

The Sudbury Soils Study: A Community-Based Risk Assessment.

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Abstract

A century of atmospheric emissions from mining and smelting operations in the Greater Sudbury Area has resulted in a significant amount of metal deposition in the surrounding landscape, particularly near the three historic smelting and refining centres of Copper Cliff, Coniston and Falconbridge. In 2001, the Ontario Ministry of the Environment (MOE) released a report that identified that the levels of nickel, copper, cobalt and arsenic, in particular, were elevated in Sudbury soils. As a result of that report and recommendations the Sudbury Soils Study was conceived and is currently underway. As part of this study two major initiatives were launched, i) a large soil sampling program that collected and analyzed over 12,000 soil samples for approximately 20 parameters in each sample, and ii) a broad Human Health Risk Assessment (HHRA) and Ecological Risk Assessment (ERA) to examine the potential human and ecological risks associated with these historical and on-going smelter emissions.

The Sudbury Soils Study is one of the most comprehensive studies of its kind in North America encompassing a wide range of scientific disciplines and expertise. The key partners for the study include INCO, Falconbridge, the Ontario Ministry of the Environment, the Sudbury & District Health Unit, the City of Sudbury and The First Nations & Inuit Health Branch of Health Canada. Although called the Sudbury Soils Study, all aspects of the environment including air, water quality, aquatic biota and terrestrial vegetation are being examined. Public consultation and outreach are also important components of the study with the study partners committed to ensuring a process that is transparent and open to all members of the community.

This presentation will provide an overview of the spatial distribution of the chemicals of interest (COIs) in Sudbury soils, and how this pattern compares with current smelter emissions, as well as historical patterns of vegetation impacts. The large geographic scope of the study and volumes of background data contribute to the complexity of the undertaking. Environmental initiatives during the past two decades, including emission reductions and re-greening efforts, have resulted in improvements to the regional landscape and biodiversity. Thus, the ERA is being conducted during a period of ecosystem recovery. A brief overview of the scope of the HHRA and ERA will be provided to illustrate how the data will be used to evaluate the potential effects of the COIs on the Sudbury community and surrounding ecosystems.