cc: [illegible] Groninger-Pittsburgh, Pa.
Duke Smith - General Offices

February 21, 1963

Dr. P. J. Castelli
Medical Director
Universal-Cyclops Steel Corporation
Bridgeville Plant
Bridgeville, Pennsylvania

X-ref: All Pydrauls
Orig. filed: Pydraul 60

Dear Dr. Castelli:

Thank you for your letter of February 13 asking for information on our Pydraul synthetic fluids.

This series of formulated products represents a number of various compositions designed to meet specific physical qualifications depending on the intended use. We do have animal toxicity data on each of the fluids which we can make available.

In general, the oral lethal dose in rats varies from about 5 grams per kilogram to more than 30 grams per kilogram of body weight. In a more sensitive animal, the rabbit, the oral lethal dose varies from 3 to 10 grams per kilogram. Similarly when applied undiluted to the skin of rabbits, the minimum lethal dose following absorption, varies from 1 to 10 grams per kilogram of body weight.

In appropriate studies for skin and eye irritation potential, none of the fluids appear to be primary irritants. None of the components have a history of sensitization in humans. We do recommend that prolonged or repeated skin contact be avoided since these fluids are excellent solvents for the normally occurring fats and oils on the skin and prolonged exposure can lead to drying and cracking.

When the fluids are instilled undiluted into the eyes of rabbits and allowed to remain, the degree of irritation does not appear to be significant. On the other hand, we do know that when the fluid is accidentally splashed or wiped into the eyes of workmen, the degree of pain is out of proportion to the degree of irritation caused in the animals. Although a number of such accidents have occurred and have been reported to us, there has been no indication of any permanent damage to eye tissues. Such incidents have confirmed the animal work that no permanent eye injury would be expected as a result of such accidents.

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Our usual suggestion for treatment of accidental eye contact is pretty much the practice followed for any chemical that gets into the eyes. We recommend that the eyes be flushed with copious quantities of water for at least fifteen minutes. Subsequent medical treatment might include the use of anesthetic eye drops such as pontocaine and opthalmic cortisone drops or ointments which seems to speed up recovery of the irritated tissues.

The fluid, when handled at room temperature, presents no vapor inhalation hazards because of low volatility. Animal studies in which the fluid was allowed to contact heated metal surfaces up to 1200°F and thus thermally decomposed, indicated that such decomposition products were little if any more toxic than the smoke, vapors, fumes, etc. from thermal decomposition of petroleum hydraulic fluids.

In several instances where hydraulic lines have ruptured and sprayed fluid onto molten metal or other heated metal surfaces, clouds of smoke and vapors have resulted depending on how much fluid sprayed onto the metal. Such decomposition products are obnoxious and irritating to the degree that no workman will voluntarily subject himself to seriously toxic concentrations. In other words, no one has suffered any serious injury from exposures limited to the time necessary to shut down equipment and leave the area or don appropriate respiratory protective equipment. In no case has there been a flash of flame or serious fire which might have enveloped the workmen had a flammable fluid been in use.

Although I have not had any experience with any cases, I would expect that treatment of any workman who had inhaled the decomposition products would be symtomatic for the relief of respiratory tract irritation.

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

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