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Office of Solid Waste and Emergency Response

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Addressee: Jim Scarbrough, Chief, Waste Management Branch, Region IV

Originator: John H. Skinner, Director, Office of solid Waste

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Summary:

EPA's position that suitable test methods exist for conducting analysis for all Appendix VIII analytes in ground water has been challenged. OSW agrees that one cannot analyze for all analytes, but holds the position that one can analyze for all of those species for which methods have been published, or proposed for inclusion, in SW-846. OSW may expand its list of analytes for which methods are not available. However, until that time, Regions should follow the recent Thomas/Price guidance.

Many applicants have raised the issue about standards not being available for all Appendix VIII analytes. ORD has obtained them for 98.2% of the constituents and has made them available to EPA and State labs. Since industry has access to suppliers, EPA will not supply them to the regulated community.

SW-846 and methods proposed on October 1, 1984, provide analytical methods for all those species for which monitoring requirements have been established. Methods that evolved from EPA's 600 series of drinking water and effluent guidelines have received extensive use and evaluation over the years. Other methods have not received a desirable degree of evaluation, but EPA based them upon generally accepted techniques. Final methods will include extraction and quantification specifications for individual Appendix VIII compounds.

OSW expects the methods selected for ground-water monitoring to achieve detection limits for the target analytes comparable to those experienced with a drinking water matrix. OSW has started to work on detection limits for all the Appendix VIII analytes.

The method detection limit set in SW-846 sets the line between species present and not present. Any species present at a concentration below the detection limit does not have to be reported.

Metal concentrations can serve as a negative, but not a positive, series for organometallic compounds.

When an applicant monitors for inorganic species, it is necessary for him/her to determine which inorganic anions and cations are present in the ground water rather than being concerned about the compounds listed in Appendix VIII.

DEC 27 1984

MEMORANDUM

Subject: RCRA Ground Water Monitoring Regulations

From: John H. Skinner, Director
Office of Solid Waste (WH-562B)

To: Jim Scarbrough, Chief
Waste Management Branch
Region IV

In answer to your letter of December 3rd, I am writing to clarify a number of points concerning the RCRA ground water monitoring requirements. I hope that this gives you the necessary information to respond to questions from permit applicants on the RCRA requirement to analyze for the Appendix VIII constituents.

As you are aware, the Agency's position that suitable test methods are available for conducting analyses for all Appendix VIII analytes in ground water has been challanged. As described in the recent Thomas/Price memo and NPRM (49 FR 38786, October 1, 1984), OSW agrees with this position. Where we differ is in the number of analytes for which suitable methods are not available. It is the position of OSW that one can analyze for all those species for which methods have been either published in SW-846 or proposed for such inclusion. Table 1 presents a listing of those analytes for which methods are not yet available. CMA and others have, challanged the Agency's statement that the SW-846 methods can actually detect and measure many of the analytes that OSW states the method is suitable for. As part of the process of finalizing the October 1, NPRM these claims will be critically evaluated and OSW may expand the list of analytes for which methods are not available. However, pending such action the guidance given in the Thomas/Price memo should be followed. When implementing this policy, one should keep in mind that it may lead to false negatives (i.e., not seeing the presence of a contaminant that, in fact, is present). Some commenters have claimed that the methods will also lead to false positives in some cases. Since competent analysts can easily identify such situations through the use of standards, confirmatory analyses, and other quality control measures, false positives are not felt to be of concern.

Thus, you are correct when you conclude that the ETC protocol would not meet the enforcement standard contained in the Thomas/Price memo.

Many permit applicants have raised the issue that standards are not available for all Appendix VIII analytes. To date, 98.2% of the Appendix VIII constituents have been obtained by ORD and made available to EPA and State laboratories. These standards are available from the EPA repository managed by the EMSL-CIN, LV and RTP laboratories. Compounds for which standards are not yet available are listed in Table 2. ORD is in the process of trying to either accumulate sufficient amounts of the missing compounds or to locate suppliers for them.

Our position is that industry has as much access to suppliers as do Government laboratoratories. Agency policy is, that EPA will not serve as a supplier of analytical standards to the regulated community and their supporting laboratories.

