

## Children's Environmental Health International Initiatives

This is an international mailing list provided by [WHO](#) and [UNEP](#) dedicated to promoting healthy environments for children

January 2011

### CHILDHOOD LEAD POISONING - WHO

This booklet describes childhood lead poisoning, one of the most common and best understood childhood diseases of toxic environmental origin. The booklet emphasizes that the contexts, sources and routes of exposure to lead differ for children in different communities, countries and regions around the world, although the biology of childhood lead poisoning is the same globally.

Acute and chronic lead poisoning remain problems of enormous importance for child health and development worldwide. Lead has no essential role in the human body, and lead poisoning accounts for about 0.6% of the global burden of disease. Lead poisoning is entirely preventable.

The major sources of children's exposure to lead are:

- lead added to petrol
- lead from an active industry, such as mining (especially in soils)
- lead-based paints and pigments
- lead solder in food cans
- ceramic glazes
- drinking-water systems with lead solder and lead pipes
- lead in products, such as herbal and traditional medicines, folk remedies, cosmetics and toys

### CHILDREN'S ENVIRONMENTAL HEALTH NEWS

#### Press Releases

#### [Pakistan floods uncover dire nutrition situation](#)

Six months after the 2010 Pakistan monsoon floods hit, UNICEF and its partners face another huge challenge following new survey results from Sindh province that reveal critical levels of malnutrition among flood-affected children. UNICEF (28/1/11)

#### [Donors act quickly to save lives in Central Africa](#)

The United Nations Foundation's Nothing But Nets campaign, PSI (Population Services International), and UNICEF announced the successful delivery of nearly 1 million anti-malaria mosquito nets in the Central African Republic (CAR)—providing one net to each family in the country. The families received their nets less than six months after the UN identified an urgent need to protect them against malaria and thousands of Americans rallied to answer the call for help. UNICEF (24/1/11)

#### [UNICEF: National and community leaders in Côte d'Ivoire must put children first](#)

UNICEF is calling on leaders in Côte d'Ivoire to ensure that all children are

- lead released by incineration of lead-containing waste
- lead in electronic waste (e-waste)
- lead in the food chain, via contaminated soil
- lead contamination as a legacy of historical contamination from former industrial sites.

Intense, high-dose exposure to lead causes acute symptomatic poisoning, characterized by colic, anaemia, and depression of the central nervous system that may result in coma, convulsions and death. Acute, symptomatic lead poisoning still occurs today and is most commonly detected among children in low-income countries and marginalized populations or in children living in lead-polluted sites. Blood lead levels that were considered previously to be safe are now understood to compromise health and injure multiple organs, even in the absence of overt symptoms. The most critical consequence of low level lead toxicity in utero and during childhood is damage to the developing brain and nervous system. The immune, reproductive and cardiovascular systems are also adversely affected by relatively low levels of exposure to lead – that is, less than 10 µg/dl.

The consequences of brain injury from exposure to lead in early life are loss of intelligence, shortening of attention span and disruption of behaviour. Because the human brain has little capacity for repair, these effects are untreatable and irreversible. They cause diminution in brain function and reduction in achievement that last throughout life. Recent research indicates that lead is associated with neurobehavioural damage at blood levels of 5 µg/dl and even lower. There appears to be no threshold level below which lead

protected from violence, that they have continued access to health services and are able to go to school, during what continues to be a volatile political situation. The present tragedy would be compounded if ongoing political instability resulted in diseases left untreated, children being exploited or missing school.

In any crisis or emergency, children are the most vulnerable. National and community leaders in Côte d'Ivoire must ensure that those responsible for the well being of children are able to work and that children are not placed in the front line of political action. UNICEF (18/1/11)

[WFP and UNICEF to scale up nutrition to fight child stunting in Southern and Eastern Africa](#)

The United Nations World Food Programme (WFP) and UNICEF agreed today to work together to reduce levels of child stunting in Southern and Eastern Africa and accelerate progress toward achieving the UN Millennium Development Goals by 2015. UNICEF (18/1/11)

[Exclusive breastfeeding for six months best for babies everywhere](#)

WHO recommends mothers worldwide to exclusively breastfeed infants for the child's first six months to achieve optimal growth, development and health. Thereafter, they should be given nutritious complementary foods and continue breastfeeding up to the age of two years or beyond. WHO (15/1/2011)

[UN urges clean-up following acute lead poisoning in Nigeria](#)

The UN has released a report calling on Nigerian authorities to prevent further lead poisoning in the country. Abnormally

causes no injury to the developing human brain. The Joint FAO/WHO Expert Committee on Food Additives re-evaluated lead in June, 2010 and withdrew the provisional tolerable weekly intake guideline value on the grounds that it was inadequate to protect against IQ loss.

