INTERPRETATION OF PYDRAUL TOXICITY STUDIES FOR DEUTSCHE SHELL

Pydraul F-9

There has been considerable toxicity research on Pydraul F-9. This has been summarized in our product bulletin and in the discussion and interpretation of the toxicity studies which have been forwarded previously to the subject company.

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 irrating than a 10% soap solution tested similarly. As indicated with Pydraul F-9 above, however, Pydraul 150 will cause severe pain if there is accidental splashing in the eyes of humans. Rats survived a 6-hour exposure to an atmosphere saturated with Pydraul 150 vapors.

Pydraul 600

The oral lethal dose for rats is approximately 30.5 grams per kilogram. When applied undiluted to the unbroken skin of rabbits the lethal dose was from 3.9 to 5.2 grams per kilogram. Animal skin and eye irritation studies indicated that Pydraul 600 is not a skin irritant. We know from experience with humans that accidental splashing in the eyes does cause severe pain but no permanent injury. Rats survived a 6-hour exposure to an atmosphere saturated with the vapors of Pydraul 600.

Pydraul AC

The oral lethal dose in rats is approximately 40 grams per kilogram and the minimum lethal dose by skin absorption (in rabbits) is 4.0 to 5.0 grams per kilogram. Rabbit skin and eye irritation studies indicate that Pydraul AC is not a serious irritant. Accidental contact with the eyes in the case of humans will result in irritation but no permanent damage. Rats survived a 6-hour exposure to an atmosphere saturated with vapors of Pydraul AC.

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General

The toxicity or toxicological properties of hydraulic fluids can be described only in relative terms. This is true of all industrial and pharmaceutical compounds. The lethal dose of a material may be quite specific in terms of a certain species of animal. However, generally such doses and the meaning of such doses cannot be interpreted on the same basis as a comparison of melting points, specific gravities or the physical or chemical properties.

We have indicated above the oral lethal dose for several of the Pydraul products. It may be of interest to mention further that the oral lethal dose for kerosene when given to rabbits has been reported as approximately 50.0 grams per kilogram of body weight. On the basis of such data one cannot say that kerosene is more or less toxic than hydraulic fluids or other petroleum products.

Experimental and practical use experience indicate that the Pydraul fluids can be used with no greater health hazards than with the petroleum fluids. Safe and satisfactory use experience with Pydraul F-9 now totals something more than 300 million hours of successful operation in various types of equipment during the six years that the fluid has been available. Never have there been any reports of injury with regard to any serious toxic effects. There have been numerous hydraulic system line breaks and other accidents which have resulted in worker exposures to Pydraul vapors and decomposition products when the fluid has sprayed on molten metal. As might be expected, voluminous clouds of vapor and decomposed material arise from the molten metal. These clouds are obnoxious and irritating. For this reason no worker voluntarily exposes himself for any significant length of time and in all cases it has been possible to shut down the necessary equipment and leave the area without any serious effects. (The decomposition studies referred to under Pydraul F-9 in the earlier correspondence indicated that decomposition products were of no greater toxicity than those from a petroleum fluid tested similarly).

The only significant hazard that we know of in connection with the use of the Pydraul fluids is the painful irritation which results if a workman has Pydraul fluid on his hands and wipes his eyes or if there is eye contact from any other accidental cause.

Medical Department

RPW:dh
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