Persistent Organic Pollutants: Impact on Child Health

Persistent Organic Pollutants: Impact on Child Health is designed to inform and educate health professionals about persistent organic pollutants and their potential impact on child health and development. The document emphasizes the critical importance of primary prevention.

The following is taken from the Foreward by Maria Neira, Director, Public Health and Environment, WHO.

Persistent organic pollutants (POPs) include pesticides and industrial chemicals that were manufactured in great quantities during the 20th century. Their use resulted in beneficial outcomes such as increased crop yields and killing of unwanted pests. Many POPs were considered to be wonder chemicals until scientific information began to emerge about devastating effects in wildlife resulting from contamination of the environment. In humans, mass poisonings resulting from unintentional contamination of food with certain POPs illustrated the

CHILDREN’S ENVIRONMENTAL HEALTH NEWS

Press Releases

Scaling up nutrition investments leads to fewer child deaths and improves economy

Despite improvements in the past decade, 22 per cent of all deaths among children under-five in the Kyrgyz Republic are still caused by undernutrition. Scaling up nutrition interventions is crucial to prevent loss of children’s lives. UNICEF (30/6/11)

UNEP supports clean-up of toxic waste dump in Sierra Leone

An environmental and public health hazard for the residents of Sierra Leone's capital, Freetown, has been contained following the successful removal of 93 barrels of toxic waste from a former oil refinery site on the city's outskirts. UNEP (27/6/11)

New evidence from WHO: inadequate housing causes more than 100,000 annual deaths in Europe

Inadequate housing accounts for over 100,000 deaths per year in the WHO European Region and causes or contributes to many preventable diseases and injuries, including respiratory, nervous system and cardiovascular diseases and cancer. WHO Europe (23/6/11)
devastating health effects of high levels of exposure. Scientific experiments in laboratory animals have revealed the effects of lower levels of POPs on numerous organ systems. Accumulating scientific information in humans has led to concerns about the effects of chronic low level POPs exposure in humans. There is particular concern that fetuses, infants and children may be at especially high risk. Humans at these early life stages generally have increased exposures compared to exposures of adults. There is rapid growth and differentiation of organ systems during these early periods, resulting in heightened vulnerability to harm. Effects on health are often subtle. Effects of these chemical exposures during “critical windows of vulnerability” of children’s development may not manifest until later in their lives.

POPs are dispersed globally and exposure is ubiquitous. Therefore, worldwide efforts have been undertaken by UNEP, governments, WHO and other stakeholders in order to eliminate and reduce the production, use and emission of these chemicals through the Stockholm Convention on Persistent Organic Pollutants. Because other chemicals with characteristics similar to POPs remain in worldwide use today, these efforts to reduce exposure must be ongoing. Healthcare providers who care for men and women of childbearing age, pregnant women and children may not be fully aware of POPs and their potential impacts on children’s health and development. This booklet offers evidence-based information about POPs and their health effects.

UN launches initiative to make cities safer for women and children
UNICEF, UN-HABITAT and UN Women launch “Safe and Friendly Cities for All,” a five-year programme that aims at making women and children feel safer in their local neighbourhoods, while improving their quality of life. UNICEF (22/6/11)

More skilled midwives needed to save women's and newborns' lives
New report calls for strengthening of midwifery services to achieve health Millennium Development Goals 4, 5 and 6 on child survival, maternal health and HIV/AIDS. Midwives play crucial role in reducing deaths during childbirth. WHO (20/6/11)

Action to Curb 'Soot' and 'Smog' Pollution Could Help Limit Global Temperature Rise
Fast action on pollutants such as black carbon, ground level ozone and methane may help limit near term global temperature rise and significantly increase the chances of keeping temperature rise below 2 degrees C, a new UN assessment says. UNEP (14/6/11)

New world report shows more than 1 billion people with disabilities face substantial barriers in their daily lives
WHO and the World Bank revealed new global estimates that more than one billion people experience some form of disability. They urged governments to step up efforts to enable access to mainstream services and to invest in specialized programmes to unlock the vast potential of people with disabilities. WHO (9/6/11)

UNEP Report Spotlights Economic Benefits of Boosting Funding for Forests
Investing an additional US$40 billion a year in the forestry sector could halve deforestation rates by 2030, increase
JOURNAL ARTICLES

Air Pollution

Residential Proximity to Freeways and Autism in the CHARGE Study

Little is known about environmental causes and contributing factors for autism. The authors examined the association between autism and residence proximity to freeways and major roadways during pregnancy and near the time of delivery. Maternal residence at the time of delivery was more likely to be near a freeway for autism cases than for controls. Autism was also associated with residential proximity to a freeway during the third trimester. Living near a freeway, but not near other major roads at birth, was associated with autism. More research is needed to provide a linkage between actual exposure to air pollutants from traffic emissions and autism. Environmental Health Perspectives

