



Method Summary

Determination of Phenols in Waters and Leachates by HPLC

Scope and Range

This method is suitable for the determination of: - 1-naphthol, 2-isopropylphenol, 2,3,5-trimethylphenol, catechol, cresols (methylphenols), phenol, resorcinol and, xylenols (dimethylphenols).

Phenol, cresols and xylenols are ISO17025 accredited for landfill leachates, untreated sewage, treated sewage effluent, trade effluent and groundwater as is the calculation of the three compounds, total monohydric phenols.

2-isopropylphenol and 2,3,5-trimethylphenol are ISO17025 accredited for landfill leachates treated sewage effluent, trade effluent and groundwater. Total speciated phenols is the sum of total monohydric phenols, 2-isopropylphenol and 2,3,5-trimethylphenol and is accredited to ISO17025 for these matrices. 1-naphthol, resorcinol and catechol, as well as NG speciated phenols which is the sum of all listed compounds are unaccredited.

The detection limit for waters is 0.016mg/l for total monohydric phenols.

References

National Grid Property Holdings Methods for the Collection and Analysis of Samples from National Grid Sites version 1 section 3.9

Principle

An aliquot of filtered sample is injected onto a liquid chromatography column, where it is separated by reverse phase HPLC. The separated compounds are carried past an electrochemical detector with the flow of eluent through the system. The detector senses a change in conductivity as each of the compounds passes it. This change in conductivity is recorded and when plotted over time gives a peak for each compound. Each compound peak is integrated to find the area beneath it and a result is obtained by comparison to a set of standards of known concentration.

Groups of compounds, such as the 3 cresol isomers or the 6 xylene isomers partially co-elute and are therefore only available as group results and not as individual isomers.

Interferences

Hydrocarbons in waters samples may interfere with the chromatography due to the leaching properties of the methanol/deionised water extractant, a dilution will be applied to these samples. Ethylphenols can elute at a similar time to the methyl phenols or dimethylphenols. Samples with high background conductivity may also interfere with the detector. If there is severe interference shown in the chromatogram, the samples should be analysed by alternative methods such as Phenols by GCMS.