

## 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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### UN-WATER GLOBAL ANALYSIS AND ASSESSMENT OF SANITATION AND DRINKING-WATER (GLAAS) 2019 REPORT

There is widespread recognition that sustainable and effective WASH service delivery is not only determined by the state of infrastructure, but also by complex institutional, governance and financial management systems. While a "system" may be interpreted or defined in different ways, core elements examined by the UN-Water Global Analysis and Assessment of Sanitation and Drinking-Water (GLAAS) initiative include the extent to which countries develop and implement national policies and plans for WASH, conduct regular monitoring, regulate and take corrective action as needed, and coordinate these parallel processes with sufficient financial resources and support from strong national institutions.

GLAAS findings on the status of WASH systems are varied. Most countries have requisite components in place, but many countries responded that they have yet to operationalize and fully implement measures to support and strengthen their national WASH systems. GLAAS findings highlight gaps and vulnerabilities in WASH systems and the need for further strengthening to assure sustainable and effective WASH service delivery in countries.

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**HEALTHY ENVIRONMENTS: WHY DO THEY MATTER, AND WHAT CAN WE DO?**

### CHILDREN'S ENVIRONMENTAL HEALTH NEWS

#### Press Releases

#### [Rising to the challenge of malaria eradication](#)

The World Health Organization (WHO) says accelerated research and development (R&D) in new tools for malaria prevention and treatment is key if the world is to eradicate malaria in the foreseeable future: today less than 1% of funding for health R&D investment goes to developing tools to tackle malaria. WHO also flags the urgent need for progress to advance universal health coverage and improve access to services, and better surveillance to guide a more targeted malaria response. The findings have emerged in a report from WHO's Strategic Advisory Group on Malaria Eradication (SAGme). "To achieve a malaria-free world we must reinvigorate the drive to find the transformative strategies and tools that can be tailored to the local situation. Business as usual is not only slowing progress, but it is sending us backwards," according to Dr Marcel Tanner, Chair of the SAGme. WHO (23/8/2019)

#### [WHO calls for more research into microplastics and a crackdown on plastic pollution](#)

The World Health Organization (WHO) today calls for a further assessment of microplastics in the environment and their potential impacts on human health, following the release of an analysis of current research related to microplastics in drinking-water. The Organization also calls for a reduction in plastic pollution to benefit the environment and reduce human exposure. "We urgently need to know more about the health impact of microplastics because they are everywhere - including in our drinking-water," says Dr Maria Neira, Director, Department of Public Health, Environment and Social Determinants of Health, at WHO. "Based on the limited information we have, microplastics in

Globally, 23% of all deaths could be prevented through healthier environments – and scaled-up action is required. This document presents an overview of sectoral actions that can be taken by various actors – and the support that is being offered by the World Health Organization – to create healthier environments, including in priority settings such as workplaces, cities, dwellings, health care facilities, and emergency settings. Key risk areas are addressed, such as air pollution; water, sanitation and hygiene; chemical safety and radiation; and climate change.

The actions presented provide an initial overview and overall policy directions and refer to more detailed information for the next steps. They focus on intersectoral collaboration between a wide range of partners – international organizations, governments, and national and subnational actors – to create safe, enabling and equitable environments for better health and a more sustainable future.

[Full report](#)

[Infographics](#)

## JOURNAL ARTICLES

### Air Pollution

[Prenatal and Childhood Traffic-Related Air Pollution Exposure and Telomere Length in European Children: The HELIX Project](#)

Telomere length is a molecular marker of biological aging. This study investigated whether early-life exposure to residential air pollution was associated with leukocyte telomere length (LTL) at 8 y of age. LTL was inversely associated with prenatal and 1-y childhood NO<sub>2</sub> and PM<sub>2.5</sub> exposures levels. Each standard deviation (SD) increase in prenatal NO<sub>2</sub> was associated with a -1.5% (95% CI: -2.8, -0.2) change in LTL. Prenatal PM<sub>2.5</sub> was nonsignificantly associated with LTL (-0.7% per SD increase; 95% CI: -2.0, 0.6). For each SD increment in 1-y childhood NO<sub>2</sub> and PM<sub>2.5</sub> exposure, LTL shortened by -1.6% (95% CI: -2.9, -0.4) and -1.4% (95% CI: -2.9, 0.1), respectively. Each doubling in residential distance to nearest major road during childhood was associated with a 1.6% (95% CI: 0.02, 3.1) lengthening in LTL. Lower exposures to air pollution during pregnancy and childhood were

drinking water don't appear to pose a health risk at current levels. But we need to find out more. We also need to stop the rise in plastic pollution worldwide." WHO (23/8/2019)

[UNEP, UN Human Rights Office sign new agreement, stepping up commitment to protect the human right to a healthy environment](#)

As threats to individuals and communities defending their environmental and land rights intensify in many parts of the world, the UN Environment Programme (UNEP) and the UN Human Rights Office have prioritised efforts to promote and protect environmental and human rights with the signing today of a new cooperation agreement. The heads of the two UN bodies agreed that although more than 150 countries have recognised the human right to a healthy environment in their constitutions, national laws and jurisprudence, or through regional agreements, significantly more work is needed to inform policy-makers, justice institutions and the public on the various ways they can take action to uphold this right. UNEP (16/8/2019)

[Youth leaders to share ideas with PAHO on improving adolescent health in the Americas](#)

The Youth Leaders Initiative, to be created by the Pan American Health Organization (PAHO), will bring together people under the age of 25 to seek innovative ideas and solutions to address health problems that affect adolescents and young people in the Americas. Around 237 million young people aged 10 to 24 live in the Americas, accounting for a quarter of the Region's population. However, despite being a priority demographic, youth mortality rates have decreased slightly between 2000 and 2015. The Youth Leaders Initiative will consist of around 20 participants, representing the various subregions, genders, ethnic groups and other segments of communities in the Americas. They will participate voluntarily and will represent the entire Region rather than specific organizations or countries. PAHO (12/8/2019)

[Progress being made in fight against tobacco, but increased action needed to help people quit deadly products](#)

Many governments are making progress in the fight against tobacco, with 5 billion people today living in countries that have introduced smoking bans, graphic warnings on packaging and other effective tobacco control measures - four times more people than a decade ago. But a new WHO

associated with longer telomeres in European children at 8 y of age. These results suggest that reductions in traffic-related air pollution may promote molecular longevity, as exemplified by telomere length, from early life onward.

