Notes:

- Please add details of the date, time, place and sponsorship of the meeting for which you are using this presentation in the space indicated.
- This is a large set of slides from which the presenter should select the most relevant ones to use in a specific presentation. These slides cover many facets of the problem. Present only those slides that apply most directly to the local situation in the region.
Children should reach their full potential as individuals.
Children should become contributing members of societies.
They are an intrinsic component of sustainable development.

The term “children” refers to those below 18 years of age, according to the United Nations Convention on the Rights of the Child.

**References:**

**Photo:**
- © WHO/Yoshi Shimizu
Learning objectives

- Understand the global importance and public health impact of children’s exposure to environmental threats
- Learn about the special vulnerability of children – new knowledge, new concepts
- Consider the threats to children’s health in developing countries, in transition economies and in industrialized countries
- Consider how different stakeholders can take action
Note:
When selecting the slides to include in your presentation, please choose only those of relevance to the region and/or interests of your audience.

Outline

• Magnitude of the problem
• Children’s unique vulnerability
• Main global environmental risks
• Future directions
We will begin with the magnitude of the problem, including:
• latest data on child mortality
• contribution of environment.
Children hold a special place in our global society. The world they inherit is one shaped by adults and past generations, but today's children will build our futures. With 26% of the world population under 15 years of age, it is imperative that we provide healthy environments for them to grow and thrive.

Find the percentage of your country’s population that is under 15 years of age at https://data.worldbank.org/indicator/SP.POP.0014.TO.ZS?name_desc=false

References:

Figure:
Produced with data from:
In 2017, 5.4 million children under five died. Though concerted efforts have significantly reduced in child mortality worldwide in recent decades, 15,000 children still died every day in 2017. Nearly half of those deaths (2.7 million annually) were concentrated in sub-Saharan Africa.

References:

Map:
Eliminating preventable child deaths is a major target of the Sustainable Development Goals, a set of global targets adopted in 2015 by United Nations Member States to achieve by 2030. They succeed the Millennium Development Goals, which were adopted in 2000 and focused on improvements, including reducing child mortality, over the time period of 1990 to 2015. The graph displayed here shows both that child mortality has been reduced in all regions from 1990 to 2017 and that mortality disproportionately affects certain regions.

Sub-Saharan Africa has the highest rate of under-five mortality at 76 deaths per 1000 live births which is 19 times higher than the average in Australia and New Zealand, where the rate is lowest. If every region experienced the under-five mortality rate of the lowest country mortality rate in the world for 2017, 5.1 million lives would have been saved.

Many child deaths are preventable. This module describes the role of the environment in children’s health and the opportunities it presents in reducing morbidity and mortality in children.

References:

Figure:
- UN IGME (2018). Levels & trends in child mortality: report 2018, estimates developed by the
The most recent WHO analysis in 2012 determined that 26% of all deaths in children under five were attributable to the environment, as represented on the lower right of this infographic. Because the environment is modifiable, these deaths, numbering 1.7 million in 2012, are preventable. The bars on the slide describe the number of under-five deaths in 2012 due to environmental factors for each cause of death shown.

The main causes of death in children under five are diseases that have a strong environmental component. Respiratory infections can be caused by household and ambient air pollution; unsafe water and food leads to diarrhoea, and proliferation of vectors in the environment results in diseases such as malaria. The following slide displays these environmental contributions in more detail.

References:

Figure:
• © WHO
Not only mortality but also morbidity can be reduced in children with modification of environmental factors. This figure illustrates the burden of disease, measured in disability adjusted life years (DALYs), for children under five in selected diseases that are caused in part by environment. DALYs are a weighted measure of deaths and disability; they are conceptualized as years lost due to illness, disability or premature mortality. In 2012, it was estimated that 25% of total under-five DALYs could be prevented by changes to environmental factors.

References:

Figure:
Environmental hazards disproportionately affect developing countries. This map shows the distribution of environment-related child deaths in different regions. While the burdens may not be borne equally, everyone is affected.

Map:

Furthermore, there remain major differences within countries. Children in rural and urban settings are exposed to different conditions and risk factors.

