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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The State of the World's Children 2024: The future of childhood in a changing world

This year's *State of the World's Children Report* examines the forces and trends shaping our world today and reflects on how they might shape the future. The report explores three megatrends that will profoundly impact children's lives between now and 2050: demographics shifts, the climate and environmental crises and frontier technologies. The report emphasizes that children today are coping with far more environmental hazards than children of the past and will have a significant impact on their lives. As we consider what we can do today, our responsibility is clear: now is the time to shape a better future for every child.
UNICEF (11/2024)

JOURNAL ARTICLES

Air Pollution

Associations between Fine Particulate Matter Components, Their Sources, and Cognitive Outcomes in Children Ages 9–10 Years Old from the United States

Emerging literature suggests that fine particulate matter [aerodynamic diameter ≤2.5μm (PM2.5)] and its components are linked to various neurodevelopmental outcomes in children. This cross-sectional study investigated how ambient concentrations of PM2.5 component mixtures relate to neurocognitive performance in 9- to 10-year-old children across the US. Annual concentrations of 15 chemical components of PM2.5 were estimated based on the residential address of child participants from the Adolescent Brain Cognitive Development (ABCD) Study. General cognitive

CHILDREN'S ENVIRONMENTAL HEALTH NEWS

Health is the Argument for Climate Action

The COP29 Special Report on Climate Change and Health outlines priority actions from the global health community for governments, policy-makers, and other sectors to place health at the heart of climate solutions. Developed by the World Health Organization (WHO) with over 100 organizations and 300 experts, this report emphasizes health as the definitive argument for climate action across people, place and planet. Fundamental to these actions is the urgent need to end fossil fuel reliance and ensure people-centred adaptation and resilience.
WHO (11/2024)

In the Media

COP29 UN Climate Conference Agrees to Triple Finance to Developing Countries, Protecting Lives and Livelihoods

The UN Climate Change Conference (COP29) closed today with a new finance goal to help countries to protect their people and economies against climate disasters, and share in the vast benefits of the clean energy boom. With a central focus on climate finance, COP29 brought together nearly 200 countries in Baku, Azerbaijan, and reached a breakthrough agreement that will: Triple finance to developing countries, from the previous goal of USD 100 billion annually, to USD 300 billion annually by 2035 AND Secure efforts of all actors to work together to scale up finance to developing countries, from public and private sources, to the amount of USD 1.3 trillion per year by 2035.Known formally as the New Collective Quantified Goal on Climate Finance (NCQG), it was agreed after two

ability, executive function, and learning/memory scores were derived from the NIH Toolbox. The authors evaluated six major PM2.5 sources including crustal, ammonium sulfate, biomass burning, traffic, ammonium nitrate, and industrial/residual fuel burning. Analysis revealed associations between cumulative exposure and worse cognitive performance across all three outcome domains, including shared overlap in detrimental effects driven by ammonium nitrates, silicon, and calcium. Negative associations were identified between ammonium nitrates and learning & memory, traffic and executive function, and crustal and industrial mixtures and general cognitive ability. This work suggests nuanced associations between outdoor PM2.5 exposure and childhood cognitive performance.
Environmental Health Perspectives

Relationship between exposure to air pollutants in the first trimester and spontaneous abortion in pregnant women in the river valley city
The authors evaluated the relationship between exposure doses of 2.5-micrometer Particulate Matter ($PM_{2.5}$), Inhalable particles (PM_{10}), Sulfur Dioxide (SO_2), Nitrogen Dioxide (NO_2) and Ozone (O_3) in the first trimester and spontaneous abortion of pregnant women in a valley city in Northwest China. Retrospective analysis of the clinical data of pregnant women with spontaneous abortion and full-term pregnant women was used, in addition to the global average method and the nearest monitoring station method to evaluate the exposure of pollutants. Results show that exposure of pregnant women to $PM_{2.5}$ ($OR_1 = 1.156$, $OR_2 = 1.036$), SO_2 ($OR_1 = 1.432$, $OR_2 = 1.429$) and NO_2 ($OR_1 = 1.121$, $OR_2 = 1.159$) in the first trimester is related to the occurrence of spontaneous abortion.
Scientific Reports