The current edition of SW-846, "Test Methods for Evaluating Solid Waste", taken together with the methods proposed on October 1, presents analytical methods for all those species for which monitoring requirements have been established. Most of these methods evolved from EPA's 600 series of drinking water and effluent guidelines monitoring methods. The 600 series of methods received extensive use and evaluation over the years and must definitely be considered as appropriate for ground water monitoring. Table 3 is a list of the SW-846 methods which were derived from 600 series methods.

The OSW also selected methods for a number of analytes which, historically, have not been of concern to the water program. In selecting appropriate methods, the OSW reviewed work done by the ORD, other Government agencies, and the open literature. Draft methods were then circulated to industry (CMA, API, ASTM, etc.) as well as within EPA's research and enforcement laboratories. After incorporation of the comments and suggestions, those methods which did not receive significant adverse comment were incorporated into the October 1 NPRM. While many of these methods have not received the degree of evaluation desirable for a monitoring method, they are based on generally accepted techniques. Problems, as they exist in certain situations, tend to be interferences which raise the analytical detection limit as opposed to causing false positives. Final methods will include extraction and quantification specifications for individual Appendix VIII compounds.

The methods selected by the OSW for ground water monitoring are expected to achieve detection limits for the target analytes comparable to those experienced with a drinking water matrix. Detection and quantification of organic compounds by GC/MS should routinely be possible in the 1 ppB to 100 ppB concentration

range. Detection and quantification of metals by ICP should routinely be possible within this same range. Furnace atomic absorption could extend this concentration range lower by one to two orders of magnitude. We have recently started work to determine the detection limits for all the Appendix VIII analytes in ground water. While much work still has to be done, I have included some early data on the detection limits for about half of the list (Table 4). Both the OSW and the ORD are conducting extensive evaluations of the methods. More complete information on analytical detection limits and precision for ground water and other matrices should be available by the end of 1985.

With respect to your question as to where the line should be drawn between present and not present, our policy is that this is set at the method detection limit set in SW-846. Any species present at a concentration below the detection limit does not have to be reported.

One oversight of the NPRM concerns the organometallic compounds listed on Appendix VIII. A number of these chemicals are more toxic than the corresponding metal cation concentration would suggest. The October 1 notice proposes that organometallic compounds be considered covered by determination of the metallic species only. While analysis for the metal cation would serve as a negative screen for organometallic compounds, its presence would not be presumptive of the presence of an organometallic compound. Individual organometallic compounds would still have to be determined to differentiate between the labile or covalently bound forms of the metal. This issue will be clearly resolved when the the regulation is promulgated.

When monitoring for inorganic species one does not worry about the compounds listed in Appendix VIII. Rather, the concern is which inorganic anions and cations are present in the ground water. Regulatory action is based on the levels of, for example, nickel and cadmium without regard for what compound was their source. A similiar situation exists for the "cyanides". Instead of setting specific thresholds for the various cyanides (e.g., hydrogen cyanide, cyanogen, cyanogen chloride) all cyanides amenable to chlorination are treated as if they were CN^-.

I hope that this memorandum adequately answers your questions. Should you require additional information, please contact David Friedman, of my staff, at (202)382-4770.

cc: M. Cook
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TABLE 1

ANALYTES FOR WHICH ANALYTICAL METHODS ARE NOT AVAILABLE

Cacasin
Ethylenebisdithiocarbamic acid
2-Fluoroacetamide
Iron Dextran
Lasocarpine
Mustard Gas
Nitrogen Mustard, N-Oxide and HCl Salts
Nitrogen Mustard and HCl Salts
Nitric Oxide
Phosphine

TABLE 2

COMPOUNDS FOR WHICH EPA HAS NOT FOUND STANDARDS

3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin salts
Benz(c)acridine
Benzo(j)fluoranthene
N,N-Bis(2-chlorethyl)-2-naphthylamine
Citrus Red No 2
Dibenz(a,b)acridine
7H-Dibenzo(c,g)carbazole
Dichlorophenylarsine
Diethylarsine
Cycasin
Dibenz(a,i)pyrene
Dibromomethane
N, N-Diethylhydrazine
O,O-Diethyl S-methyl ester of phosphorodithioic acid
3,3'-Dimethyl-1-(methylthio)-2-butanone, o-((methylamino) carbonyl) oxime
Hexaethyl tetraphosphate
Mercury fulminate
Nicotine salts
Nitrogen mustard
Nitrogen mustard N-oxide
Nitrogen mustard N-oxide hydrochloride salt
Nitroglycerin
N-Nitrosomethylvinylamine
Nitrosonornicotine
N-Nitrososarcosine
Octamethyl-pyrophosphoramide
Pronamide
O,O,O-Triethyl phosphorothioate
Tris(1-azirdinyl)phosphine sulfide
Uracil mustard

