Current MITHE-SN Projects Metadata

II  Dr. Pat Rasmussen (P.I.) – Earth Sciences, University of Ottawa

Metals in Ambient Air: Refinement of Measurement Techniques (Foods + Ingested Particles)

Objectives being Investigated
This research will improve our ability to assess human exposures to metals associated with airborne particulate matter in urban environments. Analytical and sampling methodologies will be developed to determine the relationship between aerodynamic particle size and metal solubility/bioaccessibility. Refinements in measurement techniques arising from this research will be applied to the monitoring of personal, indoor and outdoor exposures in the Windsor-Detroit area, with the ultimate goal of providing Health Canada assessors and regulators with reliable and representative exposure data in the Windsor-Detroit region. Concerns about poor air quality in the Windsor Detroit airshed have led to a number of air health effects studies being undertaken by Health Canada. This research is part of the Border Air Quality Strategy, an international agreement between the governments of Canada and the US.

Study/Sampling Design
A Micro-Orifice Uniform Deposit Impactor (MOUDI) Cascade Impactor is used to separate particles in collected dust samples into eleven aerodynamic size fractions, ranging from 18μm to 0.056μm diameter.

Personal, indoor, and outdoor PM10 and PM2.5 samples are collected using Personal Environmental Monitors (PEMs), stationary monitors inside homes, and stationary monitors in corresponding backyards. Testing of five (co-located) replicate air samplers assisted in identifying and quantifying sources of contamination of filters in the laboratory and in the field.

Number of projects providing material for study: 0

Location of Field Site(s)
Ottawa, Ontario (45° 24.33’ N, 75° 41.17’ W)
Windsor, Ontario (42° 16.53’ N, 82° 57.33’ W)
**Human Studies**

*Outcome or Process Studied*
Human Exposure Assessment

*Exposure Medium, and Metals/Substances Quantified*
Personal, Indoor and Outdoor Residential Air Samples and Settled Dust.

Copper, Iron, Nickel, Strontium, Arsenic, Lead, Titanium, Antimony, Cadmium, Manganese, Molybdenum, Cobalt, Vanadium, Tin, Zinc, Thallium, Uranium, Chromium, Aluminum.

*Biological Endpoint(s) Monitored*
--- none provided ---

**Biota Studied**

*Species*
--- none provided ---

*Metals, etc. Quantified*
--- none provided ---

*Biological Endpoint(s)*
--- none provided ---

**Physical Material(s) Studied**

*Medium/Media*
Size-fractionated particles trapped on 37 mm and 47 mm Teflon filters

*Metals, etc. Quantified*
Copper, Iron, Nickel, Strontium, Arsenic, Lead, Titanium, Antimony, Cadmium, Manganese, Molybdenum, Cobalt, Vanadium, Tin, Zinc, Thallium, Uranium, Chromium, Aluminum.

**Bibliographic References on-file with Secretariat:** No

**Data Available:** No

**Data Archived with MITHE-SN:** No

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**Metals in the Human Environment Strategic Network**
MITHE-SN Secretariat c/o The Canadian Network of Toxicology Centres Head Office