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Implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes

Note by the Secretary-General

The Secretary-General has the honour to transmit to the General Assembly the report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Marcos Orellana, in accordance with Human Rights Council resolution 45/17.

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Report of the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Marcos Orellana

The stages of the plastics cycle and their impacts on human rights

Summary

In the present report, the Special Rapporteur on the implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes, Marcos Orellana, examines the current and future negative implications of the various stages of the plastics cycle for the enjoyment of human rights. The ever-increasing plastics production, incineration and waste dumping only aggravate the detrimental consequences. Toxic chemicals are commonly added to plastics, causing serious risks and harms to human rights and the environment. The Special Rapporteur puts forward recommendations aimed at addressing the negative consequences of plastics on human rights and integrating a human rights-based approach in the transition to a chemically safe circular economy.

I. Introduction

1. Humans are eating, drinking and breathing plastics. The presence of microfibres and other plastic microparticles in human tissues has been documented. Plastic waste can be found in the lowest and highest places on the planet, from the depths of the Mariana Trench to the snows of Mount Everest. Given that plastics contain a myriad of toxic additives, human beings are exposed to a wide range of hazardous substances.[1]

2. The adverse impacts on human rights do not result from plastic waste and exposure to toxics in plastics alone. The whole cycle of plastics, at its various stages, has become a global threat to human rights. Those include the extraction of oil and gas used to make the chemicals from which plastics are made; the release of toxic pollutants into the environment during production; the transportation of plastics and plastic pellets that contaminate coastal communities; waste mismanagement and dumping; and the release of hazardous emissions after disposal, including incineration and open burning. As a result, plastics are accumulating in food chains, contaminating water, soil and air, and releasing hazardous substances such as persistent organic pollutants into the environment.

3. The large-scale manufacturing of plastics started in the 1950s, at a rate of 2 million tons. Today, the annual production of plastics is 415 million tons,[2] and it is projected to quadruple by 2050.[3] A few companies have an outsized responsibility for causing the global plastics crisis. In 2019, just 20 polymer producers accounted for more than half of all single-use plastic waste generated globally, and the top 100 producers accounted for 90 per cent.[4]

4. Plastic remains in the environment for centuries. Half of all the plastic produced is used only once and then discarded as waste, and a mere 9 per cent of all plastics produced is recycled, mostly only once.[5] There are already about 5.25 trillion pieces of plastic debris in the oceans, weighing some 269,000 tons.[6] At that pace, there will be more plastics than fish in the oceans by 2050.[7] When disposed of in landfills, plastics leach toxic chemicals into the soil and groundwater. When mismanaged, plastics pollute land, waterways and the oceans.

5. The supply chains of plastics cross borders, continents and oceans, and the trade in plastic products and waste raises serious transboundary issues. However, efforts to address the human health impacts of plastic have largely ignored the global

[1] Plastic is a polymeric material that has the capability of being moulded or shaped, usually through the application of heat and pressure. Plastic has other special properties, such as low density, low electrical conductivity, transparency and toughness. According to PlasticsEurope (the association of plastics manufacturers in Europe), there are 14 types, each with several applications. Those include bio-based and biodegradable plastics, generally referred to as bioplastics. The great variety of polymers, low price and versatility are some of the main reasons for the rapid increase in plastics production and consumption. See Ferdinand Rodriguez, "Plastic" (*Encyclopedia Britannica*, 2020).

[2] Diana Barrowclough, Carolyn Deere Birkbeck and Julien Christen, *Global Trade in Plastics: Insights from the First Life-Cycle Trade Database*, United Nations Conference on Trade and Development Research Paper, No. 53 (2020).

[3] Patricia Parkinson, "Plastics: mitigating their environmental, health and human rights impacts", International Union for Conservation of Nature, 11 February 2021.

[4] Dominic Charles, Laurent Kimman and Nakul Saran, *Plastic Waste Makers Index: Revealing the Source of the Single-Use Plastics Crisis* (Minderoo Foundation, 2021).

[5] See www.unep.org/interactive/beat-plastic-pollution/.

[6] Marcus Eriksen and others, "Plastic pollution in the world's ocean: more than 5 trillion plastic pieces weighing over 250,000 tons afloat at sea", *Plos One*, vol. 9, No. 12 (2014).

[7] World Economic Forum, Ellen MacArthur Foundation and McKinsey and Company, *The New Plastics Economy: Rethinking the Future of Plastics* (2016).

dimensions of the plastics cycle. The global plastics crisis necessitates a worldwide, human rights-based solution.[8]

6. Much of international attention on plastics has been directed at plastic waste and disposal, and additional research is needed on the impacts of all stages of the plastics cycle. Despite increasing awareness of the importance of creating a chemical-free circular economy, the volume of plastics production and waste continues to grow.

7. Plastics contain toxic additives, over 10,000 according to a recent study,[9] posing severe risks and harms to human rights and the environment. Harmful chemicals are added to plastics at every stage in the plastics cycle, and their deleterious impact will grow as plastics production and use increases.

8. False or misleading solutions to plastics are also a growing concern. At the current levels and with the current methods, recycling is often a sham to simply dump plastic waste near marginalized communities and divert attention from the responsibilities of businesses to the behaviour of consumers.[10] Similarly, incineration releases hazardous pollutants into the air and produces vast quantities of hazardous ash that harm local communities.

9. The plastics crisis affects a broad range of human rights, including the rights to life, the highest attainable standard of health, a healthy environment, housing, water and sanitation, adequate food, equality and non-discrimination, as well as rights to information, participation and effective remedy, all of which are protected under international law. It has disproportionate impacts on groups at heightened risk of human rights violations, such as workers, children, women, persons of African descent, indigenous peoples, coastal communities and people living in poverty. Not only present but future generations will be affected if the plastics crisis is not reversed.

10. Plastics also aggravate the climate emergency. Plastics limit the ability of oceans to remove greenhouse gases from the atmosphere. In addition, by 2050, greenhouse gas emissions from the plastics cycle could reach 10 to 13 per cent of the entire remaining carbon budget to reach the goals of the Paris Agreement.[11]

11. The current international legal and policy framework governing plastics is fragmented and unsuited to confront the magnitude of the global threat of plastics. Growing volumes of plastic waste and exposure to toxic additives in plastics are aggravating environmental injustices.[12] That dire situation requires strong policy responses at the global, regional and national levels.

12. The present report is informed by a broad consultative process in which the Special Rapporteur invited input from States Members of the United Nations, international organizations, civil society organizations, national human rights institutions and other key stakeholders. He widely disseminated a call for inputs, and a number of highly informative submissions were received.[13] The Special Rapporteur also held two online consultation meetings, on 30 March and 16 July 2021, with the

[8] Submission by Greenpeace International.

[9] Helene Wiesinger, Zhanyun Wang and Stefanie Hellweg, “Deep dive into plastic monomers, additives, and processing aids”, *Environmental Science and Technology*, vol. 55 (2021).

[10] Submission by Greenpeace Africa.

[11] Lisa Anne Hamilton and others, *Plastics and Climate: The Hidden Cost of a Plastics Planet* (Center for International Environmental Law, 2019).

[12] Submission by Canadian Environmental Law Association.

[13] The submissions that have been shared with the Special Rapporteur in response to the call for inputs disseminated by him can be consulted on the official webpage of the mandate, see www.ohchr.org/EN/Issues/Environment/SRToxicsandhumanrights/Pages/Index.aspx and dedicated webpage www.ohchr.org/EN/Issues/Environment/SRToxicsandhumanrights/Pages/lifecylce-plastics.aspx.

participation of experts representing civil society organizations from around the world, as well as academics.

13. The Special Rapporteur expresses his gratitude to those who shared their expertise, insights and perspectives both in written submissions and during the online meetings. The valuable insights received have been incorporated into the findings of the report.

II. Human rights impacts of plastics

14. The global plastics crisis reveals how every stage of the plastics cycle has adverse effects on the full enjoyment of human rights.

