Children’s Environmental Health International Initiatives

This is an international mailing list provided by WHO and UNEP dedicated to promoting healthy environments for children

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AMBIENT AIR POLLUTION: A GLOBAL ASSESSMENT OF EXPOSURE AND BURDEN OF DISEASE

This report presents a summary of methods and results of the latest WHO global assessment of ambient air pollution exposure and the resulting burden of disease. This WHO air quality model confirms that 92% of the world’s population lives in places where air quality levels exceed WHO limits. Information is presented via interactive maps, highlighting areas within countries that exceed WHO limits. It also represents the most detailed outdoor (or ambient) air pollution-related health data, by country, ever reported by WHO. The model is based on data derived from satellite measurements, air transport models and ground station monitors for more than 3000 locations, both rural and urban. It was developed by WHO in collaboration with the University of Bath, United Kingdom. It is reported that some 3 million deaths a year are linked to exposure to outdoor air pollution. Indoor air pollution can be just as deadly. In 2012, an estimated 6.5 million deaths (11.6% of all global deaths) were associated with indoor and outdoor air pollution together. Nearly 90% of air-pollution-related deaths occur in low- and middle-income countries, with nearly 2 out of 3 occurring in the WHO South-East Asia and Western Pacific regions. Air pollution has become a growing concern in the past few years, with an increasing number of acute air pollution episodes in many cities worldwide. As a result, data on air quality is becoming increasingly available and the science underlying the related health impacts is also evolving rapidly.

Link to full publication

JOURNAL ARTICLES

Air Pollution

CHILDREN’S ENVIRONMENTAL HEALTH NEWS

Press Releases

Global conference sets health action agenda for the implementation of the Paris Agreement
Participants attending the Second Global Conference on Health and Climate, hosted by the Government of France, COP21 presidency, proposed key actions for the implementation of the Paris agreement to reduce health risks linked to climate change. The WHO estimates that climate change is already causing tens of thousands of deaths every year. These deaths arise from more frequent epidemics of diseases like cholera, the vastly expanded geographical distribution of diseases like dengue, and from extreme weather events, like heat waves and floods. The conference highlighted the benefits of switching to cleaner energy sources. These will help reduce the levels of climate and air pollutants, as well as providing desperately needed power for health facilities in low-income countries. WHO (8/7/2016)

Birth in a time of antibiotic-resistant bacteria
According to recent estimates, more than 200,000 newborns die each year from infections that do not respond to available drugs. And studies using the data from larger hospitals – where microbes are more likely to develop antibiotic resistance – estimate that about 40% of infections in newborns resist standard treatments. Childbirth can be risky. Infants – especially if they are premature – do not have fully developed immune systems, so they are more susceptible to illnesses, either from bugs their mother is already carrying, or from infections they pick up in the hospital. Facilities should also implement policies to discharge mothers and newborns sooner rather than later, in order to reduce the potential for exposure to infectious microbes. WHO (29/8/2016)
Fetal Thyroid Function, Birth Weight, and in Utero Exposure to Fine Particle Air Pollution: A Birth Cohort Study

Thyroid hormones are critical for fetal development and growth. This study aimed to investigate the impact of third trimester exposure to fine particle (PM2.5) air pollution on fetal and maternal thyroid hormones, and their mediating role on birth weight. It was found that third trimester exposure to PM2.5 air pollution was associated with differences in fetal thyroid hormone levels that may contribute to reduced birth weight. Additional research is needed to confirm these findings in other populations and to evaluate potential consequences later in life. 

*Environmental Health Perspectives*

Individual and Joint Effects of Early-Life Ambient PM2.5 Exposure and Maternal Pre-Pregnancy Obesity on Childhood Overweight or Obesity

Although previous studies suggest that exposure to traffic-related pollution during childhood increases risk of childhood overweight or obesity (COWO), the role of early-life exposure to fine particulate matter and its joint effect with mother's pre-pregnancy body mass index (MPBMI) on COWO remain unclear. The present study was conducted to examine the individual and joint effects of ambient PM2.5 exposures and MPBMI on the risk of COWO. It was found that early-life PM2.5 exposures may play an important role in the early-life origins of COWO and may increase risk of COWO in children of mothers who were overweight or obese before pregnancy beyond the risk due to MPBMI alone. The findings of the study underscore the clinical and public health policy relevance of early-life PM2.5 exposures. 

