

## Lab Work

# METAL ANALYSIS UNDER THE METAL MINING EFFLUENT REGULATION

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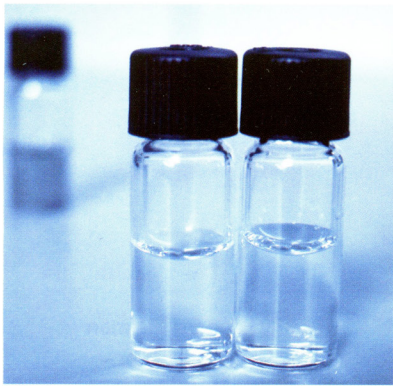
The mining industry in Canada is no stranger to compliance with environmental legislation. There are regulations pertaining to every aspect of the process from extraction to production and refinement. The mining industry is also no stranger to water, and I'm sure most mine operators and engineers would agree with the words of the actor W.C. Fields who pointed out that, "you can't trust water: even a stick turns crooked in it." Water is a force to be reckoned with in the world of mining. From the minute the ground is broken, water becomes the new headache. Issues of containment, usage, storing, pumping, diverting, treating, and disposing take front row centre.

### Metals and the Metal Mining Effluent Regulation

Now, take the fickle nature of water and throw in elevated metal concentrations, of the sort that can be found in many metal mining operations, as well as some basic principles of chemistry and the plot thickens. In fact, it thickens to the point that in 2002, with the statistics in on the huge volume of water being moved by metal mining operations, the Canadian government understood the need to establish some ground rules on the disposal of effluent from any mine that exceeds an effluent flow rate of 50m<sup>3</sup> per day (from all final discharge points) and deposits a "deleterious substance" in a water body. In 2002, the Fisheries Act, Canada's oldest piece of legislation, was amended by the Metal Mining Effluent Regulation, a regulation aimed at regulating the disposal of mine tailings and other waste matter produced during mining operations into natural fish-bearing waters. True, the regulation does not focus solely on metals and their discharge limits, but metals weigh in heavily in both the prescribed list of defined deleterious substances (Schedule 4 of the regulation), as well as in Environment Canada's guidance document for the sampling and analysis of metal mine effluent under the Metal Mining Effluent Regulation (MMER), which adds 12 more metals to the list as elements with target analytical data quality objectives for metal mining effluents.

### Metals and Water: Chemistry 101

At this point, enter a good analytical testing lab. To get the data you require for compliance with MMER, it is necessary to engage the services of an accredited analytical lab. Typically it is enough to contact the lab, order the necessary bottle supplies (customer service will walk you through this), take the sample, and submit. But, as mentioned earlier, metals in water can be-



to discuss problems with your key suppliers. Our lab has been fortunate enough to work closely with many of our mining clients at this level, often providing things like custom method development to hone in on a chemical processing issue, or the ability to pick the brains of PhD-level chemists as though they were part of your operation. We also see this particularly in the area of data management solutions – as a lab we have your data and can pretty much parse it any way you want, often at no cost, so by knowing that data management is an issue for many mining clients, we are often able to provide an easy fix.

4. Provide feedback – suppliers need to know from time to time how they are doing. In some ways, you know our competitors better than we do because you are being courted. No business relationship is static and feedback is the mechanism that often drives change.
5. Challenge the paradigm – what we mean here is don't stop thinking at the level of company→supplier. Some of the best business ventures were collaborative efforts between a principal operation and a supplier that could nimbly support or enhance it. This might create a whole new revenue stream for your operation without the strain of full ownership. Often both parties benefit.

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