

# What is a Chemical of Concern (COC)?

A COC is a metal that has been identified for further study in the human health risk assessment (HHRA) or ecological risk assessment (ERA) process.

## Selection of Chemicals of Concern

Soil samples were collected throughout the Greater Sudbury area

Soil samples were analyzed for 20 different metals

Aluminum (Al)	Chromium (Cr)	Molybdenum (Mo)
Antimony (Sb)	Cobalt (Co)	Nickel (Ni)
Arsenic (As)	Copper (Cu)	Selenium (Se)
Barium (Ba)	Iron (Fe)	Strontium (Sr)
Beryllium (Be)	Lead (Pb)	Vanadium (V)
Cadmium (Cd)	Magnesium (Mg)	Zinc (Zn)
Calcium (Ca)	Manganese (Mn)	

All soil samples were screened against Ontario Ministry of the Environment (MOE) criteria to determine:

1. Levels of chemical in soils are above MOE triggers for further study;
2. Chemical is found throughout the study area, or throughout one of our communities of interest (Sudbury core, Copper Cliff, Coniston or Falconbridge); or
3. The chemical can be tied back to smelting activities.

We identified 6 chemicals of concern for the Sudbury Soils Study:  
Arsenic, cobalt, copper, lead, nickel and selenium

Chemicals of Concern are then studied further in the ERA and HHRA.

## COC Mapping

Mapping is based on the 2001 soil sampling program (urban and rural areas throughout the Greater Sudbury area).

Soil metal levels were compared to the MOE generic soil quality guidelines (*Guideline for Use at Contaminated Sites in Ontario*):

1. **Ontario Background Levels** – Represent the upper range of metal levels measured in surface soil in Ontario from areas of no known industrial pollution sources. The background levels reflect normal human activity, both past and present, and may be naturally occurring. Soil metal levels above background usually indicate the presence of a potential point source of contamination. Soil metal levels below background are not believed to cause harmful effects to plants, animals or humans.
2. **Ontario Generic Criteria (“Trigger Values”)** – These screening criteria for soil metals were developed by the Ontario Ministry of the Environment to protect against potential impacts to human health, ecological health, and the natural environment, whichever is most sensitive. These are not “action levels”, because soil metal levels above the criteria do not automatically mean that a clean-up is required. The MOE interprets soil metal levels above the generic criteria to mean that additional studies are required.

These additional studies may include more sampling, a site specific risk assessment, or a health study, any of which may indicate the need for site remediation. The Sudbury Soils Study is fulfilling that obligation through detailed human health and ecological risk assessments in the Greater Sudbury area.

Note: The bedrock of the Sudbury area contains naturally high levels of major minerals, which accounts for the mining success of the area. The MOE generic soil guidelines are used for reference only. The Sudbury Soils Study will take into account site-specific conditions when evaluating potential risks to human health and the environment.