# Chapter 1 Results of the Initial Environmental Survey in FY 2005

## 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 2005 Initial Environmental Survey, 34 chemicals (groups) that were selected by the FY 2005 Expert Group for Promotion of the Environmental Survey and Monitoring of Chemicals were designated as target chemicals. The combinations of target chemicals and the surveyed media are given below.

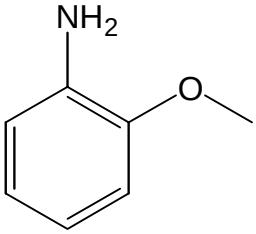
| Target chemicals | | Designated Class in | | Surveyed media | | | | |
|---|---|---|---|---|---|---|---|---|
| No | Name | The Chemical Substances Control Law | The PRTR Law | Surface water | Sediment | Wildlife | | Air |
| | | | | | | Bivalves | Fish | |
| 1 | *o*-Anisidine | | I | ○ | ○ | | | |
| 2 | Amitorole | II Monitored | I | ○ | ○ | | | |
| 3 | 4,4'-Isopropylidenebis[2-(2,6-dibromophenoxy) ethanol] | | I | ○ | ○ | | | |
| 4 | 17β-Estradiol | | | ○ | | | | |
| 5 | Estrone | | | ○ | | | | |
| 6 | 17α-Ethynylestradiol | | | ○ | | | | |
| 7 | 2,3-Epoxypropane-1-ol | | I | ○ | ○ | | | |
| 8 | *m*-Chloroaniline | II Monitored<br>III Monitored | I | ○ | ○ | | | |
| 9 | *N*-Cyclohexyl-2-benzothiazolesulfanamide | | I | ○ | | | | |
| 10 | 3,3'-Dichloro-4,4'-diaminodiphenylmethane | II Monitored | I | ○ | ○ | | | |
| 11 | 1,2-Dichloro-3-nitrobenzene | II Monitored | I | ○ | ○ | | | |
| 12 | 2-(*2H*-1,2,3-Benzotriazol-2-yl)-4,6-di-*tert*-butylphenol | I Monitored | II | ○ | | | | |
| 13 | 2,6-Dimethylaniline | II Monitored | I | ○ | | | | |
| 14 | 3,4-Dimethylaniline | III Monitored | I | ○ | ○ | | | |
| 15 | *N*-(1,3-Dimetylbutyl)-*N'*-phenyl-*p*-phnylenediamine | | II | ○ | | | | ○ |
| 16 | 3,3'-Dimethylbenzidine (*o*-tolidine) | II Monitored | I | ○ | | | | |
| 17 | Medium-chain chlorinated paraffins | | II | ○ | ○ | ○ | ○ | |
| | [17-1] Chlorinated tetradecane ($Cl_5$～$Cl_8$) | | | ○ | ○ | ○ | ○ | |
| | [17-2] Chlorinated pentadecane ($Cl_5$～$Cl_9$) | | | | | ○ | ○ | |
| 18 | Linear alkylbenzene sulfonate (LAS) (LAS-$C_{10}$～$C_{14}$) | | I | | ○ | | | |
| | [18-1] Linear decylbenzene sulfonate (LAS-$C_{10}$) | | | | ○ | | | |
| | [18-2] Linear undecylbenzene sulfonate (LAS-$C_{11}$) | | | | ○ | | | |
| | [18-3] Linear dodecylbenzene sulfonate (LAS-$C_{12}$) | | | | ○ | | | |
| | [18-4] Linear tridecylbenzene sulfonate (LAS-$C_{13}$) | | | | ○ | | | |
| | [18-5] Linear tetradecylbenzene sulfonate (LAS-$C_{14}$) | | | | ○ | | | |
| 19 | Octadecylamine(N-B) triphenylborane | | II | ○ | | | | |
| 20 | 2,4,6-Tribromophenol | | I | ○ | | | | |
| 21 | 2,4-Toluenediamine (2,4-diaminotoluene) | II Monitored | I | ○ | ○ | | | |
| 22 | *p*-Nitroaniline | II Monitored | I | ○ | | | | |
| 23 | Nitrosodiphenylamine | III Monitored | I | ○ | | | | |
| 24 | *m*-Phenylenediamine | II Monitored | I | ○ | | | | |
| 25 | *p*-Phenetidine | II Monitored | I | ○ | | | | |
| 26 | Pentachlorophenol | II Monitored<br>III Monitored | I | ○ | | | | |

| Target chemicals | | Designated Class in | | Surveyed media | | | | |
|---|---|---|---|---|---|---|---|---|
| No | Name | The Chemical Substances Control Law | The PRTR Law | Surface water | Sediment | Wildlife | | Air |
| | | | | | | Bivalves | Fish | |
| 27 | Poly(oxyethylene) alkylethers ($C_{12}$～$C_{15}$) | | I | ○ | | | | |
| | [27-1] Poly(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-1] Di(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-2] Tri(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-3] Tetra(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-4] Penta(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-5] Hexa(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-6] Hepta(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-7] Octa(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-8] Nona(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-9] Deca(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-10] Undeca(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-11] Dodeca(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-12] Trideca(oxyethylene) dodecylethers | | | ○ | | | | |
| | [27-1-13] Tetradeca(oxyethylene) dodecylethers | | | ○ | | | | |
| 28 | Poly(oxyethylene) nonylphenylethers (polymerisation degree 2-15) | III Monitored | I | ○ | | | | |
| | [28-1] Di(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-2] Tri(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-3] Tetra(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-4] Penta(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-5] Hexa(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-6] Hepta(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-7] Octa(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-8] Nona(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-9] Deca(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-10] Undeca(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-11] Dodeca(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-12] Trideca(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-13] Tetradeca(oxyethylene) nonylphenylethers | | | ○ | | | | |
| | [28-14] Pentadeca(oxyethylene) nonylphenylethers | | | ○ | | | | |
| 29 | Polybrominated diphenylethers | | | ○ | | | | |
| | [29-1] Monobrominated diphenylethers | | | ○ | | | | |
| | [29-2] Dibrominated diphenylethers | | | ○ | | | | |
| | [29-3] Tribrominated diphenylethers | | | ○ | | | | |
| | [29-4] Tetrabrominated diphenylethers | | | ○ | | | | |
| | [29-5] Pentabrominated diphenylethers | | | ○ | | | | |
| | [29-6] Hexabrominated diphenylethers | | | ○ | | | | |
| | [29-7] Heptabrominated diphenylethers | | | ○ | | | | |
| | [29-8] Octabrominated diphenylethers | | | ○ | | | | |
| | [29-9] Nonabrominated diphenylethers | | | ○ | | | | |
| | [29-10] Decabromodiphenylether | II Monitored | I | ○ | | | | |
| 30 | *N*-Methylaniline | II Monitored | I | ○ | ○ | ○ | ○ | |
| 31 | 2,3-Dihydro-2,2-dimethyl-7-benzo[b]furanyl *N*-methylcarbamate (carbofuran) | II Monitored<br>III Monitored | I | ○ | | | | |
| 32 | *N'-tert*-Butyl-*N*-cyclopropyl-6-(methylthio)-1,3,5-triazine-2,4-diamine | | | ○ | | | | |
| 33 | 2-Methoxy-5-methylaniline | II Monitored | I | ○ | ○ | | | |
| 34 | 3-Iodo-2-propynylbutylcarbamate | | . | ○ | | | | |

(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)."

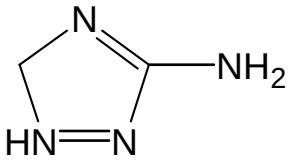
Chemical and physical properties of target chemicals of the Initial Environmental Survey are as follows.

[1] *o*-Anisidine



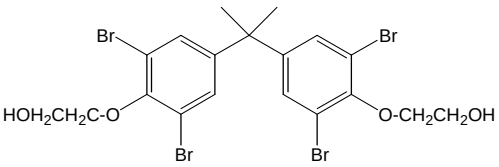
| | |
|---|---|
| Molecular formula: | $C_7H_9NO$ |
| CAS: | 90-04-0 |
| ENCS: | 3-682 |
| MW: | 123.15 |
| mp: | 5℃[1)] |
| bp: | 225℃[1)] |
| SW: | 14g/L (25℃)[2)] |
| Specific gravity: | 1.098 (15/15℃)[1)] |
| logPow: | 1.18[2)] |

[2] Amitorole



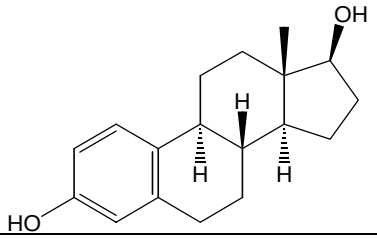
| | |
|---|---|
| Molecular formula: | $C_2H_4N_4$ |
| CAS: | 61-82-5 |
| ENCS: | 5-602 |
| MW: | 84.08 |
| mp: | 159℃[4)] |
| bp: | Uncertain |
| SW: | 280g/L (25℃)[4)] |
| Specific gravity: | 1.138 (20℃)[5)] |
| logPow: | -0.97[5)] |

[3] 4,4'-Isopropylidenebis[2-(2,6-dibromophenoxy)ethanol]



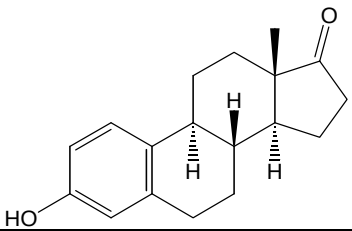
| | |
|---|---|
| Molecular formula: | $C_{19}H_{20}Br_4O_4$ |
| CAS: | 4162-45-2 |
| ENCS: | 4-218 |
| MW: | 631.98 |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | Uncertain |
| Specific gravity: | Uncertain |
| logPow: | Uncertain |

[4] 17β-Estradiol



| | |
|---|---|
| Molecular formula: | $C_{18}H_{24}O_2$ |
| CAS: | 50-28-2 |
| ENCS: | Uncertain |
| MW: | 272.39 |
| mp: | 173～179[1)] |
| bp: | Uncertain |
| SW: | 3.60mg/L (27℃)[2)] |
| Specific gravity: | 1.24 (25℃)[6)] |
| logPow: | 4.01[3)] |

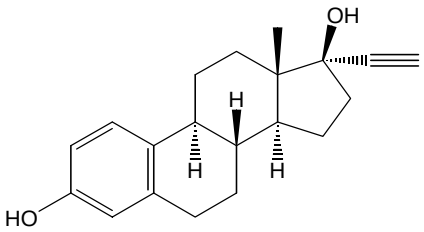
[5] Estrone



| | |
|---|---|
| Molecular formula: | $C_{18}H_{22}O_2$ |
| CAS: | 53-16-7 |
| ENCS: | 9-2145 |
| MW: | 270.37 |
| mp: | 260.2[6)] |
| bp: | Uncertain |
| SW: | 30mg/L (25℃)[1)] |
| Specific gravity: | 1.24 (25℃)[6)] |
| logPow: | 3.13[3)] |

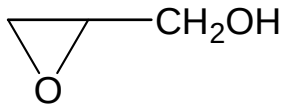
(Abbreviations) CAS: CAS registry number, ENCS: registry number in the Existing and New Chemical Substances List, MW: molecular weight, mp: melting point, bp: boiling point, SW: solubility in water, logPow: *n*-octanol-water partition coefficient, kPa: kilopascal (1 atom 101.3kPa).

