

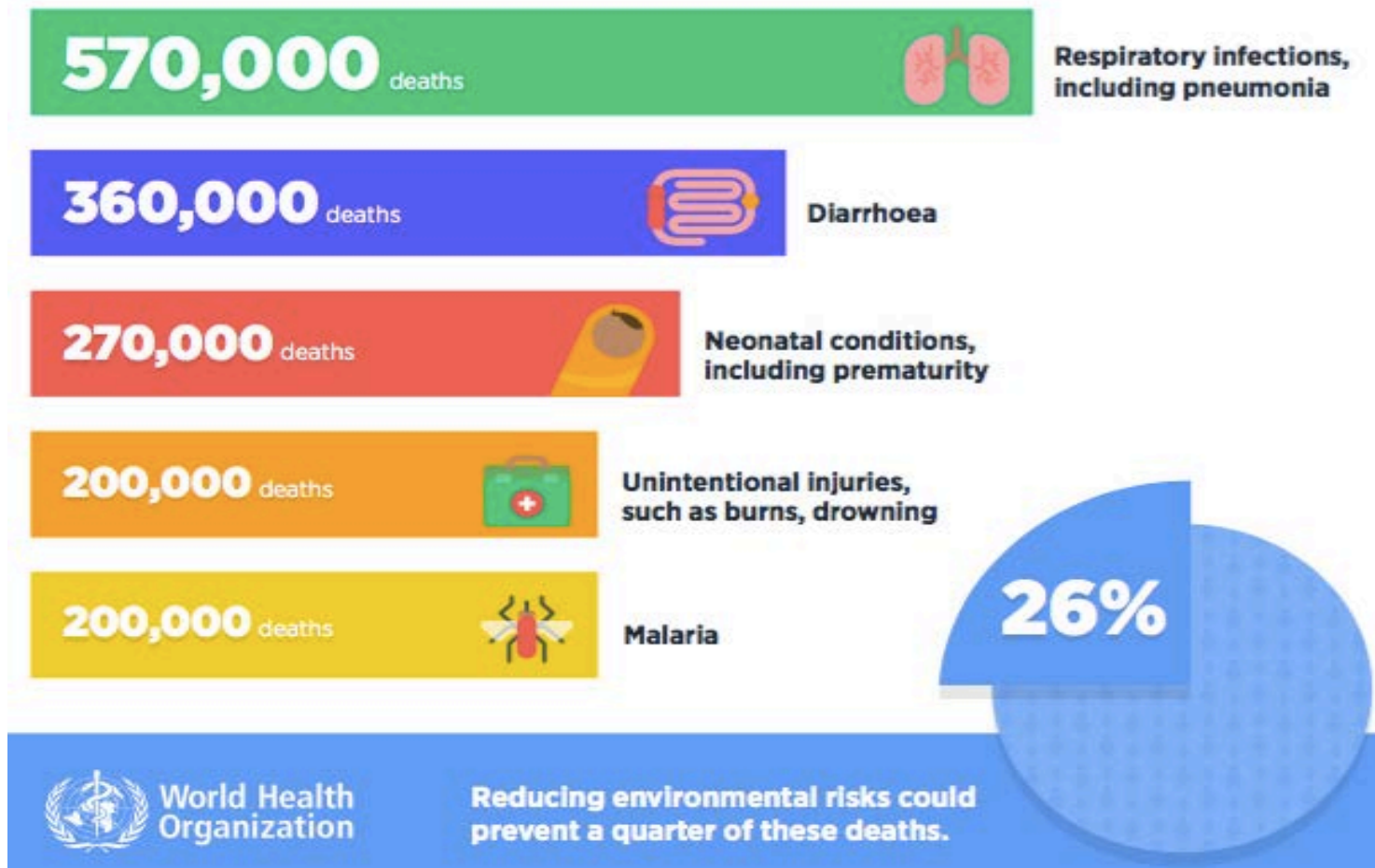
Health effects of E-waste exposure on children and vulnerable populations WHO initiative

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*With selected slides from the WHO Training Package on Children's
Environmental*



Each year 1.7 million child deaths under 5 are attributable to the environment



Environmental factors affecting children

CHILDREN ARE AFFECTED BY:



Air pollution



Inadequate water, sanitation and hygiene



Built environment



Second-hand smoke



Climate change



Hazardous wastes



UV radiation



Hazardous chemicals

CHILDREN ARE ALSO AFFECTED BY EMERGING THREATS SUCH AS:



Persistent organic pollutants / endocrine-disrupting chemicals



e-Waste

Minimising these risks are key to protecting children and achieving the Sustainable Development Goals.



