

Arsenic could be encased in glass

by Emelie Peacock- October 16, 2017

The most promising method for permanently storing the 237,000 tonnes of arsenic trioxide dust underground at Giant Mine could be putting it under glass.



Environmental engineer Kathryn Farris presents the findings of the state of knowledge review conducted by Arcadis. The review found vitrification, encasing arsenic in glass, to be the best option for above ground treatment of the 237,000 tonnes of arsenic trioxide dust now stored underground at Giant Mine.

Emelie Peacock/NNSL photo

A report on storage and treatment of arsenic trioxide dust was presented to thirty residents at a public meeting at Northern United Place. The \$117,500 study, conducted by Arcadis Canada for the Giant Mine Oversight Board (GMOB), will form the base for a research program starting within a year. The report was a "snapshot" of different technologies that could be used, said GMOB director Tony Brown.

According to researchers Kathryn Farris and John Vogan, the most promising way to keep the dust underground is the frozen block method. The remediation team plans to freeze the arsenic in place using metal rods and pipes for the next 100 years.

To store the arsenic trioxide dust above glass, encasing it in glass in a process known as vitrification, was the most promising according to the researchers. But first, it would have to be removed from the underground vaults.

The report looked at how to this could be accomplished, including remote mechanical mining and hydraulic borehole mining.

Brown said the removal, which the Yellowknives Dene First Nation and residents at previous public meetings have called for, is very challenging and will be given a lot of attention as the research program moves forward.

“It could expose workers to the arsenic trioxide dust, which obviously people don’t want,” he said. “And the other difficulty is that even though you might be able to get 98 or 99 per cent of it out, what remains in the ground is still a very important source of potential contamination.”

Brown said the research forms a baseline, but it is still far too early to tell which technologies may be superior to the frozen block method.

Dave Nickerson has been involved with Giant Mine ever since he worked at the mine, later serving as an NWT MLA, a three-term MP for the Western Arctic and chairman of the Northwest Territories Water Board. He said the research presented was not very different from previous research.

“I don’t think a lot has happened in the last 20 or 30 years ... there’s marginal improvements on technologies that existed before,” he said after the meeting. “By all accounts the many many tens, if not more, millions of dollars that have been spent indicates that keeping the stuff frozen is the best way to deal with it. Who knows what will happen in the future? I always think that one of these days arsenic will be a very valuable commodity, we can go and dig it up and sell it.”

The report also looked at the possibility of mining the arsenic trioxide dust for gold, something Yellowknife North MLA Cory Vanthuyne said should be looked at as a way to recover costs and as an incentive for remediation companies.

Frame Lake MLA Kevin O’Reilly asked about the possibility of making samples available TO researchers.

Deputy director of the Giant Mine Remediation Team Natalie Plato stated the team has protocols in place for requests for samples. The protocols may be changed or updated as the GMOB research program gets going, she added.



Thirty residents attended a public meeting of the Giant Mine Oversight Board Wednesday at Northern United Place. The meeting was held to present the findings of a study commissioned by the board on arsenic storage and treatment techniques.

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David Connelly, strategic and engagement advisor to TerraX Minerals Inc. was one of the residents who attended the meeting. He expressed concerns with how GMOB was consulting with people.

“There was a good sized group of respectful and informed, considerate, Yellowknife residents who presented a significant number of meaningful ideas which were at least worthy of consideration and a good deal of which may eventually be proven not appropriate,” he said after the meeting. “But there was no recording, there was no note-taking of any of the ideas, no undertakings by GMOB to follow up and investigate the ideas that were put forward during this public meeting.”

The Giant Mine Oversight Board was formed out of a 2015 environmental agreement between six parties; the government of Canada represented by Aboriginal Affairs and Northern Development Canada (INAC), the GNWT, the City of Yellowknife, the Yellowknives Dene First Nation, North Slave Metis Alliance and Alternatives North. Part of the board’s mandate is to look into a permanent solution to storing the arsenic trioxide dust at Giant Mine.