7.01 Dioxins emission inventory (1)

Source		Amount of emission (g-TEQ/Year)							Remarks column						
		2009	2010	2011	2012	2013	2014	2015	2009	2010	2011	2012	2013	2014	2015
1 Emissions to air															
Municipal waste incinerators		36	33	32	31	30	27	24	⑪	⑭	⑰	⑳	㉓	㉖	㉙
Industrial waste incinerators		33	28	27	28	19	19	19	⑪	⑭	⑰	⑳	㉓	㉖	㉙
Small-scale waste incinerators	3)	33-34	32-33	24.5	22.6	23	22.2	21.5	⑪	⑭	⑰	⑳	㉓	㉖	㉙
Crematoria		1.2-2.8	1.2–3.0	1.3-3.1	1.3-3.1	1.3-3.2	1.3-3.2	1.3-3.2	⑫	⑮	⑱	㉑	㉔	㉗	㉚
Electric steel-making furnaces		20.1	30.1	21.6	21.2	23.3	22.1	25.2	⑬	⑯	⑲	㉒	㉕	㉘	㉚
Sintering process for steel industry		9.1	10.9	11.9	14.1	12	10.8	7.1	⑬	⑯	⑲	㉒	㉕	㉘	㉛
Facilities for recovering zinc		2.2	2.3	2.5	0.93	3.2	2.9	3.2	⑬	⑯	⑲	㉒	㉕	㉘	㉛
Secondary aluminum smelting and refining facilities	6)	8.53	7.3	7.59	6.76	6.97	6.75	6.66	⑬	⑯	⑲	㉒	㉕	㉘	㉛
Aluminum scrap melting process for aluminum rolling industry		2.2	1.1	1.1	1.1	1.4	1.4	1.4	⑬	⑯	←	←	㉕	←	㉛
Aluminum scrap melting process for automobile dismantling and metal scrapping industry	1a)	0.32	0.32	0.32	0.32	-	-	-	⑬	⑯	←	←	㉕	←	←
Aluminum scrap melting process for aluminum casting/die-casting industry	1a)	0.014	0.014	0.014	0.014	0.014	0.014	0.014	①	←	←	←	←	←	←
Aluminum cutting chips drying process for automobile and automobile parts manufacturing industry		0.006	0.0009	0.001	0.001	0.0004	0.0004	0.0004	⑬	⑯	←	←	㉕	←	←
Paper manufacturing (Kraft pulp recovery boilers)	1b)	0.056	0.073	0.073	0.073	0.067	0.067	0.067	⑬	⑯	←	←	㉕	←	←
PVC-monomer manufacturing facilities		0.31	0.51	0.51	0.51	0.18	0.18	0.18	⑬	⑯	←	←	㉕	←	←
Caprolactam manufacturing (using nitrosyl chloride) facilities	5)	-	–	–	–	-	-	-	-	–	←	←	←	←	-
Chlorobenzene manufacturing facilities		0.000012	0.000002	0.000002	0.000002	0.000002	0.000002	0.000002	⑬	⑯	←	←	㉕	←	←
Potassium-sulphate manufacturing facilities	5)	-	-	–	–	-	-	-	-	–	–	–	-	-	-
Short alumina-fiber manufacturing facilities		0.093	0.050	0.050	0.050	0.008	0.008	0.008	⑬	⑯	←	←	㉕	←	←
Cement-manufacturing facilities	4)	0.86 (1.79)	0.54 (1.20)	0.54 (1.20)	0.54 (1.20)	0.30 (0.70)	0.30 (0.70)	0.30 (0.70)	⑬	⑯	←	←	㉕	←	←
Refractory material manufacturing facilities	5)	-	-	–	–	-	-	-	-	–	–	–	-	-	-
Fire brick manufacturing facilities	5)	-	-	–	–	-	-	-	-	–	–	–	-	-	-
Roof tile manufacturing facilities	5)	0.0029	0.0032	–	–	-	-	-	⑬	⑯	–	–	-	-	-
