

Province of Quebec

DEPARTMENT OF MINES

Office of the Deputy-Minister

Quebec, June 30th, 1951.

Mr. G.E.B. Sinclair, Director,
Department of Resources and Development,
Ottawa, Canada.

Dear Mr. Sinclair,

Re: Arsenic Sesqui-oxide -
Negus Mine.

I am in receipt of your letter of June 22nd with copies of correspondence concerning the problem of disposal of arsenical sludge at the Negus Mines, in the North West Territories.

As intimated in this correspondence, there are two main hazards which must be avoided if the proposed method of disposal is adopted:

- 1.- Contamination of ground waters which may find their way into other openings.
- 2.- Pollution of the atmosphere by certain gases generated in this sludge.

With reference to (1), I might point out that As_2O_3 is a most violent poison and does not deteriorate in storage. Mine waters tend to circulate even through "non-porous" rocks, and very close control would have to be kept to ensure that mine waters do not become highly contaminated. I am not well acquainted with the conditions at the properties mentioned in your letter, but I presume that the ordinary mine water must be contaminated to some extent if arsenic is present in the ore.

With reference to (2), I presume that SO_2 gas in the sludge is a product of roasting, since this gas would not form in a wet sludge. The greatest danger, as I see it, would be from the possible formation of arsine (AsH_3) if the sludge comes in contact with acidic waters.

Mr. G.E.B. Sinclair, Director.

- 2 -

There is another point which may need some clarification. It is noted that the total storage capacity of the proposed reservoir will be in the neighbourhood of 80,000 cubic feet, and it has been estimated that there will be a yearly sludge production of 54,720 cubic feet. If this is correct, it would indicate that the proposed reservoir will only have a storage capacity for about eighteen months operations.

I may also point out that if SO_2 gas accumulates in the sludge, it would attack concrete and result in rapid disintegration.

Insofar as the O'Brien and Beattie mines are concerned, the problem is greatly simplified since the arsenic produced is shipped to consumers, and only a limited amount is retained in storage.

I trust that these observations may contain some information that may be helpful to you in solving this problem, and remain,

Yours very truly,

(sgd) A.O. Dufresne

A. O. Dufresne,
Deputy Minister.

RHT/IMP.