BCC Ralph Fuhrhop-Chicago
J. Arbogast-Chicago
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F. H. Langenfeld-[illegible]

January 14, 1960

Mr. D. S. Hahn
American Motors Corporation
Kenosha, Wisconsin

Dear Mr. Hahn:

Confirming our telephone conversation with you today, Dr. Kelly and I have the following comments:

You requested our opinion as to the suitability, from a toxicity standpoint, of the use of Tricresyl Phosphate (low ortho isomer content), Pydraul F-9, Pydraul A-200, and Santicizer 141, in air conditioning systems for washing collected particulate matter from louvers or screens.

Of the four compounds mentioned, Santicizer 141 (2-Ethylhexyl diphenyl phosphate) is the least toxic. The reports of acute and chronic toxicity studies have been published (reprints enclosed) and confirm this opinion. Based on the low order of toxicity, Santicizer 141 is a plasticizer approved by the Food and Drug Administration for use in food wrapping films. Although the published data does not refer to inhalation toxicity, unpublished data indicates the same low order of toxicity via the inhalation route.

As Dr. Kelly pointed out in his letter of December 10, the low ortho isomer Tricresyl Phosphate, which we sell for plasticizer or hydraulic fluid use, demonstrates a relatively low order of toxicity compared to triorthocresyl phosphate. The low vapor pressure of TCP and its fire resistance has led to its use for a number of years in air conditioning systems for purposes similar to that which you propose. In this use, we believe that several million people in air conditioned commercial buildings have been exposed to air eight hours daily with no effects. I am not familiar with reports of any work which has been done to indicate the absence of TCP vapors in this air or to indicate what concentrations might be present. We feel it is safe to say, however, that the use of TCP in this application is without hazard.

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As our labels indicate, the Pydrauls do contain chlorinated hydrocarbons although, as I pointed out on the telephone, these are not the chlorinated hydrocarbons which one associates with the more toxic materials such as carbon tetrachloride. Our animal inhalation studies with Pydraul F-9 and the components of Pydraul A-200 convince us that there is no acute hazard to humans exposed to atmospheres saturated with the vapors at room temperatures. We do not have data which allows us to conclude that 8-hour daily exposures over a long period of time (such as a workman exposed 8 hours a day, month after month) are desirable. Therefore, the answer to the question as to whether or not Pydraul F-9 or Pydraul A-200 could be used in air conditioning systems where the air is supplied to the working environment depends on what concentrations of the vapors of the Pydraul components might be in the treated air. Based on theoretical considerations of vapor pressures, we have stated that if Pydraul fluids are used in such a manner that the temperatures do not exceed 150°F., vapor concentrations in the ambient atmosphere should be insignificant. We hesitate, however, to recommend the use of these fluids without data as to vapor concentrations under the practical conditions of use.

You pointed out that the treated air in your case is discharged at the face of exhaust-ventilated paint spray booths. If workmen are within the booths (without respiratory protective equipment), the question as to whether or not the potential hazard exists is complicated by the fact that the treated air is diluted with additional workroom air since I believe you said that the exhaust system removes a greater amount of air than is supplied in the treatment system.

Another consideration in comparing Trioresyl Phosphate with the Pydrauls is the fact that the vapor pressure of TCP is considerably lower than in the case of the Pydrauls.

If we can be of any further assistance, please let us know.

Very truly yours,

Elmer P. Wheeler
Assistant Director
Medical Department

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Enclosures 2

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