World Health Organization



CHILDREN ARE NOT LITTLE ADULTS



Raphael, National Gallery of Art, Washington, DC

- 1. Different and unique exposures**
- 2. Dynamic developmental physiology**
- 3. Longer life expectancy**
- 4. Politically powerless**

1. DIFFERENT AND UNIQUE EXPOSURES

- ❖ **Unique exposure pathways**
 - Transplacental
 - Breastfeeding
- ❖ **Exploratory behaviours leading to exposures**
 - Hand-to-mouth, object-to-mouth
 - Non-nutritive ingestion
- ❖ **Stature and living zones, microenvironments**
 - Location – lower to the ground
 - High surface area to volume ratio
- ❖ **Children do not understand danger**
 - Pre-ambulatory
 - Adolescence – “high risk” behaviours



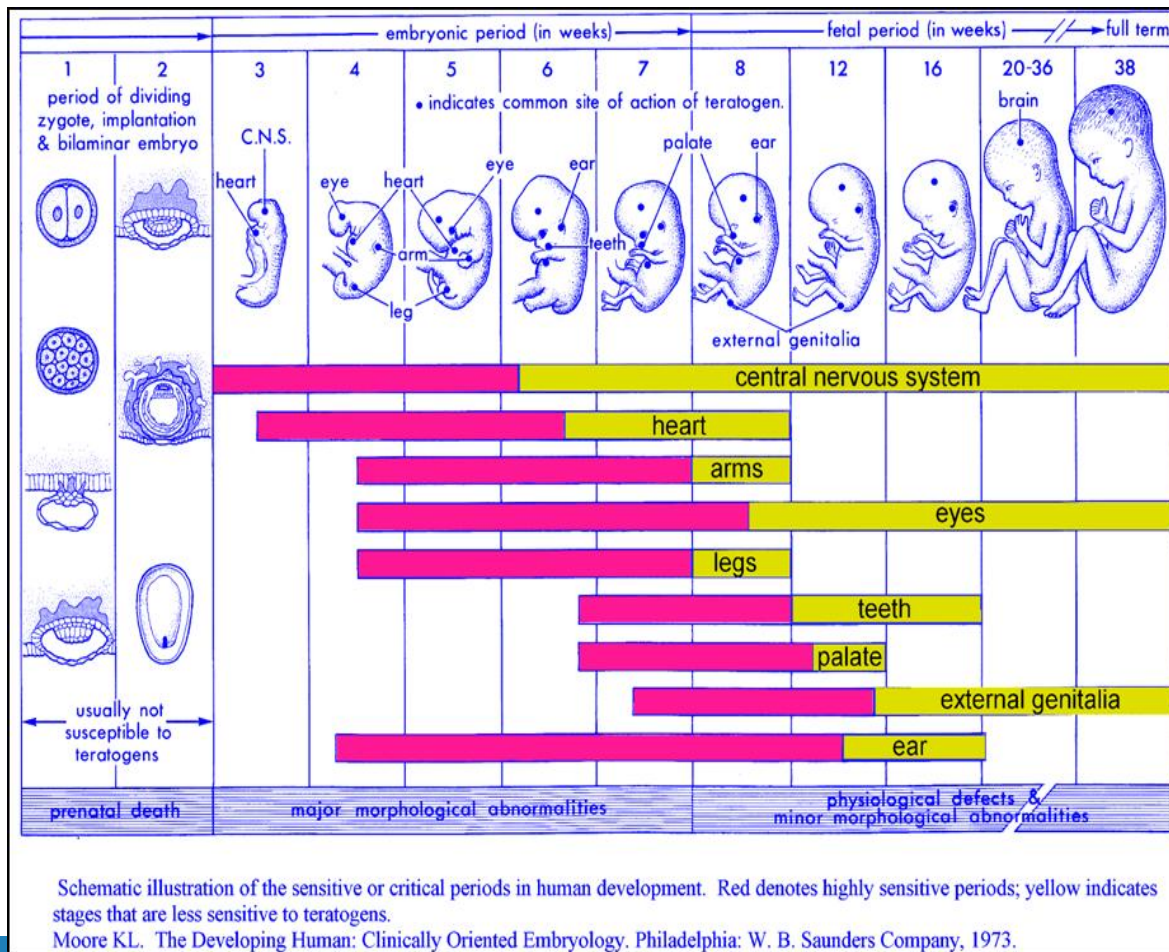
EXPOSURE TO OCCUPATIONAL RISKS DURING THE PHASES OF CHILDREN'S DEVELOPMENT

- ❖ **Before birth** (before conception and during pregnancy) – parental exposures to mutagens and teratogens, neurotoxicants, psychological and mechanical risks
- ❖ **Infancy** – take-home exposure, home work
- ❖ **Childhood** – take-home exposure, home work, child labour
- ❖ **Adolescence** – home work, apprenticeship, work



