Framework of Action for
Children’s Health and the Environment
(2014-2018)

Introduction

Millennium development goals are connected to child development and survival. About three million children still die every year from environmentally-related causes. Children in less-developed countries and emerging economies continue to face easily preventable environmental hazards and children in all countries are being increasingly exposed to new compounds with unknown effects. Children around the world are threatened by both similar and diverse hazards and although progress is being made, the international community must continue to address environmental exposures as key contributors to the global burden of disease.

The largest burden of environmental disease continues to affect children in developing countries. The main conditions which are responsible for deaths in under-fives in low and middle income countries are: diarrhoea, acute respiratory infections, malaria, measles and perinatal conditions. The "big killers" are diseases that have a strong environmental component: indoor air pollution from biomass fuels (causes acute respiratory infections (ARI)), unsafe water and food (causing diarrhoea) and the proliferation of vectors in the environment (vector-borne diseases such as malaria).

Children in all parts of the world are increasingly threatened by chronic diseases that have an environmental contribution. The effects of exposure to new chemicals, endocrine disrupting chemicals, environmental pharmaceutical pollutants, exposure to the extractive industries and hazardous waste recycling, and low-dose exposures in early life are only partially understood. However, evidence is emerging that chronic non-communicable diseases (NCDs), including chronic respiratory disorders, (asthma COPD), neurocognitive and behavioural disorders, obesity, type 2 diabetes, metabolic syndrome and cardiovascular diseases have substantial contributions from environmental exposures in early life. While these diseases have traditionally affected children in high-income countries, the burden is increasingly falling on children in low and middle-income countries. Global environmental change is also beginning to have measurable effects on human health. As a vulnerable group children will be among the first affected.

Children and developing foetuses are particularly vulnerable and particularly susceptible to environmental impacts on health because of social, economic, and physiological factors. Children have rapidly developing neurological, immune, reproductive, respiratory and digestive systems, consume more food and water than adults in proportion to their size, have a larger skin area in proportion to their size, are less able to modify their behaviors in response to risk, and do not have control over their environment. As contaminants can be passed to children through placenta and breast milk, neonates and infants face additional exposure through their mothers. Mouthing behavior of young children increases exposures to environmental contaminants, especially in their homes. Current evidence suggests exposures during
the prenatal, neonatal and early-childhood stages of life can impact the onset of disease in adulthood.

The World Health Organization (WHO) advocates a life-course approach to health, recognizing that each stage of development is linked to previous and subsequent stages. The peri-conceptual period, stage of fetal development, infancy, childhood and adolescence are critical life-stages and points for intervention. By insuring a healthy environment during these early life stages, we can provide children with the best possible start to life. In addition, as we move beyond the Millennium Development Goals, consideration should be given to reducing morbidity and years lived with disability (YLD) and improving quality of life of children to allow them to become productive individuals. Interventions at early stages of life are cost-effective and improve human development and health. Healthy development from early life is a key requirement for sustainable development and the Post-2015 Development Agenda. The child cannot be considered in isolation, nor can sustainable development be achieved without consideration of effects on children and children’s health. A schematic map of key elements is shown in figure 1.

**Figure 1: Key elements to be considered in achieving healthy and sustainable development.**

To ensure a healthy environment for children primary intervention is needed to prevent exposures in homes, schools, kindergartens, play areas and work environments. Primary prevention programs within the health and environmental management sectors have successfully protected children from hazardous exposures. Building on these successful interventions and creating new evidence-based strategies should be a priority of groups working in children’s environmental health. Involvement in international recommendations on children’s environmental health issues, contributing children’s environmental health perspectives to related international activities, assisting national and local legislators to create targeted legislation, strengthening the capacity of healthcare workers to diagnose and treat
environment related illnesses, raising awareness of children’s environmental health issues, and educating health care workers, policy makers scientists, the general population and children themselves are key activities of WHO and its partners.

The WHO Children’s Environmental Health Unit and the network of collaborating centres and other groups working in children’s environmental health (WHO CEH network) have been actively involved in efforts to increase awareness of and action to prevent harmful exposures during childhood. WHO has held three international conferences in Children’s Environmental Health, the First WHO International Conference on Environmental Threats to Children: Hazards and Vulnerability, in Bangkok, Thailand 2002, the Second WHO/PAHO International Conference on Environmental Threats to the Health of Children: Increasing knowledge and taking action, in Buenos Aires, Argentina in 2005, and the Third International Conference on Children’s Health and the Environment: From Knowledge and Research to Policy and Action, in Busan, Republic of Korea in 2009. The network reaffirms the commitments of the Busan Pledge for Action on Children’s Health and the Environment, developed at the Third International Conference on Children’s Health and the Environment.

