

5.068 Indoor Air Pollution exposure due to fuel burning in low income informal settlements in Umlazi Township, Durban, KwaZulu-Natal, South Africa .

Early Career Scientist

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Abstract:

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Abstract

This study was aimed at investigating indoor air pollution exposure due to fuel burning in low income informal settlements in Umlazi Township, KwaZulu-Natal which is the second largest township in South Africa following Soweto in the Gauteng Province and occupies approximately 4500ha with an estimated population of 388 696. We measured indoor air quality (IAQ) and ambient air quality as well as meteorological variables, documenting and analysing individual indoor exposure and house characteristics using self-report questionnaires and walkthrough surveys in 243 low income and informal households from May to August 2017. Environmental and health questionnaire data from questionnaires were aggregated and analysed at household level. IAQ samples were obtained by direct monitoring using Microdust Pro Real-time Dust Monitor and the IAQ Monitor. Ambient air quality data were obtained from South African Air Quality Information Systems website. Households predominantly used electricity, wood and paraffin for cooking and heating. The Microdust Pro for IAQ showed an average range in particulate matter from 0.001-0.078 mg/m³ with a maximum value of 2.88 mg/m³ and carbon dioxide concentrations that ranged from 332-660 ppm. Indoor temperatures during the autumn/winter months ranged from 25 to 30 °C. We noted that when the temperature of the room was high (i.e. too much discomfort) the amount of carbon dioxide was also high. Since temperature with the room is likely a major factor affecting IAQ this will be explored in more detail and in relation to household variables, including human health impacts. Findings will be useful to inform development of household-level interventions for improved IAQ and thermal comfort.

Key words: Fuel burning, exposure, low income informal settlements.