fall 2004

update

Sudbury Soils Study
metals • health • environment

1.866.315.0228 www.sudburysoilsstudy.com Vol. 2, No. 2

# Environment Minister Shows Support for the Sudbury Soils Study

Environment Minister Leona Dombrowsky met with members of the Sudbury Soils Study Technical Committee in September. Dr. Chris Wren, Director of the SARA Group, gave a presentation on the study's progress and outlined the scientific objectives. He also emphasized the community's involvement and the many initiatives that will make the risk assessment specific to the Sudbury environment. "We greatly appreciated the opportunity to talk with the Minister of the Environment about this community-based study, which is groundbreaking not only for Sudbury,but for the entire province" said Dr. Wren.

The event also included a social open house with members of the Sudbury Soils Study Technical Committee, and various invited guests from local government and service organizations. "We are pleased to continue our ongoing efforts to keep government officials and the public informed about the study," said Dr. Wren. For her part, Minister Dombrowsky expressed interest in the study, and was impressed with the level of community participation and wide scope of the study.

# Study Updates

We've just completed our second summer of fieldwork, and were very successful in collecting data for both the ecological and human health risk assessments.

Photo by Gary White

## Air Monitoring

The air monitoring program for the Sudbury Soils Study began in October, 2003, and is now complete. Samples were collected from 20 monitors at 10 sites every 6 days for a full year. We now have more than 20,000 data points, and will be working over the next few months to analyze the results. Results, for the 10 month period up to July 2004, have shown that metal levels in the air in the Greater Sudbury Area are below current Ontario Ministry of the Environment guidelines for air quality. Data collected from July-October 2004 are currently being analysed.

## Medicinal Plant Survey

Members of Whitefish Lake First Nation asked the SARA Group to conduct a study of metal levels in medicinal plants collected on reserve. Funding was provided by the First Nations and Inuit Health Branch of Health Canada to complete the study. Plant and soil samples were collected from 7 sites on the First Nation lands, and were analyzed at Testmark Laboratories in Garson for metal levels. We are currently working on analyzing the results for plants and soil, but preliminary data shows that metal levels are low in soils on reserve. A final report will be provided to Whitefish Lake First Nation in February 2005.

*continued on page 3* ➤

# Risk Assessment vs. Health Study

Since we started work on the Sudbury Soils Study back in January 2003, the SARA Group has often been asked to explain the difference between a risk assessment and a human health study, and why we are conducting a risk assessment for the Greater Sudbury Area. In this article, we describe risk assessment, which is part of the Sudbury Soils Study, and another approach to examine human health, a human health study.

Before we look at how the risk assessment will measure potential risks to human health, we need to define the terms "health" and "risk". Human health includes physical, mental and social well-being, not just absence of disease. A risk is the likelihood that a harmful effect will occur in people or the environment after exposure to a particular hazard. A hazard is something that poses a danger to people or other living things, such as fire. A person must be exposed to a hazard before there is a risk to their health.

## What is a Risk Assessment?

Risk assessments can be carried out with various elements of nature in mind: the physical environment (soil, air, surface water, groundwater), plants and animals, and humans within the study area.

Photo by Kara Hearne

A risk assessment examines the possible risks to human health from hazards, such as exposure to chemicals in the environment. This type of study must take into account all the factors that might affect how people respond to the chemicals. Things like a person's age, length and duration of contact with chemicals in air, water, soil, dust and food, lifestyle activities and occupation. For example: a person's health risk would be lower if contact with an environmental contaminant is short-term or temporary, compared to someone who is exposed to higher levels for longer periods of time (such as over a lifetime).

**Researchers conduct risk assessments to answer the following questions:**

- What are the chemicals that may pose a health risk?
- How much of each chemical are people taking in (exposed to)?
- What health risks could be associated with the estimated exposures to chemicals?

A community-based risk assessment uses an exposure pathways approach, measuring levels of chemicals in local air, water, soil, dust and food, in order to estimate daily lifetime exposures to these chemicals and their potential to impact local community health.

## What is a Human Health Study?

Human health studies examine the health conditions of a particular community, and identify trends that might occur as a result of exposures or changes in the environment.

