GUIDELINE FOR CLINICAL MANAGEMENT OF EXPOSURE TO LEAD

The WHO released a new set of guidelines focused on lead exposure. The purpose of the WHO Guideline for clinical management of exposure to lead is to assist physicians in making decisions about the diagnosis and treatment of lead exposure for individual patients and in mass poisoning incidents.

The guideline presents evidence-informed recommendations on:
1. the interpretation of blood lead concentrations;
2. use of gastrointestinal decontamination;
3. use of a chelating agent; and
4. use of nutritional supplements.

WHO (27/10/2021)

JOURNAL ARTICLES

Pollutants and Child Health

Health consequences of exposure to e-waste: an updated systematic review

Electronic waste (e-waste) contains numerous chemicals harmful to human and ecological health. The authors systematically reviewed adverse human health consequences of exposure to e-waste. People living in e-waste exposed regions had significantly elevated levels of heavy metals and persistent organic pollutants. Children and pregnant women were especially susceptible during the critical periods of exposure that detrimentally affect diverse biological systems and organs. The existence of various toxic chemicals in e-waste recycling areas impose plausible adverse health outcomes.

The Lancet Planetary Health

CHILDREN’S ENVIRONMENTAL HEALTH NEWS

Press Releases/Announcements

WHO Young Professionals Programme

The WHO Headquarters is leading the Young Professionals Programme (YPP), in which opportunities for young professionals from Least Developed Countries (LDCs) are offered to engage in WHO’s work and build skills and competence in key public health areas. This is a structured programme which incorporates additional exposure and experience at country level and career support. Young Professionals will be assigned to regular WHO positions and will be fully immersed in WHO’s technical work. Young Professionals will benefit from career support, networking, mentoring and tailored learning opportunities throughout this period to support them in achieving their personal career goals. To enhance their knowledge and widen their professional network, the YP may be posted in a different WHO office on short term learning assignments.

WHO

Reports / Annual Publications

WHO Human Health Risk Assessment Toolkit: Chemical Hazards, second edition

The purpose of the WHO human health risk assessment toolkit: chemical hazards is to provide its users with guidance to identify, acquire and use the information needed to assess chemical hazards, exposures and the corresponding health risks in their given health risk assessment contexts at local and/or national levels. The Toolkit provides road maps for conducting a human health risk assessment, identifies information that must be gathered to complete an assessment and provides
Heavy metal contamination in Peru: implications on children’s health
Cerro de Pasco, Peru, has been excessively contaminated with heavy metals due to high mining activities in the region. The authors investigated chronic exposure to heavy metals in children living in Cerro de Pasco and health status. Heavy metals are associated with higher risk of nosebleed, chronic colic, dermatologic alterations, mood alterations, presence of white lines on nails, reduced visual camp and other symptoms. Heavy metal exposure implies various negative consequences on children’s health.

Scientific Reports

Uneven development of the lead industry leads to regional differences in blood lead levels of children
Research on the relationship between children's blood lead levels (BLLs) and the development of the lead industry is still limited. This study examined whether children’s BLLs were associated with the development of lead industry in different regions of China. The results show that the level of economic development in leaded areas was associated with inequity in children's BLLs. In areas without lead industries, there was little correlation between the level of economic development. China should consciously support the improvement of children’s BLLs in undeveloped areas with lead industries through national financing and policies to avoid the continuous effects of the regional inequality problem of high children's BLLs.

Environmental Pollution

Air Pollution
Air pollution and development in Africa: impacts on health, the economy, and human capital
Africa is undergoing both an environmental and an epidemiological transition. Household air pollution is the predominant form of air pollution, but it is declining, whereas ambient air pollution is increasing. The authors aimed to quantify how air pollution is affecting health, human capital, and the economy across Africa. They found that ambient air pollution is increasing across Africa. In the absence of deliberate intervention, it will increase morbidity and mortality, diminish economic productivity, impair human capital formation, and undercut development. Because most African countries are still early in development, they have opportunities to transition rapidly to wind and solar electronic links to international resources from which the user can obtain information and methods essential for conducting the human health risk assessment.

WHO (08/12/21)

Update of the Blood Lead Reference Value — United States, 2021
The CDC released a new report updating the blood lead reference value (BLRV) to 3.5 μg/dL. It was previously 5 μg/dL. The CDC states that the new Blood Lead Reference Value (BLRV) provides an opportunity for additional progress in addressing longstanding disparities in lead exposure and BLLs in children. In addition, the BLRV should be used as a guide to empower public health partners to determine whether medical or environmental follow-up actions should be initiated for an individual child with BLLs between 3.5 and 5 μg/dL who previously would not have been recommended to receive these services until their BLL reached 5 μg/dL. In addition, it should be used to prioritize communities with the most need for primary prevention of exposure and evaluate the effectiveness of prevention efforts.

