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Submission - "The Lifecycle of Plastics and Human Rights"

Mandate of the Special Rapporteur on Toxics and Human Rights

Minderoo Foundation, Plastics and Human Health Initiative

Minderoo Foundation is an Australian, independent philanthropic organisation that takes on tough, persistent issues with the potential to drive massive change. We seek effective, scalable solutions to several pressing and complex human rights and environmental issues.

The Minderoo Foundation's Plastics and Human Health initiative ("PHH initiative") brings together quality research findings and global experts and to build knowledge and awareness that will accelerate action to reduce the harmful effects of plastics on human health. We work closely with the Foundation's No Plastic Waste and Flourishing Oceans initiatives to leverage insights, expertise and resources towards our common objectives.

The Global Chemicals Outlook II found that "the global goal to minimize adverse impacts of chemicals and waste [could] not be achieved by 2020. Solutions exist, but more ambitious worldwide action by all stakeholders is urgently required." [i]

The PHH initiative was established in early 2020 to undertake three interlinked programs of work:

1. Harness evidence by analysing the published scientific literature to determine exposure levels to plastic chemicals and their impact on human health;
2. Invest in infrastructure and research with a focus on developing reliable and contamination-free methods to measure nano-plastics and plastic additives in human samples (e.g., blood, urine, brain) and supporting research projects focussed on brain health; and
3. Establish a Global Network of leading scientists, lawyers, policy makers and civil society members to collaborate on research and communication efforts to accelerate global action on plastics and human health.

While the call for submissions offers a broad scope for comment, our submission addresses key health impacts of plastics, information gaps on the lifecycle of plastics, related human rights, meaningful participation in decision making, Persistent Organic Pollutants (POPs) and access to remedy.

Key health impacts

Plastic comprises a polymer backbone and chemical additives which give plastic its unique properties. Plastic sheds small particles (micro- and nano-plastics) and chemical additives. Micro-plastics enter the human body via inhalation, ingestion, and the skin. Inhalation of microplastics results in lung disease. Microplastics have been detected in human placenta and colon. Smaller sized nano-plastics are likely to penetrate the body further by crossing the gut and blood brain barriers. However, reliable techniques for measuring nano-plastics in human fluids and organs are not available, precluding quantification of exposure and evaluation of health effects.

Much more is known about plastic additives; in particular, phthalates (plasticisers), flame retardants (polybrominated and polychlorinated bisphenols; per and polyfluorinated alkyl substances - PFAS) as well as the monomer Bisphenol-A which leaches out of polycarbonate. Multiple studies clearly indicate that these chemicals are in our urine, blood and breast milk and in some organs. Systematic reviews with meta-analyses show clear evidence for links between exposure to these plastic additives and birthweight, genital structure in newborns, pubertal timing, miscarriage, polycystic ovarian syndrome, endometriosis, sperm concentration and motility, various cancers, childhood brain development and IQ, cardiovascular disease, diabetes, obesity and asthma. These studies alone raise considerable concern. Furthermore, despite being exposed to mixtures of multiple chemicals, human studies have only examined the effects of one at a time. In addition, there are a multitude of chemicals which have not been studied at all. Most critically, with human sperm counts predicted to decline to zero by 2045 due to multiple factors including plastic, we are facing extinction.[ii]

There are three pathways by which plastics can potentially affect health. These are:

1. From chemicals that can leach out of plastics or microplastics in general. There is growing concern about chemicals, such as phthalates and bisphenols, that are used in the production of plastics. These are considered endocrine disrupting chemicals (EDCs) that can interfere with human immune and hormonal systems.

2. From chemicals, metals and micro-organisms that can attach to microplastics. Microplastics can become carriers for these contaminants but how much exposure we have to these contaminants via micro-plastics is not known.

3. As microparticles that we ingest via food or water, inhale or absorb through our skin.[iii]

Toxicological studies (studies on human cells or animals) show that there are adverse impacts on biological systems from each of these pathways.[iv] Studies in human populations present challenges because we are exposed to a wide range of other environmental contaminants, which means we do not know how much microplastic and chemical additives we are exposed to from different sources. At present, research is ongoing, and the PHH initiative is proud to be producing and funding this critical research.

Information gaps on the lifecycle health impacts of plastics

A telling example of our limited understanding of the health impacts of plastics is the lack of protocols to measure micro and nano-plastics in human tissues. Existing techniques are not reliable to discern if nano-plastics are entering the body and both micro and nano-plastic measurement protocols are compromised by contamination issues. Together with our partners, we are developing techniques to reliably measure these plastics.

