Chlorinated hydrocarbons

Substance	Hazard	Comment
Dichloromethane (Methylene dichloride) *liquid*	HEALTH HAZARD; IRRITANT	DANGER: suspected of causing cancer; causes skin & serious eye irritation; may cause respiratory irritation, drowsiness or dizziness and damage to organs through prolonged or repeated exposure. It is used in some paint strippers. For a 15-minute exposure, the concentration in the atmosphere should not exceed 706 mg m^{-3}.
Trichloromethane (Chloroform) *liquid*	TOXIC; HEALTH HAZARD	DANGER: harmful if swallowed; causes skin & serious eye irritation; toxic if inhaled; may cause drowsiness or dizziness; suspected of causing cancer and of damaging the unborn child; causes damage to organs through prolonged or repeated exposure. For a 15-minute exposure, the concentration in the atmosphere should not exceed 30 mg m^{-3}. Used in the past as an anaesthetic.
Tetrachloromethane (Carbon tetrachloride) *liquid*	TOXIC; HEALTH HAZARD	DANGER: toxic if swallowed, inhaled or in contact with skin; may cause allergic skin reaction; suspected of causing cancer; causes damage to organs through prolonged or repeated exposure; harmful to aquatic life with long-lasting effects; harms public health & the environment by destroying ozone in the upper atmosphere. For a 15-minute exposure, the concentration in the atmosphere should not exceed 32 mg m^{-3}. It can no longer be legally bought and existing stocks should not be used in work with open test tubes.
1,1,1-trichloroethane (Methyl chloroform) *liquid*	HARMFUL	WARNING: harmful if inhaled; causes skin and serious eye irritation; harms public health & the environment by destroying ozone in the upper atmosphere. For a 15-minute exposure, the concentration in the atmosphere should not exceed 1110 mg m^{-3}. It can no longer be legally bought; existing stocks should not be used in work with open test tubes.
Tetrachloroethene (tetrachloroethylene) ***liquid***	HEALTH HAZARD; ENVIRON. HAZARD	WARNING: suspected of causing cancer; toxic to aquatic life with long-lasting effects; may cause skin and serious eye irritation. Used in dry cleaning. For 15-minute exposure, concentration in atmosphere should not exceed 275 mg m^{-3}.
Trichloroethene (Trichloroethylene) *liquid*	HEALTH HAZARD; IRRITANT	DANGER: causes skin and serious eye irritation; may cause cancer, drowsiness or dizziness; suspected of causing genetic defects; harmful to aquatic life with long-lasting effects. For a 15-minute exposure, the concentration in the atmosphere should not exceed 820 mg m^{-3}. It was used in dry cleaning but has been replaced by tetrachloroethene.

Typical control measures to reduce risk

- Use the smallest volume possible and wear suitable eye protection. Many now have restricted uses as they are known Ozone layer depleting agents Use a fume cupboard for anything larger than test-tube amounts; ensure good laboratory ventilation.
- When choosing a solvent, pick the safest one with suitable properties - cyclohexane, Volasils or Lotoxane are safer than chlorinated hydrocarbons and usually work satisfactorily.

Assessing the risks

- What are the details of the activity to be undertaken? What are the hazards?
- What is the chance of something going wrong?
- How serious would it be if something did go wrong?
- How can the risk(s) be controlled for this activity?
  eg can it be done safely? Does the procedure need to be altered? Should goggles or safety spectacles be worn?

Emergency action

In all emergency situations, alert the responsible adult immediately. Be aware that actions may include the following:

- In the eye — Irrigate the eye with gently-running tap water for at least 20 minutes. Call 999/111.
- Vapour breathed in — Remove the casualty to fresh air. Call 999/111.
- In the mouth/swallowed — Do no more than rinse and spit with drinking water. Do **not** induce vomiting. Call 999/111.
- Spilt on the skin or clothing — Remove contaminated clothing. Wash the skin with soap and water. Take contaminated clothing outside for the solvent to evaporate.
- Spilt on the floor, bench, etc — Open windows if large amounts are spilt. Consider the need to evacuate for large spills. Cover with mineral absorbent (eg cat litter) and scoop into a bucket. Add washing-up liquid and work into an emulsion. Wash to waste with plenty of water.

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