Chemicals and Microplastics
The Detection and Analysis of Microplastics in a Typical Mountainous Drinking Water System in China
Microplastics (MPs) are widely detected in urban drinking water systems. However, the presence and characteristics of MPs in mountainous drinking water systems with simple filtration facilities have been overlooked. In this study, the authors studied the level of MPs in Bainitan Village, Tiantai County, China. The facility did not effectively remove most MPs. Polyethylene, polyurethane, and polyethylene terephthalate were the dominant polymers in water samples (72.32% in total), while polyvinylchloride,

weeks of intensive negotiations and several years of preparatory work, in a process that requires all nations to unanimously agree on every word of the agreement.
UN (24/11/2024)

Delhi tops in death of kids aged 5 and under due to outdoor pollution
Delhi saw the highest number of deaths of children aged under five years due to outdoor air pollution in 2019, asserts a policy communication Collaboration for Air Pollution and Health Effect Research, India (CAPHER). The report establishes that ambient air pollution affects children's health and mortality seeks the intervention of policymakers. They attribute pollution from ambient sources and solid fuel for cooking to be “the third largest risk factor for deaths in children among under five children in India”. There is hope some change will result. The communication suggests some actions such as incorporation of air pollution in health policymaking, working on social determinants of health such as the cost of cleaner fuel.
The Times of India (26/11/2024)

Schools to close as air pollution hits record high in Pakistan’s Lahore
Pakistan’s second-largest city of Lahore closed primary schools for a week after seeing “unprecedented” pollution levels, according to government authorities. For days, the city of 14 million people was been enveloped by smog, a mix of fog and pollutants caused by low-grade diesel fumes, smoke from seasonal agricultural burning and winter cooling. The air quality index, which measures a range of pollutants, exceeded 1,000 on Saturday – well above the level of 300 considered “dangerous”. “This smog is very harmful for children. Masks should be mandatory in schools.” Punjab Senior Minister Marriyum Aurangzeb told a news conference. Breathing the toxic air can have catastrophic health consequences, with the World Health Organization (WHO) saying that strokes, heart disease, lung cancer and respiratory diseases can be triggered by prolonged exposure. The concentration of deadly PM2.5 pollutants – fine particulate matter in the air that causes the most damage to health – was more than 40 times the level deemed acceptable by the WHO at one point.
Aljazeera (03/11/2024)

Lead in gasoline tied to over 150 million excess cases of mental health disorders, study suggests
Exposure to lead in gasoline during childhood resulted in many millions of excess cases of

polyurethane, and polyethylene were the most prevalent in the sediment (74% in total) of the reservoir. The estimated daily intake of MPs through drinking water ingestion was highest in infants (2.14–31.26 MPs/kg bw/day), compared to children (1.41–20.67 MPs/kg bw/day) and adults (1.05–15.35 MPs/kg bw/day), highlighting their increased vulnerability. This emphasizes the need for advanced water treatment systems in mountainous regions.
Toxics

A Prospective Analysis of Per- and Polyfluoroalkyl Substances from Early Pregnancy to Delivery in the Atlanta African American Maternal–Child Cohort
The authors sought to characterize longitudinal per- and polyfluoroalkyl substances (PFAS) concentrations across pregnancy and to examine the maternal–fetal transfer ratio among participants in a study of risk and protective factors for adverse birth outcomes among African Americans. Using the Atlanta African American Maternal–Child cohort (2014–2020), they quantified serum concentrations of PFAS during early (8–14 weeks gestation) and late pregnancy (24–30 weeks gestation). PFAS concentrations were also measured among 199 newborns. Results show that the concentrations of most PFAS increased during pregnancy, and the magnitude of variability differed by individual PFAS. Future studies are needed to understand the influence of within-person PFAS variability during and after pregnancy on birth outcomes.
Environmental Health Perspectives

Metals/Heavy Metals
Heavy metal (Pb, Cd and Cr) contamination and human health risk assessment of groundwater in Kuakata, southern coastal region of Bangladesh
This study investigates the quality of groundwater in Kuakata, a coastal area in southwestern Bangladesh, by analyzing the levels of lead (Pb), cadmium (Cd), and chromium (Cr) in 50 groundwater samples. The results indicated that while cadmium was not detected, significant levels of lead and chromium exceeded recommended safety thresholds. Health risk assessments for adults and children revealed potential non-carcinogenic and carcinogenic risks, particularly from lead. The coastal area is heavily polluted due to industries, garbage and waste. This study provides essential data to guide groundwater management and improve public health in the region.
Geosystem & Geoenvironment

psychiatric disorders over the last 75 years, a new study estimates. Lead was banned from automobile fuel in 1996. The study, published in the Journal of Child Psychology and Psychiatry, looked at its lasting impact in the U.S. by analyzing childhood blood lead levels from 1940 to 2015. According to the findings, the national population experienced an estimated 151 million excess mental health disorders attributable to exposure to lead from car exhaust during children's early development. "Studies like ours add more evidence that removing lead from our environment and not putting it there in the first place has more benefits than we previously understood," the authors said. Though no longer in gasoline, lead is still present in other sources, such as some toys imported from other countries, water service lines that have not yet been updated, some soil and paint in old houses. There is no safe level of exposure to lead, according to the Centers for Disease Control and Prevention. Even small amounts are associated with developmental and learning difficulties.
NBC News (04/12/2024)