**References:**

<table>
<thead>
<tr>
<th></th>
<th>Urban</th>
<th>Rural</th>
</tr>
</thead>
</table>
| Non-communicable diseases: | • Better immunization coverage  
• Better access to health services  
• Violence  
• Air pollution  
• Traffic (pollution, injury, stress, noise)  
• Social and affluence problems  
• Lifestyle diseases (cancer, heart problems)  
• Mental ill-health (stress, anxiety, depression) | • Communicable diseases  
• Poor access to health care  
• Poor access to schools  
• Environmental problems linked to:  
• agricultural products and processes  
• mouldy hay, pollens |

Poverty brings out the worst of both worlds
It is important to stress that all the effects and diseases resulting from chemical, physical and biological threats have high social and economic costs.

References:
As the world continues to change, new driving forces and global environmental changes pose challenges to human health and to the environment. These challenges contribute to environmental degradation – and environmental degradation disproportionately affects children, who are most vulnerable now and in the future.

**Notes:**
- The driving forces and global environmental changes mentioned are self-explanatory. However, speakers may need to expand on one or two of the points, if considered relevant.

**References:**
Having introduced the magnitude of children’s environmental health issues broadly, we will discuss what puts children especially at risk for environmental hazards.
Figure:
• © WHO
There is growing concern about the effects of environmental threats on children’s health for the following reasons.

1. Because of children’s dynamic and continuous process of growth and development, the effects of environmental threats may be cumulative. In some instances, children may be exposed repeatedly to toxicants or radiations with effects that continue to accumulate. Exposure may have long-term consequences and produce permanent disability. Childhood exposure may affect health in adulthood, or the health of their children. Effects are intergenerational, as is the case with children born to mothers who were exposed to lead in their childhood.

2. Children have “windows of susceptibility” to environmental threats. These are specific periods, “windows of susceptibility,” in their development when the effect of a chemical, physical or biological agent is major and may result in adverse health outcomes. Throughout pregnancy there are windows of development (see slide 19) where specific environmental exposures may lead to identifiable defects that may affect the child into adulthood and beyond.

Children require a protected and protective environment to enable:
- the newborn to survive;
- the child to grow, be able to go to school and learn; and
- the adolescent to mature under good conditions and face the challenges of adulthood.

References:
Notes:
The "environment" is the sum of a large variety of factors.

Although the special susceptibility of children has been recognized for decades (especially by paediatricians), it is only in the last decade that this vulnerability has been newly recognized.

There is new, more detailed information about the specific effects of some chemicals on the developing fetus.

There is new, more sophisticated knowledge about toxicokinetics and toxicodynamics.

The importance of the **timing** of exposure is now recognized (see next slide). Dose refers to the quantity of a chemical, whereas type refers to frequency of exposure (e.g. is it repeated?).

In poorer regions, adverse effects are further exacerbated or magnified by poverty, malnutrition and stress such as is experienced in refugee camps, areas affected by drought, tornadoes or floods, or in areas of war or conflict.

Photo:  
- © WHO/Yoshi Shimizu
The fetus is connected to the mother through the placenta, where gas and nutrient exchange can occur. Exposure to chemicals such as pollutants or drugs can affect the metabolism of the mother or fetus and disturb development at or after the developmental stage.

Physiological differences between children and adults are not only manifest in immature metabolic pathways. Because important systems are still differentiating and growing, children have unique susceptibilities not seen in adults — and critical time windows for those susceptibilities. This slide illustrates the significance of the timing of exposure. The critical times are as follows:

- preconception
- gestation
- postnatal, especially the first few years of life

There has been an explosion of knowledge about child development in past decade or so, and it is hard to remember that it was only about 50 years ago that the discovery was made that the fetus is vulnerable to exposures. The phocomelia epidemic resulting from use of thalidomide by pregnant women was an early and dramatic example of the ability of chemicals to traverse the placenta and damage the fetus. It was found that thalidomide administered during a small, four-day window between gestational days 20 and 24, possibly increased the risk of autism. More than one system of the fetus can be susceptible and different pathology may occur depending upon the dose and timing of exposure *in utero*.

Now we know that other exposures during gestation, some of which are shown on this diagram, can harm the systems of the developing child. We also know that preconception exposure of parents, as well as postnatal exposure of both parents, can harm children.

**Notes:**

- It is important to point out the different responses to insults shown on the bottom bar of the figure. Significant insult during the embryonic phase will result in pregnancy loss (first two weeks) or major organ malformation. During the fetal stage, damage is more subtle and related to system dysfunction.
References:

Figure:
This slide details three specific exposures, mechanisms of actions and effects as examples.

