

PERSISTENT LIVER DYSFUNCTION AMONG WORKERS AT A
VINYL CHLORIDE MONOMER POLYMERIZATION PLANT.

Comment on a paper in J.Soc.Occup.Med. (1991)41,10-16 by S.F.Ho,
W.H.Phoon,S.L.Gan and YK Chan.

This paper describes findings in a VCM Polymer Plant in Singapore. The plant was set up in the early 1970's, around the time that the industrial hazards of vinyl chloride were being recognised. As such, exposure levels should have been low from earlier on. The paper describes atmospheric levels in the plant by acceptable techniques and also the working practices in the plant. In addition a medical surveillance programme is described. Basically this consists of serial so-called liver function tests, consisting of bilirubin and hepatic enzymes. Repeated abnormalities in these tests were followed by a work-up, including investigations designed to detect liver disease. Before describing and commenting on the findings it should be noted that several previous screening programmes have detected these minor abnormalities which have not been related to the concomitant or subsequent discovery of significant liver disease in the form of fibrosis and/or angiosarcoma in these subjects. I will confine my comments to the medical part of the report.

1. The incidence of liver function abnormality as defined in the study is 4.8% in vinyl chloride workers. Unfortunately the extent of the abnormalities is not stated but this incidence is not far from findings in screened workers in similar studies in VCM producing

factories elsewhere in the world. However unfortunately there are no controls in the present report. There are studies in which similar abnormalities were found in comparable populations of controls. Apart from the two cases of hyper-bilirubinaemia the author suggests that the abnormalities detected are mainly due to vinyl chloride. This suggestion is based on observed fluctuations in the tests in relation to vinyl chloride exposure. No case of liver disease was discovered in these workers over a period of observation lasting several years.

Isotope Scans

The reporting of hepatosplenomegaly on the grounds of a 2cm increase in size cannot be assessed for significance. There is not enough extra information about these cases to know whether the splenomegaly in particular is significant.

Liver biopsy findings

The changes reported are not typical of those described in early vinyl chloride induced liver damage. This point is inescapable and the unusual suggestion is made in the discussion that the reporting Pathologist may have made a mistake in the diagnosis!!

SUMMARY

This study describes changes, presumably minor, in hepatic enzyme tests. Fluctuations are described in relation to vinyl chloride exposure. No case of vinyl chloride induced liver disease, or indeed any other significant disease, became apparent during the several years of the study. There are no controls.

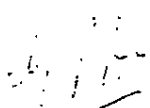
Comments about the possibility of subsequent development of angiosarcoma are purely speculative and would not conform with

several previous studies in which these minor changes have been found without concurrent or subsequent evidence of angiosarcoma. Three interpretations are therefore possible.

1. The low exposure levels in the atmosphere as described are correct and that the liver function tests fluctuations are a previous unreported abnormality in association to this exposure.
2. Abnormal findings are not related to vinyl chloride exposure.
3. There were unrecognised defects in the industrial hygiene of the factory resulting in much higher exposures to vinyl chloride by the workers than is suspected.

OPINION

My opinion is that the changes are not likely to be due to vinyl chloride exposure and not predictive of future liver disease, either in relation to vinyl chloride exposure or other significant pathology.


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