*Environmental Health Perspectives*

Association of Low Birthweight and Indoor Air Pollution: Biomass Fuel Use in Bangladesh

More than 90% of all low birthweight (LBW) babies are born in developing countries, and half of the population in developing nations uses solid fuels as their primary source of energy for cooking. An association between household use of solid biomass fuels and reduced newborn weight has been found in a number of countries. Bangladesh has a high prevalence of LBW babies (22%), and 88% of the population use solid fuels for cooking. This study explored whether indoor air pollution was associated with LBW in Bangladesh, an important determinant of infant mortality and morbidity. This is the first paper to show an association between use of highly

Millions protected in Africa’s largest-ever emergency yellow fever vaccination campaign

A major part of the largest emergency vaccination campaign against yellow fever ever attempted in Africa has been completed, with more than 7.7 million people vaccinated in record time in the city of Kinshasa, Democratic Republic of Congo (DRC), and a further 1.5 million people in DRC’s border regions with Angola. This has been accomplished through an extraordinary network of partnerships and collaborations. In these areas the yellow fever outbreak appears to be declining – no new cases have been confirmed in either country for over a month – However, given that there may still be viral circulation in the mosquito vector, and in other animal reservoirs, and in anticipation of the upcoming rainy season that will result in increased risk of transmission, it is critical to continue to provide support to ensure the countries have the capacity to detect and respond to any further cases of yellow fever. WHO (2/9/2016)

**WHO Europe launches new action plan for noncommunicable diseases, appeals for urgent joint policy action to achieve global goals and targets**

The WHO European Region has made progress in key areas of noncommunicable disease (NCD) control: death rates from cardiovascular disease (CVD) continue to decline, the clear downward trend in smoking continues, and alcohol intake is steadily decreasing. However, this overall European picture masks significant differences within and between countries and population groups; WHO/Europe estimates that the Region will fall short of the global goals of reducing tobacco use and physical inactivity and simply fail to halt the rise in obesity unless action is accelerated. “We know that managing noncommunicable diseases and conditions can unlock unimaginable health gains. Actions taken today by the whole of government will determine whether countries succeed in achieving the Sustainable Development Goals (SDGs). People who will die in middle age in 2030 from preventable causes are young adults today. There could not be a greater sense of urgency if we want to prolong lives,” said WHO Regional Director for Europe, Dr Zsuzsanna Jakab. WHO (6/9/2016).

**WHO and partners battle multiple disease outbreaks in South Sudan**

In a conflict setting, WHO and partners are responding to multiple outbreaks including
pollutant biomass fuel and prevalence of LBW babies in Bangladesh, suggesting that besides polluting the air and causing respiratory illnesses, biomass fuel combustion may also affect the health of foetuses in utero. Further longitudinal studies are required to establish this finding among mothers in developing countries. 

*Journal of Health Pollution*

**Lower Placental Leptin Promoter Methylation in Association with Fine Particulate Matter Air Pollution during Pregnancy and Placental Nitrosative Stress at Birth in the ENVIRONAGE Cohort**

Particulate matter with a diameter of less than 2.5μm (PM2.5) affects human fetal development during pregnancy. Oxidative stress is a putative mechanism by which PM2.5 may exert its effects. Leptin (LEP) is an energy regulating hormone involved in fetal growth and development. The aim of this study was to investigate in placental tissue whether DNA methylation of the LEP promoter is associated with PM2.5 and whether the oxidative/nitrosative stress biomarker 3-nitrotyrosine (3-NTp) is involved. It was found that LEP methylation status in the placenta was negatively associated with PM2.5 exposure during the second trimester, and with placental 3-NTp, a marker of oxidative/nitrosative stress. The potential consequences for health during the neonatal period and later in life warrant further exploration.

