

To ..... D.R. DeLaporte & W.A. Case  
From ..... R.J. McLeod  
Subject..... Soluable Arsenic in Mill Solutions

Date..... February 2, 1967  
Ref. .... RJM/dp

The soluable arsenic in the mill solutions have received considerable attention. There are two main sources in the milling process;

(a) Soluable arsenic produced when the roasted calcine is quenched and thickened in water.

(b) The quenching and washing of Hot Cottrell Dust.

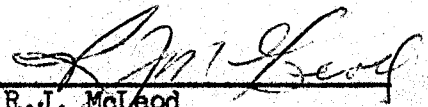
If either of these sources can be reduced to any extent then the soluable arsenic in the waste solution should be reduced by 40 - 50%.

Tests have been run to see if the arsenic in the Hot Cottrell Dust can be dissolved out before treatment. If the volume or tonnage of solution is kept low there is a possibility this solution can be used in the roaster and the arsenic volatilized and collected in the baghouse. There has been partial success in this project.

There is also the alternative of conducting the carbon process eliminating the washing step. Preliminary tests show there is promise in this method. More reagents will be required, but the gold extraction is good. If this method is feasible there is a small quantity of solution to deal with and it can be used in the roaster.

In the treatment of water from the other main source of soluable arsenic, I have contacted Mr. John C. Ingles, Head Chemical Analysis Section, Department of Energy, Mines and Resources, Ottawa, for his recommendation. He will be given all the necessary information so he can help in the matter. He has considerable talent available and can draw on the water treatment department.

Tests have been run in the wet Assay Laboratory on mill solutions. Potassium permanganate was used to oxidize solutions and met with partial success. A combination of Ferric Sulphate and Soda Ash precipitated arsenic but consumed exorbitant quantities of reagent. Tests are to be run using Alum. Sodium Sulphide has been suggested but it has objectionable qualities.

  
R.J. McLeod  
Mill Superintendent