

Northern Administration
and Lands Branch

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CANADA

DEPARTMENT
OF
RESOURCES AND DEVELOPMENT

OFFICE OF THE DIRECTOR

Ottawa, Ontario,
25 July, 1951.

AUG 1 1951

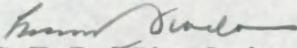
Dr. P.E. Moore,
Director,
Indian Health Services,
Department of National Health & Welfare,
Ottawa, Ontario.

Dear Dr. Moore:-

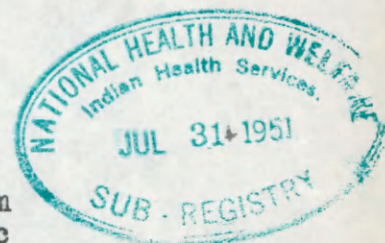
In view of your interest in the problem concerning the collection and disposal of arsenic from the roaster operations of the mines at Yellowknife and in the meeting held in my office on the 1st of June, 1951, to discuss this general problem, I am sending you herewith, a copy of a letter by Mr. Raht to Mr. W.G. Jewitt, Manager of Mines, Consolidated Mining and Smelting Company of Canada Limited, Trail, B.C., calling attention to certain items in the minutes of the meeting which he considered to be inaccurate.

Mr. Raht's letter contains valuable comments on the question of the contamination of Pud, Kam and Rat Lakes, and is, altogether, a most useful contribution to the study of the control of arsenic pollution in the Yellowknife area.

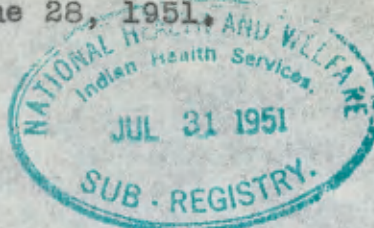
Yours very truly,


G.E.B. Sinclair,
Director.

Encl.



June 28, 1951.



Mr. W.G. Jewitt,
Manager of Mines,
Trail, B.C.

Dear Sir:-

Arsenic Collection and Disposal, Con Mine

For a time during the period when the impinger method of arsenical fume collection was under development arsenical sludge from the impinger was laundering directly to Pud Lake with mill tailings. Disposal to Pud Lake extended over a period of about three months.

Following initial development of the impinger, disposal pits were dug in the tailings area and all arsenical sludge was pumped to these pits. In February, 1950, additional pits were required and it was necessary to overflow a quantity of supernatant solution carrying about 9 grams of arsenic per litre for a short period until these pits were available. Excepting this occasion and the development period no impinger product has escaped the storage area.

When the idea of using the tailings area for disposal pits was first considered, a test pit was prepared and observed for signs of seepage. A series of test holes were dug at intervals in the tailings along the perimeter and about 10 feet out from the pit. At no time did these test holes give any indication of seepage. Following this test, full sized pits were prepared and test holes located on the perimeter with additional holes extending across the tailings area. At no time was there any indication of seepage. I personally inspected these test holes on several occasions, the last time being in May of this year. As additional proof it may be noted that when the second pair of disposal pits mentioned above were opened there was no seepage into the area. I think this is particularly significant because the area opened was large and within fifteen feet of the working pits and parallel to them. Still further evidence that there is no seepage from pits located in the tailings is the fact that solution levels remain essentially constant when a pit is dormant.

I would note here that item (3) of the minutes of the meeting of June 1st, held in Ottawa to discuss arsenic disposal, etc., is inaccurate. As stated above, we have no indication whatever that there is any seepage from pits placed in the tailings area. The reason for going to another disposal area is the fact that the potential storage space in the tailings area is too small. We would be limited to not more than about half a dozen pits and with this limited storage we would be faced with developing some scheme for removing sludge from the pits to some sort of permanent storage. This was actually considered but was discarded in favor of developing a permanent disposal area sufficiently large to provide unlimited storage. On this basis the obvious area appeared to be one of the natural rock-rimmed basins in the immediate area. Several promising basins were located and minutely examined by geologists and mining engineers to determine that the structure was suitable from the point of view of its general impermeability.

Development of a permanent storage area (a rock basin) was undertaken in the fall of 1950 and the area was brought into operation in December, 1950. All arsenical sludge is now pumped to this area. Supernatant solution is pumped back to the impinger so that, with the equipment in balance, there is no excess solution or free sludge.

Due to the difficulties of winter construction, finishing touches such as backfilling and generally making the area neat had not been completed at the time of my visit to the property in May of this year. I understand that this work has now been completed and it is the intention to locate test holes in appropriate spots to detect any evidence of seepage. My observation of the job leads me to believe that there will be no leakage from the storage area.

I would like to discuss briefly contamination of Pud, Kam and Rat Lake as noted under item (9) of the minutes of the Ottawa meeting June 1st. I have indicated previously in this letter that we have no evidence whatever to suggest that there was any seepage from storage pits located in the tailings area. Pud Lake was contaminated by laundering slurry from the impinger directly to the lake with mill tailings during the three or four-month period when the process was under development. I think it important that this point be made clear and I believe I have now done so.

The outflow from Pud Lake enters Kam Lake and is probably largely responsible for the relatively high arsenic content of the latter. A complicating factor in determining just how much contamination results from Pud Lake water entering Kam lies in the fact that a large amount of arsenical fume was deposited in the drainage area prior to the introduction of fume collection. Undoubtedly much of this material has been absorbed into the soil and vegetation which now constitutes an arsenic storage yielding an increment to the water on demand through run-off and during wet periods. This is a situation which will correct itself in time provided of course that there is no replenishment by deposition of air-borne fume.

The situation in regard to Rat Lake differs from Kam in that the arsenic content of Rat Lake water is due entirely to air-borne fume which has been deposited in the drainage area. The lake is a small body of water, practically land locked and located within a few hundred yards of the stack. Prior to fume collection the area was subject to heavy fume deposition. Actually this water offers conclusive proof that there has been no seepage of arsenic bearing solution in the direction of Rat Lake. Considering the small body of water represented in Rat Lake, a very small seepage of solution from the storage pits entering the water would cause a very significant rise in arsenic content. No such increase has been found.

In regard to our part in implementing the continuing survey of arsenic distribution in the area; we are taking regular samples of lake and domestic waters, also we are taking samples to determine the amount of arsenic deposited from air-borne fume in the areas prescribed at our meeting with Mr. Gibson, Dr. Kay, et al, in February of 1950. This material is reported to Dr. Kay and to Mr. Sinclair periodically.

Yours truly,

K. Raht/mrw

(Sgd.) K. Raht