A. Stages of the plastics cycle and its human rights implications

1. Extraction and refining

15. The first stage in the plastics cycle is the extraction and refining of raw materials for plastics production. Over 99 per cent of all plastics is produced from fossil fuels.[14]

16. Exploration and extraction activities cause deforestation, ecosystem fragmentation and chemical contamination of land and water with production waters, drilling fluids and by-products.[15] The contaminated water from exploration and extraction is often discharged in surface waters. It contains high levels of hazardous substances, such as benzene, xylene, toluene and ethylbenzene, as well as dangerous heavy metals such as arsenic, cadmium, chromium and mercury. Chronic exposure to those polluted waters can cause different kinds of cancer in humans, chromosomic alterations[16] and aplastic anaemia.[17]

17. Air quality also suffers at this stage of the plastics cycle. Air pollution causes increased risk of asthma; lung, bladder and lymphohematopoietic neoplasm; and cancers.[18] In addition, the coronavirus disease (COVID-19) pandemic is affecting people living in poor air quality zones more severely, aggravating existing environmental injustices (see A/HRC/45/12).

2. Production

18. The second stage in the cycle of plastics is its production and manufacturing, at the alarming amount of 415 million tons per year.[19] More than half of all plastics ever produced were made after 2005. It is estimated that in 2025, plastics production will reach over 600 million tons per year.[20] The production stage emits hazardous substances that pollute air, water and soil.

[14] Center for International Environmental Law, “Fueling plastics: fossils, plastics and petrochemical feedstocks”, 2017.

[15] Dara O’Rourke and Sarah Connolly, “Just oil? The Distribution of environmental and social impacts of oil production and consumption”, *Annual Review of Environment and Resources*, vol. 28 (2003).

[16] International Programme on Chemical Safety, “Benzene”, *Environmental Health Criteria*, vol. 150 (1993).

[17] World Health Organization, “Exposure to Benzene: a major public health concern”, 2010.

[18] Submission by Center for International Environmental Law; S. Belli and others, “Case-control study on cancer risk associated to residence in the neighborhood of a petrochemical plant”, *European Journal of Epidemiology*, vol. 19, No. 1 (2004).

[19] Barrowclough, Birkbeck and Christen, *Global Trade in Plastics*.

[20] Heinrich Böll Stiftung and Break Free from Plastic, *Plastic Atlas: Facts and Figures about the World of Synthetic Polymers* (Lahr, Germany, 2019).

3. Transport

19. The transport of plastics poses additional risks and harms to human health and the environment. Plastic products are often lost in containers at sea.[21] In addition, microplastics pose risks to coastlines when released during transport, such as in the case of the *MV X-Press Pearl*, which sank and released millions of plastic pellets that contaminated stretches of the western coastline of Sri Lanka.[22]

4. Use

20. Consumers and the public in general are in daily contact with plastic products and therefore exposed to their toxic additives. Pathways for exposure include the skin, the ingestion of microplastics in drinking water and the food chain, and inhalation owing to air contamination.[23] For example, thousands of chemicals used in food contact articles or packaging are in direct contact with food and beverages and may be transferred to those edibles.[24]

5. Waste

21. Plastic waste is another stage of the plastics cycle that has major impacts on human health and the environment. There is currently no commercially available waste management method capable of solving the global plastic pollution crisis. Toxic additives and microplastics contained in rain, soil, waterways, oceans and on mountaintops cannot be eliminated by recycling, landfilling or incineration. Only legally binding limits on global plastics production for essential uses can make a difference.

22. As a result of industry disinformation campaigns,[25] recycling is commonly regarded as a solution to plastic waste. However, only about 9 per cent of all plastic waste ever produced has been recycled.[26] In addition, existing recycling practices pose health threats from volatile organic compounds,[27] and they concentrate toxic additives in plastics, generating new hazardous products.[28] Filtering them out is prohibitively expensive.[29] Thus, the recycling practices implemented to date are more of a mirage, an optical illusion that perpetuates the severe human rights impacts of plastics.

23. Several of the existing methods for recycling of plastics are technically or economically unfeasible. Plastic recycling can be primary (mechanical reprocessing into a product with equivalent properties), secondary (mechanical reprocessing into products requiring lower properties), tertiary (recovery of chemical constituents) and quaternary (recovery of energy).[30] However, not all methods are efficient for handling

[21] Submission by Plastic Free President.

[22] BBC News, “X-Press Pearl: Sri Lanka braces for environmental disaster from sunken ship”, 3 June, 2021.

[23] Luísa Cortat Simonetti Gonçalves, *Legal Remedies against the Plastic Pollution of the Oceans: An Analysis of Public International Law and Private Initiatives to Face the Plastic Soup*, PhD dissertation, Maastrich University, 2020.

[24] Submission by Food Packaging Forum; submission by Zero Waste Europe.

[25] Laura Sullivan, “How big oil misled the public into believing plastic would be recycled”, NPR, 11 September 2020.

[26] Laura Parker, “A whopping 91 per cent of plastic isn’t recycled”, *National Geographic*, 20 December 2018.

[27] Zhigui He and others, “Pollution characteristics and health risk assessment of volatile organic compounds emitted from different plastic solid waste recycling workshops”, *Environment International*, vol. 77 (April 2015).

[28] Jitka Straková, Joseph DiGangi and Génon K. Jensen, *Toxic Loophole: Recycling Hazardous Waste into New Products* (International Pollutants Elimination Network, 2018).

[29] Submission by International Pollutants Elimination Network.

[30] Jefferson Hopewell, Robert Dvorak and Edward Kosior, “Plastics recycling: challenges and opportunities”, *Philosophical Transactions of the Royal Society B*, vol. 364, No. 1526 (July 2009).

different kinds of plastic. Many types of products, such as disposable coffee cups,[31] cannot be recycled by existing methods unless the different materials composing them are separated or because of the different pigments added.[32]

24. Landfilling, dumping, leakage into nature, or incineration are the destinations of about 91 per cent of all accumulated plastics worldwide.[33] Dumping sites are associated with health risks, including dangerous emissions of methane, carbon dioxide and heavy metals. Leakage into the oceans and marine plastic litter are affecting coastal communities.[34] Incineration impairs air quality with highly toxic substances such as dioxins and generates ash that is laced with toxicants.[35] Ships often irregularly dispose of plastic waste in international waters or bring it to ports lacking adequate waste reception facilities.[36] The fishing industry is responsible for the 500,000 to 1 million tons of plastic fishing nets polluting the oceans and coastal communities.[37]

25. Given that it is often economically unviable to recycle plastics, wealthy countries offshore their plastic waste to low-income countries with even less technical and financial ability to manage it in an environmentally sound manner. Only a minor percentage of the exported plastic waste is recycled, while the rest burdens developing countries, in addition to the plastic waste they generate domestically. International waste trade also creates an illusion of proper recycling, when there is actually a geographical shifting of the plastic waste problem, affecting the rights of the most vulnerable. Only 15 countries export 73.9 per cent of the plastic waste, 11 of which are members of the Organisation for Economic Co-operation and Development (OECD) and responsible for 55.3 per cent of the scrap plastic exported in the world in 2017.[38]

26. The Global E-waste Monitor provides a range of statistics showing the extent of the global problem of e-waste, which includes plastics and toxic additives. It shows that in 2019, the world generated a striking 53.6 million metric tons of e-waste. It is widely accepted that a significant amount of e-waste is shipped from the Northern hemisphere for informal disposal in low-income countries.[39] In their final destinations, e-wastes are manually broken apart and metals harvested, while plastic components are mostly burned in the open, generating toxic fumes containing dioxins, polycyclic aromatic hydrocarbons and other persistent organic pollutants.[40] That, in turn, leads to poisoning of the food chain.

[31] Lily Sedaghat, “7 things you didn’t know about plastic (and recycling)”, National Geographic Society Newsroom blog, 4 April 2018.

[32] Tom Szaky, “The many challenges of plastic recycling”, Sustainable Brands, 2015.

[33] Parker, “A whopping 91 per cent”.

[34] Submissions by Deep-Ocean Stewardship Initiative and One Ocean Hub.

[35] Submission by International Pollutants Elimination Network.

[36] Lívia Brioschi, Luísa Cortat Simonetti Gonçalves and Adriano Sant’Ana Pedra, “Dever internacional de reciclagem dos resíduos plásticos pelos navios”, *Revista Científica Foz*, vol. 2, No. 2 (2019).