*Environmental Health Perspectives*

**Chemicals**

*A preliminary study on health effects in villagers exposed to mercury in a small-scale artisanal gold mining area in Indonesia*

Cisitu is a small-scale gold mining village in Indonesia. Mercury (Hg) is used to extract gold from ore, heavily polluting air, soil, fish and rice paddy fields with Hg. Rice in Cisitu is burdened with mercury. The main staple food of the inhabitants of Cisitu is this polluted rice. Villagers were concerned that the severe diseases they observed in the community might be related to their mining activities, including high mercury exposure. The situation in Cisitu is special, with rice paddy fields being irrigated with mercury-contaminated water and villagers consuming only local food, especially mercury-contaminated rice. Severe neurological symptoms and increased levels of mercury in urine and hair support are possibly caused by exposure to inorganic mercury cholera, malaria, measles, suspected haemorrhagic fever, and kalaazar (visceral leishmaniasis). “In spite of the insecurity, WHO is taking every opportunity to ensure that we reach the people with health care services to protect them at this time when the health system has crumbled,” says Dr Abdulmumini Usman, WHO Representative to South Sudan. Despite the fragile security situation and challenging conditions to deliver health services, WHO, together with partners, is providing vital support for the people of South Sudan. WHO (9/2016)

*WHO Fact sheets*

**Pneumonia** Updated September 2016

**Lead poisoning and health** Updated September 2016

**Infant and young child feeding** Updated September 2016

**Leishmaniasis** Updated September 2016

*In the Media*

**China ratifies Paris climate change agreement ahead of G20**

China’s parliament has ratified the Paris agreement on climate change, the Xinhua state news agency, which could help put the pact into force by as early as the end of the year. The G20 nations are responsible for about 80 per cent of global carbon emissions. Nearly 200 countries agreed in Paris in December on a binding global compact to slash greenhouse gas emissions and keep global temperature increase to “well below” 2 degrees Celsius. While 180 countries have now signed the agreement, 55 nations – covering at least 55 per cent of global emissions – need to ratify the treaty to put it into legal effect. Sydney Morning Herald (3/9/2016)

**In Siberia, a ‘Blood River’ in a Dead Zone Twice the Size of Rhode Island**

A river in the far north of Siberia turned bright red this week, residents said, leading Russians to nickname the tributary “blood river”. A government ministry said it was investigating a possible leak of industrial waste, but had not determined what caused the discoloration. One hint at the possible cause is the path the river, the Daldykan takes past the Norilsk Nickel mine and metallurgical
in air, and the consumption of mercury-contaminated fish and rice. The mercury exposure needs to be reduced and treatment provided. Further research is needed to test the hypothesis that mercury-contaminated rice from small-scale gold mining areas might cause mercury intoxication. Environmental Research

Prioritizing Environmental Chemicals for Obesity and Diabetes Outcomes Research: A Screening Approach Using ToxCast™ High-Throughput Data

Diabetes and obesity are major threats to public health in the Unites States and abroad. Understanding the role that chemicals in our environment play in the development of these conditions is an emerging issue in environmental health, although identifying and prioritising chemicals for testing beyond those already implicated in the literature is challenging. This study found a number of environmental chemicals have the potential to alter metabolic function. More research is required to put these screening-level analyses into context, but the information presented in this review should facilitate the development of new hypotheses. Environmental Health Perspectives

Passive exposure to agricultural pesticides and risk of childhood leukemia in an Italian community

Exposure to pesticides has been suggested as a risk factor for childhood leukemia, but definitive evidence on this relation and the specific pesticides involved is still not clear. The aim of this study was to carry out a population-based case-control study in a Northern Italy community to assess the possible relation between passive exposure to agricultural pesticides and risk of acute childhood leukemia. Childhood leukemia risk did not increase in relation with any of the crop types with the exception of arable crops, characterized by the use of 2,4-D, MCPA, glyphosate, dicamba, triazine and cypermethrin. The very few children (n = 11) residing close to arable crops had an OR for childhood leukemia of 2.04 (95% CI 0.50–8.35), and such excess risk was further enhanced among children aged <5 years. Despite the null association with most crop types, the increased leukemia risk among children residing close to arable crops indicates the need to further investigate the involvement in disease etiology of passive exposure to herbicides and pyrethroids, though such exposure is unlikely to play a role in the vast majority of cases.

plant, by many measures one of the world’s most polluting enterprises. Russian environmental regulators suggested that iron, which is generally discarded in slurry ponds, is the most likely source of discoloration in the “blood river”, attributing the red hue to iron oxide, better known as rust. The New York Times (8/9/2016)