Human health studies can be done in a variety of ways. These include surveys, self-evaluation reports of health status, and database analyses of measured health events such as cancer, hospitalizations and prescription use, just to name a few.

A biological marker study measures the level of chemicals in body fluids (blood or urine, for example) or other indicators of health effects in individuals. The decision to undertake a biological marker study is not taken lightly. These studies are intrusive, require extensive cooperation by the community being sampled, and are, to some extent, an invasion of people's privacy. An ethics review is required for permission to collect personal health related information.

The measured levels can then be related to possible health risks. Health studies measure a sample of the population and can be designed to forecast possible health risks. However, there is often more than one source of exposure to chemicals such as metals. Without further study, this makes it difficult to directly relate levels of chemicals in air, water, soil, dust and food to those measured in individuals.

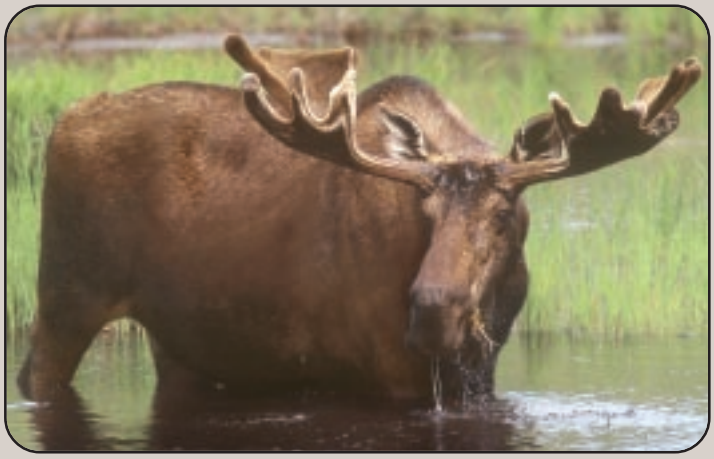
When examining the health of a community, researchers often do a risk assessment first. This may include a review of readily available human health information such as data from cancer registries, hospitalization databases, and others, before actually asking people to participate in a more intrusive health study.

## In the final analysis...

**Risk Assessment:** The risk assessment for the Sudbury Soils Study will estimate the potential health risks from exposures to identified chemicals of concern in soil. The risk assessment will determine if any further action is needed. Further action could include additional studies, or recommendations to reduce exposure to chemicals in soil, water or air.

**Human health study**: A focused human health study provides more specific measurements of health conditions in members of the community. ■

# Study Updates continued from page 1



## Ecological Field Work/Valued Ecosystem Components (VECs)

Our Ecological Risk Assessment (ERA) was in full swing again this summer. Several members of the SARA Group were in the field for many weeks, collecting soil from various remote areas around Sudbury. This soil was analyzed for metal levels, and shipped to federal government laboratories in Saskatchewan and Ottawa. Researchers there are conducting tests to determine what can grow in Sudbury soils, and whether metals in those soils are toxic to various plant and insect species. These results will be used in the bigger ERA study. By collecting these samples, we can make our risk models more Sudbury-specific and increase our confidence and certainty in the study results.

We have reviewed hundreds of published ecological studies conducted by various researchers over the years in the Sudbury area. Many government and university researchers have measured the levels of our Chemicals of Concern (nickel, copper, cobalt, arsenic, selenium and lead) in Sudbury soils, plants, and animals. These reviews have contributed greatly to our understanding of the Sudbury environment.

Finally, we have spent a great deal of time over the past few months selecting the Valued Ecosystem Components (VECs) for this study. VECs are the ecological features that will be evaluated in detail in the ERA. The recommended VECs include blueberries, plant communities, earthworms, shrews, meadow voles, moose, white tailed deer, black bear, beaver, mink, common loon, mallard, peregrine falcon, ruffed grouse, and robins (which represent other similar birds like swallows and blue jays).

# Studies Planned for Fall 2004

## Drinking Water Survey

Drinking water is an important pathway for potential intake of metals. To examine the metal levels in Sudbury drinking water, we are reviewing data collected on municipal water supplies by the City of Greater Sudbury and the Ontario Ministry of the Environment. To examine metal levels for houses not on a municipal water supply, we are conducting a survey this fall of 80-100 homes that use lake or well water for drinking.

We are looking for volunteers who would like to participate in this survey. If you are interested, please let us know by calling **1-866-315-0228**, or emailing us at **questions@sudburysoilsstudy.com**. We will select homes that represent areas of interest from the list of volunteers. All participants will receive their individual confidential results by mail early in the new year. These results will then be incorporated into the Human Health Risk Assessment.

## Food Consumption Survey

Along with drinking water, the food we eat is perhaps the greatest contributor to metal levels in our bodies. An important question for the risk assessment is to determine local eating patterns. This fall, the SARA Group will be contacting approximately 2,500 homes in the Greater Sudbury Area with a questionnaire on how much food people eat that's grown, caught, collected or raised locally (including deer, moose, rabbits, farm vegetables, and beef from local farms). These results will then be used in the human health risk assessment.

## Indoor Dust

Another route of exposure to environmental contaminants that is considered in the human health risk assessment is indoor dust. Dust can contain metals which are inhaled during daily activities, or may be a source of skin contact, particularly in young children. To make our study Sudbury-specific, a survey will be conducted this fall to collect dust from people's homes, with samples analyzed for metal levels. All participants will receive their confidential results by mail early in the new year. These results will then be incorporated into the Human Health Risk Assessment.

## Telephone Poll

In a continuing effort to improve communications for the Sudbury Soils Study, we have retained Veri/Fact Research, a Sudbury-based polling firm, to conduct a telephone poll this fall of approximately 600 homes in the greater Sudbury area. The purpose of the poll is to determine the level of knowledge about the study, and how respondents have heard about the study. This information will be used to improve our communications, either by providing more information, or by using different media, such as paid television announcements. We are also looking for this kind of feedback from the general public, and ask that you provide any comments you may have to us by phone at **1-866-315-0228** or email at **questions@ sudburysoilsstudy.com**. ■

# Have your say
## contact us

### Here's how:

- Give us your comments using the form below
- Attend workshops and open houses
- Call our toll free project information number at **1.866.315.0228**
- Send an email with your comments to: **questions@sudburysoilsstudy.com**
- Send written comments by mail or fax to:

**The SARA Group**
**933 Ramsey Lake Road**
**Sudbury, ON P3E 6B5**
**Fax: (705) 675-4866**

*If you would like copies of previous newsletters, please contact us or visit www.sudburysoilsstudy.com*

*Further information and frequently asked questions can be found at the project website* **www.sudburysoilsstudy.com.**

## Get Involved

❒ Please sign me up to receive Sudbury Soils Study Newsletters and Process Observer Reports.

Please send materials by: ❒ Canada Post ❒ Email

**Name:** _____

**Organizational Affiliation:** _____

**Address:** _____

**City/Prov:** _____ **Postal Code:** _____

**Tel:** _____ **Fax:** _____

**Email:** _____

## We welcome your comments.

*Please feel free to use this form to provide your comments to Sudbury Soils Study partners at the accompanying address. (The SARA Group, 933 Ramsey Lake Road, Sudbury, ON, P3E 6B5, Fax: (705) 675-4866)*

# Current Study Activities

There are many activities that will take place in the community in the next two years.

## Fall 2004 and Winter 2005

- Monthly Technical Committee meetings and progress reports (October, November, December, January, February). TC meetings are held in Room C11, Tom Davies Square on the second Thursday of every month, with a public session from 9:30-10:30 am.
- Meetings with the Public Advisory Committee (PAC) (November, January)
- Drinking water survey (November-January)
- Food Consumption Survey (November-December)
- Indoor Dust Survey (November-December)
- Telephone poll (November-December)
- Community Information Session: Wednesday, February 9, 2005 3pm to 9pm, Science North, Inco Cavern, 100 Ramsey Lake Road, Sudbury (Note: parking is free for Open House participants)

We will also hold meetings with interested stakeholders, and communicate our findings with the public through meetings, newspapers, and our web site, upon request.

Sudbury Soils Study | Étude des sols sudburois
metals • health • environment
métaux • santé • environnement

**1.866.315.0228**
**www.sudburysoilsstudy.com**