

Copy to Mr Midgley

FILE

HARVARD UNIVERSITY

Dear Cal:

Referring to my letter of yesterday and the question of air motion within the cabinet, please remember that the cabinet volume is about 75,000 liters and that we are not sampling continuously. Some convection currents are inevitable from temperature difference effects and the withdrawal of 30 to 150 liters at various times. When air is withdrawn it is replaced through a mask impenetrable to the fume particles. Air flows through the Tyndallmeter at about 20 liters per min. and is blown back again into the cabinet. It is true that Tolman and Vliet found this promoted flocculation of the fume particles and we have found this to be the case, but their cabinet was, I think, very small. We have to run several fans to get the same result.

I do not herald our curves as anything new or unexpected and hope you did not get this idea. They represent still air conditions or come as near to it as you can. We cannot run the precipitator inside the cabinet nor discharge the air escaping from it into the cabinet, as it is too highly ionized and of itself effects flocculation. If you want to read the Tyndallmeter inside the cabinet you are welcome to the job - personally I don't because you would have to wear a mask the entire time - 24 hours. Observers cannot keep going in and out as fume always escapes which spoils the continuity of the experiments.

As a matter of fact I think these curves support the Bureau of Mines report rather than contradict it. They show some reason for the high percentage of particles exhaled in their breathing experiments. We got comparable results in gas masks - the $PbBr_2$ fume passed through fairly easily and would not plug the mask - flocculating substances like ZnO plug masks rapidly and rapidly make them very efficient filters.

I wrote Mr. Yant at the Bureau of Mines and sent him the curves. I am going to send him slides of the fumes for microscopic study - something which they have apparently ignored up to the present although fully aware of its significance in the quantity inhaled and retained. Fieldner and Sayers have already seen some of mine.

Sincerely yours,

Philip Drinker (signed)

J. De Kaban
Note

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