

METHOD STATEMENT

**Determinand:**

Mineral oil identification

Matrix:

Sample Type: Mineral oils, wastewaters and mineral oil/ wastewater mixtures.

Principle of Method:

Any mineral oil present is dissolved into dichloromethane. The dichloromethane solution is analysed by capillary gas chromatography with mass spectrometry.

The chromatogram obtained is visually compared with chromatograms of known oil types obtained under the same gas chromatographic conditions.

Sampling and Sample Preparation:

All samples are stored in the cold room between $3\pm 2^{\circ}\text{C}$ and are analysed as soon as possible after receipt.

Interferences

The instrument is operated in scan mode, this is used to generate a chromatogram which is then used to visually compare against the reference chromatograms which have been produced by analysing known reference standards using the same instrument parameters.

A benefit of using the scan function of the GCMS is that the instrument can be used to detect and identify compounds by retention time and presence of ions resulting in a mass spectra characteristic to one compound that are not characteristic of typical hydrocarbon profiles.

These unknown peaks in the final chromatogram are identified by the library searching of mass spectra obtained against a standard NIST library containing 98,000 spectra.

Therefore, each peak obtained can be identified providing the mass spectrum of that peak is in the NIST library or a target compound in the standard.

It must be noted that when two or more compounds co-elute, their mass spectra will be distorted by one another. In this instance identification of each compound is difficult.

Performance of Method:

This is a qualitative method and therefore no performance characteristics are available.

References:

Singer, M.E. & Finnerty, W.R. - "Microbial Metabolism of Straight-Chain and Branched Alkanes" - Petroleum Microbiology, R. Atlas (ED) pp 1-60 (1984).