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CLS Helps Steel Company Meet Chemical Substance Challenge

Evraz, Inc. is a steel and pipe manufacturing company with plants located in Regina, Calgary, Red Deer, Camrose and Surrey. They recycle 1.2 million tonnes of steel per year. Jim Markatos, Environmental Manager for Canada, says proudly, "Any steel that can be recycled, we take it." The company is also a certified ISO 14001 Environmental Management System.

When Environment Canada unveiled their Chemical Substances Management Plan, Evraz was happy to comply. Companies are required to provide data on a list of chemicals, which pose various levels of risk to human health and the environment, identifying the quantities that are being used, manufactured or imported as part of their operations.

Within Batches 9 and 10 of the chemical substances lists were two chemical compounds known to have carcinogenic properties: Vanadium Oxide (V₂O₅) and Antimony Oxide (Sb₂O₃). Evraz knew that some of their products and by-products, such as slag aggregate, mill scale and electric arc furnace dust, contained traces of vanadium and antimony, but Markatos explains, "We didn't know whether they existed in an oxidized form, and at what levels."

Typically, testing for chemical substances can be achieved using spectroscopy; in this case, the characteristics of these particular chemicals, and their low concentrations, made that impossible. So Evraz approached the CLS with the problem. Jeff Warner, Industrial Staff Scientist with the CLS, explains, "The samples were analyzed on the Hard X-ray MicroAnalysis (HXMA) beamline equipped with an ultra-sensitive germanium detector. Using the X-ray Absorption Near Edge Structures (XANES) technique, we were able to determine the chemical speciation of both vanadium and antimony in the samples."

Markatos continues, "The CLS was able to offer conclusive evidence. The test results identified which products contained the oxides, and at what levels." Evraz was then able to submit the required information to Environment Canada.

Since then, a new list of chemicals, known as the Domestic Substance list,

has also been developed. Evraz plans to use the CLS again to measure substances on the new list. This new relationship promises to be one that continues into the future. Jeff Warner says, "I am looking forward to working on the challenges that Evraz has brought to us and giving them the answers they need."

