December 27, 1950

Mr. Paul D. Halley
Director of Industrial Hygiene
Standard Oil Company of Indiana
910 South Michigan Avenue
Chicago 80, Illinois

Dear Paul:

Thank you for your letter of December 21 requesting toxicity and safe handling information on Pydraul AC.

Enclosed are the following:

1. A technical bulletin (promotional) describing this fluid;

2. A copy of the acute toxicity screening studies; (In this report the fluid is identified as OS-67, which was the designation for the product during its developmental stages prior to its becoming a sales item.)

3. Our brief interpretation of the toxicity data.

We have had a number of inquiries about the use of this fluid in compressors where the air is subsequently used for supplied air respirators or masks. Due to the low volatility of the components of Pydraul AC, one would expect that no significant quantity of vapors would carry over from the compressor into the compressed air line. We recognize, however, that in compressor lubrication, temperatures may be elevated above the ambient levels depending on the type of compressor, size, state of maintenance, operating temperatures, etc. For this reason, we have always recommended that where the air is to be used for human consumption, a commercial filter cartridge for air supplied masks be incorporated in the supply line. I don't believe this is critical, but I think good industrial practice dictates that such a filter should be used regardless of the type of compressor fluid or lubricant. I am, of course, referring to a filter cartridge such as is available from MSA.

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A few months ago, Liberty Mutual industrial hygienists took some air samples from a compressor line in one of our plants, at our request. The equipment in question was a Joy Manufacturing Company compressor which had been operating on Pydraul AC for three years. During that time, the Pydraul had not been changed, but had been replenished as needed. It was assumed that the compressor was well cleaned at the time of the change-over and that three years of operation should be adequate to flush any petroleum oil from the line.

Filter paper and silica gel samples were collected and analyzed using a Beckman spectrophotometer after isooctane or isopropanol extraction. No concentrations of the major components of the fluid could be detected when the samples were compared with standards developed previously with known amounts of the components.

I do not consider this data as conclusive because of the limited number of samples and recognizing the differences in compressor operating conditions mentioned above. It does, however, substantiate our opinion somewhat. Further, in the three or more years that Pydraul AC has been used by a number of companies, we have never heard of any difficulties with it other than the unexpected amount of pain or smarting which results from accidental splashing or wiping of the fluid into the eyes. As enclosure number 3 indicates, the use of suitable eye drops or ointments helps alleviate this condition.

In regard to composition of Pydraul AC, I can only tell you that this is a phosphate ester base fluid containing chlorinated hydrocarbons.

Thank you for your Christmas greetings. I certainly hope that you had a pleasant Christmas and that the new year will be a very happy one.

Sincerely,

Elmer P. Wheeler
Assistant Director
Medical Department

EPW:dh
Enclosures 3

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TOXICITY OF PYDRAUL AC

In animal toxicity studies with Pydraul AC, the oral lethal dose in rats is approximately 40 grams per kilogram and for rabbits, 3.5 to 4.5 grams per kilogram. The greater sensitivity of rabbits is typical of this type of fluid. This lethal dose is of such an order, however, that the fluid may be considered only "slightly toxic" to man from the standpoint of accidental ingestion of single oral doses. The fluid may be absorbed through the unbroken skin of rabbits in doses resulting in death, but again the minimum lethal dose is such that accidental massive skin exposures to man do not present a hazard. Skin and eye irritation studies with rabbits would classify the fluid as a mild irritant. Laboratory animals survived six-hour exposures to an atmosphere saturated with the vapors of the fluid. On the basis of this data, it is concluded that Pydraul AC requires no special handling precautions other than avoiding prolonged or repeated skin contact. Accidental splashing in the eyes will result in moderately severe pain and irritation but no permanent damage should result. To relieve the irritation, physicians have used 1% pontocaine solution as well as ophthalmic cortisone acetate solution.

The material in this report is to be used in development of the product and may be given to responsible sales contacts, but it is not to be used by them in advertising copy. The source of this material is not to be divulged until it appears in formal publications. No exceptions to the established rule may be made without the approval of the Medical Department in St. Louis. Customers' inquiries regarding matters of toxicity are to be referred as before to the Medical Department in St. Louis for reply.

— Monsanto Chemical Company

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