This brochure summarizes the process, outcomes and key findings of the children’s environmental health indicator projects implemented as part of the global initiative on Children’s Environmental Health Indicators. Discussions took place at the Children’s Environmental Health Indicators (CEHI) workshop “Children’s Environmental Health Indicators: Five Years After the Global Commitment at the World Summit on Sustainable Development” in Tunis in 2003. The participants of this workshop included technical experts, representatives from governments, public health officers, medical doctors and representatives of partner agencies. Challenges faced and the lessons learned from the experience of collecting indicators were discussed. 10 key ideas to move forward were agreed upon.

The global initiative on Children’s Environmental Health Indicators was launched at the World Summit on Sustainable Development in 2002 with partners from five governments, three non-governmental organizations and five intergovernmental organizations with support from the Office of Children’s Health Protection at the United States Environmental Protection Agency.
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Summary –

Children’s Environmental Health Indicators (CEHI): Presenting Regional Successes Learning for the Future

Children’s environmental health indicators are aimed at improving the assessment of children’s environmental health, monitoring the effects of interventions to improve children’s health in relation to the environment and reporting on the state of children’s environmental health.

The objectives of the initiative are to:

- Develop and promote use of children’s environmental health indicators;
- Improve assessment of children’s environmental health and monitor the success or failure of interventions;
- Provide data to inform policymakers and to allow measurement of the effectiveness of policies and programmes to improve environmental conditions for children.

The World Health Organization (WHO) has been coordinating the development and implementation of this initiative with funding support from the Office of Children’s Health Protection at the United States Environmental Protection Agency (USEPA), thereby enabling pilot projects in Africa, North America, Latin America, the Caribbean and the Middle East (Box 1). The initiative builds on existing international, regional and national work on child health and environmental indicators. Several countries have chosen to collect new data as part of the implementation of the CEHI initiative (e.g. Tunisia, Oman and Cameroon). In addition, several countries are contributing to the objectives of the initiative independently through the development and reporting of children’s environmental health with their own sources of funding, while sharing results and experiences along the way (e.g. The Commission for Environmental Cooperation (CEC) of North America and the WHO European Region Environment and Health Information System (ENHIS) project).

Many countries came forward to be part of the initial phase to develop children’s environmental health indicators. Their experience proved very beneficial for other countries that joined later. It is hoped that even more countries will engage actively in future efforts.

The initiative took a flexible approach to the implementation of projects, focusing on what was feasible in the short-term while working towards a common set of indicators in the medium- and long-term where possible. Each regional or country project chose the path most suited to its specific circumstances (e.g. burden of disease, availability of resources).
In order to provide a solid basis for indicator development and collection, WHO proposed a set of core indicators at the global level, which countries adapted to suit their specific needs. Subsequently, they defined and collected indicators at the national level and integrated them at the regional level where feasible.

Throughout the CEHI initiative the aim has been to ensure equal relevance of the indicators for the health and environment sectors so that both can monitor their efforts towards realizing healthy environments for healthy children. The initiative aims to assess best practices and lessons learned among the different indicator development projects.

**Box 1. Countries and projects contributing to children’s environmental health indicator development:**

**THE AFRICAN REGION:**
- Cameroon, Kenya, Zimbabwe

**THE AMERICAS:**
- Canada, Mexico, the United States, United States-Mexico Border, Argentina

**THE EASTERN MEDITERRANEAN REGION:**
- Oman, Tunisia

**THE EUROPEAN REGION:**
- [1] Austria, Bulgaria, Czech Republic, Estonia, Finland, France, Germany, Greece, Hungary, Italy, Lithuania, Netherlands, Poland, Portugal, Romania, Slovakia, Slovenia, Spain
- [2] Sweden and the United Kingdom
- [3] Albania, Armenia, Belarus, Belgium, Croatia, Georgia, Kyrgyzstan, Malta, Serbia, the former Yugoslav Republic of Macedonia, Uzbekistan

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[1] Formal partners
[2] Volunteering partners
[3] Partners who provided data and information (case studies) input
Figure 1. Countries and projects contributing to the development of children’s environmental health indicators

Indicators provide a basis for assessing environmental risks to children’s health, prioritizing policy, and ultimately reducing environmental risks for children.

