Blcc: Dr. D.V.N. Hardy

MR. H.K. MASON, St.Louis (2) 8th September, 1955.

JWB:VEH AROCLOR TOXICOLOGY

cc: Dr. H.R. Newman.

Dear Howard,

You will readily appreciate that we are very much concerned with the toxicology of Aroclors, particularly as our development sales efforts in this field of Monsanto products have, in the last six months or so, really begun to pay off.

Recently we received through Dr. Kelly the findings of the Kettering Laboratory which as far as we were concerned included entirely new data. In particular, the toxicity of Aroclor 1254 was demonstrated with a range of animals at a level of 1.5 mgrm./cu.m. At the same time there was no toxicity found for 1242 at concentration of 1.9 mgrm./cu.m. This in itself might be said to be surprising and perhaps indicate some specific differences between the toxicities of various grades of Aroclor. We would be most anxious to learn from you whether you accept the Kettering results as fully significant in a broad way, and whether this data is going to be made available to all.

Fortunately, our Chief Medical Officer, Dr. H.R. Newman, is visiting St.Louis and will be discussing the significance of this Kettering work with Dr. Kelly. Here there is a convention that a factor of 10 is used in translating animal toxicities to human toxicities. In other words there would be an interpretation that Aroclor 1254 should not be used where atmospheres containing a quantity something less than 0.15 mgrm./cu.m. results.

Both Sales and Development here are very anxious to handle this awkward problem in the right way and to remain in complete liaison with you on actions which might be necessary. Perhaps it is particularly important to us as a very large proportion of our present sales do go to surface coating uses.

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We had been giving consideration to getting some toxicological data established for us on the Aroclors by Battelle in Germany who have good facilities for this type of work. However, we would certainly not do this without full discussion with you. To us there seems the necessity of establishing quite a lot more data and we would be willing to arrange for some of this to be obtained if you think that this is a reasonable suggestion. Dr.Newman's visit is particularly appropriate at this etage and of course it would be possible for me to discuss the matter broadly during my visit in late October. However, meanwhile we would be most grateful to gain as much of the M.C.C. point of view as possible.

J.W. BARRETT.

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Dr. D.V.N. Hardy
Dr. H.R. Newman.

Monsanto Chemical Company

St. Louis, Missouri

September 20, 1955

Dr. J.W. Barrett

London

Your memo September 8 to Mr. Nason

AROCLOR TOXICITY

Howard Nason has given me your memo of September 8. I will be happy to discuss this with Dr. Newman during his visit here. I think, however, there are several points that I can answer you now.

You comment upon the difference in toxicity between Aroclor 1254 and 1242. This is not particularly surprising because in the earlier work it was found that toxicity increased with chlorination. Of course, from the standpoint of volatility in the case of inhalation or absorption from the gut from the point of view of ingestion are important. Frankly, there was not too great a difference between the two compounds, however. As you know, the maximum allowable concentrate is 0.1 ml/cubic meter in the case of 1254, and as high as 10.0 mgm in the case of 1268. I think the former is too low and the latter is too high. In this country they don't use the MACs very routinely, but certainly in England I think it would be alright to consider 0.2 mgm/cubic meter as perfectly safe.

I don't know how you would get any particular advantage in doing more work. What is it that you want to prove? I believe your work should be directed towards finding out what the concentrations are of Aroclor during different operations whether it is industrial or painting. The reports you have seen from Kettering Laboratory are the result of approximately $15,000 to $20,000 expenditure by MCC.

MCC's position can be summarized in this fashion. We know Aroclors are toxic but the actual limit has not been precisely defined. It does not make too much difference, it seems to me, because our main worry is what will happen if an individual developes any type of liver disease and gives a history of Aroclor exposure. I am sure the juries would not pay a great deal of attention to MACs.

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We, therefore, review every new Aroclor use from this point of view. If it is an industrial application where we can get air concentrations and have some reasonable expectation that the air concentrations will stay the same, we are much more liberal in the use of Aroclor. If, however, it is distributed to householders where it can be used in almost any shape and form and we are never able to know how much of the concentration they are exposed to, we are much more strict. No amount of toxicity testing will obviate this last dilemma and therefore I do not believe any more testing would be justified.

Let's see what our discussions with Dr. Newman and yourself bring out.

R. Emmet Kelly, M.D.

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Dr. D.V.N. Hardy
Dr. H.R. Newman

Monsanto Chemical Company

St. Louis, Missouri.

September 22, 1955

Dr. J.W. Barrett

London Office

AROCLOR TOXICITY

On rereading my memo of September 20 to you I noticed an error in the second paragraph. I feel that this correspondence is sufficiently important to correct this paragraph.

This paragraph should read:

> You commented in your letter about the difference in toxicity between Aroclor 1254 and 1242. These differences are not surprising because in the earlier work it was found that toxicity increased with degree of chlorination. Of course, the volatility is important in the case of inhalation toxicity, and absorption into the intestinal tract is important from the point of oral toxicity. Frankly, there was not a great deal of difference between the two subject compounds. As you know, the maximum allowable concentration is 0.1 mg/cubic meter in the case of 1254 and is as high as 10.0 mg/cubic meter in the case of 1268. I think the former is too low and the latter is too high. In the United States they don't use maximum allowable concentrations (MAC) very routinely but certainly in England I think it would be alright to consider 0.2 mg/cubic meter as perfectly safe.

R. Emmet Kelly, M.D.

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