

# WHO Initiative on E-waste and Child Health

In 2013, after the first World Health Organization (WHO) meeting on e-waste and child health, the Geneva Declaration on E-waste and Children's Health set out a range of goals to improve the protection of children from hazardous substances released through electrical and electronic waste (e-waste) recycling activities. Following the Geneva Declaration, the WHO Initiative on E-waste and Child Health was launched with objectives to increase access to evidence, knowledge and awareness of the health impacts of e-waste; improve health sector capacity to manage and prevent risks, track progress and promote e-waste policies that better protect child health; and improve monitoring of exposure to e-waste and the facilitation of interventions that protect public health, especially the health of the most vulnerable. This leaflet sets out the justification for the specific Initiative on E-waste and Child Health and highlights the key features and achievements of the WHO initiative so far.



## What is e-waste?

As defined by the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal, e-waste is any "electrical or electronic equipment, which is waste, including all components, subassemblies and consumables, which are part of the equipment at the time the equipment becomes waste".

Such items include:

- computers, monitors and motherboards, chips
- wireless devices and other peripheral items
- printers, copiers and fax machines
- telephones, mobile phones and tablets
- video cameras
- televisions
- stereo equipment
- cathode ray tubes
- transformers
- cables and batteries
- lamps and light bulbs (including mercury-containing CFL and fluorescent bulbs)
- large household appliances (refrigerators, washers, dryers, microwaves)
- toys and sports equipment
- tools
- medical devices (some microscopes, electronic blood pressure monitoring devices, electrocardiogram machines, spectrophotometers, etc.).

## E-waste settings and health impacts

In 2019, an estimated 53.6 million tonnes of e-waste were created, and this number is projected to continue growing (1). E-waste items contain valuable components that have economic value if recycled. However, they also contain potentially hazardous substances that may be released directly into the environment, and others that may be created during recycling processes, for example through e-waste combustion. This is particularly concerning in the informal recycling sector, where modern industrial processes are not used and where workers' personal protection may be inadequate. In informal e-waste recycling settings, primitive processes include open burning of plastic wires to extract copper, bathing computer chips in acid to extract gold and manual dismantling of cathode ray tubes to extract small quantities of valuable materials. Children and adolescents are often involved in these processes and may be exposed to high quantities of toxic chemicals.

Through informal e-waste recycling activities children may be exposed to lead, cadmium, chromium, brominated flame retardants, and polybrominated dioxins and biphenyls, among other toxic chemicals. Some of these substances have been associated with adverse neurodevelopmental impacts, even at very low exposure levels. Children and adolescents are exposed in the settings they live in, via community exposure, or by working in or accompanying their parents to e-waste recycling sites.



## Exposure scenarios

There are different exposure scenarios. One example occurs in cities or towns where entire communities have developed around e-waste recycling, repair and refurbishment. A different, and often less visible, scenario occurs when e-waste is dumped or is collected door to door by individual garbage pickers who then engage in recycling activities in their own homes or in close proximity to their communities. Exposure can also occur when e-waste is incorrectly disposed of and enters landfill, contaminating air, water or soil.

## Research

In 2013 and 2020, WHO and its global network of collaborating centres developed two systematic reviews focused on health outcomes related to e-waste exposure. These systematic reviews have shown that increases in spontaneous abortions, stillbirths, premature births, and reduced birth weights and birth lengths are associated with exposure to e-waste. Impaired neurodevelopment, lung, thyroid and immune system dysfunction and greater DNA damage have also been linked to e-waste exposure. Adolescents, children and

fetuses are at particular risk as they are going through critical periods of development. Exposure to e-waste at an early age may have significant health consequences later in life. Thus, direct and indirect exposure related to e-waste recycling, including ecological and take-home exposure, are an established threat to human health. In this respect, vulnerable groups such as fetuses, children, pregnant women and workers in the informal sector especially need protection. Informal workers and their families often do not have access to health services. Adult workers should have access to user-friendly and effective protective equipment, and safer recycling practices should be taught and encouraged wherever possible. The health sector is often not well informed of the specific risks that e-waste poses to health. Children and adolescents should not work in e-waste recycling or be exposed through the environments in which they live, play and learn. Future research on e-waste and child health needs to prioritize long-term, prospective cohort studies, studies on exposure to chemical mixtures from e-waste and emerging health outcomes, and studies conducted in a wide variety of regions and locations. Risk reduction interventions and prevention strategies are also needed, along with reports of their effectiveness.



## E-waste and health action and policy agenda

### International action

The E-waste Coalition and its members, including WHO, are working together with partners at global and country level on addressing different aspects of the e-waste problem. The coalition aims to raise awareness, increase knowledge and provide integrated support to countries in preventing, reducing, collecting, recycling and disposing of e-waste sustainably.

### WHO initiative projects

WHO is working with United Nations agencies, international experts, and its collaborating centres on children's environmental health to compile relevant research and build health professionals' skills using the WHO training package on children's environmental health, including an e-waste training module. In 2021, WHO published *Children and digital dumpsites*, its first report focused on child health outcomes associated with e-waste, and an accompanying summary for policy-makers (2, 3). WHO is also collaborating with other United Nations and international agencies on a massive open online course and developing regional virtual courses on e-waste and child health (4). At the local level, WHO is helping to develop frameworks to protect children from e-waste exposure. These pilot projects aim to promote local advocacy and collaborate with communities and build the capacity of primary health systems to address risks by monitoring e-waste exposure and measuring

the success of interventions. The pilot projects are designing frameworks that can be adapted and replicated in different countries and settings.

### Health sector actions

At the **international level**, WHO and its collaborators have defined the following actions that the health sector can advocate:

- increasing the evidence and knowledge base;
- raising awareness and communication of health impacts, particularly in children;
- building the capacity of the health sector to better protect children through exposure reduction;
- promoting monitoring of exposure to e-waste;
- working with other sectors to implement policies and actions that reduce harmful exposure;
- conducting specific research about e-waste and related health effects.

At the **local level**, health professionals can play important roles by:

- identifying specific needs within local communities;
- communicating health risks with those who work with or live near e-waste;
- recognizing health effects of exposure to e-waste and prescribing solutions;
- working with communities at the primary health care level to educate and empower key agents to move the e-waste issue forward;
- implementing interventions to reduce exposure and improve the health of children, workers and their families.

## Sustainable Development Goals (SDGs) and World Health Assembly resolutions

A number of SDGs reflect the importance of tackling the devastating impacts of e-waste on children around the world.

- **SDG 3:** Ensure healthy lives and promote well-being for all
- **SDG 11:** Make cities and human settlements inclusive, safe, resilient and sustainable
- **SDG 12:** Ensure sustainable consumption and production patterns.

A number of World Health Assembly resolutions and decisions highlight the important role that the health sector can play in reducing hazardous substances released or produced during informal e-waste recycling.

- **resolution WHA63.25:** Improvement of health through safe and environmentally sound waste management
- **resolution WHA68.8:** Health and the environment: addressing the health impact of air pollution



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