Children’s environmental health indicators are important not merely in emphasizing the links between environment and health, but in drawing attention to an often neglected issue. Special attention should be devoted to children because they are generally more vulnerable than adults to environmental hazards. They breathe more air and consume more food and water relative to their size than adults, their bodies are still developing and they have little control over their environment. The findings of the participating projects clearly demonstrate that some priority issues are relevant to children everywhere on this planet.

An assessment of all these efforts provides important information and lessons on developing and implementing children’s environmental health indicators and will help guide future efforts.
A Framework for Children’s Environmental Health Indicators

Children’s environmental health indicators measure the multiple links between exposure to environmental risks and health outcomes. The Multiple Exposures Multiple Effects (MEME) model is a conceptual model for the definition, collection and reporting of children’s environmental health indicators on the basis of the Driving forces – Pressures – State – Exposure – Effects – Actions (DPSEEA) framework (Figure 2).

Although several frameworks are available, embedding indicators for children’s health and the environment within the MEME model has several advantages. It helps to:

- Demonstrate the many links between environmental exposures, larger social contexts and health outcomes;
- Illustrate a spectrum of exposures and the many locations where they may occur. These exposures often work in concert, resulting in compounded reactions and health outcomes that may range from morbidity to mortality;
- Acknowledge that effects of environmental exposures may be modified by social, economic and demographic conditions;
- Show that interventions can be implemented either in a preventive manner – at the root of environmental degradation / at the site of exposure - or in a remedial fashion, through the treatment of negative health outcomes.

Figure 3 shows an adapted example of the MEME model applied to indoor air pollution as used in the North American project led by the CEC in 2006. As the model suggests, a number of air contaminants – individually or in combination – can produce or be associated with a number of health outcomes (Briggs, 2003). Conversely, a single health outcome may be attributable to or associated with multiple exposures to multiple substances over time.

Figure 2. Multiple Exposures - Multiple Effects (MEME)

Figure 3. The MEME model as applied to indoor air pollution
Key Findings Across the CEHI Projects

Children’s environmental health risks worldwide are as diverse as the climatic conditions, political settings, social environments, and levels of economic development they inhabit. Risks range from the long-standing and well-known issues (such as inadequate shelter, lack of clean water and clean air) to more recent emerging risks, such as exposure to chemicals, radiation, and climate change.

Key findings confirm that diarrhoeal diseases from inadequate water and sanitation and respiratory diseases from indoor and outdoor air pollutants threaten children’s health in Tunisia, the United States, Mexico and countries in Europe alike. In low income countries, pollutants in the air children breathe indoors commonly come from black carbon from the use of biomass fuels, and in other countries, exposure to second hand smoke. This broad range of identified risks is highlighted below.

- **Cameroon**: Inadequate access to water, sanitation and waste disposal were identified as the major contributing factors to the environmental burden of disease in children.

- **Kenya and Zimbabwe**: Rapid urbanization was singled out as the source of several clusters of environmental health risks ranging from inadequate infrastructure to unfavourable social environments.

- **Oman**: Respiratory diseases and physical injuries rank at the top of environmentally related threats to children's health. While expanding water access almost universally has dramatically reduced mortality and morbidity due to diarrhoeal diseases, improving water quality still remains a national priority.

- **Tunisia**: A survey of children’s environmental health issues and evaluation of existing environmental and health policies led to revised national programmes to reduce indoor air pollution and to the incorporation of child safety provisions in urban planning projects.

- **The European Region**: Respiratory diseases and physical injuries were found to be priority areas for action. Major contributing factors are smoking and obesity. Radiation and exposure to hazardous chemicals represent emerging environmental health risks.

- **North America (Canada, Mexico and the United States)**: Indicators were reported under three thematic areas: asthma and respiratory disease, effects of exposure to lead and other toxic substances, and waterborne diseases. Only one of the indicators, addressing asthma in children, was fully reported by all three countries. Although the countries were able to provide relevant information for most of the selected indicators, this clearly illustrates the challenge of obtaining comparable information on environmental health issues across sectors and national borders. Overall, these data show a rise in reported cases of childhood asthma across North America.