The neurobehavioural toxicity caused by lead places great economic burdens on families and societies. When exposure to lead is widespread, low level toxicity can damage health, reduce intelligence, damage economies, and incapacitate the future leadership and security of entire countries.

The goal of this booklet is to inform and educate health professionals – paediatricians, other clinicians, nurses, and public health officials at all levels – about the importance of childhood exposure to lead and lead poisoning and its serious consequences.

[Link to WHO to read more and download the document](#)

## JOURNAL ARTICLES

### Air Pollution

[From Good Intentions to Proven Interventions: Effectiveness of Actions to Reduce the Health Impacts of Air Pollution](#)

Associations between air pollution and a multitude of health effects are now well established. Given widespread exposure to air pollution, the attributable health burden can be high, particularly for susceptible populations. The authors describe the findings of an international multidisciplinary workshop convened to discuss current knowledge regarding air pollution exposure and health impacts relevant to public health

high rates of death and illness among children have been recorded since the beginning of 2010 in Zamfara State. UNEP (7/1/11)

### In the Media

[Pregnant women warned of clay risk](#)

Pregnant women who eat baked clay for cultural reasons could be putting their babies at risk, experts have said. The ancient tradition is still widespread in many parts of the world, particularly Africa, India and Bangladesh, and the clay can also be found in UK stores. Press Association (31/1/11)

[Children exposed to lead poisoning in Greater Jakarta](#)

Research conducted in several areas in Greater Jakarta showed that a large number of children suffered from severe lead poisoning. The Jakarta Post (31/1/11)

[Rise in Childhood Cancers Parallels Toxic Chemical Proliferation](#)

Bipartisan legislation was introduced to help communities determine whether there is a connection between clusters of cancer, birth defects and other diseases, and contaminants in the surrounding environment. Environment News Service (28/1/11)

[Baby food can contain arsenic: Swedish study](#)

Certain types of baby food may contain elevated levels of manganese, arsenic, and cadmium, a new Swedish study shows. The Local Sweden (27/1/11)

recommendations. During the workshop, experts reviewed the biological mechanisms of action of air pollutants in the initiation and progression of disease, as well as the state of the science regarding community and individual-level interventions. The workshop highlighted strategies to reduce individual risk of conditions associated with increased susceptibility to the effects of air pollution and the need to better understand the role of exposure duration in disease progression, reversal, and adaptation. Two promising and largely unexplored strategies to address and mitigate air-pollution-related health impacts were identified: reducing individual baseline risk of cardiovascular disease and incorporating air-pollution-related health impacts into land-use decisions.

*Environmental Health Perspectives*

#### [Tobacco-Smoke Exposure in Children Who Live in Multiunit Housing](#)

Data from the 2001–2006 National Health and Nutrition Examination Survey was analyzed. The housing types included were detached houses, attached houses, and apartments. The study subjects were children between the ages of 6 and 18 years. Cotinine levels were used to assess secondhand tobacco-smoke exposure. Of 5002 children in the study, 73% were exposed to secondhand tobacco smoke. Children living in apartments had an increase in cotinine of 45% over those living in detached houses. This increase was 212% ( $P < .01$ ) for white residents and 46% ( $P < .03$ ) for black residents, but there was no significant increase for those of other races/ethnicities. At every cutoff level of cotinine, children in apartments had higher rates of exposure. The authors state that the exposure effect of housing type was most pronounced at lower levels of

#### [Health Canada gets it right after a decade of shame](#)

Children in this country will face one less threat in their toy-boxes as Canada finally banned products containing phthalates. Wawa News (26/1/11)

#### [Home fires: The world's most lethal pollution](#)

The world's deadliest pollution does not come from factories billowing smoke, industries tainting water supplies or chemicals seeping into farm land. It comes from within people's own homes. Smoke from domestic fires kills nearly two million people each year and sickens millions more, according to the World Health Organisation (WHO). The Independent (23/1/11)

#### [It takes a community to keep babies alive](#)

Milwaukee's rate of infant death is among the highest in the nation. A collaborative approach - now under way - will be crucial to lowering that rate. Journal Sentinel Online (22/1/11)

