

Chapter 1 Results of the Initial Environmental Survey in FY 2007

1. Purpose of the survey

The Initial Environmental Survey is aimed at understanding the environmental presence of chemicals requiring examination of the appropriateness of the designation as a Designated Chemical Substance in the Law Concerning Reporting, etc. of Releases of Specific Chemical Substances to the Environment and Promoting Improvement in Their Management (Law No. 86 of 1999) (hereafter, the PRTR Law) and chemicals requiring survey from social viewpoints.

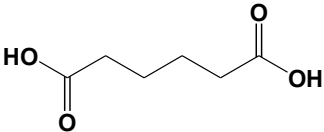

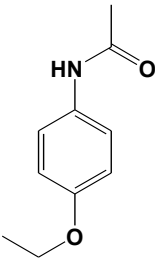
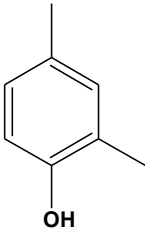
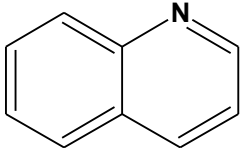
2. Target chemicals

In the FY 2007 Initial Environmental Survey, 27 chemicals that were selected and designated as target chemicals. The combinations of target chemicals and the surveyed media are given below.

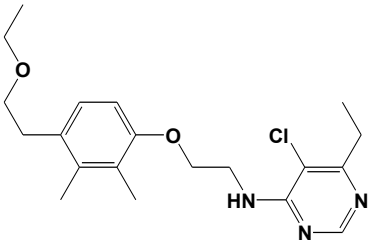
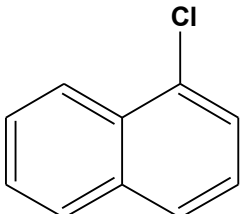
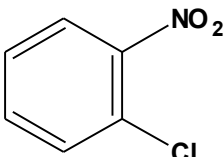
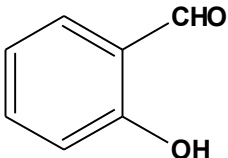
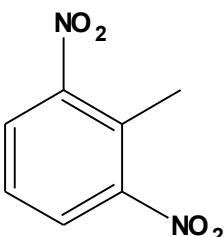
No.	Target chemicals Name	Designated Class in			Surveyed media		
		The Chemical Substances Control Law	The PRTR Law (Current)	The PRTR Law (New) Effective from October 1, 2009	Surface water	Sediment	Air
[1]	Adipic acid						○
[2]	Ethyleneimine		I	I			○
[3]	4'-Ethoxyacetanilide (synonym: Phenacetin)	II Monitored	I				○
[4]	2,4-Xylenol		II	I	○		
[5]	Quinoline			I	○		
[6]	5-Chloro-N-{2-[4-(2-ethoxyethyl)-2,3-dimethylphenoxy]ethyl}-6-ethylpyrimidine-4-amine (synonym: Pylimidifen)		II				○
[7]	1-Chloronaphthalene	III Monitored	II	II			○
[8]	2-Chloronitrobenzene			I	○		
[9]	Salicylaldehyde		I	I	○		
[10]	2,6-Dinitrotoluene	II Monitored III Monitored	I	I	○		
[11]	<i>m</i> -Dinitrobenzene	II Monitored	II	II	○		
[12]	Dibenzyl ether (synonym: [(Benzyloxy)methyl]benzene)	III Monitored	II	II	○	○	
[13]	Dimethyl 4,4'-(<i>o</i> -phenylene)bis(3-thioallophanate) (synonym: Thiophanate-methyl)			I	○		
[14]	Dimethyl terephthalate		I	I			○
[15]	Propylene dinitrate		II				○
[16]	<i>o</i> -Nitroaniline			I	○		
[17]	<i>m</i> -Nitroaniline	II Monitored	II	II	○		
[18]	Vanadium and its compounds (as Vanadium)				○		
[19]	Phenanthrene		II		○	○	
[20]	Phenylloxirane (synonym: Styreneoxide)		I	I	○		
[21]	Dimethyl phthalate				○	○	
[22]	Benzyl alcohol						○
[23]	Methylhydrazine	II Monitored	II	II	○		
[24]	2-Methyl-1,1'-biphenyl-3-ylmethyl (Z)-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate (synonym: Bifenthrin)	II Monitored	II	II	○		
[25]	2-(1-Methylpropyl)-4,6-dinitrophenol	II Monitored III Monitored	I	I			○
[26]	Mercaptoacetic acid		I		○		
[27]	Triphenyl phosphate			I			○

(Note) "The Chemical Substances Control Law" hereafter means "Law Concerning the Examination and Regulation of Manufacture, etc. Of Chemical Substances (Law No. 117 of 1973)."

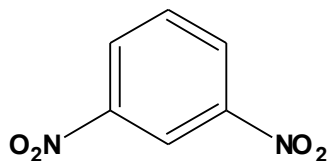
Chemical and physical properties of target chemicals of the Initial Environmental Survey are as follows.

<p>[1] Adipic acid</p> 	<p>Molecular formula: C₆H₁₀O₄ CAS: 124-04-9 ENCS: 2-858 MW: 146.14 mp: 152°C¹⁾ bp: 337.5°C¹⁾ SW: 15g/L (15°C)¹⁾ Specific gravity: 1.36 (25/4°C)¹⁾ logPow: 0.08²⁾</p>
<p>[2] Ethyleneimine</p> 	<p>Molecular formula: C₂H₅N CAS: 151-56-4 ENCS: 5-2 MW: 43.07 mp: -71.5°C³⁾ bp: 55~56°C³⁾ SW: Readily soluble⁴⁾ Specific gravity: 0.83 (24/4°C)¹⁾ logPow: -0.28⁵⁾</p>
<p>[3] 4'-Ethoxyacetanilide (synonym: Phenacetin)</p> 	<p>Molecular formula: C₁₀H₁₃NO₂ CAS: 62-44-2 ENCS: 3-697 MW: 179.22 mp: 134~135°C¹⁾ bp: 242~245°C³⁾ SW: 766mg/L (25°C)⁶⁾ Specific gravity: 1.36 (20/4°C)⁷⁾ logPow: 1.58⁸⁾</p>
<p>[4] 2,4-Xylenol</p> 	<p>Molecular formula: C₈H₁₀O CAS: 105-67-9 ENCS: 3-521, 4-57 MW: 122.17 mp: 24.5°C⁹⁾ bp: 210.98°C (760 mmHg)⁹⁾ SW: 7.87×10³ mg/L (25°C)¹⁰⁾ Specific gravity: Uncertain logPow: 2.30¹¹⁾</p>
<p>[5] Quinoline</p> 	<p>Molecular formula: C₉H₇N CAS: 91-22-5 ENCS: 5-794 MW: 129.16 mp: -14.78°C⁹⁾ bp: 237.7°C¹⁾ SW: 6.11×10³ mg/L (25°C)¹²⁾ Specific gravity: 1.09 (25/4°C)¹⁾ logPow: 2.03⁹⁾</p>

(Abbreviations) CAS: CAS registry number, ENCS: registry number in the Existing and New Chemical Substances List, MW: molecular weight, mp: melting point, bp: boiling point, SW: solubility in water, logPow: *n*-octanol-water partition coefficient, kPa: kilopascal (1 atom \approx 101.3kPa).

