



Supportive Environments for Healthy Communities

## Issue 19 August 5, 2011 | Focus on Indoor Air Quality (IAQ)

This *WASHplus Weekly* contains selected articles and reports published on IAQ. This issue includes a summary of a recent meeting at the National Institutes of Health, which determined IAQ research priorities. Recently published studies conclude that indoor air pollution leads to hypertension and affects the growth of children.

### UPCOMING EVENTS

- **Partnership for Clean Indoor Air (PCIA) Webinar, August 11, 2011** - Impacts of Household Fuel Consumption from Biomass Stove Programs in India, Nepal and Peru. ([Registration information](#))  
Michael Johnson of Berkeley Air Monitoring Group will present the results of in-home assessments in Nepal and Peru.

### JOURNAL ARTICLES

- **Association between Biomass Fuel Use and Maternal Report of Child Size at Birth: An Analysis of 2005-06 India Demographic Health Survey Data**, IN: *BMC Public Health*, 2011. T. Chandrashekar, Melaka-Manipal Medical College. ([Full-text](#))  
Observational epidemiological studies and a systematic review have consistently shown an association between maternal exposure to biomass smoke and reduced birth weight. The aim of this study was to further test this hypothesis. It concluded that use of biomass fuels is associated with child size at birth. Future studies should investigate this association using more direct methods for measurement of exposure to smoke emitted from biomass fuels and birth weight.
- **A Community Randomised Controlled Trial Evaluating a Home-based Environmental Intervention Package of Improved Stoves, Solar Water Disinfection and Kitchen Sinks in Rural Peru: Rationale, Trial Design and Baseline Findings**, IN: *Contemp Clin Trials*, July 2011. S. Hartinger. Swiss Tropical and Public Health Institute. ([Abstract](#))  
This study presents the design and baseline findings of a community-randomized

controlled trial in rural Peru to evaluate the health impact of an Integrated Home-based Intervention Package in children aged 6 to 35 months. At baseline all households used open fires and 77 percent had access to piped water supplies. *E. coli* was found in drinking water in 68 percent and 64 percent of the intervention and control households, respectively. The proportion of stunted children was 54 percent.

- **Environmentalists Seek to Set Research Agenda on Indoor Air Pollution**, IN: *British Medical Journal*, 2011. ([Full-text](#))

A three-day meeting of health advocates and biomedical researchers has proved to be the catalyst for setting a research agenda on indoor air pollution in developing countries. The US National Institutes of Health organized the conference, held near Washington, DC, May 9-11, 2011. Themes reported by the conference's working groups included the need to create a common database to eliminate duplication of research and standardization of terms and measures to enable comparisons and aggregation of research findings.

- **Impact of Reduced Maternal Exposures to Woodsmoke from an Introduced Chimney Stove on Newborn Birth Weight in Rural Guatemala**, IN: *Environ Health Perspect.*, June 2011. L. Thompson. University of California, San Francisco. ([Full-text](#))

This study examined the effect of reduced woodsmoke exposure in pregnancy on low-birth weight (LBW) of Guatemalan infants in RESPIRE (Randomized Exposure Study of Pollution Indoors and Respiratory Effects). Infants born to mothers who used a stove weighed 89g more than infants whose mothers used open fires after adjusting for maternal height, diastolic blood pressure, gravidity, and season of birth. A chimney stove reduced woodsmoke exposures and was associated with reduced LBW occurrence.

- **Indoor Air Pollution and Blood Pressure in Adult Women Living in Rural China**, IN: *Environ Health Perspect.*, July 2011. J. Baumgartner, Institute on the Environment. ([Full-text](#))

The aim of this study was to assess the relationship between air pollution exposure from indoor biomass combustion and blood pressure in women in rural China. It concludes that fine particle (PM<sub>2.5</sub>) exposure from biomass combustion may be a risk factor for elevated blood pressure, and hence for cardiovascular events.

- **Indoor Coal Use and Early Childhood Growth**, IN: *Arch Pediatr Adolesc Med.*, June 2011. R. Ghosh, University of California, Davis. ([Abstract](#))

The purpose of this research was to examine whether indoor coal combustion for heating affects early childhood growth. Pollution from indoor coal use may impair early childhood skeletal growth to age 36 months. Because a significant proportion of the world population still uses coal indoors, the finding has public health consequences.

