

Organic Compounds Analysis in Drinking Water: EPA 525.2

Introduction

Each American household uses in excess of 460,000 gallons of water per year. This large quantity of water comes from natural sources like aquifers, lakes, and rivers. These sources contain naturally dissolved chemicals as well as manmade contaminants that may need to be removed. The accepted levels of compounds allowed in drinking water are regulated at the federal level by the Environmental Protection Agency by the use of method 525.2.

Experimental

Chromatographic Conditions:

GC oven program was as follows: 120°C to 130°C at 15°C/min to 180°C at 12°C/min to 290° at 9°C/min for 7 min. Injection was 1 µL with pulsed splitless injection of 11.58 psi for 0.5 min with injector at 225°C. Column flow was programmed with initial flow of 1 mL/min for 20 min to 1.9 mL/min at 0.5 mL/min.

Results

A full chromatogram of semivolatile organics likely to be encountered in drinking water analysis EPA 525.2 is represented in Figure 1. The identities of the peaks that have been numbered in the chromatogram have been identified in Table 1. Figure 1 was expanded for peak labeling and is presented in Figures 2-5 with the x-axis showing the elution time and the y-axis being auto-scaled for each figure.

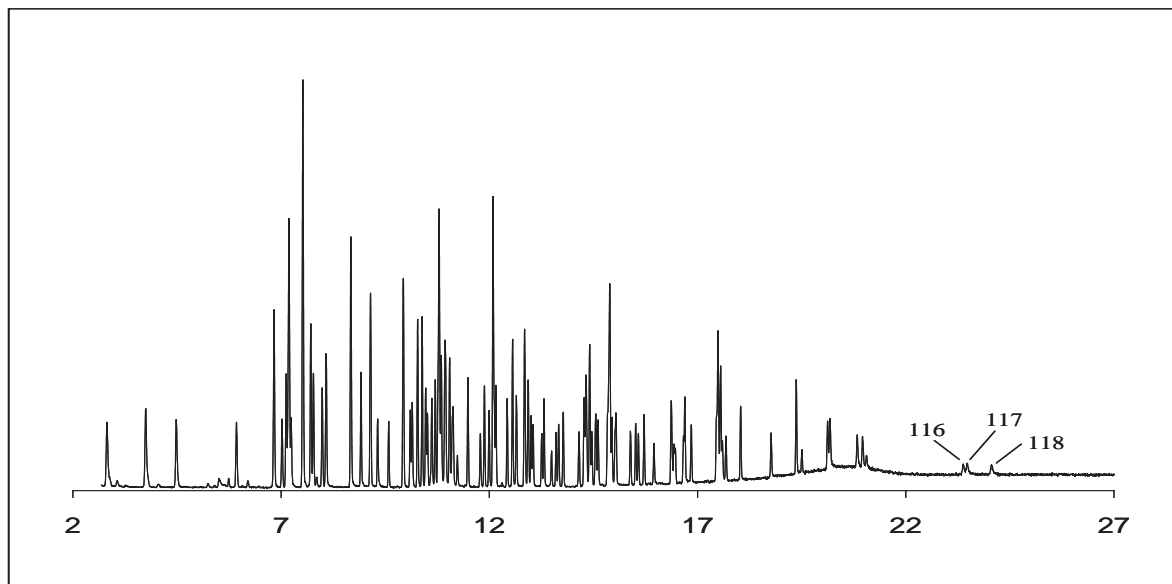


Figure 1. Chromatogram of EPA 525.2 analysis.

