

Compendium of WHO and other UN guidance on health and environment



Chapter 4. Solid waste



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4. Solid waste

Solid waste management starts from generation to collection, transport, treatment and disposal of waste. Challenges of solid waste management encompass for example poor waste collection and improper disposal such as in uncontrolled dumpsites with no measures to protect soil or groundwater.

This section includes municipal and electronic waste (e-waste); health care and medical waste is included in section [11.4 Health care facilities](#). Interventions on health care waste can be found in section [11.4 Health care facilities](#).



Overview

Solid waste refers to any type of garbage, trash, refuse or discarded material. It can be categorized according to where the waste is generated, for example as municipal solid waste, health care waste and e-waste. Over 2 billion tons of municipal solid waste are produced annually (1, 2).

Improper disposal can lead to adverse health outcomes, for example through water, soil and air contamination. Hazardous waste or unsafe waste treatment such as open burning can directly harm waste workers or other people involved in waste burning and neighbouring communities. Vulnerable groups such as children are at increased risk of adverse health outcomes. Poor waste collection leads to environmental and marine pollution and can block water drains. Resulting flooding and other standing waters in waste items favour cholera and vector-borne diseases such as malaria and dengue (1).

About 54 million tons of e-waste, such as TVs, computers and phones, are created annually (2019 data) with an expected increase to 75 million tons by 2030. In 2019 only 17% of e-waste was documented as being properly collected and recycled (3). Exposure to improperly managed e-waste and its components can cause multiple adverse health and developmental impacts especially in young children (4).

What is the situation regarding solid waste in my country?

Municipal solid waste

SDG indicator 11.6.1 monitors progress related to safe waste management: Proportion of urban solid waste regularly collected and with adequate final discharge out of total urban solid waste generated, by cities.

E-waste

The Global E-Waste Statistics Partnership monitors development related to e-waste and assists countries in producing their own e-waste statistics (5).

What do we want to achieve?

A safe management system for solid waste

A solid waste management system includes different components: waste generation, collection, transport, treatment and disposal. Solid waste management is a key budgetary expenditure for many local governments, is important for economic and social development and protects the health of especially the most vulnerable populations. Regulating and formalizing informal structures play a crucial role in providing safe waste management systems including for hazardous waste.

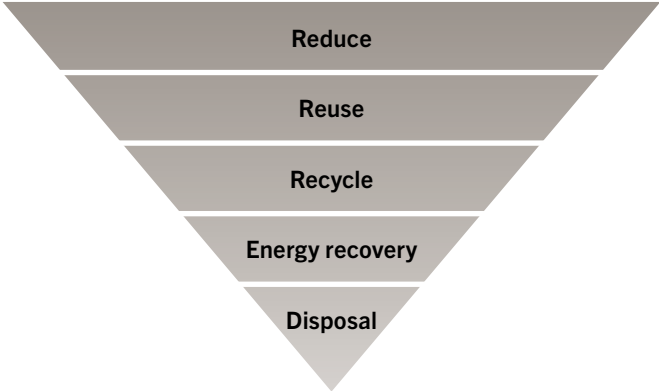
Reduced waste generation

Reduction of the amount of solid waste generated following the three-tiered approach (the 3 R's) to managing solid waste:

1. reduce
2. reuse
3. recycle.

The 3 R's are part of the waste management hierarchy (Fig. 4.1), which ranks waste management options or interventions starting from the most favoured (reduce) to the least favoured (disposal) (1).

Fig. 4.1. Waste management hierarchy



The diagram is a funnel shape divided into five horizontal sections. From top to bottom, the sections are labeled: Reduce, Reuse, Recycle, Energy recovery, and Disposal. The funnel tapers downwards, indicating that disposal is the least preferred option.