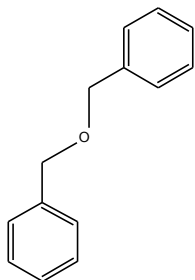
<p>[6] 5-Chloro-N-{2-[4-(2-ethoxyethyl)-2,3-dimethylphenoxy]ethyl}-6-ethylpyrimidine-4-amine (synonym: Pylimidifen)</p> 	<p>Molecular formula: C₂₀H₂₈ClN₃O₂ CAS: 105779-78-0 ENCS: Uncertain MW: 377.91 mp: 70°C¹³⁾ bp: Uncertain SW: 2.17mg/L (25°C)¹³⁾ Specific gravity: Uncertain logPow: 4.84⁵⁾</p>
<p>[7] 1-Chloronaphthalene</p> 	<p>Molecular formula: C₁₀H₇Cl CAS: 90-13-1 ENCS: 4-316 MW: 162.62 mp: -2.5°C¹⁾ bp: 259.3°C¹⁾ SW: 0.00224% (25°C)⁹⁾ Specific gravity: 1.19382(20/4°C)¹⁾ logPow: 3.9⁹⁾</p>
<p>[8] 2-Chloronitrobenzene</p> 	<p>Molecular formula: C₆H₄ClNO₂ CAS: 88-73-3 ENCS: 3-442 MW: 157.56 mp: 32.5°C¹⁴⁾ bp: 245.5°C¹⁴⁾ SW: 441 mg/L (25°C)¹⁵⁾ Specific gravity: 1.368 (22/4°C)¹⁶⁾ logPow: 2.24²⁾</p>
<p>[9] Salicylaldehyde</p> 	<p>Molecular formula: C₇H₆O₂ CAS: 90-02-8 ENCS: 3-1183, 3-2660 MW: 122.12 mp: -7°C⁹⁾ bp: 197°C⁹⁾ SW: 80.8mg/L (25°C)¹⁵⁾ Specific gravity: 1.1674 (20/4°C)²⁹⁾ logPow: 1.81 (pH5.4)¹¹⁾</p>
<p>[10] 2,6-Dinitrotoluene</p> 	<p>Molecular formula: C₇H₆N₂O₄ CAS: 606-20-2 ENCS: 3-446 MW: 182.14 mp: 64~66°C¹⁷⁾ bp: 285°C⁹⁾ SW: 208 mg/L (25°C)¹⁷⁾ Specific gravity: 1.54 (15/15°C)¹⁸⁾ logPow: 2.1¹⁹⁾</p>

[11] *m*-Dinitrobenzene



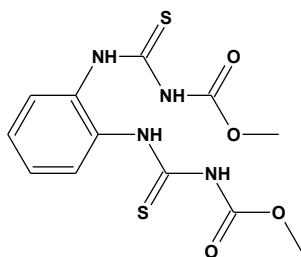
Molecular formula: C₆H₄N₂O₄
 CAS: 99-65-0
 ENCS: 3-445
 MW: 168.11
 mp: 90.3°C⁹⁾
 bp: 291°C⁹⁾
 SW: 2.09%⁹⁾
 Specific gravity: Uncertain
 logPow: 1.49²⁰⁾

[12] Dibenzyl ether (synonym: [(Benzyloxy)methyl]benzene)



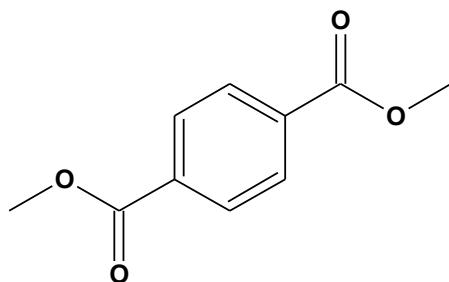
Molecular formula: C₁₄H₁₄O
 CAS: 103-50-4
 ENCS: 3-1082
 MW: 198.26
 mp: 3.6°C⁹⁾
 bp: 298°C⁹⁾
 SW: 40mg/L (35°C)²¹⁾
 Specific gravity: 1.00142 (20/4°C)¹⁾
 logPow: 3.31¹¹⁾

[13] Dimethyl 4,4'-(*o*-phenylene)bis(3-thioallophanate) (synonym: Thiophanate-methyl)



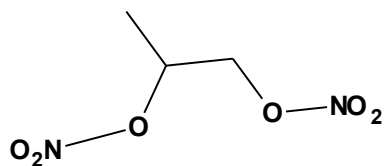
Molecular formula: C₁₂H₁₄N₄O₄S₂
 CAS: 23564-05-8
 ENCS: Uncertain
 MW: 342.39
 mp: 172°C⁹⁾
 bp: Uncertain
 SW: 439mg/L (25°C)²¹⁾
 Specific gravity: Uncertain
 logPow: 1.5²²⁾

[14] Dimethyl terephthalate



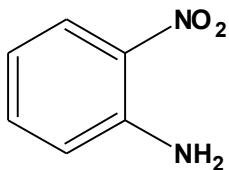
Molecular formula: C₁₀H₁₀O₄
 CAS: 120-61-6
 ENCS: 3-1328
 MW: 194.19
 mp: 141°C⁹⁾
 bp: 288°C(760 mmHg)⁹⁾
 SW: 19.0mg/L (25°C)²¹⁾
 Specific gravity: 1.065 (20/4°C)¹⁶⁾
 logPow: 2.25¹¹⁾

[15] Propylene dinitrate



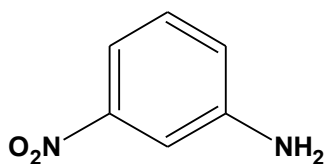
Molecular formula: C₃H₆N₂O₆
 CAS: 6423-43-4
 ENCS: 2-1570
 MW: 166.089
 mp: -29.49°C²³⁾
 bp: 92°C(10 mmHg)⁹⁾
 SW: 0.1g/100mL²⁴⁾
 Specific gravity: 1.2(water=1)²⁴⁾
 logPow: 1.83²⁵⁾

[16] *o*-Nitroaniline



Molecular formula: C₆H₆N₂O₂
 CAS: 88-74-4
 ENCS: 3-392
 MW: 138.13
 mp: 69~71°C¹⁾
 bp: 284°C¹⁾
 SW: 1260mg/L (25°C)²⁶⁾
 Specific gravity: 0.9015 (25/4°C)¹⁾
 logPow: 1.85³²⁾

