

The use of *Sphagnum* moss plates and white birch (*Betula papyrifera*) leaves to monitor metal deposition in the vicinity of Sudbury, Ontario.

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Emissions containing metal particulates are produced by smelters in the towns of Copper Cliff and Falconbridge, located in close proximity to Sudbury, Ontario. *Sphagnum* moss plates were used to measure the relative amounts of nickel deposited on five different sites near Sudbury over the growing season. White birch leaves (*Betula papyrifera*) were collected, and their concentrations were compared to those of the moss. Nickel deposition decreased as vegetation diversity increased, but not with distance from the most active smelter. Instead, re-suspension of soil metal particulates is an important factor in measuring metal deposition. Climatic factors such as wind speed and direction as well as precipitation contribute to temporal variability. White birch (*Betula papyrifera*) leaves accumulate metals in their tissues over the course of the growing season. Leaves have a higher concentration of metals per unit area. This indicates that present ecosystem health in the Sudbury area is not dictated by the continued influence of smelter emissions, as *historic soil metal levels* appear to be the major source of white birch leaf contamination.