PREVENTING DISEASE THROUGH HEALTHY ENVIRONMENTS: A GLOBAL ASSESSMENT OF THE BURDEN OF DISEASE FROM ENVIRONMENTAL RISKS

Analysing the latest data on the environment-disease nexus and the devastating impact of environmental hazards and risks on global health, backed up by expert opinion, this report covers more than 100 diseases and injuries. The analysis shows that 23% of global deaths (and 26% of deaths among children under five) are due to modifiable environmental factors.

Environmental risks take their greatest toll on young children and older people, the report finds, with children under 5 and adults aged 50 to 75 years most impacted. Yearly, the deaths of 1.7 million children under 5 and 4.9 million adults aged 50 to 75 could be prevented through better environmental management. Lower respiratory infections and diarrhoeal diseases mostly impact children under 5.

Link to the full report

Commentary by Dr Maria Neira, WHO Director, Department of Public Health, Environmental and Social Determinants of Health

Infographics in Arabic, Chinese, English, French, Russian and Spanish

JOURNAL ARTICLES

Air Pollution

CHILDREN’S ENVIRONMENTAL HEALTH NEWS

Press Releases

Climate change and poor sanitation threaten water safety for millions: UNICEF
On the eve of World Water Day, UNICEF said the push to bring safe water to millions around the world is going to be even more challenging due to climate change, which threatens both water supply and water safety for millions of children living in drought- or flood-prone areas. According to UNICEF, most vulnerable are the nearly 160 million children under 5 years old globally who live in areas at high risk of drought. Around half a billion live in flood zones. UNICEF (21/3/2016)

Countries take final step to put global mercury agreement into force
Over 550 government representatives, stakeholders and experts gathered at the Dead Sea in Jordan today to put the final touches to one of the most important legally-binding international agreements - the Minamata Convention on Mercury - which has the potential to end a serious threat to the health of millions of people. The Convention was signed in 2013 under the auspices of the United Nations Environment Programme (UNEP). So far, 23 countries have ratified it out of the 50 required for its entry into force. Speaking in Jordan, UNEP Deputy Executive Director Ibrahim Thiaw issued a strong call for countries to accelerate the entry into force and implementation of the Convention. UNEP (10/3/2016)

Asia and the Pacific must play a leading role in meeting the SDGs to eliminate global hunger and malnutrition
While the Asia-Pacific region has shown remarkable progress in reducing poverty and hunger during the last 25 years, it can lead the
Air Pollution and Cognitive Development at Age 7 in a Prospective Italian Birth Cohort

Authors analysed the association between traffic-related air pollution and cognitive function in a prospective birth cohort in Rome. A 10 μg/m³ higher NO₂ exposure during pregnancy was associated with 1.4 fewer points (95% confidence interval = −2.6, −0.20) of verbal IQ, and 1.4 fewer points (95% confidence interval = −2.7, −0.20) of verbal comprehension IQ. Other pollutants showed negative associations with larger confidence intervals.

Epidemiology

Prenatal Exposure to Traffic-related Air Pollution and Child Behavioural Development Milestone Delays in Japan

The authors examined associations between prenatal exposure to traffic-related air pollution and child behavioral development milestone delays, using data from a nationwide population-based longitudinal survey in Japan. Prenatal exposure to traffic-related air pollution was associated with behavioral development milestone delays of children in a nationally representative sample in Japan.

Epidemiology

Chemicals

Organic Food Consumption during Pregnancy and Hypospadias and Cryptorchidism at Birth: The Norwegian Mother and Child Cohort Study (MoBa)

The authors examined associations between organic food consumption during pregnancy and prevalence of hypospadias and cryptorchidism at birth. The study included 35,107 women participating in the Norwegian Mother and Child Cohort Study (MoBa) who delivered a singleton male infant. Consumption of organically produced foods during pregnancy was associated with a lower prevalence of hypospadias in the study population. These findings were based on small numbers of cases and require replication in other study populations.