**References:**
Outline

- Magnitude of the problem
- Children’s unique vulnerability
- Main global environmental risks
- Future directions

Photo:
- © WHO/Anna Kari
This infographic shows some of the environmental hazards that children are affected by. This module includes overviews of the risks listed below; for others and for more detail, please see exposures modules at https://www.who.int/ceh/capacity/training_modules/en/. Include slides relevant for your audience.

Main global environmental health risks:
1. **Water, sanitation and hygiene.** Lack of safe water, sanitation and/or hygiene leads to illness such as diarrhoea.
2. **Air pollution, both household and ambient.** This triggers or aggravates respiratory diseases.
3. **Vector-borne disease.** These cause one million deaths a year in children, due to malaria, dengue fever, leishmaniasis, Japanese encephalitis and others.
4. **Chemical hazards.** Examples include persistent organic pollutants (POPs) and ozone-depleting chemicals.
5. **Injuries and accidents.** Injuries including road accidents, drowning, burns and poisoning cause 400 000 deaths per year.
6. **Child labour.** Child labour puts children at risk for occupational exposures.
7. **Emerging issues.** These include global change (climate and others), electromagnetic radiation and more.

**Figure:**
- © WHO
Access to safe water and sanitation is a universal need and basic human right.

The number of children dying from diarrhoeal diseases has fallen from approximately 1.2 million in 2000 to 441 000 in 2017 due to various public health accomplishments, including improved water, sanitation and hygiene. These improvements have reduced morbidity and mortality among children, especially in the economically developed countries, but further environmental modifications could reduce health effects further.

The consequences of inadequate water and sanitation have a very heavy toll, especially for children, including:

- A high number of deaths in children under five years, every year.
- Disease and malnutrition
- High costs for the public health system
- Effects to education, as children often lose days of schooling. In some countries, girls are affected even more than boys as they do not go to school if there are no toilets – especially after menarche.
- Low self-esteem and dignity when the child is ill all the time, cannot go to school and becomes a burden to the family and the community.

References:


Figures:


Globally, 403 000 deaths in children under five were attributable to household air pollution in 2016, almost all in low and middle income countries.

Polluting fuels include biomass (wood, dung, crop residues and charcoal), coal, and kerosene. In 2014, almost 3.1 billion people in low and middle income countries relied on polluting fuels to cook, constituting 53% of the population of those countries and 43% of the global population. Exposures due to these pollutants can be prevented by switching to clean fuels including electricity, liquefied petroleum gas, piped natural gas, biogas, solar and alcohol fuels.

Cooking and heating with polluting fuels on open fires or traditional stoves results in high levels of household air pollution. Indoor smoke contains a range of health-damaging pollutants, such as small particles and carbon monoxide, and levels of particulate pollutants may be many times higher than accepted guideline values.

There is consistent evidence that exposure to household air pollution can lead to acute lower respiratory infections in children under five years old. Acute respiratory infections, in particular pneumonia, continue to be the leading infectious cause of death in children worldwide, accounting for 16% of all deaths of children under five years old in 2015, or 920 000 deaths. This is almost exclusively a problem of children in developing countries.

Some countries are reporting a rising trend of "wheezing".

- Heavy use of coal and biomass fuels, the most polluting fuels, is linked to respiratory and other effects on children.
- Suspended pollutants may carry infectious agents into the lungs and also predispose to infection: other particles may carry chemicals that predispose to lesions and infection.
- Not only particles are noxious, but also carbon monoxide and other toxic gases released as products of combustion (the complete explanation is given in the Respiratory Diseases module).
- Second-hand tobacco smoke is a major concern.

References:


Photo:
• © WHO/Anna Kari
Children may be affected by ambient air pollution beginning from exposures in the womb, where maternal exposures are linked to preterm birth, low birth weight and infant mortality. They may also experience increased exposures relative to adults due to greater time spent outdoors. Ambient air pollution triggers asthma and can lead to reduced lung function and growth. Air pollution is also a suspected neurotoxin, causing children living in highly polluted areas to experience cognitive defects.

Significant urban sources of ambient air pollution include vehicle emissions, fossil fuel energy production, residential heating and cooking and waste incineration. In rural areas, sources include agrochemicals, burning agricultural waste, deforestation, charcoal production, biomass burning, domestic heating, cooking and lighting, forest fires and dust storms.