*Environmental Health Perspectives*

#### [The association of early-life exposure to ambient PM2.5 and later-childhood height-for-age in India: an observational study](#)

Children in India are exposed to high levels of ambient fine particulate matter (PM2.5). However, population-level evidence of associations with adverse health outcomes from within the country is limited. The aim of this study is to estimate the association of early-life exposure to ambient PM2.5 with child health outcomes (height-for-age) in India. Children in the sample were exposed to an average of 55  $\mu\text{g}/\text{m}^3$  of PM2.5 in their birth month. After controlling for potential confounders, a 100  $\mu\text{g}/\text{m}^3$  increase in PM2.5 in the month of birth was associated with a 0.05 [0.01–0.09] standard deviation reduction in child height. For an average 5 year old girl, this represents a height deficit of 0.24 [0.05–0.43] cm. Authors also found that exposure to PM2.5 in the last trimester in utero and in the first few months of life are significantly ( $p < 0.05$ ) associated with child height deficits. The study did not observe a decreasing marginal risk at high levels of exposure.

*Environmental Health*

#### [Sex-specific associations of autism spectrum disorder with residential air pollution exposure in a large Southern California pregnancy cohort](#)

Autism spectrum disorder (ASD) affects more boys than girls. Recent animal studies found that early life exposure to ambient particles caused autism-like behaviors only in males. However, there has been little study of sex-specificity of effects on ASD in humans. Authors evaluated ASD risk associated with prenatal and first year of life exposures to particulate matter less than 2.5  $\mu\text{m}$  in aerodynamic diameter (PM2.5) by child sex. Adjusted HRs per 6.5  $\mu\text{g}/\text{m}^3$  PM2.5 were elevated during entire pregnancy [1.17 (95% confidence interval (CI), 1.04–1.33)]; first trimester [1.10 (95% CI, 1.02–1.19)]; third trimester [1.08 (1.00–1.18)]; and first year of life [1.21 (95% CI, 1.05–1.40)]. Only the first trimester association remained robust to adjustment for other exposure windows, and was specific to boys only (HR = 1.18; 95% CI, 1.08–1.27); there was no association in girls (HR = 0.90; 95% CI, 0.76–1.07; interaction  $p$ -value 0.03). There were

report shows many countries are still not adequately implementing policies, including helping people quit tobacco, that can save lives from tobacco. The seventh WHO Report on the global tobacco epidemic analyses national efforts to implement the most effective measures from the WHO Framework Convention on Tobacco Control (WHO FCTC) that are proven to reduce demand for tobacco. These measures, like the “MPOWER” interventions, have been shown to save lives and reduce costs from averted healthcare expenditure. WHO (26/7/2019)

#### [Medellín shows how nature-based solutions can keep people and planet cool](#)

This summer, as temperatures have soared across Europe, India, Egypt and many other places, the first reaction of those with access to cooling has often been to crank up the air conditioning. While this brings short-term relief, it isn't a feasible long-term solution on a warming planet. The increase in air conditioning, and other cooling, brings with it a huge surge in power demand. This, in turn, drives climate change and even higher temperatures. But it doesn't have to be that way, as Colombia's second-largest city, Medellín, is showing by embracing nature-based solutions. Nature-based Solutions are defined by the International Union for Conservation of Nature as “actions to protect, sustainably manage, and restore natural or modified ecosystems, that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits”. UNEP (17/7/2019)

#### [Smart wastewater management can help reduce air pollution](#)

“Walk along the Bagmati river in the Nepalese capital, Kathmandu, and you are hit by a pervasive stench, underlining the fact that poor wastewater management worsens air pollution,” says Birguy Lamizana, a UN Environment specialist on wastewater and pollution. “The other thing you notice is that it's the poorest of the poor living along the banks of the river in makeshift shacks: the world over it's usually the poorest people who are worst affected by pollution,” she adds. Kathmandu is not an isolated example of poor wastewater management. All big cities, especially those in developing countries with rapidly expanding populations, face similar problems. Heavily polluted urban waterways emit toxic gases such as methane and nitrous oxide which are also greenhouse gases, and a recent

no statistically significant associations with other pollutants. PM2.5-associated ASD risk was stronger in boys, consistent with findings from recent animal studies. Further studies are needed to better understand these sexually dimorphic neurodevelopmental associations.

*Environmental Pollution*

#### [Inflammation and acute traffic-related air pollution exposures among a cohort of youth with type 1 diabetes](#)

Evidence remains equivocal regarding the association of inflammation, a precursor to cardiovascular disease, and acute exposures to ambient air pollution from traffic-related particulate matter. Though youth with type 1 diabetes are at higher risk for cardiovascular disease, the relationship of inflammation and ambient air pollution exposures in this population has received little attention. Using five geographically diverse US sites from the racially- and ethnically-diverse SEARCH for Diabetes in Youth Cohort, authors examined the relationship of acute exposures to PM2.5 mass, Atmospheric Dispersion Modeling System (ADMS)-Roads traffic-related PM concentrations near roadways, and elemental carbon (EC) with biomarkers of inflammation including interleukin-6 (IL-6), c-reactive protein (hs-CRP) and fibrinogen. Indicators of inflammation were associated with estimated traffic-related air pollutant exposures in this study population of youth with type 1 diabetes. Thus youth with type 1 diabetes may be at increased risk of air pollution-related inflammation. These findings and the racial/ethnic and gender differences observed deserve further exploration.

*Environment International*

## **Chemicals**

#### [Urinary bisphenols and obesity prevalence among US children and adolescents](#)

Bisphenol A (BPA) has been recognized as an endocrine disrupting chemical and identified as an obesogen. Although once ubiquitous, human exposure to BPA is declining due to its substitution with other bisphenols. Two structurally similar substitutes, bisphenol S (BPS) and bisphenol F (BPF), have raised similar concerns, although fewer studies have been conducted on these newer derivatives. BPA, BPS, and BPF were detected in 97.5%, 87.8% and 55.2% of urine samples, respectively. Log-transformed urinary BPS concentrations were

global study found that concentrations of antibiotics in some of the world's rivers exceed safe levels by up to 300 times. UNEP (16/7/2019)

#### [World hunger is still not going down after three years and obesity is still growing – UN report](#)

An estimated 820 million people did not have enough to eat in 2018, up from 811 million in the previous year, which is the third year of increase in a row. This underscores the immense challenge of achieving the Sustainable Development Goal of Zero Hunger by 2030, says a new edition of the annual The State of Food Security and Nutrition in the World report released today. The pace of progress in halving the number of children who are stunted and in reducing the number of babies born with low birth weight is too slow, which also puts the SDG 2 nutrition targets further out of reach, according to the report. At the same time, adding to these challenges, overweight and obesity continue to increase in all regions, particularly among school-age children and adults. WHO (15/7/2019)