TABLE 3

600 Series and Corresponding SW-846 Methods

600 Series		SW-846
601		8010
602		8020
603		8030
604		8040
605	(benzidine)	-
606		8060
607	(nitrosamines)	-
608		8080
609		8090
610		8100
611	(haloethers)	-
612		8120
613	(2,3,7,8-TCDD)	-
622		8140
623		8150
624		8240
625		8250
625		8270

TABLE 4

ANALYTE DETECTION LIMITS (PRELIMINARY RESULTS)

3-86-2	Acetophenone (Ethanone, 1-phenyl)	10*
-81-2	3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts (Warfarin) (2H-1-Benzopyran-2-one, 4-hydroxy3-(3-oxo-1-phenylbutyl)-, and salts)	100
591-08-2	1-Acetyl-2-thiourea (Acetamide, N-(aminothioxomethyl)-)	500
107-02-8	Acrolein (2-Propenal)	500
79-06-1	Acrylamide (2-Propenamide)	500
107-13-1	Acrylonitrile (2-Propenenitrile)	100
309-00-2	Aldrin (1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a,8b-hexahydro-, (1-alpha, 4-alpha, 4a-beta, 5-alpha, 8-alpha, 8a-beta)-)	0.1
107-18-6	Allyl alcohol (2-Propen-1-ol)	50
92-67-1	4-Aminobiphenyl ([1,1'-Biphenyl]-4-amine)	10
50-07-7	6-Amino-1,1a,2,8,8a,8b-hexahydro-8-(hydroxymethyl)-8a-methoxy-5-methylcarbamate azirino(2',3':3,4)-pyrrolo-(1,2-a)indole-4,7-dione (ester) (Mitomycin C) (Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[((aminocarbonyl)oxy)-methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aS-(1a-alpha, 8-beta, 8a-alpha, 8b-alpha)]-)	
62-53-3	Aniline (Benzenamine)	10
7440-36-0	Antimony	100
7440-38-2	Arsenic	5
7440-39-3	Barium	10
56-55-3	Benz[a]anthracene (Benzo[a]anthracene)	50
71-43-2	Benzene (Cyclohexatriene)	10
92-87-5	Benzidine ([1,1'-Biphenyl]-4,4'diamine)	50
205-99-2	Benzo[b]fluoranthene (2,3-Benzofluoranthene)	50
205-82-3	Benzo[j]fluoranthene (7,8-Benzofluoranthene)	50

* Unless otherwise indicates all concentrations are in units of ug/l (ppb).

TABLE 4

ANALYTE DETECTION LIMITS (PRELIMINARY RESULTS)

3-86-2	Acetophenone (Ethanone, 1-phenyl)	10*
-81-2	3-(alpha-Acetonylbenzyl)-4-hydroxycoumarin and salts (Warfarin) (2H-1-Benzopyran-2-one, 4-hydroxy3-(3-oxo-1-phenylbutyl)-, and salts)	100
591-08-2	1-Acetyl-2-thiourea (Acetamide, N-(aminothioxomethyl)-)	500
107-02-8	Acrolein (2-Propenal)	500
79-06-1	Acrylamide (2-Propenamide)	500
107-13-1	Acrylonitrile (2-Propenenitrile)	100
309-00-2	Aldrin (1,4:5,8-Dimethanonaphthalene, 1,2,3,4,10,10-hexachloro-1,4,4a,5,8,8a,8b-hexahydro-, (1-alpha, 4-alpha, 4a-beta, 5-alpha, 8-alpha, 8a-beta)-)	0.1
107-18-6	Allyl alcohol (2-Propen-1-ol)	50
92-67-1	4-Aminobiphenyl ([1,1'-Biphenyl]-4-amine)	10
50-07-7	6-Amino-1,1a,2,8,8a,8b-hexahydro-8-(hydroxymethyl)-8a-methoxy-5-methylcarbamate azirino(2',3':3,4)-pyrrolo-(1,2-a)indole-4,7-dione (ester) (Mitomycin C) (Azirino[2',3':3,4]pyrrolo[1,2-a]indole-4,7-dione, 6-amino-8-[((aminocarbonyl)oxy)-methyl]-1,1a,2,8,8a,8b-hexahydro-8a-methoxy-5-methyl-, [1aR-(1a-alpha, 8-beta, 8a-alpha, 8b-alpha-)]-)	
62-53-3	Aniline (Benzenamine)	10
7440-36-0	Antimony	100
7440-38-2	Arsenic	5
7440-39-3	Barium	10
56-55-3	Benz[a]anthracene (Benzo[a]anthracene)	50
71-43-2	Benzene (Cyclohexatriene)	10
92-87-5	Benzidine ([1,1'-Biphenyl]-4,4'diamine)	50
205-99-2	Benzo[b]fluoranthene (2,3-Benzofluoranthene)	50
205-82-3	Benzo[j]fluoranthene (7,8-Benzofluoranthene)	50