Sheet glass manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Glass fiber manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Electric glass manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Optical glass manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Frit (roof tile glazing materials) manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Frit (enamel-glazing materials) manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Glass container manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Glass tableware manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Tile manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Sanitary earthenware manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Kiln furniture manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Ceramic tableware manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Insulator manufacturing facilities	5)	-	–	–	–	-	-	-	-	–	–	–	-	-	-
Lime manufacturing facilities	1a)	0.8	1.1	1.1	1.1	0.95	0.95	0.95	⑬	⑯	←	←	㉕	←	←
Cast and forged steel manufacturing facilities		0.17	0.217	0.22	0.22	0.57	0.57	0.57	⑬	⑯	←	←	㉕	←	←
Primary copper smelting facilities		0.43	0.322	0.32	0.32	0.18	0.18	0.18	⑬	⑯	←	←	㉕	←	←
Primary lead smelting facilities		0.013	0.094	0.094	0.094	0.027	0.027	0.027	⑬	⑯	←	←	㉕	←	←
Primary zinc smelting facilities		0.918	1.367	1.37	1.37	0.07	0.07	0.07	⑬	⑯	←	←	㉕	←	←
Copper recovery facilities		0	0	0	0	0	0	0	⑬	⑯	←	←	㉕	←	←
Lead recovery facilities		0.0068	0.011	0.011	0.011	0.014	0.014	0.014	⑬	⑯	←	←	㉕	←	←
Precious metals recovery facilities	5)	-		–	–	-	-	-	-	–	–	–	-	-	-
Wrought copper and copper alloy products manufacturing facilities	1a)	1.24	1.42	1.42	1.42	1.30	1.30	1.30	⑬	⑯	←	←	㉕	←	←
Copper wire and cable manufacturing facilities	1b)	0.48	0.53	0.53	0.53	0.49	0.49	0.49	⑬	⑯	←	←	㉕	←	←
Aluminum casting/die-casting facilities	5)	0.011	0.014	–	–	-	-	-	⑬	⑯	–	–	-	-	-
Automobile manufacturing (aluminum casting/die-casting) facilities		0.50	0.30	0.30	0.30	0.3	0.3	0.3	⑬	⑯	←	←	㉕	←	←
Automobile parts manufacturing (aluminum casting/die-casting) facilities		0.282	0.388	0.388	0.388	0.099	0.099	0.099	⑬	⑯	←	←	㉕	←	←
Thermal power plants		1.18	1.26	1.26	1.26	1.62	1.62	1.62	⑬	⑯	←	←	㉕	←	←
Cigarette smoke		0.06	0.06	0.05	0.05	0.05	0.05	0.05	⑪	⑭	⑰	←	㉓	←	←
Exhaust gas from automobiles	1b)	1.0	1.0	1.0	1.0	0.92	0.92	0.92	⑪	⑭	⑰	←	㉓	←	←