Health impact assessment of waste management facilities in three European Countries

Policies on waste disposal in Europe are heterogeneous and rapidly changing, with potential health implications that are largely unknown. The authors conducted a health impact assessment of landfilling and incineration in three European countries: Italy, Slovakia and England. The study population consisted of residents living within 3 km of an incinerator and 2 km of a landfill. Excess risk estimates from epidemiological studies were used, combined with air pollution dispersion modelling for particulate matter (PM10) and nitrogen dioxide (NO2). For incinerators, the authors estimated attributable cancer incidence and years of life lost (YoLL), while for landfills they estimated attributable cases of congenital anomalies and low birth weight infants.

rates of tree planting by around 140 per cent by 2050, and catalyze the creation of millions of new jobs according to a report by the UN Environment Programme. UNEP (5/6/11)

UNICEF Executive Director calls on reaching the poorest, the most disadvantaged, to meet MDG goals for children

UNICEF and other agencies are increasingly focused on equity programming that targets the poorest and most vulnerable people and communities. A recent study shows that in low-income, high mortality countries, every additional $1 million invested in such an equity-focused approach can save up to 60 percent more lives than the current path. UNICEF (3/6/11)

In the Media

Perfluorochemicals linked with impulsivity

Children’s exposure to a growing list of industrial chemicals, including certain pesticides and phthalates, has been linked to development of attention deficit hyperactivity disorder (ADHD). Now evidence suggests that perfluorinated chemicals (PFCs) boost ADHD risks by making children prone to impulsive behaviour. Chemical and Engineering News (30/6/11)

Swine flu vaccine safe in pregnancy: study

The swine flu shot appears to be safe for pregnant women, according to a new government report that tallies health problems occurring after the vaccinations. Reuters (30/6/11)

Prenatal vitamins lower autism risk

Taking prenatal vitamins around the time of conception decreased the risk of autism in the children by almost half, finds a study
They concluded that the current health impacts of landfilling and incineration can be characterized as moderate when compared to other sources of environmental pollution, e.g. traffic or industrial emissions that have an impact on public health. There are several uncertainties and critical assumptions in the assessment model, but it provides insight into the relative health impact attributable to waste management. *Environmental Health*

**Chemicals**

*Serum PCB levels and congener profiles among teachers in PCB-containing schools: a pilot study*

PCB contamination in the built environment may result from the release of PCBs from building materials. The significance of this contamination as a route of human exposure is not well-characterized. This research compared the serum PCB concentrations, and congener profiles between 18 teachers in PCB-containing schools and referent populations. Blood samples from 18 teachers in PCB-containing schools were analyzed for 57 PCB congeners. Serum PCB concentrations and congener patterns were compared between the teachers, to the 2003-4 NHANES (National Health and Nutrition Examination Survey) data, and to data from 358 Greater Boston area men. The findings suggest that the teachers in the PCB-containing buildings had higher serum levels of lighter PCB congeners (PCB 6-74) than the referent populations. The authors note that examination of the patterns, as well as concentrations of individual PCB congeners in serum is essential to investigating the contributions from potential environmental sources of PCB exposure. *Environmental Health*

**Worst drought in 60 years hitting Horn of Africa: U.N.**

The worst drought in 60 years in the Horn of Africa has sparked a severe food crisis and high malnutrition rates, with parts of Kenya and Somalia experiencing pre-famine conditions, the United Nations said. Child malnutrition rates in the worst affected areas are more than double the emergency threshold of 15 percent and are expected to rise further. Reuters (28/6/11)

**Stressful home ups lung damage in kids**

Living in stressful homes increases the effects of outside air pollution in children, resulting in greater pollution-related lung damage, U.S. researchers say. United Press International (25/6/11)

**Teen mice exposed to low levels of BPA behave like opposite sex as adults, study finds.**

Typical male and female mouse behavior was reversed in adult mice that were exposed to low levels of BPA during their adolescent development. Environmental Health News (24/6/11)

**Scientists warn that chemicals may be altering breast development**

Exposure to chemicals early in life may alter how breast tissue develops and raise
Global Change

Estimating the Global Public Health Implications of Electricity and Coal Consumption

The growing health risks associated with greenhouse gas emissions highlight the need for new energy policies emphasizing efficiency and low-carbon energy intensity. The authors assessed the relationships among electricity use, coal consumption, and health outcomes. Using time-series data sets from 41 countries with varying development trajectories over a 40-year period, they developed an autoregressive model of life expectancy (LE) and infant mortality (IM) based on electricity consumption, coal consumption, and previous year’s LE or IM. Prediction of health impacts from an integrated air pollution emissions health impact model for coal-fired power plants was compared to the time-series model results. The time-series model predicted that increased electricity consumption is associated with reduced IM for countries with relatively high IM and low LE at the start of the study, whereas LE was not significantly associated with electricity consumption regardless of IM and LE. Increasing coal consumption was associated with increased IM and reduced LE after accounting for electricity consumption. These results are consistent with results based on the GAINS model and previously published estimates of disease burdens attributable to energy-related environmental factors including indoor and outdoor air pollution and water and sanitation. Findings suggest that increased electricity consumption in countries with IM < 100 per 1,000 live births does not lead to greater health benefits, whereas coal consumption has significant detrimental health impacts.