#### [India joins the Climate and Clean Air Coalition](#)

India has formally joined the Climate & Clean Air Coalition (CCAC), becoming the 65th country to join the partnership, following through on a commitment made by the country's newly-appointed Minister for Environment, Forest and Climate Change, Prakash Javadekar, during last month's World Environment Day celebrations. The announcement underlines India's commitment to combat air pollution with a solutions-oriented approach. "India will work with Coalition countries to adopt cleaner energy sustainable production and consumption patterns and environment-friendly transport, agriculture, industry and waste management to promote clean air," Minister Javadekar said. "India has taken a lead role in combating air pollution; these activities, including bilateral and multilateral cooperation with partners, will highlight India's initiatives and expertise in the field." UNEP (5/7/2019)

#### [Oil and gas sector can bring quick climate win by tackling methane emissions](#)

As September's UN Climate Action Summit fast approaches and the mercury rises across Europe and India, the pressure is on to find workable solutions that can quickly turn down the planet's thermostat. There is an obvious focus on cutting carbon dioxide emissions, the chief culprit for climate change, but there also lies a huge

associated with an increased prevalence of general obesity (OR=1.16, 95% CI: 1.02, 1.32) and abdominal obesity (OR=1.13, 95% CI: 1.02, 1.27). BPF detection (vs. not detected) was associated with an increased prevalence of abdominal obesity (OR=1.29, 95% CI: 1.01, 1.64) and continuous BMI z-score ( $\beta$ =0.10, 95% CI: 0.01, 0.20). BPA and total bisphenols were not statistically significantly associated with general obesity, abdominal obesity, or any body mass outcome. This study suggests that BPA substitute chemicals are correlated with obesity in contemporary children.

*Journal of the Endocrine Society*

### [Organophosphate Pesticide Exposure in Pregnancy in Association with Ultrasound and Delivery Measures of Fetal Growth](#)

Perturbations in fetal growth may have adverse consequences for childhood and later life health. Organophosphate pesticide (OP) exposure has been associated with reduced birth weight at delivery but results are not consistent. Authors investigated this question by utilizing ultrasound measures of size in utero in combination with measures from delivery. A 10-fold increase in average DAPs was associated with a -0.53 SDS decrease in fetal length (95% CI=-0.83, -0.23) and a -0.32 SDS decrease in estimated fetal weight (95% CI=-0.59, -0.04) at 20 weeks of gestation. These differences corresponded to 5% and 6% decreases relative to the mean. Effect estimates were greatest in magnitude for DAP concentrations measured early in pregnancy. Associations between average DAPs and growth measures at delivery were positive but not significant for head circumference and length and were null for weight. Maternal urinary DAPs were associated with decreased fetal weight and length measured during mid-pregnancy, but not at delivery.

*Environmental Health Perspectives*

### [Fetal growth in environmental epidemiology: mechanisms, limitations, and a review of associations with biomarkers of non-persistent chemical exposures during pregnancy](#)

Non-persistent chemicals, such as phthalates, environmental phenols, organophosphate pesticides, and others, are challenging to study because of their ubiquity in the environment, diverse exposure routes, and high temporal variability of biomarkers. The bulk of the literature this study found uses biomarkers measured at a single time point in pregnancy and birth weight as

opportunity in reducing methane emissions from the oil and gas industry. Methane is responsible for at least a quarter of global warming and is over 80 times more powerful than carbon dioxide as a warming gas over a twenty-year timeframe. According to the Intergovernmental Panel on Climate Change, accelerated reductions in methane emissions must come by 2030 to have any chance of meeting the 1.5°C global temperature target—or even the 2°C target. UNEP (27/6/2019)

### [Thawing Arctic peatlands risk unlocking huge amounts of carbon](#)

Scientists have been warning us for quite some time now that a warmer planet could lead to the thawing of permafrost and the vegetable matter—peat—locked up inside it. Sinking homes are only the visible consequence of this phenomenon. Large-scale melting is expected to release huge amounts of CO<sub>2</sub>, which will in turn lead to more heating, with devastating consequences on the climate... and our everyday lives. A recent study predicts that there's a one in 20 chance of a 2-metre sea level rise if we do nothing. "To avoid such a destructive scenario, it is critical that the world's permafrost and its peatlands stay frozen and retain their carbon deposits," says UN Environment peatlands expert Dianna Kopansky. UNEP (27/6/2019)

### [Eliminating trachoma: WHO announces sustained progress with hundreds of millions of people no longer at risk of infection](#)

The number of people at risk of trachoma – the world's leading infectious cause of blindness – has fallen from 1.5 billion in 2002 to just over 142 million in 2019, a reduction of 91%, WHO has reported. New data presented today at the 22nd meeting of the WHO Alliance for the Global Elimination of Trachoma by 2020 (GET2020) also show that the number of people requiring surgery for trachomatous trichiasis – the late, blinding stage of trachoma – has dropped from 7.6 million in 2002 to 2.5 million in 2019, a reduction of 68%. "Eliminating trachoma contributes to the ocular health and quality of life of the poorest, most disadvantaged people worldwide and thereby moves us a step closer to achieving universal health coverage," said Dr Mwelecele Ntuli Malecela, Director, WHO Department of Control of Neglected Tropical Diseases. WHO (27/6/2019)

### [Maldives gets out ahead of air pollution](#)

In a country whose sovereign territory is almost

the primary measure of fetal growth. There is a small, but growing, body of research that uses ultrasound measures to assess fetal growth during pregnancy. In addition to summarizing the findings of the publications we identified, authors describe inconsistencies in methodology, areas for improvement, and gaps in existing knowledge that can be targeted for improvement in future work. This literature is characterized by variability in methodology, likely contributing to the inconsistency of results reported. Authors further discuss maternal, placental, and fetal pathways by which these classes of chemicals may affect fetal growth.

