
Climate change, pollution and health

Impact of chemicals, waste and pollution on human health

Report by the Director-General

BACKGROUND

1. The present report has been prepared pursuant to resolution WHA76.17 (2023) on the impact of chemicals, waste and pollution on human health, through which the Seventy-sixth World Health Assembly requested the Director-General to explore the full range of options for the future involvement of WHO in two intergovernmental initiatives of the United Nations Environment Assembly of UNEP: to establish a science-policy panel to contribute further to the sound management of chemicals and waste and to prevent pollution¹ and to develop an international legally binding instrument on plastic pollution, including in the marine environment.² Since their first meetings in 2022, and in accordance with their established rules of procedure, WHO has participated as an observer in both initiatives.

IMPACTS OF CHEMICALS, WASTE AND POLLUTION ON HEALTH

2. WHO estimates that in 2016, 13.7 million deaths, amounting to 24% of deaths and 23% of disease burdens globally, were attributable to modifiable environmental factors, among which are chemicals, waste and pollution. For chemical risks, the evidence is still growing, with an estimate of 1.6 million deaths in 2016 from exposure to selected chemicals. Recently, it has been estimated that the cardiovascular effects of exposure to lead alone may be six times higher than previously thought and that these effects, together with the impact of lead on intelligence quotient in young children, result in a global cost of lead exposure of US\$ 6 trillion (6.9% of the global gross domestic product).³ Other chemicals or groups of chemicals recognized by WHO to be a public health concern – such as highly hazardous pesticides, to which one fifth of all deaths by suicide are attributable, and mercury – further add to these burdens.

3. The protection of people from unhealthy environments is a key priority to ensure that the health of billions is improved, in line with the relevant targets of the Sustainable Development Goals and WHO's general programme of work. Although health is recognized as a core objective in several multilateral environmental agreements (such as the Minamata Convention on Mercury), more needs to be done to act on the interlinkages between health and the environment and enhance the engagement of

¹ See United Nations Environment Assembly resolution 5/8 (2022).

² See United Nations Environment Assembly resolution 5/14 (2022).

³ Larsen B, Sánchez-Triana E. Global health burden and cost of lead exposure in children and adults: a health impact and economic modelling analysis. *Lancet Planet Health*. 2023 Oct;7(10):e831-e840. doi: 10.1016/S2542-5196(23)00166-3.

the health sector in leading or supporting the actions needed.¹ Recognition of the increased importance of a One Health approach, the impact of climate change and loss of biodiversity provide even more impetus for a more ambitious and integrated approach to the management of chemicals and waste and preventing pollution. Implementation of proven interventions and convention obligations often lags behind at country level. More effort is needed to galvanize the production of targeted research and evidence to show the cost-effectiveness and co-benefits to health of these interventions and to prioritize innovative preventive approaches, particularly that of Health in All Policies.

Development of proposals for a science-policy panel

4. Through resolution 5/8, the United Nations Environment Assembly decided that an independent science-policy panel should be established and requested the Executive Director of UNEP to convene meetings of an ad hoc open-ended working group to prepare proposals for the panel, with the ambition of completing its work by the end of 2024. It considered that the panel should be an independent intergovernmental body with a programme of work approved by its member governments to deliver policy-relevant scientific evidence without being policy prescriptive. It further requested the Executive Director of UNEP to convene an intergovernmental meeting for the purpose of considering the establishment of the science-policy panel.

5. As independent science-policy panels on climate change and biodiversity already exist, namely the Intergovernmental Panel on Climate Change and the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, the proposed functions, institutional arrangements and working procedures of the science-policy panel are being informed by experience with these as well as with other relevant existing panels and processes.

Relevance of the proposals to WHO's existing activities

6. WHO is a science- and evidence-based organization responsible for leading global public health. Given the sizeable disease burden that can be prevented by addressing environmental risks, WHO already has a number of existing science-policy activities, many of which are relevant to the possible work of the new panel.

7. WHO's work is underpinned by high standards of transparency and integrity, with strict and well-established processes, particularly those for identifying and managing potential conflicts of interest of experts, guiding the composition and function of groups involved in guideline development and other expert groups, and for dealing with other essential parts of guideline development, such as the need to incorporate gender, health equity and human rights. Such processes help to ensure that the quality of WHO's scientific and technical work remains acceptable to Member States. The following examples illustrate some of WHO's activities that may be most relevant to the emerging proposals for the panel:

- (a) safety evaluation of additives, contaminants and naturally occurring toxicants and safety evaluation of pesticide residues in food;

¹ The road map to enhance health sector engagement in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond, approved by the Seventieth World Health Assembly in 2017, sets out the leading and supporting actions for Member States (see document WHA70/2017/REC/1, Annex 13).