Environmental Health Perspectives

the risks of breast cancer and lactation problems later in life, scientists concluded in a set of reports published recently. Environmental Health News (22/6/11)

Smoking in pregnancy cuts child's good cholesterol

Mothers who smoke while pregnant are causing changes to their unborn babies that can lead them to have less of a type of cholesterol known to protect against heart disease. Reuters (22/6/11)

Pupils' health 'at risk' from London road pollution

Up to 1,148 London schools are within 150m (492ft) of roads carrying about 10,000 vehicles a day, putting pupils' health at risk, a campaign group said. BBC (21/6/11)

Weed killers come under increasing scrutiny in Oregon and nationwide

Weed killers are getting ever more scrutiny, from Oregon's new water quality laws to studies about impacts on humans and plants. Portland Oregonian (21/6/11)

Concern grows over plasticizers used in medicines

Contamination from harmful plasticizers appears to be spreading from food into China's pharmaceutical industry. The State Food and Drug Administration confirmed that three kinds of phthalates, DMP, DEP and DBP, are legally recognized in China's 2010 Pharmacopoeia as inert in drug production. China Daily (17/6/11)

China's children pay tragic price for widespread industrial lead pollution

In the past two-and-a-half years, thousands of workers, villagers and children in at least nine of China's 31 regions have been found to be suffering
Reproductive Health

The authors analyzed biomonitoring data from the National Health and Nutrition Examination Survey (NHANES) to characterize both individual and multiple chemical exposures in pregnant women in the United States. They analyzed data for 163 chemical analytes in 12 chemical classes for subsamples of 268 pregnant women from NHANES 2003–2004. The percentage of pregnant women with detectable levels of an individual chemical ranged from 0 to 100%. Certain polychlorinated biphenyls, organochlorine pesticides, perfluorinated compounds (PFCs), phenols, polybrominated diphenyl ethers, phthalates, polycyclic aromatic hydrocarbons, and perchlorate were detected in 99–100% of pregnant women. The median number of detected chemicals by chemical class ranged from 4 of 12 PFCs to 9 of 13 phthalates. Across chemical groups, the median number ranged from 8 of 17 chemical analytes to 50 of 71 chemical analytes. Levels in pregnant women were similar to or lower than levels in nonpregnant women. The authors conclude that further efforts are warranted to understand sources of exposure in pregnant women and implications for policy making.

Environmental Health Perspectives

Ambient Carbon Monoxide and Fine Particulate Matter in Relation to Preeclampsia and Preterm Delivery in Western Washington State
Preterm delivery and preeclampsia are common adverse pregnancy outcomes that have been inconsistently associated with toxic levels of lead exposure, mostly caused by pollution from battery factories and smelters. High levels damage the brain, kidney, liver, nerves and stomach and can even kill. Children are susceptible as they absorb lead more easily than adults. Edinburgh Scotsman (16/6/11)

Smoking in front of children can make them addicted to nicotine
A new study reveals that smoking in front of children not only passes on the harmful effects of the smoke in the air - it can also get them hooked on cigarettes. London Daily (16/6/11)

GM regulators chose ignorance over science
A study showing the presence of GM pesticides in the blood points to the remarkable complacency of global safety regulators. London Guardian (16/5/11)

Prenatal pesticide exposure tied to birth size
Exposure to even moderate amounts of certain pesticides during pregnancy may affect infants' birth size, a new study suggests. Reuters (15/6/11)

103 kids in serious lead poisoning
Lead pollution from family-run workshops in east China's Zhejiang Province seriously poisoned 103 children and affected hundreds of other residents, Xinhua news agency reported. Shanghai Daily (13/6/11)

