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fuel solutions in
the home.

THE HEALTH CONSEQUENCES OF INDOOR AIR POLLUTION: A REVIEW OF THE SOLUTIONS AND CHALLENGES

Health Burden

The global health community has largely overlooked the health burden associated with indoor air pollution. In 2000, 1.6 million avoidable deaths were attributed to indoor air pollution; by 2009 that number increased to two million. Worldwide, it is the tenth leading cause of avoidable deaths. In environmental causes of death, it is second only to contaminated waterborne diseases. Additionally, the risks of using solid fuels indoors can be expressed in Disability Adjusted Life Years (DALYs). The World Health Organisation reported 41 million DALYs were lost due to indoor air pollution. It also has a long lasting effect on overall health and wellbeing because of stifled lung development in children. Other health risks include respiratory infections, pulmonary disease, and lung cancer. Emerging evidence shows that indoor air pollution increases the risk of asthma, tuberculosis, cardiovascular disease, and low birth weight.

Non-Health Burden

Gathering traditional solid fuels is a risk in and of itself. Those collecting the fuel are generally women and children. This results in children being taken away from activities like studying or attending school. Women are distracted from duties such as childcare, and the potential for them to generate extra income does not exist. In some places, gathering biomass leads to deforestation and a loss of tree resources.

Concentration in Low-Income Countries

Nearly all of the two million deaths from indoor air pollution each year occur in low and lower-middle income countries in the developing world. In low-income countries the number of deaths brought on by malaria, tuberculosis, and HIV/AIDs stands at 1.6 million deaths annually, compared to the two million caused by regular exposure to pollutants from indoor cooking with solid fuels. Exposure to pollutants from traditional solid fuels is so widespread in the developing world that it is the sixth leading cause of avoidable death in low-income countries. It is responsible for 21% of deaths from lower respiratory infections, 35% of deaths from COPD, and 3% of deaths from lung cancer in these countries.

Mobilizing Resources

Despite statistics proving the high health burden and health risks from indoor air pollution, the public health community has largely overlooked this issue. The majority of worldwide

spending for the prevention and control of disease goes to HIV/AIDS, malaria, and tuberculosis. Expenditures for malaria in 2011 were close to \$2 billion and \$8 billion for HIV/AIDS. If a comparable percentage was spent on prevention and treatment of disease resulting from indoor air pollution, the number would range from \$4–\$8 billion annually.

Changing Landscape of Household Air Pollution

Currently, 2.9 billion people are exposed to indoor air pollution every year. Most solid fuel usage occurs in East Asia, South Asia, and the Pacific; however the greatest amount of exposure to indoor pollutants is in Sub-Saharan Africa. Solid fuel use rates have grown in low-income countries with greatest population growth. From 2000 to 2007, the total number of people using solid fuels in countries that experienced no income growth grew by 45%. In the future, measuring and tracking exposure to indoor air pollution will be necessary to achieving policy changes in low-income countries. The goal is to target low-income countries.

Reducing Exposure

Switching from traditional solid fuels, such as wood or charcoal, to modern fuels will bring about the largest reductions in exposure to indoor air pollution. Modern alternatives include non-solid fuels like kerosene, biogas, natural gas, and LP Gas. Among these, LP Gas remains the best option due to its large reserves, minimal environmental impacts, and affordability. This last criterion is the driving factor for LP Gas adoption in the developing world. In the past, LP Gas prices were linked to oil prices because it is a by-product of oil production. However, with the recent rise in natural gas production, this correlation with oil prices will be reduced, as LP Gas is also a by-product of producing natural gas.

LP Gas Adoption

The biggest factors in developing countries adopting LP Gas as a fuel source are availability, reliability of supply, issues of safety, and familiarity with using the fuel. Pursuing LP Gas as an alternative fuel will likely involve identifying country-level factors that work in favor of adoption and from there, determining which countries show the greatest potential for LP Gas as a viable alternative. Educating consumers, especially women, to the benefits of LP Gas will be essential in convincing households to abandon traditional fuels for a safer alternative.

Positive Outcomes

From an economic standpoint, the health, environmental, and time-saving benefits of transitioning to LP Gas could potentially have structural impacts on productivity gains in developing countries. The health benefits include preventing diseases and millions of DALYs and deaths each year. Adopting a clean cooking fuel could redeploy women into other economic activities that would provide their families with extra income.