Environmental Health Perspectives

Cord Blood Methylmercury and Fetal Growth Outcomes in Baltimore Newborns: Potential world in the complete eradication of these scourges within the next 15 years, FAO's Regional Conference for Asia and the Pacific heard today. While acknowledging the region’s success FAO Director-General, José Graziano da Silva, emphasised that child stunting is a problem in the region, with rates in some countries higher than 40 percent. At the same time, childhood obesity in the region has also increased, with some 18 million overweight children below the age of five. FAO (10/3/2016)

WHO statement on the 2nd meeting of IHR Emergency Committee on Zika virus and observed increase in neurological disorders and neonatal malformations

The WHO Secretariat briefed the Committee on action in implementing the Temporary Recommendations issued by the Director-General on 1 February 2016, and on clusters of microcephaly and Guillain-Barré Syndrome (GBS) that have had a temporal association with Zika virus transmission. The Committee was provided with additional data from observational, comparative and experimental studies on the possible causal association between Zika virus infection, microcephaly and GBS. The Committee advised that the clusters of microcephaly cases and other neurological disorders continue to constitute a Public Health Emergency of International Concern (PHEIC), and that there is increasing evidence that there is a causal relationship with Zika virus. WHO (8/3/2016)

PAHO/WHO calls on countries to strengthen surveillance of birth defects, including microcephaly

Strengthening surveillance for birth defects will help countries obtain more accurate estimates of the prevalence of microcephaly and other congenital anomalies in newborns, say experts from the Pan American Health Organization/World Health Organization (PAHO/WHO). PAHO/WHO is urging countries to invest resources in strengthening such surveillance systems in light of the recent surge of cases of microcephaly reported by Brazil and on the observance of World Birth Defects Day on March 3. PAHO (3/3/2016)

Fact sheets

Soil-transmitted helminth infections Updated March 2016
Confounding and Effect Modification by Omega-3 Fatty Acids, Selenium, and Sex

The objective of this study was to assess the relationship between MeHg and fetal growth as well as the potential for confounding or interaction of this relationship from speciated mercury, fatty acids, selenium, and sex. The authors observed an association of increased MeHg with decreased ponderal index. There is evidence for interaction between MeHg and n-3 HUFAs; infants with higher MeHg and n-3 HUFAs had lower birth length and head circumference. *Environmental Health Perspectives*

First-Trimester Urine Concentrations of Phthalate Metabolites and Phenols and Placenta miRNA Expression in a Cohort of U.S. Women

There is increasing concern that early-life exposure to endocrine-disrupting chemicals (EDCs) can influence the risk of disease development. *In utero* exposure to EDCs may affect disease propensity through epigenetic mechanisms. The results of this study suggest that prenatal phenol and phthalate exposure is associated with altered miRNA expression in placenta, suggesting a potential mechanism of EDC toxicity in humans. *Environmental Health Perspectives*

Reproductive Health

Unconventional Natural Gas Development and Birth Outcomes in Pennsylvania, USA

Unconventional natural gas development has expanded rapidly but few publications have focused on unconventional natural gas development and birth outcomes. Prenatal residential exposure to unconventional natural gas development activity was associated with two pregnancy outcomes, adding to evidence that unconventional natural gas development may impact health. *Epidemiology*

Water, Sanitation and Hygiene

Neurodevelopmental outcomes among 2- to 3-year-old children in Bangladesh with elevated blood lead and exposure to arsenic and manganese in drinking water

Foodborne trematodiases Updated March 2016

Chagas disease (American trypanosomiasis) Updated March 2016

Leishmaniasis Updated March 2016

Zika virus Updated March 2016

Microcephaly Updated March 2016

Dengue and severe dengue Updated March 2016

In the Media

Smoking while pregnant changes baby's DNA, mounting evidence shows

Women who smoke while pregnant may alter the DNA of their developing foetus, according to an international study of more than 6,000 women and children. Doctors have long warned women to avoid cigarettes while pregnant because smoking can lead to stillbirth or babies born with cleft palate, lung disease, or neurobehavioural problems. ABC News (1/4/2016)

Mexico City orders all cars off the road one day a week to tackle air pollution

Authorities in Mexico City have temporarily ordered all cars to remain idle one day a week in response to this notoriously smoggy capital's worst air-quality crisis in over a decade. Vehicles will also be forced to remain idle one Saturday a month. The Guardian (31/3/2016)


The Indian Environment ministry has notified strict new E-Waste Management Rules, 2016 that will bring the producers under Extended Producer Responsibility (EPR), along with targets and requirements to collect e-waste and hand it over to recyclers. The Economic Times (23/3/2016)

The world's poorest pay largest percentage of income for water, study says

According to a WaterAid study published Tuesday, water saps more than half of the meager earnings of many of the world's poorest while those in developed nations spend only a fraction of their incomes on water. The report concludes that at
The objective of this study was to investigate associations between environmental exposure to these contaminants and neurodevelopmental outcomes among Bangladeshi children. In this study, where blood lead levels are high, lead is associated with decreased cognitive scores on the BSID-III, and effects of other metals are not detected. In the setting of lower lead levels, the adverse effects of arsenic and manganese on neurodevelopment are observed.

