WHO Announces open online courses on the topic of “Chemical and Biological Deliberate Events (CBDE)”

As the United Nations’ public health agency, WHO has an important role to play in the global public health response to events involving the possible deliberate use of biological and chemical hazards against a human population. The Chemical and Biological Deliberate Events (CBDE) channel hosts online training to provide basic knowledge for managing the consequences of a CBDE. General awareness is needed to better understand, prepare, detect and respond to deliberate events. Health care professionals will be among the key personnel responding to CBDEs, which will place exceptional strain on the health sector, so it is vital that public health personnel have a basic understanding of how to manage an effective response. The CBDE OpenWHO courses are free, open to anyone who registers with their email address, and are self-paced.

WHO (30/11/2022)

JOURNAL ARTICLES

Pollutants and Child Health

Indoor coal ash and school and social competency among children aged 6–14 years

Fly ash, a waste product generated when burning coal for energy, is comprised of small glass spheres with neurotoxic heavy metal(loids) found to be risk factors for learning and social problems in school. This study assessed the association of fly ash in children’s homes with school and social competency. It included children 6–14 years old from communities located within 10 miles of two coal-burning power plants in the USA. In homes,

UNICEF (30/10/2022)

559 million children currently exposed to high heatwave frequency, rising to all 2.02 billion children globally by 2050

559 million children are currently exposed to high heatwave frequency, according to new research from UNICEF. Further, 624 million children are exposed to one of three other high heat measures - high heatwave duration, high heatwave severity or extreme high temperatures. During a year in which heatwaves in both the southern and northern hemispheres broke records, The Coldest Year Of The Rest Of Their Lives: Protecting Children From The Escalating Impacts Of Heatwaves highlights the already extensive impact of heatwaves on

UNICEF (30/10/2022)
fly ash was collected on polycarbonate filters. School competency and social competency was measured. Results suggest that children with fly ash in their homes had poorer performance in the school setting, compared to peers without fly ash in their homes.

**Journal of Exposure Science & Environmental Epidemiology**

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**Air Pollution**

*Estimation of stillbirths attributable to ambient fine particles in 137 countries*

Gestational exposure to ambient fine particles (PM$_{2.5}$) increases the risk of stillbirth, but the related disease burden is unknown, particularly in low- and middle-income countries (LMICs). The authors combine estimates on stillbirths, and multiple exposure–response functions from previous meta-analyses or derived by a self-matched case-control study in 54 LMICs. They found that 10-µg/m$^3$ increase of PM$_{2.5}$ is associated with an 11.0% increase in the risk of stillbirth, and the association is significantly enhanced by maternal age. Further, they evaluated the PM$_{2.5}$-related stillbirths in 137 countries. In 2015, of 2.09 (95% CI: 1.98, 2.20) million stillbirths, 0.83 (0.54, 1.08) million or 39.7% (26.1, 50.8) are attributable to PM$_{2.5}$ exposure exceeding the reference level of 10 µg/m$^3$.

*Nature Communications*

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**Prenatal Exposure to Ambient PM$_{2.5}$ and Early Childhood Growth Impairment Risk in East Africa**

Height for age is an important and widely used population-level indicator of children's health. Morbidity trends show that stunting in young children is a significant public health concern. Data on child measurements of height-for-age were obtained from six countries in East Africa along with monthly ambient PM$_{2.5}$ concentration data. Fully adjusted models showed that for each 10 µg/m$^3$ increase in PM$_{2.5}$ concentration there is a 0.069 (CI: 0.097, 0.041) standard deviation decrease in height-for-age and 9% higher odds of being stunted. Our study identified ambient PM$_{2.5}$ as an environmental risk factor for lower height-for-age among young children in EA. This underscores the need to address emissions of harmful air pollutants in EA as adverse health effects are attributable to ambient PM$_{2.5}$ air pollution.

*Toxics*

**Air Pollution and Pregnancy Outcomes in Dhaka, Bangladesh**

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**Reports / Annual Publications**

*Information sheet on children’s environmental health for clinicians: what every clinician needs to know about children’s environmental health*

There are growing concerns about infant, child and adolescent health, with the increasing prevalence of non-communicable diseases such as obesity, neurodevelopmental diseases and allergies. In modern society, humans are exposed to a wide variety of environmental contaminants across the life course, starting before conception and extending through foetal development, infancy, childhood and adolescent to adulthood. The early stages of human development are particularly sensitive to the impacts of pollutants, which can interact with the process of developmental plasticity. Toxicant exposure may induce disease in later life. However, these issues are rarely perceived as mainstream among medical society. Currently, the health effects on foetuses and children from environmental exposure to pollutants are not well recognized in medical society. Therefore, awareness needs to be raised among key groups of health workers, through tailored information based on WHO materials. The proposal and concept for the development of the information sheets arose from a series of expert meetings that WHO convened over 2015 – 2018 about pollution and children’s environmental health.

