

PYDRAUL

Hydraulics equipment with flammable petroleum oil as the working fluid began its real growth in the late 1920's and early 1930's because hydraulics were a lightweight, efficient and economical means of transferring power. As they came into wide use in industrial applications, where there were ample sources of ignition, many fires resulted. This created a need for a fire-resistant hydraulic fluid.

PCB's were first used as a hydraulic fluid in the mid-1930's by a major automotive company.

In general, the majority of industry did not follow this example and no real viable market developed for a number of years. In the late 1940's Monsanto began research to develop formulated fire resistant (FR) hydraulic fluids to meet the infant industry's needs. Pydraul F9, a PCB-containing fluid, was first introduced in about 1951. We used PCB as a component because of its excellent fire resistance and stability in hydraulic systems as well as its low cost.

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Because of the significant price differential between FR fluids and petroleum oil (\$2.50/\$5.00 versus \$.40/\$.50 for oil) the only markets for FR fluids are those where there is a significant danger of fire. In general, the major market is the metal working industry where white hot or molten metal is abundant and where a non-FR hydraulic leak can mean a fiery death and loss of plant.

In the early 1950's a major metal working company, using petroleum oils, lost three plants involving loss of life as well as property. Another company in the famed Lavonia fire lost their hydramatic transmission plant for the same reason. These incidents, plus substantial pushing by insurance companies and their approval by Underwriters and Factory Mutual, caused a major shift in industry's interest in FR fluids and signaled a significant growth in demand for these fluids.

In 1969 we realized that large quantities of uncontrolled PCB's entering the environment were a contaminant. We were aware that because of the high pressures (2,000 psi) and severe mechanical stress it

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was very difficult to contain hydraulic fluids. So in that same year we began a research program with the goals of formulating PCB's out of our FR hydraulic fluids without decreasing the fire resistance and performance our customers needed to protect their people and plant.

In February 1970 we began selling the first of the new fluid and discontinuing sale of some of the old PCB-containing products. In early 1971 the last of the reformulation work was completed and after March 31, 1971, no further PCB formulated fluids were produced. At this time all remaining miscellaneous stocks of PCB containing fluids have been either incinerated or are in line for incineration.

In summary, our PCB containing fluids were designed to provide U. S. industry with maximum safety from loss of life and property at minimum cost. They served this function well. We know of no loss of life or personal injury in over twenty years' use of these fluids and we know of many instances where loss of life and serious property damage most likely would have happened with other than FR fluids.

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