

RISK ASSESSMENT OF EXPOSURE BY PM_{2,5} FROM THE BIOMASS BURNING IN CHILDREN OF BRAZILIAN AMAZON: ESTIMATIVE OF POTENTIAL DOSE AND RISK TOXICOLOGY

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Background and Aims: Exposure to fine fractions of particulate matter (PM_{2,5}) was associated with increased hospital admissions for respiratory disease and cardiovascular disease in children and elderly (Pope III and Dockery 2006; Gouveia et al 2006). This study aims to estimate the toxicological risk of PM_{2,5} from the burning biomass in children between 6 to 14 years of age in Tangará da Serra, a municipality of Subequatorial Brazilian Amazon.

Methods: Study of Risk Assessment of PM_{2,5} by estimated the potential dose and risk quotient in two scenarios of exposure according to local seasonality. The exposure scenarios were defined using the average of concentrations PM_{2,5} during the dry and rainy season. The potential dose of PM_{2,5} was estimated using Monte Carlo simulation, according age, gender, asthma and Body Mass Index (BMI).

Results: The children incorporated a potential average dose of PM_{2,5} of 2.05 µg/kg.dia (CI 95%: 1.91-2.18) in dry season and 0.32 µg/kg.dia (CI 95%: 0.31-0.34) in the rain scenario. During dry season, children and adolescents showed toxicological risk to PM_{2,5} of 2.41 (CI 95%: 2.25-2.57). In the rain scenario, the exposure to PM_{2,5} not configured toxicological risk (RQ=0.54; CI 95%: 0.52-0.56).

Conclusions: Children and adolescents living in the Subequatorial Brazilian Amazon region were exposed to higher potential average doses of PM_{2,5}, resulting in toxicological risk for this pollutant.

References:

Pope III CA, Dockery DW. Health effects of fine particulate air pollution: lines that connect. J Air Waste Manag Assoc 2006; 56:709-42.

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