

## **Report 32: Indoor Air Quality**

**Convener:** Patrick Breysse

### **Brief History:**

Research and funding for indoor air quality assessments and impacts lags behind the investment in ambient air quality research. Diseases like asthma continue to rise despite improvements in ambient air quality. People spend 80-90% time indoors. Indoor environments have sources and pollutant profiles that are unique in terms of particulate matter (PM) characteristics and gas phase components.

In international settings biomass burning is an important contributor to disease burden. Two-thirds of the world's population cook with biomass and many groups are investing billions (?) of dollars in deploying new cook stove technology in the developing world without evidence that this technology will reduce exposures (PM and gas phase) to result in improvements in health.

### **Discussion Highlights:**

- Important indoor environments include homes, schools and day care/preschool settings
- Women, children, and the elderly are disproportionately impacted
- This is an environmental justice health/disparity issue since poor, inner-city populations are at increased risk
- Indoor environments are readily modifiable and amenable to intervention
- The importance of schools, preschools, and day care environments was extensively discussed. Little information of exposures and health impacts is available.
- With respect to schools, the importance of IAQ and academic performance was noted as an important research gap
- No regulatory agency has responsibility for IAQ and this could be an important area of scientific contribution for NIEHS
- The health impact of the biological component of indoor PM (except for allergens and maybe endotoxin) is not well characterized
- Community interaction and risk communication are important components of studying IAQ
- The combined impact of indoor and ambient air pollution is not well understood
- The neurotoxic/neurodevelopmental effects of indoor exposure to combustion products from biomass burning and indoor pesticide use is not well understood

- Chemical emissions from building products are not well understood. Formaldehyde was mentioned as an example of carcinogen emitted from many building product

**Recommendations (not in order):**

- NIEHS should place a strategic emphasis on studying indoor air
- Intervention studies need to be conducted. Studies demonstrating the efficacy of intervention to change the environment need to be conducted prior to conducting health outcome interventions. NIEHS should partner with agencies like HUD to move these studies forward.
- Evidence base linking IAQ and school performance needs to be developed
- Evidence base linking cleaning products, IAQ and health needs to be developed. The assumption that “green cleaning” products are safer needs to be tested.
- Cooks stove pollutant toxicity studies (PM and gas phase) need to be conducted
- Health impact of “improved” cook stove technology needs to be evaluate
- The health impact of indoor air quality in poor and rural settings needs to be more actively investigated
- Policies addressing smoking in homes and multiunit dwellings need be developed
- Overall the group though that NIEHS was uniquely positioned to generate the evidence base need to stimulate policy and practice changes needed to reduce the impact of IAQ on health across many outcomes and settings

**Discussion Participants:**

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