- **Argentina**: Identification and collection of information on children’s diseases such as asthma and diabetes was not complete while data on long standing and well known indicators (e.g. water pollution indicators and diarrhoeal diseases or malnutrition) were complete. Gaps were identified in data relating to many recent and emerging environmental threats (e.g. diseases related to chemical exposure or climate change).
Comparing Different Experiences in Implementing CEHI

One of the principal aims was to adopt a flexible approach to the selection of indicators and collection of data. In order to facilitate this exercise, a two-tiered evaluation was conducted in collaboration with the Johns Hopkins School of Advanced International Studies (SAIS) in the United States, at the project level and at the indicator level by, for example, trained interviewers, external consultants, and stakeholders. Eight evaluation criteria served as the framework for the comparison and evaluation of the different projects (Box 2).

Each project was unique and contributed to the development and improvement of the objectives of CEHI. More specifically:

- Cameroon served as an example of how an initial primary data collection effort can serve as a guide for future priority setting in the implementation of national programmes;
- Kenya developed a well-designed and highly sophisticated plan for data collection;
- Zimbabwe demonstrated its ability to collect valuable secondary data from a variety of sources at the sub-national, national and international level;
- Oman had an ambitious plan for the collection of an extensive list of indicators, demonstrating a desire to comprehensively assess children’s environmental burden of disease;
- Tunisia is taking plans further. Following primary data collection for CEHI, the plans are to set up a national monitoring system for children’s environmental health;
- The European region project served as an example to others of a well-established concerted effort and demonstrated the possibilities that can arise from successful collaboration among different actors and countries;
- The project in North America successfully respected national differences while creating a unified project among the United States, Mexico and Canada by allowing flexibility in the data reported under each indicator;
- The United States-Mexico border project demonstrated the importance of focusing on the local realities of regions and of portraying those realities in a graphic, user-friendly manner.
- Argentina established a multi-sectoral and participative workgroup and using the MEME model, produced an indicator profile on children’s environmental health (Perfil Sana). This provides a useful tool for decision-making on children’s environmental health policies.

The cross-project evaluation found several commonalities in the prioritization of health issues. The most striking one consists of the fact

Box 2. Evaluation Criteria

I. EVALUATION AT PROJECT LEVEL:
   1. Prioritization of children’s environmental health topics
   2. Data collection method
   3. Inter-sectoral collaboration and capacity building
   4. Report format.

II. EVALUATION AT INDICATOR LEVEL:
   5. Comprehensiveness of indicators
   6. Utility and practicability of the indicators
   7. Level of disaggregation (e.g. by gender, socioeconomic status, provision of time-trend)
   8. Policy relevance (e.g. is the indicator child-specific? or is the indicator relevant for devising policies?).
that three indicator topics – water and sanitation, indoor/outdoor air pollution and respiratory illness – were chosen by almost all efforts as priorities. Unintentional physical injuries and exposure to chemical contaminants are other recurrent issues across all regions. At the International Children’s Environmental Health Indicators (CEHI) workshop in Hammamet, Tunisia, in 2008, it was established that the three topics identified above could serve as the basis for the development of a set of core indicators that all participating members could use and append with complementary indicators suited specifically to their local needs.

Box 3. The Eastern Mediterranean Region – The Tunisian Experience

The Tunisian pilot project prioritized environmental health issues according to the results of a preliminary survey to identify focus areas.

The survey has three modules: (i) roster of people and health, (ii) housing quality and water, hygiene, and (iii) sanitation. This assessment tool did not cover environmental health exclusively, and collected information on a variety of biological, hygienic and behavioural determinants of human, specifically child health.

Primary data populated the 46 indicators selected, all newly collected as part of the CEHI pilot project through the implementation of household surveys. The Tunisian example demonstrates the value of using external (e.g. WHO’s list of available indicators or the MEME model) and local resources efficiently, while defining national priorities.

The final report presents - in a graphic and user-friendly manner - all of the data collected and provides a detailed discussion of both the lessons learned and the ways in which Tunisia’s initial activities can be carried forward in the future.

