

SOME DATA ON TOXIC OR MAXIMUM ALLOWABLE CONCENTRATIONS OF CARBON DISULPHIDE

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Artificial silk is made by the viscose process in Hungary. Systematic air analyses and medical surveys have been carried out in a viscose rayon factory for the purpose of studying the maximum allowable or toxic concentration of carbon disulphide. In view of the fact that widely varying concentrations may give misleading results, we have not drawn any conclusions from the investigation of persons working in the churn-room or in any other places of work apart from the silk spinnery. In this latter place the average exposure was 54.0 mg/m^3 with a standard deviation ± 7.0 , and a concentration of carbon disulphide of about $100 \text{ } \mu\text{g}/100 \text{ ml.}$ was found in the blood of the workers. It was of great interest to ascertain whether persons working for a long time in such relatively low air concentrations would show any signs of the effect of carbon disulphide. In view of the fact that the carbon disulphide also has a vasculotropic effect, a short-term exposure does not allow any conclusions to be drawn about the lowest toxic concentration. Naturally our examinations, and our conclusions, were limited. We were able to examine only the effect of concentrations of $47\text{--}61 \text{ mg/m}^3$ on workers exposed for 5–12 years.

Our neurological consultant, Dr Szobor, examined 20 persons who had been subjected to such exposures. Out of these 20 persons 6 showed signs of mild or moderate vascular encephalopathy. According to Attinger and Vigliani, this disorder can be directly related to exposure to carbon disulphide. Vasovegetative neurosis associated with increased tendon reflexes and static tremor was diagnosed in 9 persons, incipient hypertony without other symptoms in 2, pseudoneurasthenic syndrome in 1, atherosclerotic manifestation with chronic alcoholism in 1, and negative neurological status only in one of the 20 persons examined. We saw hypertony in 5 persons. We do not want to discuss, however, the connection between the exposure to carbon disulphide and the vasovegetative neurosis associated with other neurological symptoms, but it should be noted that Dr Szobor found this disorder in many other people exposed to carbon disulphide. The great number of the neurological disorders and especially the 6 cases of encephalopathy demonstrate the toxic effect of exposure to about 50 mg/m^3 carbon disulphide. The toxic origin of encephalopathy is also demonstrated by the fact that out of these 6 persons, 4 are 31, 32, 34 or 38 years of age.

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In addition to carrying out the neurological examination we determined the serum proteins by the method of Grassman and Hannig, and the polarographic serum reaction by Brdicka's procedure. A growing proportion of α -globulin fractions and a greater height of the polarographic filtrate wave were found in 11 out of 20 persons. These laboratory results seem to confirm the conclusion drawn from the neurological examinations: namely that, as a result of continuous exposure to carbon disulphide concentration as low as about 50 mg/m^3 , chronic poisoning can be expected to appear after five years, exposure.

The maximum allowable concentration cannot be deduced from our investigations but it is certainly less than 50 mg/m^3 . In view of this we have suggested that the exhaust system be improved and the daily working-time shortened to six hours.