

Variation in Indoor Levels of Polycyclic Aromatic Hydrocarbons from Burning Various Biomass Types in the Traditional Grass-Roofed Households in Western Kenya. (2011).

Fred Ayodi Lisouzaa¹; Okinda P. Owuora¹& Joseph O. Lalah*²

¹ Maseno University

² Department of Chemical Science and Technology, Kenya Polytechnic University College

Abstract

Biomass burning as fuel in the traditional grass-roofed rural households of Western Province of Kenya in open fire places, in poorly ventilated conditions, lead to accumulation of soot under the roofs. This study characterized and quantified the polycyclic aromatic hydrocarbons (PAHs) in accumulated soot in these households and determined the variation in PAHs concentrations with fuel biomass type. Soot samples collected from the households were extracted, cleaned and analysed by gas chromatography. The PAHs were identified using retention times, verified by gas chromatographic mass spectral analysis and quantified from peak area responses using the internal standard method. The PAHs levels significantly varied ($P \leq 0.05$) with biomass type in the order: dung \geq indigenous trees \geq exotic trees \geq shrubs and crop residues. Use of dung and wood from indigenous trees as fuel should be discouraged since they are higher emitters ($P \leq 0.05$) of carcinogenic PAHs.

Environmental Pollution Vol. 159(7)pp 1810–1815.(2011)

See more at: <http://www.sciencedirect.com/science/article/pii/S0269749111001886>