Throwing away our health

The impacts of solid waste on human health – evidence, knowledge gaps and health sector responses

Launch webinar

16 December 2025

World Health Organization

Housekeeping

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Opening remarks

Bruce Gordon
Unit Head, Water, Sanitation,
Hygiene and Health, WHO

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Global report overview

Sophie Boisson

Water, Sanitation, Hygiene and Health Unit, WHO

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Why this report and why now?

- More waste than ever – generation is rising at unprecedented pace
- Increasingly complex in composition – harder to manage
- Waste is already polluting the environment, causing irreversible damage to ecosystems, and impacts climate change
- Rising demand from member states for WHO support on this issue (WHA resolutions 2016 & 2023)

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What you will find in this report

- Focus on municipal solid waste, signpost to key resources on other waste types
- Complement existing internal and external reports related on solid waste
- Summarize what we know on health risks, potential health impacts, and evidence gaps
- Reinforce established recommendations in the waste sector and highlight the health sector's role

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Municipal solid waste is growing fast

- **Expected to grow from** 2.1 billion tonnes in 2020 → 3.8 billion tonnes by 2050
- **HICs:** High per capita waste generation; advanced systems and regulations, but challenges remain (e.g. complex waste streams, recycling limited, emissions etc.)
- **LMICs:** Rapid growth in waste generated, exceed capacity for management

Globally, 38% of MSW is uncontrolled (not collected, or collected then dumped or burnt in the open)

Disposal of MSW in landfills remains the most common management method

Source: Global Waste Management Outlook Report, UNEP 2024

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Inadequate solid waste management expose people to a wide range of hazards

Figure 10. Biological, chemical, physical and psychological hazards of MSW

Open burning & incineration
→ dioxins, furans, PCBs, heavy metals, $PM_{2.5}$, PM_{10}, VOCs

Leachate at dumpsites & landfills
→ VOCs, PAHs, heavy metals, emerging contaminants (PFAS, microplastics, pharmaceuticals…)

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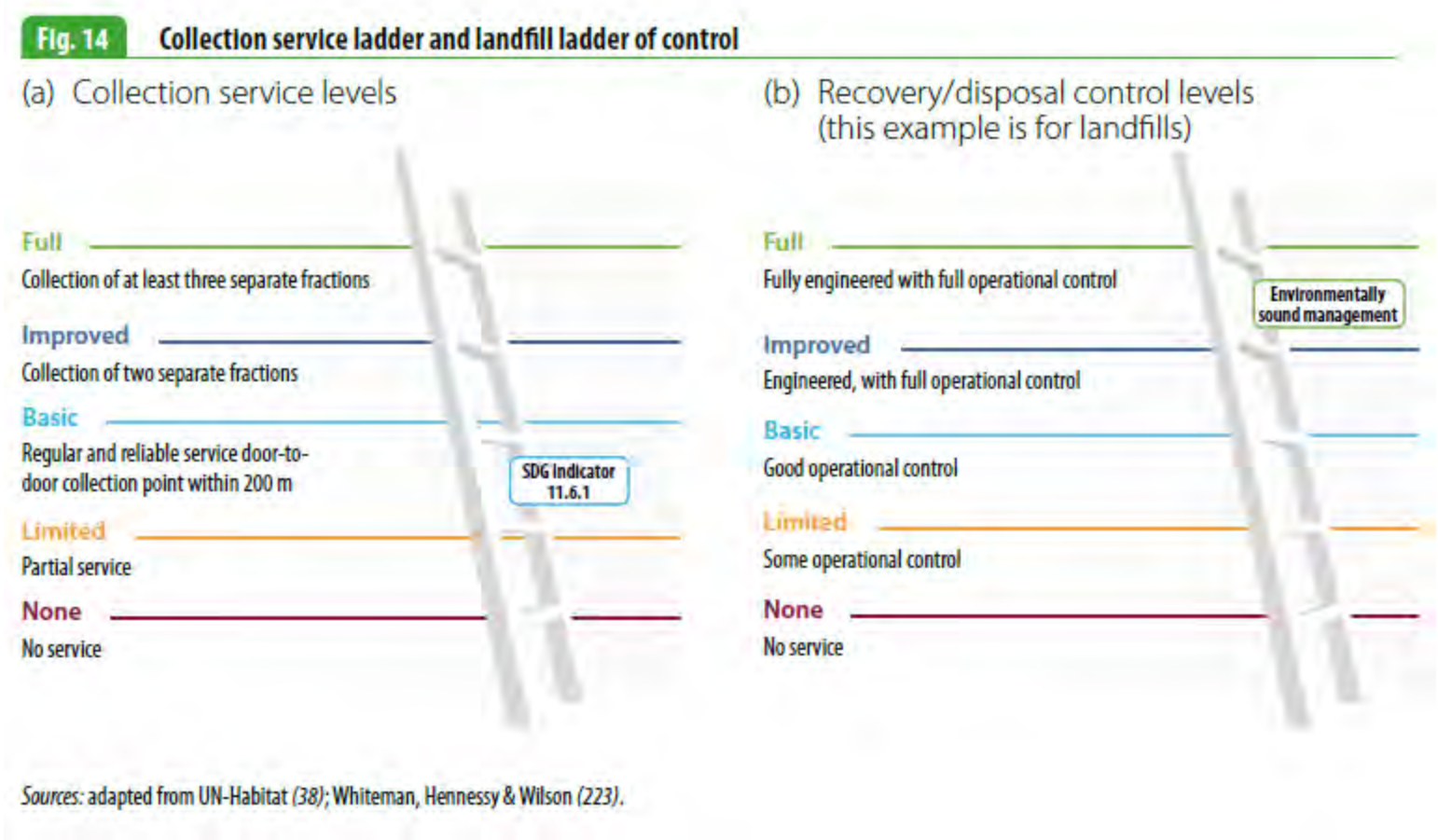
Level of risk depends on level of control

