

FALCONBRIDGE NICKEL MINES LIMITED**INTER-OFFICE MEMORANDUM**

DATE: November 23, 1978

TO: D.J. Emery

COPIES TO:

FROM: P.J. Raleigh

SUBJECT: Treatment & Sale of Arsenic Trioxide
by Giant Yellowknife Mines Limited

An interest in disposing of the by product As_2O_3 resulting from roasting gold ore at Giant has been around for many years and an inquiry by Koppers Inc. of Pittsburgh, Pennsylvania early in 1978 reactivated the interest. The renewed interest has resulted in development of some basic data by various specialist groups in the Falconbridge organization.

Data gathered on the subject to date is very encouraging and indicates the following major points:

1. Current production of about 3,000 Tons/year of low grade 85% - 92% As_2O_3 containing less than 0.1 oz Au/Ton can be sold to Koppers for prices which will afford Giant a reasonable profit. A letter of intent to purchase current production is presently being discussed which will clearly define selling prices.
2. Stored reserves of arsenic containing dust with significant values in gold (+ .4 oz per ton of dust) can be treated to produce a high grade As_2O_3 product which is in demand, and will allow for the recovery of the contained gold.

The following is a summary of the current position on the major points under study.

- (a) Current production of As_2O_3 is over 3,000 Tons/year with low gold values. The product is a low grade Arsenic Trioxide with a limited market. Koppers appears to be the only promising customer.
- (b) Stored reserves of As_2O_3 in the Yellowknife area including Giant's 180,000 tons in stopes and Con's 50,000 on surface are sufficient to supply North American demands for more than ten years.
- (c) Stored reserves carry appreciable gold values (+ 0.4 oz/ton of ore) which may be recovered, if separated from the arsenic trioxide.

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(d) Market investigations show that:

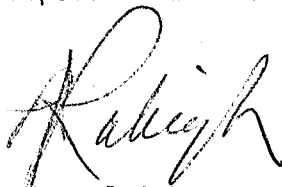
- (i) There is a shortage of high purity As_2O_3 in North America.
 - (ii) The extra volume is being imported from Europe at 30¢/#.
 - (iii) Volumes of about 6,000 tons per year are being bought from overseas currently.
 - (iv) The market is volatile but has grown as a result of the use of Arsenic Trioxide in wood preservatives which are now in good demand. Most users are anxious to discuss the supply position with Giant.
 - (v) Prices have moved from 16¢ to 24.5¢ for domestic production during 1978.
- (e) Preliminary research shows that upgrading of the stored product can be done using a hot water leach approach, producing a high grade As_2O_3 product and a gold bearing residue.
- (f) Economics of the recovery and upgrading schemes proposed, yield rates of return that repay estimate investments in less than one year, before taxes.
- (g) Initial discussions with the Operators at Con Mine were held to investigate the availability of their Arsenic for retreatment.

Based on current estimates, the recovery and sale of arsenic and gold from stored material will provide an operating profit of over \$100.00/ton of material treated and either product can carry operating costs with a small operating profit margin.

Recommendations

It is recommended that: (1) that discussion with Con be continued to further explore the terms for a combined purification plant in Yellowknife and (2) that the sale of current product to Koppers be permitted on terms in keeping with current ore reserves.

Research is continuing at the Falconbridge Laboratory to prepare a flowsheet for the proposed upgrading scheme. A cost estimate of the scheme will be made to further define the economics of the proposal. Initial information should be available in January.



P.J. Raleigh

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