Box 4. The Americas - The experience of the Council of the North American Commission for Environmental Cooperation (CEC)

The North American project prioritized environmental health issues according to the recommendations adopted by the CEC of North America in 2002 in recognition of the shared environmental health threats to children in the three countries: (i) exposure to lead and toxic substances, (ii) respiratory illnesses, and (iii) waterborne diseases.

Suitable indicators were identified according to data availability, scientific soundness and credibility, and indicator applicability and clarity. Country reports were prepared by each country, providing data and contextual information to populate the 13 indicators selected, drawing on national and local datasets.

While not all countries presented data for all indicators, missing data were replaced by alternative, yet related measures. Thus the project acknowledged existing data gaps as well as national differences among the participating countries.

The final report, based on the country reports, provides extensive information and illustrations of data sources and analysis. A discussion of lessons learned regarding both individual indicators and the project as a whole, including data needs and opportunities for enhanced cooperation, is also included.


Overall, the biggest challenge is integrating the indicators into existing surveys and reporting tools both at national and international levels.

The process of implementing CEHI in countries will need the participation of multilateral agencies such as WHO, the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), the United Nations Children Fund (UNICEF), the Organisation for Economic Cooperation and Development (OECD) and the World Bank as well as national governments, nongovernmental organizations and other stakeholders.

Opportunities include:

- **Incorporating children’s environmental health indicators into existing national data collection mechanisms such as:**
  - censuses
  - clinical data
  - data collected and monitored at community level in cooperation with schools
  - routinely collected environmental data
  - routinely collected paediatric data.

- **Incorporating children’s environmental health questions and issues into international surveys and data collection and reporting mechanisms such as:**
  - Demographic and Health Surveys (DHS): Implemented by Macro International Inc. in 75 countries, the DHS collects nationally representative population-based surveys with large sample sizes (usually between 5000 and 30 000 households).
  - GEO Data Portal: This portal is the authoritative source for data sets used by UNEP and its partners in the Global Environment Outlook (GEO) report and other integrated environment assessments. Its online database holds more
than 450 different variables, as national, subregional, regional and global statistics or as geospatial data sets (maps), covering themes like freshwater, population, forests, emissions, climate, disasters, health and GDP.

- Living Standards Measurement Study (LSMS): Implemented by the World Bank to help policy makers identify how policies could be designed and improved to positively affect outcomes in health, education, economic activities, housing and utilities, etc.

- Joint Monitoring Programme for Water Supply and Sanitation (JMP): Implemented by WHO and UNICEF. The overall aim of the JMP is to report globally on the status of the water supply and sanitation sector, and to support countries in improving their monitoring performance to enable better planning and management at the country level.

- Millennium Development Goals (MDGs): The United Nations site for the MDG Indicators presents the official data, definitions, methodologies and sources for more than 60 indicators to measure progress towards the MDGs. The data and analyses are the product of the work of the Inter-agency and Expert Group (IAEG) on MDG Indicators, coordinated by the United Nations Statistics Division.

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**Box 5. Children’s Environment and Health Action Plan for Europe (CEHAPE) - Europe’s action programme**

The Fourth Ministerial Conference on Environment and Health (2004) adopted CEHAPE, an international instrument negotiated with member states to develop and manage environmental health indicators. The project, established by the WHO Regional Office for Europe, set four regional priority goals identifying key themes for action on children's health in relation to environmental factors: gastrointestinal health related to safe water and adequate sanitation; healthy and safe transport, mobility, and home environment to reduce injuries and enhance physical activity; respiratory health and clean air; and health through an environment free of hazardous chemical, physical, and biological factors.

The declaration from the Ministerial Conference reaffirmed that environmental health indicator systems are essential for policy making relevant to children’s environmental health. With this in mind, an international project - Implementing Environment and Health Information System in Europe (ENHIS), co-funded by the European Commission (EC) and coordinated by the WHO Regional Office for Europe - developed a prototype of an evidence-based system to support children’s health and environmental policies in the European Region.

The interdependence between science and policymaking is probably best exemplified by the interaction between CEHAPE and ENHIS. While indicators serve as the basis and starting point for CEHAPE, the very same indicators are also used to benchmark and evaluate the resulting policy actions through ENHIS.

