METHOD STATEMENT

Determinand:
Determination of Bromate

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

Principle of Method:
This method uses Thermo Scientific Integrion 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.

Sampling and Sample Preparation:
Samples are normally collected in 250 ml or 300 ml amber glass bottles.
No special preservation is required
If analysis cannot be immediately undertaken, samples should be stored at a temperature of 1 - 5°C until the day of analysis. Samples should be warmed up to room temperature prior to analysis and analysed within 31 days of the sampling date.

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

Performance of Method:

Range of Application:
LOQ - 20 µg/l BrO_3
The analytical ranges may be extended by sample dilution with deionised (Milli-Q) water.
Reporting Limit is 0.069 µg/l BrO_3

Limit of Quantification:
0.0686 µg/l BrO_3

Recoveries of Compounds, Bias 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	0.6237	10.3701	10.0	101.30		± 1.56
Medium- Tophill Low	0.6237	10.6465	10.0	100.23		± 0.78
Hard- Purton (Bristol)	1.5040	11.5053	10.0	100.01		± 0.98
Borehole – Goose House BH2	0.0049	10.0709	10.0	100.66		± 1.00
Raw-(Surface) Derwent at Elvington	0.8725	10.8926	10.0	100.20		± 1.00
Bottle water - Strathmore	0.0049	10.0371	10.0	100.32		± 0.80
Spiked LOD sample	-	0.5059	0.5		1.19	
4 µg/l Std	-	4.0249	4.00		0.62	

Sample type	Mean sample result (µg/l)	Mean sample spike result (µg/l)	Conc. of spike (µg/l)	Spike recovery (%)	Bias (%)	% uncertainty
16 µg/l Std	-	16.3419	16		2.14	

References:

Thermo Scientific Integrion user's instruction guides
Thermo scientific (Dionex) Technical Note 116 - Determination of Bromate by ISO Method 11206