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SOLVENTS FOR CLEANING

Two of the more common solvents to be seen in laboratories and elsewhere are BENZENE* and CARBON TETRACHLORIDE. Whilst there may be occasions when the use of these particular solvents is essential, they should on no account be used as 'general purpose' cleaners and degreasers other than under carefully controlled conditions. Both are serious systemic poisons which can enter the body as a result of inhalation or of absorption through the intact skin. Both for Benzene and Carbon Tetrachloride, the allowable concentrations of vapour in breathing air are so low as to be undetectable by smell. In addition, Benzene is highly flammable.

TRICHLOROETHYLENE is not recommended as a substitute, again on grounds of toxicity. If a non-flammable chlorinated Hydrocarbon is essential, 1, 1, 1-Trichloroethane (Methyl Chloroform) may prove to be an acceptable substitute, although some commercial grades are known to disfigure the surface of aluminium and its alloys. It is listed in the A.E.R.E. Stores Catalogue as 14/26815, the grade at present stocked being I.C.I. "Genklene". Although this is a cheap, low-toxicity solvent, it should be borne in mind that in contact with hot metals, chlorinated hydrocarbon - air mixtures can lead to the production of Phosgene, a highly poisonous gas.

Low-toxicity but flammable non-chlorinated solvents include Kerosene (1-7/0830) and White Spirit (1-7/0357), as well as a range of petroleum spirits listed in Section 14 of the catalogue. If it is essential to use an aromatic hydrocarbon as a solvent, Toluene (14/26715) or Xylene (14/27540) may be acceptable, although it must be remembered that besides being flammable, their toxicity is not as low as the other alternatives suggested.

All the solvents described, and many others besides, share the property of easily removing fat from the skin. Repeated contact can lead to dermatitis, "one of the principal causes of disablement from industrial disease"(1). In addition, many volatile solvents have a narcotic action. That is to say that inhalation of high concentrations of the vapour may produce drowsiness or unconsciousness. Death can follow if the exposure is not terminated.

Further information regarding solvent toxicity may be obtained from the Occupational Hygiene Section, Health Physics and Medical Division, Room 1.78, Bldg. 364, Tel. 4142.

Reference

(1) Annual Report of the Chief Inspector of Factories on Industrial Health, 1962, p. 14 (H.M.S.O.).

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*Sometimes called "Benzole" in impure form, and not to be confused with "Benzine", which is another name for Petroleum Spirit.