

SOLUTIONS FOR A WORKING WORLD

May 27, 2014

LETTER OF OPINION REGARDING ACTINOLITE IN SULPHIDE CONCENTRATE

Mr. Robin Goad, President Fortune Minerals Limited 148 Fullarton Street, Suite 1600 London, ON N6A 5P3

Dear Mr. Goad,

LEX Scientific received the three following mineralogical samples and analyzed them for asbestos:

PP-03 POX Thickener U/F: Filtercake, Tailings Fe/As PPT, Filtercake, Process Water Precipitate Bulk Concentrate, Filter cake, concentrate, arsenic, iron

The samples were received directly from SGS Lakefield. The samples were from a pilot plant process development project: Nico 11758-006. We were informed that this was for a project by Fortune Minerals Limited. Information pertaining to these samples was provided to LEX. These samples of materials were from a 200-ton processing trial and, taking into consideration the processing/mixing that the materials had undergone, we believe that these samples are representative of the original materials. SGS Lakefield is an independent lab and had custody and control of the samples prior to submission to LEX Scientific. LEX was asked to provide an opinion if this material may pose an asbestos related health hazard in the surrounding environment. Two samples contained traces of actinolite below Saskatchewan regulatory limits.

The three samples were analyzed by a Professional Geologist using the PLM 1000 Point Count Method (EPA 600/R-93/116). This method is considered very sensitive and accurate for the purposes to which it was applied to this project. If the samples were to have been analyzed by the routine analytical method the asbestos would most likely not have been detected. The Asbestos Analysis Laboratory of LEX Scientific Inc. is accredited in the National Voluntary Laboratory Accreditation Program (NVLAP) for analysis of bulk materials for asbestos, which is administered by the National Institute for Standards and Technology (NIST). Our Laboratory Code No. is 101949. The Project Manager for this project is Michael Hoffbauer who has over 30 years of experience with asbestos analysis, including eight years with the Ontario Ministry of Environment using both optical and electron microscopic methods. A summary of the analytical results are as follows:

PP-03 POX Thickener U/F: Filtercake, Tailings: Fe/As PPT, Filtercake, Process Water Precipitate: Bulk Concentrate, Filter cake, concentrate, arsenic/iron:

0.2% actinolite no asbestos detected less than 0.1 % actinolite These results indicate that there is a very low percentage or trace of asbestos in these materials. These results are not unexpected. Actinolite is present in many rock formations and subsequently also becomes a part of the soil. The state rock of California is serpentine which is the host rock for chrysotile asbestos. As expected, asbestos was mined in California. Thus, the presence of asbestos in nature makes it important to define a level of asbestos in a material which may present a health hazard.

The Saskatchewan Occupational Health and Safety Act, 1996 defines "asbestos containing material", pursuant to the March 2014 amendment and can be seen in the quote below.

"THE SASKATCHEWAN GAZETTE, MARCH 21, 2014

Section 330 amended

- 4 The following clause is added after clause 330(b):
- "(b.1) 'asbestos-containing material' means:
- (i) vermiculite determined to contain any asbestos when tested according to an approved method; or
- (ii) any material, other than vermiculite, that when tested according to an approved method is determined to contain:
- (A) a proportion of asbestos greater than 0.5%, if the material is friable; or
- (B) a proportion of asbestos greater than 1.0%, if the material is non-friable"."

These definitions are similar to those in other Canadian jurisdictions. For example, in Ontario 0.5% is also the level at which a material is considered an "asbestos containing material". These values represent a conservative approach to environmental and occupational health and safety. It must be stressed that it has been proven from the study of glacial ice from Antarctica, that asbestos has been present as an airborne dust particle for thousands of years. In 1982, the province of Ontario conducted a study of air samples, taken from across the province, to determine ambient levels of airborne asbestos. The median fibre concentration for an area considered suburban was 0.001 f/cc; for a small city (Peterborough) the ambient airborne asbestos fibre concentration was 0.0018 f/cc. A similar study could not be found for the province of Saskatchewan.

The materials that were tested were not friable and did not meet the definition of being asbestos containing materials. Even if these materials were to become friable at some point, they would still not reach fifty percent of the level of asbestos that would justify a classification of "asbestos containing material" as per the most recent and most stringent revision of the Saskatchewan regulation quoted above.

Another fact must also be considered: the asbestos portion of the entire material will not selectively become airborne. Rather, the material as a whole, if it were to become airborne 0.2% of it would then be the actinolite. This raises the question: is the rest of the material, the 99.8% fraction, less hazardous than the 0.2% asbestos fraction? In my experience, during indoor asbestos abatement projects where friable materials containing an excess 10% asbestos are being abated, asbestos is usually only detected when there is visible airborne dust. This is usually due to insufficient wetting of friable materials prior to disturbance. Therefore, if a detectable level of asbestos were to become airborne, it would certainly have to be a part of a significant dust cloud.

LEX has conducted outdoor air monitoring during large scale demolition of large structures clad in asbestos cement boards. Analysis was performed and reviewed by both the Ontario Ministry of Labour and the Ontario Ministry of Environment and completed to their satisfaction. Even though the disturbance was great, ambient air quality criteria guidelines were never exceeded. Furthermore, with the exception of one or two samples, asbestos was not even detected. This success can be credited to the diligent application of work practices to mitigate airborne asbestos. I feel that even better results would be achieved on this project because the material being processed has such low levels of fibrous actinolite to begin with and because engineering controls, in addition to work practices applied, would be part of the overall process.

The presence of trace amounts of actinolite in the bulk concentrate (less than 0.1%) and POX thickener filtercake tailings (0.2%) are below Saskatchewan regulatory limits. It is my professional opinion that airborne actinolite from a facility processing the materials that were tested will not pose a measurable asbestos related health hazard in the surrounding environment.

Thank you for the opportunity to be of assistance to you. If you have any questions regarding this project or any other Environmental or Health and Safety matter, please do not hesitate to call me at 800-824-7082 X223.

Michael M. Hoffbauer B.Sc.

Director

Mark A. Nazar, PhD, PEng, CIH, ROH

Mark Mozan

Associate

Senior Industrial Hygienist