*WHO (01/11/2022)*

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**Over 27 million children at risk as devastating floods set records across the world**

As COP27 gets underway in Egypt, UNICEF warns this year has brought overwhelming flooding to at least 27.7 million children in 27 countries worldwide. A large majority of the 27.7 million children affected by flooding in 2022 are among the most vulnerable and are at high risk of a multitude of threats including death by drowning, disease
Air pollution, one of the biggest environmental risks to health, is a severe problem in Bangladesh. This study explored the negative health impact of air pollution on pregnancy outcomes - preterm births (PTB) and low birth weight (LBW). The study assessed air quality in terms Air Quality Index (AQI) and quantified the association with LBW and PTB. Air pollution situation is quite alarming in Dhaka city, at ‘Unhealthy’ to ‘Extremely Unhealthy’ levels for two thirds of the year. An increase in the prevalence of LBW and PTB was found with increasing cumulative air pollution exposure. LBW increased from 20.6% to 36.0% and PTB increased from 9% to 15.2% respectively between the lowest and highest category AQI value exposure.

The Journal of Climate Change and Health

Chemicals

Bone mass density following developmental exposures to perfluoroalkyl substances (PFAS): a longitudinal cohort study

Environmental exposures to industrial chemicals, including perfluoroalkyl substances (PFAS), may play a role in bone development and future risk of osteoporosis. The objective of this study was to estimate associations between serum-PFAS concentrations measured in infancy and early childhood and areal bone mineral density (aBMD) measured at age 9 years in a birth cohort of children from the Faroe Islands. The authors found PFAS exposures in childhood to be negatively associated with aBMD z-scores, with the strongest association seen for perfluorononanoic acid (PFNA) at age 5 years. These results suggest that bone may be a target tissue for PFAS. Pediatric bone density has been demonstrated to strongly track through young adulthood and possibly beyond; therefore, these prospective results may have important public health implications.

Environmental Health

Phthalate Metabolites in Urine of Chinese Children and Their Association with Asthma and Allergic Symptoms

Phthalates are ubiquitous ‘modern’ chemical compounds with potential negative impacts on children’s health. The authors investigated associations of phthalate exposure with children’s asthma and allergic symptoms. They utilized 243 urine samples from 4–8-year-old children in Tianjin, China. They found significantly positive associations of diagnosed asthma with MnBP and outbreaks, lack of safe drinking water, malnutrition, disruption in learning, and violence. “We are seeing unprecedented levels of flooding all around the world this year, and with it, an explosion in threats to children,” said Paloma Escudero, head of the UNICEF delegation for COP27. “The climate crisis is here. In many places, the flooding is the worst it has been in a generation, or several. Our children are already suffering at a scale their parents never did.”

UNICEF (08/11/2022)

In the Media

Plastics and Human Rights: Questions and Answers

Plastic production, use, and disposal have significant impacts on human rights. Plastics contain toxic chemical additives, which can pose significant threats to human health. Because they are made of fossil fuels, plastics are driving the climate crisis, which in turn threatens human rights. On November 28, 2022, countries around the world will begin to negotiate a new Global Plastics Treaty. The negotiations are based on a resolution by the United Nations Environment Assembly, mandating the creation of a legally binding instrument by the end of 2024 to end plastic pollution. As negotiations proceed, the countries involved should ensure that the treaty addresses plastics in a way that protects human rights.

Human Rights Watch (23/11/2022)

Young kids who breathe polluted air can fall behind in school, study finds

Young children living in neighborhoods with high rates of poverty are more likely to be exposed to many different air pollutants, and that can harm their development during early childhood, according to a recently published study. The children’s increased exposure to air toxins during infancy can reduce reading and math abilities and cause them to fall behind — for some, the effect is equivalent to losing an entire month of elementary school.

The Washington Post (30/11/2022)

Unique resource for identifying new biomarkers of environmental exposures in early life

Researchers now have a unique resource for identifying new biomarkers of environmental exposures in early life and understanding their health effects. This is thanks to a study led by the Barcelona Institute for Global Health (ISGlobal), an institution supported by "la Caixa" Foundation,
MEOHP. The results indicates that phthalate exposure in childhood, may be a risk factor for children's asthma.