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8 European Environment and Health Information System. More information: www.enhis.org
Multiple Indicator Cluster Surveys (MICS): The MICS programme developed by UNICEF assists countries in filling data gaps for monitoring the situation of children and women through statistically sound, internationally comparable estimates of socioeconomic and health indicators. The household survey programme is the largest source of statistical information on children.

World Health Statistics: Implemented by WHO, the World Health Statistics contains WHO’s annual compilation of data from its 193 Member States, and includes, in the 2009 report, a summary of progress towards the health-related MDGs and targets.

This integration of CEHI into existing international and national data collection and reporting mechanisms could translate into a valuable tool. Although some of the information readily collected, reported and available through international and national surveys or databases could be used to monitor and evaluate children’s environmental health, pilot studies identified large data gaps in information across countries and regions.

Good quality information is available on indicators related to water quality for example but gaps exist in indicators related to pesticides, child labour, nutrition, and unintentional injuries.

Box 6. Argentina

On the basis of the preparation of the Indicator Profile for Argentina and the assessment of children’s environmental health and other on-going efforts in Argentina, the development and creation of a Working Group on Children Environmental Health at the Argentinean Society of Paediatrics and the promotion of Children Environmental Health Units (Unidades Pediatricas Ambientales), were launched at different levels in the country with strong involvement of paediatricians. The information and evidence contained in the Indicator Profile has helped promote an “Atlas of Children in Argentina” under the National Ombudsman carried out with support from UNDP, UNICEF, the International Labour Organization (ILO) and the Pan-American Health Organization (PAHO).
In April 2008, a group of international technical experts and representatives of governments and partner agencies committed to children’s environmental health indicators convened in Hammamet, Tunisia to assess the progress made with the project and to discuss future directions. On the basis of discussions about the challenges faced and the lessons learned from the experience of collecting indicators, participants developed 10 key ideas to ensure the sustainability of the initiative:

1. **Engage in a Targeted Advocacy and Communication Strategy**
   The need to draw attention to children’s environmental health issues and more specifically towards data collection and reporting, to involve all stakeholders, including children themselves, as well as recognize, replicate and disseminate successful experiences was identified. There is a need for a few simple key messages – targeted to specific audiences such as policy-makers, public health officials, healthcare providers – detailing the importance of indicator development. Educational practices and methodologies which build knowledge and understanding while encouraging participation of children can play a role in decreasing the severity of impacts from environmental health impacts.

2. **Incorporate Children’s Environmental Health into Climate Change Issues**
   In order to increase the visibility, relevance and usefulness of children’s environmental health, it is important to incorporate the initiative into the climate change agenda. Children are particularly vulnerable, and are likely to suffer disproportionately from both direct and indirect adverse health effects of climate change. Recent estimates suggest that almost 90% of the global burden of disease from climate change is borne by children (WHO 2007c). There is a need to enhance the understanding of current and potential impacts of climate-related risks, of the degree of population vulnerability, of characteristics of vulnerable groups (such as children), of the type of surveillance and alert and emergency management systems, of the most useful indicators for monitoring and evaluation, and of the criteria for action.

3. **Highlight Economic Benefits of Addressing Children’s Environmental Health**
   The economic benefits of preventing environment-related diseases are many and must be quantified and clearly communicated to policy-makers. This work has begun at the OECD and should be continued. Existing data mainly reflect health outcomes and remedial actions, but rarely expose the responsible environmental risk factors. However, knowledge about these risk factors is essential for countries to strengthen preventive programmes in addition to responsive medical care. This will help to avert diseases, save children’s lives, improve families’ livelihoods and reduce the burden on a nation’s health care system. Children’s environmental health indicators can be used to identify specific cost-effective interventions targeted towards the improvement of children’s environmental health.

4. **Ensure Greater Policy Relevance of Indicators**
   Children’s environmental health indicators provide a way to clarify the linkages between the environment and health. Indicators may reflect the effectiveness of past and current policies, and may suggest needs and opportunities for new interventions to improve children’s health. Policy relevance is a key consideration in selecting and designing indicators.

