

METHOD STATEMENT



Determinand:

Determination of Organochlorine pesticides, synthetic pyrethroids, and selected non-polar organic compounds.

<i>Compound</i>	<i>CAS No.</i>
Aldrin	309-00-2
Chlorothalonil	1897-45-6
Chlorthal-dimethyl	1861-32-1
Cyfluthrin	68359-37-5
Cypermethrin	52315-07-8
Deltamethrin	52918-63-5
Dichlobenil	1194-65-6
Dieldrin	60-57-1
Endrin	72-20-8
Fenvalerate	51630-58-1
Fluazifop-butyl	69806-50-4
alpha-HCH	319-84-6
delta-HCH	319-86-8
gamma-HCH	58-89-9
Heptachlor	76-44-8
cis-Heptachlor Epoxide	1024-57-3
trans-Heptachlor Epoxide	28044-83-9
Hexachlorobenzene	118-74-1
Methoxychlor	72-43-5
o,p'-DDE	3424-82-6
o,p'-DDT	789-02-6
o,p'-TDE	53-19-0
Parathion-ethyl	56-38-2
Pentachlorobenzene	608-93-5
cis-Permethrin	54774-45-7
trans-Permethrin	51877-74-8
p,p'-DDE	72-55-9
p,p'-DDT	50-29-3
p,p'-TDE	72-54-8
Tecnazene	117-18-0
Trifluralin	1582-09-8
Diazinon	333-41-5
Diflufenican	83164-33-4
Kresoxim-methyl	143390-89-0
Lambda-Cyhalothrin	91465-08-6
Triallate	2303-17-5

Matrix:

Sample Type: Waters abstracted for Potable supply.

Principle of Method:

Approximately 200 ml of sample is extracted with 5.0±0.2 ml of hexane/ethyl acetate (in a 1:1 ratio mix). The extract is then analysed by gas chromatography using triple quad mass spectrometric detection in MRM mode.



METHOD STATEMENT



Interferences:

Any compound, which passes through the extraction procedure and that co-elutes with any of the analytes and produces a significant response to the relevant ions being monitored.

Performance of Method:

Range of Application:

The operational range is from the limit of detection, to 120 ng/l. Samples producing results above this range should be diluted to bring the sample response below that of the top standard.

Limit of Detection, Uncertainty of measurement and Recoveries of Compounds

Instrument, WAKGCQQQ02, AG2):