[37] World Wide Fund for Nature, “Stop ghost gear: the most deadly form of marine plastic debris”, 19 October 2020.

[38] Luísa Cortat Simonetti Gonçalves and Adriano Sant’Ana Pedra, “Third world approaches to the international law: warnings and the urgency to face the plastic soup”, *Revista Internacional de Direito Ambiental*, No. 25 (January–April 2020).

[39] Vanessa Forti and others, *The Global E-waste Monitor 2020: Quantities, Flows, and the Circular Economy Potential* (Bonn, Geneva and Rotterdam, United Nations University, United Nations Institute for Training and Research and International Telecommunication Union, 2020).

[40] Submission by International Pollutants Elimination Network.

B. Human rights impacts of toxic additives in plastics

27. One of the greatest constraints to plastics joining the chemical-free circular economy is the toxic chemical additives they contain. The existing mechanical recycling of plastics with toxic additives produces a low-grade, low-value end product, injecting existing hazardous substances into new products.[41]

28. In low-income countries, unrecyclable plastic scrap is burned in the open to reduce volume or burned directly as a cheap fuel in food production. In that process, toxic additives such as brominated flame retardants are transformed into the most toxic chemicals known to humans, such as brominated dioxins and furans, contaminating the soil and food chain.[42]

29. Sizing less than 5mm, microplastics constitute an invisible threat that spreads through waters, soil, air, food, animals and humans. Microplastics contain all the toxics that macroplastics do, but they also spread more easily and extensively.[43] Microplastics result from the gradual tearing of plastic waste. They are also manufactured and added to products such as textiles, cosmetics, cleaning products, paints and products used in the oil and gas industry.[44] Microplastics are easily ingested through food, drinking water and salt. They can also enter the human body through inhalation[45] and may induce the rise of antibiotic-resistant microbes.[46]

30. Several toxic additives in plastics disrupt the endocrine system. One of the best known is bisphenol A, which is present in laptops, cell phones, baby bottles, water main pipes, laboratory and hospital equipment,[47] and food containers. Bisphenol A is capable of causing cancer, cardiovascular disease, diabetes, obesity and interference with liver function.[48] Despite some recent efforts on restriction and regulation, industry is replacing bisphenol A with similar substances that pose similar threats.[49]

31. Phthalates are another set of endocrine-disrupting chemicals that are used to make plastics more durable. Phthalates appear in hundreds of household products, and researchers have linked them to asthma, attention-deficit hyperactivity disorder, breast cancer, obesity, type II diabetes, neurodevelopmental issues, behavioural issues, autism spectrum disorders, altered reproductive development and male fertility issues.[50]

32. Plastics both release and absorb and carry persistent organic pollutants, such as flame-retardant plasticizers, and heavy metals. Plastics can absorb polycyclic

[41] Straková, DiGangi and Jensen, *Toxic Loophole*.
[42] Ibid.
[43] Parkinson, “Plastics”.
[44] Anja Verschoor and others, *Quick Scan and Prioritization of Microplastic Sources and Emissions* (Bilthoven, National Institute for Public Health and the Environment, The Netherlands, 2014).
[45] Alvise Vianello and others, “Simulating human exposure to indoor airborne microplastics using a breathing thermal manikin”, *Scientific Reports*, vol. 9, art. No. 8670 (2019).
[46] Ester M. Eckert and others, “Microplastics increase impact of treated wastewater on freshwater microbial community”, *Environmental Pollution*, vol. 234 (March 2018).
[47] Submission by Health Care Without Harm Europe.
[48] Iain A. Lang, Tamara S. Galloway and Allan Scarlett, “Association of bisphenol A concentration with medical disorders and laboratory abnormalities in adults”, *JAMA*, vol. 300, No. 11 (2008). Soria Eladak and others, “A new chapter in the bisphenol A story: bisphenol S and bisphenol F are not safe alternatives to this compound”, *Fertility and Sterility*, vol. 103, No. 1 (January 2015).
[49] Luísa Cortat Simonetti Gonçalves, “Cases of *PlasticsEurope v. European Chemicals Agency* (T-185/17, T-636/17 and T-207/18): through the ways of justice in an unhealthy war: BPA to an end in Europe?”, *Revue européenne de droit de la consommation*, vol. 2021, No. 1 (2021).
[50] Amy Westervelt, “Phthalates are everywhere, and the health risks are worrying. How bad are they really?”, *The Guardian*, 10 February 2015.

aromatic hydrocarbons, which are known for causing damage to the respiratory system and the liver, as well as other health problems.[51]

III. Impacts of the plastics cycle on persons in vulnerable situations

33. Persons and groups in vulnerable conditions are disproportionately exposed to the impacts of the plastics cycle, depending on factors such as age, gender, ethnicity, education, profession and poverty.[52] Those populations often lack tools and opportunities to protect themselves from such exposure. Historically, their right to information on the risks and harms of exposure to plastics has been denied,[53] and opportunities for their participation in the decision-making process on plastics policies have been minimal or non-existent.[54]

A. Workers

34. Workers are one of the groups most exposed to the impacts of the plastics cycle. Exposure to hazardous substances in their workplaces represents a global public health crisis (see A/HRC/39/48). The health risks and harms affecting workers in the plastics industry include exposure to chemicals in plastics manufacturing and recycling, manual handling and machinery noise.

35. Exposure to hazardous chemicals added to plastics undermines the right to a safe work environment. Moreover, the lack of information on risks and harms impairs the right to an effective remedy, as does the burden of proving harm and causation. Statutes of limitations that do not account for the latency periods of hazardous substance exposure can also result in denial of justice and a fair trial.

36. In his 2019 thematic report to the Human Rights Council, the Special Rapporteur put forward a set of principles aimed at protecting workers from exposure to hazardous substances (A/HRC/42/41), which are particularly relevant to the stages of the plastics cycle.

1. Petrochemical and plastics manufacturing industries

37. The petrochemical and the plastics manufacturing industries employ and release chemicals that impair workers' rights to life, health and a safe working environment. Risks and harms are due mostly to exposure to hazardous substances utilized or emitted in the industrial process, such as benzene, xylene, toluene, ethylbenzene, heavy metals, bisphenols and the many toxic plastic additives.[55]

38. In semiconductor manufacturing in the electronics sector, over 250 chemicals are used in a variety of plastics and resins.[56] Workers face risks and harms for non-Hodgkin's lymphoma, leukaemia, brain tumours and breast cancer. Evidence also

[51] Submission by Center for Biological Diversity.
[52] See A/75/290 and A/74/480; submission by The Center for Oceanic Awareness, Research and Education.
[53] Submission by Minderoo Foundation.
[54] Juliano Calil and others, *Neglected: Environmental Justice Impacts of Marine Litter and Plastic Pollution* (Nairobi, United Nations Environment Programme (UNEP), 2021).
[55] John N. Hahladakis and others, "An overview of chemical additives present in plastics: migration, release, fate and environmental impact during their use, disposal and recycling", *Journal of Hazardous Materials*, vol. 344 (15 February 2018).
[56] Submission by Supporters for the Health and Rights of People in the Semiconductor Industry.

points to reproductive risks, including miscarriages, congenital malformation and reduced fertility.[57]

2. Waste pickers

39. Waste pickers usually lack formal organization and governmental support, social security or protection equipment.[58] They scavenge a living on waste sites, facing serious health risks and harms, including cancer, asthma and tuberculosis.[59] Respiratory risks[60] are due to the poor air quality, and non-respiratory illness, such as diabetes, can result from exposure to polychlorinated biphenyls.[61] Formalizing the sector would help to limit exposure and work-related risks.[62]

40. In many countries, e-waste dismantling remains in the informal economy, offering no guarantees of decent work conditions.[63] The dismantling of specific plastic products, such as electronics, causes disturbance of thyroid and brain functions.[64]

B. Children

41. Children exposed to hazardous substances in the plastics cycle suffer a violation of their rights to life, health and physical integrity, as well as their right to a toxic-free environment, among others.[65] Cancer, endocrine disruption and adverse development are some of the consequences in children that are linked to chemicals used in plastics.[66] The risks and harms to health posed by plastic additives are particularly serious at a young stage of body development. Toxic additives, particularly endocrine-disrupting chemicals, are found in many plastic products used by children, such as bottles and toys.[67] Among them, bisphenols are linked to precocious puberty and obesity.[68] The vulnerability of children is aggravated when they live in poverty or are exposed to dumping sites, or when they work as waste pickers.[69]

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[57] Myoung-Hee Kim, Hyunjoo Kim and Domyung Paek, “The health impacts of semiconductor production: an epidemiologic review”, *International Journal of Occupational and Environmental Health*, vol. 20, No. 2 (2014).