Malaysia's health ministry records 10,272 cases of waterborne diseases in six flood-hit states
The Malaysian Health Ministry has recorded 10,272 cases of waterborne diseases at temporary relief centres (PPS) in Kelantan, Terengganu, Kedah, Negeri Sembilan, Pahang and Perak as of Dec 6. Health minister Dzulkefly Ahmad said that cases detected include 6,730 acute respiratory infections and 3,021 skin infections. There were also 298 cases of acute gastroenteritis, 190 of conjunctivitis, 20 of chickenpox and 13 of hand, foot and mouth disease. As of Dec 1, Malaysia's floods – caused by torrential rain in the last week of November – had affected more than 150,000 people across 10 states. The public must remain attentive to directives from the authorities and take personal health precautions to prevent the spread of infectious diseases, accidents and injuries," Dr Dzulkefly said.
The Straits Times (07/12/2024)

Young Adults and Children Are Most at Risk from Heat Exposure
Some 75% of heat-related deaths occurred amongst people under the age of 35, and one-third of such deaths were young adults between the ages of 18 to 35, according to a new study on heat mortality in Mexico. This contradicts previous assumptions that the elderly are the most vulnerable to heat. "We project, as the climate warms, heat-related deaths are going to go up, and the young will suffer the

Metals in Honey from Bees as a Proxy of Environmental Contamination in the United States
This is the first large bio-surveillance study examining the contents and geographic variation of metals of public health concern—arsenic (As), lead (Pb), cadmium (Cd), nickel (Ni), chromium (Cr), and cobalt (Co)—in honey samples collected across the United States. Metal concentrations were measured and the spatial distribution pattern of these contaminants was evaluated. The mean (highest) values were for As, for Pb, and for Cd. These values, as well as the highest concentrations of for Ni, Co, and for Cr, were lower than global averages reported in other countries. The study identified distinct geographic patterns of honey contamination; particularly high As levels were found in northwestern states, while high Co was measured in the southeast. Health risk calculations indicate no adverse health concerns for children and adults, and all samples fell below the threshold for carcinogenic risk. The variation in metal concentrations found in samples from different states may reflect the influence of air, water, or soil pollution, as well as differential accumulation across plant species. The distinct geographic clustering certain metals warrants further investigation to determine the sources of these metals and to assess public health risks.
Environmental Pollution

Reproductive Health
Solid fuel combustion and adverse pregnancy outcomes: A nationwide study on stillbirth in India
Exposure to household air pollution from solid fuel combustion during pregnancy has been associated with adverse pregnancy outcomes, including stillbirth. This study aimed to investigate the association between solid fuel use and stillbirth risk in India, utilizing data from the National Family Health Survey 5 (NFHS-5), a nationally representative cross-sectional survey conducted in India from 2019 to 2021. The study sample consisted of 204,723 women aged 15–49 years who had a pregnancy in the past 5 years preceding the survey. The use of unclean cooking fuels was significantly associated with an increased risk of stillbirth compared to clean fuels. The findings highlight the detrimental impact of solid fuel use on stillbirth rates in India, underscoring the need for targeted interventions to promote cleaner cooking technologies and address socioeconomic disparities.
Public Health

most," said R. Daniel Bressler, co-lead author of the study, published in *Science Advances.* "It's a surprise. These are physiologically the most robust people in the population," said the study's co-author Jeffrey Shrader. The researchers speculate that several factors may be at work. Young adults are more likely to be engaged in outdoor labour including farming and construction, and thus more exposed to dehydration and heat stroke. They are also more likely to participate in strenuous outdoor sports, the researchers pointed out. Infants and children under the age of five are also particularly vulnerable to heat as their bodies are not yet efficient in regulating temperature.
Health Policy Watch (16/12/2024)