**Environmental Health**

*Use of a Cumulative Exposure Index to Estimate the Impact of Tap Water Lead Concentration on Blood Lead Levels in 1- to 5-Year-Old Children (Montréal, Canada)*

Drinking water is recognized as a source of lead (Pb) exposure. However, questions remain about the impact of chronic exposure to lead-contaminated water on internal dose. In children 1–5 years of age, BPb was significantly associated with water lead concentration with an increase starting at a cumulative lead exposure of ≥ 0.7 μg Pb/kg of body weight. In this age group, an increase of 1 μg/L in water lead would result in an increase of 35% of BPb after 150 days of exposure.

**Environmental Health Perspectives**

**E-waste**

*Elevated lead levels and adverse effects on natural killer cells in children from an electronic waste recycling area*

To monitor the internal Pb level and evaluate its effect on natural killer (NK) cells and cytokine/chemokine concentrations, authors recruited 285 preschool children from Guiyu, one of the largest electronic waste (e-waste) destinations. Results showed that children in Guiyu had higher blood Pb levels and lower percentages of NK cells than children from the reference area. A significantly negative association was found between the percentage of NK cells and increasing Pb levels.

**Environmental Pollution**

*Relationship between e-waste recycling and human health risk in India: a critical review*

Informal recycling of waste (including e-waste) is an emerging source of environmental pollution in India. To the best of the authors' knowledge, this is the first comprehensive critical review of exposure least 650 million people -- or nearly 1 in 10 people -- around the globe do not have access to clean and safe water and more than 2.3 billion lack access to basic sanitation. Los Angeles Times (22/3/2016)

**Climate change is contaminating water sources with fecal matter**

New testing procedures have found that 1.8 billion people may be imbibing water contaminated by E.coli, which means there are traces of fecal matter in it, according to UNICEF. And this includes sources that have undergone improvements. Climate change is believed to be one of the main contributors to such pollution due to its link to an increase in flooding. Huffington Post Australia (21/3/2016)

**Choked Mexico City bans 1m cars in air pollution alert**

Authorities have banned more than 1 million cars from the roads and offered free subway and bus rides to coax people from their vehicles as Mexico City’s first air pollution alert in 11 years stretched into a third day. The environment secretary, Alejandro Pacchiano, said measures would be considered if conditions did not improve further, such as suspending industrial activity at factories. The Guardian (17/3/2016)

**Drought and rising temperatures 'leaves 36m people across Africa facing hunger'**

More than 36 million people face hunger across southern and eastern Africa, the United Nations has warned, as swaths of the continent grapple with the worst drought in decades at a time of record high temperatures. The worst hit country in the current crisis is Ethiopia, where rains vital to four-fifths of the country’s crops have failed. UNICEF has said it is making plans to treat more than 2 million children for malnutrition, and says more than 10 million people will need food aid. The Guardian (17/3/2016)

**Indigenous community in Peru suffers after oil spill**

Not for the first time in recent years, locals have been dealing with the aftermath of a huge oil spill after a trans-Amazonian pipeline fractured, emptying some 3,000 barrels of thick black crude into the jungle river system. There is evidence that children from poor, indigenous communities have been involved in the clean-up. BBC News (15/3/2016)

**Newark School Officials Knew of Lead Risks, 2014 Memo Shows**
pathways for pollutants, to both humans and animals either working in or living in or near waste disposal sites, especially e-waste processing sites in India.

Environmental Science and Pollution Research

New Publications and Recent or upcoming Events

Environmental Pollution: An Under-recognized Threat to Children’s Health, Especially in Low-and Middle-Income Countries
Patterns of pollution and pollution-related disease change as countries move through economic development. Environmental pollution is now recognized as a major cause of morbidity and mortality in low- and middle-income countries (LMICs). Toxic chemical pollution is growing into a major threat to children’s health in LMICs. Pollution control strategies and technologies that have been developed in high-income countries must now be transferred to LMICs to assist these emerging economies to avoid the mistakes of the past. The authors suggest a new international clearinghouse is needed to define and track the health effects of pollution, quantify the economic costs of these effects, and direct much needed attention to environmental pollution as a risk factor for disease.