[58] Calil and others, *Neglected*.

[59] Kristen Grant and others, “Health consequences of exposure to e-waste: a systematic review”, *The Lancet: Global Health*, vol. 1, No. 6 (2013).

[60] Jing Ma and others, “Asthma and infectious respiratory disease in children: correlation to residence near hazardous waste sites”, *Paediatric Respiratory Reviews*, vol. 8, No. 4 (December 2007).

[61] Maria Kouznetsova and others, “Increased rate of hospitalization for diabetes and residential proximity of hazardous waste sites”, *Environmental Health Perspectives*, vol. 115, No. 1 (January 2007).

[62] Martin Medina, “The informal recycling sector in developing countries: organizing waste pickers to enhance their impact”, Gridlines, note No. 44 (Washington, D.C., World Bank, 2008).

[63] Guy Ryder, Director General of the International Labour Organization, “Keep our planet safe, clean and fit for work”, statement made on World Environment Day, 5 June 2018.

[64] Submission by Juarez and others.

[65] World Conservation Congress of the International Union for Conservation of Nature and Natural Resources, resolution 101 on child’s right to connect with nature and to a healthy environment, 2012.

[66] Calil and others, *Neglected*.

[67] Joseph DiGangi, Jitka Strakova and Lee Bell, “POPs recycling contaminates children’s toys with toxic flame retardants”, April 2017.

[68] Melanie H. Jacobson and others, “Urinary bisphenols and obesity prevalence among U.S. children and adolescents”, *Journal of the Endocrine Society*, vol. 3, No. 9 (September 2019); and Kembra L. Howdeshell and others, “Exposures to bisphenol A advances puberty”, *Nature*, vol. 401, No. 16755 (21 October 1999).

[69] World Wide Fund for Nature, *Solving Plastic Pollution through Accountability* (Gland, Switzerland, 2019); and submission by Major Group for Children and Youth.

42. Children also have limited possibilities to exercise their rights to information, participation and access to remedies. Therefore, States should take enhanced measures to respect, protect and enable children's rights in relation to plastics.[70]

C. Women

43. Owing to biological, social and economic inequalities, as well as political underrepresentation in the decision-making processes, women are particularly affected by the harmful effects of hazardous chemicals from plastics.[71] That is especially the case during pregnancy and menopause. Bisphenol A, for example, can adversely affect ovarian and uterine health.[72]

44. Women workers represent the majority of the plastics workforce, including the textiles industry, being exposed to disproportionate risks and harms of breast cancer and reproductive disorders.[73] Women also form a significant proportion of waste pickers in the informal plastic waste sector.[74]

45. In addition, women are exposed to the dangers of plastics in hygiene and menstrual products. Numerous products, such as tampons, sanitary towels, incontinence materials and wet wipes, contain plastics with additives that are carcinogenic and hormone-disrupting or cause menstrual disorders and allergies. Such products also generate sizeable amounts of plastic waste. During her lifetime, a woman generates about 90 kg of waste from menstrual pads and 60 kg of waste from tampons.[75]

D. Persons of African descent

46. Communities of persons of African descent often endure a higher concentration of hazardous waste facilities, contaminated sites or dumping grounds. Fenceline communities face disproportionate impacts from the petrochemical and plastics manufacturing industries.[76]

47. Notoriously, the chemical and the plastics industries walk hand in hand. Such is the case, for instance, of the so-called Cancer Alley, a petrochemical corridor along the Mississippi River in the United States of America.[77] The area used to be a plantation, where enslaved Africans and African descendants were forced to work. The incessant pollution generated by the chemical and plastics industries has spread illness and misery. United Nations independent human rights experts have raised serious concerns about further industrialization of Cancer Alley and denounced the development of petrochemical complexes in Louisiana as a form of environmental racism.[78]

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[70] Submission by Alana Institute.

[71] Calil and others, *Neglected*.

[72] Maricel V. Maffini and others, "Endocrine disruptors and reproductive health: the case of bisphenol-A", *Molecular and Cellular Endocrinology*, vols. 254–255 (25 July 2006).

[73] Robert DeMatteo and others, "Chemical exposures of women workers in the plastics industry with particular reference to breast cancer and reproductive hazards", *New Solutions: A Journal of Environmental and Occupational Health Policy*, vol. 22, No. 4 (February 2013).

[74] Heinrich Böll Stiftung, Break Free from Plastic and Institute for Global Environmental Strategies, *Plastic Atlas: Facts and Figures about the World of Synthetic Polymers*, Asia ed. (2021).

[75] Submission by Zero Waste Europe.

[76] Submission by Center for Biological Diversity.

[77] Oliver Laughland and Emily Holden, "In the most polluted part of America, residents now battle the US's biggest plastic plant", *The Guardian*, 1 April 2020.

[78] Office of the United Nations High Commissioner for Human Rights (OHCHR), "USA: environmental racism in 'Cancer Alley' must end – experts", 2021.

E. Indigenous peoples and coastal communities

48. The exploitation of fossil fuels, which make up the bulk of plastic feedstock, has caused widespread and severe environmental contamination of indigenous peoples' lands and territories (see A/HRC/24/41). Spills from ruptured pipelines and dumping of contaminated waters have poisoned rivers and exposed indigenous peoples to heavy metals and other hazardous substances.[79] This stage in the cycle of plastics causes serious violations of indigenous peoples' rights to health, culture, water, food, healthy environment and self-determination, among others.

49. Toxic additives in plastics that are persistent and capable of long-range transport also affect indigenous peoples and coastal communities. For example, persistent industrial chemicals and microplastics transported by atmospheric and oceanic currents from lower latitudes accumulate in the Arctic. That threatens the health and food security of indigenous peoples and coastal communities, who register some of the highest levels of persistent pollutants of any population on Earth.[80]

50. Coastal communities around the world are inundated with marine plastic litter. In addition, those relying on seafood are exposed to the toxic additives that leach from plastic and contaminate the food supply.

F. People living in poverty

51. The stages of the plastics cycle disproportionately affect people living in poverty. Neighbourhoods close to chemical industries are often populated by low-income families.[81] The impacts also derive from products that are accessible to people living in poverty.[82] For example, cheap textiles made with plastic fibers,[83] social housing insulated with plastics,[84] and slums and homes built upon a layer of plastic waste[85] have heavier impacts on people living in poverty.

52. Low-income countries are on the receiving end of the global plastic waste flow. Trade in plastic waste is often disguised as recycling, but it actually burdens people living in poverty.[86] What is worse, 90 per cent of waste in low-income countries is disposed of in unregulated dumps or openly burned,[87] fouling the air and soil with hazardous substances.

[79] See Marcos A. Orellana and Francisco Calí Tzay, "El petróleo que no compensa a las comunidades de la Amazonía peruana", *El País* (Spain), 11 July 2021; and OHCHR, "Peru: clean up oil pollution in indigenous communities before allowing more drilling, UN experts urge", 28 June 2021.

[80] See A/HRC/39/48/Add.2; submission by Alaska Community Action on Toxics.

[81] Calil and others, *Neglected.*

[82] Women Engage for a Common Future, "Toxic free periods: eco-friendly healthy plastic-free periods", 2020.

[83] Greenpeace, "Timeout for fast fashion", fact sheet, 2016. Submission by Richard Thompson.

[84] Submission by Red de Acción por los Derechos Ambientales.

[85] Deborah Torr, "The homes built on plastic: life in a Sierra Leone slum", VSO International, 27 September 2018.

[86] Basel Action Network, *Holes in the Circular Economy: WEEE Leakage from Europe* (Seattle, Washington, 2018).

[87] Silpa Kaza and others, *What a Waste 2.0: A Global Snapshot of Solid Waste Management to 2050*, Urban Development Series (Washington, D.C., World Bank, 2018).

