

HUMAN BIOMONITORING FOR GARDENERS EXPOSED TO CONTAMINATED SOILS IN LIÈGE

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Background: Gardeners from one of the biggest and most contaminated collective garden in Wallonia were recruited for a targeted human biomonitoring study, following an environmental health risk assessment based on extensive environmental sampling, with Pb, Cd and As concentrations widely exceeding wallonian regulatory standards values for soils and commercial compliance for vegetables.

Methods: During a four month period in the summer 2018, 93 volunteers from this site agreed to provide blood and urine samples for the measurement of internal exposure to Pb, Cd and As by monitoring blood lead (PbB), urinary Cd (CdU) and speciated (Asi+MMA+DMA) urinary ($As_{spec}U$), relevant to metal body burden and health impact.

Results: The results of analysis have been compared to three types of reference values: (1) in general population, (2) in case studies with exposed and non-exposed people and (3) to cut-offs we fixed for every metals which mean an adverse effect in case of overtaking. The comparisons have shown a high impregnation for lead in blood and some very high internal exposure for cadmium (P50 of sample > P95 Belgian, French and German populations) and arsenic in urine ($As_{spec}U$: P50 > P95 French population).

Short discussion/conclusions: The high and very high concentrations of PbB, CdU and $As_{spec}U$ found in the body of the 93 participants might suggest a real risk of kidney disease as we know that one of the major toxic effects of lead and cadmium concerns the kidney function. The detection of kidney impairment of every volunteer should be realized in a short future.