‘Big Success Story’: Sri Lanka Is Declared Free of Malaria

After a long struggle, Sri Lanka, the large island nation southeast of India, was declared free of malaria last week by the World Health Organisation. It has been more than three years since the last case. Sri Lanka almost succeeded in eliminating malaria 50 years ago, but its huge effort fell apart. The country became the example most frequently cited by malarialogists to show how defeat could be reaped from the jaws of victory. The Sri Lankan health ministry set up mobile clinics near the camps, as well as at airports and ferry landings where migrants arrived, offering diagnosis and treatment to all. Free malaria care is still a core part of the country’s effort to prevent an imported case from leading to a new outbreak. The New York Times (12/9/2016)

Second-hand smoke can hurt kids years after exposure

Breathing second-hand smoke during childhood can lead to long-term breathing and health problems and a shorter life expectancy, according to a new scientific statement from the American Heart Association. Even though the harms of exposing kids to cigarette smoke are well known – asthma and lung infections among them – many children still breathe this smoke at home or in public places or while riding in cars or buses. Children are especially vulnerable to second-hand smoke exposure in part because they cannot control tobacco use in their surroundings, and they appear to be particularly susceptible physically to the smoke’s effects. Reuters (12/9/2016)

Toddlers Are at Highest Risk for Chemical Burns to the Eyes

Accidents involving chemicals splashed in the eyes were long regarded as a workplace risk. But it turns out that toddlers have the highest risk for this potentially blinding injury at home. Before a parent can stop them, curious babies may spray themselves in the face with a household cleaner or squeeze a liquid detergent packet until it explodes. Using a database of 900 emergency departments nationwide, researchers found that 1-
Reproductive Health

**In Vitro Effects of Lead on Gene Expression in Neural Stem Cells and Associations between Upregulated Genes and Cognitive Scores in Children**

Lead (Pb) adversely affects neurodevelopment in children. Neural stem cells (NSCs) play an essential role in shaping the developing brain, yet little is known about how Pb perturbs NSC functions and whether such perturbation contributes to impaired neurodevelopment. This study aimed to identify Pb-induced transcriptomic changes in NSCs and to link these changes to neurodevelopmental outcomes in children who were exposed to Pb. Our findings revealed that Pb induces an NRF2-dependent transcriptional response in neural stem cells and identified SPP1 upregulation as a potential novel mechanism linking Pb exposure with neural stem cell function and neurodevelopment in children. *Environmental Health Perspectives*

Water, Sanitation and Hygiene

**Unsafe Child Feces Disposal is Associated with Environmental Enteropathy**

The aim of this study was to investigate the relationship between unsafe child feces disposal, environmental enteropathy, and impaired growth, through a prospective cohort study of 216 young children in rural Bangladesh. It was found that among the 216 households with young children, 84% had an unsafe child feces disposal event during structured observation and 75% had caregiver reported events. There was no significant difference in observed unsafe child feces disposal events for households with or without an improved sanitation option or by child’s age. Children in households where caregivers reported unsafe child feces disposal has significantly higher environmental enteropathy scores, and significantly greater odds of being wasted. Therefore, it was found that unsafe child feces disposal was significantly associated with environmental enteropathy and impaired growth in a paediatric population in rural Bangladesh. Interventions are needed to reduce this high-risk behaviour to protect the health of susceptible pediatric populations. *Journal of Pediatrics*

E-waste

and 2-year-olds had the highest rates of eye injuries from chemicals. Roughly 28 out of 100,000 1-year-olds and 23 out of every 2-year-olds had chemical eye burns, while only 13 out of every 100,000 adults aged 18-64 did. The New York Times (12/9/2016)

**Commentary: 25 years of endocrine disruptor research – great strides, but still a long way to go**

Cancer. Diabetes. Autism. Infertility. ADHD. Asthma. As the rates of these diseases increase over time, the public and researchers alike have focused on the role the environment might play in their cause and progression. Scientists in the field of environmental health sciences are not satisfied just to know that the environment contributes to human disease – they want to know how. This week, researchers, public health advocates, government officials, and industry spokespersons will meet at National Institutes of Health (NIH) to celebrate 25 years of scientific research on one aspect of environmental health: endocrine disrupting chemicals (EDCs). These are compounds that alter the way hormones act in the body, often by mimicking or blocking their actions. Just a few examples of widely used consumer products that contain EDCs are plastics, electronics, flooring, some personal care products, and furniture treated with some flame retardants. As we celebrate 25 years of EDC research this week, it is heartening to see the significant strides we have made in the scientific arena. Yet we must also acknowledge that much more is needed to protect the health of generations to come. *Environmental Health News (19/9/2016)*