G. Future generations

53. The existing global plastics crisis is aggravating the toxification of the planet and undermining the ability of future generations to enjoy their human rights and an environment conducive to a life with dignity. Growing volumes of plastic waste impose a debt on future generations. Microplastics have even been found in human placentas.[88]

54. This debt is compounded by toxic plastic additives, such as "forever chemicals" (perfluoroalkyl and polyfluoroalkyl substances) that do not break down, and by sites contaminated with toxic ash from plastics incineration. Toxic additives in plastics can also disrupt human procreation.[89] From 1973 to 2011, there was a 60 per cent decline in male sperm count, and by 2045, the male sperm count could approach zero.[90] Hazardous chemicals added to plastics or released as by-products during production can also damage human DNA.[91] The exposure of pregnant women to such hazardous substances can affect the health of their descendants.[92]

IV. International instruments relevant to the cycle of plastics

55. Currently, there exists no international legally binding instrument addressing the risks and harms to human health and the environment throughout all stages of the cycle of plastics. While the cycle is global, existing international instruments cover only certain marine regions[93] or aspects of the plastics cycle. Accordingly, they offer fragmented responses that have proved unable to adequately address the global plastics crisis.[94] A global instrument addressing all stages of the plastics cycle with a human rights-based approach is sorely lacking.

A. Multilateral environmental agreements

56. The Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal and the Stockholm Convention on Persistent Organic Pollutants, as well as the International Convention for the Prevention of Pollution from Ships 1973, as modified by the 1978 and 1997 Protocols, contain certain provisions that concern plastic waste and certain plastic additives. However, they do not address the challenges of reducing the volumes of plastics production and waste, controlling all hazardous additives added to plastics, promoting a chemically safe circular economy or protecting human rights.

1. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal

57. The 1989 Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal was negotiated in response to the deleterious impacts on human health and the environment of the transfer of wastes from the

[88] Antonio Ragusa and others, "Plasticenta: first evidence of microplastics in human placenta", *Environment International*, vol. 146 (January 2021).

[89] Submission by Endocrine Society.

[90] Shanna H. Swan and Stacey Colino, *Count Down* (Simon & Schuster, New York, 2021).

[91] Submission by Center for Biological Diversity.

[92] Jenni Glenn Gingery and Laura Vyda, "Plastics pose a threat to human health", International Pollutants Elimination Network, 15 December 2020.

[93] See Nicole Wienrich, Laura Weiand and Sebastian Unger, *Stronger Together: The Role of Regional Instruments in Strengthening Global Governance of Marine Plastic Pollution* (Institute for Advanced Sustainability Studies, 2021).

[94] See Japan, Ministry of the Environment, *G20 Report on Actions against Marine Plastic Litter: Second Information Sharing Based on the G20 Implementation Framework – 2020* (2020).

industrialized North to developing countries lacking the capacity to ensure their sound management. The Basel Convention rests on the prior informed consent procedure, whereby the State of export notifies relevant States (transit and import) of a shipment of hazardous waste and does not allow export until consent has been received from all relevant States. In 1995, the States parties to the Convention adopted an amendment banning exports of hazardous wastes, including waste for recycling, from States members of OECD, States members of the European Union and Liechtenstein to other countries.[95] The amendment, known as the ban amendment, entered into force in December 2019 for those States parties that ratified it.

58. In 2019, States parties to the Basel Convention adopted amendments to annexes II, VIII and IX to the Convention to control plastic wastes and put an end to the dumping of wastes, often on developing countries, under the pretext of recycling. The amendments define which plastics are hazardous wastes (annex VIII) and which are not (annex IX). They also specify that all plastics not covered by the new entries in annexes VIII and IX are subject to annex II, which concerns waste that requires special consideration and is subject to the prior informed consent procedure. The amendments entered into force on 1 January 2021, except for those States parties that notified their non-acceptance.

59. For the States parties that are bound by the ban amendment, plastic wastes covered by annex VIII as hazardous wastes are subject to the ban of exports from States members of OECD, States members of the European Union and Liechtenstein to other countries. For States parties that have not ratified the ban amendment, such plastic wastes are subject to the prior informed consent procedure.

60. The amendments relating to plastic waste adopted in 2019 are intended to close the loophole of sham recycling and to ban or control the transboundary movements of most plastic wastes. At the same time, the changes to annex IX do not exclude the possibility of trade in certain plastic waste that is destined for recycling in an environmentally sound manner and “almost free from contamination”. The amendment, however, does not establish a threshold for what constitutes “almost free from contamination”. That may open another loophole for pretend recycling and the transfer of hazardous wastes to low-income countries, given that plastics often contain toxic additives that pose severe threats to the full enjoyment of human rights. Ongoing work to update the 2002 technical guidelines for the identification and environmentally sound management of plastic wastes and for their disposal[96] may clarify that issue.[97]

61. The work of the Basel Convention on e-waste is also relevant to the control of plastics. In 2019, e-waste handling was covered by a policy, legislation or regulation in less than half the countries in the world. The toxicity of e-waste directly relates to plastics and plastic toxic additives, including brominated flame retardants, mercury, lead and chromium. In 2019, States parties revised technical guidelines on e-waste, which consider that used electronic equipment exported for reuse, including repair, is not waste.[98] Given that e-waste trade remains rampant, the fifteenth meeting of the Conference of the Parties to the Basel Convention expects to discuss a proposal to include e-waste in annex II to the Convention and subject it to the prior informed consent procedure.

62. The amendments relating to plastic waste and the slow progress on e-waste show the clear limitations of the Convention’s scope, which is focused on the waste stage

[95] See E/CN.4/2001/55 and A/HRC/24/39.
[96] UNEP, document UNEP/CHW.6/21.
[97] Conference of the Parties to the Basel Convention decision BC-14/13: further actions to address plastic waste under the Basel Convention.
[98] UNEP, document UNEP/CHW.14/7/Add.6/Rev.1.

of the plastics cycle. The plastics provisions are important but insufficient to confront the global threat of plastics to human rights and the environment.

2. Stockholm Convention on Persistent Organic Pollutants

63. The 2001 Stockholm Convention on Persistent Organic Pollutants is aimed at eliminating or restricting the production and use of hazardous organic chemicals that persist in the environment, bioaccumulate in humans and wildlife, have harmful effects and have the potential for long-range environmental transport.

64. Under the Stockholm Convention, 26 persistent organic pollutants have been listed to be eliminated, 2 to be restricted and 7 to have their unintentional release reduced.[99] Several of those hazardous chemicals are used as additives in plastics or are generated by the incineration of plastics. For example, polychlorinated biphenyls, which are common in electronic applications, are listed for elimination.[100] Similarly, several brominated flame retardants, including decabromodiphenyl ether, which is used in plastic parts of electronic devices, are listed for elimination.[101]

65. Persistent organic pollutants listed for reduction of unintentional emissions include polychlorinated dibenzo-p-dioxins. Those and other dioxins are commonly released when e-waste plastics are burned and can cause cancer and damage the immune system.[102] Annex C to the Stockholm Convention lists waste incinerators and open burning of waste as primary sources of those highly toxic and persistent chemicals.

66. The application of the Stockholm Convention to toxic additives in plastics is illustrated by discussions on the listing of UV-328.[103] That chemical is typically used to shield plastic polymers from cracking or other damage from ultraviolet radiation. In addition to persistence, bio-accumulation and adverse effects, the Stockholm Convention identifies the potential for long-range environmental transport as a screening criterion for listing. The ubiquitous and global spread of microplastics carrying toxic additives such as UV-328 that leach into the environment could very well satisfy the long-range transport criterion.[104]

3. International Convention for the Prevention of Pollution from Ships 1973, as modified by the 1978 and 1997 Protocols

67. The International Convention for the Prevention of Pollution from Ships 1973, as modified by the 1978 and 1997 Protocols is the primary legal instrument that covers the prevention of marine pollution, including from plastics. It contains regulations to prevent and minimize both accidental and routine or operational vessel pollution. Annex V to the Convention prohibits the discharge into the sea of all plastics.[105]

68. The Convention deals with one fifth of the plastic sources that enter the marine environment, given that 80 per cent of all plastic polluting the oceans is land-based.[106]

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[99] Annexes A, B and C. See www.pops.int/TheConvention/ThePOPs/AllPOPs/tabid/2509/Default.aspx.

