



Method Summary

Determination of WHO12 and EC7 Polychlorinated Biphenyl Congeners by GC-MS in Waters

Scope and Range

Polychlorinated biphenyls (PCBs) are a mixture of up to 209 different chlorinated biphenyl isomers (i.e. isomers exhibiting different numbers of chlorine atoms). The physio-chemical properties of PCBs such as stability and excellent dielectric strength make them suitable for use as transformer oils, dielectric fluids, hydraulic fluids and flame retardants.

Production of PCBs is now banned due to the mammalian toxicity of this class of compounds and their environmental persistence. 12 of the PCB congeners targeted in this method are considered by the World Health Organisation (WHO) to be 'dioxin-like' due to their toxicity and certain features of their structure, thus pose a greater risk to human health than other congeners such as those included in the EC7 suite which are considered to be the most prevalent in the environment by the Environmental Protection Agency.

This method is used to analyse for 18 individual PCB congeners in water and leachates.

The linear range for the method is LOR to 12.5 µg/L.

References

EPA Method 8082, Polychlorinated Biphenyls by Gas Chromatography

EA Method 174, The determination of organochlorine pesticides and polychlorinated biphenyls in waters and complex matrices (2003)

EA Method 5109631, The determination of polychlorinated biphenyls by gas chromatography using mass spectrometric detection (2003)

Principle

Preparation and Extraction:

Samples should be collected in glass containers and kept cool during transit. Samples are extracted using liquid/liquid extraction.

Analysis:

Samples are analysed by GC-MS using Selective Ion Monitoring (SIM).

Interferences

By using GC-MS in SIM there are few significant interferences.