#### [WHO recommends food marketing curbs for child obesity](#)

Governments must work with industry to restrict advertising of foods high in salt, sugar and dangerous fats targeted at children to tackle an epidemic of obesity and other diseases. Reuters (22/1/11)

#### [Sri Lanka floods could leave 400,000 children without enough food](#)

The worst floods in Sri Lanka's recent history have destroyed homes, schools and agricultural land. Up to 1 million people, including 400,000 children, are facing a food crisis, a children's charity has warned. London Guardian (21/1/11)

cotinine. Most children without known secondhand tobacco-smoke exposure inside the home still showed evidence of tobacco-smoke exposure. Children in apartments had higher mean cotinine levels than children in detached houses. The authors propose potential causes for this result as seepage through walls or shared ventilation systems.

*Pediatrics*

## **Chemicals**

### [Intellectual Impairment in School-Age Children Exposed to Manganese in Drinking Water](#)

Manganese is an essential nutrient, but in excess, it can be a neurotoxicant. Despite the common occurrence of manganese in groundwater, the risks associated with this source of exposure are largely unknown. The authors assessed the relationship between exposure to manganese from drinking water and children's intelligence quotient (IQ) and also examined manganese exposure from water consumption and diet. This cross-sectional study involved 362 children ages 6–13 years of age living in communities supplied by groundwater in southern Quebec, Canada. Manganese concentration was measured in home tap water (MnW) and children's hair (MnH); manganese intake from water ingestion and diet was estimated using a questionnaire. The authors report that MnH increased with manganese intake from water consumption but not with dietary manganese intake. Higher MnW and MnH were significantly associated with lower IQ scores. A 10-fold increase in MnW was associated with a decrease of 2.4 IQ points. There was a 6.2-IQ point difference between children in the lowest and highest MnW quintiles. MnW was also more strongly associated with Performance IQ than Verbal IQ. The

### [Health Canada restricts use of 'rubber duck chemicals' in children's products](#)

Canada recently announced strict new rules limiting the use of phthalates in toys and other children's products. But companies remain free to use phthalates in a host of other consumer goods — a serious problem, many environmental experts say. *Toronto Globe and Mail* (20/1/11)

### [Arsenic sinks to new depths](#)

More than a century of groundwater over-exploitation in Vietnam has drawn the water table down and, with it, arsenic. It may only be a matter of time before the toxic element also permeates deep aquifers in other Asian countries that follow the same practice, such as those around the Bengal Basin. *Nature News* (18/1/11)

### [A widely-used phthalate not so different from banned cousins, rat study finds.](#)

An animal study finds for the first time that another widely used phthalate affects development when exposure occurs in the womb and early life. It is also the first to show the chemical can affect brain development, too. DINP – a phthalate that is increasingly used in plastic products – caused similar changes in the male reproductive system as other types of recently banned – but more potent – phthalates. *Environmental Health News* (18/1/11)

### [Contaminated water still a major threat: report](#)

Around 40% of all reported diseases and deaths in Pakistan are attributed to poor water quality in the country. *Karachi News International* (17/1/11)

authors conclude that their findings suggest that exposure to manganese at levels common in groundwater is associated with intellectual impairment in children.

*Environmental Health Perspectives*

#### [Hemoglobin, Lead Exposure, and Intelligence Quotient: Effect Modification by the DRD2 Taq IA Polymorphism](#)

Anemia and lead exposure remain significant public health issues in many parts of the world, and they often occur together. Animal studies suggest that the dopamine D2 receptor (DRD2) mediates the effects of both lead and iron on cognition and behavior. The authors tested the hypothesis that the DRD2 Taq IA polymorphism modifies the effects of lead and hemoglobin on intelligence quotient (IQ) among children. Blood lead and hemoglobin were assessed in 717 children 3–7 years of age in Chennai, India, and IQ was determined using the Binet-Kamat scales of intelligence. The authors explored interactions between lead and hemoglobin, and DRD2 Taq IA categories [homozygous variant (A1) vs. presence of wild-type allele (A2)]. The authors report that a one-unit increase in log blood lead was associated with a decrease of 9 IQ points in the homozygous-variant children compared with a decrease of 4 IQ points among those with the wild-type allele. Higher hemoglobin levels were associated with higher IQ in the children with the wild-type DRD2 allele; however, in children homozygous for the variant allele, an increase of 1 g/dL hemoglobin was associated with a decrease in 1.8 points of IQ. The authors suggest that the DRD2 Taq IA polymorphism disrupts the protective effect of hemoglobin on cognition and may increase the susceptibility to the deficits in IQ due to lead exposure.

