

# Statistical Evaluation of Sydney Urban Soil Data

## **BACKGROUND:**

The Statistical Evaluation of Sydney Urban Soil Data report uses statistical tools to evaluate soil samples collected in 2001 within a three kilometre radius of the former Sydney Steel Coke Ovens. The report follows up on the Chronic Health Risk Assessment conducted by the engineering consortium JDAC Environment in the neighbourhood north of the Coke Ovens, and on biological testing for lead and arsenic carried out by the Nova Scotia Department of Health.

Those studies enabled Dr. Jeff Scott, the Provincial Medical Officer of Health, to conclude that the neighbourhood north of the Coke Ovens is as safe a place to live as any comparable urban community in Nova Scotia. In other words, the neighbourhood is as safe as any Nova Scotia community with a similar history of urban development, but without Sydney's history of steel and coke making.

The neighbourhood north of the Coke Ovens was chosen for detailed study in the Chronic Health Risk Assessment because it was thought to be the residential area most likely to be impacted by contaminants from the steel plant and coke ovens. Dr. Scott asked for the statistical analysis to see whether any other Sydney neighbourhoods need further investigation.

## **THE ANALYSIS:**

JDAC Environment carried out the statistical analysis, which was also subjected to extensive peer review by independent statisticians.

JDAC collected 194 soil samples from random locations within a three kilometre radius of the Coke Ovens. Another 54 soil samples were collected from private properties whose owners requested testing, but because these samples were not random, they were considered separately. Homeowners received the individual test results for their properties in March, 2002.

The JDAC scientists compared the results of all these tests with the results of soil samples collected in the neighbourhood north of the Coke Ovens, and with 90 soil samples collected in North Sydney, using various statistical tools. North Sydney was chosen for comparison because it has a similar urban history to Sydney, but is without significant impacts from steel and coke production.

The study also sought to determine whether the distribution of chemicals in the soil samples revealed any connection with the known pattern of historic industrial emissions in Sydney.

## **CONCLUSIONS:**

- 1) The statistical analysis of the soil data concluded that soil chemistry outside Sydney's old city core is similar to that in North Sydney, and typical of residential neighborhoods.
- 2) Soil chemistry inside the old city core (an area including the North End and parts of Victoria Road and Railway Street), and in the area around the Sydney landfill, shows overall concentrations and ranges similar to that found in the neighbourhood north of the Coke Ovens.

- 3) The study found no definitive correlation between known industrial emissions and soil chemistry, suggesting that the soil chemicals are not due entirely to steel making operations.

#### **PUBLIC HEALTH IMPLICATIONS:**

Dr. Scott and Dr. Charl Badenhorst, the District Medical Officer of Health for Cape Breton, have issued a formal response to the study. They report that the results of this statistical analysis of soil data, together with the 2001 biological testing program and the 2001 Chronic Health Risk Assessments, continue to support the previous conclusion that Sydney is as safe a place to live as any comparable urban community in Nova Scotia.

#### **Want More Information?**

This summary provides the key points of a very detailed statistical report. To read the complete report, together with comments on it by the Provincial and District Medical Officers of Health, please go to <http://gov.ns.ca/stpa/> and click on the library tab. The reports are stored under the subject, "Soil analysis."