(b) developing new and updated technical health-based guidelines on air quality, drinking-water quality and chemicals of key public health concern, including those of concern for workers' health;

(c) convening of independent advisory groups, such as that on air pollution, which help to synthesize evidence and knowledge and determine emerging research questions;

(d) preparing thematic progress reports and compiling and verifying country data and metadata with indicators of the relevant Sustainable Development Goals for which WHO is the custodial agency, including 3.4, 3.9.1, 3.9.2, 3.9.3, 3.d.1, 6.1.1, 6.2.1, 7.1.2 and 11.6.2;

(e) carrying out chemical risk assessments, developing and harmonizing assessment methodologies and guidance materials that can be used by countries and developing simple-to-use safety information in multiple languages;

(f) using model approaches and targeted provision of support to countries to identify and implement innovative and effective interventions to address chemicals or groups of chemicals of public health concern, such as lead, mercury, cadmium and highly hazardous pesticides, and the protection of children's environmental health;

(g) synthesizing emerging science and evidence, such as updating the *State of the science of endocrine disruptors 2012*, and addressing cross-cutting issues such as persistent pharmaceuticals in the environment, microplastics in drinking water and chemicals used in health care that are important for ensuring sustainable and healthy health care facilities; and

(h) preparing recommendations, procedures and protocols to establish the scientific basis for the conduct of surveillance of priority chemicals from a health perspective. This work is already being considered as part of arrangements for evaluation of the effectiveness of the Minamata Convention on Mercury and through developing and strengthening poisons centres and human biomonitoring arrangements.

8. Supporting these activities is a wide network of WHO collaborating centres and other institutions, including the WHO Chemical Risk Assessment Network of 95 institutions in 52 countries and the WHO Global Chemicals and Health Network, comprising more than 70 ministries of health, set up to foster implementation of the road map to enhance health sector engagement in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond.

9. WHO's relationship with the Inter-Organization Programme for the Sound Management of Chemicals, a collaborative effort of 10 international organizations¹ coordinating their activities on the sound management of chemicals is also relevant. WHO currently provides the secretariat for it, as well as being a member. Biannual meetings help to cement a close working relationship and coordinated programme delivery. The role of the Inter-Organization Programme for the Sound Management of Chemicals in the science-policy panel is another important area to be considered, to ensure that a non-duplicative, coordinated and coherent work programme of the panel is developed.

¹ The participating organizations comprise FAO, ILO, UNEP, UNIDO, WHO, OECD, United Nations Institute for Training and Research, World Bank, UNDP and the Basel, Rotterdam and Stockholm conventions.

Possible options for WHO's role in the science-policy panel

10. Given the potential areas of relevance and the complexities in avoiding duplication, not only to the work of WHO but also to other United Nations organizations, multilateral environmental agreements and processes, WHO has conveyed to the ad hoc open-ended working group the merit in the panel focusing its work primarily on adding value to the work of others. This would involve tackling some of the broader questions of how to speed up implementation of evidence-based solutions at country level, as well carrying out horizon scanning, the outputs of which can be used by all relevant stakeholders.
11. Taking into consideration the relevance of the proposed panel to WHO's work, the formulation of close and effective future working arrangements with WHO would be essential. Avoiding duplication of effort, maintaining WHO's standards of quality assurance and ensuring the relevance and legitimacy of the panel for health-related issues would be paramount in such arrangements.
12. Options for the role of WHO in the work of the panel could include:
 - (a) participating at the institutional level of the panel by providing or jointly providing with another intergovernmental organization technical and/or administrative secretariat support. This could further strengthen the capacity of the panel to execute its work programme, while utilizing existing networks and sectoral expertise to enhance cooperation and avoid duplication. There is a precedent in this area: WMO and UNEP have a Memorandum of Understanding concerning the Intergovernmental Panel on Climate Change for joint provision of secretariat services.
 - (b) identifying and nominating health-related experts as part of relevant bodies undertaking the panel's work. This would be important, particularly for health-related assessments and in cases where experts in health were not being nominated by other stakeholders;
 - (c) proposing and commenting on possible activities for the panel's work programme, which would serve to enhance the policy relevance of the panel's work and enhance cooperation and avoid duplication with existing WHO activities;
 - (d) commenting on assessments, horizon scanning and other outputs from the panel so that issues of relevance to policy-makers in the health sector are conveyed and considered as far as possible. Such activities would serve to enhance policy relevance, credibility, legitimacy and interdisciplinarity, and further enhance cooperation and avoid duplication;
 - (e) knowledge management and information sharing. WHO could conduct or foster research and compile information as an input to the panel's assessments or horizon scanning. The identification of knowledge gaps pertaining to health aspects or alternatively undertaking work to fill knowledge gaps would be important to ensure the usefulness of the panel's deliverables for the health sector. Dissemination of the assessment outputs and fostering uptake by policy-makers would further enhance policy relevance; and
 - (f) capacity-building and providing technical support. WHO sees this as a potentially important role, building on its existing work and experience in advising on needs and arrangements for capacity-building in the health sector, including by conducting capacity-building at regional and country levels and/or working to address any gaps in capacity-building relevant to the health sector identified through the panel's activities.