[6] 17α-Ethynylestradiol



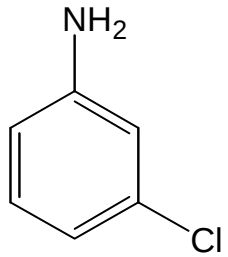

| | |
|---|---|
| Molecular formula: | $C_{20}H_{24}O_2$ |
| CAS: | 57-63-6 |
| ENCS: | Uncertain |
| MW: | 296.4 |
| mp: | 141～146[1)] |
| bp: | Uncertain |
| SW: | 11.3mg/L (27°C)[2)] |
| Specific gravity: | Uncertain |
| logPow: | 3.67[3)] |

[7] 2,3-Epoxypropane-1-ol



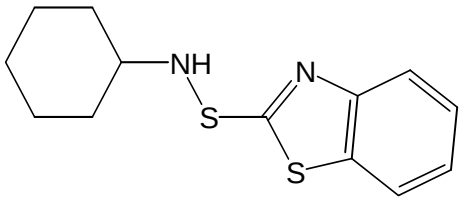

| | |
|---|---|
| Molecular formula: | $C_3H_6O_2$ |
| CAS: | 556-52-5 |
| ENCS: | 2-2389 |
| MW: | 74.08 |
| mp: | -45°C[8)] |
| bp: | 160°C[7)] |
| SW: | Readily soluble[8)] |
| Specific gravity: | 1.115 (20°C)[7)] |
| logPow: | 0.95[3)] |

[8] *m*-Chloroaniline



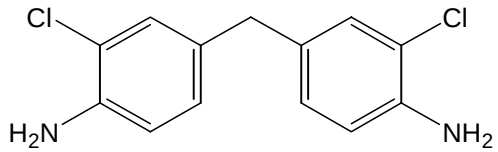

| | |
|---|---|
| Molecular formula: | $C_6H_6ClN$ |
| CAS: | 108-42-9 |
| ENCS: | 3-194 |
| MW: | 127.57 |
| mp: | -10.4°C[1)] |
| bp: | 230.5°C[1)] |
| SW: | 5,400mg/L (20°C)[4)] |
| Specific gravity: | 1.215 (22°C)[1)] |
| logPow: | 1.88[3)] |

[9] *N*-Cyclohexyl-2-benzothiazolesulfanamide



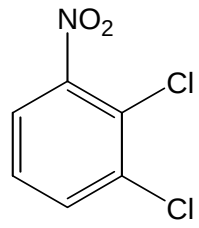

| | |
|---|---|
| Molecular formula: | $C_{13}H_{16}N_2S_2$ |
| CAS: | 95-33-0 |
| ENCS: | 5-256 |
| MW: | 264.43 |
| mp: | 93～100°C[10)] |
| bp: | Uncertain |
| SW: | Almost insoluble[10)] |
| Specific gravity: | 1.27[10)] |
| logPow: | 5.0[3)] |

[10] 3,3'-Dichloro-4,4'-diaminodiphenylmethane



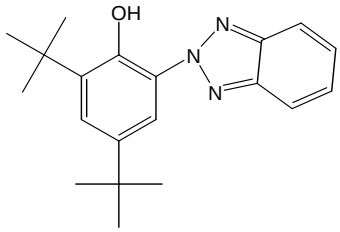

| | |
|---|---|
| Molecular formula: | $C_{13}H_{12}Cl_2N_2$ |
| CAS: | 101-14-4 |
| ENCS: | 4-275, 4-95, 4-96 |
| MW: | 267.16 |
| mp: | 110°C[1)] |
| bp: | 378.9°C[11)] |
| SW: | 13/9mg/L (24°C)[11)] |
| Specific gravity: | 1.44[10)] |
| logPow: | 3.91[12)] |

[11] 1,2-Dichloro-3-nitrobenzene



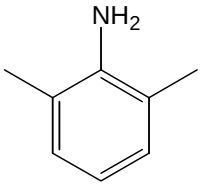

| | |
|---|---|
| Molecular formula: | $C_6H_3Cl_2NO_2$ |
| CAS: | 3209-22-1 |
| ENCS: | 3-455 |
| MW: | 192.00 |
| mp: | 61.5℃[6] |
| bp: | 257.5℃[6] |
| SW: | 62.4mg/L (20℃)[2] |
| Specific gravity: | 1.721 (14℃)[6] |
| logPow: | 3.05[3] |

[12] 2-(*2H*-1,2,3-Benzotriazol-2-yl)-4,6-di-*tert*-butylphenol



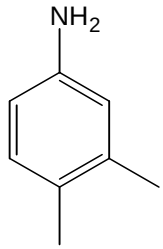

| | |
|---|---|
| Molecular formula: | $C_{20}H_{25}N_{30}$ |
| CAS: | 3846-71-7 |
| ENCS: | 5-3580, 5-3604 |
| MW: | 323.44 |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | Uncertain |
| Specific gravity: | Uncertain |
| logPow: | 6.27[3] |

[13] 2,6-Dimethylaniline



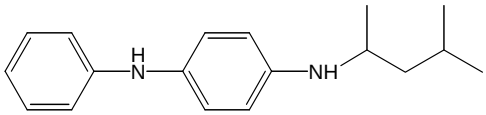

| | |
|---|---|
| Molecular formula: | $C_8H_{11}N$ |
| CAS: | 87-62-7 |
| ENCS: | 3-129 |
| MW: | 121.20 |
| mp: | 11.2℃[6] |
| bp: | 216℃[8] |
| SW: | 8.24g/L (25℃)[13] |
| Specific gravity: | 0.9842 (20℃)[6] |
| logPow: | 1.84[3] |

[14] 3,4-Dimethylaniline



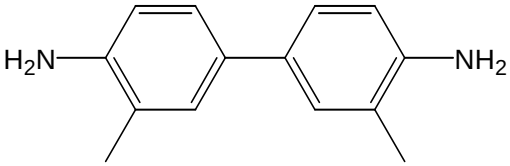

| | |
|---|---|
| Molecular formula: | $C_8H_{11}N$ |
| CAS: | 95-64-7 |
| ENCS: | 3-129 |
| MW: | 121.20 |
| mp: | 51℃[6] |
| bp: | 228℃[6] |
| SW: | 3.8g/L (22℃)[13] |
| Specific gravity: | 1.076 (18℃)[6] |
| logPow: | 1.84[12] |

[15] *N*-(1,3-Dimetylbutyl)-*N'*-phenyl-*p*-phnylenediamine




| | |
|---|---|
| Molecular formula: | $C_{18}H_{24}N_2$ |
| CAS: | 793-24-8 |
| ENCS: | 3-136, 3-368 |
| MW: | 268 |
| mp: | 50℃[10] |
| bp: | Uncertain |
| SW: | Uncertain |
| Specific gravity: | 1.07[10] |
| logPow: | 4.77[3] |

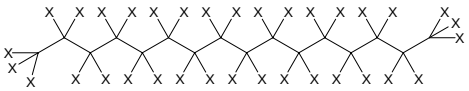
[16] 3,3'-Dimethylbenzidine (*o*-tolidine)



| | |
|---|---|
| Molecular formula: | $C_{14}H_{16}N_2$ |
| CAS: | 119-93-7 |
| ENCS: | 9-882 |
| MW: | 212.28 |
| mp: | 129～131℃[1)] |
| bp: | 300℃[10)] |
| SW: | 1,300mg/L (25℃)[2)] |
| Specific gravity: | Uncertain |
| logPow: | 2.34[3)] |

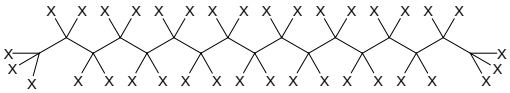
[17] Medium-chain chlorinated paraffins

[17-1] Chlorinated tetradecane ($Cl_5$～$Cl_8$)



X=H (25～22) or Cl (5～8)

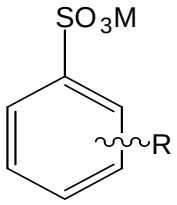
[17-2] Chlorinated pentadecane ($Cl_5$～$Cl_9$)



X=H (27～23) or Cl (5～9)

| | |
|---|---|
| Molecular formula: | $C_mH_{(2m-n+2)}Cl_n$ (m=14～17, n=1～17) |
| CAS: | 85535-85-9 |
| ENCS: | 2-68 |
| MW: | [17-1]<br>370.61 ($C_{14}H_{25}Cl_5$)～473.95 ($C_{14}H_{22}Cl_8$)<br>[17-2]<br>384.64 ($C_{15}H_{27}Cl_5$)～522.42 ($C_{15}H_{23}Cl_9$) |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | Insoluble[1)] |
| Specific gravity: | 1.00～1.07[1)] |
| logPow: | 5～12[3)] |

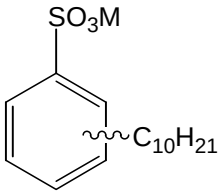
[18] Linear alkylbenzene sulfonate (LAS-$C_{10}$～$C_{14}$)



M=H or Na and other metals

| | |
|---|---|
| Molecular formula: | See [18-1]～[18-5] |
| CAS: | See [18-1]～[18-5] |
| ENCS: | See [18-1]～[18-5] |
| MW: | See [18-1]～[18-5] |
| mp: | See [18-1]～[18-5] |
| bp: | See [18-1]～[18-5] |
| SW: | See [18-1]～[18-5] |
| Specific gravity: | See [18-1]～[18-5] |
| logPow: | See [18-1]～[18-5] |

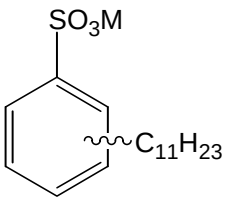
[18-1] Linear decylbenzene sulfonate (LAS-$C_{10}$)



M=H or Na and other metals

| | |
|---|---|
| Molecular formula: | $C_{16}H_{26}O_3S$ ($C_{16}H_{25}O_3SNa$ as a sodium salt) |
| CAS: | 1322-98-1 |
| ENCS: | 3-1949 |
| MW: | 298.46 (320.44 as a sodium salt) |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | Uncertain |
| Specific gravity: | Uncertain |
| logPow: | Uncertain |

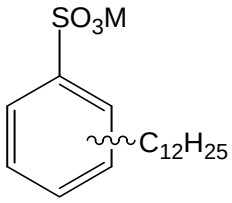
[18-2] Linear undecylbenzene sulfonate (LAS-$C_{11}$)



M=H or Na and other metals

| | |
|---|---|
| Molecular formula: | $C_{17}H_{28}O_3S$ ($C_{17}H_{27}O_3SNa$ as a sodium salt) |
| CAS: | 27636-75-5 |
| ENCS: | 3-1906 |
| MW: | 312.48 (334.46 as a sodium salt) |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | Uncertain |
| Specific gravity: | Uncertain |
| logPow: | Uncertain |

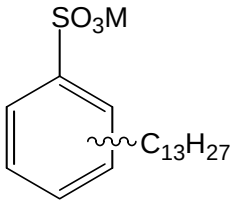
[18-3] Linear dodecylbenzene sulfonate (LAS-$C_{12}$)




M=H or Na and other metals

| | |
|---|---|
| Molecular formula: | $C_{18}H_{30}O_3S$ ($C_{18}H_{29}O_3SNa$ as a sodium salt) |
| CAS: | 25155-30-0 |
| ENCS: | 3-1884 |
| MW: | 326.51 (348.49 as a sodium salt) |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | 0.8g/L[2)] |
| Specific gravity: | Uncertain |
| logPow: | 0.45[3)] |

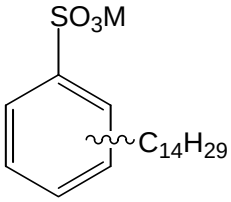
[18-4] Linear tridecylbenzene sulfonate (LAS-$C_{13}$)




M=H or Na and other metals

| | |
|---|---|
| Molecular formula: | $C_{19}H_{32}O_3S$ ($C_{19}H_{31}O_3SNa$ as a sodium salt) |
| CAS: | 26248-24-8 |
| ENCS: | Uncertain |
| MW: | 340.47 (362.45 as a sodium salt) |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | Uncertain |
| Specific gravity: | Uncertain |
| logPow: | 2.52[3)] |

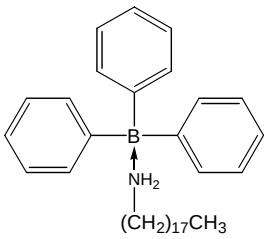
[18-5] Linear tetradecylbenzene sulfonate (LAS-$C_{14}$)




M=H or Na and other metals

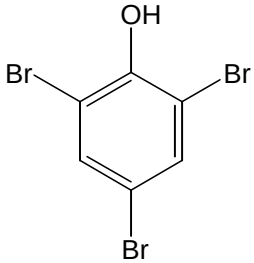
| | |
|---|---|
| Molecular formula: | $C_{20}H_{34}O_3S$ ($C_{20}H_{33}O_3SNa$ as a sodium salt) |
| CAS: | 28348-61-0 |
| ENCS: | 3-1906 |
| MW: | 354.50 (376.48 as a sodium salt) |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | Uncertain |
| Specific gravity: | Uncertain |
| logPow: | Uncertain |