* Unless otherwise indicates all concentrations are in units of ug/l (ppb).

32-8	Benzo[a]pyrene (Benzo(d,e,f)chrysene)	50
1-91-1	Bis(2-chloroethoxy)methane (Ethane, 1,1'-[methylenebis(oxy)bis[2-chloro-)	10
44-4	Bis(2-chloroethyl) ether (Ethane, 1,1'oxybis[2-chloro-)	10
108-60-1	Bis(2-chloroisopropyl) ether (Ether, Bis(2-chloro-1-methylethyl)-)	10
117-81-7	Bis(2-ethylhexyl) phthalate (1,2-Benzenedicarboxylic acid,-bis(2-ethylhexyl) ester)	10
74-83-9	Bromomethane (Methane, bromo-)	10
101-55-3	4-Bromophenyl phenyl ether (Benzene, 1-bromo-4-phenoxy-)	10
85-68-7	Butyl benzyl phthalate (1,2-Benzenedicarboxylic acid, butyl-phenylmethyl ester)	10
7440-43-9	Cadmium	10
75-15-0	Carbon disulfide (Carbon bisulfide)	10
12789-03-6	Chlordane (alpha and gamma isomers) (4,7-Methanoindan,-1,2,4,5,6,7,8,8-octachloro-3,4,7,7a-tetrahydro-) (alpha and gamma isomers)	1
108-90-7	Chlorobenzene (Benzene, chloro-)	10
59-50-7	p-Chloro-m-cresol (Phenol, 4-chloro-3-methyl)	10
110-75-8	2-Chloroethyl vinyl ether (Ethene, (2-chloroethoxy)-)	10
67-66-3	Chloroform (Methane, trichloro-)	10
74-87-3	Chloromethane (Methane, chloro-)	10
91-58-7	2-Chloronaphthalene (Naphthalene, 2-chloro-)	10
95-57-8	2-Chlorophenol (Phenol, 2-chloro-)	10
5344-82-1	1-(o-Chlorophenyl)thiourea (Thiourea, (2-chlorophenyl)-)	500
7440-47-3	Chromium	20
218-01-9	Chrysene (1,2-Benzphenanthrene)	10
1319-77-3	Cresol (Cresylic acid) (Phenol, methyl-)	10
— — -	Cyanides (amenable to chlorination)	25
72-54-8	DDD (Benzene, 1,1'-(2,2-dichloroethylidene)bis(4-chloro-)	0.1
72-55-9	DDE (Ethylene, 1,1-dichloro-2,2-bis(4-chlorophenyl-)	0.1