Through our literature reviews, we are finding that while there is significant research on the small number of plastic additives noted above, there are voluminous black spots on the vast majority. With the proliferation of new chemicals and the far slower pace of regulators and scientists detecting them and analysing their health effects, the gap between known and unknown impacts is only set to widen. Simultaneously, we are conscious that whilst scientific testing focuses on individual chemical exposures, the reality is that humans are exposed to cumulative mixtures of substances over time, the effect of which is not known.

An additional challenge for all stakeholders is access to information. Information about a chemical can be restricted by confidential business information, including the chemical's name, structure and mixtures. This leaves researchers to find out about these chemicals by identifying novel substances and guessing as to their origins – an unfortunate state when researchers are already playing catch up on novel substances. Members of the public are even less equipped to modify their own behaviour and look after the health of their communities, as will be discussed below.

Health impacts and Human Rights

Human rights can only be secured in an environment that is healthy enough to sustain them. Human rights are affected across the plastics lifecycle, which includes plastic production (including fossil fuel extraction), use of plastic articles and post-use (including recycling, waste management and waste mismanagement). These impacts occur at a societal and individual level.

At a societal level, protection of the environment is a vital pre-condition to securing human rights, particularly the right to life and health.[v] Plastic production requires extraction of fossil fuels which contributes to climate change, and the product itself has led to the spread of plastic, microplastics and nanoplastics with contamination of every corner of the globe.[vi] Reliable information about plastic exposure and their health impacts are urgently needed in order to address human rights. However, we do know that a range of plastic additives are found in human blood, urine, and breastmilk as well as some organs and that this contamination is associated with health impacts. The concept of "the right to clean blood" is aligned to UN (United Nations) SDG (Sustainable Development Goal) 3 "Good Health and Wellbeing", and clearly underpins many of the impacts and implications of plastics and human rights. The rights to health, life, and body integrity cannot be met whilst human blood is being polluted without knowledge or consent. Plastic additives should not be in our blood or bodies. We did not give permission to be contaminated. The fact that we are contaminated is beyond our control, making the impacts on health a major issue of public concern.

At the individual level, people have some control over how their rights to health and life are affected by plastics. For example, where plastic articles have information about their contents and safe usage, or where hazardous plastic additives include safety data sheets. They also have the capacity to research and comprehend the risks of different plastics. This is particularly helpful for individuals to make informed and personally appropriate decisions about plastics in their lives. However, the barrier to this individual approach is transparency and complexity making meaningful decision making difficult as will be discussed below. Furthermore, even where individuals do self-regulate their relationship with plastics, societal-level pollutants continue to affect them.

Meaningful participation in decision making

Global awareness of the human health impacts of plastics is extremely limited with more information available for developed rather than developing countries. Gaps in awareness and scientific understanding affect both the scientific and regulatory communities, as well as groups outside these spheres (e.g., the general population).

Regulatory and scientific barriers

A significant challenge for regulators trying to manage plastic governance is obtaining data on and evaluating plastic additives. There are more than 40,000 industrial chemicals available to use in Australia, many of which are plastic-associated chemicals. Australia's key evaluation agency takes a

risk-based approach to determining the depth of evaluation.[vii] Very few in-depth assessments are conducted by the Scheme each year (11 in 2015-16).[vi] This rate cannot keep pace with the introduction of new chemicals or latest scientific evidence. Consequently, regulators are constantly playing catch up with the chemicals sector and regulatory approaches are delayed in incorporating the latest scientific evidence.

The structure of plastic governance also affects meaningful participation in decision making. Across the globe, approaches to regulating plastics vary considerably. Some jurisdictions are more centralised (e.g., EU (European Union)) and others manage chemicals under distinct schemes depending on their end-use and authority (e.g., Australia). The latter approach has been termed 'noodle governance' because of the many regulators, committees, and regulations that it employs. A degree of complexity in plastics regulation is necessary, because of the broad forms and applications of plastics, however the lack of uniformity in Australian law makes it difficult for any stakeholder to know who and how to engage on chemical regulation.

Barriers for the public

In Australia, the public can participate in decision making through consultation processes. These occur at many stages – in the preparation of legislation,[viii] when a chemical is being considered for scheduling as a poison,[ix] and where a regulator is considering toxic chemicals in plastic packaging.[x] The regulatory complexity of the Australian system forces any stakeholder wanting to engage in these processes to keep up with many different regulators and consultation processes. The difficulty of discerning who is responsible for an area of regulation and when consultation processes are open is a significant barrier for the public to have their say.

