



Taste and Odour Analysis

The distributors of drinking water (including spring and mineral waters) can now identify the potential source of discernible tastes and provide a product that is aesthetically desirable to consumers.



In recent years customer complaints regarding taste or odour with drinking water have been on the increase. Taste and odour analysis enables the distributors of drinking water (including spring and mineral waters) to identify the potential source of discernible tastes and provide a product that is aesthetically desirable to consumers. The challenge for the suppliers of drinking water is to provide a palatable product that also meets drinking water guidelines and standards.

SENSORY ANALYSIS

The AWQC has been conducting flavour profile analysis and taste assessment of water extracts according to AS/NZS 4020 since 1997. The AWQC has a number of trained panellists that are provided with regular training as described in FPA-2170 (Twentieth Edition of Standard Methods for the Examination of Water and Wastewater).

Flavour profile analysis is performed by taste and odour assessment. This assessment provides a qualitative classification and a semi-quantitative determination of both taste and odour intensity.

TASTE - Can be applied to drinking water free from bacterial, viral and toxic substances.

ODOUR – Can be applied to raw and treated drinking water.

ANALYTICAL TECHNIQUES FOR THE CHARACTERISATION OF TASTE AND ODOUR

The Centre offers a number of analytical techniques for the characterisation of tastes and odours and other organics in a variety of waters.

The Centre has two Gas Chromatograph/Mass Spectrometer (GC/MS) systems that are dedicated to the analysis of taste and odour compounds in water. Compounds such as 2-methylisoborneol (MIB) and geosmin, which are responsible for the earthy/musty and earthy/grassy odours in water, are determined by Closed Loop Stripping Analysis (CLSA) coupled with gas chromatography-mass spectrometry.

This method has been developed to provide very precise and accurate quantitation of these compounds to 1 nanogram per litre (ng/L or 1 ppt), which is well below the human odour threshold for these compounds. 2,4,6-trichloroanisole or TCA, responsible for musty/ "wet sacks" odours is also analysed in a similar manner to 0.2 ng/L.

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15 FEBRUARY 2009

Solid Phase MicroExtraction (SPME) – GC/MS is an alternative technique that provides a more rapid turnaround time for the analysis of MIB, geosmin and TCA. Reporting limits from this method are 4 ng/L and 2 ng/L for MIB and geosmin, respectively and 0.2 ng/L TCA.

Other compounds quantitatively analysed include b-cyclocitral, dimethyl disulphide and trisulphide, as well as halogenated phenolics and aldehydes known to impart off-flavours to water. The above methods are readily extended for complete screening of other odorous compounds, which may be present in water. In addition, the AWQC is able to offer full scan GC/MS analysis for the identification of other odorous compounds.

The AWQC has extensive expertise (more than 20 years experience) in the area of taste and odour analysis by GC/MS. It has provided service to the water industry in the determination of sources of taste and odours in a wide variety of water types (covering raw, potable, spring/bottled and waters involved in processing of food). The AWQC also provides analysis to determine the identity and source of compounds leached from various materials in contact with water, a service which complements the standard product testing.

The AWQC holds NATA accreditation for the analysis of MIB, geosmin and TCA by both CLSA-GC/MS and SPME-GC/MS.



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