CDC (29/20/2021)

Towards a tool for assessment of cumulative risks from indoor air pollutants in public settings for children: the second expert consultation: meeting report
Since 2017, the WHO Regional Office for Europe, supported by international experts, has been developing a screening tool for assessment of risks to human health from combined exposure to multiple chemical pollutants in indoor air in public settings for children. The first consultation, in December 2018 in Bonn, Germany, agreed on lists of priority chemicals and adverse effect endpoints to be considered. The second consultation held in Bonn, Germany, in September 2019 was called to finalize the methodological approach and to agree on the relevant toxicological information. The main outcomes of the consultation were approaches to the assessment of exposure and handling of toxicological information for the calculation of risks.

WHO (11/2021)

Framework for the use of systematic review in chemical risk assessment
Systematic review approaches have the potential to improve decision-making in chemical risk assessment, in particular where there is conflicting evidence and where there is significant uncertainty. This publication uses a high-level overview to...
energy, avoiding a reliance on fossil fuel-based economies and minimising pollution.  
*The Lancet Planetary Health*

**Ambient air pollution associated with lower academic achievement among US children**

Few studies have investigated the impact of ambient air pollution on children’s academic performance on a nationwide level. The authors investigated three prevalent ambient air pollutants: PM$_{2.5}$, NO$_2$ and ozone, and their associations with the average academic test scores, at the Geographic School District (GSD) level, of the third to eighth grade students in the United States from 2010 to 2016. The results show that ambient air pollution is associated with lower academic performance among children. Improving air quality may benefit children’s overall academic achievement and socioeconomic attainment.  
*Environmental Epidemiology*

**Air Pollution and Adolescent Development: Evidence from a 3-Year Longitudinal Study in China**

This study aimed to investigate the impact of air pollution on the development of adolescents and the mediating role of students’ emotional disorders in Southern China (2016 to 2018). The results show that students’ higher degree of exposure to air pollution was negatively associated with development. Three out of four emotional disorders (i.e., anxiety, neuroticism, and withdrawal) mediate this association. The results suggest that the physical environment can influence the emotional status and overall development of adolescents.  
*Children*

**Chemicals**

**Prenatal Exposure to Chemical Mixtures and Cognitive Flexibility among Adolescents**

Cognitive flexibility, a skill that is vital to higher-level executive functions. There is evidence that prenatal exposure to individual chemicals may adversely impact executive functions in children. The authors investigated this association among a diverse group of adolescents living near a Superfund site in, Massachusetts. They investigated the association of biomarkers of prenatal exposure to organochlorines (DDE, HCB, PCBs) and metals (lead, manganese) with cognitive flexibility. Adverse cognitive flexibility provide guidance to chemical risk assessors who are not currently familiar with systematic approaches, without being prescriptive or endorsing any existing published methods.  
*WHO (03/11/2021)*

**In the Media**

**Plastics in soil threaten food security, health, and environment: FAO**

According to data collated by FAO experts, agricultural value chains each year use 12.5 million tonnes of plastic products while another 37.3 million are used in food packaging. And microplastics – less than 5 mm in size – have been found in human feces and placentas as well as been transmitted to fetuses through their pregnant mothers. While most scientific research on plastics pollution has been directed at aquatic ecosystems, FAO experts say agricultural soils are thought to receive far greater quantities of microplastics. Lacking viable alternatives, it impossible for plastics to be banned. The report does, however, identify several solutions based on the “Refuse, Redesign, Reduce, Reuse, Recycle, and Recover” model.  
*UN News (07/12/2021)*

**‘They’re killing our children’: mothers from around the world demand action on fossil fuels**

A delegation of mothers from all over the world, all of whom had seen their own children suffer health damage from air pollution, met the Cop26 president, Alok Sharma to demand an end to fossil fuel financing. The delegation was led by Rosamund Adoo-Kissi-Debrah, who lost her nine-year-old daughter, Ella, to severe asthma that was officially linked to air pollution in London. She was joined by Dr Maria Neira, the director of public health at the World Health Organization (WHO), and other mothers from India, Brazil, South Africa, Poland and Nigeria, to present a letter to Sharma. “Lots of words and no action – and toxic pollution on our streets – is fuelling a public health crisis that is making our kids sick and threatening their futures,” said Kissi-Debrah. “We need urgent action now.”  
*The Guardian (05/11/2021)*

**First Person: Telling the tragic story of mercury poisoning in Japan**

As a storyteller at the Minamata Disease Municipal Museum, Mr. Ogata helps to keep alive the memory of what is considered to be one of the most
associations were identified with Mn and chemical mixtures. There was little evidence of effect modification by sex and some evidence of effect modification by a measure of social disadvantage. 

