

SOURCES OF INDOOR AIRBORNE CD AND PB IN A COHORT OF PREGNANT WOMEN IN CALI, COLOMBIA

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Background and aim: As part of the exposure assessment to heavy metals in a cohort of pregnant women in Cali, we evaluated presence and levels of Cd and Pb in food, water and air. Previous exploratory evaluations have been made in food (fish and vegetables) and water (Cali River and water distribution net) showing presence in moderate levels. Although environmental measurements of pm2.5 and its elemental composition shown presence in air of these metals and industrial activities have been identified as the main source, little is known about sources in the indoor. Although air is not the main source for these heavy metals, some practices may increase exposure levels and therefore become an important exposure media. The aim of this research was to identify sources of Cd and Pb in the indoor and immediate neighborhood.

Methods: Based on blood levels of lead and cadmium measured in the first trimester of pregnancy, we selected 50 women with detectable levels of one or both metals. We visited their houses and collected information about practices that could increase exposure to PM2.5, Pb and Cd; developed a peri-domicile assessment, registered sources in the outdoor, and determined distance to industrial areas or other source of air pollution. Teflon filters were analyzed by X-ray fluorescence (XRF) for Cd and Pb.

Results: Main practices found associated with increased PM2.5 exposure were everyday sweeping, use of curtains for dividing rooms, and opened windows during the day. Practices in the immediate neighborhood like recycling and outdoor burning were also found associated to presence of Pb (max:0.09, min:0.04 µg/m³), we did not find Cd in these measurements.

Conclusions: Many of the practices increasing likelihood of exposure in this population are related to poverty. There is a need to develop a complete exposure assessment to identify sources contributions, exposure routes and pathways.