METHOD STATEMENT

Determinand:
Non-Targeted (Unknown) Volatile and semi Volatile organic compounds analysed by De-convolution software and identified by library search with Semi-quantified concentrations calculated relative to an internal standard response.
Target compound concentrations quoted are based on the comparison of responses between the organic compounds detected in the sample and the concentration of that compound in the extracted standard, and also the internal standard concentrations in both the sample and standards

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

Principle of Method:
The water sample is placed in a septum vial and allowed to equilibrate with its headspace vapour at 60°C. A sample of the vapour is injected using an automatic headspace sampler into a capillary column gas chromatograph (GC), the volatile organic compounds are separated and then identified and quantified with mass spectrometric detection (MSD) in combined selected ion monitoring and scan (SIM + Scan) mode.

Sampling and Sample Preparation:
Amber sampling vials are prepared prior to sending to samplers by the addition of 100µl of Sodium Thiosulphate solution as specified in the sampling manual.
The vial is slowly and completely filled to exclude headspace in order to avoid loss of volatile determinands. When the water just begins to overflow the vial it is capped with the PTFE face of the septum in contact with the sample.
Storage – samples should be analysed as soon as possible after collection. When this is not possible they should be stored under refrigeration at 3 ± 2°C, until analysis can begin. The sample vials are checked for headspace prior to analysis and vials with significant headspace, >10% of the vial, are noted on the extraction log and an appropriate analyst's comment must be assigned to the sample when entering the sample results both onto the worksheet and onto the LaBS database

Interferences
Any compound, which passes through the extraction procedure, and has similar Gas Chromatographic and mass spectrometric properties to the analyte will cause interference. No bottles of reference materials are to be opened, and no stock, intermediate or spiking solution preparation is to be carried out in the VOC Laboratory, Wakefield Room 8

Performance of Method:

Range of Application:
Operational Calibration Range of LOD to 50µg/l

Limit of Detection:
LOD for all compounds identified using data acquired in Scan mode is 5.00µg/l

Targeted Compound	Limit of Detection (µg/l)
(1-methylethyl)-Benzene (Cumene)	2.00
(1-methylpropyl)-Benzene (sec-ButylBenzene)	2.00
1,1,2,2-TetraChloroEthane	5.00
1,1,2-TriChloroEthane	5.00
1,1-DiChloroEthane	2.00

Targeted Compound	Limit of Detection (µg/l)
1,1-DiChloroEthene	2.00
1,1-DiChloroPropene	2.00
1,2,3-TriChloroBenzene	2.00
1,2,3-TriChloroPropane	5.00
1,2,4-TriChloroBenzene	2.00
1,2,4-TriMethylBenzene	2.00
1,2-DiBromo-3-ChloroPropane (DBCP)	2.00
1,2-DiChloroBenzene	2.00
1,2-DiChloroPropane	2.00
1,3,5-TriMethylBenzene	2.00
1,3-DiChloroBenzene	2.00
1,3-DiChloroPropane	5.00
1,4-DiChloroBenzene	2.00
1.1,1,2-TetraChloroEthane	2.00
111-TriChloroEthane	2.00
12-DiBromoEthane (EDB)	2.00
12-DiChloroEthane	2.00
1-methyl-4-(1-methylethyl)-Benzene (p-Cymene)	2.00
2,2-DiChloroPropane	2.00
2-ChloroToluene	2.00
4-ChloroToluene	2.00
Benzene	2.00
BromoBenzene	2.00
BromoChloroMethane	2.00
BromoDiChloroMethane	2.00
ChloroBenzene	2.00
cis-1,2-DiChloroEthene	2.00
cis-1,3-DiChloroPropene	2.00
DiBromoChloroMethane	2.00
DiBromoMethane	5.00
DiChloroMethane	2.00
Dimethyl Disulfide	2.00
Ethyl Benzene	2.00
HexaChloroButaDiene	2.00
mp-Xylene	2.00
MTBE	2.00
Naphthalene	2.00
n-ButylBenzene	2.00
n-propyl-Benzene	2.00
o-Xylene	2.00
Styrene	2.00
TAME	2.00
tert-ButylBenzene	2.00
TetraChloroEthene	2.00
TetraChloroMethane	2.00
Toluene	2.00

Targeted Compound	Limit of Detection (µg/l)
trans-1,2-DiChloroEthene	2.00
trans-1,3-DiChloroPropene	5.00
TriBromoMethane	2.00
TriChloroEthene	2.00
TriChloroMethane	2.00

Recoveries of Compounds, Bias and Uncertainty of measurement:

N/A

References:

In house method