[17] *m*-Nitroaniline



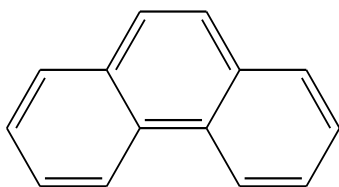
Molecular formula: C₆H₆N₂O₂
 CAS: 99-09-2
 ENCS: 3-392
 MW: 138.13
 mp: 114°C¹⁾
 bp: 306°C¹⁾
 SW: 1g/880mL¹⁾
 Specific gravity: 0.9011 (25/4°C)¹⁾
 logPow: 1.37²⁷⁾

[18] Vanadium and its compounds (as Vanadium)



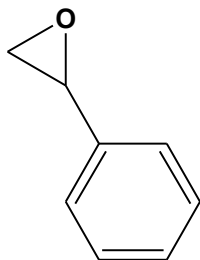
Molecular formula: V
 CAS: 7440-62-2
 ENCS: Uncertain
 MW: 50.94
 mp: 1917°C¹⁾
 bp: Uncertain
 SW: Insoluble¹⁾
 Specific gravity: Uncertain
 logPow: Uncertain

[19] Phenanthrene



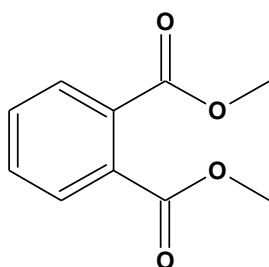
Molecular formula: C₁₄H₁₀
 CAS: 85-01-8
 ENCS: 4-635
 MW: 178.23
 mp: 101°C⁹⁾
 bp: 340°C⁹⁾
 SW: 1.6 mg/L (15°C)¹⁷⁾
 Specific gravity: 0.98 (4°C)⁹⁾
 logPow: 4.46²⁾

[20] Phenyloxirane (synonym: Styreneoxide)



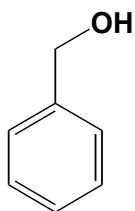
Molecular formula: C₈H₈O
 CAS: 96-09-3
 ENCS: 3-1033
 MW: 120.15
 mp: -35.6°C⁹⁾
 bp: 194.1°C⁹⁾
 SW: 3,000mg/L (20°C)³⁰⁾
 Specific gravity: 1.0523⁹⁾
 logPow: 1.61³¹⁾

[21] Dimethyl phthalate



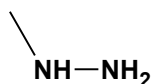
Molecular formula: C₁₀H₁₀O₄
 CAS: 131-11-3
 ENCS: 3-1301
 MW: 194.19
 mp: 5.5°C¹⁾
 bp: 283.7°C¹⁾
 SW: 4g/L (20°C)¹⁸⁾
 Specific gravity: 1.192 (20°C)¹⁶⁾
 logPow: 1.56³²⁾

[22] Benzyl alcohol



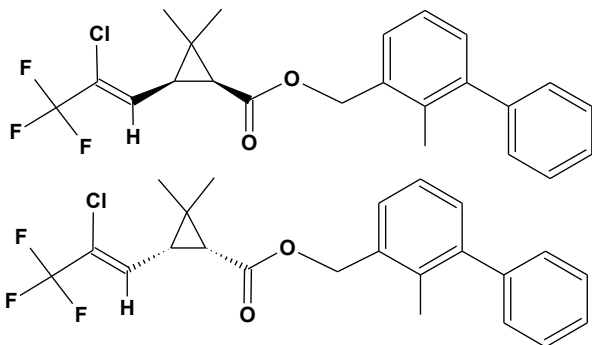
Molecular formula: C₇H₈O
 CAS: 100-51-6
 ENCS: 3-1011
 MW: 108.14
 mp: -15.2°C⁹⁾
 bp: 205.3°C⁹⁾
 SW: 42.9g/L (25°C)¹⁵⁾
 Specific gravity: 1.04 (20/4°C)⁹⁾
 logPow: 1.10²⁾

[23] Methylhydrazine

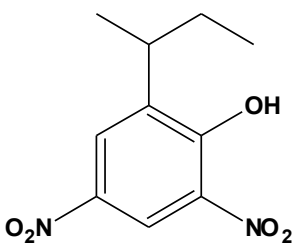
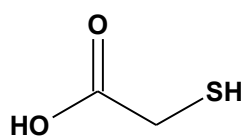
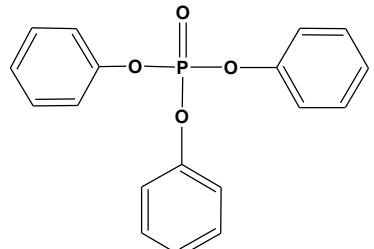


Molecular formula: CH₆N₂
 CAS: 60-34-4
 ENCS: 2-2385
 MW: 46.07
 mp: -52.4°C¹⁾
 bp: 87.5°C¹⁾
 SW: 1,000 g/L (25°C)³³⁾
 Specific gravity: 0.874 (25°C)¹⁾
 logPow: -1.05³⁴⁾

[24] 2-Methyl-1,1'-biphenyl-3-ylmethyl (Z)-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate (synonym: Bifenthrin)



Molecular formula: C₂₃H₂₂ClF₃O₂
 CAS: 82657-04-3
 ENCS: 4-1701
 MW: 422.87
 mp: 69°C¹⁾
 bp: Uncertain
 SW: 0.1mg/L¹³⁾
 Specific gravity: 1.21 (25°C)¹⁾
 logPow: >6²⁾

<p>[25] 2-(1-Methylpropyl)-4,6-dinitrophenol</p> 	<p>Molecular formula: C₁₀H₁₂N₂O₅ CAS: 88-85-7 ENCS: 3-828 MW: 240.215 mp: 38~42°C¹⁾ bp: 332°C³⁵⁾ SW: 25.8mg/L³⁶⁾ Specific gravity: 1.29(water=1) (30°C)³⁷⁾ logPow: 3.09³⁶⁾</p>
<p>[26] Mercaptoacetic acid</p> 	<p>Molecular formula: C₂H₄O₂S CAS: 68-11-1 ENCS: 2-1355 MW: 92.11 mp: -16.5°C¹⁾ bp: 123°C (3.9 kPa), 108°C (2.0 kPa)¹⁾ SW: Readily soluble¹⁾ Specific gravity: 1.300 (25°C/4°C)¹⁶⁾ logPow: 0.09³⁸⁾</p>
<p>[27] Triphenyl phosphate</p> 	<p>Molecular formula: C₁₈H₁₅O₄P CAS: 115-86-6 ENCS: 3-2522, 3-3363 MW: 326.29 mp: 50.5°C²⁾ bp: 245°C (11 mmHg)²⁾ SW: 1.9 mg/L (25°C)²¹⁾ Specific gravity: Uncertain logPow: 4.59¹¹⁾</p>

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 - 27) International Chemical Safety Cards ICSC0307
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 - 38) USEPA KOWWIN v1.66

3. Surveyed site and procedure

In the Initial Environmental Survey, the sampling and analysis of specimens was entrusted to prefectural governments and government-designated cities across Japan, and some specimens were analyzed by private analytical laboratories.