5. **Create a Core Set of Indicators to Facilitate Comparability**
   The difference in the approaches taken by the pilot projects makes comparisons very difficult. It was suggested that a limited number of indicators (i.e. a core set) applicable to all regions be agreed upon through a collaborative expert opinion approach. Subsequently, each region could develop complementary indicators specific to its own circumstances, taking into account traditional as well as emerging threats. In this manner, cross-country/regional comparisons would be facilitated, as would tailor-made assessments of the local burden of disease related to environmental health.
INTEGRATE CHILDREN’S ENVIRONMENTAL HEALTH INDICATORS INTO NATIONAL HEALTH INFORMATION SYSTEMS

In order to ensure continuity of this work, children’s environmental health indicators need to be integrated into other data collecting and reporting mechanisms in a harmonized manner that allows a regional and global comparability and monitoring. The WHO/Health Metrics Network Framework and standards for country health information systems is a potentially useful framework for such integration. This would ensure that child health indicators can be collected sustainably over time, increase their prominence and avoid duplication. It would be wise to reduce the number of data items to be collected and focus on a few key ones in order to minimize the burden on other data collection systems and facilitate inter-country comparisons. Incorporating specific questions or even specifically developed environmental health components into nationally implemented surveys (e.g. DHS, MICS, LSMS), constitute potential areas within which children’s environmental health indicators could be integrated.

DISAGGREGATE DATA AND PROVIDE STATISTICAL INFORMATION

In order to increase the policy relevance of indicators, they should be highly representative and appealing, and provide a comprehensive overview of the particular situation in a country/region. Moreover, consistent geographical, gender, and age disaggregation would be useful, as well as the reporting of confidence intervals where applicable.

CREATE AN INTERNET PORTAL AS A REFERENCE FOR PARTICIPATING COUNTRIES

Data collection and reporting efforts would be facilitated by the creation of a dedicated web portal hosted by WHO. Participants could contribute immediately, subject to agreeing technical issues, by uploading their data on a regular basis and draw on the portal by being able to consult legislation, surveys, best practices, etc. A web log or a “Q&A” section on such a website would also be useful for national planners to seek guidance and share experiences, problems, and resources.

STRENGTHEN INCENTIVES TO REPORT

In order to ensure sustainability of the development and use of indicators for children’s environmental health, it is recommended to strengthen harmonized reporting requirements, thus reducing the reporting burden.

CONTINUE TO PROVIDE TECHNICAL ASSISTANCE THROUGH THE CEHI NETWORK

One common request was the provision of technical assistance to countries and regions that wish to develop indicators. Although sustainability is key and data collection tools/mechanisms must be rendered self-sustaining, continuous technical assistance – particularly in the early phases of indicator development – is crucial. Countries have requested ongoing technical input and support. More assistance could be provided to countries for data collection and reporting, presenting, analysing and disseminating data through the establishment of an international CEHI technical network involving stakeholders at every level (e.g. national, regional and international). Funding remains an issue for several projects and regions and hinders scale-up efforts.

These 10 key ideas provide a sense of how far the CEHI initiative has come and how much potential it has to grow. The ideas highlight the need for greater coordination and harmonization, but at the same time call for specific, tailor-made approaches to the collection of data on children’s environmental health and financial support.

Translating evidence into policy

Producing a list of relevant indicators and populating them with data is a necessary step towards the ultimate goal of improving children’s health. However, future actions must strive to close the gap between theory and practice.

The CEHI initiative explicitly addresses the need to improve knowledge and data collection, and invites participation from private and public partners. Policy interventions in the area of children’s environmental health can range from school education to waste collection improvement, emission controls and improved stoves, food regulation and flood control, housing improvements and disease eradication programmes. Without a thorough understanding of the linkages between multiple exposures and multiple effects, it is not possible to determine the costs, benefits, and effectiveness of potential interventions (Box 5 & 6).
Conclusion

Establishing and using children’s environmental health indicators that express environment and health linkages in a meaningful way provides countries with the foundation needed to better understand how children’s environments and their health are related. In addition it provides the baseline information needed to reassess policies and to move towards preventing childhood death and disease through healthy environments.