[19] Octadecylamine(N-B) triphenylborane



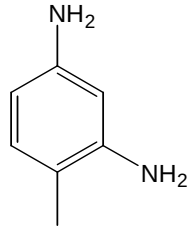

| | |
|---|---|
| Molecular formula: | $C_{36}H_{54}BN$ |
| CAS: | 107065-10-1 |
| ENCS: | 3-4280 |
| MW: | 511 |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | Uncertain |
| Specific gravity: | Uncertain |
| logPow: | Uncertain |

[20] 2,4,6-Tribromophenol



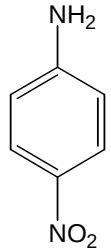

| | |
|---|---|
| Molecular formula: | $C_6H_3Br_3O$ |
| CAS: | 118-79-6 |
| ENCS: | 3-959 |
| MW: | 330.80 |
| mp: | 94～96℃[1)] |
| bp: | 286℃[6)] |
| SW: | 70mg/L (15℃)[2)] |
| Specific gravity: | 2.55 (20℃)[6)] |
| logPow: | 4.13[3)] |

[21] 2,4-Toluenediamine (2,4-Diaminotoluene)



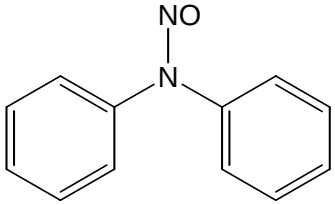
| | |
|---|---|
| Molecular formula: | $C_7H_{10}N_2$ |
| CAS: | 95-80-7 |
| ENCS: | 3-126 |
| MW: | 122.17 |
| mp: | 99°C[6)] |
| bp: | 292°C[6)] |
| SW: | 7.74g/L[20)] |
| Specific gravity: | 1.042 (100°C)[1)] |
| logPow: | 0.337[4)] |

[22] *p*-Nitroaniline



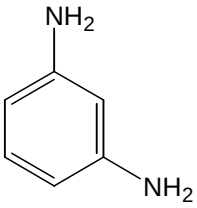
| | |
|---|---|
| Molecular formula: | $C_6H_6N_2O_2$ |
| CAS: | 100-01-6 |
| ENCS: | 3-392 |
| MW: | 138.13 |
| mp: | 146°C[1)] |
| bp: | 332°C[1)] |
| SW: | 724mg/L (25°C)[21)] |
| Specific gravity: | 1.424 (20°C)[6)] |
| logPow: | 1.39[3)] |

[23] Nitrosodiphenylamine



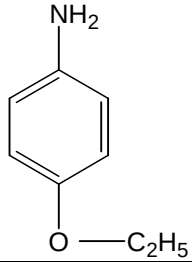
| | |
|---|---|
| Molecular formula: | $C_{12}H_{10}N_2O$ |
| CAS: | 86-30-6 |
| ENCS: | 3-431 |
| MW: | 198.22 |
| mp: | 66.5°C[6)] |
| bp: | Uncertain |
| SW: | 35mg/L (25°C)[2)] |
| Specific gravity: | 1.23[22)] |
| logPow: | 3.13[23)] |

[24] *m*-Phenylenediamine



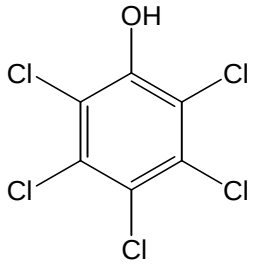
| | |
|---|---|
| Molecular formula: | $C_6H_8N_2$ |
| CAS: | 108-45-2 |
| ENCS: | 3-185 |
| MW: | 108.15 |
| mp: | 62～63°C[1)] |
| bp: | 284～287°C[1)] |
| SW: | 238g/L (20°C)[24)] |
| Specific gravity: | 1.0096 (58°C)[6)] |
| logPow: | -0.33[3)] |

[25] *p*-Phenetidine



| | |
|---|---|
| Molecular formula: | $C_8H_{11}NO$ |
| CAS: | 156-43-4 |
| ENCS: | 3-682 |
| MW: | 137.18 |
| mp: | 2.4°C[1)] |
| bp: | 253～255°C[1)] |
| SW: | 20g/L[1)] |
| Specific gravity: | 1.065 (16°C)[1)] |
| logPow: | 1.24[3)] |

[26] Pentachlorophenol




| | |
|---|---|
| Molecular formula: | $C_6HCl_5O$ |
| CAS: | 87-86-5 |
| ENCS: | 3-2850 |
| MW: | 266.35 |
| mp: | 174℃ (monohydrate)[25] |
| | 191℃ (nonhydrate)[25] |
| bp: | 309～310℃ (decomposition)[1] |
| SW: | 14mg/L (26.7℃)[2] |
| Specific gravity: | 1.978 (22℃)[1] |
| logPow: | 5.12[3] |

[27] Poly(oxyethylene) alkylethers ($C_{12}$～$C_{15}$)

$H_{(2n+1)}C_m$-$(O$-$CH_2$-$CH_2$-$)_m$-OH

(n=12～15, m=1～)

| | |
|---|---|
| Molecular formula: | $C_{(n+2m)}H_{(2n+4m+1)}O_{(m+1)}$ |
| CAS: | 68551-12-2 |
| ENCS: | 7-97 and so on |
| MW: | dependent on the molecule |
| mp: | dependent on the molecule |
| bp: | dependent on the molecule |
| SW: | dependent on the molecule |
| Specific gravity: | dependent on the molecule |
| logPow: | dependent on the molecule |

[27-1] Poly(oxyethylene) dodecylethers (polymerisation degree 2-15)

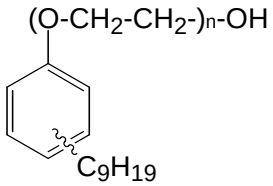
$H_{25}C_{12}$-$(O$-$CH_2$-$CH_2$-$)_n$-OH

(n=2～14)

| | |
|---|---|
| Molecular formula: | $C_{(2n+12)}H_{(4n+26)}O_{(n+1)}$ |
| CAS: | 9002-92-0 |
| ENCS: | 7-97 |
| MW: | 274.44 ([27-1-1])～803.07 ([27-1-13]) |
| mp: | 16℃[16] |
| bp: | Uncertain |
| SW: | solubule[1] |
| Specific gravity: | 1.02[16] |
| logPow: | Uncertain |

[27-1-1] Di(oxyethylene) dodecylethers
[27-1-2] Tri(oxyethylene) dodecylethers
[27-1-3] Tetra(oxyethylene) dodecylethers
[27-1-4] Penta(oxyethylene) dodecylethers
[27-1-5] Hexa(oxyethylene) dodecylethers
[27-1-6] Hepta(oxyethylene) dodecylethers
[27-1-7] Octa(oxyethylene) dodecylethers
[27-1-8] Nona(oxyethylene) dodecylethers
[27-1-9] Deca(oxyethylene) dodecylethers
[27-1-10] Undeca(oxyethylene) dodecylethers
[27-1-11] Dodeca(oxyethylene) dodecylethers
[27-1-12] Trideca(oxyethylene) dodecylethers
[27-1-13] Tetradeca(oxyethylene) dodecylethers

[28] Poly(oxyethylene) nonylphenylethers

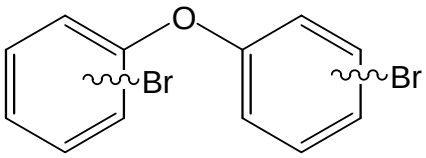



(n=2～15)

[28-1] Di(oxyethylene) nonylphenylethers
[28-2] Tri(oxyethylene) nonylphenylethers
[28-3] Tetra(oxyethylene) nonylphenylethers
[28-4] Penta(oxyethylene) nonylphenylethers
[28-5] Hexa(oxyethylene) nonylphenylethers
[28-6] Hepta(oxyethylene) nonylphenylethers
[28-7] Octa(oxyethylene) nonylphenylethers
[28-8] Nona(oxyethylene) nonylphenylethers
[28-9] Deca(oxyethylene) nonylphenylethers
[28-10] Undeca(oxyethylene) nonylphenylethers
[28-11] Dodeca(oxyethylene) nonylphenylethers
[28-12] Trideca(oxyethylene) nonylphenylethers
[28-13] Tetradeca(oxyethylene) nonylphenylethers
[28-14] Pentadeca(oxyethylene) nonylphenylethers

| | |
|---|---|
| Molecular formula: | dependent on the molecule |
| CAS: | 9016-45-9 |
| ENCS: | 7-172 |
| MW: | 308.46 ([28-1])～881.14 ([28-14]) |
| mp: | 42～43℃[3] |
| bp: | Uncertain |
| SW: | 1,000 mg/L 以上 (25℃)[3] |
| Specific gravity: | 1.06 (20℃)[4] |
| logPow: | Uncertain |

[29] Polybrominated diphenylethers

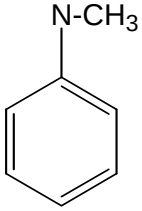



(Br=1～10)

[29-1] Monobrominated diphenylethers
[29-2] Dibrominated diphenylethers
[29-3] Tribrominated diphenylethers
[29-4] Tetrabrominated diphenylethers
[29-5] Pentabrominated diphenylethers
[29-6] Hexabrominated diphenylethers
[29-7] Heptabrominated diphenylethers
[29-8] Octabrominated diphenylethers
[29-9] Nonabrominated diphenylethers
[29-10] Decabromodiphenylether

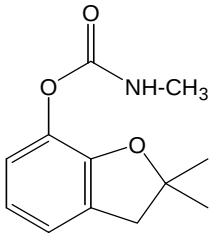
| | |
|---|---|
| Molecular formula: | $C_{12}H_{(10-n)}OBr_n$ |
| CAS: | 101-55-3 (4-monobromoisomer of[29-1]) |
| | 2050-47-7 (4,4'-diboromoisomer of[29-2]) |
| | 49690-94-0 (2,3',4'-tribromoisomer[29-3]) |
| | 40088-47-9 ([29-4]) |
| | 32534-81-9 ([29-5]) |
| | 36483-60-0 ([29-6]) |
| | 68928-80-3 ([29-7]) |
| | 32536-52-0 ([29-8]) |
| | 63936-56-1 ([29-9]) |
| | 1163-19-5 ([29-10]) |
| ENCS: | 3-2846 ([29-10]) |
| MW: | 249.11 ([29-1])～959.17 ([29-10]) |
| mp: | 18.72℃ (4-monobromoisomer of [29-1])[6] |
| | -7～-3℃ ([29-5])[26] |
| | 70～150℃ ([29-7])[26] |
| | 167～257℃ ([29-8])[26] |
| | 305℃ ([29-10])[28] |
| bp: | 425℃で decomposition ([29-10])[26] |
| SW: | 0.0133mg/L ([29-5])[27] |
| | 0.0001mg/L ([29-10])[2] |
| Specific gravity: | 1.6088 (4-monobromoisomer of [29-1])[6] |
| | 2.25～2.28 ([29-5])[27] |
| | 2.6 ([29-7])[26] |
| | 2.76 ([29-8])[26] |
| logPow: | 5.87～6.16 ([29-4])[26] |
| | 6.64～6.97 ([29-5])[27] |
| | 6.86～7.92 ([29-6])[26] |
| | 8.35～8.90 ([29-8])[26] |
| | 10.1 ([29-10])[26] |

[30] *N*-Methylaniline



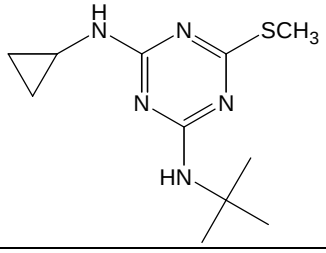

| | |
|---|---|
| Molecular formula: | $C_7H_9N$ |
| CAS: | 100-61-8 |
| ENCS: | 3-106 |
| MW: | 107.16 |
| mp: | -57°C[1)] |
| bp: | 196.2°C[1)] |
| SW: | 5,620mg/L (25°C)[2)] |
| Specific gravity: | 0.989 (20°C)[1)] |
| logPow: | 1.66[3)] |