*Environmental Health*

#### [Environmental phthalate exposure and preterm birth in the PROTECT birth cohort](#)

Preterm birth is a global public health issue and rates in Puerto Rico are consistently among the highest in the USA. Exposures to environmental contaminants might be a contributing factor. In a preliminary analysis from the Puerto Rico Testsite for Exploring Contamination Threats (PROTECT) cohort (n=1090), authors investigated the association between urinary phthalate metabolite concentrations measured at three study visits (targeted at 20, 24, and 28 weeks of gestation) individually and averaged over pregnancy with gestational age at delivery and preterm birth. Authors additionally assessed differences in associations by study visit and among preterm births with a spontaneous delivery. Among pregnant women in the PROTECT cohort, DBP and DiBP metabolites were associated with increased odds of preterm birth. These exposures may be contributing to elevated rates of preterm birth observed in Puerto Rico.

*Environment International*

#### [Children's exposure to phthalates and non-phthalate plasticizers in the home: The TESIE study](#)

Phthalates and their potential replacements, including non-phthalate plasticizers, are ubiquitous in home environments due to their presence in building materials, plastics, and personal care products. As a result, exposure to these compounds is universal. However, the primary pathways of exposure and understanding which products in the home are associated most strongly with particular exposures are unclear. This paper summarizes one of the most comprehensive phthalate and non-phthalate plasticizer investigation of potential residential

100 per cent ocean, there are an unexpected number of cars, trucks and motorcycles packed into the Maldivian capital. Some 70,000 vehicles buzz around the roads of Malé, one of the world's smallest and most densely populated capital cities. That's almost one vehicle for every two people living on the small, cramped atoll. At rush hour, as cars and swarms of motorcycles scrape by each other in the narrow lanes, you could be forgiven for forgetting you're in a country better known for its pristine beaches than its traffic chaos. UNEP (25/6/2019)

#### [National academies call for immediate action on air pollution](#)

Countries across the world must urgently adopt emissions controls and air monitoring systems for the worst pollutants, if they are to grapple with the growing problem of air pollution causing millions of deaths each year, five national academies have said. The Academies of Sciences and Medicine from South Africa, Brazil, Germany, and the United States issued a joint statement on 19 June, which they presented at the United Nations Headquarters in New York, calling for intensified funding and action under a new global compact to tackle air pollution. "If we do not urgently address this global challenge, air pollution will continue to take a startling toll in terms of preventable disease, disability and death, as well as in avoidable costs of care," said Marcia McNutt, president of the US National Academy of Sciences. "We need to act much more decisively. We need more public and private investments to tackle air pollution that match the scale of the problem." UNEP (20/6/2019)

#### [Only 6 per cent of children in Africa live in areas where air pollution is reliably measured at the ground-level](#)

Only 6 per cent of children in Africa live in areas where air pollution is reliably measured at ground-level, leaving half a billion children across the continent living in areas with no reliable means of measuring air quality, according to a new UNICEF report released on World Environment Day. For babies and young children, breathing particulate air pollution is extremely harmful to their health and development, as it can cause permanent damage to brain tissue and lungs. UNICEF warns that since air pollution is not monitored in Africa to the same extent as other parts of the world, we are not only potentially underestimating the severity of the impact – we might also be underestimating its scope. In Europe and North

exposure sources conducted in North America to date. The data presented herein provide evidence that dermal contact and hand-to-mouth behaviors are important sources of exposure to phthalates and non-phthalate plasticizers. In addition, the percentage of vinyl flooring is an important consideration when examining residential exposures to these compounds.

*Environment International*

#### [Neurocognitive impact of metal exposure and social stressors among schoolchildren in Taranto, Italy](#)

Metal exposure is a public health hazard due to neurocognitive effects starting in early life. Poor socio-economic status, adverse home and family environment can enhance the neurodevelopmental toxicity due to chemical exposure. Disadvantaged socio-economic conditions are generally higher in environmentally impacted areas although the combined effect of these two factors has not been sufficiently studied. The effect of co-exposure to neurotoxic metals including arsenic, cadmium, manganese, mercury, lead, selenium, and to socio-economic stressors was assessed in a group of 299 children aged 6–12 years, residing at incremental distance from industrial emissions in Taranto, Italy. Metal exposure and the distance from industrial emission was associated with negative cognitive impacts in these children. Lead exposure had a neurocognitive effect even at very low levels of blood lead concentration when socio-economic status is low, and this should further address the importance and prioritize preventive and regulatory interventions.

*Environmental Health*

#### [Urinary parabens in children from South China: Implications for human exposure and health risks](#)

Parabens are extensively applied in cosmetics, drugs or food as preservatives and have become common pollutants in environmental media. However, data on human exposure to these chemicals is still limited, especially for children. This study aimed to investigate parabens in urine samples of children and to evaluate the cumulative risk of paraben exposure. Methyl paraben (MeP), ethyl paraben (EtP) and n-propyl paraben (PrP) were widely detected in urine samples (detection rates > 94.9%), indicating their widespread exposure. The urinary median concentrations of MeP, EtP and PrP were 2.25, 0.33 and 0.50 µg/L, respectively. Significantly positive correlations ( $p < 0.01$ ) were observed

America 72 per cent of children live where air pollution is so measured, 43 per cent in Asia, and 25 per cent in South America. UNICEF (4/6/2019)

#### **In the Media**

#### [Australian power stations among world's worst for toxic air pollution](#)

Power stations in Victoria's Latrobe Valley and New South Wales's Lake Macquarie region have been named on a list of the world's biggest hotspots for toxic air pollution. A new report by Greenpeace, published on Monday, used satellite data published by Nasa to analyse the world's worst sources of sulphur dioxide (SO<sub>2</sub>) pollution, an irritant gas known to affect human health and one of the main pollutants contributing to deaths from air pollution worldwide. The greatest source of SO<sub>2</sub> in the atmosphere is the burning of fossil fuels in power stations and other industrial facilities. The Guardian (19/8/2019)

#### [Jhongli rain most acidic in Taiwan](#)

Rain samples collected in Taoyuan's Jhongli District last year had a pH of 4.77, the most acidic among all monitoring stations nationwide, an Environmental Protection Administration (EPA) survey showed. Acid rain is mainly caused by the dissolution of acidic substances in rain, the EPA said, adding that these include carbon dioxide, formic acid and organic acid compounds, some of which are released from natural phenomena. The agency defines acid rain as precipitation with a pH of 5 or less to focus on the effects of human-caused air pollution on the quality of rain, it said. Samples collected from 14 stations had an average pH of 5.72, while the Jhongli station was the only one that reported a pH of less than 5, EPA statistics showed. Taipei times (19/8/2019)

#### [Lead Crisis in Newark Grows, as Bottled Water Distribution Is Bungled](#)

A growing crisis over lead contamination in drinking water gripped Newark on Wednesday as tens of thousands of residents were told to drink only bottled water, the culmination of years of neglect that has pushed New Jersey's largest city to the forefront of an environmental problem afflicting urban areas across the nation. Urgent new warnings from federal environmental officials about contamination in drinking water from aging lead pipes spread anxiety and fear across much of Newark, but the municipal government's makeshift efforts to set up distribution centers to hand out bottled water were hampered by

between MeP and PrP in urine, suggesting similar sources and/or metabolic pathways of these two chemicals. The median estimated daily intakes (EDIs) of parabens were determined to be 18.1 and 9.79  $\mu\text{g}/\text{kg}\text{-bw}/\text{day}$  for kindergarten children and elementary school students, respectively.