7.01 Dioxins emission inventory (2)

Source		Amount of emission (g-TEQ/Year)							Remarks column						
		2009	2010	2011	2012	2013	2014	2015	2009	2010	2011	2012	2013	2014	2015
2 Emissions to water															
Municipal waste incinerators		0.0010	0.0020	0.0007	0.0010	0.00062	0.00075	0.0032	⑪	⑭	⑰	⑳	㉓	㉖	㉙
Industrial waste incinerators		0.60	0.71	0.35	0.64	0.48	0.29	0.32	⑪	⑭	⑰	⑳	㉓	㉖	㉙
Bleaching facilities for pulp making		0.19	0.24	0.24	0.24	0.09	0.09	0.09	⑬	⑯	←	←	㉕	←	←
PVC monomer manufacturing facilities		0.055	0.051	0.051	0.051	0.12	0.12	0.12	⑬	⑯	←	←	㉕	←	←
Aluminum alloy manufacturing (rolling, etc.)		0.008	0.011	0.011	0.011	0.008	0.008	0.008	⑬	⑯	←	←	㉕	←	←
Aluminum alloy manufacturing (automobiles and automobile parts manufacturing)		0.000009	0.000013	0.000013	0.000013	0.00000002	0.00000002	0.00000002	⑬	⑯	←	←	㉕	←	←
Caprolactam manufacturing (using nitrosylchloride) facilities		0.012	0.010	0.010	0.010	0.0047	0.0047	0.0047	⑬	⑯	←	←	㉕	←	←
Chlorobenzene manufacturing facilities		0.0000002	0.000001	0.000001	0.000001	0.000002	0.000002	0.000002	⑬	⑯	←	←	㉕	←	←
Potassium sulphate manufacturing facilities		0		–	–	-	-	-	⑬	⑯	–	–	-	-	←
Acetylene manufacturing (dry process) facilities		0.0010	0.0012	–	–	-	-	-	⑬	⑯	–	–	-	-	-
Short alumina fiber manufacturing facilities		0.0016	0.0010	–	–	-	-	-	⑬	⑯	–	–	-	-	-
Dioxazine violet manufacturing facilities		0	0	–	–	-	-	-	⑬	⑯	–	–	-	-	-
Facilities for recovering Zinc		0.00083	0.00040	0.00003	0.00006	0.00002	0.00011	0.00001	⑬	⑯	⑲	㉒	㉕	㉘	㉛
Facilities for manufacturing yellow pigment intermediates	5)	-	-	–	–	-	-	-	-	–	–	–	-	-	-
4-Chlorophthalic acid monosodium salt manufacturing facilities		0.0000001	0.0000002	–	–	-	-	-	⑬	⑯	–	–	-	-	-
2, 3-dichloro-1, 4-naphthoquinone manufacturing facilities		0.000009	0.000137	–	–	-	-	-	⑬	⑯	–	–	-	-	-
Terminal sewage treatment facilities		0.131	0.23	0.50	0.11	0.22	0.19	0.2	⑪	⑭	⑰	⑳	㉓	㉖	㉙
Joint wastewater treatment facilities		0.056	0.264	0.26	0.26	0.057	0.057	0.057	⑪	⑭	⑰	←	㉓	←	←
Final disposal sites		0.006	0.006	0.007	0.007	0.006	0.006	0.004	⑪	⑭	⑰	⑳	㉓	㉖	㉙
Facilities for processing exhaust gas from carrier type catalyst manufacturing facilities		0.000083	0.000000055	–	–	-	-	-	⑬	⑯	–	–	-	-	-
Facilities for processing PCB	7)	0.00000046	0.000005	0.000063	0.000006	0.000001	0.000003	0.000003	⑪	⑭	⑰	⑳	㉓	㉖	㉙
Facilities for destroying CFC	7)	0.00014	0.000023	0.000012	0.00001	0.000045	0.000079	0.012	⑪	⑭	⑰	⑳	㉓	㉖	㉙
Total		155-157	158-160	141-143	136-138	128-130	121-123	118-120							
Of which, emission to water		1.1	1.5	1.4	1.3	1.0	0.8	0.8							

Notes:

1: Unit of emission: g-TEQ/year. Emissions from 2001 to 2007 are expressed by WHO-TEF(1998) as Toxicity Equivalency Factor. Emissions after 2008 are expressed by WHO-TEF(2006) as long as possible.

1a: Emissions from Aluminum scrap melting process for automobile dismantling and metal scrapping industry, Aluminum scrap melting process for aluminum casting/die-casting industry, Roof tile manufacturing facilities, Lime manufacturing facilities, and Wrought copper and copper alloy products manufacturing facilities are expressed by WHO-TEF (1998) as Toxicity Equivalency Factor.

1b: Parts of Emission data from Paper manufacturing (Kraft pulp recovery boilers), Copper wire and cable manufacturing facilities, Exhaust gas from automobiles are expressed by WHO-TEF(1998) as Toxicity Equivalency Factor.

2: Arrows in the Remarks column indicate that the same amount was considered to be emitted as in the year which arrow points.

3: Small-scale waste incinerator refer to an incinerator with capacity of less than 200kg/h and implemented at plants.

4: Parenthesized values refer to the number of facilities having permissions for installing industrial waste disposal facilities and the numbers are excluded from total.

5: Sources not listed in Stockholm Convention on Persistent Organic Pollutants Annexes C, of which emission amounts are so small as to not affect total of emissions in any way, are excluded from the calculation.

