

**ABSTRACT 441** – Environmental contaminants and multiple exposure risks in the Eastern Brazilian Amazon

**Thematic area:** Environmental Toxicology

**Financial support:** Iniciativa Amazônia+10 Program

**Authors:** Carlos José Sousa Passos (**presenter**); **1.** José Antônio Menezes Filho; **2.** Mariele Feiffer Charão; **3.** Carolina Weber Ferrareze; **4.** Fernando Barbosa Jr.; **5.** Tânia Mara Pires Moraes; **6.** Alexandro Cezar Florentino

**INTRODUCTION:** The Amazon has long been under considerable national and international pressure from various types of development, including logging, mining, hydroelectric dams, and agriculture, with their environmental, economic, social, and health risks. Human exposure to environmental contaminants resulting from these anthropogenic activities has become a global concern for several neglected Amazonian populations. Mercury (Hg) exposures have been extensively studied, and more recently elevated levels of lead (Pb) were measured by our group in riverine communities along the Tapajós River, one of the possible sources being manioc flour consumption. In parallel, soybean monoculture has been greatly expanding in recent decades. In addition to increasing deforestation, these agricultural practices are accompanied by the widespread use of pesticides, mainly glyphosate-based herbicides (GBH). **OBJECTIVE:** our research group has been conducting a large project aiming to address environmental and human health priorities related to the risks of exposure to environmental contaminants and their toxic effects in rural communities of the Eastern Brazilian Amazon. **METHODS:** in May and November 2024 we conducted two large sampling campaigns in rural areas of the Santarém Region in Western Pará as well as in the outskirts of Macapá, the capital of Amapá. A variety of biological samples were collected for the determination of a series of pesticide residues as well as toxic metals, and interview administered sociodemographic and dietary questionnaires were applied. **PRELIMINARY RESULTS AND CONCLUSION:** Some initial findings suggest an important profile of environmental exposures to different essential and/or toxic metals as well as to GBH, as measured in urine samples. As for toxic outcomes, for instance, blood lead levels (BLLs) median (range) in children were 2.2 µg/dL (0.5-40.1), 13% above 5 µg/dL, the WHO reference value. No differences were observed between boys and girls. Total blood mercury (THg) concentrations were 3.51 µg/L (0.28-53.55), of which 19% were above the reference level of 5 µg/L. Multivariate linear regression analysis detected a significant negative association between BLL and Raven total scores after adjusting for children's age, sex, THg levels, and maternal education. For BLL log10 transformed, the non-standardized  $\beta$ -coefficient was -5.39 with a 95%-CI of -10.79 to -0.01, which means that with a 10-fold increase in children's BLLs, there would be a loss of approximately five points in their IQ. No interaction was observed between Pb and Hg exposures on children's intellectual performance. Other biomarkers of exposures and effects are currently under analyses.

**Keywords:** Amazon, Pesticides, Metals