

# MEMORANDUM

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From C.O. Olesen

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

Subject To determine the use of  $\text{CuSO}_4$  as a precipitant for arsenic in DTB and #8 Ag.

## PART I

A 500 ml sample of DTB was subjected to numerous tests, which involved the addition of  $\text{CuSO}_4$ ,  $\text{CaO}$ , and  $\text{NH}_4\text{OH}$ .

	As ppm	% Removal As
DTB	2100	—
+ 4lb/ton $\text{CuSO}_4$	1790	14.8%
+ 4lb/ton $\text{CaO}$	1500	29.6%
6 drops $\text{NH}_4\text{OH}$	800	62.0%

## PART II

A small sample of #8 Ag. (100 ml) was subjected to .25g. of  $\text{CuSO}_4$  and later 4 drops of  $\text{NH}_4\text{OH}$  was added to the solution.

	ppm As	% Removal As
#8 Ag	12	—
+ $\text{CuSO}_4$	5	38.3%
+ $\text{NH}_4\text{OH}$	5	38.3%

## OBSERVATIONS

### PART I

With the addition of  $\text{CuSO}_4$  a brown ppte is formed and upon addition of lime the brown ppte disappears and a green-blue ppte shows. Upon the final addition (the addition of  $\text{NH}_4\text{OH}$ ), the ppte goes to a more green-blue color.

### PART II

Upon addition of  $\text{CuSO}_4$  to #8 Ag. waste the  $\text{CuSO}_4$  forms a colloidal ppte and then settles,; the ppte color is blue. Upon addition of the  $\text{NH}_4\text{OH}$  the ppte developes a darker blue color.

## CONCLUSIONS

The  $\text{CuSO}_4$  does suppress the arsenic to some extent but not to its expected ability as stated in "A treatise on Inorganic and theoretical chemistry" (J.W. Mellor) pg. 38. A probable cause to this is that the DTB upon addition of the  $\text{CuSO}_4$  was not sufficiently alkaline. Therefore a new set of samples will be run.