PM$_{2.5}$ and PM$_{10}$ are indicators for air pollution exposure. Exposure to these mixtures of soot, heavy metals, nitrates, sulphates, black carbon and dust particles means that these items may enter the lungs and cardiovascular system. This map shows annual average concentrations of ambient (outdoor) fine particulate matter (PM$_{2.5}$) in µg/m$^3$.

Strategies that reduce urban air pollution include investing in clean and efficient household energy, adopting renewable energy sources and low emissions energy production, and improving public transit as well as developing pedestrian and cycle networks. Burning agricultural waste and use of agro-chemicals should be avoided near residential areas, and reducing deforestation, agro-burning and charcoal production will help in rural areas.

References:
- WHO (2016). Ambient air pollution: A global assessment of exposure and burden of disease

Map:
Vector-borne disease

Major demographic, environmental and societal changes in the last decade have contributed to the re-emergence of vector-borne diseases (VBDs), including:

- Malaria
- Schistosomiasis
- Japanese encephalitis
- Dengue
- Trypanosomiasis
- Other vector-borne diseases

Environmental issues allow vectors to breed

Notes:
- Highlight vector-borne diseases prevalent in your region.

Major global demographic, environmental and societal changes occurring in the last decade have contributed to the re-emergence of vector-borne and other diseases, many of which have an important impact on children's health and development. Vectors thrive in specific environments, but with proper management, they can be reduced and disease prevented.

A considerable proportion of the disease burden for four key vector-borne diseases: malaria, schistosomiasis, Japanese encephalitis and dengue haemorrhagic fever falls on children under five years of age.

Malaria is caused by a protozoan (plasmodium) and transmitted by the bite of an infected female mosquito (*Anopheles*). Malaria is preventable and treatable. In 2016, malaria caused an estimated 445,000 deaths, mostly among African children. Severe complications and death may occur if not diagnosed and treated promptly and properly with effective medicines.

Schistosomiasis or "Bilharzia" is caused by flukes (Trematodes) released by snails in fresh water, and which penetrate the skin of children. The disease is endemic in 52 countries. It is estimated that at least 91.4% of those requiring treatment for schistosomiasis live in Africa. Children are exposed through swimming and lack of personal hygiene. Liver and bladder damage may result in premature death.

Japanese encephalitis is caused by a Flavivirus transmitted by mosquitoes (*Culex*), that breed particularly in flooded rice fields. Outbreaks occur mainly in Asia and south-east Asia, including eastern parts of Russia and also some of Australia (see map in references for detail). Estimates show nearly 68,000 clinical cases globally each year, with up to 20,400 deaths. It primarily affects children and has up to a 30% fatality rate in cases with disease symptoms. 20% to 30% of survivors live with permanent neurological damage.

Dengue can be caused by four different dengue viruses transmitted by infected female mosquitoes (*Aedes*). It occurs mainly in urban areas. In children it may develop into dengue haemorrhagic fever or shock, which have high mortality rates. An estimated 500,000 people with severe dengue require hospitalization each year, and about 2.5% of those affected die.
Trypanosomiasis is a vector-borne parasitic disease. *Trypanosoma*, the parasites concerned, are protozoa transmitted to humans by tsetse flies in the case of Human African Trypanosomiasis. Tsetse flies live in Africa, and they are found in vegetation by rivers and lakes, gallery-forests and vast stretches of wooded savannah. Another human form of trypanosomiasis (Human American Trypanosomiasis) occurs in the Americas and is known as Chagas disease.

Lyme disease is an infectious disease caused by a spirochete (*Borrelia burgdorferi*), which is transmitted chiefly by ticks (*Ixodidae*). It is a disease with early and late cutaneous manifestations plus involvement of the nervous system, heart, eye, and joints in variable combinations.

References:

Photo:
- WHO/Yoshi Shimizu. © WHO. A woman breastfeeds her baby under a mosquito net, in South Tarawa, Kiribati.
Malaria is a leading cause of child mortality. In 2017, malaria killed an estimated 263 000 children under five years of age. The highest rates of death and disease burden from malaria occur in the WHO African Region, which carries 90% of disease cases and 91% of all malarial deaths.

Globally, malaria mortality rates in children under five years of age dropped by 35% between 2010 and 2015. This success illustrates that environments can be modified such that malaria-carrying mosquitoes and reduced. Continued efforts are needed to further reduce malaria in children.