60-51-5	Dimethoate (Phosphorodithioic acid, O,O-dimethyl S-[2-(methylamino)-2-oxoethyl] ester	0.5
119-90-4	3,3'-Dimethoxybenzidine ([1,1'Biphenyl]-4,4'-diamine, 3-3'-dimethoxy-)	25
60-11-7	p-Dimethylaminoazobenzene (Benzenamine, N,N-dimethyl-4-(phenylazo)-)	10
57-97-6	7,12-Dimethylbenz[a]anthracene (Benz[a]anthracene, 7,12-dimethyl-)	50
122-09-8	alpha,alpha-Dimethylphenethylamine (Benzenemethanamine,- alpha,alpha-dimethyl-)	10
105-67-9	2,4-Dimethylphenol (Phenol, 2,4-dimethyl-)	10
131-11-3	Dimethyl phthalate (1,2-Benzenedicarboxylic acid,- dimethyl ester)	10
51-28-5	2,4-Dinitrophenol (Phenol, 2,4-dinitro-)	20
121-14-2	2,4-Dinitrotoluene (Benzene, 1-methyl-2,4-dinitro-)	10
606-20-2	2,6-Dinitrotoluene (Benzene, 2-methyl-1,3-dinitro-)	10
117-84-0	Di-n-octyl phthalate (1,2-Benzenedicarboxylic acid,- dioctyl ester)	10
123-91-1	1,4-Dioxane (p-Dioxane)	50
122-39-4	Diphenylamine (Benzenamine, N-phenyl-)	10
122-66-7	1,2-Diphenylhydrazine (Hydrazine, 1,2-diphenyl-)	10
298-04-4	Disulfoton (Phosphorodithioic acid, O,O-diethyl S-[2-(ethylthio)-ethyl] ester	2.5
115-29-7	Endosulfan (5-Norbornene, 2,3-dimethanol, 1,4,5,6,7,7- hexachloro-, cyclic sulfite	0.1
72-20-8	Endrin and metabolites (1,4:5,8-Dimethanonaphthalene, - 1,2,3,4,10,10-hexachloro 6,7-epoxy-1,4,4a,5,6,7,8,8a-octahydro-, endo,endo- and metabolities)	1
97-63-2	Ethyl methacrylate (2-Propenoic acid, 2-methyl-, ethyl ester)	50
62-50-0	Ethyl methanesulfonate (Methanesulfonic acid, ethyl ester)	10
206-44-0	Fluoranthene	10
75-69-4	Fluorotrichloromethane (Methane, trichlorofluoro-)	10

76-44-8	Heptachlor (4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-3a,4,7,7a-tetrahydro-)	0.1
024-57-3	Heptachlor epoxide (alpha, beta, and gamma isomers) (4,7-Methano-1H-indene, 1,4,5,6,7,8,8-heptachloro-2,3-epoxy-3a,4,7,7-tetrahydro-, alpha, beta, and gamma isomers)	0.1
118-74-1	Hexachlorobenzene (Benzene, hexachloro-)	10
87-68-3	Hexachlorobutadiene (1,3-Butadiene, 1,1,2,3,4,4-hexachloro-)	50
— — -	Hexachlorocyclohexane (all isomers) (Cyclohexane, hexachlor-, all isomers)	0.1
77-47-4	Hexachlorocyclopentadiene (1,3-Cyclopentadiene, 1,2,3,4,5,5-hexachloro-)	50
67-72-1	Hexachloroethane (Ethane, hexachloro-)	50
193-39-5	Indeno(1,2,3-cd)pyrene	50
74-88-4	Iodomethane (Methane, iodo-)	10
78-83-1	Isobutyl alcohol (1-Propanol, 2-methyl-)	50
143-50-0	Kepone (1,3,4-Metheno-2H-cyclobuta[cd]pentalen-2-one,-1,1a,3,3a,4,5,5a,5b,6-decachlorooctahydro-)	10
7439-92-1	Lead	80
23-33-1	Maleic hydrazide (3,6-Pyridazinedione, 1,2-dihydro-)	5000
7439-97-6	Mercury	0.3
126-39-7	Methacrylonitrile (2-Propenitrile, 2-methyl-)	50
72-43-5	Methoxychlor (Benzene,-1,1'-(2,2,2-trichloroethylidene)bis-(4-methoxy-)	10
75-55-8	2-Methylaziridine (Aziridine, 2-methyl-)	300
78-93-3	Methyl ethyl ketone (MEK) (2-Butanone)	10
80-62-6	Methyl methacrylate (2-Propenoic acid, 2-methyl-, methyl ester)	500
66-27-3	Methyl methanesulfonate (Methanesulfonic acid, methyl ester)	10
298-00-0	Methyl parathion (Phosphorothioic acid, O,O-dimethyl-O-(4-nitrophenyl) ester)	0.5
91-20-3	Naphthalene	10
134-32-7	1-Naphthylamine (1-Naphthalenamine)	10