(1) Organisations responsible for sampling

Local communities	Organisations responsible for sampling	Surveyed media		
		Surface water	Sediment	Air
Hokkaido	Hokkaido Institute of Environmental Sciences	○	○	○
Sapporo City	Sapporo City Institute of Public Health	○		○
Iwate Pref.	Research Institute for Environmental Sciences and Public Health of Iwate Prefecture	○		
Miyagi Pref.	Miyagi Prefectural Institute of Public Health and Environment	○		
Sendai City	Sendai City Institute of Public Health	○		○
Yamagata Pref.	Environmental Science Research Center of Yamagata Prefecture	○		
Ibaraki Pref.	Ibaraki Kasumigaura Environmental Science Center	○		○
Tochigi Pref.	Tochigi Prefectural Institute of Public Health and Environmental Science	○		
Saitama Pref.	Center for Environmental Science in Saitama	○		○
Chiba Pref.	Chiba Prefectural Environmental Research Center	○		○
Tokyo Met.	Tokyo Metropolitan Research Institute for Environmental Protection			○
Kanagawa Pref.	Kanagawa Environmental Research Center			○
Yokohama City	Yokohama Environmental Science Research Institute	○		
Kawasaki City	Kawasaki Municipal Research Institute for Environmental Protection	○	○	○
Niigata Pref.	Niigata Prefectural Institute of Public Health and Environmental Sciences	○	○	
Ishikawa Pref.	Ishikawa Prefectural Institute of Public Health and Environmental Science	○	○	
Nagano Pref.	Nagano Environmental Conservation Research Institute	○		○
Gifu Pref.	Gifu Prefectural Research Institute for Health and Environmental Sciences			○
Aichi Pref.	Aichi Environmental Research Center	○	○	
Nagoya City	Nagoya City Environmental Science Research Institute	○		○
Mie Pref.	Mie Prefectural Science and Technology Promotion Center	○	○	○
Shiga Pref.	Lake Biwa Environmental Research Institute	○	○	
Kyoto Pref.	Kyoto Prefectural Institute of Public Health and Environment	○		○
Kyoto City	Kyoto Prefectural Institute of Public Health and Environment	○		○
Osaka Pref.	Research Institute of Environment, Agriculture and Fisheries, Osaka Prefectural Government	○		○
Osaka City	Osaka City Institute of Public Health and Environmental Sciences	○		
Hyogo Pref.	Hyogo Prefectural Institute of Public Health and Environmental Sciences	○	○	
Wakayama Pref.	Wakayama Prefectural Research Center of Environment and Public Health			○
Okayama Pref.	Okayama Prefectural Institute for Environmental Science and Public Health	○	○	○
Hiroshima City	Hiroshima Prefectural Technology Research Institute Health and Environment Center	○	○	
Yamaguchi Pref.	Yamaguchi Prefectural Public Health and Environment	○	○	○
Tokushima Pref.	Tokushima Prefectural Institute of Public Health and Environmental Sciences	○		○
Kagawa Pref.	Kagawa Prefectural Research Institute for Environmental Sciences and Public Health	○	○	○
Fukuoka Pref.	Fukuoka Institute of Health and Environmental Science	○		○

Local communities	Organisations responsible for sampling	Surveyed media		
		Surface water	Sediment	Air
Kitakyushu City	Kitakyushu City Institute of Environmental Sciences	○	○	
Fukuoka City	Fukuoka City Institute for Hygiene and the Environment	○		
Saga Pref.	Saga Prefectural Environmental Research Center	○	○	○
Kumamoto Pref.	Kumamoto Prefectural Institute of Public Health and Environmental Science			○

(Note) Organisations responsible for sampling are described by their official names in FY 2007.

(2) Surveyed sites and target chemicals

Surveyed sites and target chemicals for surface water are shown in Table 1-1-1 and Figure 1-1-1. Surveyed sites and target chemicals for sediment are shown in Table 1-1-2 and Figure 1-1-1. Surveyed sites and target chemicals for air are shown in Table 1-1-3 and Figure 1-1-2. The breakdown is summarized as follows.

Surveyed media	Numbers of local communities	Numbers of target chemicals	Numbers of surveyed sites	Numbers of samples at a surveyed site
Surface water	33	17	53	3
Sediment	14	3	18	3
Air	24	10	29	3

Table 1-1-1 List of surveyed sites (surface water) and target chemicals in the Initial Environmental Survey in FY 2007

Local communities	Surveyed sites	Target chemicals																						
		[4]	[5]	[8]	[9]	[10]	[11]	[12]	[13]	[16]	[17]	[18]	[19]	[20]	[21]	[23]	[24]	[26]						
Hokkaido	Ishikarikakokyo Bridge, Mouth of Riv.Ishikari(Ishikari City)										○					○	○							
Sapporo City	Nakanuma of Riv.Toyohira(Sapporo City)																							○
	Azuma-bashi Bridge, Riv.Toyohira(Sapporo City)										○													○
Iwate Pref.	Riv.Toyosawa(Hanamaki City)															○								
Miyagi Pref.	Kannon-Bridge of Riv.Naruse (Misato Town)											○												
Sendai City	Hirose-ohashi Bridge, Riv.Hirose(Sendai City)							○	○				○	○										
Yamagata Pref.	Mouth of Riv.Mogami(Sakata City)																					○		
Ibaraki Pref.	Katta-bashi Bridge, Riv.Naka(Hitachinaka City)							○	○		○	○	○										○	
	Tonekamome-ohasi Bridge, Mouth of Riv.Tone(Kamisu City)							○	○		○	○	○										○	
Tochigi Pref.	Riv.Tagawa (Utsunomiya City)	○																					○	
Saitama Pref.	Nawate-Bridge of Riv.Ayase(Saitama City)					○																		
Chiba Pref.	Asahi Higashiashiarai Beach																			○				
	Asai-bashi Bridge, Riv.Yourou(Ichihara City)											○										○		
Yokohama City	Kamenoko Bridge over Riv.Tsurumi(Yokohama City)											○				○	○						○	
Kawasaki City	Mouth of Riv. Tama(Kawasaki City)			○		○	○	○				○	○								○			
	Keihin Canal, Port of Kawasaki			○		○	○	○				○	○								○			
Niigata Pref.	Lower Riv. Shinano(Niigata City)		○	○		○	○	○				○	○								○			
Ishikawa Pref.	Mouth of Riv. Sai(Kanazawa City)	○	○	○		○	○	○				○	○											
	Offshore of Kasama Town(Hakusan City)																							○
Nagano Pref.	Lake Suwa (center)	○	○																				○	
Aichi Pref.	Nagoya Port																○							
Nagoya City	Minatoshinbashi Bridge, Riv. Hori (Nagoya City)																					○		
Mie Pref.	Yokkaichi Port	○	○	○		○	○					○	○			○		○						
	Tsumatusaka Port																							○
Shiga Pref.	Nomura-Bridge of Riv. Hino(Omihachiman City)						○																	
	Hattori-Bridge of Riv. Yasu(Moriyama City)																				○			
	Lake Biwa(center, offshore of Minamihira)		○														○							
Kyoto Pref.	Miyazu Port										○					○								
Kyoto City	Miyamae Bridge, Riv. Katsura(Kyoto City)																					○		
Osaka Pref.	Dainineyagawa, Shinkingoro Bridge(Higashiosaka City)																							○
	Mouth of Riv. Yamato (Sakai City)		○																			○		
Osaka City	Osaka Port						○																	
Hyogo Pref.	Amagasaki-Nishinomiya-Ashiya Port																							○
	Awata-Bridge of Riv. Kako(Ono City)																				○			
	Offshore of Himeji		○									○												
Okayama Pref.	Offshore of Mizushima											○				○			○			○		
Hiroshima Pref.	Mitsu Bay						○																	
	Kure Port																					○		
	Hiroshima Bay																					○		
	West of Hiroshima Bay																					○		

