

METHOD STATEMENT

Determinand:

Polyoxyethylene non-ionic detergents

Matrix:

Final effluents, groundwaters and crude sewage

Principle of Method:

When iodine reagent is added to solutions containing Polyoxyethylene non-ionic detergents, a brown coloured colloid is formed, the intensity of which varies according to the concentration of non-ionic detergent contained in the solution. The absorbance of the brown coloured solution is then measured by spectrophotometer at a wavelength of 480 nm. Concentrations of detergent can be calculated by comparing the absorbance of unknowns with the absorbance values obtained from known concentrations of Triton X100. Measurements are corrected for sample colour and turbidity.

Sampling and Sample Preparation:

Polyoxyethylene non-ionic detergents (NIDs) consist of a range of different chemicals that are degraded by bacterial activity at varying rates. Consequently, NIDs should be analysed as soon as possible to minimise losses. As detergents are water soluble, samples may be filtered when necessary, prior to analysis using 0.45um filters to remove particulate matter. Upon shaking, if sample appears to be foamy then analysis should be run on a x10 dilution straight away.

Interferences:

Colour and turbidity within the samples may give a false indication of detergents if not corrected for.

Performance of Method:

Range of Application: 2 - 25mg/l
 Limit of Detection: 1.05 mg/l
 Normal Reporting Level: 2 mg/l

Determinand	Low standard		High standard	
	% RSD	% Bias	% RSD	% Bias
NIDS	10.10	6.85	2.55	2.70

Determinand	Final Effluent		Crude		Groundwater	
	RSD %	Rec. %	RSD %	Rec. %	RSD %	Rec. %
NIDS	3.22	108.77	4.70	109.03	10.57	96.55

Uncertainty of Measurement

The reported uncertainty is an expanded uncertainty calculated using a coverage factor of 2, which gives a level of confidence of approximately 95%.

Determinand	Uncertainty of Measurement (%)
NIDS	17.79

References:

In house method based upon Iodophor formation

