

POLLUSOL 2 project: large scale investigation of soil-to-plant and soil-to-human exposition pathways in urban areas near industry in Wallonia

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Since 2007, SPAQuE, with the collaboration of four universities in Belgium (UCL-ELIE, UMONS, Ulg-GxABT and Ulg-Aquapôle), has investigated urban areas near industry in Wallonia (Belgium), collecting data in residential gardens, woodland and cultivated or grazing areas. The objectives of the project were to define urban background soil quality values and to investigate soil-to-plant and soil-to-human exposition pathways.

1126 soil samples, 1341 vegetables and 435 groundwater samples were collected and analyzed. Seventeen inorganic pollutants, 33 organic pollutants, 6 soil parameters and 5 major elements were analyzed in soil, 16 inorganic and 16 organic pollutants in vegetables and 20 inorganic pollutants and 74 organic compounds in groundwater.

Furthermore, several laboratory experiments were carried out by the universities:

- To study human bioaccessibility via the gastrointestinal tract, the Unified BARGE (Bioaccessibility Research Group of Europe) Method was applied to 307 soils samples for 8 inorganic pollutants;
- To estimate the soil-to-plant transfer, several chemical extractives were tested: 480 soil samples with CaCl₂ and 126 samples with EDTA, DPTA and Mehlich 3 method;
- To develop an identification key, 96 samples of slag were analyzed by x-ray.

The collected data were used to:

- Map pollutants background concentrations in soils and groundwater ;
- Develop tools designed to provide a better estimation of soil-to-plant, soil-to-human and soil-to-water transfers ;
- Assess the human health exposure level.

The POLLUSOL 2 results will be an important asset for the Walloon administration when implementing the legislation about potentially contaminated sites.

| The presentation will focus on the POLLUSOL 2 results regarding the soil-to-plant and soil-to-human transfers, and their impact on risk assessment studies.