

Critical gaps in household air pollution research identified

By Paula Whitacre

Household air pollution (HAP) from smoky, inefficient traditional stoves used for cooking and heating affects nearly 3 billion people, almost half the world's population. HAP is the leading environmental cause of death and disability in the world today. Yet, significant research gaps persist about the health effects of these stoves and the solid fuels used in them, and the impacts of alternatives, according to a June PLOS Medicine [article](#)

(<http://www.ncbi.nlm.nih.gov/pubmed/23750119>)

authored by a group of researchers that included NIEHS Senior Advisor for Public Health John Balbus, M.D.

William Martin, M.D., associate director for prevention research and health promotion at the Eunice Kennedy Shriver National Institute of Child Health and Human Development (NICHD), served as the lead author.

"The real research gap that must be addressed is whether clean stoves and clean fuels really work," he said during a podcast discussion about the findings, hosted by NICHD in June.

Linked Audio

[Listen as Glass interviews guests about the health problems posed by indoor air pollution \(24:03\)](#)

Development of the article's findings and conclusions began with a May 2011 [workshop](#), Health Burden of Indoor Air Pollution on Women and Children in Developing Countries, spearheaded by NIEHS, NICHD, and the Fogarty International Center (FIC). Research gaps were identified in seven disease areas - cancer, infections, cardiovascular disease, burns, ocular disorders, respiratory disease, and maternal, neonatal, and child health. In addition, four cross-cutting areas were found to merit further research - exposure and biomarker assessment, women's empowerment, behavioral approaches, and program evaluation.

During the podcast, Balbus focused on the area of exposure and biomarker assessment.

"More studies, especially using more sophisticated methods, are needed to get a really accurate idea of how clean cookstoves need to be," he said.

Balbus noted that the variability in conditions - ranging from the type and wetness of fuel used and the way people move around their homes, to the way the homes are constructed and ventilated - poses a challenge to research. The NIEHS Exposure Biology Research Program is currently promoting the development of a new generation of exposure monitors to overcome these challenges.

Findings align with clean cookstove initiative

The researchers hope their work will contribute to successful achievement of the goal of the [Global Alliance for Clean Cookstoves](#)

(<http://www.cleancookstoves.org/our-work/>)

- for 100 million homes to adopt clean and efficient cookstoves and fuels by 2020.

"We recommend approaches that include everything from birth cohort studies, to randomized controlled trials, to perhaps even more timely program evaluation of the major implementation studies around the world," Martin said. "As a research community, we need to partner with these implementers to work together."

"It's not just a matter of buying cleaner, more efficient cookstoves and giving them to people who need them," agreed Roger Glass, M.D., Ph.D., FIC director and another author of the article,



Balbus is the NIEHS lead for global environmental health. (Photo courtesy of Steve McCaw)



Newly appointed to lead the The Ohio State University College of Public Health (see [story](#)), Martin was a member of the NIEHS leadership team from 2006 to 2008, serving as associate director for translational research. (Photo courtesy of Steve McCaw)

during the podcast. "If we in the developed world really want to help, then we must conduct the necessary research as to what is acceptable and what really works to reduce exposures and improve health."

Yvonne Njage, M.D., co-organizer of the May 2011 workshop, also participated in the podcast. She noted her personal experience of growing up in Kenya with an indoor cooking fire, which created HAP smoke. She stressed the need to find creative ways to sell the cookstove concept, because of a variety of food and cultural preferences.

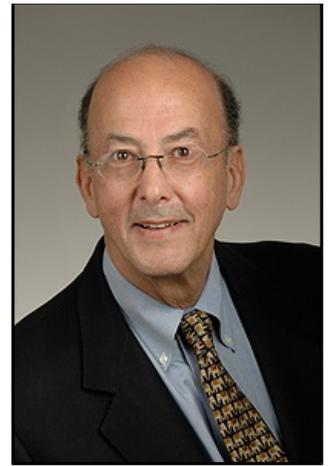
"Just because the stove is good in the lab," she said, "does not mean the women will use it."

Citation: [Martin WJ 2nd, Glass RI, Araj H, Balbus J, Collins FS, Curtis S, Diette GB, Elwood WN, Falk H, Hibbard PL, Keown SE, Mehta S, Patrick E, Rosenbaum J, Sapkota A, Tolunay HE, Bruce NG.](#)

(<http://www.ncbi.nlm.nih.gov/pubmed/23750119>)

2013. Household air pollution in low- and middle-income countries: health risks and research priorities. *PLoS Med* 10(6):e1001455.

(Paula Whitacre is a contract writer with the NIEHS office in Bethesda, Md.)



Glass heads FIC, the NIH center specifically charged with supporting and facilitating global health research conducted by U.S. and international investigators, building partnerships between health research institutions in the U.S. and abroad, and training the next generation of scientists to address global health needs. (Photo courtesy of NIH)

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