2. DYNAMIC DEVELOPMENTAL PHYSIOLOGY

WINDOWS OF DEVELOPMENT



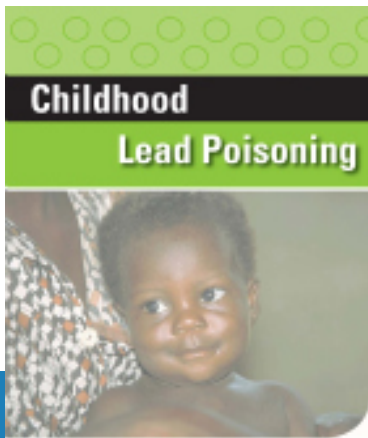
3. LONGER LIFE EXPECTANCY

Childhood exposure to lead and its relationship with adult hypertension, immune system alterations, cardiovascular effects

4. POLITICALLY POWERLESS

Children do not vote

They live in the world adults created for them



E-WASTE AND ENVIRONMENTAL POLLUTION

Environmental pollution may be associated with...



PRIMITIVE

Open Burning Practice

Recycling & Recovering

Landfilling

SOURCES OF CHILD EXPOSURE AT HOME AND SURROUNDINGS

- ❖ Recovering and recycling are often rudimentary in house or backyard operations
- ❖ Primitive recycling procedures through open cable burning, acid baths, and “cooking” circuit boards
- ❖ Home-based and family-run recycling activities



SECA



- ❖ Injury risk
- ❖ High levels of mixtures of chemicals contained in the materials

FROM ENVIRONMENT TO CHILDREN

- ❖ Contamination of the surrounding areas, soil, home surfaces (e.g. windows sills), water
- ❖ Atmospheric pollution due to burning and dismantling activities
- ❖ Inhalation of indoor or outdoor fumes
- ❖ Ingestion of:
 - Contaminated dust and soil
 - Contaminated drinking water
 - Contaminated food



In Uruguay: 24 % of children with blood lead levels higher to 5 $\mu\text{g}/\text{dl}$ – burning of cables in neighboring area

WHY E-WASTE AND CHILD HEALTH?

E-waste materials are not only a source of environmental contamination but may also pose significant human health risks if improperly managed



MULTIPLE TOXIC EFFECTS ON CHILD HEALTH AND DEVELOPMENT

- Neurodevelopmental deficits
- Damage to the blood and cardiovascular systems
- Respiratory diseases
- Skin problems
- Gastric diseases



WHO

E-waste workers suffer high incidences of birth defects and infant mortality.

WHY E-WASTE AND CHILD HEALTH?

- A systematic review led by WHO and WHO collaborating centres looking at health outcomes related to e-waste exposure, showed that increases in spontaneous abortions, stillbirths, and premature births, and reduced birth weights and birth lengths are associated with exposure to e-waste



WHO

WHY DO WE NEED TO ACT NOW

SDG Goal 3: Ensure healthy lives and promote well-being for all at all ages.

Target 3.9: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination.

SDG Goal 12: Ensure sustainable consumption and production patterns.

Target 12.4: By 2020, achieve the environmentally sound management of chemicals and all wastes throughout their life-cycle, in accordance with agreed international frameworks, and significantly reduce their release to air, water and soil in order to minimize their adverse impacts on human health and the environment.



World Health Assembly resolutions



In the past 10 years, new World Health Assembly Resolutions on:
Addressing air pollution, climate change, the role of the health sector in chemical and waste management

AIM OF THE WHO INITIATIVE ON E-WASTE AND CHILD HEALTH

To advance the work towards better defining the exposures and related factors that can lead to health risks and allow identification of measures to protect children and other vulnerable populations from environmental health risks in e-waste



E-WASTE & CHILD HEALTH

- WHO, WHO collaborating centers have identified through initial consultations (2013, 2016) urgent gaps
 - identifying needs at local level
 - communicating the problem to health actors
 - developing training methods and tools for health professionals
 - encouraging specific research about e-waste
 - gathering interested stakeholders to move this issue forward around interventions that can improve the health of affected communities.



