

Health Impacts of Indoor Cooking Smoke on Women and Children

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Biomass/Solid Fuels Widely Used for Heating and Cooking by the Global Poor

Primary fuel source for the poor in lower and middle income countries

- Biomass fuels (variable content of water)
 - Wood/ charcoal
 - Crop residues/ leaves/ combustible debris
 - Dung
- Solid fuels
 - Coal or biomass



Health Effects from Indoor Air Pollution on Women Occur within a Social-Cultural Context

- Social / behavioral / cultural issues
 - women lead different lives than men!
- Absence of decision-making control
- Absence of opportunity for education and independent economic growth
- Unique vulnerabilities for displaced or refugee populations

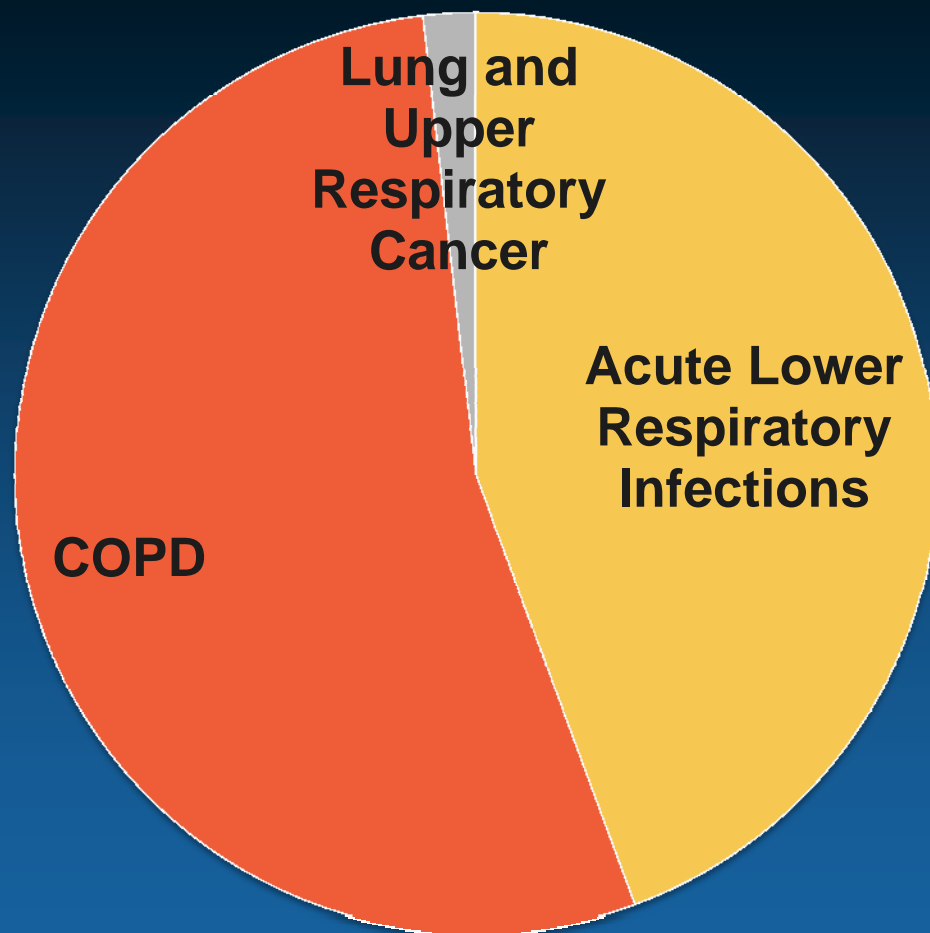


Health Effects from Exposure to Household Smoke from Burning of Biomass/Solid Fuels

- Infancy: low birth weight, perinatal morbidity and mortality, sepsis ?
- Respiratory: ALRI in children, COPD, asthma, otitis media
- Cancer: lung and upper airway cancers
- Cardiovascular: hypertension, coronary heart disease
- Infection: tuberculosis, acute pneumonia in adults (?)
- Ocular: cataracts
- Musculoskeletal injuries/ hernias
- Burn injuries



Almost 2 Million Deaths Attributable to Indoor Air Pollution Every year



■ 872,000 children under 5 from acute lower respiratory infections

■ 1,057,000 adults from COPD

■ 36,000 adults from lung and upper respiratory cancers



Woman in Guatemala Cooking Indoors

Courtesy of Kirk Smith, PI of RESPIRE study



RESPIRE Study in Guatemala

- RCT to assess impact of reducing household air pollution (HAP) using improved cookstoves with chimneys.
 - 265 intervention and 253 control children with primary outcome of physician diagnosed pneumonia
- Significant reductions in three secondary outcomes of pneumonia :
 - Fieldworker assessed severe pneumonia
 - Physician assessed severe pneumonia
 - RSV-negative pneumonia
- Exposure (CO) response analysis suggests a minimum of a 50% reduction in exposures (and perhaps as high as 80-90%) is necessary to achieve a significant reduction of severe pneumonia.

Kirk Smith et al, Lancet 378: 1717-1726, 2011



U.S. DEPARTMENT OF HEALTH AND HUMAN SERVICES
National Institutes of Health



INDOOR
AIR
POLLUTION

Launch of the Global
Alliance for Clean
Cookstoves





INDOOR AIR POLLUTION

WORKSHOP

MAY 9-11, 2011 • ARLINGTON, VA

**HEALTH BURDEN
OF INDOOR
AIR POLLUTION
ON WOMEN
AND CHILDREN
IN DEVELOPING
COUNTRIES**

New Stove Technologies in the Marketplace

Semi-Industrial Manufacturers



Cambodia: GERES charcoal stove

Over \$1M in carbon financing received in 2008

Innovative Element



Guatemala: HELPS wood stove (tortillas)

Very high quality stove for local use; very safe stove



Uganda: wood Ugastove

1st stove to get carbon credits under Gold Std.



StoveTec 2-door stove (charcoal or wood)

Mass manufactured at low cost; combustion chamber can stand alone

Multinational Corporations



Oorja pellet stove (formerly BP)

Emerging markets strategy; pellets from local ag waste

Innovative Element



EnviroFit/Shell Foundation wood stove

5-yr warranty on metal combustion chamber (can be stand-alone, too)



Philips wood fan stove

Extremely clean, but pricey; not yet in market



Bosch-Siemens plant oil stove

Major focus is to ensure sustainable oil production

INDOOR AIR POLLUTION

Global Alliance for Clean Cookstoves: A Mission to Save Lives

- The Challenge:
 - HAP is the leading environmental cause of death in the world today (1.9 million deaths/yr)
 - As many as 600-800 million households
- How to solve:
 - Clean and efficient cookstoves and fuels implemented “at scale” that **prevent disease and “save lives”**
 - The Alliance: Public-private partnership by the UN Foundation to raise \$250 million
 - 2020 goal: 100 million homes to adopt clean and efficient stoves