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NWT river metals 'far below' guidelines, study finds

Results of community-based monitoring show no harm to humans

By MEAGAN WOHLBERG

The first scientific data to come out on metals in rivers in the Northwest Territories show there is little to worry about in terms of potential effects on health and the environment.

Samples taken from sites throughout the Mackenzie River Basin indicate all 15 metals researched are present at levels well below the guidelines for safe drinking water.

Dr. Céline Guéguen of Trent University, who conducted the research on metals at 12 sites from Fort Smith to Inuvik last summer, said it is good news for Northerners.

"All concentrations were far below the guidelines for drinking water," she told *The Journal*. "We haven't found at any single time or any sites any metals that were above the guidelines. That is very good."

Guéguen said there was some variability in the amounts and types of metals detected along the river system, but all were "far below" safe limits. There were no sites where concentrations were particularly high.

The research on metals was done using several types of sampling equipment, from one-off grab samples to passive samplers that collect water over a month-long period and the high-tech water monitoring sondes that report data every four hours via satellite all summer.

Photo: Katherine Trembath

Peter Redvers, a consultant for the Sambaa K'e Dene band in Trout Lake, helps with water monitoring work.

The passive samplers employed by Guégen, known as DGTs (diffusive gradients in thin films), measure concentrations of metals dissolved in the water, while grab samples can account for what metals are attached to particles in the water.

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Dr. Erin Kelly, manager of watershed programs and partnerships with the NWT department of Environment and Natural Resources (ENR), said many methods were used to sample data as a way to ensure the research addressed specific community concerns.

"One of the things that came up in several different communities was when you take a grab sample of water, that's only what's in the water at that time, and communities know that water changes over time. So passive samplers are a way of getting an integrated look at what is happening in the water rather than a one-shot grab sample," she said.

Kelly said data from all three sampling methods is now being analyzed to look for trends and will help decide the extent of the 2013 summer sampling program.

"The plan is that we're going to analyze the data, look at the sonde data - how it relates - and then make some decisions about where continued sampling may take place and where new sampling may happen, or at different time periods," Kelly said.

One gap in monitoring the department is trying to address is how to get samples from rivers during freshet, or the high flows that come with spring melt. Kelly said ENR is interested in having community members deploy their own DGTs and mail them in, similar to what fishermen have done in the Pacific Islands.

"There's been an interest expressed by communities that they would like to be doing their own monitoring," Kelly said. "This is one of those ways that we can help build that capacity...Community members are there when spring freshet happens and the big rain events go down the river, so these are excellent opportunities for communities to participate in this type of monitoring and get answers to some of their questions."

The department is also hoping to link this new data with that coming from oil-sands monitoring underway in Alberta, which is using the same sondes as those in the NWT, but not DGTs.

Kelly said the metals study is a great example of what can emerge when community concerns are partnered with interested researchers who have the right equipment and skill set.

"I think it brings a lot of value to the water work that we're doing in the North," she said. "We can continue this process to address other concerns in the future, but also maintain some kind of monitoring so we can get information over the long-term for some of these communities, as well."