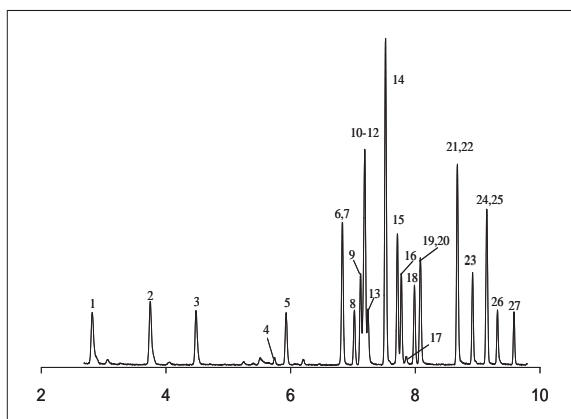


Figure 2. Expanded view of EPA 525.2 analysis from 2.5 min to 9.8 min.

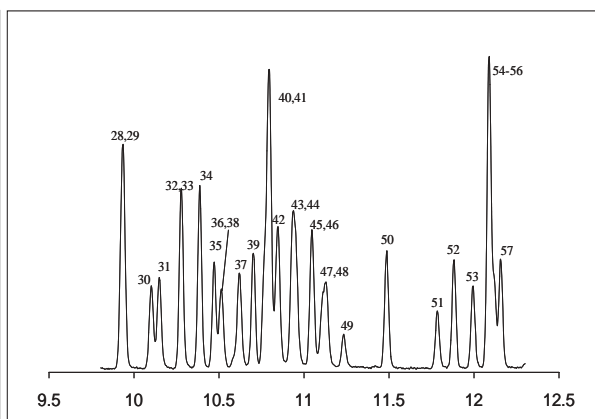


Figure 3. Expanded view of EPA analysis from 9.8 min to 12.3 min.



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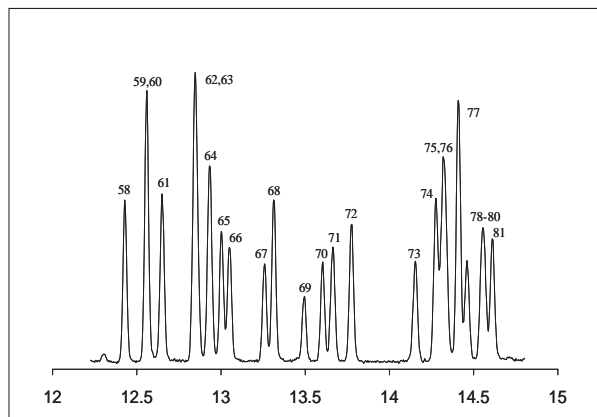


Figure 4. Expanded view from 12.3 min to 14.8 min.

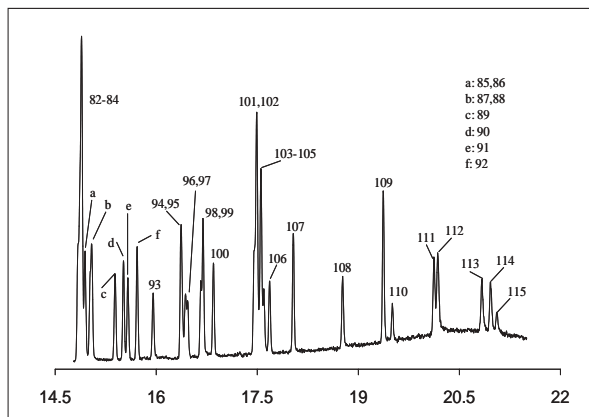


Figure 5. Expanded view from 14.8 min to 21.5 min.

Table 1. Compound list of chemicals included in this analysis.