[31] 2,3-Dihydro-2,2-dimethyl-7-benzo[b]furanyl *N*-methylcarbamate (carbofuran)



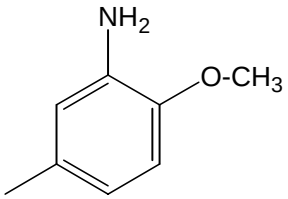

| | |
|---|---|
| Molecular formula: | $C_{12}H_{15}NO_3$ |
| CAS: | 1563-66-2 |
| ENCS: | 5-5540 |
| MW: | 221.26 |
| mp: | 151°C[6)] |
| bp: | Uncertain |
| SW: | 700mg/L (25°C)[1)], 320mg/L (25°C)[5)] |
| Specific gravity: | 1.18 (20°C)[6)] |
| logPow: | 2.32[3)] |

[32] *N'-tert*-Butyl-*N*-cyclopropyl-6-(methylthio)-1,3,5-triazine-2,4-diamine



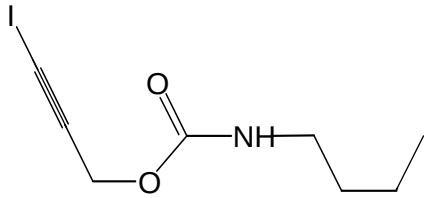

| | |
|---|---|
| Molecular formula: | $C_{11}H_{19}N_5S$ |
| CAS: | 28159-98-0 |
| ENCS: | Uncertain |
| MW: | 253.37 |
| mp: | Uncertain |
| bp: | Uncertain |
| SW: | Uncertain |
| Specific gravity: | Uncertain |
| logPow: | Uncertain |

[33] 2-Methoxy-5-methylaniline




| | |
|---|---|
| Molecular formula: | $C_8H_{11}NO$ |
| CAS: | 120-71-8 |
| ENCS: | 3-614 |
| MW: | 137.18 |
| mp: | 51.5°C[6)] |
| bp: | 235°C[6)] |
| SW: | Almost insoluble[6)] |
| Specific gravity: | Uncertain |
| logPow: | 1.74[3)] |

[34] 3-Iodo-2-propynylbutylcarbamate




| | |
|---|---|
| Molecular formula: | $C_8H_{12}INO_2$ |
| CAS: | 55406-53-6 |
| ENCS: | 2-3456 |
| MW: | 281.09 |
| mp: | 66°C[1)] |
| bp: | Uncertain |
| SW: | 156mg/L (20°C)[1)] |
| Specific gravity: | 1.575[1)] |
| logPow: | 2.4[3)] |

References


1) O'Neil, The Merck Index - An Encyclopedia of Chemicals, Drugs, and Biologicals 13th Edition, Merck Co. Inc. (2001)
2) Yalkowsky et al., Aquasol Database of Aqueous Solubility Version 5, College of Pharmacy, University of Arizona (1992)
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## 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 anaylized by private analytical laboratories.

(1) Organisations responsible for sampling

| Local communities | Organisations responsible for sampling | Surveyed media | | | |
|---|---|---|---|---|---|
| | | Surface water | Sediment | Wildlife | 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 | ○ | | | |
| 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 | 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 | ○ | ○ | ○ | |
| Fukui Pref. | Fukui 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 | ○ | ○ | ○ | ○ |
| Kyoto Pref. | Kyoto Prefectural Institute of Public Health and Environment | ○ | | | ○ |
| Kyoto City | Kyoto City Institute of Health and Environmental Sciences | ○ | | | ○ |
| Osaka Pref. | Osaka Prefecture Environmental Pollution Control Center | ○ | ○ | ○ | |
| Osaka City | Osaka City Institute of Public Health and Environmental Sciences | ○ | ○ | ○ | |
| Hyogo Pref. | Hyogo Prefectural Institute of Public Health and Environmental Sciences | ○ | ○ | ○ | |
| Kobe City | Public Health Research Institute of Kobe City | ○ | ○ | | |
| Wakayama Pref. | Wakayama Prefectural Research Center of Environment and Public Health | ○ | ○ | | ○ |
| Tottori Pref. | Tottori Prefectural Institute of Public Health and Environmental Science | | | ○ | |
| Shimane Pref. | Shimane Prefectural Institute of Public Health and Environmental Science | | | ○ | |
| Okayama Pref. | Okayama Prefectural Institute for Environmental Science and Public Health | ○ | ○ | ○ | |
| Hiroshima City | Hiroshima City Institute of Public Health | | | ○ | |
| Yamaguchi Pref. | Yamaguchi Prefectural Institute of 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 | ○ | ○ | ○ | |
| Kochi Pref. | Kochi Prefectural Environmental Research Center | | | ○ | |
| Fukuoka Pref. | Fukuoka Institute of Health and Environmental Science | ○ | ○ | | |
| 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 | ○ | | | |
| Kagoshima Pref. | Kagoshima Prefectural Institute for Environmental Research and Public Health | | | ○ | |
| Okinawa Pref. | Okinawa Prefectural Institute of Health and Environment | | | ○ | |

(Note) Organisations responsible for sampling are described by their official names in FY 2005.

(2) Surveyed sites (or areas) 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 areas and target chemicals for wildlife were shown in Table 1-1-3 and Figure 1-1-2. Surveyed sites and target chemicals for air are shown in Table 1-1-4 and Figure 1-1-3. The breakdown is summarized as follows.

| Surveyed media | Numbers of local communities | Numbers of target chemicals (groups) | Numbers of surveyed sites (or areas) | Numbers of samples at a surveyed site (or area) |
|---|---|---|---|---|
| Surface water | 30 | 33 | 36 | 3 |
| Sediment | 13 | 13 | 16 | 3 |
| Wildlife | 22 | 2 | 24 | 3 |
| Air | 13 | 1 | 14 | 3 |

Table 1-1-1 (1/2) List of surveyed sites (surface water) and target chemicals in and the Initial Environmental Survey in FY 2005

| Local communities | Surveyed sites | Target chemicals | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | [1] | [2] | [3] | [4] | [5] | [6] | [7] | [8] | [9] | [10] | [11] | [12] | [13] | [14] | [15] | [16] | [17] |
| Hokkaido | Ishikarikakokyo Bridge, Mouth of Riv. Ishikari (Ishikari City) | | | | | | | | | | | | | | | | | |
| Iwate Pref. | Ofunato Bay | | | | | | | | | | | | | | | | | |
| Sendai City | Hirose-ohashi Bridge, Riv. Hirose (Sendai City) | | | | | | | | | | | | | | | | | |
| Ibaraki Pref. | Tonekamome-ohasi Bridge, Mouth of Riv. Tone (Kamisu City) | ○ | ○ | | | | | | ○ | | | ○ | | | ○ | | | |
| Tochigi Pref. | Riv. Tagawa (Utsunomiya City) | | | | | | | | | ○ | | | | | | | | |
| Saitama Pref. | Shiki-ohasi Bridge, Riv. Yanase (Shiki City) | | | | | | | | | | | | | | | | | |
| | Kachi-hashi Bridge, Riv. Ichino (Yoshimi Town) | | | | | | | | | | | | | | | | | |
| Chiba Pref. | Riv. Ichinomiya (Chosei Village) | | | | | | | | | | | | | | | | | |
| Yokohama City | Kamenoko-bashi Bridge, Riv. Tsurumi (Yokohama City) | | | | ○ | ○ | ○ | | | | | | | | | | | |
| Kawasaki City | Mouth of Riv. Tama (Kawasaki City) | | | | | | | | | | | | | | | | | |
| | Keihin Canal, Kawasaki Port | | | | | | | | | | | | | | | | | |
| Niigata Pref. | Lower Riv. Shinano (Niigata City) | | | | | | | | | | | | | | | | | |
| Ishikawa Pref. | Mouth of Riv. Sai (Kanazawa City) | ○ | | | | | | | ○ | ○ | | | | ○ | ○ | | | |
| Fukui Pref. | Mishima-bashi Bridge, Riv. Shono (Tsuruga City) | | | | ○ | ○ | ○ | | | | | | | | | | | |
| Nagano Pref. | Lake Suwa (center) | | | | | | | | | ○ | | | | | | | | |
| Aichi Pref. | Nagoya Port | ○ | ○ | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | | ○ | ○ | | | |
| Nagoya City | Minatoshinbashi Bridge, Riv. Hori (Nagoya City) | | | | ○ | ○ | ○ | ○ | | | | | | | | | ○ | |
| Mie Pref. | Yokkaichi Port | ○ | | | | | | | ○ | | | | ○ | ○ | ○ | | | |
| Kyoto Pref. | Miyazu Port | | | | | | | | | | | | | | | | | |
| Kyoto City | Miyamae-bashi Bridge, Riv. Katsura (Kyoto City) | | | | ○ | ○ | ○ | | | | | | | | | | | |
| Osaka Pref. | Mouth of Riv. Yamato (Sakai City) | | | | ○ | ○ | ○ | ○ | | | | | | | | | ○ | |
| Osaka City | Riv. Yodo (Osaka City) | | ○ | | ○ | ○ | ○ | | | | | | | | | | | |
| | Osaka Port | | ○ | ○ | ○ | ○ | ○ | | | ○ | ○ | | | | | ○ | | ○ |
| | Outside Osaka Port | | | | | | | | | | | | | | | | | |
| Hyogo Pref. | Offshore of Himeji | | | | | | | | | ○ | | | | ○ | | | ○ | |
| Kobe City | Kobe Port (center) | | ○ | | | | | | | | | | | | | | | |
| Wakayama Pref. | Kinokawa-ohashi Bridge, Mouth of Riv. Kinokawa (Wakayama City) | | | | ○ | ○ | ○ | | | | | | | | | ○ | ○ | |
| Okayama Pref. | Offshore of Mizushima | | | ○ | | | | | | | ○ | ○ | ○ | | | | | ○ |
| Kagawa Pref. | Takamatsu Port | | | | ○ | ○ | ○ | | ○ | | ○ | | | | | | | |
| Yamaguchi Pref. | Tokuyama Bay | | | | | | | | | | | | ○ | | | ○ | | |
| | Offshore of Hagi | | | | | | | | | | | | ○ | | | ○ | | |
| Fukuoka Pref. | Offshore of Omuta | | ○ | | | | | ○ | | | | | ○ | | | | ○ | |
| Kitakyushu City | Kanmon Strait | | | ○ | | | | ○ | | ○ | ○ | ○ | | | | | ○ | ○ |
| | Dokai Bay | | | ○ | | | | ○ | | ○ | ○ | ○ | | | | | ○ | ○ |
| Fukuoka City | Hakata Bay | | | | | | | | | | | | | | | | | |
| Saga Pref. | Imari Bay | | | | ○ | ○ | ○ | | | ○ | | | | | | | | |

[1] *o*-Anisidine, [2] Amitorole, [3] 4,4'-Iopropylidenebis[2-(2,6-dibromophenoxy)ethanol], [4] 17β-Etradiol, [5] Etrone, [6] 17α-Ehynylestradiol, [7] 2,3-Eoxypropane-1-ol, [8] *m*-Cloroaniline, [9] *N*-Cyclohexyl-2-benzothiazolesulfanamide, [10] 3,3'-Dichloro-4,4'-diaminodiphenylmethane, [11] 1,2-Dichloro-3-nitrobenzene, [12] 2-(*2H*-1,2,3-Benzotriazol-2-yl)-4,6-di-*tert*-butylphenol, [13] 2,6-Dimethylaniline, [14] 3,4-Dimethylaniline, [15] *N*-(1,3-Dimetylbutyl)-*N'*-phenyl-*p*-phnylenediamine, [16] 3,3'-Dimethylbenzidine (*o*-Tolidine), [17] Medium-chain chlorinated paraffins