Meaningful action requires awareness and understanding of the issues being addressed, capacity to influence decision making, and willingness to make changes. Information about what is in a plastic product and how we may be exposed to plastic is opaque. When a consumer purchases a plastic product, they are often not informed about which additives it contains. This opacity continues throughout the supply chain, where importers may struggle to determine the chemical composition of an article. It is difficult enough for scientists and regulators to comprehend the connections between plastics and health. For a regular citizen, the challenge is even more immense. Providing more information does not therefore increase transparency. Transparency also requires information to be comprehensible and actionable.

Information complexity

Campaigns to induce behaviour change with respect to plastic and human health issues struggle to make inroads due to this information complexity, communication flaws, varied waste management practices in different jurisdictions, and complex governance. Different effects are associated with different lifespan stages of plastics and exposure sources.[xi] There are also different health risks associated with use of different types of plastics. In addition, research findings of the effects of exposure in different populations will vary because each country and region has adopted different waste management systems for plastics, there is varying availability of waste management and recycling services. [xii]

To allow consumers to reduce the impacts of plastics, we would like to see mandatory and internationally consistent labelling of plastic products that includes the type of plastic, content of

plastic products, known health risks of exposure, and if/how it can be recycled as well as redesigned to minimise environmental impact and human exposure.

A publicly available international listing of types of plastics and risks to human health and the environment would also support consumer behaviour change and put pressure on manufacturers to redesign plastics.

Persistent Organic Pollutants

Australia is a signatory to the Stockholm Convention and has ratified the initial list of 12 POPs. It has not ratified any further POPs, but in March 2021 legislation passed which will move Australia closer to ratifying additional POPs in 2022.[xiii] Although Australia has lagged in ratifying POPs, it has been influenced by additions to the Convention and has taken steps to manage listed chemicals.[xiv] For example, the PFAS National Environmental Management Plan is intended to meet the management obligations under the Convention prior to ratifying.[xv]

The Stockholm Convention process is valuable for setting a global standard and influencing regulation in Australia, although we hold some concerns about the time taken to add and ratify a POP (Persistent Organic Pollutant) listing. We also see opportunity to move from a chemical-by-chemical approach to a chemical class approach. A major problem with any chemical restriction is sinister substitution – where a producer replaces a restricted product with a chemically similar one that is not restricted yet likely has the same negative properties. At an international and domestic level, the approach must shift to stop this practice and encourage innovative, sustainable, and safe design.

Access to remedy

Gaining access to remedy via the courts for plastic-related human rights abuses is rare, particularly when those harms are health related. This is because proving a case for negligence requires linking actions and harms that have often occurred over an extended period, with multiple sources of exposure and emerging harms. The most successful cases that we have seen are where there is acute exposure to a defined population, e.g., the PFAS cases in the USA. In Australia, plaintiffs have had success in seeking remedy for monetary loss where their properties have been polluted.[xvi] These harms affect property rights and have far clearer causation and quantifiable damages than plastic-related health cases.

Alternative approaches for remedy have been developed in Australia for firefighters who are exposed to chemicals and other hazards due to their occupation. Legislation allows claimants who are diagnosed with specific cancers to automatically be presumed to have the illness because of their role.[xvii]

Conclusion

We urgently need to turn attention to the impacts of plastics on human health, and therefore on our human rights. We want to see a new era of plastics – where they are safe and sustainable, supporting all human rights, rather than compromising the rights to life, a standard of living that is adequate to health and bodily integrity. We know that some plastic particles and additives are in the human body and affecting health. There are still many unknowns about the impact of plastic exposure on human health. For all parties – governments, industry, civil society, individuals - there is a need to regulate more wisely and have clearer information on what can be done to reach this new

era. We have a right to know our bodies are not contaminated and that our health and wellbeing are protected.

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viii https://www.environment.gov.au/protection/chemicals-management/national-standard/draft-legislation

[ix] https://www.tga.gov.au/public-notices-about-scheduling

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[xiv] https://www.environment.gov.au/protection/chemicals-management/international-agreements/stockholm-convention

[xv] https://www.pfas.gov.au/government-action/international-cooperation

[xvi] https://www.abc.net.au/news/2020-02-27/pfas-federal-class-action-setttlement/12006184

[xvii] Workers Compensation Legislation Amendment (Firefighters) Bill 2018 (NSW), which amended a number of NSW statutes.