- Design
- Operation & maintenance
- Emission controls
- Regulations
- Ability to cope with climate-related events



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Vulnerable groups face elevated health risks

- Informal waste workers
- Communities without regular collection or those living near uncontrolled or poorly controlled management sites
- Includes women and children
- Wider population

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Epidemiological studies have reported links with some adverse health outcomes, but the evidence is limited

- **Evidence largely from HIC**
  - Workers and populations living near incinerators or landfills
  - Associations reported with certain health outcomes but inconsistently
    (e.g. cancers, congenital anomalies, birth outcomes, cardiovascular and respiratory disease, mortality, biomarkers)
  - Especially in studies of older facilities (before stricter regulation in place)

- **Evidence from LMIC is more limited**

Assessing the full extent of health risks and impacts from waste is challenging

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More research and stronger evidence are needed

- Data from low-income settings and vulnerable groups
- Details on technology & operations
- Exposure assessment (methods, source attribution, emerging contaminants)
- Study designs
- Under-researched outcomes (infectious diseases, mental and social well-being, externalities)
- Policy and programme evaluation

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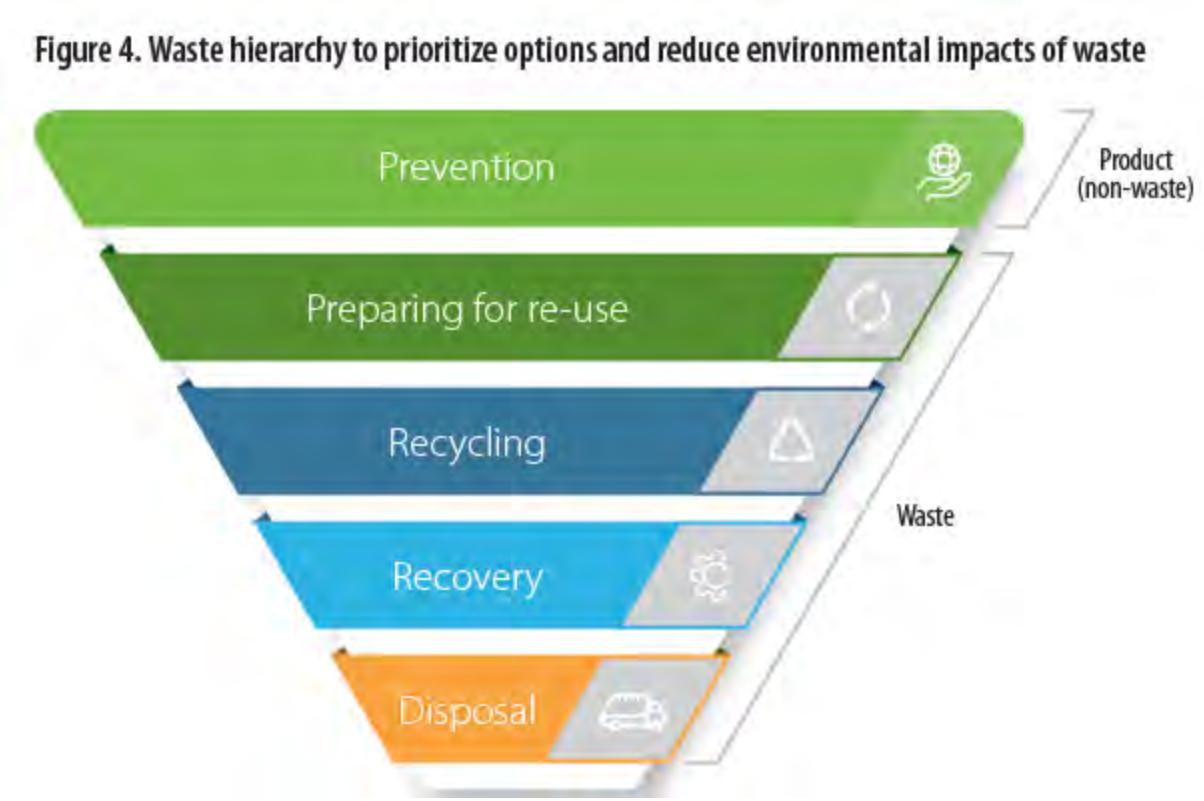
Despite limited evidence, action can be taken

Reinforcing commonly accepted recommendations in the waste sector

- Apply integrated sustainable waste management principles and the waste hierarchy
- Encourage sustainable consumer behaviour
- Improve SWM services
- Improve data collection and planning
- Enhance financial sustainability
- Implement extended producer responsibility
- Strengthen human resources capacity
- Drive innovation in circular economy practices