Two forms of vector control are recommended by WHO; insecticide-treated mosquito nets (ITNs) and indoor residual spraying (IRS).

Pyrethroids are currently the only class of insecticide recommended for use with ITNs which puts this form of vector control at a high risk for mosquito resistance. At this point, there has only rarely been an association between resistance and efficacy of long-lasting insecticidal nets (LLINs). However, a rotational approach to using different classes of insecticides is recommended to prevent further resistance.

IRS insecticide formulations are recommended to contain only one insecticide belonging to one of four classes: pyrethroids, carbamates, organophosphates, or organochlorines.

WHO’s strategy for malarial prevention is based on 3 key concepts:

1. Ensuring universal access to malaria prevention, diagnosis and treatment.
2. Accelerating efforts towards elimination and attainment of malaria-free status
3. Transforming malaria surveillance into a core intervention
References:


Photo:

- WHO/Yoshi Shimizu. © WHO. Children sitting next to the mosquito net.
WHO estimates that 24,000 children died in 2016 as a result of unintentional poisoning.

Some adverse effects on health and development of unknown etiology are being attributed to chemicals – for example to some “new” pollutants, or poorly-tested chemicals.

There are rising trends of adverse effects linked to chemicals (see module: “Children and chemicals”). For example, chemicals with endocrine-disrupting properties are a cause of global concern.

There are also “unexplained” paediatric diseases that may be linked to chemicals. For example, sudden infant death is related to tobacco use by the mother or in the home of the newborn.

List the main chemicals of concern (and why there is concern) in your country. For more information see the corresponding modules on the chemicals mentioned.

Some examples are listed below:

- **Lead**: a major development toxicant, worldwide
- **Mercury**: distribution ubiquitous, may affect the fetus and child
- **Pesticides**: their unsafe use creates important public health and environmental problems
- **POPs** (Persistent Organic Pollutants): are they linked to reproductive dysfunction and cancer?
- **Nitrates**: risk of methaemoglobinaemia in newborns
- **Fluorides**: risk of dental and/or osteoskeletal fluorosis in some countries
- **Arsenic**: serious problem of contamination of drinking-water in Bangladesh, India, and a few other countries
- **Mycotoxins**: these moulds are an endemic problem in some African countries
- **Other chemicals**

**References:**

Notes:
Unintentional injuries account for 328,000 deaths in children under five years of age every year worldwide. Include local data and priority issues for your region.

Those who survive injury may suffer life-long disability.

The next slide goes into more detail. For more information, see the module on Injuries.

References:
Injuries are usually classified on the basis of intentionality. The word "accident" should not be used, as it carries the notion of inevitability – whereas, in effect, accidents are 100% preventable.

- Road traffic injuries, poisoning, falls, fire and burn injuries and drowning are unintentional in children in most cases.

- Homicides, sexual assault, neglect and abandonment, and maltreatment are intentional, as are suicide and collective violence (war).

- Evidence suggests that small children are more vulnerable to injuries such as poisoning, drowning, burns and maltreatment by caregivers. Adolescents are at higher risk of road traffic injuries, interpersonal violence and sports injuries.

- Injuries tend to be more prevalent in boys. The general rates of injuries due to burns and car accidents tend to be higher in boys. There are some exceptions such as injuries related to horse-riding in Australia and the United Kingdom and in girls working as cooks and cleaners.

- Poor children live in the most unsafe and unhealthy environments – and are particularly vulnerable as they have fewer chances of overcoming the risks and fewer advantages, such as access to education and health services.

- Rates and patterns of injury vary from country to country.

References:

Photo:
- © WHO/Chau Doan
Notes: Mention child labour only if relevant; include relevant local data, if available; state whether the country has ratified the ILO/IPEC conventions.

Some of the worst forms of environmental exposure in children occur in the context of child labour.

Strides are being made as the number of children involved in child labour fell by 94 million between 2000 and 2016. Since 2012, however, progress has slowed with the reduction in child labour decreasing to one third of its previous rate of decline.

References:

Photo:
- © WHO/Joao Soares Gusmao
Emerging issues

New or “re-emerging” potential threats to children’s health and development

- Global climate change
- E-waste
- Endocrine disruption
- Obesity
- Some radiation
- Others...

Emerging issues are new or "re-emerging" potential threats to children's health and development.

For some of the following, the effects have not been fully demonstrated, and some are still being investigated, but there is growing evidence about potential effects on children.

