STUDIES ON EMISSION RATES OF GREENHOUSE GASES FROM BIOMASS USED AS FUEL IN DOMESTIC COOKING

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Over the last two centuries the concentration of CO_2 an important Greenhouse Gas (GHG) in the atmosphere has increased by more than 25% from about 275 ppmv in the eighteenth century to more than 350 ppmv in 1989. Most of that increase is attributed to the combustion of fossile fuels, but about a third is thought to have come from deforestation.

Global warming is known to be due to increased accumilation of GHG's in the atmosphere. Of the GHG's emitted into atmosphere carbon dioxide is produced mainly by burning of forests or by burning of biomass for industrial and domestic energy needs.

Biomass in the form of firewood is widely used in Sri Lanka for domestic cooking purposes and in industry. The population in Sri Lanka is about 18 million and it is estimated about 80% of the population uses firewood for cooking producing a considerable quantity of CO_2 into the atmosphere. For the first time in Sri Lanka studies were carried out to estimate quantities of carbon dioxide and carbon monoxide produced when biomass materials like rubber firewood, mixed firewood and waste materials of coconut plantations were used in domestic cooking using traditional and improved firewood stoves.

The emission of carbon dioxide and carbon monoxide when 01 kg of moisture free biomass fuel is burnt using both single and double pot stoves are as shown below.

It is observed that residual materials of coconut tree produces more carbon monoxide (56.2g) than rubberwood (29.9g) and jungle wood (33.8g). Emission of carbon dioxide is similar with all three types of fuels, using both types of stoves.