What is now required includes:

- the creation of a sustainable clearing house for children’s environmental health indicators;
- the institutionalization of the harmonized collection and reporting efforts undertaken in the framework of the pilot projects; and
- the effective translation of the vast and comprehensive findings into policy recommendations tailored to specific target populations and areas.

This involves the development of models and application of other statistical tools to enable linkages within complex systems to be understood. The CEHI initiative offers for the first time a systematic approach to supply the data necessary for such a task.
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We wish to particularly highlight the participation and contributions of partners and individuals in the different phases of the Global Initiative:

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Canada  
Italy  
Mexico  
South Africa  
United States of America

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Commission for Environmental Cooperation of North America  
Organisation for Economic Co-operation and Development  
United Nations Children’s Fund  
United Nations Environment Programme  
World Health Organization

**Nongovernmental Organizations:**
International Network on Children’s Health, Environment and Safety (INCHES)  
International Society of Doctors for the Environment (ISDE)  
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National and Regional Information on Children’s Environmental Health Indicator Development

THE AFRICAN REGION
WHO African Region: www.afro.who.int/des/phe/index.html

THE AMERICAS
Canada: Institute of Child Health (in collaboration with AAAMA/ISDE). http://www.cich.ca/project_safeenvironment.html

THE EUROPEAN REGION
WHO European Centre for Environment and Health, Bonn, Germany: http://www.euro.who.int/EHindicators
Environment and Health Information System for Europe: http://www.enhis.org

THE EASTERN MEDITERRANEAN REGION
WHO Centre for Environment and Health, Amman, Jordan: http://www.emro.who.int/ceha/

THE SOUTH-EAST ASIA REGION
WHO South-East Asia Region: http://www.searo.who.int/en/Section23.htm

THE WESTERN PACIFIC REGION
WHO Western Pacific Region: http://www.wpro.who.int/environmental_health/
OTHER USEFUL WEBSITES

Asociación Argentina de Médicos por el Medio Ambiente - AAMMA: http://www.aamma.org
Demographic and Health Surveys: http://www.measuredhs.com/
International Society of Doctors for the Environment, ISDE: http://www.isde.org
International Network on Children’s Health Environment and Safety, INCHES: http://www.inchesnetwork.org
Organisation for Economic Co-operation and Development (OECD): http://www.oecd.org/topic/0,2686,en_2649_34283_1_1_1_1_37465,00.html
United Nations Children's Fund (UNICEF):-
- Statistical data access by indicator or country: http://www.unicef.org/statistics/index.html
- Monitoring the situation of children and women (MICS): http://www.childinfo.org/
United Nations Environment Programme (UNEP):-
- Global Environmental Outlook (GEO) data portal: http://geodata.grid.unep.ch/
United Nations Statistics Division (UN):-
World Health Organization: - Children’s Environmental Health Indicators: http://www.who.int/ceh/indicators/en/
- Health Statistics and health information systems: http://www.who.int/healthinfo/en/

KEY PUBLICATIONS


Summary

Children's Environmental Health Indicators (CEHI):
Presenting Regional Successes Learning for the Future

The brochure summarizes the process, outcomes and key findings of the children’s environmental health indicator projects implemented as part of the global initiative on Children’s Environmental Health Indicators. 

The global initiative on Children’s Environmental Health Indicators was launched at the World Summit on Sustainable Development in 2002 with partners from five governments, three nongovernmental organizations and five intergovernmental organizations with support from the Office of Children’s Health Protection at the United States Environmental Protection Agency. 

The initiative aimed to develop a global framework for the collection of indicators on the health impacts of environmental exposures, with the goal of informing research, policy formulation, and health promotion at the international, national, and local levels.

The brochure highlights the key milestones and achievements of the initiative, including:

- Development of the Children’s Environmental Health Indicators (CEHI) framework
- Collection and analysis of data from various regions
- Identification of priority areas for action
- Development of guidelines for indicator development

The brochure also discusses the challenges faced during the initiative, such as data collection and analysis, and the lessons learned, including the importance of stakeholder engagement and the need for a multidisciplinary approach.

The brochure concludes with recommendations for future action to ensure the continued relevance and usefulness of the CEHI framework.

For more information, please visit the World Health Organization’s website at www.who.int/ceh.