**Busan Pledge for Action on Children's Environmental Health,**
**June 2009**

We pledge to develop a global plan of action to improve CEH, monitor and report on progress, and we urge WHO and its partners to facilitate the development of this plan in collaboration with all relevant agencies. We will implement activities in close interactive partnerships with governmental and non-governmental organizations, centres of excellence, academia, professional bodies, educators and other sectors. We commit to take CEH issues to the consideration of the higher authorities in our respective countries and to the attention of the international agencies concerned about children's health and the environment and the needs for green growth and sustainability.

In order to build upon the Global Plan of Action for Children’s Environmental Health (2010-2015) the network of WHO collaborating centres and other groups working in children’s environmental health have developed this framework of action. This framework will lay out a strategy for upcoming activities between 2014 and 2018, assisting with the transition between the current Global Plan of Action and future activities of WHO in the area of Children’s Environmental Health. The network will develop its activities to support the evolving priorities of WHO in line with the Post-2015 Development Agenda. Environmental hazards to children’s health are a crucial element of the Post-2015 health agenda and must remain a key focus of the international community.

**Aims of the programme and areas of work**

Based on our previous work and our Global Plan of Action for children’s environmental health, the following will function as both the aims of the programme and the general areas of work:
• Setting a research agenda aimed at building evidence and research capacities
• Collaborative research coordination and analysis
• Education, communication and awareness raising
• Developing interventions aimed at capacity building, reducing exposure and preventing or decreasing the burden of disease

**Objective:** To reduce morbidity and mortality of children by identifying and controlling environmental risks

To address this objective, work will be carried out using a life-course approach in the specific areas of developmental impacts of the environmental exposures, early life origins of disease and environmental contributions to chronic disease throughout childhood and adult life. The impact of global environmental change on combined exposures and health outcomes will be an active focus of project areas. The social and environmental determinants of health will be included. We will use both an “exposure” (figure 2) and an “outcome” focus (figure 3).
Specific Environmental Risks

Traditional Risks
- Indoor air pollution
- Water & Sanitation
- Ionizing radiation
- Environmental chemicals and metals
- Injuries
- Disasters and conflicts
- Pesticides
- Occupational exposures

Emerging Risks
- Emerging chemicals
- Low-dose chronic exposures in early life
- Global environmental change
- E-waste management
- Children in extractive industries
- Environmental pharmaceutical pollutants
- Combination effects with infectious diseases
- Non-communicable diseases

Implementation
Projects will be undertaken by the WHO CEH unit and its international network of partners, to be known collectively as the WHO CEH Network. Projects will be
organized around nodes of expertise, led by WHO CEH collaborating centres and involving centres in formal relationships with WHO, informal partners and independent experts. An inter-organizational chart will be created to map the interaction of partner organizations and identify gaps in expertise.

Where applicable a tabular system, similar to that used in previous WHO environmental health publications, will be used to evaluate progress in scientific evidence, awareness raising, existence of policies/recommendations designed to protect children, and to indicate issues that may be suitable for implementing public health interventions, even in the absence of full and definitive evidence. A table template is shown below.

The network hopes to transition from an exposure based focus to a health effects based focus. This shift will more effectively address the primary goal of WHO, to influence health professionals and policy makers. The following activities will assist in achieving these aims:

Establish collaboration with groups within WHO to introduce a focus on children’s environmental health to existing programs, including:

- Air pollution
- Water and sanitation
- Ionizing radiation
- Environmental contributions to burden of disease
- Climate change
- Chemical safety
- Occupational health and safety
- Child and Adolescent Health
- Infectious diseases
- Food security

Establish collaboration with UN agencies and organizations to introduce a focus on children’s environmental health to existing programs and seek the expertise of international participants in related fields.

