October 4, 1967

Dr. Bruce T. Smith, Medical Director
Chevrolet Division
General Motors Corporation
Massena, New York 13662

Dear Dr. Smith:

Mr. Fred Colmar of your plant was in St. Louis last Friday. During his visit to Monsanto, Elmer P. Wheeler, our industrial hygienist had the pleasure of meeting Mr. Colmar and discussing with him our views of the safe handling and use of Pydraul A-200, one of Monsanto's fire-resistant hydraulic fluids, which I understand is used in your plant--as well as in other General Motors installations. Mr. Wheeler has suggested that I confirm the verbal discussion for your convenience.

Animal toxicity studies with Pydraul A-200 have indicated that the oral lethal dose (LD_{50}) to rats is 10,500 milligrams per kilogram. The lethal dose when the material was applied undiluted to the unbroken skin of rabbits is approximately 1250 milligrams per kilogram.

We conclude from the above that accidental ingestion on the part of humans is not a particular hazard in view of the high oral lethal dose in rats. Similarly, single massive skin exposures should not be immediately hazardous. The lethal dose obtained in skin penetration studies is such, however, that prolonged and repeated skin contact should be avoided because of possible systemic effects. In addition, prolonged and repeated skin contact may lead to skin irritation.

We also feel that vapor inhalation should be avoided when the fluid is heated to elevated temperatures. Such exposure again relates to prolonged or repeated exposures rather than short-term massive or acute exposures. Some years ago, we obtained acute toxicity data for animals exposed to massive concentrations of thermally decomposed Pydraul A-200. A copy of the results of these brief experiments is enclosed. (Please note that the

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sample tested was identified as "OS-95". This was the Development Department's designation of the fluid prior to the adoption of the trade-name, "Pydraul A-200"). I think you will agree that the conditions of the test were extreme in that humans would not voluntarily remain in atmospheres so grossly contaminated. In the series of experiments, all animals survived after signs and symptoms which were principally related to the inhalation of the HCl which is formed by the thermal decomposition.

The use of Pydraul A-200 in industrial hydraulic fluid applications should not present toxicity hazards during the transfer of the fluid from original containers to the hydraulic system. Obviously when the fluid is within the hydraulic system, there should be no exposure and consequently, no hazard. In the event of rupture of hydraulic lines and subsequent splashing or spraying of the fluid on the heated surfaces, vapors of the fluid and possible decomposition products (depending on the temperature of the heated surface) may be irritating if inhaled to the degree that workmen will not voluntarily expose themselves to toxic concentrations. No hazardous exposure should result during the interval required to shut down the system and obtain suitable respiratory protective devices during repairs to the system.

We would not anticipate any greater hazards during routine maintenance of a system containing Pydraul A-200 than would be present if the system contained a phosphate base fluid. It would appear to be good practice to wipe dry any equipment before doing any welding on surfaces which might be "wetted" with or have a film of either type fluid on them.

If I can be of any further assistance, please do not hesitate to let me know.

Very truly yours,

R. Emmet Kelly, M.D.
Medical Director

REK:cjs/EPW
cc: Fred Colmar - New York
Jack Bonaroglia - New York
G. R. Graham - New York
Norman T. Johnson

bcc: Dale Smith

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