**Are U.S. public schools prepared for an emergency?**

More than a fifth U.S. school districts lack comprehensive plans to respond to natural disasters, epidemic diseases or other emergencies, a new report finds. While almost 80 percent of school districts nationwide have plans to help students and staff with special needs during an emergency situation, only about 68 percent have protocols to reunite children with their families after disaster strikes, according to the report from the U.S. Centres for Disease Control and Prevention (CDC). Roughly 69 percent of school districts have procedures set up to cope with pandemic influenza or other infectious disease outbreaks and to offer mental health support to students, faculty and staff after a crisis. When schools aren’t fully prepared for a disaster life altering consequences may occur.
Associations between polycyclic aromatic hydrocarbon (PAH) exposure and oxidative stress in people living near e-waste recycling facilities in China

Emission of polycyclic aromatic hydrocarbons (PAHs) from e-waste recycling activities in China is known. However, little is known on the association between PAH exposure and oxidative damage to DNA and lipid content in people living near e-waste dismantling sites. This study assessed urine samples collected from people living in and around e-waste dismantling facilities, and in a reference population from rural and urban areas in China, including children. The results of the study indicate that the exposure to PAHs at the e-waste dismantling site may have an effect on oxidative damage to DNA among selected participants, but this needs to be validated in large studies.

Environment International

New Publications

World Health Organisation Health In All Policies Training Manual

The purpose of this manual is to provide a resource for training to increase understanding of Health in All Policies (HIAP) by health and other professionals. It is anticipated that the material in this manual will form the basis of two- or three-day workshops which will; build capacity to promote, implement and evaluate HIAP; encourage engagement and collaborations across sectors; facilitate the exchange of experiences and lessons learned; promote regional and global collaboration on HIAP; and promote the dissemination of skills to develop training courses for trainers. It is envisaged that these workshops will be held regionally and in-country, often with the support of the WHO. At the same time, using its global platform, the WHO will support the development of training standards globally, through levers of change such as training of trainers courses and curriculum changes in schools.

UPCOMING EVENTS

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

including increased morbidity and mortality.

Reuters (20/9/2016)

Chromium-6: 'Erin Brockovich' chemical threatens two-thirds of Americans

Nearly 200 million Americans across all 50 states are exposed to unsafe levels of chromium-6 or hexavalent chromium, a heavy metal known to cause cancer in animals and humans, according to a new report released by the non-profit research and advocacy organisation Environmental Working Group (EWG). In their analysis of the EPA’s own data collected for the first nationwide test of chromium-6 contamination in US drinking water, the report’s co-authors found that 12,000 Americans are at risk of getting cancer. The Guardian (20/9/2016)

River pollution puts 323m at risk from life-threatening diseases, says UN

A week before Russia’s Daldykan river was turned red by a leak from a metals plant, the UN issued a warning as chilling as it was overlooked: 323 million people are at risk from life-threatening diseases caused by the pollution of rivers and lakes. Cholera, typhoid and other deadly pathogens are increasing in more than half of the rivers in Africa, Asia and Latin America, according to a United nations Environment Programme (UNEP) report. Salinity levels have also risen in nearly a third of waterways. The Guardian (22/9/2016)

China tops WHO list for deadly outdoor air pollution

China is the world’s deadliest country for outdoor air pollution, according to analysis by the World Health Organisation. The UN agency has previously warned that tiny particles from cars, power plants and other sources are killing 3 million people worldwide each year. For the first time the WHO has broken down that figure to a country-by-country level. It reveals that of the worst three nations, more than 1 million people died from dirty air in China in 2012, at least 600,000 in India and more than 140,000 in Russia. The Guardian (27/9/2016)

Oakey defence base contaminants linked to serious disease, United Nations report says

The Federal Government is under pressure to acknowledge the scale of a defence base contamination issue after the United Nations linked the contaminant to serious disease. The chemicals PFOS and PFOA have leached into
groundwater under dozens of Australian bases including the Oakley Army Aviation Centre in Queensland and the Williamtown RAAF Base in New South Wales. Australian health advice warns residents in these areas against drinking contaminated water, but maintains there is no strong link to human health. However, a UN toxins committee has ruled the chemicals have significant human and environmental health effects and is calling for a global response. ABC News (27/9/2016)