Children’s Environmental Health International Initiatives

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

September/October 2022

**Course Launch: Risk Assessment for Children’s Health and E-Waste Exposure – 2022**

The treatment and disposal of electronic waste is a growing problem in the region of the Americas due to contamination by toxic elements present in electrical and electronic devices, generating occupational and environmental exposures from which adverse health conditions are derived. This course is launched as a tool for the generation of capacities oriented to the management and multidisciplinary approach of the problem with a public health approach. The course, unique in its kind, has been developed by the Pan American Health Organization in close collaboration with WHO headquarters, UNIDO, Panama and Bolivia Ministries of Health and WHO country offices and the technical support of the WHO collaborating center in San Luis Potosi University, Mexico. The course is initially available in Spanish, with English and French versions to be available in the near future.

PAHO (05/10/22)

**JOURNAL ARTICLES**

**Air Pollution**

*Joint association between ambient air pollutant mixture and pediatric asthma exacerbations*

The authors evaluated the association between air pollutant mixtures (52 pollutants) and pediatric asthma exacerbations. The study focused on children (age ≤ 19 years) living in, Nebraska. A seasonal-scale joint association between the outdoor air pollutant mixture adjusting for potential confounders (temperature, precipitation, wind speed, and wind direction) in relation to pediatric asthma exacerbation-related emergency department visits was evaluated. There were

**CHILDREN’S ENVIRONMENTAL HEALTH NEWS**

**Press Releases**

*EPA Celebrates Children’s Health Month, Highlighting Unprecedented Investment in Protecting Children’s Health*

October is Children’s Health Month and this year the US Environmental Protection Agency (EPA) is spotlighting the historic resources advancing protection of children's environmental health.

“Protecting the health of our children and the environment where they live, learn and play is central to EPA's mission, especially when it comes to children in overburdened and underserved areas,” said EPA Administrator Michael S. Regan. “As we mark Children’s Health Month, I’m honored to highlight EPA's work to protect children’s health and the historic level of funding from President Biden's Bipartisan Infrastructure Law and Inflation Reduction Act, that will bolster these efforts to deliver clean air, clean water and healthy lands for our children.”

EPA (04/10/2022)

**Child poverty across eastern Europe and Central Asia soars by 19 per cent, as Ukraine war and rising inflation drive four million children into poverty - UNICEF**

The war in Ukraine and rising inflation have driven an additional four million children across eastern Europe and Central Asia into poverty, a 19 per cent increase since 2021, according to a new UNICEF study. Children are bearing the heaviest burden of the economic crisis caused by the war in Ukraine. While children make up 25 per cent of the population, they account for nearly 40 per cent of the additional 10.4 million people experiencing poverty this year. “Beyond the obvious horrors of
associations between outdoor air pollutant mixture and pediatric asthma exacerbations during the spring, summer, and fall seasons. Among the 52 pollutants PM\textsubscript{2.5}, pollen and mold contributed the highest weight to the air pollutant mixture. 

*Environmental Epidemiology*

**First Trimester of Pregnancy as the Sensitive Period for the Association between Prenatal Mosquito Coil Smoke Exposure and Preterm Birth**

Mosquito coils are efficient mosquito repellents and mosquito coil smoke (MCS) contributes to indoor air pollution. However, no prior population-based study has investigated whether prenatal MCS exposure is a risk factor for preterm birth (PTB). The sample involved 66,503 mother–child dyads in Longhua Child Cohort Study (LCCS) in China. Results indicated that maternal MCS exposure during pregnancy was associated with PTB and that the first trimester might be the sensitive period. In light of these findings, public health interventions are needed to reduce prenatal exposure to MCS, particularly during the first trimester of pregnancy. 

*Environmental Research and Public Health*

**PM\textsubscript{2.5}, PM\textsubscript{10} and bronchiolitis severity: A cohort study**

Particulate matter (PM) exposure might play a role in bronchiolitis. This prospective study investigated the association between PM (PM\textsubscript{2.5} and PM\textsubscript{10}) exposure and the severity of bronchiolitis. This cohort study was conducted between November 2019 and February 2020 in Milan, Italy. Infants <1 year of age with bronchiolitis were eligible. The bronchiolitis severity score was assessed in each infant. The daily PM\textsubscript{10} and PM\textsubscript{2.5} exposure in the 29 preceding days were considered. The results show for the first time a direct association between PM\textsubscript{2.5} and PM\textsubscript{10} levels and the severity of bronchiolitis. 