[100] Andrea Warmuth and Kei Ohno, “The PCBs elimination network: the information exchange platform created for the risk reduction of polychlorinated biphenyls (PCBs)”, Secretariat of the Stockholm Convention, 2019.

[101] United States of America, Environmental Protection Agency, *Toxicological Review of Decabromodiphenyl Ether (BDE-209)*, EPA/635/R-07/008F (Washington, D.C., 2008).

[102] Jindrich Petrlik and others, “Weak controls: European e-waste poison Africa’s food chain”, International Pollutants Elimination Network, April 2019.

[103] Secretariat of the Stockholm Convention, “Big year for chemicals and waste continues as UN experts take steps to recommend eliminating UV-328 (a toxic plastic additive)”, 2021.

[104] UNEP, document UNEP/POPS/POPRC.16/3.

[105] International Maritime Organization (IMO), document MEPC.201(62), annex V, regulation 3.

[106] Chris Sherington, “Plastics in the marine environment”, Eunomia, June 2016.

That share amounts to 2 million tons every year, which will contaminate the food chain.[107] Marine plastic pollution that affects fisheries and litters coastlines deprives coastal communities of income sources from fishing and tourism. Those negative impacts of plastics compromise the right to food and nutrition, to work, to a healthy environment and to culture. The hazardous substances carried by or leached from such plastics also interfere with the enjoyment of the rights to life and health.

69. The Convention requires States parties to ensure the provision of facilities at ports for the reception of garbage.[108] At present, there is a lack of adequate reception facilities.[109] Moreover, the seams between port reception facilities and downstream, land-based plastics management often exhibit weaknesses that result in plastic leakage and pollution of coastal communities.[110] In addition, the financial burden of operating the Convention's reception facilities should not be wholly assumed by port States, many of which are developing countries lacking the resources to properly service them. The International Maritime Organization adopted an action plan in 2018 to address marine litter from ships, which identifies measures to strengthen port reception facilities and other plastics issues by 2025.[111]

B. Sustainable Development Goals

70. The Sustainable Development Goals under the 2030 Agenda for Sustainable Development are an important tool to address the human rights dimensions of the plastics cycle. Goal 14, for example, on conservation and sustainable use of the oceans, seas and marine resources, explicitly mentions plastics. To measure progress, it establishes an index for plastic debris density.

71. Effective plastics policies are key to achieving several other Goals. For example, Goal 6, on water quality and sanitation, includes target 6.3, which focuses on reducing pollution, eliminating dumping and minimizing release of hazardous chemicals and materials. That target cannot be achieved without properly addressing the threats to human rights posed by plastic and its additives.

72. Similarly, Goal 12 on sustainable production and consumption, includes target 12.4, according to which, by 2020, States should have achieved the environmentally sound management of chemicals and all wastes throughout their life cycle.[112] The United Nations Environment Programme (UNEP) reported in 2019 that that Goal would not be met.[113] The fifth session of the International Conference on Chemicals Management is expected to define a post-2020 chemicals and waste strategy. A human rights-based approach to that strategy is key to avoiding a repeat of the failed global Goal for 2020, helping to achieve the Sustainable Development Goals and shifting the global agenda for the sound management of chemicals and wastes towards chemically safe circular economies.

[107] International Union for Conservation of Nature, "Marine plastics", May 2018.

[108] Annex V, regulation 7 (reception facilities).

[109] IMO, document MEPC.1/Circ.834/Rev.1.

[110] Gabriela Argüello, "Environmentally sound management of ship wastes: challenges and opportunities for European ports", *Journal of Shipping and Trade*, vol. 5, No. 12 (2020).

[111] IMO, document MEPC 73/19/Add.1; submission by Environmental Investigation Agency.

[112] Other targets under Goal 12, such as target 12.5 (reducing waste generation), 12.6 (encouraging companies towards sustainable practices) and 12.8 (providing relevant information and awareness), are also of importance to plastics.

[113] UNEP, *Global Chemicals Outlook II: From Legacies to Innovative Solutions: Implementing the 2030 Agenda for Sustainable Development* (2019).

C. Discussions on a global legally binding agreement on plastics

73. Plastic wastes and chemical additives cross borders, and plastics supply chains involve the global economy. Aware of the global character of the plastics threat and alarmed that plastics production is expected to double in the next 20 years,[114] the United Nations Environment Assembly of UNEP has adopted several resolutions to address the global plastics crisis.[115] However, those steps have yet to prove sufficient in practice.[116]

74. In 2017, the United Nations Environment Assembly set up an expert group to examine options to combat marine litter from all sources, including international response options.[117] The expert group concluded that maintaining the status quo was not an option and identified a range of possible response options, including the development of a new global agreement.[118] It identified certain elements for such a global instrument, including global and national reduction targets, design standards, the phasing out of avoidable plastics, the facilitation of national and regional action plans, the sharing of scientific knowledge, and international coordination of financial and technical resources. It is expected that in 2022, United Nations Environment Assembly 5.2 will address that matter.

75. Momentum for a new global agreement addressing the plastics cycle is growing. That is reflected by several high-level declarations, such as the Oceans Day Plastics Pollution Declaration by the Alliance of Small Island States (2021), which 79 States have already endorsed;[119] the Nordic ministerial declaration on the need for a global agreement to prevent marine plastic litter (2020);[120] the European Commission Circular Economy Action Plan (2020);[121] the Caribbean Community St. John's Declaration (2019);[122] and the Durban Declaration on Taking Action for Environmental Sustainability and Prosperity in African States (2019).[123]

76. A human rights-based approach to global plastics management, focusing on human rights principles as well as mechanisms for accountability and access to remedy, is vital to ensuring that any global agreement on plastics is effective and legitimate. Human rights principles should be reflected not only in the architecture and text of the agreement, but also in the negotiation process. In that regard, modalities for participation in the negotiations of the Regional Agreement on Access to Information, Public Participation and Justice in Environmental Matters in Latin America and the Caribbean (Escazú Agreement) offer an example of good practices.[124]

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[114] Michelle Langrand, "A new global treaty for plastics pollution", Geneva Solutions, 4 March 2021.

[115] See UNEP, documents UNEP/EA.1/Res.6; UNEP/EA.2/Res.11; UNEP/EA.3/Res.7; UNEP/EA.4/Res.6; and UNEP/EA.4/Res.9.

[116] Center for International Environmental Law, Environmental Investigation Agency and Global Anti-Incinerator Alliance, *The Convention on Plastic Pollution: Toward a new global agreement to address plastic pollution* (2020).

[117] UNEP, document UNEP/EA.3/Res.7, para. 10 (d)(i).

[118] See UNEP, document UNEP/AHEG/4/7, annex (Chair's summary of the work of the ad hoc open-ended expert group on marine litter and microplastics for consideration by the United Nations Environment Assembly at its fifth session).

[119] Available at http://plasticdeclaration.aosis.org/.

[120] Available at https://www.norden.org/en/declaration/nordic-ministerial-declaration-need-new-global-agreement-prevent-marine-plastic-litter.

[121] European Commission, document COM/2020/98.

[122] Caribbean Community, communiqué issued at the conclusion of its fortieth regular meeting of the conference of heads of government, Gros Islet, Saint Lucia, July 2019.

[123] African Ministerial Conference on the Environment, document AMCEN/17/9.

[124] Natalia Gomez Peña and David B. Hunter, "The hard choices in promoting environmental access rights", in *Advocating Social Change through International Law*, Daniel D. Bradlow and David B. Hunter, eds. (Brill, 2020).

V. Principles of a human rights-based approach for a chemically safe circular economy for plastics

77. A circular economy for plastics overcomes the linear "take-make-waste" approach. Its aim is to move towards a zero waste and pollution economy that relies on continued reuse of resources and effective recycling. However, growing volumes of plastics production, coupled with their toxic additives, and the fact that many plastics products cannot be recycled pose serious obstacles to a chemically safe circular economy. In addition, recycling is often a pretence that perpetuates the transfer of hazardous substances to low-income countries and the continued exposure of marginalized communities.

