

**HEALTH EFFECTS OF INDOOR AIR POLLUTION: THE GLOBAL PICTURE****K.R. Smith***Environmental Health Sciences, University of California, Berkeley, USA*

This year, the World Health Organization (WHO) published the results of an effort that brought together about 100 specialists from approximately 30 institutions worldwide to conduct the first large-scale coherent multi-risk-factor Comparative Risk Assessment (CRA) ever done. Previous risk estimates, such as those for indoor air pollution (IAP), had been done independently from one another, leading to incompatible criteria for accepting evidence of exposure-response relationships and approaches for establishing exposure. In addition, the separate assessments used different base years, different estimates of background disease rates, different population estimates, and different groupings of populations/countries/regions. Among the nearly 30 major risk factors examined were hypertension, cholesterol, tobacco, alcohol, unsafe sex, several kinds of occupational risks, lead exposure, climate change, and outdoor air pollution. At 1.6 million premature deaths annually, mainly in women and young children, IAP was found to be one of the 10 most important causes of ill-health in the world today and was ranked fourth after poor nutrition, unsafe sex, and dirty water in poor countries as a cause of ill-health. Substantial uncertainty is associated with these estimates, however, and there is urgent need to improve the quality and extent of exposure and epidemiological risk assessments to reduce the uncertainty associated with the main disease outcomes: pneumonia in children, chronic obstructive pulmonary disease and lung cancer in adults, and to establish whether other diseases, for which is limited but intriguing evidence today, can be causally linked: TB, asthma, heart disease, cataracts, and low birth weight. New studies, such as the first randomized intervention trial in air pollution history, are promising to throw more light on this question. This trial, in highland Guatemala, is examining pneumonia and asthma related endpoints as well as adult heart-rate variability and pulmonary health. New technology is also greatly improving the capacity to estimate IAP exposures over large populations for small particle, the best single measure of risk. The WHO CRA also estimated the rate at which fuel-based household pollution would decline worldwide without intervention, which is a function of population and economic trends. The decline was estimated to be only 6-10% per decade, barely sufficient to make up for population increases. Thus there is need to find cost-effective interventions that can be effectively applied. The Chinese improved stove program, which has introduced nearly 200 million stoves, may provide useful lessons for other countries.