6: Up until 2003, generation source of aluminum related products was called as "Aluminum alloy manufacturing facilities" as a collective term, from 2004, it was called as "Secondary aluminum smelting and refining facilities" as "the Government Plan to Reduce Dioxin Levels Resulting from Business Activities in Japan" described. No alternation on data has been conducted so far.

7: Data collection on an amount of gas emission from operators nationwide began and they were compiled when operators were registered as a so-called specified facility which "the Law Concerning Special Measures against Dioxins" stipulates.

8: Numbers in the Remark column correspond with the followings.

①: estimated by METI in Sep., 2004
②: estimated by Moe in Dec., 2007
③: estimated by MHLW in Oct., 2007
④: estimated by METI in Oct., 2007
⑤: estimated by Moe in Nov., 2008
⑥: estimated by MHLW in Nov., 2008
⑦: estimated by METI in Nov., 2008
⑧: estimated by Moe in Nov., 2009
⑨: estimated by MHLW in Sep., 2009
⑩: estimated by METI in Oct., 2009
⑪: estimated by Moe in Dec., 2010
⑫: estimated by MHLW in Oct., 2010
⑬: estimated by METI in Nov., 2010
⑭: estimated by Moe in Feb., 2012
⑮: estimated by MHLW in Nov., 2011
⑯: estimated by METI in Feb., 2012
⑰: estimated by Moe in Jan., 2013
⑱: estimated by MHLW in Nov., 2012
⑲: estimated by METI in Dec., 2012
⑳: estimated by Moe in Feb., 2014
㉑: estimated by MHLW in Nov., 2013
㉒: estimated by METI in Feb., 2014
㉓: estimated by Moe in Mar., 2015
㉔: estimated by MHLW in Nov., 2014
㉕: estimated by METI in Feb., 2015
㉖: estimated by Moe in Mar., 2016
㉗: estimated by MHLW in Nov., 2015
㉘: estimated by METI in Mar., 2016
㉙: estimated by Moe in Mar., 2017
㉚: estimated by MHLW in Jan., 2017
㉛: estimated by METI in Mar., 2017

Source: "Dioxins Emission Inventory," Ministry of the Environment

7.02 Result of environmental survey on dioxins

Unit : Air pg-TEQ/m^3
Water quality pg-TEQ/L
Sediments pg-TEQ/g
Soil quality pg-TEQ/g

(FY2015)

Environmental media	Type of survey or classification of areas （Water area）	Number of Sampling points	Number of samples	Sampling points that exceed environmental standards	Results of Survey			Environmental Standard value
					Average	Minimum value	Maximum value	
Air	All	660	1,978	0	0.021	0.0042	0.49	0.6
		(706)	(2,036)	(-)	(0.021)	(0.0029)	(0.49)	
	Ambient Environment	497	1,492	0	0.019	0.0049	0.190	
		(524)	(1,529)	(-)	(0.019)	(0.0029)	(0.190)	
	Vicinities of sources	137	398	0	0.028	0.0042	0.49	
		(156)	(419)	(-)	(0.027)	(0.0042)	(0.49)	
	Roadsides	26	88	0	0.019	0.0053	0.050	
		(26)	(88)	(-)	(0.019)	(0.0053)	(0.050)	
Public Waters ~~area~~ Quality	All	1,491	1,955	23	0.18	0.0110	4.9	1
	River	1,147	1,578	21	0.21	0.0110	4.9	
	Lakes and marshes	93	104	2	0.15	0.0140	1.7	
	Sea areas	251	273	0	0.069	0.0150	0.59	
Public Waters ~~area~~ Sediment	All	1,232	1,305	3	7.1	0.0590	1,100	150
	River	942	1,013	3	6.6	0.0590	1,100	
	Lakes and marshes	86	86	0	8.2	0.2100	33	
	Sea areas	204	206	0	9.1	0.0660	100	
Groundwater Source		515	518	0	0.004	0.0036	0.88	1
Soil	Total	852	852	0	2.6	0	100	1,000
	Ambient Environment Survey	599	599	0	1.8	0	100	
	Survey on the vicinities of pollution sources	253	253	0	4.4	0	100	