Table 1-1-1 (2/2) List of surveyed sites (surface water) and target chemicals in the Initial Environmental Survey in FY 2005

| Local communities | Surveyed sites | Target chemicals | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | [19] | [20] | [21] | [22] | [23] | [24] | [25] | [26] | [27] | [28] | [29] | [30] | [31] | [32] | [33] | [34] |
| Hokkaido | Ishikarikakokyo Bridge, Mouth of Riv. Ishikari (Ishikari City) | | | | | | | | ○ | | | | | | | | |
| Iwate Pref. | Ofunato Bay | ○ | | | | | | | | | | | | | | | |
| Sendai City | Hirose-ohashi Bridge, Riv. Hirose (Sendai City) | | | | | | | ○ | | | | | | | | | |
| Ibaraki Pref. | Tonekamome-ohasi Bridge, Mouth of Riv. Tone (Kamisu City) | | | ○ | ○ | | | | ○ | | | | | | | ○ | |
| Tochigi Pref. | Riv. Tagawa (Utsunomiya City) | | | | | | | | | | | | | | | | |
| Saitama Pref. | Shiki-ohasi Bridge, Riv. Yanase (Shiki City) | | | | | | | | | ○ | | | | | | | |
| | Kachi-hashi Bridge, Riv. Ichino (Yoshimi Town) | | | | | | | | | ○ | | | | | | | |
| Chiba Pref. | Riv. Ichinomiya (Chosei Village) | | | | | | | | | | ○ | | | | | | |
| Yokohama City | Kamenoko-bashi Bridge, Riv. Tsurumi (Yokohama City) | | | | | | | | | ○ | ○ | | | | | | |
| Kawasaki City | Mouth of Riv. Tama (Kawasaki City) | | | | | | | | | ○ | ○ | | | | | | |
| | Keihin Canal, Kawasaki Port | | | | | | | | | | | | | | ○ | | |
| Niigata Pref. | Lower Riv. Shinano (Niigata City) | | | | | | | | | ○ | | | | | | | |
| Ishikawa Pref. | Mouth of Riv. Sai (Kanazawa City) | | | | | | | ○ | ○ | | | | ○ | | | | |
| Fukui Pref. | Mishima-bashi Bridge, Riv. Shono (Tsuruga City) | | | | | | | | ○ | ○ | ○ | ○ | | | | | |
| Nagano Pref. | Lake Suwa (center) | | | | | | | | | | | | | | ○ | | |
| Aichi Pref. | Nagoya Port | | ○ | | | | | ○ | | | | | ○ | ○ | ○ | | |
| Nagoya City | Minatoshinbashi Bridge, Riv. Hori (Nagoya City) | | | | ○ | | | | | | | | | | | ○ | |
| Mie Pref. | Yokkaichi Port | | | | | | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | | ○ |
| Kyoto Pref. | Miyazu Port | | | | | | | | ○ | | | | | | | | |
| Kyoto City | Miyamae-bashi Bridge, Riv. Katsura (Kyoto City) | | | | | | | | | ○ | ○ | | | | | | |
| Osaka Pref. | Mouth of Riv. Yamato (Sakai City) | | | | ○ | | | | | | | | | | | ○ | |
| Osaka City | Riv. Yodo (Osaka City) | | | | | | | | | | | | | | ○ | | |
| | Osaka Port | ○ | | | | | | | | | | ○ | | | ○ | | |
| | Outside Osaka Port | | | | | | | | | | | | | | ○ | | |
| Hyogo Pref. | Offshore of Himeji | | | | | | | ○ | ○ | | | ○ | | | | | |
| Kobe City | Kobe Port (center) | | | | | | | | | ○ | ○ | ○ | | | | | |
| Wakayama Pref. | Kinokawa-ohashi Bridge, Mouth of Riv. Kinokawa (Wakayama City) | ○ | | | | | | | ○ | | ○ | ○ | | | ○ | | ○ |
| Okayama Pref. | Offshore of Mizushima | | ○ | | | | | | | | | ○ | ○ | | | | ○ |
| Kagawa Pref. | Takamatsu Port | | | ○ | | | | | | | | | ○ | ○ | | | |
| Yamaguchi Pref. | Tokuyama Bay | | ○ | | | ○ | ○ | | ○ | | | | | ○ | | ○ | |
| | Offshore of Hagi | | ○ | | | ○ | ○ | | ○ | | | | | ○ | | ○ | |
| Fukuoka Pref. | Offshore of Omuta | ○ | | | ○ | | | | | | | | | | | ○ | ○ |
| Kitakyushu City | Kanmon Strait | | ○ | ○ | ○ | ○ | ○ | | | | | | ○ | | | ○ | |
| | Dokai Bay | | ○ | ○ | ○ | ○ | ○ | | | | | | ○ | | | ○ | |
| Fukuoka City | Hakata Bay | | | | | | | | ○ | | | | | | ○ | | |
| Saga Pref. | Imari Bay | | | | | | | ○ | | | | | | | | | |

[19] Octadecylamine(N-B) triphenylborane, [20] 2,4,6-Tribromophenol, [21] 2,4-Toluenediamine (2,4-Diaminotoluene), [22] *p*-Nitroaniline, [23] Nitrosodiphenylamine, [24] *m*-Phenylenediamine, [25] *p*-Phenetidine, [26] Pentachlorophenol, [27] Poly(oxyethylene) alkylethers, [28] Poly(oxyethylene) nonylphenylethers
[29] Polybrominated diphenylethers, [30] *N*-methylaniline, [31] 2,3-Dihydro-2,2-dimethyl-7-benzo[b]furanyl *N*-methylcarbamate (carbofuran), [32] *N'-tert*-Butyl-*N*-cyclopropyl-6-(methylthio)-1,3,5-triazine-2,4-diamine, [33] 2-Methoxy-5-methylaniline, [34] 3-Iodo-2-propynylbutylcarbamate

Table 1-1-2 List of surveyed sites (sediment) and target chemicals in the Initial Environmental Survey in FY 2005

| Local communities | Surveyed sites | Target chemicals | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | [1] | [2] | [3] | [7] | [8] | [10] | [11] | [14] | [17] | [18] | [21] | [30] | [33] |
| Saitama Pref. | Shiki-ohasi Bridge, Riv. Yanase (Shiki City) | | | | | | | | | | ○ | | | |
| | Kachi-hashi Bridge, Riv. Ichino (Yoshimi Town) | | | | | | | | | | ○ | | | |
| Ishikawa Pref. | Mouth of Riv. Sai (Kanazawa City) | ○ | | | | ○ | | | ○ | | | | ○ | |
| Aichi Pref. | Nagoya Port | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | ○ | ○ |
| Mie Pref. | Yokkaichi Port | ○ | | | | ○ | | | ○ | | ○ | | ○ | |
| Osaka Pref. | Mouth of Riv. Yamato (Sakai City) | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | | | ○ | ○ | ○ |
| Osaka City | Riv. Yodo (Osaka City) | | ○ | | | | | | | | | | | |
| | Osaka Port | | ○ | ○ | | | ○ | | | ○ | | | | |
| Hyogo Pref. | Offshore of Himeji | | | | | | | | | | ○ | | | |
| Kobe City | Kobe Port (center) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | ○ | ○ |
| Wakayama Pref. | Kinokawa-ohashi Bridge, Mouth of Riv. Kinokawa (Wakayama City) | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | ○ | ○ |
| Okayama Pref. | Offshore of Mizushima | ○ | ○ | ○ | ○ | | ○ | ○ | ○ | ○ | | ○ | ○ | ○ |
| Kagawa Pref. | Takamatsu Port | | | | | ○ | ○ | | | | | ○ | ○ | |
| Fukuoka Pref. | Offshore of Omuta | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | | | ○ | ○ | ○ |
| Kitakyushu City | Kanmon Strait | | | ○ | | | | | | ○ | | | | |
| | Dokai Bay | | | ○ | | | | | | ○ | | | | |

[1] 2-Methoxyaniline, [2] Amitorole, [3] 4,4'-Isopropylidenebis[2-(2,6-dibromophenoxy)ethanol], [7] 2,3-Epoxypropane-1-ol, [8] *m*-Chloroaniline, [10] 3,3'-Dichloro-4,4'-diaminodiphenylmethane, [11] 1,2-Dichloro-3-nitrobenzene, [14] 3,4-Dimethylaniline, [17] Medium-chain chlorinated paraffins , [18] Linear alkylbenzene sulfonate (LAS-$C_{10}$～$C_{14}$), [21] 2,4-Toluenediamine (2,4-Diaminotoluene), [30] *N*-Methylaniline, [33] 2-Methoxy-5-methylaniline

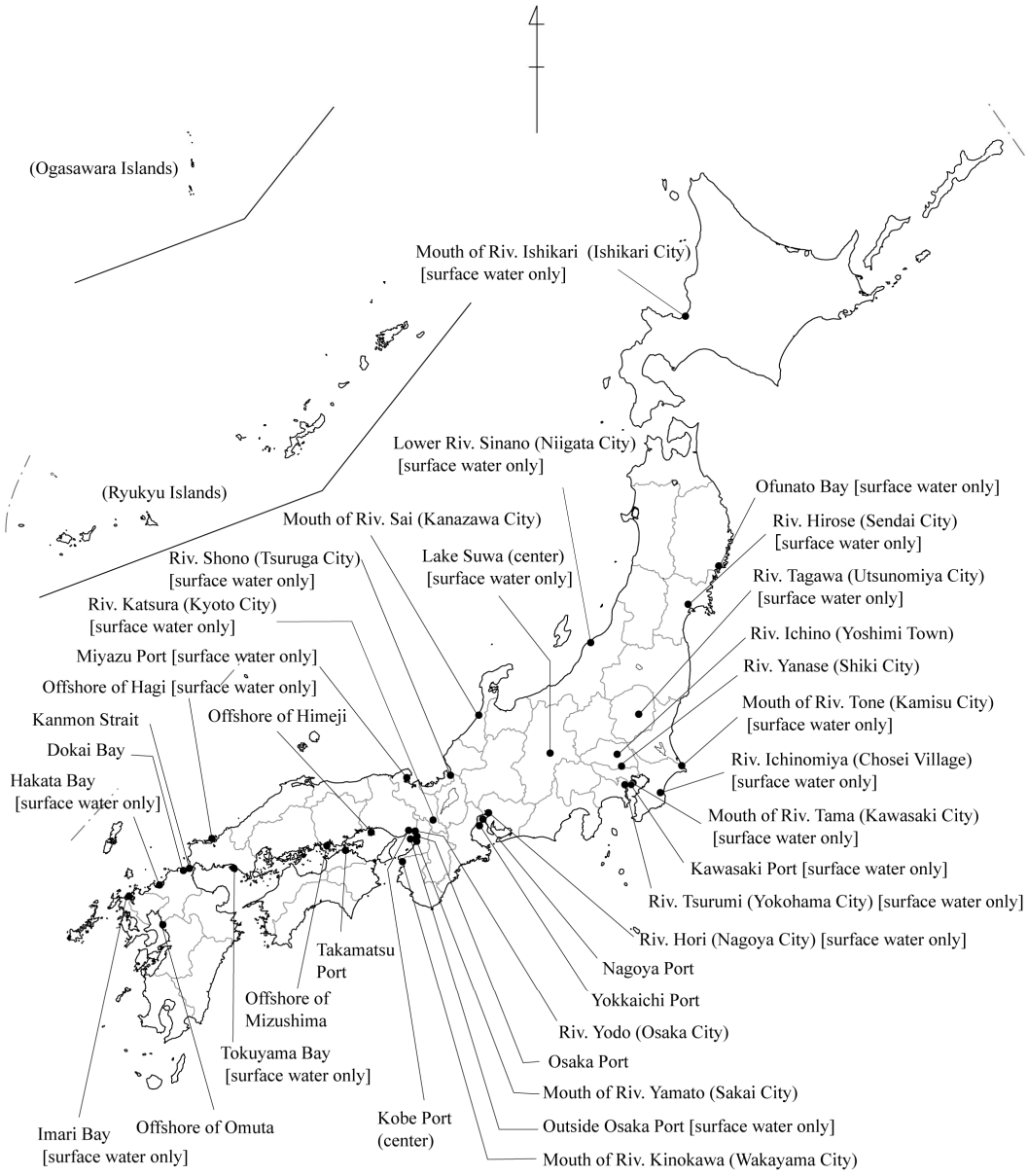



Figure 1-1-1 Surveyed sites (surface water and sediment) in the Initial Environmental Survey in FY 2005