*Environmental Health Perspectives*

#### [Evidence suggests role for chemicals in diabetes](#)

Evidence strongly suggests that some chemicals, especially chemicals in cigarette smoke, might cause some cases of diabetes and obesity, U.S. government researchers said. Reuters (14/1/11)

#### [Winter brings fiery killer into Afghan homes](#)

Smoke from heating and cooking kills 54,000 Afghans a year, says the World Health Organization. Most of those killed are children under five. By contrast, 2,412 civilians were killed by conflict-related violence and 3,803 wounded in the first ten months of 2010, said the United Nations, the most violent year since late 2001. Reuters (14/1/11)

#### [Childhood cancer rates on the rise](#)

Health experts have warned the public that pollution and environmental deterioration are behind rising cancer rates among Chinese children aged under 14. China Daily (14/1/11)

#### [Study finds toxic chemicals in pregnant women's bodies](#)

In spite of often elaborate efforts to protect their babies' health, a new study shows the typical pregnant woman has dozens of potentially toxic or even cancer-causing chemicals in her body – including ingredients found in flame retardants and rocket fuel. USA Today (14/1/11)

#### [Second Hand Smoke Exposure Raises Kindergartners' Blood Pressure](#)

It's no secret that second hand smoke poses serious health hazards, but the damage can be especially insidious among children, setting them up for

[Serum Dioxins and Polychlorinated Biphenyls Are Associated With Growth Among Russian Boys](#)

The authors evaluated the associations of serum dioxins and polychlorinated biphenyls (PCBs) with longitudinally assessed growth measurements among peripubertal Russian boys. A total of 499 boys from Chapaevsk, Russia, aged 8 to 9 years were enrolled in the study from 2003 to 2005 and were followed prospectively for 3 years. Blood samples were collected and physical examinations were conducted at entry and repeated at annual study visits. Multivariate mixed-effects regression models for repeated measures were used to examine the associations of serum dioxins and PCBs with longitudinal measurements of BMI, height, and height velocity. Serum dioxin and PCBs were measured in 468 boys. At study entry and during 3 years of follow-up, >50% of the boys had age-adjusted BMI and height z scores within 1 SD of World Health Organization–standardized mean values for age. Boys in the highest exposure quintile of the sum of dioxin and PCB concentrations and total TEQs had a significant decrease in mean BMI z scores of 0.67 for dioxins and TEQs and 1.04 for PCBs, compared with boys in the lowest exposure quintile. Comparison of the highest versus the lowest quintile revealed that higher serum PCB concentrations were associated with significantly lower height z scores and height velocity after 3 years of follow-up. The authors suggest that exposures to dioxins and PCBs are associated with reduced growth during the peripubertal period and may compromise adult body mass, stature, and health.

*Pediatrics*

possible heart disease later in life. Time Magazine (13/1/11)

[Thirdhand smoke exposure increases health risks](#)

The remnants of cigarette smoke on fabrics and other surfaces pose a larger health hazard than previously believed, especially for young children, according to a new study. Quebec Media Agency (13/1/11)

[EPA Proposes Phaseout of Fluoride-Based Pesticide](#)

The EPA proposed to start gradually banning a pesticide, sulfuryl fluoride, often used on cocoa beans and dried fruits that degrades to fluoride, a move closely linked to the Obama administration's decision to curb the maximum levels of fluoride in drinking water out of concern for children's health. Greenwire (12/1/11)

[A healthy environment for children](#)

Millions of children, particularly in developing countries, die every year as a result of environment-related diseases. Their deaths could be prevented by using low-cost and sustainable tools and strategies for improving the environment. Gulf Times ( 11/1/11)

[Yale study links antibiotics, asthma risk in infants](#)

Giving antibiotics to infants could lead to an increased risk of the babies developing asthma in childhood, according to research at the Yale School of Public Health. New Haven Register (10/1/11)

[Lead a major contaminant in Nigeria](#)

Lead pollution in soil and drinking water and mercury contamination in the air dramatically exceed safe levels in Nigeria,

[Knowns and unknowns on burden of disease due to chemicals: a systematic review](#)

Continuous exposure to many chemicals, including through air, water, food, or other media and products results in health impacts which have been well assessed, however little is known about the total disease burden related to chemicals. In this article the authors review the known burden related to selected chemicals or their mixtures, main data gaps, and the link to public health policy.