*Environment Research and Public Health*

**Heavy Metals**

*Heavy metal contamination assessment and its associated human health risk evaluation in the Mahanadi River sediments, India*

The deltaic areas of the Mahanadi River basin are densely populated and are prone to contamination due to sewage, industrial waste, and agricultural runoff. The present study evaluated the degree of heavy metal pollution in sediment and its impact on human health. The mean concentration of Co and Pb exceeded the global average value in the study regions, and indicated anthropogenic pollution, possibly from agriculture land due to heavy use of pesticides. The human health risk suggested no significant non-carcinogenic risk for adults and children in the study region. However, the carcinogenic risk in children due to Cr posed a mild threat.

*International Journal of Environmental Science and Technology*

**Reproductive Health**

*Birth defects associated with paternal firefighting in the National Birth Defects Prevention Study*

The authors investigated associations between birth defects and paternal work as a firefighter compared to work in non-firefighting and police officer occupations. They analyzed 1997–2011 data from the multi-site case-control National Birth Defects Prevention Study. Paternal firefighting may be associated with an elevated risk of birth defects (including total anomalous pulmonary venous return, cleft palate, cleft lip, and transverse limb deficiency) in offspring. Additional studies are warranted to replicate these findings. Further research may contribute to a greater understanding of the reproductive health of firefighters and their families for guiding workplace practices.

*American Journal of Industrial Medicine*

**Water, Sanitation and Hygiene**

*Water, sanitation, and hygiene access in Senegal and its impact on the occurrence of diarrhea in children under 5 years old*

Diarrheal diseases are the second leading cause of child mortality worldwide, occurring in about one which systematically documented all associations between a wide range of early life exposures and molecular profiles at different levels, including the epigenome (DNA methylation), transcriptome (gene expression) and metabolome (metabolites). The findings, have been published in *Nature Communications* and are publicly available.

*News Medical (22/11/2022)*

**In utero exposure to flame retardants increases anxiety symptoms in adolescents**

New research led by the University of Cincinnati and Cincinnati Children's Hospital Medical Center sheds light on the connection between exposure to environmental toxins in utero and the later development of anxiety during adolescence. The study, published in the journal *Depression & Anxiety*, focused on polybrominated diphenyl ethers (PBDEs), used as flame retardants for products like wire insulation, upholstery, computers and appliances. The study found that each time the PBDE levels doubled in a pregnant mother's blood sample was associated with increased anxiety scores in the adolescents, suggesting PBDE exposure during pregnancy may be a risk factor for developing anxiety symptoms in early adolescence.

*Science Daily (15/11/2022)*

**Nine months on, how the chaos of war in Ukraine is impacting mothers and babies**

Antonina was 30 weeks pregnant when she and her husband fled fighting in the Donetsk region, two months into Russia's war in Ukraine. Fleeing west to Dnipro, she gave birth to a premature girl with severe health complications. "The war added an immense amount of stress to my pregnancy," said Antonina*. I was so stressed that I ended up getting high blood pressure". The couple's baby was born with a compromised immune system, needs an inhaler three times a day and is set to be on medication for the next three years. Save The Children said high levels of stress and anxiety during pregnancy can affect a baby's brain development or immune system and can lead to premature births or even miscarriages.

*EuroNews (24/10/2022)*

**Death of two-year-old from mould in flat a ‘defining moment’, says coroner**

A coroner has said the death of an “engaging, lively, endearing” two-year-old from prolonged exposure to mould in his family’s flat should be a “defining moment” for the UK’s housing sector.
in every nine child deaths, and were associated with water, sanitation, and hygiene (WASH) access. In this study, we provided an overview of WASH indicators' evolution from 2000 to 2017 and their impact on the occurrence of diarrhea in children under 5 years old in Senegal. Our results showed that access to safely managed services increased by 18.1 and 19.1%, respectively, for water and sanitation. The prevalence of diarrhea among children under 5 years old was still relatively high in Senegal and was significantly associated with a lack of WASH access. Additional efforts to make water safer to drink will significantly reduce the occurrence of diarrheal diseases among children under 5 years old in Senegal.

**Water & Health**

**Climate Change and Children’s Health**

**Climate-Related Disasters and Children’s Health: Evidence from Hurricane Harvey**

In this study, the author exploits the interruption of a health survey in Houston by Hurricane Harvey, linked to local flooding data. Data show Harvey led to worse parent-reported health among children six to nine months later, particularly in flooded communities. Further evidence suggests that household life disruption and home damage were key mechanisms and that severe exposure correlated with larger health declines among immigrants, including Hispanic and Asian or other-race children and those younger than 10 years. The author argues that through disasters, climate change should be conceptualized as a risk factor for heath and intergenerational disparities within cohorts and for intergenerational inequalities as newer cohorts experience more extreme weather.