#### *Environmental Pollution*

#### [Per- and Polyfluoroalkyl Substance Plasma Concentrations and Bone Mineral Density in Midchildhood: A Cross-Sectional Study \(Project Viva, United States\)](#)

Identifying factors that impair bone accrual during childhood is a critical step toward osteoporosis prevention. Exposure to per- and polyfluoroalkyl substances (PFASs) has been associated with lower bone mineral density, but data are limited, particularly in children. Children were [mean $\pm$ standard deviation (SD)] 7.9 $\pm$ 0.8 years of age. The highest PFAS plasma concentrations were of perfluorooctanesulfonic acid (PFOS) {median [interquartile range (IQR)]: 6.4 (5.6) ng/mL} and perfluorooctanoic acid (PFOA) [median (IQR): 4.4 (3.2) ng/mL]. Using linear regression, children with higher plasma concentrations of PFOA, PFOS, and perfluorodecanoate (PFDA) had lower aBMD z-scores [e.g.,  $\beta$ : -0.16; 95% confidence interval (CI): -0.25, -0.06 per doubling of PFOA]. The PFAS mixture was negatively associated with aBMD z-score ( $\beta$ : -0.16; 95% CI: -0.28, -0.04 per IQR increment of the mixture index). PFAS exposure may impair bone accrual in childhood and peak bone mass, an important determinant of lifelong skeletal health.

#### *Environmental Health Perspectives*

#### [Thyroid hormone levels associate with exposure to polychlorinated biphenyls and polybrominated biphenyls in adults exposed as children](#)

A growing body of evidence suggests that exposure to certain endocrine-disrupting compounds may affect thyroid function, especially in people exposed as children, but there are conflicting observations. In this study, authors extend previous work by examining age of exposure's effect on the relationship between PBB exposure and thyroid function in a large group of individuals exposed to PBB. Higher PBB levels were associated with many thyroid hormones measures, including higher free T3 ( $p = 0.002$ ), lower free T4 ( $p = 0.01$ ), and higher free T3: free T4 ratio ( $p = 0.0001$ ). Higher PCB levels were associated with higher free T4 ( $p = 0.0002$ ),

confusion and frustration. New York Times (14/8/2019)

#### [How to Reduce Exposure to Air Pollution](#)

Hot summer days can bring spikes in air pollution, as traffic exhaust and other emissions bake in the sun. Scientists have linked dirty air to a long list of health problems, and the danger can seem all the more frightening because, unlike with many other risks, we have no choice about breathing. But while most of us do not have the power to make the air cleaner, there are some things individuals can do to protect themselves. Steps like changing travel and exercise routes, buying an air purifier and choosing not to light a fire at home can reduce your exposure to air pollution in any season, experts say. New York Times (13/8/2019)

#### [Hitting clean air targets 'could stop 67,000 child asthma cases a year'](#)

Almost 67,000 new cases of asthma in children across 18 European countries could be prevented every year if levels of tiny particulates polluting the air are cut to recommended levels, research suggests. The study joins a growing body of research into the impact of air pollution on human health. A landmark study published in April estimated that 4m new asthma cases a year globally among those aged one to 18 were down to levels of nitrogen dioxide (NO<sub>2</sub>) in the air. The latest study, which focused on asthma diagnoses among children aged one to 14, looked at components of toxic air including fine particulate matter known as PM<sub>2.5</sub> as well as NO<sub>2</sub>, both of which are released by road vehicles and sources. The Guardian (8/8/2019)

#### [From 20 to 3 tonnes per person, Edmonton sets lofty emissions goal](#)

Under its current energy strategy, the City of Edmonton won't reach its greenhouse gas emissions reduction targets, a report released Thursday shows. The worldwide goal is to stop the average temperature on the planet from rising by more than 1.5 C. Edmonton must step up its game, Mayor Don Iveson said at city hall Thursday. "We've got to be on a downward trajectory," Iveson said. "If we throw up our hands and say, 'Well, it's too hard,' that's going to be bad for business in Edmonton. That's going to be bad for our brand, bad for our ability to attract talent and bad for the credibility of this province." Edmonton signed on to the target in March 2018 when it hosted the Cities and Climate Change Science Conference. The Guardian (8/8/2019)



and higher free T3: free T4 ratio ( $p=0.002$ ). Importantly, the association between PBB and thyroid hormones was dependent on age at exposure. Among people exposed before age 16 ( $N=446$ ), higher PBB exposure was associated with higher total T3 ( $p=0.01$ ) and free T3 ( $p=0.0003$ ), lower free T4 ( $p=0.04$ ), and higher free T3: free T4 ratio ( $p=0.0001$ ). No significant associations were found among participants who were exposed after age 16. No significant associations were found between TSH and PBB or PCB in any of the analyses conducted.

*Environmental Health*

## Climate Change

### [Climate change and health: more research on adaptation is needed](#)

Climate change is widely recognised as one of the biggest global threats of the 21st century. The Intergovernmental Panel on Climate Change has projected that global warming is likely to reach  $1.5^{\circ}\text{C}$  between 2030 and 2052 if climate change continues at the current rate. Generally, climate change will exert adverse effects on human health. For example, many studies have found that heat-related mortality would increase in parallel with climate change. However, few studies have considered the effects of adaptation, which might lead to uncertainty in risk assessments of climate change.

