

# MEMORANDUM

To H.E. Pawson: R.J. Tucker

Date Dec 19/75

From C.O. Olesen

Ref. \_\_\_\_\_

Subject Arsenic Suppression Tests

Abstract: To use varying amounts of  $\text{FeCl}_3$  and  $\text{CuSO}_4$  at a constant pH using  $\text{Na}_2\text{CO}_3$  as the alkaline reagent.

## Part I #6 Thickener

$\text{FeCl}_3$	$\text{CuSO}_4$	pH	pHOH	As	AsOH	Fe	FeOH	Cu	CuOH
.090	0	5.5	10.9	17.4	14.0	3.6	ND	.07	ND
.018	0	3.5	10.9	17.0	10.5	20.5	ND	.20	.15
.027	0	3.3	10.9	20.2	9.5	108.5	ND	.35	.55
0	.15	6.6	11.1	25.5	22.0	ND	ND	29.8	.08
0	.25	6.4	10.9	26.3	18.8	ND	ND	81.0	.15
0	.50	6.1	10.9	26.3	17.5	ND	ND	200.0	.30
0	0	7.3	10.9	38.5	32.2	.5	ND	3.05	.30

## Part II #11 Thickener

$\text{FeCl}_3$	$\text{CuSO}_4$	pH	pHOH	As	AsOH	Fe	FeOH	Cu	CuOH
.40	0	3.0	10.8	97	20	335	ND	.30	.20
.55	0	2.9	10.8	132	11.5	555	.21	.30	.30
.70	0	2.8	10.8	157	10.2	815	.30	.30	.30
0	.45	3.7	10.8	149	28.1	70	ND	209	1.05
0	.50	3.6	10.9	142	26.5	65	ND	240	1.86
0	.75	3.7	10.8	147	22.5	65	ND	365	3.10
0	0	6.2	10.8	165	86	178	.25	ND	.30

## Calculations:

### Part I #6 Thickener

Avail Fe (mg)	Avail Cu (mg)	Consumed As (mg)	Ratio x/As	$\text{Na}_2\text{CO}_3$ limit As attained (ppm)	Ratio x/As	$\text{NH}_4\text{OH}$ -previous limit As tests attained (ppm)
18.9	0	12.25	1.54	14.0	2.20	3.2
37.8	0	14.0	2.70	10.5	4.15	2.1
56.7	0	14.5	3.91	9.5	6.23	2.1
0	38.2	8.25	4.63	22.0	4.24	12.0
0	63.6	9.85	6.46	18.8	5.53	9.0
0	127.2	10.5	12.11	17.5	9.42	3.0

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## Part II #11 Thickener

Avail Fe (mg)	Avail Cu (mg)	Consumed As (mg)	Ratio x/As	Na <sub>2</sub> CO <sub>3</sub> limit As attained (ppm)	NH <sub>4</sub> OH Ratio x/As	-previous tests limit As attained (ppm)
630	0	72.5	8.69	20	2.93	4.6
735	0	76.75	9.58	11.5	3.84	1.8
840	0	77.4	10.85	10.2	4.98	3.0
0	114.5	68.45	1.67	28.1	1.72	2.0
0	127.2	69.25	1.84	26.5	1.92	3.0
0	190.0	71.25	2.67	22.5	2.86	2.0

### Conclusions:

- As the above results show it takes less FeCl<sub>3</sub> or CuSO<sub>4</sub> to suppress the arsenic with NH<sub>4</sub>OH than with Na<sub>2</sub>CO<sub>3</sub>, but then the pH was slightly lower in the previous tests. Therefore, tests should be run at varying pH's with a constant amount of FeCl<sub>3</sub> or CuSO<sub>4</sub>. Also tests should be run on the ppte's to determine if they reverse upon dilution.