June 10, 1965

Mr. Paul D. Halley
American Oil Company
910 South Michigan Avenue
Chicago 80, Illinois

Dear Paul:

I am finally sending a whole raft of material relating to the toxicity of Aroclors 1248 and 1254. Included are:

1. Reports of acute oral and skin absorption lethal doses.

2. Reports on subacute dermal toxicity.

3. Xerox copies of an article in C & E News indicating the relationship of our Aroclors to our Therminols.

4. An Underwriter Laboratories report on heat transfer fluids.

5. Two Monsanto publications describing Aroclors as plasticizers and as used in fluid heat systems.

As I told you on the telephone, the skin absorption toxicity of Aroclors appears to be of greater significance, when the Aroclor is applied as a solution in oil. Younger Laboratories obtained skin absorption MLD in rabbits using undiluted material. Calandra's subacute dermal LD_{50} determinations were obtained using the Aroclor sample as a 4% solution in corn oil. The toxicity might or might not be increased if a petroleum oil were used as a solvent or carrier rather than corn oil.

The C & E News item indicates that our Aroclors which have been promoted for heat transfer medium use for more than 20 years, are now identified as Therminols and are

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marketed with more precise specifications than were the Aroclors. In the Underwriter's Laboratories report the fluids are identified as Thermofluid FR-1, FR-2 and FR-3. These are now Therminols FR-1, 2 and 3 respectively. Chemically, they are Aroclors 1242, 1248 and 1254 respectively, refined to the rigid specifications for heat transfer application.

We have other UL reports on the Aroclors -- one dated 1934 and a second one in 1949. These relate to the dielectric use of the Aroclors. The data therein are comparable to the September 5, 1961 UL report enclosed.

In all of the descriptive material including the UL reports, time and again the chemical stability of the Aroclors is pointed out. This includes "non-oxidation." The Monsanto publications mention this characteristic in such terms, as "they are among the most oxidation-resistant compounds known."

I have checked with our knowledgeable research, development and sales personnel all of whom confirm the fact that there has never been any problem with oxidation of the Aroclors. In some applications there may be slight decomposition if the fluids are exposed to excessive temperatures or electrical arcing. The problem here, however, is not oxidation but is rather the release of chlorine or HCl. For this reason some formulations of the Aroclors included chlorine or chloride "scavengers" to eliminate or reduce the problem of corrosion. (Parenthetically, I have been told that Hooker markets a scavenger that is used in appropriate applications.)

If you have any questions or if you think I can add anything further after you have digested the enclosed material, please let me know.

Very truly yours,

Elmer P. Wheeler, Manager
Environmental Health
Medical Department

EPW:mjb

cc: H. O. Jacobsen, Chgo

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