Table 1-1-3 List of surveyed areas (wildlife) and target chemicals in the Initial Environmental Survey in FY 2005

| Local communities | Surveyed areas | Wildlife spices | Target chemicals | |
|---|---|---|---|---|
| | | | [17] Medium-chain chlorinated paraffins | [30] *N*-Methylaniline |
| Hokkaido | Offshore of Kushiro | Rock greenling (*Hexagrammos otakki*) | ○ | ○ |
| | | Chum salmon (*Oncorhynchus keta*) | ○ | ○ |
| | Offshore of Japan Sea (offshore of Iwanai) | Greenling (*Hexagrammos lagocephalus*) | ○ | ○ |
| Iwate Pref. | Yamada Bay | Blue mussel (*Mytilus galloprovincialis*) | ○ | ○ |
| Miyagi Pref. | Sendai Bay (Matsushima Bay) | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Ibaraki Pref. | Offshore of Joban | Pacific saury (*Cololabis saira*) | ○ | ○ |
| Tokyo Met. | Tokyo Bay | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Yokohama City | Yokohama Port | Blue mussel (*Mytilus galloprovincialis*) | ○ | ○ |
| Kawasaki City | Offshore of Ogi Island in Kawasaki Port | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Ishikawa Pref. | Coast of Noto Peninsula | Blue mussel (*Mytilus galloprovincialis*) | ○ | ○ |
| Mie Pref. | Ise Bay | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Osaka Pref. | Osaka Bay | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Osaka City | Osaka Port | Sea bass (*Lateolabrax japonicus*) | ○ | |
| Hyogo Pref. | Offshore of Himeji | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Tottori Pref. | Nakaumi | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Shimane Pref. | Shichirui Bay, Shimane Peninsula | Blue mussel (*Mytilus galloprovincialis*) | ○ | ○ |
| Okayama Pref. | Offshore of Mizushima | Striped mullet (*Mugil cephalus*) | ○ | |
| Hiroshima City | Hiroshima Bay | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Yamaguchi Pref. | Tokuyama Bay | Striped mullet (*Mugil cephalus*) | ○ | ○ |
| | Offshore of Hagi | Striped mullet (*Mugil cephalus*) | ○ | ○ |
| Tokushima Pref. | Naruto | Hard-shelled mussel (*Mytilus coruscus*) | ○ | ○ |
| Kagawa Pref. | Takamatsu Port | Hard-shelled mussel (*Mytilus coruscus*) | ○ | |
| | | Striped mullet (*Mugil cephalus*) | | ○ |
| Kochi Pref. | Mouth of Riv. Shimanto (Shimanto City) | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Kagoshima Pref. | West Cast of Satsuma Peninsula | Sea bass (*Lateolabrax japonicus*) | ○ | ○ |
| Okinawa Pref. | Nakagusuku Bay | Okinawa seabream (*Acanthopagrus sivicolus*) | ○ | ○ |

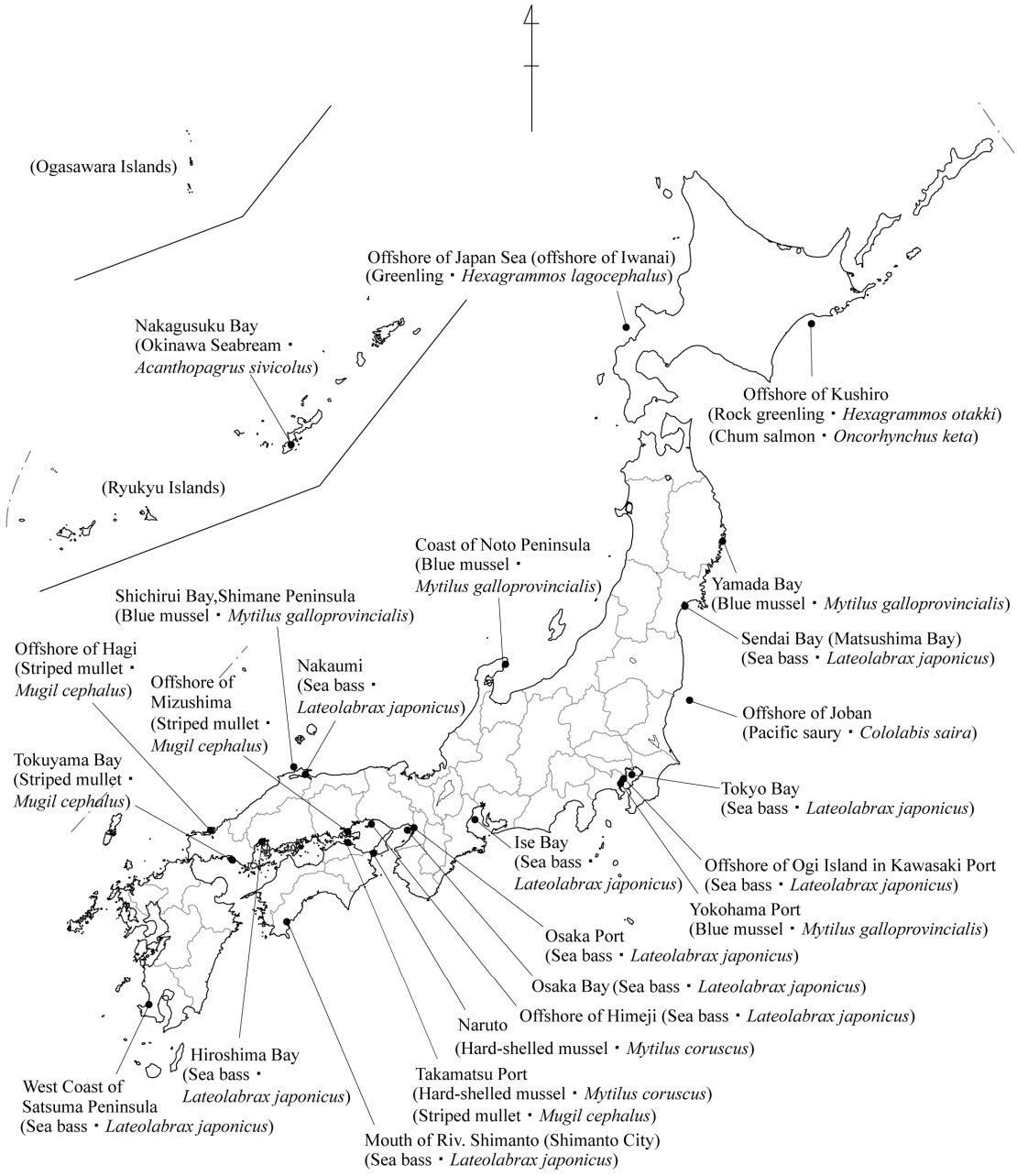



Figure 1-1-2 Surveyed areas (wildlife) in the Initial Environmental Survey in FY 2005

Table 1-1-4 List of surveyed sites (air) and target chemicals in the Initial Environmental Survey in FY 2005

| Local communities | Surveyed sites | Target chemicals |
|---|---|---|
| | | [15] *N*-(1,3-Dimetylbutyl)-*N*′-phenyl-*p*-phnylenediamine |
| Sapporo City | Sapporo City Institute of Public Health (Sapporo City) | ○ |
| Saitama Pref. | Center for Environmental Science in Saitama (Kisai Town) | ○ |
| Chiba Pref. | Ichihara-Matsuzaki Air Quality Monitoring Station (Ichihara City) | ○ |
| Tokyo | Tokyo Metropolitan Research Institute for Environmental Protection (Koto Ward) | ○ |
| | Chichijima Island | ○ |
| Kanagawa Pref. | Kanagawa Environmental Research Center (Hiratsuka 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 Technology Promotion Center (Yokkaichi City) | ○ |
| Kyoto Pref. | Kyoto Prefecture Joyo Senior High School (Joyo City) | ○ |
| Kyoto City | Kyoto City Government Building (Kyoto City) | ○ |
| Wakayama Pref. | Wakayama Prefectural Research Center of Environment and Public Health (Wakayama City) | ○ |
| Yamaguchi Pref. | Yamaguchi Prefectural Institute of Public Health and Environment (Yamaguchi City) | ○ |
| Kitakyushu City | Kitakyushu Monitoring Station (Kitakyushu City) | ○ |