*The Lancet Planetary Health*

### [Elevated atmospheric CO<sub>2</sub> concentrations and climate change will affect our food's quality and quantity](#)

Greenhouse gas emissions are affecting the quantity and quality of our food in two ways. First, they are driving anthropogenic climate change, which decreases yields of major cereal crops in some regions. Increased temperatures, changes in precipitation patterns, increased ozone concentrations, and more frequent and extreme heatwaves, floods, and droughts can reduce crop yields, particularly in the tropics, with risks increasing with additional warming depending on the region. Lower crop yields increase stunting and wasting, particularly in low-income and middle-income countries. Second, increased concentrations of carbon dioxide ( $\text{CO}_2$ )—by directly affecting plants—worsen the nutritional quality of food by decreasing protein and mineral concentrations by 5–15%, and B vitamins by up to a 30%. Higher  $\text{CO}_2$  concentrations increase photosynthesis in  $\text{C}_3$  plants (eg, wheat, rice,

### [Children's health at risk because of climate change warns new public health initiative](#)

The Ontario Public Health Association (OPHA), in partnership with leading health organizations, launches Make It Better, an initiative to engage health workers and families on how they can help protect children from the harmful impacts of climate change. This is the first public health initiative in Ontario to raise public awareness about the links between climate change and children's health, as research reveals increasingly concerning evidence. "Climate change is one of the most critical threats to human health – and children are among the most vulnerable," says Pegeen Walsh, Executive Director at OPHA. "As health professionals, we all have a responsibility to kids and their parents to raise awareness of these risks and give people the tools and information they need to protect their families." CISION (7/8/2019)

### [Some Fish Are Still Full of Mercury, for a Worrying Reason](#)

Environmental success stories are seemingly in short supply, but the fall of mercury is one of them. Released by coal-burning power plants and other industries, mercury—a toxic metal—circulates in the atmosphere, enters the ocean, worms up the food web and, via the seafood we eat, ends up in our bodies. For decades mercury in seafood has been a health scourge, because it inflicts long-term harm on the brain and increases the risk of heart disease. It's especially risky for developing fetuses, and mothers-to-be have long been warned away from mercury-rich tuna and swordfish. The Atlantic (7/8/2019)

### [PFAS discovery in fish and water near Mackay Airport leads to concern for children's health](#)

Samples of fish and water taken from Mackay's Shellgrit Creek, an area popular with recreational fishers, show elevated levels of a substance used in firefighting foam. The discovery has prompted a warning from Queensland Health that people not consume seafood caught in the area. PFAS, or per- and poly-fluoroalkyl, is a chemical found in firefighting foam used at dozens of airports and Defence bases since the 1970s. It has not been used in the Mackay region since 2010, but residual levels have remained in the soil and sediment in some locations. ABC News AU (7/8/2019)

### [A Quarter of Humanity Faces Looming Water](#)

potatoes, barley), which can increase crop yields. But those increases come at the cost of lower nutritional quality as plants accumulate more carbohydrates and less minerals (eg, iron and zinc), which can negatively affect human nutrition. *The Lancet Planetary Health*

## Water, Sanitation and Hygiene

### [Effect of in-line drinking water chlorination at the point of collection on child diarrhoea in urban Bangladesh: a double-blind, cluster-randomised controlled trial](#)

Previous blinded trials of household water treatment interventions in low-income settings have failed to detect a reduction in child diarrhoea. Technological advances have enabled the development of automated in-line chlorine dosers that can disinfect drinking water without electricity, while also allowing users to continue their typical water collection practices. This study aimed to evaluate the effect of installing novel passive chlorination devices at shared water points on child diarrhoea prevalence in low-income, densely populated communities in urban Bangladesh. Between July 5, 2015, and Nov 11, 2015, 100 water points with 920 eligible households were enrolled into the study and randomly assigned to the treatment (50 water points; 517 children at baseline; 2073 child observations included in the primary analysis) or control groups (50; 519; 2154). Children in the treatment group had less WHO-defined diarrhoea than did children in the control group (control 216 [10·0%] of 2154; treatment 156 [7·5%] of 2073; prevalence ratio 0·77, 95% CI 0·65–0·91). Drinking water at the point of collection at treatment taps had detectable free chlorine residual 83% (mean 0·37 ppm) of the time compared with 0% at control taps (0·00 ppm).

*The Lancet Global Health*

## E-waste

### [Decreased erythrocyte CD44 and CD58 expression link e-waste Pb toxicity to changes in erythrocyte immunity in preschool children](#)

Lead (Pb) toxicity damages blood cells and disturbs the immune micro-environment. When Pb enters the circulatory system, >95% of Pb accumulates in erythrocytes. Authors therefore conducted this study to explore the long-term effect of Pb exposure on expression of erythrocyte adhesion molecules (CD44 and CD58) and related downstream cytokine

## Crises

Countries that are home to one-fourth of Earth's population face an increasingly urgent risk: The prospect of running out of water. From India to Iran to Botswana, 17 countries around the world are currently under extremely high water stress, meaning they are using almost all the water they have, according to new World Resources Institute data published Tuesday. Many are arid countries to begin with; some are squandering what water they have. Several are relying too heavily on groundwater, which instead they should be replenishing and saving for times of drought. *New York Times* (6/8/2019)

### [900 New York City Classrooms Test Positive for Lead](#)

More than 900 classrooms in New York City public schools tested positive for lead in recent months, according to data released by the city's Department of Education. The presence of lead-based paint and visible deterioration was found in 938 classrooms, according to the inspection by the city of more than 5,400 classrooms in nearly 800 schools built before 1985. Officials found deteriorating lead paint in 302 of the schools and deteriorating paint in 2,245 classrooms. The findings were the result of typical end-of-year wear and tear, according to department officials, and will be fixed by the start of the school year. The inspections follow a local news investigation that found dangerous levels of lead in four schools. *US News and World Report* (1/8/2019)

### [The UK government is raising the alarm about flame retardants in breast milk, but the benefits of breastfeeding still outweigh any risks](#)

Europe's household items were supposed to be less toxic after 2003, when the EU started banning certain types of flame retardants — chemicals designed to keep items from catching fire. Sixteen years later, the UK Parliament's environmental audit committee has released a report calling on the UK to further reduce the presence of flame-retardants in home furnishings, including children's mattresses and sofas. The report also suggested that these contaminants — which have been linked to thyroid cancer, ADHD, and decreases in children's IQs — are leaching into breast milk. *Business Insider* (24/7/2019)

### [Trump administration won't ban pesticide tied to childhood brain damage](#)

The US government has rejected a proposed ban on a toxic pesticide linked to brain damage in

concentrations. Compared to low erythrocyte Pb levels (quartile 1), high erythrocyte Pb levels (quartile 4) were related to lower levels of erythrocyte CD44 and CD58. Elevated blood Pb correlated with higher IL-12p70 and IFN- $\gamma$ , and lower IL-2. The mediation effect of erythrocyte CD44 on the relationship of erythrocyte Pb with IL-1 $\beta$  and IL-12p70 was significant, and the effect of erythrocyte Pb on IFN- $\gamma$  was mediated by erythrocyte CD58. The data provides novel translational insight into the relationship between elevated Pb exposure and the change of erythrocyte immunity and downstream cytokine secretion in preschool children.