Local communities	Surveyed sites	Target chemicals																
		[4]	[5]	[8]	[9]	[10]	[11]	[12]	[13]	[16]	[17]	[18]	[19]	[20]	[21]	[23]	[24]	[26]
Yamaguchi Pref.	East of Tokuyama Bay																	○
	Tokuyama Bay												○				○	
	Offshore of Ube				○													
	Offshore of Hagi												○				○	
Tokushima Pref.	Mouth of Riv. Yoshino(Tokushima City)									○								
Kagawa Pref.	Takamatsu Port	○											○					○
Fukuoka Pref.	Offshore of Omuta	○		○						○								
	Kabura-bashi Bridge, River Raizan(Maebaru City)	○								○								
Kitakyushu City	Kanmon Strait	○		○		○	○				○	○		○				
	Dokai Bay	○		○		○	○				○	○		○				
Fukuoka City	Hakata Bay													○				
Saga Pref.	Mameda-Bridge of Riv. Iryuu(Yoshinogari Town)																○	
	Imari Bay	○								○								

[4] 2,4-Xylenol, [5] Quinoline, [8] 2-Chloronitrobenzene, [9] Salicylaldehyde, [10] 2,6-Dinitrotoluene, [11] *m*-Dinitrobenzene, [12] Dibenzyl ether (synonym: [(Benzyloxy)methyl]benzene), [13] Dimethyl 4,4'-(*o*-phenylene)bis(3-thioallophanate) (synonym: Thiophanate-methyl), [16] *o*-Nitroaniline, [17] *m*-Nitroaniline, [18] Vanadium and its compounds (as Vanadium), [19] Phenanthrene, [20] Phenyloxirane (synonym: Styreneoxide), [21] Dimethyl phthalate, [23] Methylhydrazine, [24] 2-Methyl-1,1'-biphenyl-3-ylmethyl (Z)-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate (synonym: Bifenthrin), [26] Mercaptoacetic acid

Table 1-1-2 List of surveyed sites (sediment) and target chemicals in the Initial Environmental Survey in FY 2007

Local communities	Surveyed sites	Target chemicals		
		[12]	[19]	[21]
Hokkaido	Ishikarikakokyo Bridge, Mouth of Riv. Ishikari(Ishikari City)	○	○	
Kawasaki City	Mouth of Riv. Tama(Kawasaki City)	○		○
	Keihin Canal, Port of Kawasaki	○		○
Niigata Pref.	Lower Riv. Shinano(Niigata City)	○		○
Ishikawa Pref.	Mouth of Riv. Sai(Kanazawa City)	○		
Aichi Pref.	Nagoya Port		○	
Mie Pref.	Yokkaichi Port		○	○
Shiga Pref.	Lake Biwa(center, offshore of Minamihira)		○	
Hyogo Pref.	Offshore of Himeji	○		
Okayama Pref.	Offshore of Mizushima		○	
Hiroshima Pref.	Kure Port			○
	Hiroshima Bay			○
Yamaguchi Pref.	Tokuyama Bay		○	
	Offshore of Hagi		○	
Kagawa Pref.	Takamatsu Port		○	
Kitakyushu City	Kanmon Strait		○	
	Dokai Bay		○	
Saga Pref.	Imari Bay	○		

[12] Dibenzyl ether (synonym: [(Benzyloxy)methyl]benzene), [19] Phenanthrene, [21] Dimethyl phthalate