*Pediatric Allergy and Immunology*

**Chemicals**

*Unconventional Oil and Gas Development Exposure and Risk of Childhood Acute Lymphoblastic Leukemia: A Case–Control Study in Pennsylvania, 2009–2017*

Unconventional oil and gas development (UOGD) releases chemicals that have been linked to cancer and childhood leukemia. The authors evaluated potential associations between war – the killing and maiming of children, mass displacement – the economic consequences of the war in Ukraine are having a devastating impact on children across eastern Europe and Central Asia,” said UNICEF Regional Director for Europe and Central Asia Afshan Khan. “If we don’t support these children and families now, the steep rise in child poverty will almost certainly result in lost lives, lost learning, and lost futures.” UNICEF (16/10/2022)

**Almost 1 million people die every year due to lead poisoning, with more children suffering long-term health effects**

‘Say no to lead poisoning’ is the theme of the 10th International Lead Poisoning Prevention Week (ILPPW) to raise awareness about lead poisoning and encourage all countries to take action to prevent lead exposure, particularly in children. Each year, an estimated 1 million people, die from lead poisoning. UNICEF estimates that 1 in 3 children have blood lead levels at or above 5 μg/dl. “Lead exposure is especially dangerous to children’s developing brains and can result in reduced intelligence quotient (IQ), attention span, impaired learning ability, and increased risk of behavioural problems.” Says Dr. Maria Nera, WHO Director, Department of Environment, Climate Change and Health. 

WHO (23/10/2022)

**Public Education**

UN CC:Learn and SCYCLE Step Up Action on Electronic Waste through a New E-Course on How to Prevent E-Waste 

UN CC:Learn and SCYCLE partnered up to develop a brand new course on “How to Prevent E-Waste”. Most people don’t actually properly dispose of their old phones – or any other electronic device – and instead toss them into drawers not to be used again. In the worst cases, these old devices end up in regular waste bins, mixing up with regular trash, fueling a growing environmental problem called “e-waste”. To help tackle this problem, UN CC:Learn partnered up with UNITAR’s Sustainable Cycles (SCYCLE) Programme to develop the “How to Prevent E-Waste” e-course. This 2-hour, free and self-paced e-learning course aims to provide individuals with practical solutions to tackle the e-waste crisis. 

UN CC:Learn (22/10/2022)
residential proximity to UOGD and risk of acute lymphoblastic leukemia (ALL), in 405 children ages 2–7 y diagnosed with ALL in Pennsylvania between 2009–2017, and 2,080 controls. UOGD was found to be a risk factor for childhood ALL. This work adds to mounting evidence of UOGD’s impacts on children’s health, providing additional support for limiting UOGD near residences.

Environmental Health Perspectives

Cord blood immune profile: Associations with higher prenatal plastic chemical levels
Prenatal exposure to plastic chemicals has been associated with alterations to early-life immune function in children. In a large population-based pre-birth cohort (n = 1074), third-trimester measurements of eight phthalate metabolites and three analogues of bisphenols were used to estimate prenatal exposure to phthalate and bisphenol compounds. In cord blood, immune cell populations were measured to estimate “early life” immune profiles. Generally, inverse associations were observed between prenatal phthalate exposure and cord blood immune indices.

Environmental Pollution

Potential Health Risk to Brazilian Infants by Polybrominated Diphenyl Ethers Exposure via Breast Milk Intake
Polybrominated diphenyl ethers (PBDEs) are ubiquitous flame retardants and are environmentally persistent. The infants’ exposure begins in the prenatal period and continues via breast milk ingestion. In this study, PBDE levels in Brazilian breast milk were assessed in 200 lactating women. At least one PBDE congener was detected in the samples, and showed a 100% of detection rate. Taking the high detection rate of PBDEs in breast milk and their toxicity, continuous studies on infant exposure, fetal growth, and child neurodevelopment are requested.

Environmental Research and Public Health

Metals
Exposure to metal mixtures and neuropsychological functioning in middle childhood
Elevated exposure to multiple trace metals can be neurotoxic even at relatively low levels. The authors examined associations between exposure to a mixture of four metals (arsenic, cadmium, manganese, lead) measured in hair

In the Media
Devastating floods in Pakistan claim lives of more than 500 children
The catastrophic floods in Pakistan have now claimed the lives of at least 528 children, according to the latest Government figures. All of us on the ground see malnourished children, battling diarrhoea and malaria, dengue fever, and many with painful skin conditions. A lot of the mothers are anaemic and malnourished themselves and have very low-weight babies. An estimated 16 million children have been impacted by these ‘super floods’ and at least 3.4 million girls and boys remain in need of immediate, lifesaving support. Young children are living out in the open with their families, with no drinking water, no food, and no livelihood, exposed to a wide range of new flood-related risks and hazards - including from damaged buildings, drowning in flood waters and snakes.