Peak #	tR	Compound	Peak #	tR	Compound	Peak #	tR	Compound
1	2.82	Isophorone	40	10.76	Pronamide	79	14.55	Fenamiphos
2	3.75	1,3-dimethyl-2-nitrobenzene	41	10.80	Phenanthrene-D10	80	14.56	trans-Nonachlor
3	4.48	Dichlorvos	42	10.85	Phenanthrene	81	14.61	Napropamide
4	5.74	Hexachlorocyclopentadiene	43	10.93	Diazinon	82	14.85	Tricyclazole
5	5.92	EPTC	44	10.95	Anthracene	83	14.86	p,p'-DDE
6	6.83	Mevinphos	45	11.05	Disulfoton	84	14.89	p-Terphenyl-d14
7	6.83	Butylate	46	11.06	Methyl paraoxon	85	14.94	Dieldrin
8	7.03	Vernolate	47	11.11	Terbacil	86	14.94	Endrin
9	7.12	Dimethylphthalate	48	11.13	delta-BHC	87	15.02	Carboxin
10	7.17	Terrazole	49	11.23	Chlorothalonil	88	15.04	Hexachlorobiphenyl
11	7.19	Pebulate	50	11.48	Trichlorobiphenyl	89	15.40	Endosulfan I
12	7.19	Acenaphthylene	51	11.78	Metribuzin	90	15.51	Chlorobenzilate
13	7.25	2,6-Dinitrotoluene	52	11.88	Acetochlor	91	15.58	Endosulfan II
14	7.52	Acenaphthene-D10	53	12.00	Simetryn	92	15.72	p,p'-DDD
15	7.72	2-Chlorobiphenyl	54	12.09	Alachlor	93	15.95	Endrin aldehyde
16	7.78	Chloroneb	55	12.09	Ametryn	94	16.36	Butylbenzylphthalate
17	7.85	Tebuthiuron	56	12.11	Heptachlor	95	16.38	Norflurazon
18	7.98	Pentachlorobenzene	57	12.16	Prometryn	96	16.43	Endosulfan sulfate
19	8.07	2,4-Dinitrotoluene	58	12.43	Terbutryn	97	16.47	p,p'-DDT
20	8.09	Molinat	59	12.56	Di-n-butyl phthalate	98	16.66	Hexazinone
21	8.67	Diethylphthalate	60	12.56	Bromacil	99	16.69	Di(2-ethylhexyl)adipate
22	8.68	Fluorene	61	12.65	Tetrachlorobiphenyl	100	16.85	Triphenylphosphate
23	8.92	Propachlor	62	12.84	Aldrin	101	17.45	Benz(a)anthracene
24	9.14	Ethoprop	63	12.85	Metolachlor	102	17.49	Chrysene-D12
25	9.15	Cycloate	64	12.94	Chlorpyrifos	103	17.55	Heptachlorobiphenyl
26	9.32	Chlorpropham	65	13.00	Triadimefon	104	17.56	Chrysene
27	9.59	Trifluralin	66	13.05	DCPA	105	17.60	Methoxychlor
28	9.93	alpha-BHC	67	13.26	MGK 264-A	106	17.69	Octachlorobiphenyl
29	9.94	2,3-Dichlorobiphenyl	68	13.31	Diphenamid	107	18.04	bis(2-Ethylhexyl)phthalate
30	10.11	Hexachlorobenzene	69	13.50	MGK 264-B	108	18.77	Fenarimol
31	10.15	Atraton	70	13.60	Pendimethalin	109	19.37	cis-Permethrin
32	10.28	Prometon	71	13.66	Heptachlor epoxide	110	19.51	trans-Permethrin
33	10.28	Simazine	72	13.78	Pentachlorobiphenyl	111	20.12	Benzo(b)fluoranthene
34	10.39	Atrazine	73	14.16	g-Chlordane	112	20.18	Benzo(k)fluoranthene
35	10.47	Propazine	74	14.28	Cyanazine	113	20.84	Benzo(a)pyrene
36	10.51	beta-BHC	75	14.32	Pyrene	114	20.96	Perylene-d12
37	10.59	Pentachlorophenol	76	14.34	Stirofos	115	21.06	Fluridone
38	10.62	g-BHC (Lindane)	77	14.41	Butachlor	116	23.38	Indeno(1,2,3-cd)pyrene
39	10.70	Terbufos	78	14.46	a-Chlordane	117	23.47	Dibenz(a,h)anthracene
						118	24.06	Benzo(g,h,i)perylene

Ordering Information

Order Number Description
7HG-G002-11 ZB-5 30m x 0.25mm x 0.25µm

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