- United Nations Environment Programme (UNEP)
- International Labour Organization (ILO)
- United Nations University (UNU)
- United Nations Industrial Development Organization (UNIDO)
- International Telecommunications Union (ITU)
- United Nations Children’s Fund (UNICEF)
**Specific Tasks**

**Setting a research agenda aimed at building evidence and research capacities**

A. Develop a research agenda on early environmental origins of disease, with a specific focus on NCDs.
B. Refine and validate a maternal environmental exposure history form for use in clinical practice and research settings.
C. Create guidance to improve data collection systems, methodologies and research quality
D. Defining the WHO CEH Network’s role in cohort harmonization
E. Training of researchers in CEH
   a. Creation of training materials
   b. Pilot training course with scientists from developing countries

**Collaborative research coordination and analysis**

A. Continue to grow the WHO CEH Network, including: redesignating current collaborating centres; designating new centres; and investigating alternative forms of interaction with organizations and individuals
B. Map the major institutions working on CEH with a view towards expanding the network and identifying gaps in expertise
C. Develop collaborations to investigate the social and environmental determinants of health.
D. Develop a series of peer-reviewed publications on environmental health and early environmental origins of diseases designed to raise awareness in the general and scientific communities.

**Education, communication and awareness raising**

A. Continue the current WHO/UNEP newsletter (Healthy Environments for Children Alliance) and expand where necessary to cover Network activities
B. Website. Develop a portal to other sources
   a. Web updates on main projects
   b. Website on activities of the network of CEH centers
C. Develop a series of overview documents including: systematic reviews, state of the evidence documents, commentaries, etc designed to outline priorities in CEH and the expertise of the WHO CEH Network.
D. CEH training package
   a. Update the modules
   b. Create targeted packages for specific projects
E. Reproductive health training package
   a. Develop and pilot the package
   b. Validate the model maternal history form as a tool for doctors and surveillance
F. Training of pediatricians in CEH: new partnerships
   a. Build partnerships with groups to carry out international, regional, and national training
   b. Design and implement a master training plan
G. Develop interactive training programs for professionals from other fields to increase CEH literacy
H. Educate children on environmental hazards.
   a. Produce modules aimed at educating children on environmental hazards and how to avoid them.
   b. Produce and collate teaching materials for teachers
   c. Investigate the use of social media to engage youth networks
I. Develop a series of webinars on CEH, focusing on CEH and post-2015 MDGs
J. Develop plain language leaflets aimed at the general public

Developing interventions aimed at capacity building, reducing exposure and preventing or decreasing the burden of disease
A. Public Health interventions
B. Global environmental change
   a. Develop educational materials on the next generation being affected by global environmental change
C. Chemicals/metals
   a. Lead in paint: addressing an old legacy – contributing to the Global Alliance to Eliminate Lead in Paint
      • International Day for Lead Reduction
      • Implementation of interventions and report to Global Alliance
      • Contribution to WHO Lead guidelines
   b. Mercury
      • Contribution to WHO mercury guidelines
D. Extractive industries: reaching the health sector
   a. Review of effects of small artisanal gold mining on child health
   b. Adaptation of CEH training materials to the mining context
   c. Pilot in Mongolia and report of the training experience
   d. Assisting countries in developing health plans in relation to small artisanal gold mining
E. Electronic Waste
   a. Health impacts of children’s exposure to e-waste, including both informal and formal recycling setting
      • Peer-reviewed publication and commentaries
      • Training module: develop, pilot and implement
      • Launch of WHO eWaste Network, September 2013.
      • 4th International Conference in CEH, with a focus on e-waste
F. Agriculture and pesticides: raising awareness, creating capacities
Table Template for addressing environmental hazards to children's health and possible interventions

<table>
<thead>
<tr>
<th>Setting 1</th>
<th>Disease / Health issue 2</th>
<th>BoD 3</th>
<th>Exposure/hazard 4</th>
<th>Monitoring 5</th>
<th>Policies 6</th>
<th>Interventions 7</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Deaths</td>
<td>YLD</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

1 Describe the exposure setting, e.g., low-income, high mortality country; emerging economy, etc.
2 Describe the disease or health issue of interest.
3 Describe the burden of disease, preferably both in terms of mortality and years lived with disability appropriate to the exposure setting.
4 Describe the exposure or hazard to children’s health, taking into account the life stage approach outlined earlier.
5 Describe the level of monitoring available for the disease or health issue and for the exposure or hazard in the exposure setting.
6 Describe what policies or legislation is in place in the exposure setting to protect children’s health.
7 Describe, where applicable, public health interventions that could be introduced in the exposure setting to protect children from the exposure or hazard and improve health.