

# RISK ASSESSMENT AROUND THE LANDFILL OF CUAUTLA MORELOS MEXICO. SITE CHARACTERIZATION

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**Background and Aims:** In Mexico only 58% of generated solid waste is deposited in landfills. Information on improper waste handling and its possible health risk is limited. The main aim is to characterize biological agents and chemical concentrations in air, water, soil and leachate from the landfill as possible pathways to human exposure, "La Perseverancia" in the State of Morelos.

**Methods:** The characterization was developed in two stages: 1) an exploratory sampling at the landfill in order to detect microbiological and chemical pollution indicators. Airborne viable particles and nonviable (PM<sub>10</sub>) were sampled, metals in air were analysed by X ray fluorescence. In soil samplings, physicochemical parameters were measured: pH, electrical conductivity and metal concentrations (Fe, Cu, Mn, Zn, Pb, Ni, Cr, Cd). Microbiological indicators of fecal contamination were quantified in groundwater and leachate sampling 2) For the selection of sampling sites, a geographic information system was developed and a meteorological station was installed; we selected 2 areas for aerobiological sampling into the closest neighborhood as well as 23 extraction wells and 16 points along 2 rivers for sampling groundwater and surface water.

**Results:** Preliminary mean PM<sub>10</sub> concentration was 68.6 µg/m<sup>3</sup> (rain season 33.1 and dry season 99.0 µg/m<sup>3</sup>); 39% of particles were metals in a subsample (n=11), Mn and Ni exceed the recommended inhalation reference dose. Mean electrical conductivity values in leachate samples were 21.81 mS/cm. *Pseudomonas stutzeri* and *Proteus* sp. were isolated for viable particles and *Pseudomonas*, *Proteus* and *Escherichia coli* were the mainly genera identified for leachate sampling. With the results obtained of electrical conductivity, 5 of the 23 extraction wells were selected to monitor for the next 8 months.

**Conclusions:** Water seems to be a possible media for biological contamination while particle contain both biological and metal concentrations relevant for people living close to the landfill.

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