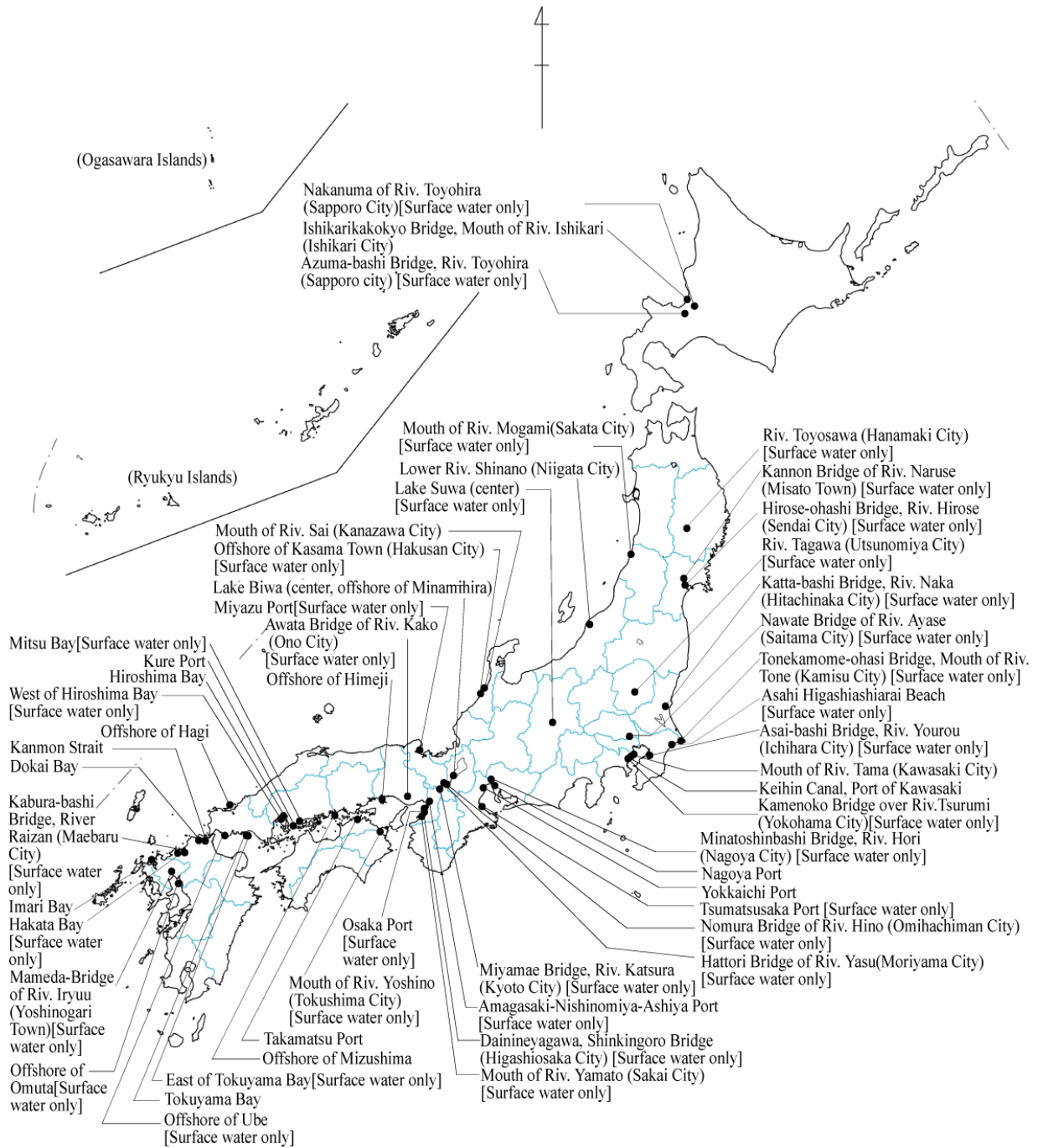


Figure 1-1-1 Surveyed sites (surface water and sediment) in the Initial Environmental Survey in FY 2007

Table 1-1-3 List of surveyed sites (air) and target chemicals in the Initial Environmental Survey in FY 2007

Local communities	Surveyed sites	Target chemicals									
		[1]	[2]	[3]	[6]	[7]	[14]	[15]	[22]	[25]	[27]
Hokkaido	Hokkaido Institute of Environmental Sciences(Sapporo City)	○				○	○			○	
Sapporo City	Sapporo City Institute of Public Health(Sapporo City)								○		○
Sendai City	Tsutsujigaoka Park(Sendai City)						○		○		
Ibaraki Pref.	Ibaraki Kasumigaura Environmental Science Center(Tsuchiura City)			○	○					○	
Saitama Pref.	Center for Environmental Science in Saitama(Kisai Town)						○	○			○
Chiba Pref.	Chiba Prefectural Environmental Research Center(Ichihara City)		○	○	○		○			○	○
	Ichihara-Matsuzaki Air Quality Monitoring Station(Ichihara City)					○					
Tokyo Met.	Tokyo Metropolitan Research Institute for Environmental Protection(Koto Ward)					○					
	Chichijima Island					○					
Kanagawa Pref.	Sagamihara City Fuchinobe Elementary School(Sagamihara City)		○	○						○	
	Kanagawa Environmental Research Center(Hiratsuka City)	○									○
Kawasaki City	Daishi Air Quality Monitoring Station(Kawasaki City)		○	○						○	
Nagano Pref.	Nagano Environmental Conservation Research Institute(Nagano City)					○	○				
Gifu Pref.	Gifu Prefectural Research Institute for Health and Environmental Sciences(Kakamigahara City)							○			
Nagoya City	Chikusa Ward Heiwa Park(Nagoya City)	○		○	○		○	○			
Mie Pref.	Mie Prefectural Science and TechnologyPromotion Center(Yokkaichi City)					○	○	○	○		
Kyoto Pref.	Kyoto Prefectural Joyo High School(Joyo City)					○					
Kyoto City	Kyoto City Hall(Kyoto City)	○							○		
Osaka Pref.	Research Institute of Environment, Agriculture and Fisheries, Osaka Prefectural Government(Osaka City)					○	○				
Wakayama Pref.	Wakayama Prefectural Research Center of Environment and Public Health(Wakayama City)	○									
Okayama Pref.	Shionasu Air Quality Monitoring Station(Kurashiki City)		○	○						○	
Yamaguchi Pref.	Shunan City Government Building(Shunan City)		○	○						○	
	Yamaguchi Prefectural Public Health and Environment(Yamaguchi City)						○	○	○		○
Tokushima Pref.	Wakimachi ambient air pollution monitoring station(Mima City)		○	○						○	
Kagawa Pref.	Takamatsu Joint Prefectural Government Building(Takamatsu City)							○	○		
Fukuoka Pref.	Omuta City Hall(Omuta City)							○			
	Munakata Prefectural Government Building(Munakata City)							○			
Saga Pref.	Saga Prefectural Environmental Research Center(Saga City)			○	○						
Kumamoto Pref.	Kumamoto Prefectural Institute of Public Health and Environmental Science(Udo City)				○		○				

[1] Adipic acid, [2] Ethyleneimine, [3] 4'-Ethoxyacetanilide (synonym:Phenacetin),
[6] 5-Chloro-N-{2-[4-(2-ethoxyethyl)-2,3-dimethylphenoxy]ethyl}-6-ethylpyrimidine-4-amine (synonym:Pyrimidifen),
[7] 1-Chloronaphthalene, [14] Dimethyl terephthalate, [15] Propylene dinitrate, [22] Benzyl alcohol,
[25] 2-(1-Methylpropyl)-4,6-dinitrophenol, [27] Triphenyl phosphate