- **Global climate change** – global warming and its effects on vectors and on vector-borne diseases, which are a major "killer" of children.
- **Ozone depletion** – and overexposure to ultraviolet radiation, to which children are very susceptible.
- **Some types of radiation** – give cause for great concern and are currently the subject of studies.
- **Contamination by persistent organic pollutants (POPs)** – effects have been demonstrated in wildlife; acute toxic effects have been observed in humans; effects of low-level exposure are currently under study.
- **Endocrine disruption** – due to anthropogenic and natural compounds with endocrine effects which have been demonstrated in animals, and are suspected in humans.
- **Obesity** – related to environments that predispose to sedentarism and unhealthy diets in children.
- **Others** – ongoing changes to society mean that unanticipated environmental issues are likely to arise.

**References:**

**Photos:**
- © WHO/Sergey Volkov
A review of the global environmental threats to children’s health, one by one, helps to provide an understanding of why many paediatric illnesses are linked to pollutants in the environment, which may cause, trigger or exacerbate diseases.

Let us consider some examples that illustrate the fact that environmental risks do build up. Exposures do not occur in isolation but rather combine in different settings and under various circumstances.

In 2012, modifiable environmental factors caused:
• 22% of the global disease burden in DALYs
• 25% of the global disease burden in DALYs in children under five
• 23% of global deaths, and
• 26% of deaths in children under five.

Many paediatric diseases are linked in one way or another to circumstances where several threats are combined:
• Heavy traffic, where exposure to noise, heat, particulate materials and the risk of injury coexist
• Toxic waste sites, where children are exposed to toxic products, discarded contaminated food, vectors of disease, dioxins and toxic fumes; where waste is burned; plus a social environment that may predispose to injury and violence
• Industrial effluents
• Contaminants in water, food and objects
• Pollutants where children live, grow, play and work.

References:

Photo:
© WHO/Anna Kari
Challenges to children’s health and development

The double — or triple — burden of disease

However, developing countries are currently facing both the global risk factors (persistent problems) and the new epidemics, or emerging issues identified in the more industrialized countries.

Hence, developing countries are facing a double burden of disease: on top of the "unfinished agenda" (infectious diseases that have not yet been conquered), they are also being affected by emerging epidemics of noncommunicable diseases that are characteristic of the more industrialized countries.

Children are affected by both types of challenges, as signified by the arrows.

This burden is triple if we add malnutrition or poverty as another element.

References:
This slide compares the main "global" concerns with those reported in industrialized countries.

Children in all countries are exposed to environmental risks factors.

However, the risks vary from country to country and even within the country, and in different communities (e.g. urban and rural).

It is useful to compare the concerns of developing and industrialized countries:
- Key global risk factors – as determined by WHO – that have already been described, the very "basic" risk factors that result in high morbidity and mortality; and
- Specific concerns of both the scientific community and the public in the more industrialized countries – that refer more to outcomes that may be attributable to environmental risk factors. This is a list of diseases and developmental effects observed in children that are linked to environmental causes – even if in many instances more research is needed to demonstrate scientific proof of the links.

References:
Having reviewed hazards around the world, we will discuss future directions in building healthy environments for children.
Children represent the future of our societies

Key players must prevent harmful exposures and protect children’s health.

As children represent the future of our societies and have the right to healthier, cleaner and safer environments, different sectors are called to join their efforts and work towards the protection of children.

Notes:
• Key message: Avoid being overwhelmed by the problems and "paralyzed" by their magnitude.
• Describe the roles that the different sectors are called to play.
The Sustainable Development Goal era began in 2015 with countries committing to a global development agenda for the next fifteen years. Many of the SDGs relate to children’s environmental health, as action is required from multiple sectors, but the goal that targets health specifically is SDG 3: Ensure healthy lives and promote well-being for all at all ages.

Each SDG contains targets to achieve the overall goal, and Target 3.2 focuses directly on child mortality, as shown on the slide. Indicators for monitoring progress Target 3.2 include:

- Indicator 3.2.1: Under-five mortality rate
- Indicator 3.2.2: Neonatal mortality rate

Other targets included in SDG relating to children’s environmental health as discussed in this module are listed here:

- **Target 3.3**: By 2030, end the epidemics of AIDS, tuberculosis, malaria and neglected tropical diseases and combat hepatitis, water-borne diseases and other communicable diseases
- **Target 3.6**: By 2020, halve the number of global deaths and injuries from road traffic accidents
- **Target 3.9**: By 2030, substantially reduce the number of deaths and illnesses from hazardous chemicals and air, water and soil pollution and contamination
- **Target 3.A**: Strengthen the implementation of the World Health Organization Framework Convention on Tobacco Control in all countries, as appropriate

Attention to children’s environmental health is crucial in achieving these goals, and health care professionals are in the best position to champion the cause!