Taiwan orders recall of Glaxo children's drug - report
Taiwan has ordered pharmaceutical giant GlaxoSmithKline to recall an antibiotic used to treat infections in children for containing a chemical additive. Agence France-Press (12/6/11)
ambient air pollutant exposures. The authors prospectively examined relations between exposures to ambient carbon monoxide (CO) and fine particulate matter [particulate matter ≤ 2.5 μm in aerodynamic diameter (PM$_{2.5}$)] and risks of preeclampsia and preterm delivery. They used data collected over a 10-year period from women who delivered liveborn infants. Ambient CO and PM$_{2.5}$ exposures were predicted using regression models based on regional air pollutant monitoring data. Predicted periconceptional CO exposure was significantly associated with preeclampsia after adjustment for maternal characteristics and season of conception. However, further adjustment for year of conception essentially nullified the association. Associations between PM$_{2.5}$ and preeclampsia were nonsignificant and weaker than associations estimated for CO, and neither air pollutant was strongly associated with preterm delivery. Patterns were similar across all exposure windows. *Environmental Health Perspectives*

**Neonatal outcomes among multiple births less than or equal to 32 weeks gestational age: Does mode of conception have an impact? A Cohort Study**

Studies comparing perinatal outcomes in multiples conceived following the use of artificial reproductive technologies (ART) vs. spontaneous conception (SC) have reported conflicting results in terms of mortality and morbidity. The objective of this study was to compare composite outcome of mortality and severe neonatal morbidities amongst preterm multiple births < 32 weeks gestation infant born following ART vs. SC. One hundred and thirty seven neonates were born following use of ART and 233 following SC. The unadjusted composite outcome rate was significantly higher in preterm multiples born following ART vs. SC [43.1% vs. 37.2% respectively]. The adjusted composite outcome rate was also significantly higher in preterm multiples born following ART vs. SC [38.9% vs. 28.5% respectively].

**Council of Europe seeking ban on mobile phones in schools**

The Council of Europe has issued a new draft resolution calling for a ban on the use of mobile phones and Wi-Fi technology in all schools in its 47 member states, including Malta. *Times of Malta* (9/6/11)

**EPA To Ban Rat, Mouse Poisons**

The Environmental Protection Agency intends to ban the sale of four rat and mouse poisons to residential customers and prohibit the use of most loose bait and pelletized rodenticides. The four chemicals affected by the decision are brodifacoum, bromadiolone, difethialone, and difenacoum. *Chemical and Engineering News* (9/6/11)

**Minorities see bottled water as safer, buy more**

Poor minority parents are spending a sizeable chunk of their income on bottled water based on unfounded beliefs that it’s safer. *Reuters* (8/6/11)

**Debating BPA’s Toxicity**

The precautionary principle serves as a dividing line in arguments over the safety of bisphenol A. There are no simple answers. *Chemical and Engineering News* (6/6/11)

**Exposure Routes Confound BPA Debate**

Concern over potentially harmful health effects from exposure to the estrogen-mimicking compound bisphenol A initially leveled a spotlight on baby bottles and food cans. But that focus has left several other potentially important sources of estrogen mimics in the environment largely in the dark. Key among them are credit card and cash register receipts that use BPA in the printing process, natural estrogenic compounds found in foods, and
vs. 26.6%, p=0.001; OR 1.98 (95% CI 1.13, 3.45); however, when adjusted for confounders the difference between groups was not statistically significant [OR 1.39, 95% CI 0.67, 2.89]. The authors conclude that in their population of preterm multiple births, the mode of conception had no detectable effect on the adjusted composite neonatal outcome of mortality and/or three neonatal morbidities. 

*BMC Pediatrics*

**Additional Publications**

**Violence and Injury Prevention and Disability (VIP) Short Courses**

VIP short courses provide a complete training resource, each addressing a specific injury or violence area. They have been designed to provide facilitators around the world with everything they need to conduct a short course of 2-5 days on various topics. These "trainings in a box" can be downloaded from the WHO website free of charge.

*Link to VIP short courses*

**UPCOMING EVENTS**

*Scientific Conference to launch the Children's Health and Environment Program*

5 - 7 August 2011. Brisbane, Queensland Australia

*World Conference on Social Determinants of Health*


*6th International Conference on children’s Indoor Exposure of Phthalates Harmful to Children: NCKU*

A research team of environmental health at National Cheng Kung University
(No URL available: Contact information - Department of Environmental Epidemiology Nofer Institute of Occupational Medicine, 8 Teresy St. 91-348 Lodz, Poland Tel.: +48 42 6314 569; Fax: + 48 42 6314 562; e-mail: inches2011@wp.pl)

16th International Conference on AIDS & STIs in Africa (ICASA)
4 – 8 December 2011. Addis Ababa, Ethiopia

(NCKU) has verified that DEHP in the environment can lead to children’s allergy and asthma and girls’ precocious puberty.

Bradenton Herald (2/6/11)

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Collated and distributed with the cooperation of the WHO Collaborating Centre for Children’s Environmental Health, Perth, Australia and Children’s Health and the Environment Program, QCMRI, Brisbane, Australia