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The health sector has a clear role to play

- Minimize and manage HCW safely and sustainably
- Oversee health and safety of waste workers
- Strengthen evidence on health risks from solid waste
- Coordinate, develop and implement health protecting policies and standards
- Monitor and assess and health risks
- Strengthen capacity of health sector and raise awareness among communities

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Country examples

Vanessa Cruvinel
University of Brasilia

Sonia Dias
WIEGO

Samuel Agyei-Mensah
University of Ghana

World Health Organization

University of Brasilia

Multisectoral approach for controlling Zika, Dengue and Chikungunya in Brasilia, Brazil

Vanessa Cruvinel

Professor at University of Brasília, Brazil

TDR For research on diseases of poverty

UNICEF · UNDP · World Bank · WHO

LOCAL SOLUTIONS FOR GLOBAL IMPACT

Waste Pickers, Climate and Health

Sonia Dias - WIEGO

MSW Challenge in the Context of Climate Emergency

- MSW projected to nearly double by 2050
- Climate change exacerbate risks to what is already a complex scenario
- Workers in the informal economy bear the brunt of the waste and climate crisis
- CC & OHS: heat waves, torrential rains and other phenomena are impacting workers health all over the world including informal waste pickers
- Waste pickers contribute to GHG mitigation but they are still invisible in CC research and policy

Climate Change:
Significant OHS Risks for Waste Pickers

Documentation of CC impacts on workers working conditions and health can help shape investment on improving work infrastructure and adaptations strategies that can prevent diseases and injuries, improve physical and mental health and wellbeing and thus protect workers' health.

Brazil 2023 CC Mapping: climate change has concrete impacts on work routine, income and health. Heatwaves (**85%**) and flash flooding (**39%**) hitting both organized and independent workers the most.