Toxics

Effect of childhood phthalates exposure on the risk of overweight and obesity: A nested case-control study in China
There is interest in endocrine disrupting chemicals that might have effect on the obesity epidemic, but few studies on the association of phthalates (PAEs) with childhood overweight and obesity in China. A nested case-control study was conducted in a prospective cohort of 2298 children aged 7–13 years from October 2017 to October 2020 with five waves visits in Xiamen city, China. The authors found that children in China were extensively exposed to PAEs, and the exposure to PAEs during childhood could significantly increase the risk of overweight and obesity with a dose-response relationship, particularly in girls. 

Environment International

Preschool-Age Children's Pesticide Exposures in Child Care Centers and at Home in Northern California
Young children may be exposed to pesticides used in child care centers and their family homes. The authors examined pesticide use and factors associated with child exposures in these settings. Common pesticides were bifenthrin, chlorpyrifos, cypermethrin, fipronil, and cis- and trans-permethrin. Pesticide chemical storage onsite, cracks in the walls, using doormats, observed pests, or evidence of pests were associated with child exposures. Exposures were higher in counties with higher agricultural or commercial pesticide use or when children lived in homes near agricultural fields. 

Journal of Pediatric Health Care

Reproductive Health

Maternal occupational exposure to endocrine-disrupting chemicals and urogenital anomalies in the offspring
The authors investigated if there an association between maternal occupational exposure to endocrine-disrupting chemicals (EDCs) early in pregnancy and subgroups of congenital anomalies of kidney and urinary tract (CAKUT), and hypospadias in offspring. For this case-control study, cases with urogenital anomalies from the serious Japanese pollution incidents of the Twentieth Century. The incident was caused by the release of toxic chemicals from an industrial plant, which accumulated in shellfish and fish, and were then eaten by the local population. More than 2,000 people have been recognized as victims, many of whom, including Mr. Ogata, had to fight for recognition and compensation: around 20 members of his family were affected by the disease, which causes muscle weakness, loss of peripheral vision, and hearing/speech impairment. 

UN News (30/30/2021)

Pushing renewable power immediately could save trillions in health costs
The use of fossil fuels comes with a wide variety of externalized costs. The big focus tends to be on the carbon dioxide fossil fuel produces and its role in warming the climate. But fossil fuels also cause environmental damage when they're extracted, and burning them produces particulate pollution and ozone. Those substances have effects on human health and agriculture. There have been attempts over the years to quantify these externalized costs. The researchers' results say that, even if you ignore the climate benefits, moving away from fossil fuels rapidly would lead to benefits that, in the US alone, can add up to trillions of dollars before the century is over.ARC Technica (01/11/2021)

New study shows environmental and social factors contribute to higher rates of pneumonia in children
A new study demonstrates that children who are exposed to a certain type of environmental air pollution are more likely to contract community acquired pneumonia, or CAP, and to be hospitalized for longer periods of time. Social factors, including race and socioeconomic status, were also found to be associated with living in high-risk areas for CAP.

Science Daily (30/10/2021)

As Delhi chokes, India's supreme court is grappling with the air pollution crisis
Delhi has been reeling under severe winter pollution for decades, and since record taking started in 2016, not much has changed. In India, biomass burning happens almost throughout the year. About 5% of the biomass fires come from farmland and 14% from forest fires. While forest fires occur before monsoon months, residual crop burning occurs mainly in the Indo-Gangetic plains during winter. “If we can control air pollution, then we also solve the climate crisis to a certain extent.
European Concerted Action on Congenital Anomalies and Twins Northern Netherlands (Eurocat NNL) registry and non-malformed controls from the Lifelines children cohort (living in the same catchment region as Eurocat NNL) born between 1997 and 2013 were selected. Exposure to specific EDCs can increase the risk of CAKUT and no association with hypospadias was observed. 

