July 7, 1966

AIR MAIL

REFERENCE -- 734

Mr. Wesley M. Noble
Industrial Hygienist
San Francisco Bay Naval Shipyard
Vallejo, California 94592

Dear Mr. Noble:

This is in reply to your letter of June 30 requesting information as to the hazard of using phosphate ester fluids as a lubricant for air compressors. I am sorry that your earlier letter of May 9 must have gone astray.

I have had no experience with phosphate ester fluids per se as lubricant for air compressors. We have manufactured and sold a proprietary product, trade name (Pydraul AC) which is a phosphate ester base fluid containing chlorinated hydrocarbons. This fluid was introduced in 1954 and is described in the enclosed "Fact Finder" bulletin.

The question of carry-over of this lubricant in the compressed air stream has been raised on a number of occasions. Several years ago the industrial hygienists of Liberty Mutual Insurance Company took samples from a line downstream from the compressor in one of our own plants. The Pydraul AC had been used in the compressor for more than a period of three years at the time the samples were taken with only small volumes replenishing any losses as needed during that period.

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

We do not consider this data as conclusive because of the limited number of samples taken, and recognizing the differences in compressor design and operating conditions. For example, I believe the possibility of carry-over would depend on a number of factors including the type of compressor, maintenance procedures, degree of wear of compressor parts, cylinder wall temperatures and perhaps other factors.

From a practical and use standpoint, it would appear that there is little loss of lubricant through volatilization, leakage or

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decomposition during compressor use. Pydraul AC has been found to be very stable with essentially no need for replacement or addition because of losses.

In spite of the fact that we believe there is no serious hazard of carry-over, we have always recommended that a commercial filter cartridge for air supplied masks be incorporated in the compressor air line if the compressed air is to be used for air line masks, filling compressed air cylinders for breathing equipment, etc. My own opinion is that this is simply only good common sense and good industrial practice regardless of the type of compressor fluid or lubricant. As you know, compressed air lines can become fouled with moisture, rust or perhaps other contaminants without regard to the type of lubricant.

I am sorry for the delay in this reply to your earlier request.

Very truly yours,

Elmer P. Wheeler
Manager, Environmental Health
Medical Department

EPW:mjb