METHOD STATEMENT

Determinand:
Determination of Bromate

Matrix:
Sample Types: Raw, Potable, Surface and Ground Waters.

Principle of Method:
This method uses Metrohm Compact IC Pro and associated accessories.
Detection of Bromate is obtained by applying an acidic solution of potassium iodide containing a catalytic amount of molybdenum (VI) where the bromate reacts with iodide to form tri-iodide ions in a post column reaction (PCR) step. The tri-iodide is then measured by UV detection at 352nm. The amount of tri-iodide is directly proportional to the quantity of bromate in the sample.

Interferences:
Any peak that co-elutes at the same time as Bromate.

Performance of the Method:

Range of Application:

LOD - 20 µg/l BrO_3

The analytical range may be extended by sample dilution. Samples with a concentration higher than that of the top standard of 20 µg/l should be diluted with deionised (Milli-Q) water.

Reporting Limit is 0.1 µg/l BrO_3

Limit of Detection

0.0319 µg/l BrO_3

Recoveries of Compounds and Uncertainty of measurement:

Sample type	Mean sample result (µg/l)	Mean sample spike result (µg/l)	Conc. of spike (µg/l)	Spike recovery (%)	Bias (%)	% Uncertainty
Soft- Langsett	0.002	10.190	10	101.9	-	±5.39
Medium- Coventry	1.189	10.042	8.6	102.9	-	±6.12
Hard- Elvington	0.316	10.177	9.6	102.7	-	±5.05
Borehole - Cowick	0.000	9.494	10	94.9	-	±8.00
Raw-Derwent / Elvington	0.0002	10.222	10	102.2	-	±4.78
Bottle water - Strathmore	0.000	9.938	10	99.4	-	±4.68
Bristol- Littleton (hard)	2.459	10.385	7.6	104.3	-	±7.90
Spiked LOD sample	-	0.524	0.5	-	-	±14.4
4 µg/l Std	3.985	-	-	-	-0.38	±3.16
16 µg/l Std	16.021	-	-	-	0.13	±1.67

References:
Metrohm user's instruction guides.

Metrohm Application Setup - Analysis of bromate in water samples
15.3 Water Quality-Sampling-Part 3: Guidance on the Preservation and Handling of Water Samples. BS EN ISO 5667-3-2003, Page 14.