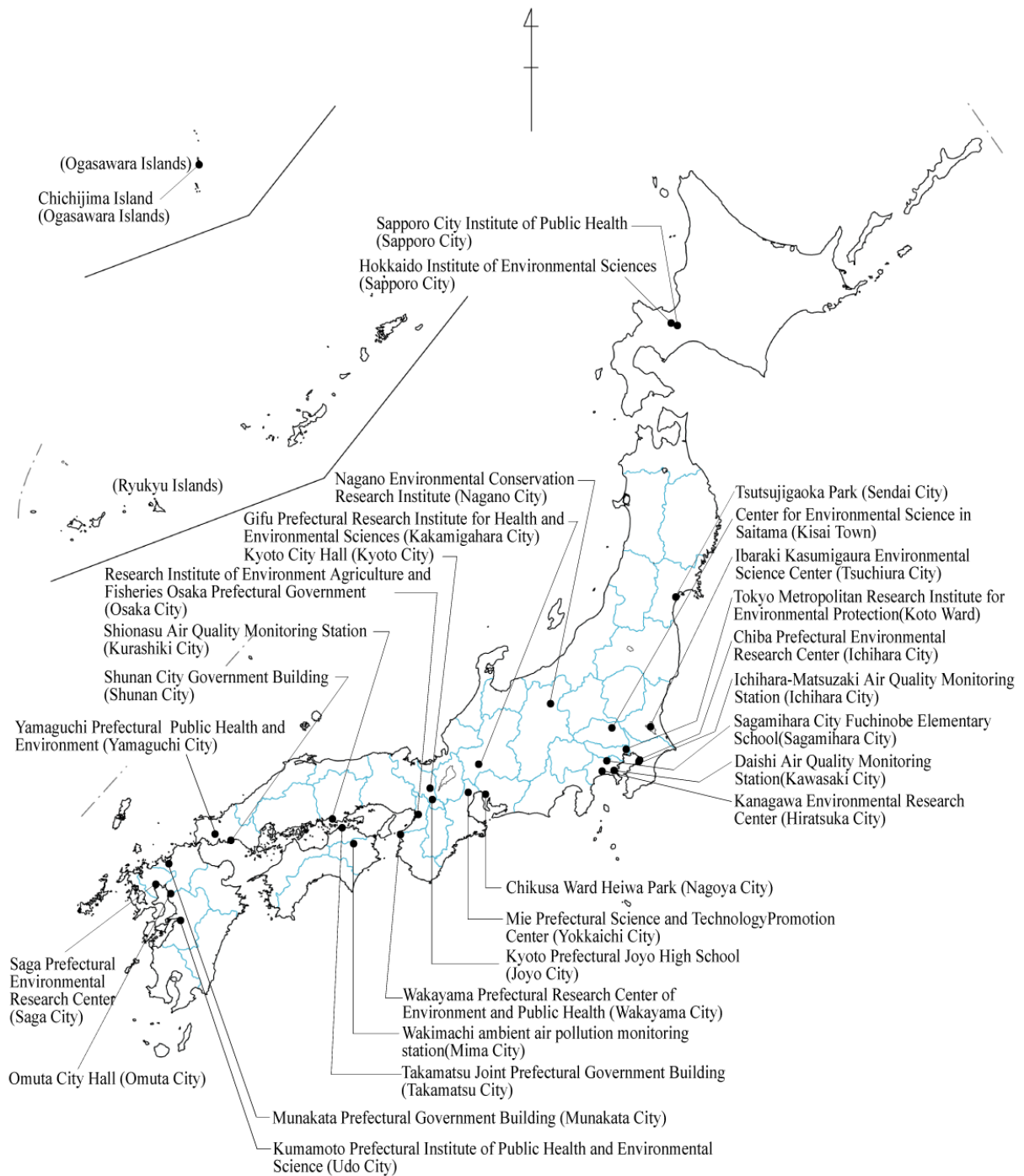


Figure 1-1-2 Surveyed sites (air) in the Initial Environmental Survey in FY 2007

(3) Detection limit

The detection limits of analysed values reported by the analytical laboratory are not necessarily the same because of differences in the properties of specimens and in the available measurement equipment. To enable summarisation, therefore, a unified detection limit is predetermined and the analytical values reported by the analytical laboratory are summarised by the following procedure.

Treatment of measured value as an undetected value in high-sensitivity analysis

In the case of high-sensitivity analysis, in which the detection limit of the analytical laboratory is lower than the unified detection limit, any measured value lower than the unified detection limit is treated as an undetected value in the nationwide summary (see schematic ①).

Elimination of undetected values in low-sensitivity analysis from summary subject

When the detection limit of the analytical laboratory is higher than the unified detection limit, any target chemical not detected is eliminated from the subject of the summary (see schematic ②).

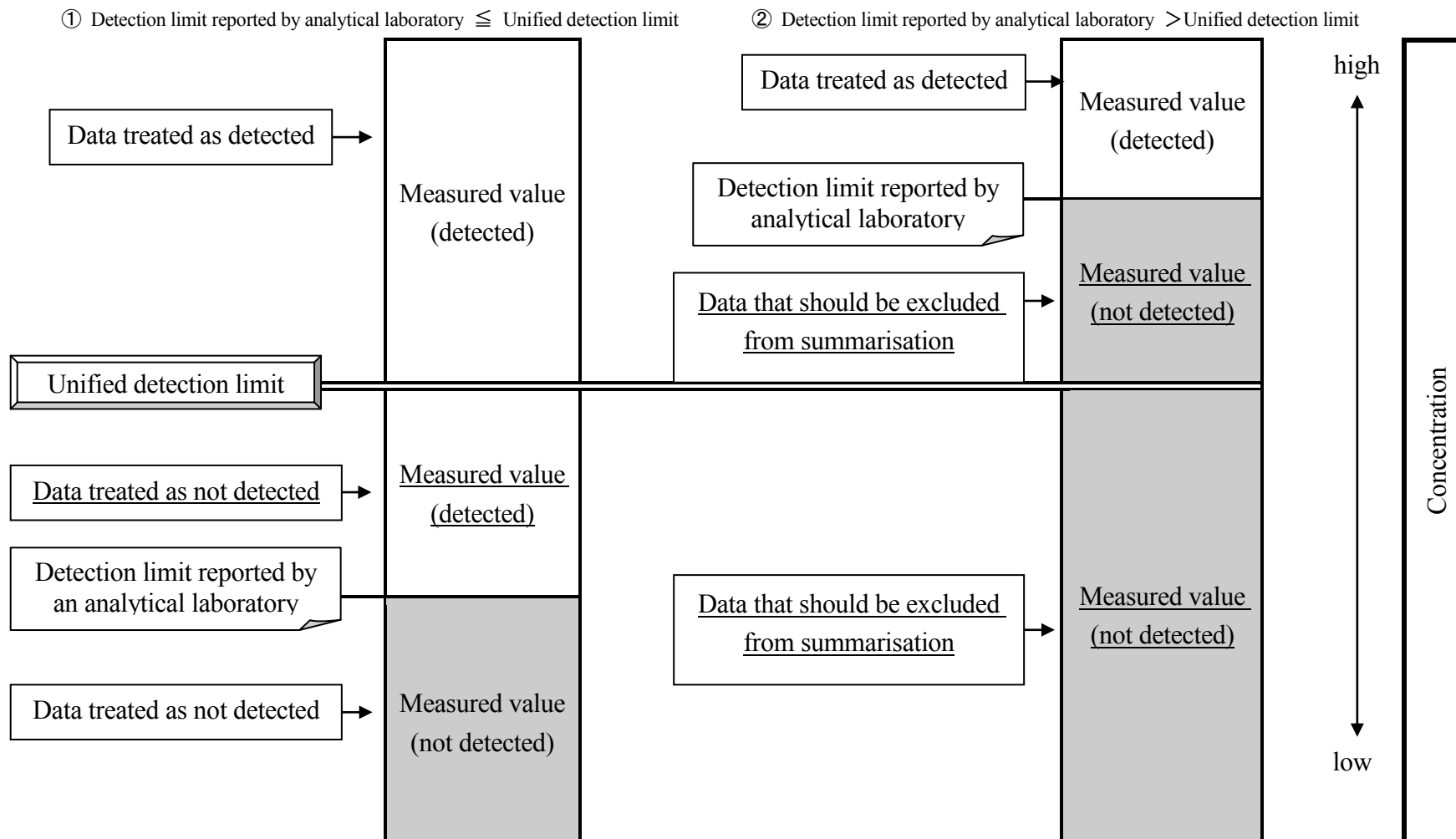
When the instrument detection limit (IDL) and the method detection limit (MDL) are given in the analytical method, which is described in reports on the investigation of the development of analytical methods for chemicals and adopted in the Initial Environmental Survey (hereafter, the Initial Environmental Survey Analytical Method), if the IDL measured by the analytical laboratory is lower than the given IDL, the MDL of the Initial Environmental Survey Analytical Method is used as the detection limit by the analytical laboratory.

