Monsanto

FROM (NAME & LOCATION): E. S. Tucker - R&D Laboratories - South Second Street

DATE: December 11, 1969

cc M. W. Farrar - Res. 1
R. E. Keller - Res. 1
W. R. Richard - GO

SUBJECT: AROCLOR / WILDLIFE, FISH TOXICITY STUDIES

REFERENCE:

TO : E. P. Wheeler/ J. T. Garrett
General Offices

As per our discussion with the people from the Canadian Food and Drug Directorate and Jack's and my combined discussions with Dr. Denzel Ferguson (Mississippi State University) and the people at the Michigan Water Resources Commission, I believe - as you do - that the Bio-Test fish toxicity work should be repeated.

I have determined experimentally that, outside of using a continuous flow bio assay system, we cannot easily prepare a stable, definite concentration of Aroclor in water for static bio assay. This is primarily due to the infinite capacity of the container walls with respect to the desired exposure levels. (Re Meeting Minutes, Analytical Review of Bio-Test Four Day Fish Toxicity Studies, 7-31-69.)

Although the static 96 hour (TLm) is not the ultimate in toxicity data, it is a familiar toxicity index that fish and wild life people understand and employ. I, therefore, suggest that 96 hour (TLm's) be determined for selected Aroclors according to "Standard Methods" no matter how ridiculously high, the exposure level has to be pushed to cause complete mortality.

I also think that we should use Dr. D. J. Clegg's (Canadian F.D.D.) suggestion of substituting bull-heads for the trout used in the earlier Bio-Test exposures.

Assuming two species of fish (bluegills and bull-heads) and three exposure levels, the cost of the analytical work would be in the range of $2500-$3500 per Aroclor studied. This would include:

1. Analysis of zero time water samples, 6 samples per Aroclor.
2. Analysis of all fish mortalities and survivors, 6-30 samples per Aroclor.
3. Determination of a "blank container profile", 36 samples per Aroclor.

Additionally, I think that we should review the results of the Bio-Test feeding studies to determine which of them should be supported with analytical data so that necessary time can be programmed into our projected work load.

E. S. Tucker

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