UNICEF (15/09/2022)

Climate Change May Boost Arctic ‘Virus Spillover’ Risk
A warming climate could bring viruses in the Arctic into contact with new environments and hosts, increasing the risk of "viral spillover," according to recent research. Viruses need hosts like humans, animals, plants or fungi to replicate and spread, and occasionally they can jump to a new one that lacks immunity, as seen during the COVID-19 pandemic. Scientists in Canada wanted to investigate spillover risk by examining samples from the Arctic landscape of Lake Hazen, the largest lake in the world entirely north of the Arctic Circle. "This enabled us to know what viruses are in a given environment, and what potential hosts are also present," said Stephane Aris-Brosou, an associate professor in the University of Ottawa's biology department, who led the work.

Science & Health (18/10/2022)

Global health: Women and children pay heaviest price for ‘gaping inequities’
A new UN report, titled “Protect the Promise” shows that women’s and children’s health has suffered globally, as the impacts of conflict, the COVID-19 pandemic and climate change converge, with devastating effects on prospects for children, young people and women. Data presented in the report show a clear and critical regression across virtually every major measure of childhood wellbeing, and many key indicators of the Sustainable Development Goals (SDGs).
and markers of cognition, attention, and behavior among 6–12-year-old children. The findings suggest that similar to exposure during prenatal and early childhood periods, recent exposure to metals during middle childhood is associated with adverse neurodevelopmental consequences. Middle childhood may also be a developmental window of susceptibility to the negative consequences of exposure to environmental neurotoxicants.

*NeuroToxicology*

**Reproductive Health**

*Maternal Exposure to Per- and Polyfluoroalkyl Substances (PFAS) and Male Reproductive Function in Young Adulthood: Combined Exposure to Seven PFAS*

Concerns remain about the human reproductive toxicity of the widespread per- and polyfluoroalkyl substances (PFAS) during early stages of development. The authors examined associations between maternal plasma PFAS levels during early pregnancy and male offspring reproductive function in adulthood. The study included 864 young men (age range: 18.9–21.2 y) from the Fetal Programming of Semen Quality (FEPOS) cohort. Plasma samples from their mothers were retrieved from the Danish National Biobank and levels of 15 PFAS were measured. The authors observed consistent inverse associations between exposure to maternal PFAS and semen quality (lower sperm concentration, lower total sperm count, and higher proportions of nonprogressive and immotile sperm).

*Environmental Health Perspective*

**Water, Sanitation and Hygiene**

*Prenatal exposure to nitrate from drinking water and the risk of preterm birth*

Evidence is emerging that preterm birth (PTB, birth before 37 completed weeks of gestation), a risk factor for neonatal mortality and future morbidity, may be induced by maternal nitrate exposure from drinking water. This study assessed the association between maternal exposure to nitrate and the risk of PTB in a nationwide study of liveborn singletons in a Danish cohort. The authors observed an increasing risk of PTB with increases in nitrate in household tap water. These findings add to a growing body of evidence of adverse effects from nitrate in drinking water at levels below current regulatory levels.

Since the last *Every Woman Every Child Progress Report* published in 2020, food insecurity, hunger, child marriage, risks from intimate partner violence, and adolescent depression and anxiety have all increased.

UN News (18/10/2022)

*Children as young as nine say they are ill from work recycling plastic in Turkey*

According to the Humans Rights Watch, residents and workers, including young children, are being exposed to hazardous conditions at Turkish plastic recycling centres. This comes as a result of failing to enforce safety laws. After China’s ban on plastic waste imports in 2018, waste exports to Turkey from European countries skyrocketed, contributing to a steep growth in waste centres. While Turkey did impose a plastic waste import ban in 2021, it was later lifted. The waste centres were also found to employ refugees and undocumented migrants, with some failing to provide access to medical facilities. Many recycling facilities are located dangerously close to homes, schools, and hospitals, a violation of Turkish laws and regulations, a telling sign of the extent to which the situation has unravelled.

The Guardian (21/09/2022)

*‘It took everything’; the disease that can be contracted by breathing California’s air*

Accompanying rising temperatures in California associated with the global climate crisis, scientists have observed a growth in the number of Valley Fever cases, a disease from the fungus *Coccidioides* which is endemic to United States’ south western soil. This fungus requires hot and dry conditions to grow, and become airborne when disrupted. Residents of the area can easily become exposed to Valley Fever by digging in undisturbed soil or even breathing in areas of concentrated fungus. Experts state that cases will continue to rise and will also spread further across the American West as temperatures continue to rise. Within Kern County, located north of Los Angeles, there has been a substantial increase in cases over the last decade. It is essential to raise awareness regarding the ongoing climate crisis and associated health effects related to the changes inflicted on our environment.