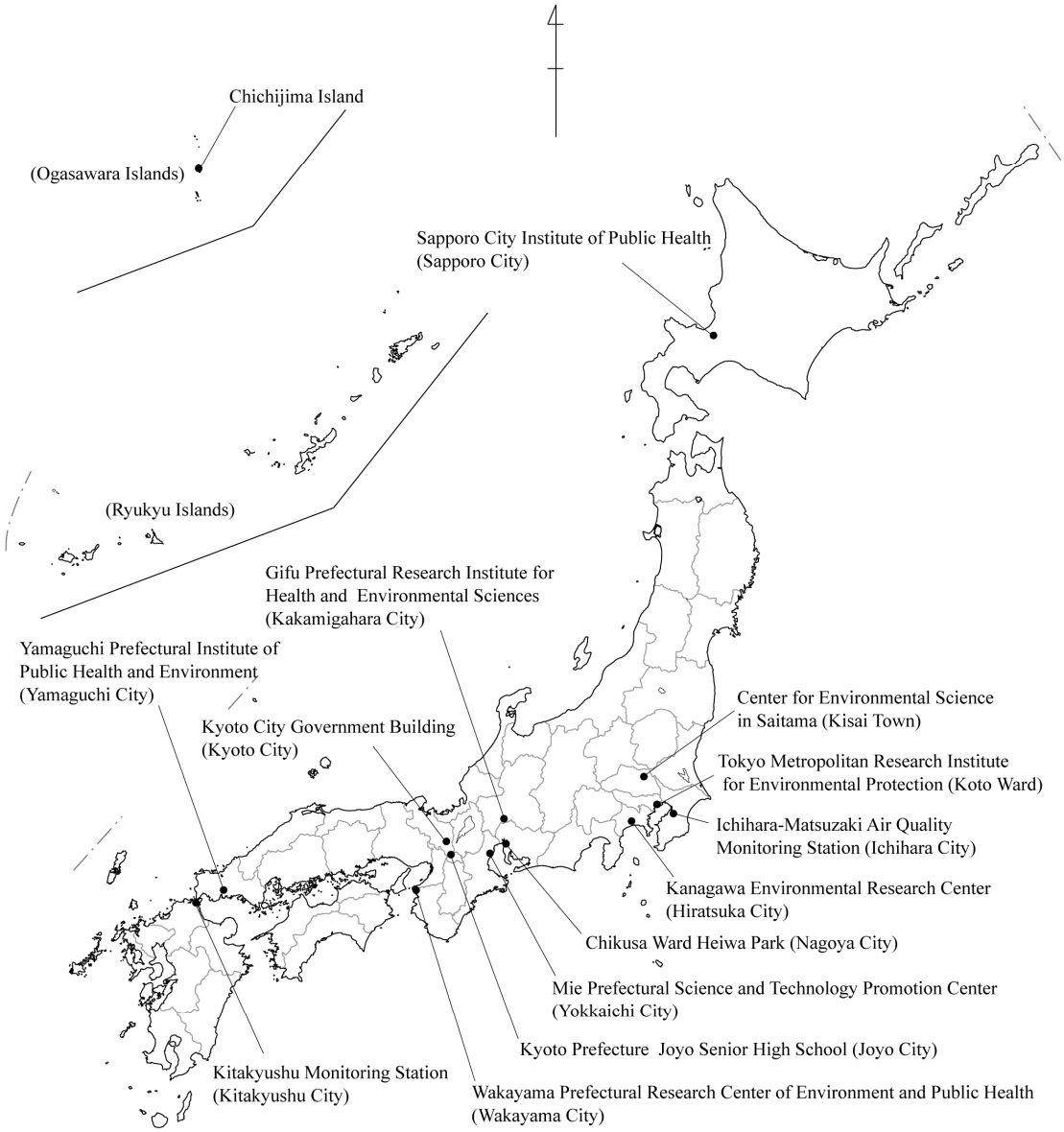



Figure 1-1-3 Surveyed sites (air) in the Initial Environmental Survey in FY 2005

(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

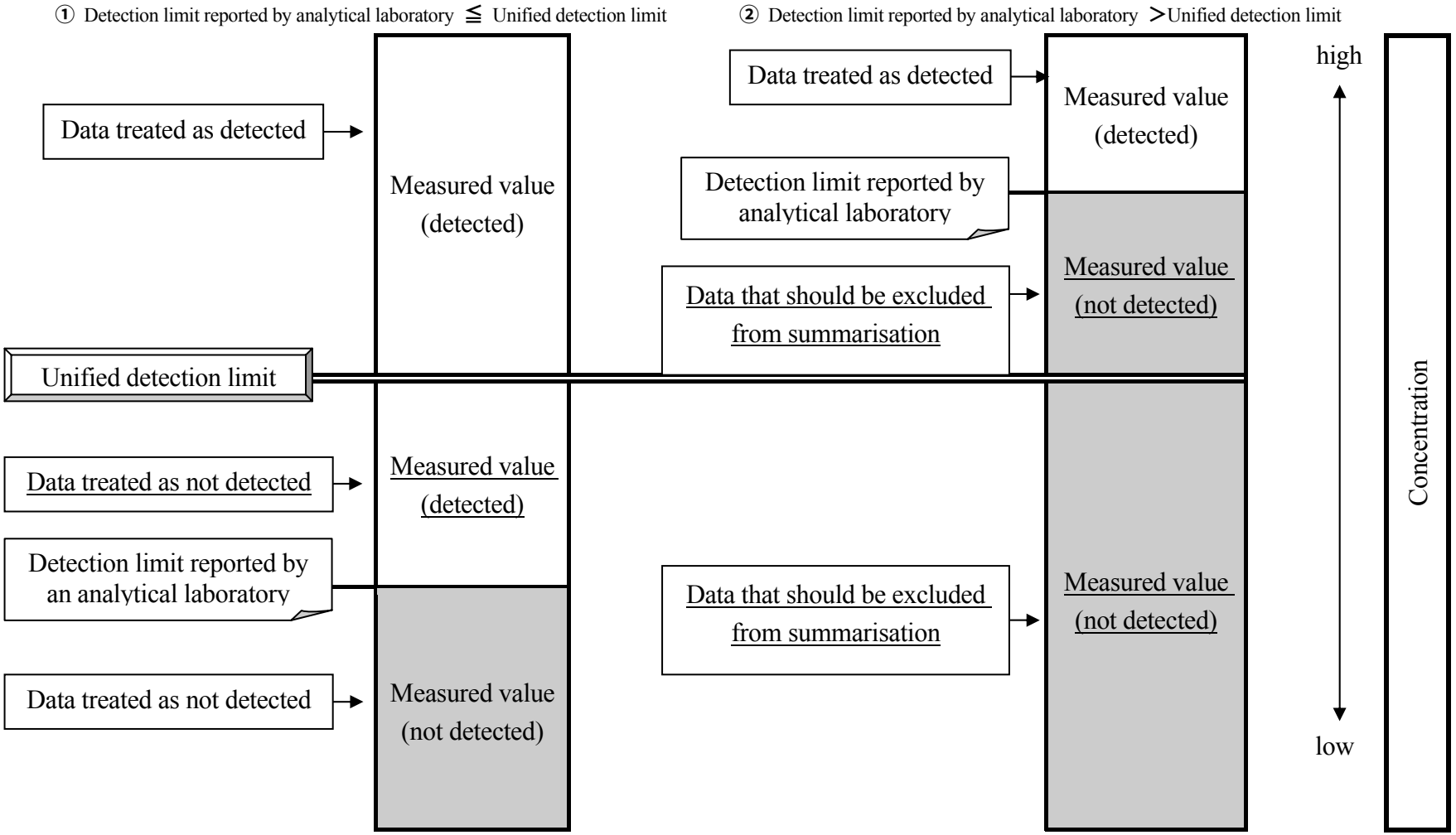
When the detection limit of the analytical laboratory is higher than the unified detection limit, any target chemical not detected is eliminated from the subject of the summary (see schematic ②).

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, the signal/noise ratio (S/N ratio) is obtained from the results of addition and collection tests and from the chromatogram of environmental specimens, in order to calculate the specimen conversion concentration of the reference substance corresponding to S/N=3, from which the detection limit of the analytical laboratory is estimated; the maximum obtained value is designated as the detection limit for the analytical laboratory.




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, 6 out of the 33 target chemicals (groups) were detected.

・[4] 17β-Estradiol: 4 of the 10 valid sites

・[5] Estrone: 6 of the 11 valid sites

・[20] 2,4,6-Tribromophenol: 5 of the 6 valid sites

・[27-1-3]～[27-1-13] Poly(oxyethylene) dodecylethers (polymerisation degree 2-14) among poly(oxyethylene) dodecylethers among poly(oxyethylene) alkylethers ($C_{12}$～$C_{15}$): 3 of the 5 valid sites

・[28-1]～[28-14] Poly(oxyethylene) nonylphenylethers (polymerisation degree 2-15): 3 of the 3 valid sites

・[33] 2-Methoxy-5-methylaniline: 4 of the 8 valid sites

In sediment, 6 out of the 13 target chemicals (groups) were detected.

・[7] 2,3-Epoxypropane-1-ol: 1 of the 6 valid sites

・[8] *m*-Chloroaniline: 3 of the 6 valid sites

・[10] 3,3'-Dichloro-4,4'-diaminodiphenylmethane: 3 of the 7 valid sites

・[17-1] Chlorinated tetradecane ($Cl_5$～$Cl_8$): 4 of the 4 valid sites

・[18-1]～[18-4]: Linear alkylbenzene sulfonate (LAS-$C_{10}$～$C_{14}$): 4 of the 4 valid sites

・[21] 2,4-Toluenediamine (2,4-Diaminotoluene): 2 of the 6 valid sites

In wildlife (bivalves or fish), 1 out of the 2 target chemicals (groups) was detected.

・[17-1] Chlorinated tetradecane ($Cl_5$～$Cl_8$): 6 of the 6 valid areas (bivalves) and
17 of the 19 valid areas (fish)

・[17-2] Chlorinated pentadecane ($Cl_5$～$Cl_9$): 6 of the 6 valid areas (bivalves) and
18 of the 18 valid areas (fish)

In air, 1 out of the 1 target chemical was detected.

・[15] *N*-(1,3-dimetylbutyl)-*N'*-phenyl-*p*-phnylenediamine: 8 of the 13 valid sites

Table 1-2 Summary of the detection ranges and the detection limits in the Initial Environmental Survey in FY 2005

| Target chemicals | | Surface water [ng/L] | | Sediment [ng/g-dry] | | Wildlife [ng/g-wet] | | | Air [ng/m$^3$] | |
|---|---|---|---|---|---|---|---|---|---|---|
| No. | Name | Detection range and frequency | Detection limit | Detection range and frequency | Detection limit | Bivalves Detection range and frequency | Fish Detection range and frequency | Detection limit | Detection range and frequency | Detection limit |
| 1 | *o*-Anisidine | nd<br>0/3 | 9.8 | nd<br>0/3 | 3.3 | | | | | |
| 2 | Amitorole | nd<br>0/2 | 12 | nd<br>0/7 | 0.4 | | | | | |
| 3 | 4,4'-Isopropylidenebis[2-(2,6-dibromophenoxy)ethanol] | nd<br>0/5 | 20 | nd<br>0/9 | 11 | | | | | |
| 4 | 17β-Estradiol | nd～1.7<br>4/10 | 0.11 | | | | | | | |
| 5 | Estrone | nd～5.8<br>6/11 | 0.11 | | | | | | | |
| 6 | 17α-Ethynylestradiol | nd<br>0/9 | 0.11 | | | | | | | |
| 7 | 2,3-Epoxypropane-1-ol | nd<br>0/5 | 8.7 | nd～69<br>1/6 | 24 | | | | | |
| 8 | *m*-Chloroaniline | nd<br>0/5 | 51 | nd～6.7<br>3/6 | 3.6 | | | | | |
| 9 | *N*-Cyclohexyl-2-benzothiazolesulfa namide | nd<br>0/9 | 75 | | | | | | | |
| 10 | 4,4'-Methylenebis-2-chloroaniline | nd<br>0/6 | 30 | nd～37<br>3/7 | 7 | | | | | |
| 11 | 1,2-Dichloro-3-nitrobenzene | nd<br>0/5 | 12 | nd<br>0/5 | 4.0 | | | | | |
| 12 | 2-(*2H*-1,2,3-Benzotriazol-2-yl)-4,6-di-*tert*-butylphenol | nd<br>0/5 | 6 | | | | | | | |
| 13 | 2,6-Dimethylaniline | nd<br>0/4 | 21 | | | | | | | |
| 14 | 3,4-Dimethylaniline | nd<br>0/4 | 7.2 | nd<br>0/3 | 0.7 | | | | | |
| 15 | *N*-(1,3-Dimetylbutyl)-*N'*-phenyl-*p*-p hnylenediamine | nd<br>0/4 | 0.45 | | | | | | nd～0.35<br>8/13 | 0.02 |
| 16 | 3,3'-Dimethylbenzidine (*o*-tolidine) | nd<br>0/6 | 37 | | | | | | | |
| 17 | Medium-chain chlorinated paraffins | | | | | | | | | |
| | [17-1] Chlorinated tetradecane ($Cl_5$～$Cl_8$) | nd<br>0/4 | ※71 | 19～390<br>4/4 | ※3.0 | nd～8.5<br>6/6 | nd～160<br>17/19 | bivalves:※1.4<br>fish:※1.5 | | |
| | Pentachlorinated tetradecane | nd<br>0/4 | 14 | nd～28<br>4/4 | 0.45 | nd～2.1<br>6/6 | nd～4.3<br>15/19 | bivalves: 0.22<br>fish: 0.22 | | |
| | Hexachlorinated tetradecane | nd<br>0/4 | 22 | 4.1～100<br>4/4 | 0.91 | nd～2.0<br>6/6 | nd～25<br>17/19 | bivalves: 0.46<br>fish: 0.46 | | |
| | Heptachlorinated tetradecane | nd<br>0/4 | 8.9 | 7.9～140<br>4/4 | 1.0 | nd～2.8<br>6/6 | nd～66<br>16/19 | bivalves: 0.43<br>fish: 0.52 | | |
| | Octachlorinated tetradecane | nd<br>0/4 | 26 | 6.9～120<br>4/4 | 0.61 | nd～2.4<br>6/6 | nd～63<br>16/19 | bivalves: 0.27<br>fish: 0.30 | | |
| | [17-2] chlorinated pentadecane ($Cl_5$～$Cl_9$) | | | | | 0.26～3.3<br>6/6 | nd～84<br>18/18 | ※0.44 | | |
| | Pentachlorinated pentadecane | | | | | 0.028～0.39<br>6/6 | nd～1.2<br>18/18 | 0.023 | | |
| | Hexachlorinated pentadecane | | | | | nd～0.49<br>6/6 | nd～9.8<br>17/18 | 0.12 | | |
| | Heptachlorinated pentadecane | | | | | nd～0.87<br>6/6 | nd～23<br>17/18 | 0.13 | | |
| | Octachlorinated pentadecane | | | | | nd～1.2<br>6/6 | nd～34<br>17/18 | 0.11 | | |
| | Nonachlorinated pentadecane | | | | | 0.085～0.77<br>6/6 | nd～19<br>17/18 | 0.053 | | |
| 18 | Linear alkylbenzene sulfonate (LAS) (LAS-$C_{10}$～$C_{14}$) | | | nd～1,100<br>4/4 | ※9.5 | | | | | |
| | [18-1] Linear decylbenzene sulfonate (LAS-$C_{10}$) | | | nd～97<br>2/4 | 1.9 | | | | | |
| | [18-2] Linear undecylbenzene sulfonate (LAS-$C_{11}$) | | | nd～350<br>4/4 | 2.0 | | | | | |
| | [18-3] Linear dodecylbenzene sulfonate (LAS-$C_{12}$) | | | nd～400<br>4/4 | 1.8 | | | | | |
| | [18-4] Linear tridecylbenzene sulfonate (LAS-$C_{13}$) | | | nd～210<br>4/4 | 1.9 | | | | | |