*Human Reproduction*

**Water, Sanitation and Hygiene**

*Progress in Water, Sanitation and Hygiene (WASH) coverage and potential contribution to the decline in diarrhea and stunting in Ethiopia*

Inadequate safe water supply and poor sanitation and hygiene continue to be important risk factors for diarrhoea and stunting globally. We used data from the four rounds of the Ethiopian Demographic and Health Survey and applied the new World Health Organization (WHO)/UNICEF Joint Monitoring Program (JMP) service standards to assess progress in water, sanitation and hygiene (WASH) coverage between 2000 and 2016. We observed a significant increase in the coverage of safe drinking water and adequate sanitation facilities over the period. At the national level, the use of a basic water source increased from 18% in 2000 to 50% in 2016. The reduction in surface water use between 2000 and 2016 explained 6% of the decline in diarrhoea observed among children aged 0–5 months. In children aged 6–59 months, between 7% and 9% of the reduction in stunting were attributable to the reduction in open defecation over this period. Despite progress, improvements are still needed to increase basic WASH coverage in Ethiopia. 

*Maternal & Child Nutrition*

**Climate Change and Children’s Health**

*Monitoring climate change and child health: The case for putting children in all policies*

Climate change is threatening the health of current and future generations of children. The most recent evidence from the *Lancet* Countdown: Tracking Progress on Health and Climate Change finds declining trends in yield potential of major crops, rising heatwave exposures, and increasing climate suitability for the transmission of infectious diseases, putting at risk the health and wellbeing of children around the world. However, if children

But for farmers, crop stubble burning is a matter of their livelihood. So they need affordable alternatives to make a shift,”

*Climate Home News (20/11/2021)*

**Chemicals from certain personal care products may impact maternal hormone levels during pregnancy**

Use of certain personal care products during pregnancy may impact maternal hormone levels, according to a new Rutgers study. The study, published in *Environmental Research*, examined the association between personal care product use and the levels of sex steroid hormones, including estrogens and progesterone and thyroid hormones among pregnant women. The researchers found that many products are associated with lower levels of sex steroid hormones, which have a critical role maintaining pregnancy and fetal development. Disruptions of these hormones may contribute to adverse maternal and pregnancy outcomes like growth restriction, preterm birth and low birth weight.

*News Medical (11/12/2021)*

**Climate change makes children vulnerable to infectious diseases: Study**

Scientists have found that climate parameters accounted for 9 to 18 per cent of the total infectious disease in children under 16 years of age in Varanasi, India, according to a study from the DST-Mahamana Centre of Excellence in Climate Change Research, BHU. Climate change driven by anthropogenic activities may challenge the gains in public health over the past many years, particularly in a country like India that ranks high in the list of climate-vulnerable countries in the world, the Science and Technology Ministry said in a statement. Globally, it is estimated that children are to bear most of the burden of disease due to climate change, with the poorest disproportionately affected. The higher risk associated with children is due to the combination of physiological vulnerability as well as the risk of exposure.

*Devdiscourse (13/12/2021)*

**Newsletters**

*The Patron (CEHN Newsletter)*

The Patron highlights numerous updates on CEH across the United States and highlights proposals to policy changes, including the *Keep Children and Families Safe from Lead Hazards Act*, which was introduced in the Senate. The legislation would
are considered at the core of planning and implementation, the policy responses to climate change could yield enormous benefits for the health and wellbeing of children throughout their lives. Child health professionals have a role to play in ensuring this, with the beneficiaries of their involvement ranging from the individual child to the global community. The newly established Children in All Policies 2030 initiative will work with the Lancet Countdown to provide the evidence on the climate change responses necessary to protect and promote the health of children.

*Journal of Pediatrics and Child Health*

**EVENTS**

**2022 PPTOX VII – International Conference on Prenatal Programming and Toxicity**
Virtual Meeting  
January 10-13, 2022

**International Society for Children’s Health and the Environment (ishe) Retreat**
Translation & Communication: Protecting Children from Toxic Chemicals  
Hardingasete, Norway  
June, 2022

direct the U.S. Department of Housing and Urban Development (HUD) to conduct an annual risk assessment of lead exposures in at-risk properties to ensure that lead hazards are identified and remediated.

**NewsSlice**
This month’s newsletter highlights the impact of climate crisis on children. Articles highlight Native American communities hit especially hard by warming in northern communities, and the worldwide impact climate change is having on children’s mental health.

**Down to Earth**
The Guardian’s weekly environmental newsletter discusses evidence that people exposed to poor air quality are more likely to suffer more severe forms of COVID-19. The point here is this: Covid-19 now joins many other diseases for which there is strong evidence that air pollution is a contributory factor, even if a causal link cannot be proved.