PLAINTIFF'S EXHIBIT
UC-4847

Please Note:

Only two copies of the pictures used in this Memorandum were made. If anyone wishes to see them, please call John Myers or K. S. Chopra.

Technology Department
Mining and Metals Division - UCC
Niagara Falls, New York
September 17, 1973

M E M O R A N D U M

TO: Mr. J. L. Myers (2)

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FROM: K. S. Chopra

SUBJECT: Determination of Asbestos in Water

About 500 cc. each of water samples marked "effluent," "river-below," and "river-above" were received for analysis of asbestos content present in them, if any. The water sample marked "effluent" looked muddy, whereas the samples marked "river-above" and "river-below" looked relatively free of any finely distributed particles, but the color of the water in all the samples was yellow.

There are some techniques recommended in the literature about procedures to determine the approximate amounts of asbestos in liquids. The methods are very approximate in nature and too much faith is placed on the sampling procedure. It is assumed that a drop of the centrifuged sample concentrated from a large volume would disperse itself evenly on the holes of a microscope grid, and the final analysis as to number of fibers in the sample is based upon this assumption.

The water sample in all three cases was centrifuged and the weight of residue was checked in each case. In the case of the effluent sample, the following procedure was used to determine the asbestos content in the sample.

1.	Volume of the sample analyzed	235 cc.
2.	Weight of the residue collected after centrifuging and drying	.047 g.
3.	Weight of the above residue after treating overnight with 20% KOH at 48°C. to dissolve away organic materials and washing and drying	.034 g.
4.	Analyses of magnesium checked on 1/2 of the above residue sent for chemical analyses	.87%

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the weight of residue in effluent as compared to weight of the residue in "river-below" sample, the number of chrysotile fibers in the effluent is 3.4×10^{12} as compared to 1.4×10^{11} or less in the "river-below" sample. These results can be very deceiving because the extrapolation is based upon the fact that the residue analyzed in effluents showed 0.87% magnesium and it was assumed that all the magnesium present is tied up as chrysotile. This assumption is not always true because magnesium could also be tied up as carbonate, etc.

K. S. Chopra

KSC:ms
Attach.