TOXICITY OF PYDRAUL FLUIDS

Pydraul F-9

There has been considerable toxicity research on Pydraul F-9. Attached is a discussion and interpretation of the toxicity studies. The results may be summarized in a briefer fashion as follows:

In the case of oral feedings, it was found that the minimum lethal dose for rats was 10.6 to 15.8 grams per kilogram of body weight. In rabbits, the oral MLD was 0.57 to 0.85 grams; in both cases the undiluted material was introduced into the animal stomach by means of a rubber tube catheter.

Pydraul F-9 was patch tested full strength according to the method of Schwartz and Peck, which is the standard test for industrial chemicals. Two hundred and five volunteers were tested and there was no evidence of primary skin irritation or sensitization.

Pydraul 625

The Oral LD_{50} of 34.3 grams per kilogram when tested with rats, and the Oral Minimum Lethal Dose of 3.25 to 5.00 grams per kilogram when tested with rabbits indicate that Pydraul 625 may be classed as "relatively harmless" to "slightly toxic" from the standpoint of oral ingestion. Potential irritation studies with rabbits show that it is only a mild irritant to skin and eyes. In acute vapor inhalation studies, rats survived a six-hour exposure to atmospheres saturated with vapors of the product. The above figures are lower than those obtained in studies with Pydraul F-9. This comparison is significant since Pydraul F-9 has been used since 1949 with no reports of skin irritation or other toxic effects.

Pydraul 150

The toxicity report on Pydraul 150 indicates that it is practically innocuous when fed orally to rats since the animals survived single doses of 28.5 grams per kilogram with loss of appetite and severe diarrhea as the only toxic effects. The fluid apparently is not absorbed through the unbroken skin of rabbits since this species survived doses up to 9.5 grams per kilogram of body weight. In rabbit skin and eye irritation studies, Pydraul 150 was no more irritating than a 10% soap solution tested similarly. As indicated with Pydraul F-9, however, Pydraul 150 will cause severe pain if there is accidental splashing in the eyes of humans. Rats survived a six-hour exposure to an atmosphere saturated with Pydraul 150 vapors.

Pydraul A-200

Our interpretation of the toxicity data obtained on this newer synthetic hydraulic fluid is that accidental ingestion is not a particular hazard in view of the high oral lethal dose (Oral LD50: 10,500 mg/kg). Similarly, single massive skin exposures should not be immediately hazardous (Skin MLD: 625 to 1,250 mg/kg). The lethal dose following skin penetration is such, however, that prolonged and repeated skin contact should be avoided. Such exposure must also be avoided to prevent skin irritation. We also feel that vapor inhalation should be avoided when the fluid is at elevated temperatures. Such exposure again relates to prolonged or repeated exposures rather than massive or acute exposure. In the case of the latter, workmen would probably not voluntarily subject themselves to concentrations that are hazardous for short periods.

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.