Determinand	LOD (ng/l)	Low Standard 30ng/l Spike		High Standard 100ng/l Spike		Elvington Treated Water (Hard Water) PCV Spike		Uncertainty
		% Recovery	% RSD	% Recovery	% RSD	% Recovery	% RSD	
Aldrin	3	98.78%	4.78%	101.20%	7.37%	99.39%	3.35%	± 9.86 %
Chlorothalonil	4	92.46%	6.06%	99.44%	6.72%	106.90%	7.20%	± 19.08 %
Chlorthal-dimethyl	2	97.67%	2.82%	100.36%	8.24%	98.91%	2.61%	± 9.20 %
Cyfluthrin	3	98.90%	6.34%	101.44%	6.65%	100.17%	4.89%	± 10.73 %
Cypermethrin	2	96.18%	3.67%	100.64%	6.56%	97.55%	2.94%	± 13.29 %
Deltamethrin	3	97.12%	4.60%	101.00%	5.21%	98.83%	5.09%	± 10.07 %
Dichlobenil	1	106.86%	7.13%	102.64%	6.40%	99.61%	5.95%	± 11.41 %
Dieldrin	3	95.65%	3.69%	100.30%	10.61%	95.66%	4.95%	± 11.29 %
Endrin	3	100.95%	4.79%	100.70%	6.81%	99.07%	3.01%	± 8.87 %
Fenvalerate	2	99.37%	8.32%	100.57%	5.72%	97.89%	5.39%	± 10.84 %
Fluazifop-butyl	2	96.55%	5.09%	101.23%	6.57%	96.81%	4.69%	± 14.74 %
HCH-alpha	2	105.25%	2.68%	102.68%	4.78%	100.72%	2.06%	± 8.28 %
HCH-delta	2	100.44%	2.21%	101.01%	4.92%	101.52%	1.56%	± 7.22 %
HCH-gamma	1	101.02%	2.75%	101.87%	4.56%	99.98%	2.05%	± 7.26 %
Heptachlor	2	93.87%	7.23%	99.75%	6.05%	100.98%	4.75%	± 9.68 %
cis-Heptachlor Epoxide	3	96.76%	4.34%	99.60%	9.06%	98.59%	3.83%	± 9.44 %
trans-Heptachlor Epoxide	2	99.69%	3.46%	100.35%	7.44%	99.27%	3.16%	± 12.41 %
Hexachlorobenzene	2	105.42%	3.44%	103.20%	5.23%	100.98%	3.00%	± 8.54 %
Methoxychlor	2	98.83%	12.73%	101.10%	8.06%	93.51%	4.71%	± 22.74 %
op-DDE	2	99.92%	2.34%	101.37%	5.33%	99.71%	1.18%	± 6.25 %
op-DDT	2	96.06%	1.66%	99.94%	5.99%	98.76%	1.92%	± 9.00 %
op-TDE	2	99.19%	3.74%	100.56%	7.40%	95.12%	2.77%	± 13.17 %
Parathion-ethyl	3	98.34%	7.45%	99.59%	6.51%	98.17%	3.63%	± 10.99 %
Pentachlorobenzene	2	104.83%	5.88%	102.72%	5.71%	100.47%	4.60%	± 9.78 %
cis-Permethrin	3	96.89%	4.87%	100.74%	6.79%	99.14%	3.30%	± 9.73 %
trans-Permethrin	3	96.68%	4.74%	100.72%	6.39%	98.40%	3.32%	± 9.73 %
pp-DDE	1	98.61%	1.60%	100.93%	5.86%	98.73%	4.84%	± 7.22 %
pp-DDT	2	94.69%	5.89%	99.19%	6.12%	99.71%	2.89%	± 10.26 %
pp-TDE	2	95.27%	6.22%	100.33%	7.48%	94.27%	4.53%	± 17.92 %
Tecnazene	2	103.03%	3.62%	100.54%	6.28%	98.25%	6.42%	± 9.57 %
Trifluralin	2	95.55%	2.73%	100.38%	6.06%	99.65%	2.34%	± 8.79 %
Diazinon	1	97.34%	4.61%	101.18%	7.69%	99.83%	2.86%	± 8.90 %



METHOD STATEMENT



Determinand	LOD (ng/l)	Low Standard 30ng/l Spike		High Standard 100ng/l Spike		Elvington Treated Water (Hard Water) PCV Spike		Uncertainty
		% Recovery	% RSD	% Recovery	% RSD	% Recovery	% RSD	
Diflufenican	2	96.16%	4.04%	99.82%	6.96%	98.23%	3.00%	± 10.84 %
Kresoxim-methyl	2	95.85%	5.80%	100.38%	5.15%	100.04%	4.03%	± 11.06 %
lambda-Cyhalothrin	3	99.19%	9.91%	102.63%	11.81%	102.04%	9.67%	± 13.73 %
Triallate	2	95.01%	3.40%	99.53%	8.71%	97.89%	3.49%	± 10.42 %

Instrument, WAKGCQQQ03, AG3:

Determinand	LOD (ng/l)	Low Standard 30ng/l Spike		High Standard 100ng/l Spike		Elvington Treated Water (Hard Water) PCV Spike		Uncertainty
		% Recovery	RSD	% Recovery	RSD	% Recovery	RSD	
Aldrin	3	101.56%	4.57%	101.84%	7.25%	98.01%	4.65%	± 20.90 %
Chlorothalonil	7	96.87%	7.89%	98.79%	8.16%	103.92%	10.55%	± 11.18 %
Chlorthal-dimethyl	3	101.24%	8.47%	100.10%	8.41%	100.89%	8.07%	± 12.61 %
Cyfluthrin	3	94.94%	5.48%	98.55%	4.31%	97.05%	5.28%	± 18.10 %
Cypermethrin	3	93.46%	4.11%	98.63%	3.04%	97.77%	2.45%	± 18.33 %
Deltamethrin	3	89.83%	4.96%	98.73%	3.95%	97.12%	2.42%	± 20.59 %
Dichlobenil	3	103.60%	9.74%	101.27%	6.56%	101.11%	7.40%	± 20.61 %
Dieldrin	2	98.86%	4.05%	101.99%	2.73%	99.08%	3.73%	± 15.81 %
Endrin	3	101.31%	3.46%	100.52%	2.72%	99.20%	2.89%	± 12.04 %
Fenvalerate	4	101.65%	11.95%	99.75%	5.61%	101.96%	6.62%	± 22.92 %
Fluazifop-butyl	4	94.85%	7.34%	100.82%	4.49%	99.57%	5.09%	± 20.29 %
HCH-alpha	3	103.97%	8.36%	102.45%	7.83%	102.87%	8.16%	± 17.01 %
HCH-delta	3	98.43%	5.56%	97.57%	7.73%	98.55%	7.67%	± 13.29 %
HCH-gamma	3	100.78%	1.52%	100.46%	1.38%	99.97%	1.55%	± 12.31 %
Heptachlor	2	99.73%	8.49%	99.75%	6.53%	102.95%	9.03%	± 24.06 %
cis-Heptachlor Epoxide	2	97.29%	6.06%	99.74%	6.14%	97.45%	3.49%	± 15.58 %
trans-Heptachlor Epoxide	2	95.57%	5.23%	99.51%	4.99%	96.22%	4.62%	± 15.71 %
Hexachlorobenzene	2	105.49%	6.98%	103.45%	7.59%	102.34%	6.93%	± 14.55 %
Methoxychlor	4	96.04%	7.02%	98.60%	6.13%	95.96%	5.62%	± 21.05 %
op-DDE	3	102.72%	2.81%	99.98%	5.53%	99.79%	2.77%	± 13.94 %
op-DDT	3	98.92%	1.93%	100.47%	1.87%	99.43%	2.04%	± 13.39 %
op-TDE	3	103.49%	2.10%	101.51%	2.16%	98.69%	2.36%	± 13.51 %
Parathion-ethyl	4	94.39%	5.21%	99.71%	2.91%	99.71%	3.24%	± 14.84 %
Pentachlorobenzene	3	102.58%	8.93%	103.27%	6.87%	102.35%	7.18%	± 20.66 %
cis-Permethrin	3	94.52%	6.88%	98.86%	4.20%	98.68%	3.64%	± 14.72 %
trans-Permethrin	3	93.68%	7.66%	99.34%	3.76%	99.84%	3.84%	± 17.87 %
pp-DDE	3	101.37%	2.20%	100.79%	2.32%	99.83%	2.30%	± 13.05 %
pp-DDT	3	94.48%	2.59%	99.09%	1.57%	100.79%	2.39%	± 15.44 %
pp-TDE	3	100.19%	4.24%	101.17%	3.47%	97.75%	3.77%	± 16.52 %
Tecnazene	4	99.06%	8.11%	101.36%	6.56%	103.08%	7.70%	± 17.39 %
Trifluralin	2	93.02%	2.99%	99.21%	2.90%	99.29%	2.41%	± 17.54 %
Diazinon	3	95.69%	6.41%	98.71%	2.71%	99.86%	3.53%	± 15.21 %



METHOD STATEMENT



Determinand	LOD (ng/l)	Low Standard 30ng/l Spike		High Standard 100ng/l Spike		Elvington Treated Water (Hard Water) PCV Spike		Uncertainty
		% Recovery	RSD	% Recovery	RSD	% Recovery	RSD	
Diflufenican	4	95.44%	2.80%	99.15%	1.95%	99.39%	2.52%	± 14.90 %
Kresoxim-methyl	3	96.58%	8.16%	100.78%	5.75%	100.14%	9.69%	± 19.20 %
lambda-Cyhalothrin	3	96.22%	8.42%	99.46%	5.70%	99.40%	11.14%	± 17.70 %
Triallate	3	97.83%	3.41%	100.46%	4.55%	102.22%	4.99%	± 12.65 %

References:

In house method