78. A human rights-based approach is key for Governments to discharge their duty to prevent exposure[125] and transition towards a circular economy in all stages of the plastics cycle. Informed participation of the public, for example, can ensure that plastics policy does not compromise the effective enjoyment of human rights for the sake of the profit expectations of certain business entities. Principles of prevention, precaution and polluter-pays are critical to internalizing costs and avoiding false solutions. Similarly, accountability should guide the transformation of existing national and international legal and policy frameworks on plastics. It should also secure an effective remedy to those individuals and communities that have suffered harms. In the face of the global plastics crisis, a reaffirmation of the right to a toxic-free environment is sorely needed.

79. Effective responses to the global plastics crisis must be globally coordinated and grounded on international cooperation and human rights standards. The required actions must comply with the responsibilities of States and businesses enshrined in international environmental and human rights law, as well as relevant regional treaties. International policy initiatives should be translated into national action plans on plastics.[126]

A. Right to information on the hazards of plastics

80. The right to information is now well established under international law.[127] Access to environmental information enables people to understand how environmental harms caused by plastics undermine their human rights. It also enables meaningful participation in decision-making on plastics policy and supports the exercise of other human rights, including the rights to freedom of expression and effective remedy.

81. The vast majority of rights holders do not have access to information relating to the impacts of the various stages of the plastics cycle. Consumers, for example, do not have adequate information regarding the chemical additives in the plastic products they buy. States and businesses have the obligation to ensure access to the information along the plastics cycle, such as the information on environmental and health hazards posed by toxic chemicals in plastics.[128]

82. Given the global dimensions of the plastics cycle, the guarantee against non-discrimination in access to information is crucial. Nationality or domicile should not hinder people's access to information on the hazards of plastics (see A/HRC/37/59).

[125] See A/74/480.

[126] Submission by Center for Biological Diversity.

[127] See International Covenant on Civil and Political Rights general comment No. 34 on freedoms of opinion and expression (CCPR/C/GC/34).

[128] Submission by Center for International Environmental Law.

B. Right to participation in decision-making on plastics policy

83. A human rights-based approach means that people are actively involved in the decision-making process on plastics management. Meaningful participation is vital in all stages of the plastics cycle, including issues of volumes of plastics production, the use of additives in plastic mixtures, and management of plastic waste.

84. States should ensure the participation of affected communities and environmental human rights defenders in decision-making processes on plastics policies. Special measures should be tailored to the needs of people in vulnerable situations, ensuring that they are able to influence decisions that may affect them.

85. Human rights instruments guarantee the right of participation in the cycle of plastics. For example, the United Nations Declaration on the Rights of Indigenous Peoples emphasizes the obligation of States to ensure that no storage or disposal of hazardous materials shall take place in the lands or territories of indigenous peoples without their free, prior and informed consent. In addition, the Permanent Forum on Indigenous Issues has urged States and the United Nations system to include indigenous peoples in a fully meaningful and effective manner in decision-making processes in all areas aimed at tackling marine litter and plastic pollution (E/2021/43-E/C.19/2021/10, para. 65).

86. Regional treaties on environmental rights to information, participation and justice present a solid basis for the right to participation in the decision-making on plastics management, such as the 2018 Escazú Agreement and the 1998 Convention on access to information, public participation in decision-making and access to justice in environmental matters (Aarhus Convention). The Escazú Agreement, for example, commits States Parties to guarantee the right to a healthy environment, establishes robust standards for public participation in decision-making on environmental matters and provides for special measures for the participation of persons and groups in vulnerable situations.

C. Accountability and access to effective remedies

87. Accountability and the right to an effective remedy are essential elements of a human rights-based approach to plastics. All too often, people suffer harm from the extraction of fossil fuels for plastics production, hazardous emissions released in plastics manufacturing, toxic additives that leach from plastics during use or the release of hazardous substances in incineration or open burning.

88. In addition, the plastics industry has deliberately spread disinformation on the false promises of recycling in order to delay controls, divert attention to consumer responsibilities and escape effective accountability for the risks and harms posed by plastics (see A/HRC/48/61). In regard to the responsibilities of States and business entities, the Guiding Principles on Business and Human Rights: Implementing the United Nations “Protect, Respect and Remedy” Framework have an essential role to play in securing accountability and access to remedy (see A/HRC/17/31).

89. Businesses, especially companies that produce plastics or market plastic products, have particular responsibilities in regard to the risks and harms caused along all the stages of the plastics cycle. The registration and disclosure of polymers and additives by plastics producers would facilitate their identification and thus help to secure access to an effective remedy.

90. A significant challenge to accountability and access to remedies is the global dimension of the plastics industry, along the various stages of the plastics cycle. That calls for a global liability and compensation mechanisms for pollution from plastics.

It also reinforces the need for implementation of the extraterritorial obligations of States to secure an effective remedy for human rights abuses by businesses.[129]

D. Prevention and precautionary approaches to risks and harms from plastics

91. The prevention and the precautionary principles are aimed at preventing environmental and human rights risks and harms. The main difference between the two principles is the degree of certainty/uncertainty of the possible damage. Where the harmful effects of an action or substance are already known, application of the principle of prevention ensures protection. However, where scientific evidence points to possible serious risks and harms, while identifying uncertainties, the application of the precautionary principle ensures protection.[130]

92. Both the principles of prevention and precaution are directly applicable to the plastics crisis. Many of the risks and harms of plastics are clearly established by science, and while others are not definitively established, scientific evidence points to serious harms.[131] In both situations, urgent and robust measures are indispensable to protect human rights and the environment from plastics and their toxic additives. The implementation of those principles calls for a range of measures, such as avoiding false solutions, addressing classes of hazardous chemicals, and an emphasis on product design.

1. Assessment of potential impacts of solutions

93. Apparent solutions to the plastics crisis bring problems of their own. Thus, there is a need to assess their potential impacts on human rights to prevent unintended consequences and the shifting from one form of toxic exposure to another.

94. Bioplastics have been presented as an alternative to the plastics impacts of fossil fuel extraction and waste.[132] Instead of utilizing fossil fuel feedstock, they are made primarily of plants. Where food crops such as corn and sugarcane are used, bioplastics enter into competition with food staples for the population. Just like plastics, bioplastics may also contain toxic additives. Accordingly, while bioplastics may biodegrade where composting practices are available, they aggravate the toxification of the planet.

95. Plastic-to-fuel technologies have been presented as another alternative to plastic waste.[133] Instead of dumping or landfilling, those technologies transform plastics into fuel through incineration. Nonetheless, the incineration of plastic waste results in the creation of persistent organic pollutants, such as dioxins and furans, brominated dioxins and polychlorinated biphenyls. Plastic-to-fuel technologies therefore release new hazardous substances into the air. Moreover, incineration generates toxic ash, weighing about 30 per cent of the burned waste, which contains harmful persistent organic pollutants.[134]

[129] See Committee on the Rights of the Child general comment No. 16 (2013) on State obligations regarding the impact of the business sector on children's rights (CRC/C/GC/16); see also A/72/162.
[130] See A/HRC/48/61; see also submission by Friends of the Earth Sri Lanka.
[131] Submission by Plastic Soup Foundation.
[132] Ingrid Odegard and others, "Biobased plastics in a circular economy: Policy suggestions for biobased and biobased biodegradable plastics", CE Delft, 2017.
[133] Submission by Fronteras Comunes.
[134] Submission by International Pollutants Elimination Network.

2. Product design

96. A chemically safe circular economy begins with a design of products that reduces material input,[135] avoids the use of toxic chemicals and enables reuse and recycling. However, the physical ability to recycle polymers is significantly reduced or outright impeded when incompatible types of plastic are mixed.[136] Similarly, the use of toxic additives in plastics means that if such plastics are recycled, the toxics in them will form part of new hazardous products. To avoid the new risks and harms to human health and the environment that would ensue, addressing the hazards of toxic chemicals by class, instead of individually, could better safeguard the rights that are compromised by toxic exposure. For instance, the European Union recently committed to phasing out the use of perfluoroalkyl and polyfluoroalkyl substances as a class.[137]

E. Polluter-pays principle and extended producer responsibility

97. The polluter-pays principle means that the polluter should bear the costs of preventing and implementing control measures for pollution.[138] Intended as a basic cost internalization tool to avoid distortions on international trade, the principle should play a major role in the design of plastics policies capable of addressing the risks and harms caused by plastics along their cycle.

