## The lifecycle of plastics and human rights”Mandate of the Special Rapporteur on toxics and human rights

 There is compelling evidence that plastics present a global environmental challenge with negative effects on human health and well-being, wildlife and economies. Given that even relatively small quantities of litter reduce the value of our human interactions with the environment (Wyles et al. 2015) it is clear that humanity is affected on a global scale. It is widely acknowledged that hundreds of species encounter plastics and that many are negatively affected by plastic litter (Gall and Thompson 2015, Kuhn et al. 2015). There is evidence of negative effects at most levels of biological organisation (Browne et al. 2015) including ecosystem services (Green et al. 2015, Green et al. 2017). Recently an international working group of academic experts concluded that unless action is taken we will, in the next few decades, likely see irreversible wide scale ecological impacts from microplastics (SAPEA 2019).

Over the last decade there has been a progressive shift from denial and distraction by some sectors to a broad consensus that the accumulation of plastics in the environment presents a global environmental challenge. This leads the focus away from collecting evidence around harm and toward solutions, yet we have very little information on the efficacy of solutions and in particular how to trade-off between alternative solutions in order to be most effective. This is especially concerning since solutions will vary between locations, for example in relation to waste management infra structure - yet some seek one size fits all approaches. Not surprisingly with this eagerness for action coupled with a lack of clarity to guide direction, we see interventions that are unlikely to make meaningful difference (bans on drinking straws are good in principle, but trivial in consequence). We also see interventions that are ill thought out and products, including some materials labelled as biodegradable, that imply benefit beyond that which is proven (Napper and Thompson 2019, SAPEA 2020).

It is very apparent that many of the issues stem from a failure at the design stage to consider environmental impact during the lifetime of a product or at the end of its life. Product designers tell me ‘*’that was never in the brief*’’. By way of example, research has highlighted the issue of microplastic beads in cosmetic products some of which contain millions of plastic particles (Napper et al. 2015), this evidence has led to policy action to prohibit use in some countries. A success one might think; yet the patent for the use of plastic microbeads in cosmetic products was filed 50 years ago - did no one in the industry ever ask the question over those 50 years, where are all the microbeads going, what is their environmental fate? Similar scenarios are emerging around textile fibres which are one of the most common types of micropalstic reported in the environment with growing evidence that the solutions lie in better design of yarns and fabrics (Napper and Thompson 2016, De Falco et al. 2020). Yet rather than seek intervention at the design stage considerable emphasis is placed on filters for washing machines and wastewater treatment (Murphy et al. 2016, Napper et al. 2020). Most of the human population lack waste water treatment and washing machines; and even if that were not the case half of the release of micropalstics fibres from clothing occurs while wearing the garments not washing them (De Falco et al. 2020). The solution lies in better design so that fabrics last longer, are more sustainable in general and release fibres at a much slower rate.

The evidence that has emerged from the plastics challenge is that we have waited too long for evidence to build before evaluating actions. We are now faced with an urgent need for actions, but little evidence to guide us specifically on what to do where. There are few LCAs or EIAs to properly inform, Extended Producer Responsibility is critical, but what form should it a take. It is clear that industry has in some cases failed to take proper regard for the likely consequences of design and production practices and as a consequence the planet as a whole has been put under unnecessary avoidable strain.

It is also clear that plastics bring substantive societal and environmental benefit; the challenge then is to start using plastics more responsibly, so as to preserve the benefits without the current levels of harm to the environment, human wellbeing and the economy.

A real opportunity here is to learn from the mistakes that have resulted from inadequate thinking around the design and use of plastics; and to establish frameworks to place a duty of care to consider the wider environmental impacts of goods and services right form the design stage. The resources of the planet are finite and it can no longer be acceptable to knowingly market goods that harm the environment and human wellbeing in in their production, use or disposal.

Such transformative change can only be achieved with appropriate policy frameworks to ensure a level playing field for commerce and with future challenges, to promote the need for evidence around potential solutions in a far timelier manner than has been the case with plastics.

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