than two years. the subsequent pollution as a result of textile dyes and synthetic chemicals has been researched, documented and shown explicitly to be one of the causes of ecosystem deterioration and disease in communities living and working in areas with high industrial activity.

While recycled polyester keeps plastic from reaching the ocean, when in use or during laundering, still does release microscopic plastic fibers. According to a 2017 report by the International Union for Conservation of Nature (IUCN), microfibers washed off products such as synthetic clothes and car tyres could contribute up to 30% of the plastic waste that ends up in the environment. Even after disposal of clothing in landfills, if these disposal areas are not designed and managed adequately, chemicals leaking from discarded clothing could eventually end up in groundwater.

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Our water sources are at potential risk

Like most forms of microplastics, microfibers from our clothing eventually end up in our rivers, dams and ultimately the ocean. Currently, it is estimated that about 35% of primary plastic that is polluting most of the world's oceans originates from plastic particles that have come off items made with synthetic material.

Wastewater treatment plants have been identified as a potential source for the transfer of microplastics and fibers into water environments. Recent studies done in well designed and maintained wastewater treatment facilities can remove almost all (up to 94%) of the microplastics in the untreated wastewater. However, if the wastewater treatment works are not functioning properly, then removal rates might be lower. The microplastics removed during wastewater treatment are likely to be present in wastewater sludge, which may act as another medium for dissemination into the environment, through the land application of sludge for agricultural purposes.

In a worldwide study, 83% of the tap water samples analysed contained microplastics; of these microplastics, 99.7% were microfibers. Similarly, earlier research funded by the WRC revealed the presence of microplastics and microfibers in drinking water, groundwater and surface water in Gauteng Province. However, the study showed that in South Africa, levels of microfibers in surface water were far less than in other industrialised countries. However, as South Africa looks to further industrialise, and with rapid urbanisation and the continual rise in the participation of "fast fashion", the levels of microfibers in surface and groundwater are set to increase.

Greening the global textile value chain

Lauren Hartzenberg 23 Apr 2021

According to the World Health Organisation, the potential hazards associated with microplastics and fibres is multifaceted and complex. Microplastics can act as physical stressors, where they may be ingested by smaller organisms, resulting in possible adverse effects. Microfibers have been reported to pose a health threat to tiny organisms in water known as phytoplankton and might eventually pose a health threat to humans as a result of plastic entering the food chain. On the one hand, microplastics have been reported to act as carriers of toxic chemicals and pathogens, thus serving as vectors and

hosts for the entry of a cocktail of hazardous chemicals and pathogens into our bodies, respectively. So in countries where measures to prevent the leakage of plastics into the environment are adequate, this problem is not as significant. The science on the risk of microplastics to human health is evolving, therefore it is important to continue implementing as much preventative measures as possible to avoid possible effects.

South Africa relies on both surface water and groundwater sources for industry and domestic needs. It is therefore imperative that as a country, we conduct the necessary research to unequivocally determine the extent of the problem and implications of not only microfibers but microplastics broadly, on ecosystems and human health – a universal question that multiple countries and research studies are endeavouring to answer. This research is important as it will ensure a balanced discussion on the action plans required for addressing microplastic pollution and inform the public debate on plastic pollution.

Secondhand clothing sales are booming - and may help solve the sustainability crisis in the fashion industry

Hyejune Park and Cosette Marie Joyner Armstrong 11 Jan 2021

Conscious consumers are the key to industry sustainability

Many of the changes that are needed to make the textile industry more sustainable rest with big manufacturers but consumer behaviour and choices too can make a fundamental difference. Actions such as purchasing less clothing overall (even if clothing is made from natural fibres) that remain in wearable condition for a few years, patronising sustainable brands and repairing, donating, or even upcycling clothes into new products, will go a long way to transform the clothing and textile industries.

Manufacturers must become environmental allies

While consumers do their part, the clothing and textile industries must also reinvent their production processes and focus on becoming part of the circular economy where all products are sustainably manufactured to regenerate the environment and eliminate waste and pollution. As part of their sustainable business efforts, industry players must actively fund continual research and development into large-scale production methods that are environmentally sustainable and alternative fibres such as bamboo, hemp and banana in place of synthetic fibres. At the same juncture, it is also pertinent to call for transparency within the clothing and textile industry. For example, as a standard, clothing labels should explicitly state how much plastic and water is used in a product, giving the consumer the choice to purchase an item with high plastic content or to choose an alternative.

As we continue to understand the ecosystem and human health risk posed by microfibers and microplastics in general, this Plastic Free July, themed “My Plastic Action Counts”, all actors from manufacturers to consumers must get involved. We can all be part of the solution to prevent or stop plastic mismanagement and this includes the way we produce, purchase, use and dispose of our clothing items.

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