'Everywhere chemicals' in plastic food containers and more linked to preterm births, doctors warn
The effects of synthetic chemicals called phthalates — dubbed "everywhere chemicals" — are being found in the womb, experts now warn.
A new study backed by the National Institutes of Health has shown that phthalates, found in everyday products from food containers to shampoo, may be behind the rise in preterm births in the US. "Phthalates can also contribute to inflammation that can disrupt the placenta even more and set the steps of preterm labor in motion," Dr. Leonardo Trasande, director of environmental pediatrics at NYU Langone Health, explained in a CNN report. Specifically, scientists looked at one of the most well-established phthalates — Di(2-ethylhexyl) phthalate, or DEHP — along with 19 others. "Studies show the largest association with preterm labor is due to a phthalate found in food packaging called [DEHP]," Trasande continued. "In our new study, we found DEHP and three similar chemicals could be responsible for 5% to 10% of all the preterm births in 2018. This could be one of the reasons why preterm births are on the rise."
MSN (01/12/2024)

Climate change causing stunting, underweight in Bangladeshi children: Study
Bangladeshi children are experiencing stunting and underweight conditions due to the adverse effects of climate change, according to a recent study. The findings reveal that in-utero exposure to rainfall variations significantly reduces children's height-for-age (stunting) and weight-for-age (underweight) scores. The study was presented during a roundtable organised by the Policy Research Institute of Bangladesh (PRI). Dr Minhaj Mahmud, delivered the address. "We identify that climate financing projects related to adaptation and

Association of mixed exposure to microplastics with sperm dysfunction: a multi-site study in China

This study aims to investigate the presence of multiple microplastics in human semen and urine and their association with sperm quality in a multi-site study across China. The authors included 113 male participants from three regions in China. Semen and urine samples were collected and analysed for eight types of microplastics: polystyrene (PS), polypropylene (PP), polycarbonate (PC), polyethylene (PE), polyvinyl chloride (PVC), polytetrafluoroethylene (PTFE), polyethylene terephthalate (PET), and acrylonitrile butadiene styrene (ABS). Semen quality parameters, including total sperm count, concentration, motility, and morphology, were assessed. Microplastics were detected in all semen and urine samples, with participants typically exposed to 3–5 different types. Notably, PTFE exposure was significantly associated with decreased semen quality. Each additional type of microplastic exposure further decreased semen quality. The findings highlight the potential reproductive health risks posed by microplastic contamination.

The Lancet

Climate Change and Health

Prenatal ozone exposure and risk of intellectual disability

Evidence suggests that climate change will worsen ozone pollution. The authors examine the association of average ozone exposure during the preconception period, and first, second and third trimesters of pregnancy on the odds of intellectual disability (ID) in Utah children. For the period of 2002–2020, we assembled daily ozone concentration data, and data on cases' full siblings and population controls. Ozone was positively associated with the odds of ID in cases vs. their siblings (in the preconception, first, second and third trimester exposure windows) and vs. population controls (only in the second trimester exposure window, $p < 0.05$, $n = 5179$). The findings indicate that ozone has a measurable relationship with children's cognitive development.

Journal of Exposure Science & Environmental Epidemiology

Meetings

mitigation have mitigating effects on these adversities by improving children's anthropometric outcomes," Minhaj said. He highlighted Bangladesh's vulnerability to climate extremes, noting that 26% of the population is affected by cyclones and 70% live in flood-prone areas. "In an agricultural economy, many people living below the poverty line have limited means to combat the harms of climate change and climate extremes. This often exacerbates health adversities, especially among lower-income groups," he added.

The Business Standard (22/12/2024)

Exposure to air pollution increases infertility risk, US study finds

Maternal and paternal exposure to common air pollutants may increase the risk of infertility because it can be detrimental to egg, sperm and embryo development, new research in the US finds. The study looked at about 1,400 men and women attempting to have a child through in vitro fertilization. That allowed researchers to look at donor oocytes, and sperm that were developed in isolation from each other, and in physically different areas. It was generally assumed that air pollution harmed women more, but the new research shows paternal exposure is a problem, too. "We don't usually think about the male partners' exposures in the preconception window, but we and others are increasingly showing that male exposures are important, both in terms of fertility, and potentially later in child health outcomes," said Audrey Gaskins, an Emory University researcher and study lead author.

The Guardian (04/12/2024)

Webinars and Events

Building Social Connections: Designing multi-unit housing for social well-being

Free Webinar Hosted by NCCEH

Jan 15, 2025 @ 12 - 1pm PT

Speaker: Madeleine Herbert

Global Conference on Air Pollution and Health: Accelerating action for clean air, clean energy access and climate change mitigation
March 25-27, 2025
Cartagena, Colombia

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