*Environmental Health*

## **Reproductive Health**

[Variability and Predictors of Urinary Bisphenol A Concentrations](#)

Prenatal exposure to bisphenol A (BPA) may be associated with developmental toxicity, but few studies have examined the variability and predictors of urinary BPA concentrations during pregnancy. The authors measured BPA concentrations during pregnancy and at birth in three spot urine samples. They report that of the occupations studied, cashiers had the highest BPA concentrations. Consuming canned vegetables at least once a day was associated with higher BPA concentrations compared with those consuming no canned vegetables. BPA concentrations did not vary by consumption of fresh fruits and vegetables, canned fruit, or store-bought fresh and frozen fish. Concentrations of urinary high-molecular-weight phthalate and serum tobacco smoke metabolites were positively associated with BPA concentrations. According to the authors, these results suggest numerous sources of BPA exposure during pregnancy. Etiological studies may need to measure urinary BPA concentrations more than once during pregnancy and adjust for

a joint U.N. report found. United Press International (7/1/11)

[Pollutants' Passage From Mother To Child](#)

An international team of researchers has for the first time quantified how effectively mothers pass 87 common environmental contaminants to their children. Their findings provide a way to correlate pollutant concentrations in a mother's blood to levels in her developing baby, which may help regulators pinpoint compounds that are hazardous to unborn and nursing babies. Chemical and Engineering News (6/1/11)

[Battery Factory Sickens 24 Children In China](#)

Twenty-four children have been hospitalized with lead poisoning caused by an illegal battery factory in their east China village, state media said Thursday, in the latest in a string of battery-related poisonings in recent years. Associated Press (6/1/11)

[Family planning helps women ... and slows climate change](#)

With women empowered to plan their pregnancies, the world's population grows more slowly, as do carbon emissions. Any strategy that enhances human health, dignity and empowerment while also reducing global warming is not just advisable, it's essential. London Guardian (5/1/11)

[Diet may mitigate toxic effects of arsenic](#)

People drinking water naturally contaminated with high levels of arsenic may benefit from eating more radishes, sweet potatoes and other similar plants, a new study finds. Reuters (4/1/11)

phthalates and tobacco smoke exposures.  
*Environmental Health Perspectives*

[In utero exposure to butyl benzyl phthalate induces modifications in the morphology and the gene expression profile of the mammary gland: an experimental study in rats](#)

The aim of this study was to elucidate the effect of prenatal exposure to BBP on the morphology, proliferative index, and genomic signature of the rat mammary gland at different ages. In utero exposure was performed by gavage of pregnant Sprague Dawley CD rats with 120mg or 500mg BBP/kg/day from day 10 post-conception to delivery. Female litters were euthanized at 21, 35, 50 and 100 days. Prenatal exposure of BBP induced delayed vaginal opening and changes in the post-natal mammary gland long after the end of the treatment, mainly by 35 days of age. Exposure to the high dose resulted in modifications in architecture and proliferative index of the mammary gland, mostly affecting the undifferentiated terminal end buds. Moreover, the expression profiles of this gland in the exposed rats were modified in a dose-dependent fashion. Analysis of functional categories showed that modified genes were related to immune function, cell signaling, proliferation and differentiation, or metabolism. The authors suggest that in utero exposure to BBP induced a delayed pubertal onset and modified morphology of the mammary gland. These alterations were accompanied by modifications in gene expression previously associated with an increased susceptibility to carcinogenesis.

*Environmental Health*

[State proposes tougher standards for chemical in drinking water](#)

California environmental health officials are proposing a tough new goal for hexavalent chromium in drinking water, citing new concerns about the toxic chemical's effect on children. Riverside Press-Enterprise (4/1/11)

[Children's flu epidemic feared by doctors as virus escalates](#)

The flu outbreak gripping Britain is set to become a "children's epidemic" as new figures show that the number of under-fives being brought into doctors' surgeries with the illness doubled over the Christmas period. London Guardian (3/1/11)

[Mercury cancels brain benefits of fish oil, study confirms.](#)

Prenatal mercury exposure from a mother's fish-rich diet can reduce the beneficial effects fish oil has on brain development, report an international group of researchers. The babies exposed in the womb to higher methyl mercury levels scored lower on skills tests as infants and toddlers than those exposed to lower levels of the pollutant. Environmental Health News (3/1/11)

## UPCOMING EVENTS

### [6th World Environmental Education Congress](#)

19 – 23 July 2011. Brisbane, Queensland, Australia

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#### **Have news for us?**

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

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