Environmental Health Perspectives

Alternatives Assessment Frameworks: Research Needs for the Informed Substitution of Hazardous Chemicals
Given increasing pressures for hazardous chemical replacement, there is growing interest in alternatives assessment to avoid substituting a toxic chemical with another of equal or greater concern. Alternatives assessment is a process for identifying, comparing, and selecting safer alternatives to chemicals of concern (including those used in materials, processes, or technologies) on the basis of their hazards, performance, and economic viability. The purposes of this substantive review of alternatives assessment frameworks are to identify consistencies and differences in methods and to outline needs for research and collaboration to advance science policy practice.

Environmental Health Perspectives

UPCOMING EVENTS

The potential danger of lead exposure was something school officials in Newark, NJ, had been aware of for years, and the district had installed lead-reduction filters on water fountains and kitchen prep sinks, particularly in schools built before 2006, according to a memo. New York Times (11/3/2016)

Vote on controversial weedkiller's European licence postponed
A mutiny by several EU states has forced the postponement of a vote in Brussels on relicensing a widely used weedkiller that the World Health Organisation has found is probably carcinogenic. Italy joined France, Sweden and the Netherlands in opposing a new 15-year licence for glyphosate at a meeting which had been expected to rubber stamp its reapproval on Tuesday. The Guardian (9/3/2016)

Doctors should screen for poverty during child-wellness visits, American Academy of Pediatrics recommends
The American Academy of Pediatrics, which represents 64,000 pediatricians, has announced new recommendations to screen for poverty in a bid to reduce its health effects. The recommendations are the result of a years-long effort on the part of the AAP's Poverty and Child Health Leadership Workgroup, which formed when the academy officially made child poverty a focus of its broader agenda in 2013. The Washington Post (9/3/2016)

Adult and underage workers risk their lives in Bangladesh's rising ship-breaking industry
Bangladesh's increased market share of the ship breaking industry has raised alarm among environmental and labor activists, as well as United Nations officials, who say the country has not kept pace with industry reforms elsewhere. Training and safety equipment are scant, and dozens of workers are still killed or seriously injured each year in falls, explosions and other accidents. In addition, workers face the long-term health effects of exposure to hazardous substances released when the ships are broken down. Los Angeles Times (9/3/2016)

Blame HUD for America's Lead Epidemic
The problem is a dangerous mismatch between the prevailing science on lead poisoning and the Department of Housing and Urban Development's standards. These outdated regulations set the blood lead level for lead poisoning three to four times higher than that set by the Centers for
The e-waste challenge MOOC  
April 2016. Online

Environmental Impact 2016  
8 - 10 June 2016. Valencia, Spain

The 2nd International Conference on Environmental Pollution and Health  
13-15 June 2016, Guangzhou, China

UNESCO-IHE Hazardous Waste Management short course 2016  
1 – 11 September 2016

8th International Network on Children’s Health, Environment and Safety (INCHES) Conference  
14-16 September 2016, Barcelona, Spain

The 12th World Conference on Injury Prevention and Safety Promotion - Safety 2016  
18 - 21 September 2016. Tampere, Finland

International Congress for Tropical Medicine and Malaria 2016  
18 - 22 September 2016. Brisbane, Australia

21st WONCA World Conference of Family Doctors  
2 – 6 November 2016. Rio de Janeiro, Brazil

PPTox V (Prenatal Programming and Toxicity V)  
13 -16 November 2016. Kitakyushu, Japan

17th International Conference of the Pacific Basin Consortium  
1 – 4 March 2017. Delhi, India

Disease Control and Prevention. New York Times (03/03/2016)

\textbf{Flint Is in the News, but Lead Poisoning Is Even Worse in Cleveland}  
The poisoning of Flint’s children outraged the nation. But too much lead in children’s blood has long been an everyday fact in Cleveland and scores of other cities — not because of bungled decisions about drinking water, but largely because a decades-long attack on lead in household paint has faltered. It is a tragic reminder that one of the great public health crusades of the 20th century remains unfinished. New York Times (3/3/2016)

\textbf{EPA targeting pesticide used on strawberries, lettuce}  
The U.S. Environmental Protection Agency has announced its intent to ban sales in the United States of commercial insecticides made with flubendiamide, used on wine grapes, strawberries and lettuce. The Californian (2/3/2016)

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