PPG INDUSTRIES

INTER-OFFICE CORRESPONDENCE

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To: Dr. F. C. Dehn

Location: 10 West

Subject: Discussion with Dr. Tamburro

VCM

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I talked at length with Dr. Carlo Tamburro at the University of Louisville on August 18 at the suggestion of Dr. M. Johnson, Medical Director of B. F. Goodrich. Dr. Tamburro is working closely with Dr. Creech (plant physician at BFG in Louisville). I was interested in the latest findings of the predictability of the liver function tests (enzyme tests) with relationship to liver disease, and more specifically, angiosarcoma of the liver. I was also interested in their program for handling employees whose tests are found to be abnormal.

Among the things he related was the categorization of the sensitivity versus specificity of the various enzyme and liver tests. He said the ECG clearance was most sensitive, followed by SGPT, SGOT, alkaline phosphatase, GGTP, bilirubin, and liver-spleen scan. LDH was neither sensitive nor specific.

As far as the specificity for tumor (tissue mass liver), he rated the liver-spleen scan first; SGPT combined with alkaline phosphatase, second; SGOT combined with alkaline phosphatase, a close second; and alkaline phosphatase, third.

Dr. Tamburro said that if both SGPT and alkaline phosphatase were abnormal, they would perform the ECG clearance and liver-spleen scan. Depending upon the results of these tests, a liver biopsy might be done. A high, persistent alkaline phosphatase almost always means trouble, but the cause may not be occupationally-related.

The GGTP is not very reliable since experience shows a large number of false-positives. Extensive false-positives (which result in removal from the job) may mean declaring the employee biochemically disabled; that is, a person whose blood chemistry may be slightly abnormal and yet who has no symptoms of ill health may be deprived of his livelihood.

BFG in Louisville permits employees to continue work in vinyl chloride until a liver biopsy is performed. At present, there are 25 to 30 such workers who have been restricted. If they used the abnormal enzyme criteria for removal, about 160 workers would be affected. They have learned through experience that some of the original histologies showed portal fibrosis which was attributed to VCM. Further work and better characterization of early lesions would indicate that portal fibrosis cases would not be attributed to vinyl chloride exposure, but to another chemical such as carbon tetrachloride. Based on more data, the proliferation of hepatocytes in the biopsy liver specimen may represent early vinyl chloride changes.

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In a hypothetical situation for workers with under ten years of exposure to vinyl chloride, I asked whether it was reasonable to repeat the blood chemistries more than twice before a decision was made to remove a man from further exposure. If it was assumed that the patient was asymptomatic and he had no enlarged liver, Dr. Tamburro would not remove the man from exposure under the above-stated conditions. There is more medical risk involved in returning an employee to work without determining the cause of one abnormal enzyme than there is in deciding to keep the man on the job while performing more routine blood tests. They have found abnormal enzyme values in 50 percent of the workers.

Further, constituting a person biochemically incapacitated may have psychological and social ramifications. It may also impact upon his future employment possibilities, especially if his current employment is terminated for any of a variety of reasons.

Dr. Tamburro hopes to have another workshop in December, and an announcement will be sent to us.

Zeb G. Bell, Jr.

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