HEALTH CARE PROVIDERS PLAY A KEY ROLE

- ❖ Identifying the problem
- ❖ Diagnose exposure and treat health effects
- ❖ Defining its local determinants and characteristics
- ❖ Educating colleagues and other professionals
- ❖ **Working with the community – and the children**
- ❖ Raising the awareness of policy-makers
- ❖ Promoting the implementation of the appropriate measures
- ❖ Helping to evaluate the efficacy of preventive measures
- ❖ Surveillance of exposure and effects.



WHO

AVAILABLE TOOLS AND RESOURCES

Tools for reaching the health sector

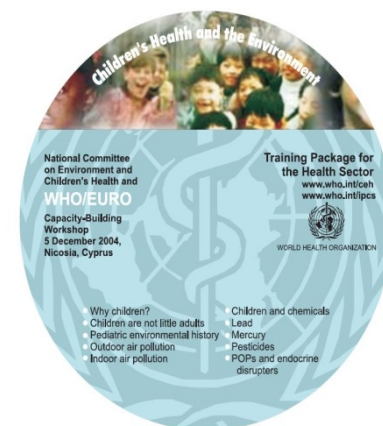
Development of an e-waste and child health “train the trainers” peer-reviewed module of the WHO Training Package on Children's Environmental Health for health professionals (with WHO Collaborating Centre in Uruguay)

Technical information

Series of publications on child health, including a systematic review
Developed with collaborating centers and health partners

Information dissemination

through WHO website, WHO/UNEP, newsletter, survey, reports



NEXT STEPS

- Communications: raising awareness on health impacts
- Networking with relevant stakeholders to protect health
- Bringing health to interventions by
 - Strengthening the monitoring of exposure to e-waste, and related health impacts particularly among children and workers
 - Providing information for the protection vulnerable populations from e-waste health impacts
 - Increasing capacity of the health sector to manage risks related to e-waste and work multi-sectorally

WORKING TOGETHER TO PROTECT THE HEALTH OF OUR CHILDREN



APPENDIX

Inheriting a sustainable world? Atlas
on children's health and the
environment



WHO resources

Main publications of WHO and WHO network of collaborating centres on children's environmental health on e-waste and child health

- Grant K et al. Health consequences of exposure to e-waste: a systematic review on health effects of e.waste. The Lancet.
[http://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X\(13\)70101-3.pdf](http://www.thelancet.com/pdfs/journals/langlo/PIIS2214-109X(13)70101-3.pdf)
- Bruné MN et al. Health effects of exposure to e-waste. Lancet Global Health. Vol1, 2, e70, August 2013 [http://www.thelancet.com/journals/langlo/article/PIIS2214-109X\(13\)70020-2/fulltext?rss=yes](http://www.thelancet.com/journals/langlo/article/PIIS2214-109X(13)70020-2/fulltext?rss=yes)
- Heacock M et al . E-Waste and Harm to Vulnerable Populations: A Growing Global Problem. Environ Health Perspect. 2015 Sep 29.
<http://www.ncbi.nlm.nih.gov/pubmed/26418733>
- Perkins D et al. E-waste: a global hazard., Ann Glob Health. 2014 Jul-Aug;80(4):286-95.
<http://www.ncbi.nlm.nih.gov/pubmed/25459330>
- Sustainable Management of Waste Electrical and Electronic Equipment in Latin America. ITU in collaboration with WHO and many UN partners.2015

WHO resources

Websites

- WHO e-waste and child health website <http://www.who.int/ceh/risks/ewaste/en>
- e-waste and child health network website. WHO's collaborating centre, Children's Environmental Health Program, Brisbane - <https://www.qcmri.uq.edu.au/chep/e-waste-network.aspx> includes the Geneva Declaration on e-waste and child health

Newsletter

- WHO/UNEP Children's Environmental Health monthly newsletter with specific section on e-waste (and child health)
<http://www.who.int/heca/infomaterials/hecanet/en/>

Initial UNU/WHO survey

- http://www.step-initiative.org/files/step/_downloads/UNU%20&%20WHO%20Survey%20on%20E-waste%20and%20its%20Health%20Impact%20on%20Children%20-%205%20August%202013.pdf

WHO resources

- Multi UN - Flipbook: Sustainable management of waste electrical and electronic equipment in Latin America -

http://wftp3.itu.int/pub/epub_shared/TSB/2016-Integrated-mngnt/index.html#p=1

Also available in Spanish -

http://wftp3.itu.int/pub/epub_shared/TSB/2016-Integrated-mngnt-ES/index.html#p=1

