

Adding up the risks in Sudbury

Soil assessment examines potential health risks of six metals

The Sudbury Soils Study is one of the most comprehensive assessments of its kind in Canada. We are using the most up-to-date scientific information available, and will provide valuable conclusions on the assessment of health risks associated with the identified chemicals of concern.

During a recent presentation of sampling results at a Public Advi

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Now, consider that there are potentially thousands of substances in the environment at any given time, all existing at different levels. And when you add individual lifestyle variables into the mix (such as eating habits, smoking, medications, and occupational exposures), the possible combinations are infinite.

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Guest Column

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Between 1998 and 2002, Health Canada's Toxic Substances and Research Initiative (TSRI) con-

tributed \$40 million and funded numerous research projects to study cumulative effects. In the United States, the Centers for Disease Control (CDC) and the Agency for Toxic Substances and Disease Registry (ATSDR) continue to study this issue. But more work is needed to answer all the questions this concept can generate.

The Sudbury Soils Study is much more than just a study about soil. Among other things, we have collected data on metal concentrations in the air, garden vegetables, fish, drinking water and household dust.

The risk assessment is examining the potential health risks associated with six different metals, or chemicals of concern (COCs): arsenic, cobalt, copper, lead, nickel, and selenium. The potential human and ecological effects of each of these COCs will be evaluated and conclusions will be drawn concerning their potential impact on health.

But will the risk assessment take into account the possible "cumulative" interactions between these different chemicals? The reality is that we will consider these effects to the extent that current science can provide answers.

The science of toxicology and risk assessment is largely based on understanding the toxic effects of one chemical at a time, sometimes two at a time, but rarely more. Scientists understand the interactions between different chemicals, and that those interactions can vary significantly depending on which combination of chemicals is present.

In some cases, exposure to more than one chemical can have a greater effect than what might be normally expected from the sum

of the individual chemicals. Or, in some cases, they can cancel out the effects of each other, as in the anti-venom example. But to accurately predict the countless potential interactions of six COCs is beyond the limits of the scientific methods available to this study.

Risk assessments provide important, valuable, actionable information that supports a community's goal or health protection. However, no risk assessment to date has been able to answer all the questions, particularly with respect to cumulative effects.

This is not due to lack of effort or desire to understand these various interactions. The scientific tools are simply not available at this time.

As we continue our work on this important study, community members are encouraged to continue to ask these important questions. The goal is to provide as many answers as possible, within the framework of the study and the best available science.

■ Christopher Wren is director of the Sudbury Area Risk Assessment Group.

ON THE WEB

■ For more information on cumulative effects in Canada, visit Health Canada's TSRI website at: www.hc-sc.gc.ca/hecs-sesc/tsri/cumulative.htm

■ For information on the research concerning interaction profiles being undertaken by the U.S. Centers for Disease Control, Agency for Toxic Substances and Disease Registry (ATSDR), go to: www.atsdr.cdc.gov/interactionprofiles/ipga.html