The Guardian (29/08/2022)

*Your Brain on Gas Stoves*

A third of American homes—some 46 million—have gas stoves. People in the U.S. are
Environmental Epidemiology

Social Justice/Equality
The Intersection of Immigrant and Environmental Health: A Scoping Review of Observational Population Exposure and Epidemiologic Studies
The authors summarized current knowledge comparing immigrants’ and nonimmigrants' exposure to and health effects of environmental exposures. Multiple studies reported higher exposures in immigrants compared with nonimmigrants. Among immigrants, studies sometimes observed exposure disparities by country of origin and time since immigration. Although most identified studies explored potential exposure disparities, few investigated subsequent differences in health effects. Research gaps include the role of immigrants’ country of origin and time since immigration, as well as the combined effects of immigrant status with intersecting socioeconomic characteristics, such as race/ethnicity, income, and education attainment.

Environmental Health Perspectives

Exposure to conflict and child health outcomes: evidence from a large multi-country study
Previous research has consistently found evidence of poor health outcomes among children living in conflict areas. This study analyses the adverse impact of exposure to different types of conflicts from in utero to five years of age, on several child health measures across a large group of countries. Empirical estimates show that conflict exposure is negatively associated with child nutrition and immunization, across all our measures of conflict. These findings are robust across a range of specifications, alternative measures of conflict and sub-samples.

Conflict and Health

Climate Change
Ambient temperature and term birthweight in Latin American cities
Extreme temperatures may lead to adverse pregnancy and birth outcomes, including low birthweight. This study evaluated compared birth outcome for newborns in urban areas in Brazil, Chile, and Mexico from 2010 to 2015 from the SALURBAL study (Urban Health in Latin America) with high-resolution daily air temperature data and computed average ambient indoors and at home about 70 percent of their time. This means gas stove emissions could add up to a serious pediatric public health issue. “I’ve been working on cooking-related pollution for quite a few years now,” said Stephanie Holm, co-director of the Pediatric Environmental Health Specialty Unit at the University of California, San Francisco. Gas stoves are a major source of indoor air pollution, releasing a toxic potpourri of inhalable particulate matter, nitrogen dioxide, formaldehyde, and methane. Gas stoves may worsen asthma in children and can release numerous carcinogens (though in low concentrations), even when turned off. There are steps you can take to reduce the risk.

Slate (16/10/2022)

Air Pollution is Linked to Adverse Brain Development in Young Children
Infants’ brains are negatively affected by air pollution, according to a study which has documented the effects of children’s exposure to air pollution from conception to the age of eight-and-a-half years for the first time. Tracking 3,515 children aged 9-12, the study found an association between exposure to air pollutants in the womb and their early years of life to alterations in white matter structural connectivity in the brain. “One of the important conclusions of this study is that the infant’s brain is particularly susceptible to the effects of air pollution not only during pregnancy, as has been shown in earlier studies, but also during childhood,” said Anne-Marie Binter, Barcelona Institute for Global Health (ISGlobal) researcher and first author of the study, which was published in the journal Environmental Pollution.

Health Policy Watch (26/09/2022)

Researchers find toxic particles in lungs, brains, and liver of unborn babies
Previous research shows that specific environmental hazards can impact an unborn baby. Researchers have also found that exposure to lead, pesticides, and air pollution can impact the health of a baby in the uterus. Now a research team from the University of Aberdeen in Scotland, United Kingdom, and Hasselt University in Belgium has found evidence of air pollution particles in the lungs, liver, and brain of unborn babies. The scientists believe the particles are able to cross the placenta and enter the fetus while in the womb as early as the first trimester of pregnancy. This study recently appeared in the journal Lancet Planetary Health.
temperature for every month of gestation for each newborn. They found that higher temperatures during the entire gestation are associated with lower birthweight, particularly in Mexico and Brazil. The cumulative effect of temperature on birthweight is mostly driven by exposure to higher temperatures during months 7–9 of gestation.

*Environment International*

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**EVENTS**

**UN Climate Change Conference 2022 (UNFCCC COP 27)**
November 7-18, 2022, Sharm el-Sheikh, South Sinai, Egypt

**Newsletters**

**CEHN Newsletter: The Patron**

The Patron Newsletter features progress in children’s Environmental Health Policy and Advocacy across the United States and is organized by the Children’s Environmental Health Network (CEHN). October’s newsletter highlights an announcement by the US Environmental Protection Agency (EPA) to proceed with a second-year launch of the Enhancing Lead-Safe Work Practices through Education and Outreach initiative. The EPA also released 20 Climate Adaptation Implementation Plans developed by its major offices. The newsletter also announced several calls to action for individuals to participate in causes, including one to Join or Provide Comments for the Upcoming Meeting of the EPA Children’s Health Protection Advisory Committee.

**CEHN (27/10/2022)**

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**Links to past issues and how to subscribe**

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