98. Extended producer responsibility has emerged as an instrument to implement the polluter-pays principle. It entails the financial and/or physical responsibility of producers or importers for soundly dealing with post-consumer products.[139] To be effective, that approach should be complemented by measures that control toxic additives. Furthermore, extended producer responsibility does not address the cross-border environmental injustices that may arise when only the importer, and not the exporter, of plastic products that contain hazardous substances is held responsible for those post-consumer products.

99. The polluter-pays principle is sometimes associated only with liability regimes. While reparation, including restitution of environmental quality and compensation for damages, is imperative, other aspects of a human rights-based approach to the plastics cycle are also essential, including prevention and meaningful participation.

VI. Conclusions and recommendations

100. **We are in the midst of a worldwide plastics crisis. The world is polluted by plastics containing chemicals that are harmful to people and the environment, jeopardizing everyone's full enjoyment of human rights. It is past time that governments and businesses assume their responsibilities to address the global plastics problem.**

101. **It is time to face the facts. Plastics and the persistent chemicals they contain will not degrade in the environment, and their production is associated with global environmental and health problems. The ability of future generations to enjoy a toxic-free environment conducive to a life with dignity is now compromised.**

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[135] Submission by Comisión de Derechos Humanos de la Ciudad de México.

[136] Hopewell, Dvorak and Kosior, "Plastics recycling: challenges and opportunities".

[137] See European Commission, "EU chemicals strategy for sustainability towards a toxic-free environment", 2020.

[138] Organisation for Economic Co-operation and Development, document OCDE/GD (92) 81.

[139] Thomas Lindhqvist, "Extended producer responsibility in cleaner production: Policy principle to promote environmental improvements of product systems", PhD dissertation, Lund University, 2000.

102. **Each of the stages of the plastics cycle poses threats to human rights. The exploration and extraction of fossil fuels pollute the air, water and soil, resulting in dangerous compounds, deforestation and ecosystem fragmentation. The ever-increasing production of plastics exacerbates the vast contamination of the environment and its consequences for human health. Plastic waste poses similarly damaging impacts. Moreover, plastic waste is being shipped from wealthy to low-income countries with even less technical and financial capacity to manage it. Only a small portion of the exported waste is recycled, leaving the rest to burden developing countries and triggering serious concerns of double environmental standards and environmental injustice.**

103. **When plastics are burned, people are exposed to and inhale toxic fumes and particles. Drinking water and the entire food chain are contaminated as a result of such emissions. When plastics are landfilled, they leach toxic chemicals into groundwater and the surrounding environment. When plastic trash is dumped into oceans, rivers and lakes, the chemicals they contain are ingested by marine animals and other aquatic species. Those chemicals endanger their health and the health of the people who eat them.**

104. **Persons in vulnerable conditions are disproportionately affected by the plastics cycle and related human rights violations. Children suffer heightened health risks from plastic additives given that their bodies are particularly fragile in various stages of growth. Owing to biological causes, social and economic disparities, and political underrepresentation, women face a disproportionate amount of the burden of plastic pollution. Workers are affected when they are exposed to harmful substances at work. Waste pickers frequently lack institutional organization and governmental backing or social security and safety equipment. Indigenous peoples, communities of persons of African descent, coastal communities and people living in poverty face disproportionate consequences and human rights violations. These are often the same communities who lack the means for recourse to adequate health care, information and access to remedy.**

105. **With the envisaged growth by the plastics and chemical industries, fossil fuels will continue to be extracted, more hazardous emissions will be released and even more plastic products will be in use and require disposal.**

106. **Plastics pose a threat that can be addressed, but collective action needs to be taken now. Existing international instruments and initiatives provide fragmented solutions that fall short of resolving the global plastics problem. The only way to respond to the global plastics crisis is to transition towards a chemically safe circular economy that addresses all stages of the plastics cycle and is guided by human rights principles.**

107. **Misleading notions, such as heralding recycling as an all-encompassing solution to the plastics problem, should be avoided. It should become common knowledge that only about 9 per cent of plastic wastes are recycled globally and existing recycling facilities and technologies fall short of meeting the growing plastic waste streams, let alone the anticipated increases in plastics production. At the same time, other proposed solutions, such as incineration, plastic-to-fuel and bioplastics, should be assessed regarding their implications for human rights and the environment.**

108. **A human rights-based approach calls for a vision of plastics policy that aligns with scientific evidence, centres on principles of non-discrimination, accountability and informed participation and gives special attention to the needs of people in vulnerable situations. Strict controls must be instituted to prevent further pollution and to hold plastics and chemical producers**

accountable for the damage already caused, including remediation and compensation.

109. **Safeguarding the human rights of present and future generations that are compromised by the growing toxification of the planet demands that the international community reverse the plastics crisis. Addressing the negative impacts of the plastics cycle on human rights and integrating a human rights-based approach to plastics policy are indispensable for effective and legitimate solutions to the global plastics problem.**

110. **The Special Rapporteur recommends that States:**

(a) **Recognize the threats that plastic poses to human rights in its entire cycle and acknowledge their responsibilities for the sound management of plastics;**

(b) **Adopt a human rights-based approach to plastics management, including meaningful public participation and access to remedies;**

(c) **Adopt urgent and immediate actions to reduce the volume of plastics production and use, including single-use plastics and packaging, and to prevent and address plastic pollution;**

(d) **Pursue complementary international responses, including the negotiation of a new international legally binding instrument addressing the whole cycle of plastics;**

(e) **Ensure appropriate funding for international initiatives aimed at the sound management of plastics and the achievement of Sustainable Development Goal 12;**

(f) **Establish controls and bans on non-essential plastics;**

(g) **Invest in initiatives to train and formalize waste pickers and to ensure safe and healthy work conditions;**

(h) **Require businesses to disclose the full chemical composition of plastic products, including additives;**

(i) **Ratify the Basel Convention ban amendment and fully implement the Basel Convention amendments relating to plastic waste;**

(j) **Phase out subsidies and export credit and guarantees for fossil fuel extraction, plastics production facilities and plastic-to-energy projects;**

(k) **Establish and implement effective policies to manage the plastics cycle, including by:**

(i) **Creating an enabling environment for the conduct of scientific inquiry on the risks and harms to human health and the environment from plastics;**

(ii) **Establishing adequate civil and criminal penalties for illegal transboundary movements of plastic waste;**

(iii) **Reducing plastics production, controlling and eliminating toxic additives and establishing liability regimes;**

(iv) **Applying the polluter-pays principle, including by adopting extended producer responsibility mechanisms within and beyond boundaries;**

(v) **Regulating classes of chemicals in accordance with the precautionary principle.**

111. **The Special Rapporteur recommends that business enterprises:**

(a) **Actively work to eliminate the presence of toxics additives in plastics and the practice of recycling plastics containing hazardous substances;**

(b) **Invest in closed-loop systems that do not generate hazardous emissions or waste;**

(c) **Direct research and development efforts towards developing safe and circular non-single use delivery methods;**

(d) **Ensure that information on plastics composition and additives is publicly available.**

112. **The Special Rapporteur recommends that international bodies and mechanisms in the field of chemical and waste management:**

(a) **Join efforts towards a global agreement on plastics that:**

(i) **Adopts a human rights-based approach to address the impacts of the cycle of plastics;**

(ii) **Enables the elaboration of national action plans;**

(iii) **Reduces global volumes of plastics production and wastes;**

(iv) **Controls and phases out the use of hazardous chemicals in plastic;**

(v) **Cleans up already existing plastic pollution;**

(vi) **Secures effective reparations for harms from plastics;**

(vii) **Mobilizes financial and other support to low-income countries;**

(b) **Clarify ambiguous terms in the Basel Convention amendments relating to plastic waste, especially to avoid new loopholes under the guise of recycling;**

(c) **Control and document transboundary movements of e-waste;**

(d) **Phase out classes of hazardous additives in plastics under the Stockholm Convention;**

(e) **Address the shortcomings of port waste reception facilities and support developing country port States in servicing them.**