Waste pickers are developing specific strategies, but they need a strong and expanded network to solve structural problems.

Near Real-Time Monitoring Extreme Weather Events and Impacts on Waste Pickers' Cooperatives (NRTM)

A monitoring system that relates extreme weather events to the impacts on workspaces, working conditions, health, and livelihoods of waste pickers in six capital cities.

Scale and beneficiaries :
16 cooperatives with 531 waste pickers

Partners: Mãos para o Futuro RLS program and local coops

Emerging Insights

- There’s an urgent need to raise awareness about how to respond to climate impacts and to strengthen early warning systems so workers can prepare in advance.
- Pre-existing infrastructure deficits worsen the impacts of floods and heatwaves, especially for workers’ health and productivity (absenteeism, lower-quality recyclables, lower incomes).
- The mapping highlights the need for climate-resilient workspaces, including upgrading or building recycling warehouses with better drainage, flood-resistant storage, and improved ventilation.

Workers' Health & Work Infrastructure

Social Protection

Cornerstone of climate adaptation:

- Document health risks and enable access to health care
- Emergency relief grants to cope with climate disasters
- Health and climate capacity building to help workers cope with heat and/or identify symptoms

Preparedness

- Early warning systems helps workers anticipate and respond to climate risks

Place of work matters! Whether in the streets, sorting centers or open dumpsites work infrastructure plays a role in workers' health

Investment on climate change sensitive work infrastructure is of crucial importance for workers' health

WIEGO

Women in Informal Employment: Globalizing and Organizing

Thank you

sonia.dias@wiego.org

Solid Waste Management and Health in Accra

Professor Samuel Agyei-Mensah

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The scale of Accra's Municipal Solid Waste (MSW) crisis

- Accra Metropolitan Area has a population of 284,124 inhabitants (2021 census)
- The city generates between 1500 and 2800 metric tons of waste daily
- Large amounts of the MSW exceeds collection capacity.
- MSW is mainly managed through house-to-house service and communal bins.
- The challenge of managing waste has been exacerbated by urbanization and resource constraints

Informal waste collectors

Communal bins

Zoomlion collection truck in a middle-class area

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Common health effects of MSW

- Open burning release fine particles, toxic gases (CO, CO2, Nitrogen oxides etc.), persistent organic pollutants, heavy metals, etc.
- Can cause respiratory illnesses (e.g., asthma, bronchitis and chronic lung disease), cardiovascular diseases, impacts on children's development, cancers…
- Open dumping facilitate the spread of diseases like cholera and typhoid and creates breeding sites for mosquitoes that can transmit diseases like malaria.

Massive waste burning in Accra polluting the air

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Addressing MSW in Accra

Support integration of the informal waste workforce

Former Mayor of Accra, Mohammed Adjei Sowah leading Accra to receive International Bloomberg Award for incorporating informal waste collectors into mainstream waste collection.

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Addressing MSW in Accra

Urban Health Initiative

- **Embedding health considerations into key urban policies**
- **Solid waste as one of four sectors that drive air pollution in Accra**
  - **Simulated** potential **health and economic** co-benefits of improved SWM practices
  - **Capacity building** across sectors (solid waste, health, urban planning, etc.), education campaigns etc.
  - Supported **healthier urban policies** (policy reviews, updates etc.)

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Addressing MSW in Accra Cont'd

- Youth-led groups like the Buz Stop Boys promote environmental responsibility.
- Integrated Recycling and Compost Plant (IRECOP) – Processes municipal solid waste into valuable compost and recyclables such as plastics and metals

Buz Stop Boys

IRECOP waste recovery plant

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Way forward

A healthy city must have an efficient and proper handling of waste to create a safe and pleasant urban environment

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Panel discussion

Moderator: **Megha Rathi**
Climate change, air pollution and health unit, WHO

David Wilson
Visiting Professor at Imperial College London

Miriam Medel García
Head of the Environment Team, Permanent Mission of Mexico in Geneva

Nicole Weber
Waste management specialist, RWA-wasteaware

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連環境計
際環境技術セン

Closing remarks

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