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:
