Letters from Xstrata and CVRD

xstrata nickel

Technical Committee
Sudbury Soils Study
c/o Marc Butler, Xstrata Nickel

November 22, 2006

To the partners in the Sudbury Soils Study,

I am writing this letter to affirm Xstrata Nickel's ongoing commitment to the Sudbury Soils Study.

This study is an important initiative for the community of Greater Sudbury. Xstrata Nickel is committed to the principles of Sustainable Development and strongly believes in conducting our business in a manner that is beneficial both to the company and to the community. Environmental stewardship and the health and safety of community members are fundamental and important components of this consideration.

While the study was initiated under prior ownership of our company, please be assured that Xstrata Nickel's commitment to the study process remains strong. Mike Romaniuk is Xstrata Nickel's senior representative in Sudbury and an integral part of the Sudbury community. I know he supports both the study process as well as the involvement of the Xstrata Nickel representatives on the Technical Committee and Working Group.

Finally, I would like to commend the study partners and community members involved in the study for the tremendous amount of effort that has been put forth to date. The Sudbury Soils Study has the potential to emerge as an example of best practice for multi-stakeholder, consensus-oriented risk assessments in our global industry.

We look forward to seeing the final results released to the community in early 2007.

Sincerely,

Ian Pearce
CEO, Xstrata Nickel

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Xstrata Nickel is part of Falconbridge Limited, a member of the Xstrata Group of Companies.

INCO

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January 15, 2007

Technical Committee
Sudbury Soils Study
c/o Glen Watson, CVRD Inco Limited

To the partners in the Sudbury Soils Study,

I am writing this letter to affirm CVRD Inco Limited's ongoing commitment to the successful completion of the Sudbury Soils Study.

Inco's long-held commitment to environmental stewardship, to the Sudbury community and to this study, remains strong under the new ownership of CVRD Inco. The Sudbury Soils Study is one of great importance to the community of Greater Sudbury and all of us who live here.

CVRD Inco is proud to be a partner in one of the most comprehensive risk assessments of its kind conducted anywhere – and we salute the study partners and community members who have dedicated themselves to its success. The Sudbury Soils Study has the potential to deliver a benchmark for multi-stakeholder, consensus-oriented risk assessments – and continues the work that the Sudbury community has undertaken over many decades addressing our environmental legacies.

Sincerely,

Fred Stanford

INCO LIMITED Ontario Operations, Copper Cliff, Ontario P0M 1N0

Have your say
contact us

Here's how:

- Attend the public sessions at TC and PAC meetings
- 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
512 Woolwich St., Suite 2
Guelph ON N1H 3X7
Fax: 519.763.1668

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**.

Upcoming Events

Independent Expert Review Panel:
Public Briefing for the Ecological Risk Assessment

- Monday, March 5, 7:30 to 8:30 pm

2007 Technical Committee Meetings

- Thursday, March 8
- Thursday, April 12
- Thursday, May 10
- Thursday, June 14

Public Advisory Committee Meetings

- Tuesday, March 27, 7:00 to 9:00 pm
- Tuesday, May 15, 7:00 to 9:00 pm

Sudbury Soils Study | Étude des sols sudburois
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update

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Human Health Risk Assessment
Nears Completion!

After four years of intensive environmental fieldwork and data analyses, the Human Health Risk Assessment (HHRA) for the Sudbury Soils Study is almost completed, and is expected to be released this spring.

While the original target was to complete this important phase of the study in two years, the sheer volume of data and complexity of the investigation has extended this timeframe.

Why has it taken so long? Our goal has always been to provide reliable answers for Sudbury, and to do it right the first time.

To our knowledge, this is the largest and most complex risk assessment of its kind ever conducted in Canada. To obtain the information necessary to make this a Sudbury specific study, the field team collected well over 11,000 samples from the environment (soil, dust, water, vegetables, air, fish) and had them analyzed for the presence of several metals.

This exhaustive data collection resulted in a database of over 220,000 individual data points for the HHRA alone. Each of these must be analyzed and assessed using the most up-to-date information, technology and regulatory guidance.

To further refine our understanding of the local conditions, several additional studies were also completed in the area, such as the urinary arsenic study in Falconbridge, and the nickel speciation study.

To ensure that the study was conducted according to the highest scientific standards, the Technical Committee submitted the draft report to an independent expert review panel (IERP).

Last summer, the Technical Committee circulated the draft HHRA to a panel of seven scientists from across North America. In September, the panel met with the SARA Group in Sudbury for intensive technical reviews. Over a two-day period, the panel members asked questions on various aspects of the study. This process of peer review is standard practice within the scientific community. The purpose of this review was to provide a vigorous evaluation of the methods, results and conclusions provided for the Sudbury Human Health Risk Assessment. The meetings were also attended by members of the Technical Committee, the Public Advisory Committee and the study Process Observer.

The final report of the IERP was provided to the Technical Committee and SARA Group in December 2006.

The IERP report will be available to the public at the conclusion of this study. In general, the panel commended the thoroughness of the Sudbury Soils Study for examining in detail many aspects of the environment (i.e., air, water, garden vegetables, soil, dust). The panel determined that the study addressed the primary objectives of the HHRA: to examine health risks for current and future exposure conditions.

The IERP also concluded that generally acceptable scientific methods were followed, and the conservative nature of the approach and assumptions would be more likely to over-estimate risk than to under-estimate risk. In any risk assessment, scientists take a conservative approach (i.e., over-estimating the risk), to ensure the highest level of health protection.

The panel made recommendations on how to improve the organization and presentation of the results within the report. They also identified some areas of uncertainty, which prompted the SARA Group to re-analyze some samples of soil and dust. This resulted in further revisions to the schedule, but it was an important step to ensure the best and most reliable results possible.

We are in the final stage of addressing the IERP comments and evaluating the possible long-term health effects associated with exposure to metals in the Sudbury environment. The results and conclusions from the final analysis will be made public by this spring through a series of media releases and public information sessions.

Dr. Christopher Wren
Senior Project Director, SARA Group

Study Update

Assessing the Sudbury environment

A draft of the Ecological Risk Assessment (ERA) has been submitted to TERA (Toxicology Excellence for Risk Assessment), an independent body that is coordinating the international scientific peer review of the Sudbury Soils Study reports. Members of the expert review panel will be meeting with the SARA Group (the study team that conducted the data collection and analysis, and drafted the report) and the Technical Committee in March to discuss the ERA. The draft report of the Human Health Risk Assessment (HHRA) was reviewed by a TERA expert review panel last September, their comments were received in December, and the SARA Group is in the last stages of addressing those comments.

When the final reports are completed this year, they will include input from some of the world's leading scientific experts. The public will also have an opportunity to review the reports and provide comments.

With more than three years of research and thousands of data points, the final report is expected to be a very large document divided into three volumes:

- Vol. 1 - Historical and Background Information;
- Vol. 2 - Human Health Risk Assessment (HHRA); and,
- Vol. 3 - Ecological Risk Assessment (ERA).

A plain language summary of the report will be available.

For more information on the Sudbury Soils Study final report, call us toll-free at 1.866.315.0228, visit the website, or e-mail us at questions@sudburysoilsstudy.com.

Environmental Risk Assessment

Meet the Peer-Review Panel

Joseph W. Gorsuch

B.S., Wildlife Biology; M.S., Environmental Sciences, Purdue University President, Gorsuch Environmental Management Services, Inc. (G.E.M.S., Inc.)

With over 35 years of experience in soils and aquatic toxicity testing, Mr. Gorsuch has presented at numerous workshops for the US Environmental Protection Agency (EPA) on Environmental and Plant Toxicology and has peer reviewed extensive US EPA plant studies. A member of the Environment Canada Science Advisory Group for Plant Tests since 2000, he was an invited participant of the Natural Resources Canada International Workshop "Metals in Soils: Science Gaps and Regulatory Needs." He has served on four scientific journal editorial boards and has published extensively, editing three books on the use of plants in toxicity tests and authoring journal articles on the risk assessment of metals in soil.

Dr. Samuel N. Luoma

Ph.D., Zoology, University of Hawaii; Senior Research Hydrologist, US Geological Survey (USGS)

For 30 years, Dr. Samuel Luoma has studied the fate and effects of contaminants, primarily metals and metalloids, in aquatic ecosystems. He has worked on contaminant bioavailability to invertebrates from diet and water, sediment contamination, and both organism-level and community-level effects of metals. He has served on countless committees including the National Academy of Sciences committee on Bioavailability of Contaminants from Soils and Sediments in 2002–2003. In 2004, he was a Fulbright Distinguished Scholar in London and is completing a book on managing metal contamination in aquatic environments.

Dr. Charles Anthony Pittinger

M.Sc., Aquatic Ecology, University of Tennessee; Ph.D., Environmental Toxicology, Virginia Tech Senior Toxicologist, ARCADIS/BBL Sciences; Visiting Scientist Toxicology Excellence for Risk Assessment (TERA)

Dr. Pittinger has extensive experience leading initiatives across the public and private sectors to implement sound science and regulatory policy. He served on the US EPA's Science Advisory Board Ecological Processes and Effects Committee for two terms, and has served on the Organization for Economic Co-operation and Development's (OECD) Risk Assessment Advisory Board, as well as the American Chemistry Council's Ecological Risk Assessment Steering Team. Dr. Pittinger has over 25 years of technical experience that includes environmental and human health risk assessment, industrial emissions, environmental chemistry, toxicology and impacts to sediment.

Dr. William A. Stubblefield

M.S., Toxicology/Toxicodynamics, University of Kentucky; Ph.D., Aquatic Toxicology, University of Wyoming; Senior Environmental Toxicologist, Parametrix, Inc., Corvallis, OR; Department Molecular and Environmental Toxicology, Oregon State University, courtesy faculty

Dr. William Stubblefield is a senior environmental toxicologist with more than 20 years of experience in ecological risk assessment, toxicology, water quality criteria derivation, and aquatic and wildlife toxicology studies. He has authored more than 100 peer-reviewed publications and technical presentations on aquatic and wildlife toxicology and environmental risk assessment. Dr. Stubblefield's research examines the effects of metal and hydrocarbon contaminants in the environment. He has held several offices in the Society of Environmental Toxicology and Chemistry (SETAC), including President, and is chairman of SETAC's Metals Advisory Group. He has been an invited participant at scientific and regulatory conferences, has served on numerous committees and panels, including the US EPA Science Advisory Board's Framework for Inorganic Metals Risk Assessment Review Panel, and frequently acts as a technical reviewer for scientific publications.

Dr. Joyce Tsuji

B.Sc., Biological Sciences, Stanford University; Ph.D., Physiology and Ecology, Department of Zoology, University of Washington; Diplomate of the American Board of Toxicology Principal, Exponent, Bellevue, WA, USA

Dr. Tsuji is a toxicologist with 19 years of experience in risk assessment on projects in the US, Canada, South America, Africa, Australia, and Asia. She has worked on projects for the US EPA, the US Department of Justice, the Australian EPA, and state and local municipalities. Dr. Tsuji has conducted and reviewed ecological and human health risk assessments of mining and smelting sites and has directed exposure studies involving health education, environmental sampling and monitoring of populations potentially exposed to metals in soil, water, and the food chain. She has served on a number of US National Academy of Sciences and US National Research Council subcommittees. Dr. Tsuji also served on the expert panel that reviewed the human health risk assessment for the Sudbury Soils Study.

Dr. Shaun A. Watmough

B.Sc., Applied Biology, Liverpool Polytechnic; Ph.D., Plant Stress Physiology , Liverpool John Moores University Assistant Professor, Trent University, ON

For the past 16 years, Dr. Shaun Watmough has studied the fate and effects of acid deposition and trace metals on forest ecosystems in the UK, Europe and North America. His research on the impacts of metals ranges from work at heavily impacted sites, including mine spoils and smelters, to stable isotope trace studies of the behaviour and uptake pathways of metals in forests remote from point sources. He has studied the impact of metals on vegetation at both the cellular and whole plant levels, using novel experimental (callus culture) and analytical (laser ablation ICP-MS) techniques. Recent work has considered the role of climate and episodic acidification on metal mobility in whole-catchment studies.

For more information on TERA peer reviews, visit their website at www.tera.org/peer.

Mark Your CALENDAR!

Public Briefing: Independent Expert Review Panel (IERP) for the Ecological Risk Assessment

March 5, 2007 | 7:30 to 8:30 pm | Jean-Watters Auditorium, Collège Boréal

Find out more about the peer-review process for the Sudbury Soils Study. Plan to attend this informative public briefing, hosted by TERA (Toxicology Excellence for Risk Assessment) and open to members of the community. For more information, go to www.sudburysoilsstudy.com or call toll-free 1-866-315-0228.

Ask an Expert!

Ecological Risk Assessments Explained

Dr. Stella Swanson

We sat down with Dr. Stella Swanson, an Aquatic Biologist and Toxicologist with Golder Associates Ltd., to get an independent expert's perspective on the environmental risk assessment (ERA) process.

Dr. Swanson has over 27 years of experience in evaluating the effects of human activities on the environment. She has directed numerous ERAs throughout North America, ranging from abandoned mine sites and petrochemical plants to intensive livestock operations.

For the Sudbury Soils Study, Dr. Swanson provides input to the Technical Committee as the Independent Scientific Advisor for Ecological Risk, and is not affiliated with the consultants performing the study.

What is the purpose of an ERA?

Dr. Swanson: Ecological risk assessment is a flexible approach that can be used to evaluate both direct and indirect risk to the natural environment from a variety of chemical and physical impacts at a specific site. Once an ERA is complete, its findings are used by decision-makers to determine what action, if any, should be taken. In this sense, the primary purpose of an ecological risk assessment is to determine how much mitigation or remediation is required to reduce potential risks to plant and animal populations to acceptable levels.

What will a risk assessment tell us?

Dr. Swanson: An ecological risk assessment tells us whether we have a problem with risk to plant or animal populations, where that problem occurs, how big the problem is and what the key "drivers" of risk are. The results can then be used to develop an environmental management plan as well as follow-up monitoring programs that evaluate whether the mitigation or remediation measures are successfully reducing the risk.

Will the ERA tell us which plants are most affected by environmental conditions in the soil?

Dr. Swanson: The objective for plants in the ERA was to achieve "regionally representative, self-sustaining vegetation communities." The focus was on the overall plant communities rather than on particular species. The assumption is that specific environmental conditions, such as topographic characteristics (e.g., hillsides that face south), natural soil types (e.g., sandy silt) and local climate, will influence which plant communities will naturally establish themselves. If metals or other influences are found to be limiting the natural development of the plants, then the objective is not being met.

Do plants contain metals naturally?

Dr. Swanson: ***Yes***. Almost all metals (except, for example, lead) are required micronutrients and are taken up by plants to maintain natural functions such as photosynthesis. There is a wide range of natural metal concentrations in soil, related to the presence of different minerals in the local rocks. Soil originates from rock, so natural metal concentrations in rock are also found in soil.

Because metals occur naturally in soils and plants, the mere presence of metal concentrations in plants does not equate with risk to those plants or to animals eating the plants. However, metal concentrations that exceed "effects benchmarks" may indicate a potential risk to plant or animal health.

Was the sampling extensive enough to give us reliable answers?

Dr. Swanson: The sampling done in the vicinity of the three smelters was extensive enough to give us reliable answers regarding whether the plant communities and animals in those areas are at risk. However, planning remediation measures for areas outside of the sampling zone may require additional sampling to confirm that we are applying the appropriate remediation or monitoring tools for those sites.

What are the main factors that control where plants grow?

Dr. Swanson: The main natural factors are the soil (texture, depth, organic matter and moisture content); topographic and terrain features such as elevation, slope and aspect (north, south, east, west); and climate.

Human activities that influence where plants grow include logging, fire, agriculture, introduced plant diseases and pests, and chemical or physical stressors from activities such as mining, pesticide use, fertilizers and dams.

Are there safe limits for metals in soil that are protective of plants/animals? How are these limits developed?

Dr. Swanson: There are three types of soil quality objectives designed for use at contaminated sites in Ontario. These are background-based, generic and risk-based objectives.

The goal using background-based objectives is to reduce metal concentrations to those that would naturally occur due to local geology. There are two main problems with this approach. First, it is often difficult to establish what background really is at a site with high natural variation in metal concentrations and/or other sources of metals (lead in soil next to highways, for example). Second, although use of background-based objectives gives us assurance that there will be no risk to plants or animals, it can come at a very high cost that is out of proportion to the actual risk. Remember that risk is not the same as effects. Rather, risk means that there is potential for effects under certain circumstances.

Generic soil objectives are set by the Province of Ontario. They are deliberately set to be conservative, meaning they are developed to be protective of the most sensitive receptors (people, plants or animals) under the whole range of conditions that could occur. The threshold (or level that is considered protective) is based on the lowest concentration shown to have effects in laboratory tests on plants and animals. If chemical concentrations are below this threshold, we can be confident that there will be no effects. Chemical concentrations above the generic threshold will not necessarily cause effects at a specific site.

To account for any uncertainty in applying laboratory tests to real-life conditions, the laboratory threshold concentration is often divided by ten. This process can sometimes result in the threshold being set at a level that is lower than natural background levels, so it may be over-protective. Mitigation or remediation based solely on generic objectives can result in a mismatch of effort and risk.

For the Sudbury area ERA, a site-specific risk-based approach was used so that risk management decisions will reflect the particular conditions at a site. Site-specific risk-based objectives are developed using local site characteristics such as soil type and local background concentrations. Local conditions can often change the way metals move through the environment, and can also affect how available metals are for uptake into plants and animals. There may be particular species that are either more or less sensitive to soil metals. Also, there may be other human activities in the area that can affect the risk from soil metals (e.g. agricultural practices that increase erosion of soils to surface water).

Site-specific risk-based objectives are "tailor-made" for local conditions, thus providing more assurance that we are matching effort with risk.

The Chemicals of Concern being studied in the Sudbury Soils Study are arsenic, cobalt, copper, lead, nickel and selenium. More information on these metals is available on the FAQ and Related Links pages of the Study website (www.sudburysoilsstudy.com).