

MEMORANDUM

H.E. Pawson: R.J. Tucker

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From C.O. Olesen

Ref.

Subject Arsenic Suppression

Procedure: To take the 3 streams entering into #8 Ag. and combine them as a single stream. Working with 3 liters of this solution 3 grams of CuSO_4 was added and agitated for complete mixing. Smaller samples were then taken and treated with various amounts of Na_2CO_3 to attain defferent pH levels.

Data:

Part I

	mls of sample	pH	Cu (ppm)	Fe (ppm)	As (ppm)
thickener 6	1700	7.7	.12	.30	31.5
thickener 11	875	3.0	.70	134	12.50
thickener 13	525	6.0	.15	13	145
6 + 11 + 13	3100	4.2	.40	33	93
6 + 11 + 13 + CuSO_4	3000	5.2	220	25	65

Part II The combined streams with CuSO_4 plus Na_2CO_3 as the alkaline reagent.

pH	Cu (ppm)	Fe (ppm)	As (ppm)
6.0	88	ND	39
7.1	3.92	ND	28
7.9	1.83	ND	26.5
9.1	.45	ND	18.8
9.9	.32	ND	15.8
10.4	1.62	ND	21.8

Calculations:

- the theoretical heavy metals in the combined streams were:
As - 45.2 ppm Cu - .28 ppm Fe - 38 ppm
- amount of copper added to the combined streams was 246 ppm.

pH	Consumed As ppm	Consumed Cu ppm	Cu/As
6.0	26	132	5.08
7.1	37	216	5.84
7.9	38.5	218	5.66
9.1	46.2	220	4.76
9.9	49.2	220	4.47
10.4	43.2	218	5.05

Conclusions: - overall, a discrepancy was noted from the theoretical calculated arsenic to the actual arsenic of 48ppm. This discrepancy was also noted in a previous report (arsenic suppression Sept5/75) of an increase of 50 ppmAs, within the combined streams. The actual cause of this increase is still obscure. - Also an optimum working PH of 9 - 10 was also noted with the use of Na_2CO_3 , but it only attains the arsenic levels produced by the addition of lime. - since the levels attained with the use of NH_4OH are lower than that of Na_2CO_3 , tests will be run using NH_4OH at varying pH's and a constant amount of copper.