- **Intervention to Lower Household Woodsmoke Exposure in Guatemala**

**Reduces ST-segment Depression on Electrocardiograms**, IN: *Environ Health Perspect.*, June 2011. J. McCracken, Harvard School of Public Health. ([Full-text](#))

A large body of evidence suggests that fine particulate air pollution is a cause of cardiovascular disease, but little is known in particular about the cardiovascular effects of indoor air pollution from household use of solid fuels in developing countries. Findings from this research conclude that the stove intervention was associated with reduced occurrence of nonspecific ST-segment depression, suggesting that household woodsmoke exposures affect ventricular repolarization and potentially cardiovascular health.

- **Solid Fuel Use: Health Effect**, IN: *Encyclopedia of Environmental Health*, 2011. E. Rehfuess, University of Munich. ([Full-text](#))

This article presents an overview of global and regional household energy practices, considers the composition of biomass smoke and coal smoke as well as associated pollutant concentrations and personal exposure, and reviews the evidence linking indoor air pollution to a variety of health outcomes.

## REPORTS

- **Analysis of Cookstove Change-Out Projects Seeking Carbon Credits**, 2011. P. Cox, University of Minnesota Law School. ([Full-text](#))

Cookstove change-out projects in developing nations seek to replace open fire burning with more efficient cookstove technology. This report analyzes the characteristics of cookstove projects that are seeking to obtain carbon credits as a result of emissions reductions achieved through the stove replacement. The report identified 43 cookstove projects that have applied for or obtained carbon credits.

- **Combating Deforestation? – Impacts of Improved Stove Dissemination on Charcoal Consumption in Urban Senegal**, 2011. G. Bensch, Rheinisch-Westfälisches Institut für Wirtschaftsforschung. ([Full-text](#))

This paper evaluates the impact of an improved cookstoves (ICS) dissemination project in urban Senegal. It examined the effects of the intervention on charcoal consumption. On average, households using an ICS consume 25 percent less charcoal per stove utilization. In total, around 6.1 to 6.9 percent of the Dakar charcoal consumption is saved due to the ICS dissemination project.

- **The Impact of Indoor Air Pollution on the Incidence of Life Threatening Respiratory Illnesses: Evidence from Young Children in Peru**. 2011. G. Garrido. Consultative Group on International Agricultural Research. ([Full-text](#))

This paper analyzes the impact of indoor air pollution on child health and the validity of various mitigation strategies using a panel of Peruvian children younger than 6 years old. This study improves on previous work by (i) controlling for unobserved household/child heterogeneity, (ii) providing a set of controls defined in the literature as important confounding variables and (iii) analyzing the impact of indoor air pollution

by gender. It finds a negative, statistically significant and considerable impact of indoor air pollution on child respiratory health. This impact is stronger and only significant for boys.

- **Improved Stoves in Southern Africa: A Solution for All Seasons**, 2011. M. Mapako, Cape Peninsula University of Technology. ([Full-text](#))

This paper examines the different domestic heating loads in selected areas in Southern Africa in the summer and winter months to show that cooking energy is not always the main requirement. Top down approaches to planning and dissemination of improved stoves often fail to appreciate such factors, typically resulting in limited impact of the initiatives.

- **Nutritional Status and Access to Clean Fuels: Evidence from South Asia**, 2011. P. Bhagowalia, TERI University. ([Full-text](#))

This study examines the correlations between fuel choice and the nutritional status of children. Results suggest that the choice and use of fuel has long lasting effects on the growth and health of children. It is also associated with a higher frequency of respiratory disorders.

Each *WASHplus Weekly* will highlight topics such as Urban WASH, Indoor Air Quality, Innovation, Household Water Treatment and Storage, Handwashing, Integration and more. If you would like to feature your organization's materials in upcoming issues, please send them to Dan Campbell, WASHplus knowledge resources specialist, at [dacampbell@fhi360.org](mailto:dacampbell@fhi360.org).



**About WASHplus** - WASHplus, a five-year project funded through USAID's Bureau for Global Health, creates supportive environments for healthy households and communities by delivering high-impact interventions in water, sanitation, hygiene (WASH) and indoor air quality (IAQ). WASHplus uses proven, at-scale interventions to reduce diarrheal diseases and acute respiratory infections, the two top killers of children under five years of age globally. For information, visit [www.washplus.org](http://www.washplus.org) or contact: [washplus@aed.org](mailto:washplus@aed.org).

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