**Reference:**

Figure:
• © United Nations
Over the past 30 years, the importance of protecting children’s health and their environments has been recognized internationally.

This is a long list, with the international agreements and recommendations that refer to the need to protect children from environmental threats.

Are these being put into effect in the different countries?

Notes: Select and mention only the more relevant international agreements/declarations. Consult the relevant web sites if you wish to expand on any of the declarations/conventions.

<table>
<thead>
<tr>
<th>Year</th>
<th>Declaration/Initiative</th>
</tr>
</thead>
<tbody>
<tr>
<td>2002</td>
<td>United Nations General Assembly Special Session on Children [<a href="http://www.unicef.org/specialsession/">www.unicef.org/specialsession/</a>]</td>
</tr>
<tr>
<td></td>
<td>The Bangkok Statement (WHO International Conference) [<a href="http://apps.who.int/iris/bitstream/10665/67366/1/WHO_SDE_PHE_02.02.pdf">http://apps.who.int/iris/bitstream/10665/67366/1/WHO_SDE_PHE_02.02.pdf</a>]</td>
</tr>
<tr>
<td></td>
<td>World Summit on Sustainable Development [<a href="https://sustainabledevelopment.un.org/milestones/wssd">https://sustainabledevelopment.un.org/milestones/wssd</a>]</td>
</tr>
<tr>
<td></td>
<td>Announcement of the Healthy Environments for Children Alliance [<a href="http://www.who.int/heca/en">http://www.who.int/heca/en</a>]</td>
</tr>
</tbody>
</table>

2005 | Healthy Environments, Healthy Children: Commitment for Action [http://www.who.int/iris/bitstream/10665/67371/1/WHO_SDE_PHE_05.01.pdf] |


2008 | World Health Assembly resolution: Climate change and health |

2009 | Minamata Convention on Mercury |

2011 | Global Alliance to Eliminate Lead Paint |

2011 | World Health Assembly resolution: Drinking-water, sanitation and health |

2015 | UN Sustainable Development Goals |

2015 | Global Strategy for Women’s, Children’s and Adolescents’ Health 2016-2030 |

2015 | World Health Assembly resolution: Health and the environment: addressing the health impact of air pollution |

2016 | World Health Assembly resolution: The role of the health sector in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond |
<table>
<thead>
<tr>
<th>Year</th>
<th>Description</th>
<th>URL</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>World Health Assembly resolution on climate change and health</td>
<td><a href="http://www.who.int/globalchange/climate/EB_CChealth_resolution/en/">http://www.who.int/globalchange/climate/EB_CChealth_resolution/en/</a></td>
</tr>
<tr>
<td></td>
<td>World Health Assembly resolution: Drinking-water, sanitation and health</td>
<td><a href="http://apps.who.int/gb/or/e/e_wha64r1.html">http://apps.who.int/gb/or/e/e_wha64r1.html</a></td>
</tr>
</tbody>
</table>
Global Strategy for Women's, Children's and Adolescents' Health, 2016-2030

World Health Assembly resolution: Health and the environment: addressing the health impact of air pollution

2016

World Health Assembly resolution The role of the health sector in the Strategic Approach to International Chemicals Management towards the 2020 goal and beyond
To reach these objectives, WHO is undertaking a number of technical activities, in partnership with different organizations, such as their network of WHO collaborating centers, INCHES (The International Network for Children’s Health, Environment and Safety), ISDE (International Society of Doctors for the Environment) and others.

One of the key tools available are the "train the trainers" training materials for health care providers. The Training Package for the Health Sector is a tool to build the capacity of the health sector to deal with the adverse effects of environmental factors.

Creating healthier, cleaner and safer environments for children will contribute to a more secure future for the world.

Notes:
• Mention the organizations involved in the event, sponsors and partners.
• End with the motto of World Health Day: "Shaping the future of life" or any other positive phrase.

