

Sampling for Methyl Mercury in the Sheep River

BACKGROUND

Alberta Environment has initiated a sampling program on the Sheep River in response to concerns that the Turner Valley Gas Plant (TVGP) may be introducing toxic levels of methyl mercury into the river. This progress report is intended to provide preliminary results from initial samples.

SAMPLING

To date there have been two separate sample events specifically for methyl mercury. These sample events took place on October 26 and November 8, 2005.

Six locations were sampled during each of these sample events. Locations were chosen to provide data on the Sheep River both upstream and downstream of the TVGP, to provide local communities with data they requested on the raw water they use in their drinking water treatment facilities, and to provide data on specific sites where the public had expressed concern.

Samples were sent to the Alberta Research Council (ARC), a lab accredited for methyl mercury by the Canadian Association for Environmental Analytical Laboratories (CAEAL).

RESULTS

Location	October 26, 2005	November 8, 2005
Sheep River above TVGP - hospital	N/A	0.04 ng/L
Sheep River above TVGP - above hells acre bridge	0.13 ng/L	N/A
Sheep River at Black Diamond	0.21 ng/L	0.05 ng/L
Spring/seep beside road north of TVGP	0.05 ng/L	No detection
River bank seep beside TVGP	0.07 ng/L	N/A
Turner Valley raw water	0.09 ng/L	No detection
Black Diamond raw water	0.09 ng/L	No detection
Okotoks raw water	N/A	No detection

Note:

- This is raw data and a full analysis cannot be completed until the sampling program is complete.
- Data is in nanograms (ng) (1 gram is equal to 1,000,000,000 ng). ARC's detection limit for methyl mercury is 0.03 ng/L.
- The upstream sample point was moved from the hells half acre bridge to the old hospital during the second sample event to ensure no influence from the TVGP.
- Samplers were unable to get enough ground water from the "River bank seep beside TVGP" sample point to sample it during the second event.
- At the request of the Town of Okotoks, their raw water was sampled during the second event.
- Tests for total mercury in the Sheep River and in municipal raw water found it well within criteria (40 to 1500 times less than criteria).

The Calgary Health Region has reviewed these initial results and determined "the total and methyl mercury concentrations are not suggestive of a public health risk." They have also stated that while there are no specific guidelines for methyl mercury in drinking water "the draft Canadian water guideline to protect freshwater life is 4.0 ng/L. This accounts for bio-concentration of mercury into fish and later consumption by humans."

While the Guidelines for Canadian Drinking Water Quality do not have a specific guideline for methyl mercury, a total mercury guideline of 1000 ng/L is provided based on the determination that 30,000 ng is a tolerable daily intake of mercury as methyl mercury. Daily consumption of water containing total mercury at the "Maximum Acceptable Concentration" (1000 ng/L mercury) would therefore contribute approximately 5 per cent of the tolerable intake allowing a considerable margin of safety.

NEXT STEPS

Alberta Environment will continue to monitor the Sheep River and Community Development's management of the site.

UPDATE (February 2006)

Alberta Environment conducted a third sampling event on February 27, 2006. Results will be posted as they become available.