Notes:
・Average, Minimum value, and Maximum value are the annual average, minimum, and maximum values taken at each sampling points.
・WHO-TEF(2006) is used to calculate amount of toxic equivalent.
・As for Air, data includes survey results of fixed points designated by Ministry of the Environment, as well as the survey results independently carried out by municipality designated by Air Pollution Control Law ordinance. The lower parenthesized data refers to data from all of the sampling points.
・The number of over-the-standards sampling points for sediments of pubic water areas that of sampling points where the environmental standards were exceeded once a year or more.
・As for underground water, besides the survey reported here, investigation on the surrounding area of pollution well (5 samples from 5 sampling points) and continuous monitoring and researches (15 samples from 18 sampling points) were implemented.
・As for soil, data from 8 samples of 8 sampling points where a simplified measuring method is used are not included when calculating averages and concentration range. Also, a continuous monitoring and research (4 samples from 4 sampling points in 4 areas) was carried out for soil.

Source: "Dioxins Emission Inventory," Ministry of the Environment

7.03 Chronological changes in daily intake of dioxins per person in Japan 1)

Convert per 1kg body weight（Unit：pg-TEQ / kg bw / day）

	Air and Soil		FOOD 2)														Tolerable daily intake (TDI)
	Air 3)	Soil 4)	Rice and Processed rice	Grains except rice, Nuts(Fruits), Potatoes	Sugar and Confectionary	Oils and fats	Beans and Processed beans	Fruits, Juice	Green and Yellow Vegetables	Other vegetables, Mushrooms, Sea Weeds	Beverages including alcoholic beverage	Seafood	Meat and Eggs	Milk and Dairy Products	Seasoning	Drinking Water	Total	
FY 2000	0.042	0.0092	0.0002	0.0038	0.011	0.0032	0.0004	0.0002	0.0212	0.0288	0.00	1.107	0.194	0.0794	0.0048	0.00	Approx. 1.50	4 5)
	0.051		1.453															
FY 2001	0.042	0.0064	0.0004	0.0268	0.004	0.001	0.0028	0.0004	0.0222	0.0028	0.0076	1.335	0.154	0.0698	0.0020	0.00	Approx. 1.68	
	0.048		1.629															
FY 2002	0.028	0.0068	0.0002	0.001	0.006	0.001	0.0002	0.00	0.0030	0.001	0.00	1.290	0.150	0.0346	0.0014	0.00	Approx. 1.52	
	0.035		1.489															
FY 2003	0.020	0.0052	0.00	0.001	0.002	0.002	0.00	0.00	0.0018	0.001	0.0002	1.147	0.141	0.0322	0.0018	0.00	Approx. 1.36	
	0.025		1.330															
FY 2004	0.017	0.0044	0.0004	0.0026	0.002	0.001	0.0004	0.00	0.0028	0.0026	0.001	1.245	0.101	0.0468	0.0020	0.00	Approx. 1.43	
	0.021		1.409															
FY 2005	0.015	0.0040	0.0004	0.0022	0.002	0.001	0.0008	0.00	0.0028	0.001	0.000	1.090	0.0686	0.0328	0.0014	0.00	Approx. 1.22	
	0.019		1.203															
FY 2006	0.015	0.0038	0.0006	0.0054	0.002	0.001	0.0002	0.00	0.0012	0.001	0.000	0.9400	0.0704	0.0212	0.0012	0.00	Approx. 1.06	
	0.019		1.045															
FY 2007	0.012	0.0054	0.0002	0.001	0.002	0.0004	0.0004	0.00	0.0006	0.001	0.00	1.033	0.0422	0.0226	0.0012	0.00	Approx. 1.12	
	0.017		1.106															
FY 2008	0.011	0.0056	0.00	0.0008	0.001	0.0004	0.0002	0.00	0.0008	0.001	0.00	0.8634	0.0396	0.0076	0.0008	0.00	Approx. 0.93	
	0.017		0.9152															
FY 2009	0.009	0.0042	0.00	0.0010	0.001	0.0006	0.0002	0.00	0.0004	0.001	0.00	0.7840	0.0398	0.013	0.0012	0.00	Approx. 0.86	
	0.014		0.8428															
FY 2010	0.009	0.0042	0.00	0.0004	0.001	0.0004	0.0000	0.00	0.0006	0.0004	0.00	0.7626	0.0416	0.0028	0.0036	0.00	Approx. 0.83	
	0.014		0.8134															
FY 2011	0.008	0.0040	0.00	0.0006	0.001	0.0004	0.0002	0.00	0.0002	0.0004	0.00	0.6308	0.0416	0.0008	0.0016	0.00	Approx. 0.69	
	0.012		0.6774															

