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Workplace air — Determination of vaporous chlorinated hydrocarbons — Charcoal tube/solvent desorption/gas chromatographic method

Air des lieux de travail — Détermination des hydrocarbures chlorés vaporeux — Méthode d'analyse par tube à charbon actif/désorption des solvants/chromatographie en phase gazeuse

Reference number
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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 9486 was prepared by Technical Committee ISO/TC 146, *Air quality*, Sub-Committee SC 2, *Workplace atmospheres*.

Annexes A, B and C form an integral part of this International Standard. Annex D is for information only.

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Workplace air — Determination of vaporous chlorinated hydrocarbons — Charcoal tube/solvent desorption/gas chromatographic method

1 Scope

This International Standard specifies a charcoal tube/gas chromatographic method for the determination of the concentration of vaporous chlorinated hydrocarbons in workplace air.

The method is valid for the measurement of the concentrations of airborne vapours of any of the following compounds:

a) dichloromethane;

b) chloroform;

c) carbon tetrachloride;

d) 1,1-dichloroethane;

e) 1,2-dichloroethane;

f) 1,1-dichloroethene;

g) 1,2-dichloroethene;

h) 1,1,1-trichloroethane;

i) 1,1,2-trichloroethane;

j) trichloroethene;

k) 1,1,2,2-tetrachloroethane;

l) tetrachloroethene;

m) 1,2-dichloropropane;

n) chlorobenzene;

o) *o*-dichlorobenzene.

The method is valid for concentrations of airborne vapours of these compounds in the range from approximately 1 mg/m^3 to 1 000 mg/m^3 (about 0,2 ml/m^3 to 200 ml/m^3; see 8.1) when sampling 10 litres of air.

NOTE 1 The upper limit of the useful range is set by the adsorptive capacity of the first section of the charcoal tube (5.1) used. This capacity is measured as a breakthrough volume of air, which should not be exceeded during sampling (see clause 6 and annex A).

The lower limit is set by a number of parameters, including the noise level of the detector (5.9), blank concentrations due to the contamination of the charcoal tube and carbon disulfide by the substance analysed, desorption efficiency (see annex B) and interference of the solvent peak in the gas chromatographic analysis.

The method is also valid for the measurement of airborne concentrations of mixtures of these compounds. In such cases, the unique properties of each compound have to be considered when determining the volume of air to be sampled and the gas chromatographic conditions to be used.

NOTE 2 When analysing chlorinated hydrocarbon mixtures with very large differences in concentrations and in which several compounds are present, the reproducibility and repeatability of the compounds of minor importance might be influenced.

The method has been validated for a selection of typical chlorinated hydrocarbons[1].

This procedure is compatible with low flow rate personal sampling equipment, and can be used for personal and fixed location sampling for obtaining time-weighted-average concentrations of chlorinated hydrocarbon solvent vapours in air. It cannot be used to measure instantaneous or short-term fluctuations in concentrations. Alternative on-site procedures, such as gas chromatography or infrared spectrometry, shall be used to measure rapidly changing concentrations.