91-59-8	2-Naphthylamine - (2-Naphthalenamine)	10
86-88-4	1-Naphthyl-2-thiourea (Thiourea, 1-naphthalenyl-)	50
7440-02-0	Nickel	10
100-01-6	p-Nitroaniline (Benzenamine, 4-nitro-)	50
98-95-3	Nitrobenzene (Benzene, nitro-)	10
100-02-7	4-Nitrophenol (Phenol, 4-nitro-)	50
924-16-3	N-Nitrosodi-n-butylamine (Butanamine, N-butyl-N-nitroso-)	50
62-75-9	N-Nitrosodimethylamine (Methanamine, N-methyl-N-nitroso-)	10
684-93-5	N-Nitroso-N-methylurea (Urea, N-methyl-N-nitroso-)	25
100-75-4	N-Nitrosopiperidine (Piperidine, 1-nitroso-)	10
930-55-2	Nitrosopyrrolidine (Pyrrolidine, 1-nitroso-)	50
56-38-2	Parathion (Phosphorothioic acid, O,O-diethyl O-(4-nitrophenyl) ester	0.5
608-93-5	Pentachlorobenzene (Benzene, pentachloro-)	10
82-68-8	Pentachloronitrobenzene (PCNB) (Benzene, pentachloronitro-)	50
87-86-5	Pentachlorophenol (Phenol, pentachloro-)	10
62-44-2	Phenacetin (Acetamide, N-(4-ethoxyphenyl)-)	10
108-95-2	Phenol	25
108-45-2	m-Phenylenediamine (1,3-Benzenediamine)	25
95-54-5	O-Phenylenediamine (1,2-Benzenediamine)	25
106-50-3	p-Phenylenediamine (1,4-Benzenediamine)	25
103-85-5	N-Phenylthiourea (Thiourea, phenyl-)	50
109-06-8	2-Picoline (Pyridine, 2-methyl-)	10
23950-58-5	Pronamide (Benzamide, 3,5-dichloro-N-(1,1-dimethyl-2-propynyl)-)	10
107-19-7	2-Propyn-1-ol (1-Hydroxy-2-propyne)	50
110-86-1	Pyridine	500
7440-22-4	Silver	10
95-94-3	1,2,4,5-Tetrachlorobenzene (Benzene, 1,2,4,5-tetrachloro-)	10

6-01-6	2,3,7,8-Tetrachlorodibenzo-p-dioxin (TCDD) (Dibenzo-p-dioxin, 2,3,7,8-tetrachloro-)	0.001
20-6	1,1,1,2-Tetrachloroethane (Ethane, 1,1,1,2-tetrachloro-)	10
79-34-5	1,1,2,2-Tetrachloroethane (Ethane, 1,1,2,2-tetrachloro-)	10
127-18-4	Tetrachloroethene (Ethene, tetrachloro-)	10
58-90-2	2,3,4,6-Tetrachlorophenol (Phenol, 2,3,4,6-tetrachloro-)	50
107-49-3	Tetraethylpyrophosphate (Diphosphoric acid, tetraethyl ester)	25
7440-28-0	Thallium	5
62-56-6	Thiourea (Urea, thio-)	500
108-88-3	Toluene (Benzene, methyl-)	10
25376-45-8	Toluene diamine (Benzenediamine, ar-methyl-)	100
26471-62-5	Tolylene diisocyanate (Benzene, 1,3-diisocyanatomethyl-)	
8001-35-2	Toxaphene (Polychlorinated camphene)	4
75-25-2	Tribromoethane (Methane, tribromo-)	10
-82-1	1,2,4-Trichlorobenzene (Benzene, 1,2,4-trichloro-)	10
71-55-6	1,1,1-Trichloroethane (Ethane, 1,1,1-trichloro-)	10
79-00-5	1,1,2-Trichloroethane (Ethane, 1,1,2-trichloro-)	10
79-01-6	Trichloroethene (Ethene, trichloro-)	10
95-95-4	2,4,5-Trichlorophenol (Phenol, 2,4,5-trichloro-)	10
88-06-2	2,4,6-Trichlorophenol (Phenol, 2,4,6-trichloro-)	10
93-76-5	2,4,5-Trichlorophenoxyacetic acid (Acetic acid, 2,4,5-trichlorophenoxy-)	2
93-72-1	2,4,5-Trichlorophenoxypropionic acid (Silvex) (Propanoic acid, 2-(2,4,5-trichlorophenoxy)-)	2
96-18-4	1,2,3-Trichloropropane (Propane, 1,2,3-trichloro-)	10
75-01-4	Vinyl chloride (Ethene, chloro-)	10