ENDING PLASTIC POLLUTION

13. Global plastic pollution and use has grown exponentially since the 1950s, with present production of about 430 million metric tons of plastics each year. Production is set to triple by 2060 if “business-as-usual” continues, with heavy annual social and environmental costs linked to plastic pollution ranging from US\$ 300 billion to US\$ 600 billion per year.¹

14. There are many intersections between plastics and health that are relevant to the development of the instrument on plastic pollution. Health risks from plastics exist at each stage of the plastics’ life cycle, from production, use and recycling to disposal. Use of petrochemicals in the manufacture of plastics contributes to climate change and through that has wider impacts on human health. The increasing use of micro- and nanoplastic fibres and particles in consumer products, breakdown products from plastic products, as well as the presence of plastic-related materials in humans and other biota is a growing concern. The addition of chemicals, such as so-called forever chemicals and endocrine disruptors, added to plastics to confer specific properties may themselves be harmful to health and add to the complexity of ensuring the safety of plastics over their life cycle. Plastic waste in the environment can have serious impacts on drainage and sanitation, and air quality if burned, which is commonplace in many low- and middle-income countries. Importantly, many gaps remain in the current scientific knowledge of the health impacts of different types of plastics and added chemicals and their breakdown in the environment.

15. WHO recognizes that plastics have a critical role in health care and are used in the composition of products for a wide range of health care needs including packaging, infection prevention and control, diagnostics, surgical interventions and assistive products, to name a few. Ensuring affordable access to these health products is critical for achieving primary health care and universal health coverage goals. Product design, procurement, use and waste management practices relating to plastics in health care are particularly important; and innovation of products and practices to reduce the harm from use and disposal is essential. Replacement of non-essential plastics will be an increasingly important part of promoting the sustainable use of plastics, and of decreasing plastic pollution, in the health sector.

Possible options for WHO’s role in the instrument on plastic pollution

16. WHO considers that the protection of human health should be one of the core objectives of the instrument and that health aspects should have due prominence in the provisions that are negotiated. WHO stands ready, subject to available resources, to contribute to work on issues relating to health between formal negotiating sessions, in relation to: the assessment of health risks in general and of chemicals in particular; the development of criteria and/or methodologies that might identify particularly problematic polymers or products; and the quality of health products, including substitutes for plastics.

17. WHO would expect close cooperation in the implementation of the instrument once ratified, as with other multilateral environmental instruments. The use of plastics in health care is growing and can be made more sustainable by eliminating unnecessary use, reuse when possible and innovation in product and packaging design and strengthening waste management practices. Some of these transformations may require time, research and investment and require a strong understanding of and connections in the health care sector.

¹ Turning off the tap. How the world can end plastic pollution and create a circular economy. Nairobi: United Nations Environment Programme; 2023 (<https://www.unep.org/resources/turning-off-tap-end-plastic-pollution-create-circular-economy>, accessed 14 December 2023).

18. Examples of problematic single-use plastics from a health perspective include cigarette filters which contribute substantially to plastic pollution while offering no public health benefits and single-use, disposable electronic cigarettes, or vapes. There is a need for specific consideration for some uses of plastics from a health-perspective. In particular, careful account needs to be taken to ensure continued access to safe and effective health products that are of good quality and are affordable, accessible and appropriate to those who need them.

NEXT STEPS

19. Two meetings of the ad hoc open-ended working group for the proposed science-policy panel and three meetings of the intergovernmental negotiating committee for the instrument on plastic pollution will have been held by the time of the 154th session of the Executive Board, with a further meeting of the intergovernmental negotiating committee by the time of the Seventy-seventh World Health Assembly. Given that both intergovernmental initiatives have an ambitious timeline, with the working group and negotiating committee aiming to complete their work by the end of 2024, the outcomes will be shared as appropriate.

20. During 2024, and in accordance with the relevant rules of procedure, WHO will, continue to engage as an observer at the ad hoc open-ended working group on the preparation of proposals for the science-policy panel and at the intergovernmental negotiating committee developing the instrument on plastic pollution. In doing so, every opportunity will be taken to offer technical support to Member States in areas within WHO's mandate, disseminate information on the proposals to health ministries, risk assessment institutions and relevant WHO collaborating centres to improve awareness of both of these developments and to address relevant health issues that arise.

21. Regarding the proposed science-policy panel, WHO will continue to explore all options for its involvement in the future panel, beyond the default role as a United Nations agency observer, along the lines described in paragraph 12, subject to available resources.

22. Regarding the development of the binding instrument to end plastic pollution, including the marine environment, WHO will engage to the extent possible, subject to available resources, particularly in relation to draft provisions on health issues, and on relevant technical work between formal negotiations but would need additional specific consideration of any proposed role in any future subsidiary bodies that may be set up to assist implementation of the instrument. The series of online dialogues organized by WHO to provide an opportunity to discuss the nexus between plastics pollution and health will be continued during 2024.

ACTION BY THE EXECUTIVE BOARD

23. The Board is invited to note the report. Considering the relevance to WHO of the two intergovernmental initiatives being developed in 2024 described in the present report, the Board may wish to provide guidance on the scope of the Secretariat's future role in:

- the proposed science-policy panel; and
- the instrument being developed on plastic pollution.

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