| Target chemicals | | Surface water [ng/L] | | Sediment [ng/g-dry] | | Wildlife [ng/g-wet] | | | Air [ng/m$^3$] | |
|---|---|---|---|---|---|---|---|---|---|---|
| No. | Name | Detection range and frequency | Detection limit | Detection range and frequency | Detection limit | Bivalves Detection range and frequency | Fish Detection range and frequency | Detection limit | Detection range and frequency | Detection limit |
| | [18-5] Linear tetradecylbenzene sulfonate (LAS-$C_{14}$) | | | nd<br>0/4 | 1.9 | | | | | |
| 19 | Octadecylamine(N-B) triphenylborane | nd<br>0/3 | 6.1 | | | | | | | |
| 20 | 2,4,6-Tribromophenol | nd～80<br>5/6 | 0.87 | | | | | | | |
| 21 | 2,4-Toluenediamine (2,4-Diaminotoluene) | nd<br>0/4 | 5.9 | nd～1.7<br>2/6 | 0.78 | | | | | |
| 22 | *p*-Nitroaniline | nd<br>0/6 | 53 | | | | | | | |
| 23 | Nitrosodiphenylamine | nd<br>0/4 | 3.2 | | | | | | | |
| 24 | *m*-Phenylenediamine | nd<br>0/4 | 450 | | | | | | | |
| 25 | *p*-Phenetidine | nd<br>0/5 | 35 | | | | | | | |
| 26 | Pentachlorophenol | nd<br>0/9 | 10 | | | | | | | |
| 27 | Poly(oxyethylene) alkylethers | | | | | | | | | |
| | [27-1] Poly(oxyethylene) dodecylethers | nd～1,000<br>3/5 | ※264 | | | | | | | |
| | [27-1-1] Di(oxyethylene) dodecylethers | nd<br>0/5 | 29 | | | | | | | |
| | [27-1-2] Tri(oxyethylene) dodecylethers | nd<br>0/5 | 17 | | | | | | | |
| | [27-1-3] Tetra(oxyethylene) dodecylethers | nd～50<br>1/6 | 21 | | | | | | | |
| | [27-1-4] Penta(oxyethylene) dodecylethers | nd～100<br>2/6 | 19 | | | | | | | |
| | [27-1-5] Hexa(oxyethylene) dodecylethers | nd～55<br>2/5 | 18 | | | | | | | |
| | [27-1-6] Hepta(oxyethylene) dodecylethers | nd～450<br>2/8 | 18 | | | | | | | |
| | [27-1-7] Octa(oxyethylene) dodecylethers | nd～88<br>3/5 | 16 | | | | | | | |
| | [27-1-8] Nona(oxyethylene) dodecylethers | nd～130<br>2/5 | 23 | | | | | | | |
| | [27-1-9] Deca(oxyethylene) dodecylethers | nd～130<br>3/5 | 19 | | | | | | | |
| | [27-1-10] Undeca(oxyethylene) dodecylethers | nd～130<br>3/5 | 20 | | | | | | | |
| | [27-1-11] Dodeca(oxyethylene) dodecylethers | nd～140<br>3/5 | 20 | | | | | | | |
| | [27-1-12] Trideca(oxyethylene) dodecylethers | nd～120<br>3/5 | 20 | | | | | | | |
| | [27-1-13] Tetradeca(oxyethylene) dodecylethers | nd～120<br>3/5 | 24 | | | | | | | |
| 28 | Poly(oxyethylene) nonylphenylethers | 18～150<br>3/3 | ※44 | | | | | | | |
| | [28-1] Di(oxyethylene) nonylphenylethers | 5.1～330<br>5/5 | 3.7 | | | | | | | |
| | [28-2] Tri(oxyethylene) nonylphenylethers | nd～220<br>6/7 | 4.2 | | | | | | | |
| | [28-3] Tetra(oxyethylene) nonylphenylethers | nd～130<br>5/6 | 1.8 | | | | | | | |
| | [28-4] Penta(oxyethylene) nonylphenylethers | nd～120<br>5/6 | 3.4 | | | | | | | |
| | [28-5] Hexa(oxyethylene) nonylphenylethers | nd～90<br>4/6 | 3.7 | | | | | | | |
| | [28-6] Hepta(oxyethylene) nonylphenylethers | nd～94<br>4/6 | 3.8 | | | | | | | |
| | [28-7] Octa(oxyethylene) nonylphenylethers | nd～96<br>4/6 | 2.7 | | | | | | | |
| | [28-8] Nona(oxyethylene) nonylphenylethers | nd～87<br>3/6 | 2.3 | | | | | | | |
| | [28-9] Deca(oxyethylene) nonylphenylethers | nd～85<br>4/6 | 2.4 | | | | | | | |

| Target chemicals | | Surface water [ng/L] | | Sediment [ng/g-dry] | | Wildlife [ng/g-wet] | | | Air [ng/m$^3$] | |
|---|---|---|---|---|---|---|---|---|---|---|
| No. | Name | Detection range and frequency | Detection limit | Detection range and frequency | Detection limit | Bivalves Detection range and frequency | Fish Detection range and frequency | Detection limit | Detection range and frequency | Detection limit |
| | [28-10] Undeca(oxyethylene) nonylphenylethers | nd～73 4/6 | 3.6 | | | | | | | |
| | [28-11] Dodeca(oxyethylene) nonylphenylethers | nd～59 3/6 | 2.6 | | | | | | | |
| | [28-12] Trideca(oxyethylene) nonylphenylethers | nd～38 3/6 | 2.4 | | | | | | | |
| | [28-13] Tetradeca(oxyethylene) nonylphenylethers | nd～28 2/6 | 4.3 | | | | | | | |
| | [28-14] Pentadeca(oxyethylene) nonylphenylethers | nd～12 1/4 | 3.5 | | | | | | | |
| 29 | Polybrominated diphenylethers | | | | | | | | | |
| | [29-1] Monobrominated diphenylethers | nd 0/2 | ※0.25 | | | | | | | |
| | PBDE#1 | nd 0/2 | 0.073 | | | | | | | |
| | PBDE#2 | nd 0/2 | 0.095 | | | | | | | |
| | PBDE#3 | nd 0/6 | 0.4 | | | | | | | |
| | [29-2] Dibrominated diphenylethers | nd 0/2 | ※0.082 | | | | | | | |
| | PBDE#7 | nd 0/6 | 0.06 | | | | | | | |
| | PBDE#8 and #11 | nd 0/2 | 0.018 | | | | | | | |
| | PBDE#10 | nd 0/2 | 0.017 | | | | | | | |
| | PBDE#12 and #13 | nd 0/2 | 0.020 | | | | | | | |
| | PBDE#15 | nd 0/6 | 0.10 | | | | | | | |
| | [29-3] Tribrominated diphenylethers | nd 0/2 | ※0.086 | | | | | | | |
| | PBDE#17 | nd 0/6 | 0.11 | | | | | | | |
| | PBDE#25 | nd 0/2 | 0.01 | | | | | | | |
| | PBDE#28 | nd 0/6 | 0.13 | | | | | | | |
| | PBDE#35 | nd 0/2 | 0.01 | | | | | | | |
| | PBDE#37 | nd 0/2 | 0.018 | | | | | | | |
| | [29-4] Tetrabrominated diphenylethers | nd 0/1 | ※0.14 | | | | | | | |
| | PBDE#47 | nd 0/6 | 0.11 | | | | | | | |
| | PBDE#49 | nd 0/6 | 0.12 | | | | | | | |
| | PBDE#66 | nd 0/6 | 0.11 | | | | | | | |
| | PBDE#71 | nd 0/5 | 0.04 | | | | | | | |
| | PBDE#75 | nd 0/2 | 0.01 | | | | | | | |
| | PBDE#77 | nd 0/6 | 0.15 | | | | | | | |
| | [29-5] Pentabrominated diphenylethers | nd 0/1 | ※0.32 | | | | | | | |
| | PBDE#85 | nd 0/6 | 0.072 | | | | | | | |
| | PBDE#98 | nd 0/1 | 0.054 | | | | | | | |
| | PBDE#99 | nd 0/6 | 0.05 | | | | | | | |
| | PBDE#100 | nd 0/6 | 0.03 | | | | | | | |
| | PBDE#102 | nd 0/1 | 0.046 | | | | | | | |

| Target chemicals | | Surface water [ng/L] | | Sediment [ng/g-dry] | | Wildlife [ng/g-wet] | | | Air [ng/m$^3$] | |
|---|---|---|---|---|---|---|---|---|---|---|
| No. | Name | Detection range and frequency | Detection limit | Detection range and frequency | Detection limit | Bivalves Detection range and frequency | Fish Detection range and frequency | Detection limit | Detection range and frequency | Detection limit |
| | PBDE#116 | nd 0/2 | 0.01 | | | | | | | |
| | PBDE#118 | nd 0/2 | 0.037 | | | | | | | |
| | PBDE#119 | nd 0/6 | 0.06 | | | | | | | |
| | PBDE#121 | nd 0/1 | 0.027 | | | | | | | |
| | PBDE#126 | nd 0/6 | 0.03 | | | | | | | |
| | [29-6] Hexabrominated diphenylethers | nd 0/1 | ※0.27 | | | | | | | |
| | PBDE#138 | nd 0/6 | 0.06 | | | | | | | |
| | PBDE#153 | nd 0/6 | 0.062 | | | | | | | |
| | PBDE#154 | nd 0/6 | 0.089 | | | | | | | |
| | PBDE#155 | nd 0/2 | 0.01 | | | | | | | |
| | PBDE#156 | nd 0/6 | 0.089 | | | | | | | |
| | PBDE#166 | nd 0/1 | 0.01 | | | | | | | |
| | [29-7] Heptabrominated diphenylethers | nd 0/1 | ※0.10 | | | | | | | |
| | PBDE#181 | nd 0/2 | 0.01 | | | | | | | |
| | PBDE#183 | nd 0/6 | 0.07 | | | | | | | |
| | PBDE#184 | nd 0/5 | 0.07 | | | | | | | |
| | PBDE#190 | nd 0/2 | 0.01 | | | | | | | |
| | PBDE#191 | nd 0/5 | 0.07 | | | | | | | |
| | [29-8] Heptabrominated diphenylethers | | | | | | | | | |
| | PBDE#196 | nd 0/4 | 0.3 | | | | | | | |
| | PBDE#197 | nd 0/4 | 0.09 | | | | | | | |
| | PBDE#203 | nd 0/2 | 0.83 | | | | | | | |
| | PBDE#204 | nd 0/2 | 0.86 | | | | | | | |
| | [29-9] Nonabrominated diphenylethers | nd 0/1 | ※0.72 | | | | | | | |
| | PBDE#206 | nd 0/6 | 0.70 | | | | | | | |
| | PBDE#207 | nd 0/5 | 0.2 | | | | | | | |
| | PBDE#208 | nd 0/1 | 0.01 | | | | | | | |
| | [29-10] Decabromodiphenylether BDE#209 | nd 0/6 | 1.3 | | | | | | | |
| 30 | *N*-methylaniline | nd 0/7 | 12 | nd 0/9 | 1.2 | nd 0/5 | nd 0/18 | 1.4 | | |
| 31 | 2,3-Dihydro-2,2-dimethyl-7-benzo[b] furanyl *N*-methylcarbamate (carbofuran) | nd 0/5 | 7 | | | | | | | |
| 32 | *N'-tert*-Butyl-*N*-cyclopropyl-6-(methylthio)-1,3,5-triazine-2,4-diamine | nd 0/10 | 8 | | | | | | | |
| 33 | 2-Methoxy-5-methylaniline | nd～57 4/8 | 32 | nd 0/6 | 6.0 | | | | | |
| 34 | 3-Iodo-2-propynylbutylcarbamate | nd 0/4 | 80 | | | | | | | |

| Target chemicals | | Surface water [ng/L] | | Sediment [ng/g-dry] | | Wildlife [ng/g-wet] | | | Air [ng/m$^3$] | |
|---|---|---|---|---|---|---|---|---|---|---|
| No. | Name | Detection range and frequency | Detection limit | Detection range and frequency | Detection limit | Bivalves Detection range and frequency | Fish Detection range and frequency | Detection limit | Detection range and frequency | Detection limit |

(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.
(Note 4) ※ is the sum value of for detection limits of each congener, and therefore a detection range that does not exceed this value can be shown instead of "nd".