	total (pg-TEQ/kg)	Air and Soil (%		Food (%)						tolerable daily intake (TDI) (pg-TEQ/kg)
		Air 3)	Soil 4)	Seafood	Meat and Eggs	Seasoning	Milk and Dairy Products	Sugar and Confectionary	others	
FY2012	0.7	1.14	0.46	89.52	7.70	0.23	0.40	0.11	0.30	4 5)
FY2013	0.59	1.12	0.75	89.39	7.75	0.27	0.10	0.10	0.51	
FY2014	0.7	0.89	0.46	91.05	6.17	0.20	0.03	0.06	1.14	
FY2015	0.65	0.87	0.56	87.01	10.74	0.31	0.09	0.06	0.37	

Notes:

1: WHO-TEF(1998) is used from FY 2000 to FY 2007 and WHO-TEF(2006) is used after FY2008 to calculate toxic equivalent (TEQ).

2: Effective digit is based on the amount of daily intake of dioxins byfood category and total amount of daily intake of diet.

3: The values calculated by dividing the sum of the multiples of each of the averages and the corresponding numbers of locations by the grand total number of locations is used as for the average values for Ambient Environment and roadside., each average values are added with the value.

4: The average values of ambient environment are used.

5: TDI are set under Act on Special Measures against Dioxins(Act No. 106 of July 16, 1999),
Reference: http://law.e-gov.go.jp/htmldata/H11/H11HO105.html and http://www1.mhlw.go.jp/houdou/1106/h0621-3_13.html

Source: "Survey on dioxins," Ministry of the Environment
"Survey of daily intake of dioxin from diet (Health Labor Sciences Research)," Ministry of Health, Labor and Welfare

7.04 Chronological changes in daily intake of dioxins originated from total diet samples

Survey on chronological changes in daily intake of dioxins from stored samples [1)]

（Unit： pg-TEQ / kg bw / day）

	Dioxins	Co-planar PCB	PCDDs＋PCDFs
FY 1977	8.18	4.43	3.75
1982	5.32	2.96	2.36
1988	5.58	3.14	2.44
1992	2.07	1.23	0.84
1995	2.30	1.15	1.15
1998	2.72	1.80	0.92

Survey on daily intake [2)]

（Unit： pg-TEQ / kg bw / day）

	Dioxins	Co-planar PCB	PCDDs＋PCDFs
FY 1998	2.00	1.16	0.83
1999	2.25	1.36	0.89
2000	1.45	0.88	0.57
2001	1.63	1.09	0.54
2002	1.49	0.97	0.52
2003	1.33	0.89	0.44
2004	1.41	0.96	0.45
2005	1.20	0.82	0.38
2006	1.04	0.73	0.31
2007	1.11	0.78	0.33
2008	0.92	0.66	0.26
2009	0.84	0.61	0.24
2010	0.81	0.57	0.24
2011	0.68	0.47	0.20
2012	0.69	0.48	0.21
2013	0.58	0.39	0.18
2014	0.69	0.48	0.21
2015	0.64	0.46	0,18

Notes:

1: Estimation of a chronological change in the amount of dioxins intake from an average diet by analyzing Dioxins with total diet samples collected and stored at five time-points in Kansai area between FY 1977 and FY 1995 (six time-points if FY 1998 is included).

2: Estimation of the amount of dioxins intake from an average diet by analyzing Dioxins with total diet samples collected from all over the country.