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
Policies and actions			
1. Implement a solid waste management system prioritizing actions along the waste management hierarchy (Fig. 4.1) (1, 4).	 Environment  Waste	National; community	Other management and control; Regulation
2. Develop or update policies and actions across relevant sectors that reduce harmful exposure to all types of solid waste, particularly for children (6).	 Environment  Industry  Waste  Health	National	Regulation

 Guidance	 Sector principally involved in planning/implementation	 Level of implementation	 Instruments
3. Implement international agreements such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (7), the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade (8), the Stockholm Convention on Persistent Organic Pollutants (9) and the Minamata Convention on Mercury (10).	 Environment  Health	National	Regulation
4. Eradicate child labour within all waste management (4). This is especially relevant for the management of hazardous waste, including management of e-waste.	 Labour  Environment	National; community	Regulation
5. Promote screening and (bio)monitoring of harmful waste exposure in target populations accompanied with environmental monitoring (e.g. of water, soil, air) (4).	 Environment  Health	National; community; health care Universal health coverage	Assessment and surveillance
6. Restrict and discourage open dumping of waste (1). Waste that cannot be reused, recycled or recovered should be treated in an appropriate waste treatment facility or be disposed in regulated sanitary landfills that have measures to avoid environmental contamination.	 Environment	National; community	Regulation
7. Clean up and remediate contaminated sites or hot spots (4).	 Environment	National; community	Other management and control
8. Phase out single-use plastics progressively (11). Examples include bans and taxes on plastic bags and Styrofoam products.	 Environment	National; community	Regulation; taxes and subsidies
E-waste: policies and actions			
Note: Guidance particularly concerning e-waste is also relevant for prevention of hazardous exposure to e-waste, which is also discussed in section 5.2 Chemical safety			
9. Phase out the use of specific toxic chemicals from electrical and electronic equipment (4, 12).	 Industry  Environment  Health	National	Regulation
10. Identify and address illegal transboundary movement of electrical and electronic equipment and e-waste (12).	 Industry  Environment  Health	National	Regulation

 Guidance	 Sector principally involved in planning/ implementation	 Level of implementation	 Instruments
11. Identify e-waste streams and formalize and regulate waste management and recycling to ensure safe treatment of e-waste (4, 12). This may require the development of local and/or regional recycling facilities.	 Environment  Waste  Health	National	Assessment and surveillance; regulation; infrastructure, technology and built environment
12. Implement regulations to prevent discharge of toxic chemicals (12).	 Environment  Industry  Health	National	Regulation
13. Implement standards, actions and programmes in e-waste toxicant exposures: • reduce and reuse waste policies • “take back” programmes • design maximized for durability, reparability and reusability (4, 12).	 Environment	National; community	Regulation; other management and control
Capacity building and awareness raising			
14. Ensure sufficient health sector capacity for engaging in harmful waste exposure reduction (6).	 Health	Health care Universal health coverage	Information, education and communication
15. Train workers in formal and informal waste-settings on good practices in waste management (4).	 Waste  Environment	Workplace	Information, education and communication
16. Raise awareness and communicate on behaviour change among consumers and health impacts from harmful waste exposure, especially in children (6).	 Health  Environment	Community; national Universal health coverage	Information, education and communication
17. Implement a campaign to mobilize people to use alternatives to plastic bags (11).	 Environment	Community; national	Information, education and communication

Selected tools

World Bank 2020: Solid Waste Management (MOOC) (1)

This is a massive open online course (MOOC) on solid waste management.

World Bank 2020: Solid Waste Management Knowledge Silo Breaker (KSB) (13)

This is a community of practice aiming to achieve knowledge sharing of solid waste challenges and innovations between community members of all affiliations.

UNEP 2018: Single-use plastics: A roadmap for sustainability (11)

UNEP 2015: *Global waste management outlook* (14)

UNEP/Institute for Global Environmental Studies 2020: *Waste management during the COVID-19 pandemic: from response to recovery* (15)

Factsheets on topics such as waste management, green jobs, resource efficiency among others, are also available from UNEP (16).

WHO 2008: The paediatric environmental history: a tool for health-care providers (17)

A series of basic, concise questions that enables health professionals to identify children's potential exposure to environmental factors and special vulnerabilities.

E-waste

United Nations University/UNITAR/ International Telecommunication Union/International Solid Waste Association 2020: *Global e-waste monitor* (3)

This report provides comprehensive insight to address the global e-waste challenge.

WHO 2019: Electrical/electronic waste and children's health. In: Training modules and instructions for health care providers. Children's health and the environment (4)

EIT Climate-KIC Online course "The E-Waste Challenge MOOC" (18)

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