When IDL and MDL are not given in the Initial Environmental Survey Analytical Method, the detection limit is predetermined by the following procedure.

When the analytical laboratory calculates the appropriate IDL and MDL following the calculation method stated in the analytical method development instruction manuals, this calculated MDL is used as the detection limit by the analytical laboratory.

When the appropriate IDL and MDL are not calculated by the analytical laboratory, one of the following procedures was employed to establish the detection limit by the analytical laboratory.

- deduction from the IDL and MDL calculated for the corresponding chemical by Initial Environmental Survey Analytical Method or other analytical laboratories
- deduction from the lowest calibration curve concentration and the results of recovery tests
- deduction from the results of addition and collection tests, the results of operation blank tests, and the signal/noise ratio (S/N ratio) obtained from the chromatogram of environmental specimens



Schematic of procedure for data summarisation

4. Summary of survey results

The detection ranges and the detection limits are shown in Table 1-2. The survey results are summarized as follows.

In surface water, 8 out of the 17 target chemicals were detected.

- [4] 2,4-Xylenol: 5 of the 9 valid sites
- [5] Quinoline: 4 of the 7 valid sites
- [12] Dibenzyl ether (synonym: [(Benzyloxy)methyl]benzene): 1 of the 8 valid sites
- [13] Dimethyl 4,4'-(o-phenylene)bis(3-thioallophanate) (synonym: Thiophanate-methyl): 1 of the 9 valid sites
- [18] Vanadium and its compounds (as Vanadium): 5 of the 5 valid sites
- [19] Phenanthrene: 6 of the 9 valid sites
- [21] Dimethyl phthalate: 7 of the 7 valid sites
- [26] Mercaptoacetic acid: 3 of the 5 valid sites

In sediment, 3 out of the 3 target chemicals were detected.

- [12] Dibenzyl ether (synonym: [(Benzyloxy)methyl]benzene): 3 of the 6 valid sites
- [19] Phenanthrene: 10 of the 10 valid sites
- [21] Dimethyl phthalate: 6 of the 6 valid sites

In air, 5 out of the 10 target chemicals were detected.

- [7] 1-Chloronaphthalene: 5 of the 8 valid sites
- [14] Dimethyl terephthalate: 8 of the 9 valid sites
- [15] Propylene dinitrate: 1 of the 8 valid sites
- [22] Benzyl alcohol: 5 of the 6 valid sites
- [27] Triphenyl phosphate: 5 of the 5 valid sites

Table 1-2 Summary of the detection ranges and the detection limits in the Initial Environmental Survey in FY 2007

Target chemicals		Surface water [ng/L]		Sediment [ng/g-dry]		Air [ng/m ³]	
No.	Detection range and frequency	Detection range and frequency	Detection limit	Detection range and frequency	Detection limit	Detection range and frequency	Detection limit
[1]	Adipic acid					nd 0/5	90
[2]	Ethyleneimine					nd 0/6	2.7
[3]	4'-Ethoxyacetanilide (synonym: Phenacetin)					nd 0/9	3.1
[4]	2,4-Xylenol	nd~4.3 5/9	1.4				
[5]	Quinoline	nd~13 4/7	1.1				
[6]	5-Chloro-N-{2-[4-(2-ethoxyethyl)-2,3-dimethylphenoxy]ethyl}-6-ethylpyrimidine-4-amine (synonym: Pylimidifen)					nd 0/5	1.8
[7]	1-Chloronaphthalene					nd~0.73 5/8	0.15
[8]	2-Chloronitrobenzene	nd 0/8	2.3				
[9]	Salicylaldehyde	nd 0/5	13				
[10]	2,6-Dinitrotoluene	nd 0/7	1.4				
[11]	<i>m</i> -Dinitrobenzene	nd 0/8	1.9				
[12]	Dibenzyl ether (synonym: [(Benzyloxy)methyl]benzene)	nd~8.3 1/8	1.9	nd~21 3/6	0.18		
[13]	Dimethyl 4,4'-(<i>o</i> -phenylene)bis(3-thioallophanate) (synonym: Thiophanate-methyl)	nd~0.90 1/9	0.79				
[14]	Dimethyl terephthalate					nd~1.0 8/9	0.012
[15]	Propylene dinitrate					nd~3.9 1/8	2.0
[16]	<i>o</i> -Nitroaniline	nd 0/8	1.1				
[17]	<i>m</i> -Nitroaniline	nd 0/7	2.2				
[18]	Vanadium and its compounds	630~4,600 5/5	2.4				
[19]	Phenanthrene (as Vanadium)	nd~55 6/9	1.4	3.9~690 10/10	0.023		
[20]	Phenyloxirane (synonym: Styreneoxide)	nd 0/5	12				
[21]	Dimethyl phthalate	nd~9.7 7/7	1.7	0.54~6.3 6/6	0.35		
[22]	Benzyl alcohol					nd~7,300 5/6	450
[23]	Methylhydrazine	nd 0/5	27				
[24]	2-Methyl-1,1'-biphenyl-3-ylmethyl(Z)-3-(2-chloro-3,3,3-trifluoro-1-propenyl)-2,2-dimethylcyclopropanecarboxylate (synonym: Bifenthrin)	nd 0/11	7.8				
[25]	2-(1-Methylpropyl)-4,6-dinitrophenol					nd 0/8	3.2
[26]	Mercaptoacetic acid	nd~24 3/5	1.1				
[27]	Triphenyl phosphate					0.054~0.33 5/5	0.041

(Note 1) Detection frequency is based on the number of sites or areas, thus means (the number of detected sites/the number of surveyed sites). A site where data was not available was excluded from the number of surveyed sites. A site where the data became invalid under a unified detection limit was also excluded. 3 samples were measured for a site or area, and the detection in more than one out of samples from a site or area can be defined as one detected site or area.

(Note 2) Detection range is based on the number of samples and therefore can be shown as "nd~" even if a target chemical is detected in all sites (or areas).

(Note 3) means the medium was not surveyed.

