Method Summary

Determination of Hexavalent Chromium in soils

Scope and Range

This method can be used to determine hexavalent chromium in soil and sewage sludge samples using the discrete colorimetric analyser.
The method is accredited to ISO 17025 and MCERTS for soils and ISO17025 for sewage sludges.

Detection limit: 0.6 mg/kg

Range: 0 – 10 mg/kg

References

Standard Methods for the Examination of Water and Wastewater. 20th Edition. 1998
Methods for the Examination of Waters and Associated Materials; Chromium in Raw and Potable Waters and Sewage Effluents 1980.

Principle

Soils are extracted using a 10:1 ratio of as received soil to 0.2M NaOH. Highly coloured extractants are treated with activated carbon/charcoal to remove colouration.

Hexavalent chromium reacts with diphenylcarbazide in acid solution to produce a red/violet coloured complex which is read photometrically at 540nm.

Interferences

Hexavalent chromium may be remediated from soils by treatment using calcium polysulphide. This compound is a bright orange/yellow colour and may be mistaken as indicating a high concentration of hexavalent chromium. In addition, the presence of the compound causes a precipitation to occur when the acidic colour reagent is added, resulting in a falsely positive result. As a result of this, soils or groundwaters which are known to, or are suspected to contain calcium polysulphide are **not suitable** for analysis using this method without pre-treatment.