**Social Inequality/Social Justice**

**Social Inequalities: Do They Matter in Asthma, Bronchitis, and Respiratory Symptoms in Children?**

Social inequalities (e.g., poverty and low level of education) generate inequalities in health. The aim of the study was to determine the relationships between indicators of social inequalities and the frequency of respiratory symptoms, asthma, and bronchitis in children. An epidemiological cross-sectional study on students from elementary schools in South Poland was conducted. The students’ parents completed a questionnaire based on Asthma and Allergies in Childhood. Social inequalities in the children’s families were determined according to several parameters.

Awaab Ishak died in 2020, eight days after his second birthday, as a direct result of black mould in the flat he lived in. About 450,000 homes in England have problems with condensation and mould and the verdict triggered calls from paediatric doctors for better reporting of air quality problems in homes. And England’s housing ombudsman, Richard Blakeway, said landlords must make plans to tackle the “real risk of worsening damp and mould issues” as energy bills soar. Greg Fell, the vice-president of the Association of Directors of Public Health, said the verdict “tragically underscored” the “hidden risk” to public health posed by mould.

The Guardian (15/11/2022)

**Toxic Winter: The ‘Slow Violence’ of Air Pollution in Mongolia**

Ulaanbaatar, Mongolia’s capital city is home to 1.5 million people, half of Mongolia’s population. The city consistently ranks among the world’s most polluted cities. On December 1, Ulaanbaatar’s Air Quality Index was 169, with a particulate matter (PM) 2.5 concentration 18 times the World Health Organization (WHO) recommended level. Temperatures regularly fall well below -20 degrees Celsius. As a result, most of the population living in gers, traditional Mongolian yurts, and burn raw coal for heat. This has identified as the main cause of Ulaanbaatar’s air pollution. In addition, Ulaanbaatar is located in the narrow valley. This geography creates a thermal inversion layer above the city, which traps its toxic air. This recurring phenomenon of toxic winter air in Ulaanbaatar can be best understood as a form of “slow violence.”

The Diplomat (08/12/2022)

**Highest metal concentrations in US public water systems found among Hispanic/Latino and American Indian communities**

Significantly higher arsenic and uranium concentrations in public drinking water have been linked to communities with higher proportions of Hispanic/Latino, American Indian/Alaskan Native, and non-Hispanic Black residents, according to a new study at Columbia University Mailman School of Public Health. Irene Martinez-Morata, MD, PhD candidate in Environmental Health Sciences at Columbia University Mailman School of Public Health was first author. “These findings support that inequalities in public water contaminant exposures are more severe in regions with more residents from communities of color relying on public drinking...
results show that social inequalities have significant impacts on the occurrence of respiratory symptoms, bronchitis, and asthma in children.

*International Journal of Environmental Research and Public Health*

**Collateral Damage: Increasing Risks to Children in a Hostile Immigration Policy Environment**

To identify how recent immigration policies have affected the health of children in immigrant families (CIF). As the number of children and families arriving to the US border has increased, so too have immigration policies directly targeting them. Anti-immigrant policies increase the dangers experienced by children migrating to the USA, while also limiting access to needed resources and medical care for CIF inside the country, including many who are US citizens. The resultant deprivation and toxic stress are associated with adverse consequences for children’s physical and mental health.

*Current Pediatrics Reports*

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**EVENTS**

**NCCEH Environmental Health Webinar Series**

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**Newsletters**

**CEHN Newsletter**

The most recent Children’s Environmental Health Network Newsletter highlights healthy holiday giving for kids, by avoiding toys containing chemicals such as Polyvinyl Chloride (PVC), phthalates, and Bisphenol A (BPA). It's also a good idea to avoid toys likely to contain lead, cadmium, asbestos and organic solvents, which may be common in some arts and crafts supplies. The newsletter also highlights the *Climate Resilience for Frontline Clinics Toolkit*, developed in collaboration by The Center for Climate, Health, and the Global Environment at Harvard T.H. Chan School of Public Health (Harvard Chan C-CHANGE) and Americares to help protect people on the frontlines of the climate crisis. [Click for more.](#)

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**Podcasts**

**LISTEN: Ashley James on protecting children from environmental exposures**

Ashley James joins the Agents of Change in Environmental Justice podcast to discuss reframing how we think about children’s health, and what organizers and regulators can learn from each other. James, an ORISE Fellow in the U.S. EPA Office of Children's Environmental Protection and former reporting intern at EHN.org, also talks about community organizing, and her work educating folks on beauty justice. The Agents of Change in Environmental Justice podcast is a biweekly podcast featuring the stories and big ideas from past and present fellows, as well as others in the field.

*Environmental Health News (16/11/2022)*

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

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If you would like to submit information to future HECANET issues, email us at heca@who.int with the subject line "INFORMATION FOR HECANET".

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