*Science of The Total Environment*

#### [Cardiovascular endothelial inflammation by chronic coexposure to lead \(Pb\) and polycyclic aromatic hydrocarbons from preschool children in an e-waste recycling area](#)

Lead (Pb) and polycyclic aromatic hydrocarbon (PAH) exposure is positively associated with cardiovascular disease (CVD), and the possible potential mechanism may be caused by damage to the endothelium by modulation of inflammatory processes. No comprehensive research shows co-exposure of Pb and PAH on cardiovascular endothelial inflammation in electronic waste (e-waste) exposed populations. Given this, the aim of this study is to provide evidence for a relationship between Pb and PAH co-exposure and cardiovascular endothelial inflammation, in an e-waste-exposed population, to delineate the link between a potential mechanism for CVD and environmental exposure. The results of this study indicate that children with elevated exposure levels of Pb and PAHs have exacerbated vascular endothelial inflammation, which may indicate future CVD risk in e-waste recycling areas.

*Environmental Pollution*

#### [Ambient fine particulate matter inhibits innate airway antimicrobial activity in preschool children in e-waste areas](#)

Ambient fine particulate matter (PM<sub>2.5</sub>) is a risk factor for respiratory diseases. Previous studies suggest that PM<sub>2.5</sub> exposure may down-regulate airway antimicrobial proteins and peptides (AMPs), thereby accelerating airway pathogen infection. The mean concentration of PM<sub>2.5</sub> in Guiyu was higher than in Haojiang, resulting in a higher individual PM<sub>2.5</sub> CDI. Concomitantly, saliva SAG levels were lower in Guiyu children (5.05 ng/mL) than in Haojiang children

children, dismissing a growing body of research on the health hazards of a widely used agricultural chemical. The Environmental Protection Agency (EPA) announced in a ruling on Thursday that it supported farmers' continued use of chlorpyrifos, a pesticide that growers have long sprayed on almonds, citrus, cotton, grapes, walnuts and other major crops in America. The decision, outlined in a response to a petition from environmental and public health groups, said "critical questions remained regarding the significance of the data" on neurological impacts on children. The Guardian (18/7/2019)

#### [Edmonton clinic cares for kids exposed to pollutants](#)

The Children's Environmental Health Clinic in Edmonton is the only one of its kind in Canada, caring for kids affected by indoor and outdoor air pollution and contaminated water. Global News (15/7/2019)

#### [Billions of air pollution particles found in hearts of city dwellers](#)

The hearts of young city dwellers contain billions of toxic air pollution particles, research has revealed. Even in the study's youngest subject, who was three, damage could be seen in the cells of the organ's critical pumping muscles that contained the tiny particles. The study suggests these iron-rich particles, produced by vehicles and industry, could be the underlying cause of the long-established statistical link between dirty air and heart disease. The Guardian (12/7/2019)

#### [China has made major progress on air pollution. Wuhan protests show there's still a long way to go](#)

When world leaders arrive in Beijing, the city typically lays on beautiful blue skies. It's a sign of the Chinese capital's ability to control its notorious smog when it needs to. It's also indicative of the progress China has made in tackling air pollution in recent years, both by shutting down and upgrading elderly factories and passing new restrictions to tackle emissions. That's seen Beijing fall out of the top 100 most-polluted cities in Asia in recent years, with overall pollution levels 10% lower across Chinese cities between 2017 and 2018, according to a report by Greenpeace and AirVisual. Shanghai, the country's largest city and financial capital, has also made environmental advances, such as adopting stringent recycling regulations. CNN (11/7/2019)

#### [Recycled electronics are turning Thailand into a](#)

(8.68 ng/mL), and were negatively correlated with CDI. Additionally, peripheral counts of white blood cells, and the concentrations of interleukin-8 and tumor necrosis factor-alpha, in Guiyu children were greater than in Haojiang children, and were positively associated with CDI. Similar results were found for neutrophils and monocytes. To our knowledge, this is the first study on the relationship between PM2.5 exposure and innate airway antimicrobial activity in children, in an e-waste area, showing that PM2.5 pollution may weaken airway antimicrobial activity by down-regulation of saliva SAG levels, which might accelerate airway pathogen infection in children.

*Environment International*

## **New Publications**

### [The global burden of childhood and adolescent cancer in 2017: an analysis of the Global Burden of Disease Study 2017](#)

Accurate childhood cancer burden data are crucial for resource planning and health policy prioritisation. Model-based estimates are necessary because cancer surveillance data are scarce or non-existent in many countries. Although global incidence and mortality estimates are available, there are no previous analyses of the global burden of childhood cancer represented in disability-adjusted life-years (DALYs). Globally, in 2017, there were 11.5 million (95% uncertainty interval 10.6–12.3) DALYs due to childhood cancer, 97.3% (97.3–97.3) of which were attributable to YLLs and 2.7% (2.7–2.7) of which were attributable to YLDs. Childhood cancer was the sixth leading cause of total cancer burden globally and the ninth leading cause of childhood disease burden globally. 82.2% (82.1–82.2) of global childhood cancer DALYs occurred in low, low-middle, or middle Socio-demographic Index locations, whereas 50.3% (50.3–50.3) of adult cancer DALYs occurred in these same locations. Cancers that are uncategorised in the current GBD framework comprised 26.5% (26.5–26.5) of global childhood cancer DALYs.