References:

Photo:
• © WHO/Yoshi Shimizu
“We are guilty of many errors and faults; but our worst crime is abandoning the children, neglecting the fountain of life.

Many of the things we need can wait. The child cannot.

Right now is the time his bones are being formed, his blood is being made, and his senses are being developed.

To him, we cannot answer 'Tomorrow'. His name is 'Today'."

Gabriela Mistral (1889—1957)
Nobel Prize-winning poet from Chile
Acknowledgements for current version

Reviewers:
Initial edits by Kathy Prout (WHO)
Reviewers: Fiona Goldizen (Australia), Irena Buka (Canada)
Final review, technical and copy-editing: Gloria Chen (WHO Consultant)
WHO CEH training project coordinator: Marie-Noëll Brund-Drissé (WHO)
WHO is grateful to the ISDE for organizing the working meeting of the Training Package in 2016.
This publication was made possible with financial support from the Federal Ministry for the Environment, Nature Conservation, Building and Nuclear Safety, Germany.
Update: January 2019
Design by L’IV Com Sàrl, Villars-sous-Yens, Switzerland.
Acknowledgements from past versions

WHO is grateful to the US EPA Office of Children's Health Protection for financial support that made this project possible and for some of the data, graphics and test used in preparing these materials for a broad audience.

First draft prepared by Jenny Pronczuk (WHO)

With the advice of the Working Group Members on the Training Package for the Health Sector:
Cristina Alonso (Uruguay); Yona Amitai (Israel); Stephan Boese-O’Reilly (Germany); Stephanie Borgo (ISDE, Italy); Irena Buka (Canada); Ernesto Burgio (ISDE, Italy); Lilian Coria (Argentina); Ruth A. Etzel (WHO); Ligia Fruchtengarten (Brazil); Mila Labonde (Uruguay); Leda Nemer (WHO/EURO); Jenny Pronczuk (WHO); Roberto Romizzi (ISDE, Italy); Christian Schweizer (WHO/EURO); Katherine M. Shea (USA).

Reviewers: Giorgio Tamburlini (Italy); Irma Makalinao (Philippines); Ligia Fruchtengarten (Brazil); Yona Amitai (Israel); Ruth A. Etzel (USA), Daniel Beltrame (Argentina).

Update: November 2014

WHO Project coordination: Jenny Pronczuk
Medical Consultant: Katherine M. Shea
Technical Assistance: Marie-Noël Bruné
Edited by Kathy Prout
Disclaimer

© World Health Organization 2019. Some rights reserved. This work is available under the Creative Commons Attribution-NonCommercial-ShareAlike 3.0 IGO licence (CC BY-NC-SA 3.0 IGO; https://creativecommons.org/licenses/by-nc-sa/3.0/igo).

Under the terms of the CC BY-NC-SA 3.0 IGO licence, you may copy, redistribute and adapt the work for non-commercial purposes, provided the work is appropriately cited, as indicated below. In any use of this work, there should be no suggestion that WHO endorses any specific organization, products or services. Any modification or adaptation of the work shall be marked in a reasonable manner with a reference to the original work. Any violation relating to disputes arising under the licence shall be conducted in accordance with the mediation rules of the World Intellectual Property Organization.

Third-party materials. If you wish to reuse material from this work that is attributed to a third party, such as tables, figures or images, it is your responsibility to determine whether permission is needed for that reuse and to obtain permission from the copyright holder. The risk of claims resulting from infringement of any third-party material contained in the work rests solely with the user.

This training module was developed by the World Health Organization (WHO) and is intended to be used for training purposes only. The opinions, conclusions, and statistics expressed in this training module do not necessarily represent the official position of the World Health Organization.

The contents of this training module are based upon references available in the published literature as of the last stated update date. Users are encouraged to search standard medical databases for updates in the science for issues of particular interest or sensitivity in their region and/or areas of specific concern.

The designations employed and the presentation of the material in this training module do not imply the expression of any opinion whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its boundaries. Dotted lines on maps represent approximate border lines for which there may not yet be full agreement.

The mention of specific companies or of certain manufacturers’ products does not imply that they are endorsed or recommended by the World Health Organization in preference to others of a similar nature that are not mentioned. Errors and omissions excepted; the names of proprietary products are distinguished by initial capital letters.

The authors alone are responsible for the views expressed in this training package and they do not necessarily represent the decisions, policy or views of the World Health Organization.

Suggested citation: