Dr. W.L. Ball

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J.P. Windish

August 15, 1956.

Yellowknife Trip

Attached is a report on my recent trip to Yellowknife.

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REPORT ON TRIP TO YELLOWKNIFE

JUNE 21st TO JULY 30, 1956.

J.P. WINDISH

August 15, 1956.

Mr. Pockney and I left Ottawa for Yellowknife on June 21st. While there we collected the usual environmental grass and water samples and took stack samples at Con and Giant Mines. On the way back I visited the Nickel Refinery of the Chemical Metallurgical Division, Sherritt Gordon Mines Limited in Fort Saskatchewan, Alberta. I took two days leave in Winnipeg during which time I visited the Manitoba Bureau of Industrial Hygiene.

I returned to work in the laboratory on July 30th while Mr. Pockney returned on July 23rd.

Con Mine

On July 13th Mr. Homulos, the district mine inspector, and I had a talk with Mr. J. Colethorpe, manager of the Con Mine and discussed the following subjects:

(a) Considerable time ago it was suggested that test pits be dug around the pond in which arsenic-bearing sludge from the impinger is stored to see whether seepage from the pond was occurring. However, before the pond was built arsenic was stored in the area adjacent to it and as this old source of arsenic is still contaminating the area to a certain extent, it would be impossible to tell where any arsenic which might be found in test holes was coming from. Consequently none have been dug.

Since the pond was first established, in a natural rock basin, the concrete retaining walls which were built to seal off the natural drainage openings have been raised in height several times, to increase the storage capacity of the basin. As the level of stored arsenic sludge rises it becomes of increasing interest and importance to know whether seepage from the pond is occurring. Mr. Colethorpe was interested in my suggestion of adding a tracer material to the arsenic in the pond. I shall write to Mr. Kurt Raht, senior research engineer at Consolidated Mining and Smelting Company at Kimberley and ask him to consider investigating the possibilities of this technique.

(b) Cleaning Flues of Arsenic Dust. Waste gases leaving the roasters pass through flues to the impinger. Some of the arsenic-bearing dust in these gases deposits along the bottom of the flues and on the dampers and once each shift must be removed. This is done by inserting a long pipe, attached to a compressed airline, into a series of five clean-out ports in the flue system, and blowing the dust along towards the impinger.

A considerable amount of dust blows back out the last two ports and a heavy cloud escapes from the manhole on top of the impinger. I made two suggestions: (i) The manhole should be closed with a cover which completely seals the opening.

(ii) Compressed airlines with jet openings at appropriate locations along their lengths should be permanently installed inside the flues and connected through sealed openings to a compressed air supply. Cleaning would then be effected by turning a master valve located outside the flues; as there would be no ports to open there would be no openings from which dust could escape.

These ideas appealed to Mr. Colethorpe who promised to discuss them with Mr. R.M. Lauer, the Mill Superintendent, when the latter returned from holidays.

(c) Arsenic in Drinking Water. During spring runoff the concentration of arsenic in both the Con and Yellowknife townsite tap water rose considerably as it always has at this time of year. However in contrast with last year's occurrence the high concentrations did not last very long, falling rapidly to the m.a.c. or lower.

Last year Con thought that it might be able to find a different place for its water intake in Yellowknife Bay where arsenic concentrations would not be so high during spring runoff. Samples taken since that time and during spring runoff this year have shown that their present intake location is about as good as can be found.

Giant Mine

Mr. Homulos and I visited Mr. P.M. Pitcher, General Manager of Giant Yellowknife Gold Mines Limited on July 23rd. Giant at present is losing twenty ounces of gold per day (approximately $250,000 per year) because of poor extraction. By using a hot and a cold cottrell in series they could recover most of the gold but almost no arsenic. Last summer Mr. Pitcher had spoken of a new method of roasting which his company was experimenting with and which was then ready for pilot plant testing (cf. my memo to Dr. Kay dated 8 Aug. 55, file 0455-10-13). This method which would have involved roasting all the ore instead of a concentrate, as is presently done, was tested during the winter and did not live up to expectations. They are now investigating other methods.

In addition to its own staff Giant has retained several consultants in Canada and the United States to work on this problem. Three methods offer promise:

(a) Roasting of concentrate by a process different from that now being used.
(b) An autoclaving process which will produce an insoluble calcium arsenate.
(c) Smelting. This is now done at a plant in Tacoma, Washington which handles an arseniferous gold ore. Arsenic trioxide evolved is collected satisfactorily by a cottrell precipitator.

Mr. Pitcher said that in deciding upon a method, the efficiency with which arsenic could be collected would be of major consideration. A method of treatment which would give high gold extraction but only fair arsenic collection would not be acceptable.

Sherritt Gordon

This visit was made in company with Mr. E.E. Owen former safety supervisor of the Alberta Workman's Compensation Board. We were conducted through the plant by Mr. S.R. Walker the safety supervisor.

The company's plant at Lynn Lake, Manitoba produces a nickel concentrate in a powdered form which is shipped by boxcar to the Fort Saskatchewan Plant. The cars are unloaded inside the plant by payloaders. Mr. Walker said that as this is a very dusty operation the men are supplied with respirators but they do not wear them all the time. He was concerned about the possible silicosis risk and asked for suggestions. I offered two:

(a) Install exhaust ventilation along the wall above the place where the material is dropped to the ground from the payloaders, so that dust will be captured before it is dispersed into the general atmosphere.

(b) Have a sample of the material analysed for free silica.

Mr. Walker has since sent samples of the raw material and of settled dust for analysis. X-ray diffraction failed to reveal any quartz but as dust concentrations during unloading probably far exceed the limit of fifty million particles per cubic foot for nuisance dusts the use of respirators is still advisable. Mr. Walker has been so informed.

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