*The Lancet*

### [Association between neighbourhood green space and biological markers in school-aged children. Findings from the Generation XXI birth cohort](#)

There is considerable literature on the psychological and behavioural benefits of green space. However, less is known about its health-promoting effects, as expressed on biological

### ['dumping ground for hazardous waste'](#)

Electronic waste from Western countries, including Australia, is flooding the shores of South-East Asian nations like Thailand, sparking fears of air and water pollution. Global waste markets were upended in 2018 when China implemented tough new import restrictions on plastic and e-waste materials from foreign nations, forcing countries to find new markets. Australia is among the countries taking advantage of the lax environmental regulations in Asia, redirecting trash China will no longer take to countries like Thailand, Malaysia and Indonesia. ABC News (16/7/2019)

### [Children's lives could be cut short by air pollution](#)

Air pollution could shorten a child's life by up to seven months, a study on one of the largest UK cities has suggested. An eight-year-old child born in 2011 may die between two to seven months early if exposed over their lifetime to projected future pollution concentrations, Kings College London researchers studying Birmingham have found. It is the first time new Government guidance on "mortality burdens" of air pollution has been applied in practice in a large city area. The study looked at the combined impact of two pollutants – particulate matter and nitrogen dioxide – two of the leading causes of poor health from air pollution. The London Economic (8/7/2019)

### [700 English schools reported over asbestos safety concerns](#)

Nearly 700 schools have been referred to the national health and safety body over concerns they are failing to safely manage asbestos in their buildings, potentially putting thousands of staff and pupils at risk, it has been revealed. It is thought that about 90% of school buildings in England contain asbestos, often around pipes and boilers, and in wall and ceiling tiles. The Health and Safety Executive (HSE) advises that it is only a risk if it is disturbed or damaged, which releases fibres into the air. The Guardian (4/7/2019)

### [Jakarta residents to sue government over severe air pollution](#)

Tired of breathing in some of the world's filthiest air, a group of activists and environmentalists in Jakarta has decided to sue the Indonesian government to take action. Air quality in the south-east Asian metropolis has plunged dramatically in the past month and recorded worse conditions than notoriously polluted cities such as Delhi and

markers. Additionally, incorporating biomarkers into pediatric research may help elucidate the links between exposures to environmental stressors and lifelong health. Among the 3108 children (51.7% male; mean age 87.3 months), the mean allostatic load (AL) index was 0.00 (standard deviation 2.94). Adjusted models showed that having a green space within 400 m and 800 m from the child's school was inversely associated with AL (400 m: beta  $-0.29$  95% CI  $-0.54$  to  $-0.02$ ; 800 m:  $-0.29$  95% CI  $-0.51$  to  $-0.07$ ). Also, there was a 12% (0%; 23%) increase in the AL index for every 1 km increase in distance to the nearest green space. No significant associations with AL were observed with residential accessibility to green space or with the presence of a garden at home. This study found a cross-sectional negative association between accessibility to green space near schools and AL in children, suggesting that the provision of green space may contribute to improvements in population health beginning early in life.

*Environment International*

#### [Commentary health risks from climate fix: The downside of energy storage batteries](#)

Energy storage is the key component to almost all technologies arising in response to climate change. Although most lead batteries are recycled, the process as employed in the majority of recycling plants around the world is highly polluting. Lithium ion batteries, considered the most advanced battery for climate solutions, are employed in electric vehicles, solar lanterns, and increasingly in other energy storage applications. These are generally not being recycled as there are no available technologies to economically extract metals in a form that can be used to make new batteries or other high-value products. As the energy storage market is projected to grow rapidly in coming years, we must consider the impacts of increased mining, milling, smelting and recycling of these metals. Much of these materials will be extracted and processed in low and middle-income countries and eventually be recycled in these same jurisdictions with few regulations to protect public health and the environment.

*Environmental Research*

#### [Speaking up for global road safety](#)

This week marks the fifth UN Global Road Safety Week. This year's biennial events and activities aim to galvanise public demand for stronger

Beijing. Social media users have uploaded photographs of the Indonesian capital blanketed in smog under the hashtag, #SetorFotoPolusi. The Guardian (2/7/2019)

#### [People of color live with 66% more air pollution, US study finds](#)

People of color in the American north-east and mid-Atlantic are living with 66% more air pollution from vehicles than white residents are, according to a new analysis from the Union of Concerned Scientists (UCS). On average, African Americans are exposed to 61% more of the tiny pollution particles that come from burning gasoline. Asian Americans breathe 73% more and Latinos 75% more. The UCS, a research-focused advocacy organization, studied particulate matter pollution that is smaller than 2.5 micrometers, or a fraction of the width of a human hair. Called PM 2.5, the particles are minuscule enough to enter the bloodstream and are linked to lung and heart diseases, asthma and premature death. They can be made up of hundreds of different chemicals. The Guardian (27/6/2019)

#### [Action on air pollution works but far more is needed, study shows](#)

Government action can cut air pollution, a long-term study has shown, with early deaths linked to dirty air in the UK falling by half between 1970 and 2010. But toxic air remains the number one environmental health hazard, with one in 20 deaths still attributable to small particle pollution alone. The researchers said urgent action was needed to deal with a public health emergency that caused harm comparable to alcohol. Cleaning up power stations and vehicles led to a fall in most pollutants in the four decades analysed. But ammonia from farms, which mixes with city air to form dangerous particles, has yet to be stringently tackled, the scientists said, and ozone pollution has risen. The Guardian (26/6/2019)

#### [How banning dangerous chemicals could save the US billions](#)

The Trump administration has argued that environmental regulations hold back economic productivity. Yet history suggests that the opposite is the case. Look at phasing out lead in gasoline. To this day, the US receives a \$200bn annual economic stimulus package each year because lead levels in children plummeted when the US Environmental Protection Agency moved to protect children. Now, we realize that a larger

leadership for road safety worldwide. Every day some 3700 people die on the world's roads, equating to 1.35 million lives lost every year, according to WHO. Furthermore, up to 50 million people are left injured or disabled after a crash. Poorer countries bear the brunt of the burden, with 93% of deaths taking place in low-income or middle-income countries. Regionally, Africa and southeast Asia experience the highest number of fatalities. What is most shocking, however, is the fact that road traffic crashes are the number one cause of death for children and young people between the ages of 5 and 29 years globally.

*The Lancet Global Health*

## EVENTS

[Pacific Basin Consortium Conference 2019](#)

Kyoto, Japan. 16 – 19 September 2019

[Simpósio Brasileiro de Saúde Ambiental em Pediatria](#)

Porto Alegre, Brazil. 8 October 2019

suite of chemicals can disrupt hormones and cost our economy. We're talking not just about chemicals in cosmetics, but also in food packaging, aluminum cans, agriculture, electronics, carpeting and furniture. *The Guardian* (25/6/2019)

[Pollutionwatch: how farming causes harm to rural air quality](#)

We think of the countryside as being a place of fresh air. Each weekend thousands of us leave our cities to hike or cycle in rural areas or simply to enjoy time in nature. Increasing attention is being given, however, to air pollution from farming. Ammonia from fertiliser and slurry mixes with air pollution from cities, traffic and industry to add to the particle pollution that plagues many parts of the world. It is estimated that halving ammonia from farming could avoid about 52,000 premature deaths from air pollution across Europe each year and 3,000 in the UK. *The Guardian* (20/6/2019)

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