Source: "Survey of daily intake of dioxins from diet (Health Labor Sciences Research) in 2015," Ministry of Health, Labor and Welfare

7.05 Notifications of specified facilities based on the Law concerning Special Measures against Dioxins (1)

(Unit: Facilities)

	Facilities subject to Gas Emission Standards								Facilities subject to Effluent Emission Standards							
	FY 2008 end	FY 2009 end	FY2010 end	FY 2011 end	FY 2012 end	FY 2013 end	FY 2014 end	FY 2015 end	FY 2008 end	FY 2009 end	FY2010 end	FY 2011 end	FY 2012 end	FY 2013 end	FY 2014 end	FY 2015 end
Hokkaido	295	292	285	288	278	271	264	254	86	83	84	88	90	94	92	91
Aomori	147	140	139	139	138	137	139	134	55	72	77	73	73	73	73	72
Iwate	144	142	139	130	126	126	127	116	8	8	8	9	9	9	19	16
Miyagi	145	140	136	148	150	123	122	126	17	17	17	16	16	16	16	16
Akita	96	94	91	88	84	84	86	87	11	11	11	11	10	10	10	10
Yamagata	129	128	123	117	120	116	113	111	47	47	48	43	43	42	42	42
Fukushima	167	162	157	156	156	154	150	149	72	69	61	61	60	60	65	64
Ibaraki	500	486	458	437	421	411	405	388	112	114	112	106	98	91	88	85
Tochigi	292	277	274	248	244	228	220	218	19	19	21	16	18	20	18	18
Gunma	211	169	166	135	131	128	121	121	29	21	21	15	16	15	16	15
Saitama	420	407	393	375	357	351	339	311	255	251	253	240	242	239	237	232
Chiba	426	404	395	384	373	360	344	336	156	147	142	136	137	136	132	132
Tokyo	360	343	331	325	326	324	317	284	262	252	256	259	263	258	250	228
Kanagawa	153	153	151	144	140	127	122	118	92	96	103	105	105	87	89	87
Niigata	268	257	248	246	240	230	225	220	72	73	73	73	73	71	71	70
Toyama	135	129	127	124	117	113	111	107	50	49	51	43	39	40	36	38
Ishikawa	99	90	89	88	86	84	82	81	13	11	11	11	11	11	11	11
Fukui	144	140	137	126	120	111	103	101	43	41	41	40	37	31	30	30
Yamanashi	101	99	95	91	88	88	88	84	14	13	13	10	10	10	11	10
Nagano	219	207	199	184	181	166	159	159	114	111	109	102	102	91	95	98
Gifu	269	261	257	245	240	227	216	207	49	46	46	42	43	40	40	40
Shizuoka	428	415	394	377	366	345	336	323	308	306	304	297	298	290	285	265
Aichi	461	438	423	413	392	387	386	371	114	109	104	99	100	93	91	95
Mie	283	274	267	254	253	256	245	239	64	64	56	55	54	48	44	42
Shiga	172	154	149	140	129	121	119	118	24	19	19	20	19	19	20	19
Kyoto	96	96	93	92	91	89	88	92	23	23	22	22	22	22	22	27
Osaka	187	184	175	166	160	150	132	131	156	158	153	120	120	115	103	84
Hyogo	335	293	290	285	272	264	256	238	117	87	86	87	86	81	82	52
Nara	198	196	195	194	195	190	187	182	35	34	38	34	34	33	35	35
Wakayama	107	100	94	91	89	85	85	82	23	20	20	19	19	19	18	16
Tottori	100	97	96	95	94	91	89	84	39	39	39	39	39	39	35	30
Shimane	102	91	90	82	79	80	75	73	30	32	31	29	28	32	30	30
Okayama	143	135	136	132	141	142	133	122	31	31	31	31	32	34	34	28
Hiroshima	188	181	178	165	159	150	149	143	35	33	33	29	27	27	27	16
Yamaguchi	202	190	185	176	162	157	146	149	75	74	69	69	67	67	68	18
Tokushima	177	173	172	166	162	149	148	139	49	47	47	41	41	39	39	31
Kagawa	139	137	132	128	125	121	115	112	37	37	36	38	37	35	35	26
Ehime	216	206	203	202	197	189	183	187	34	37	37	36	36	37	37	12
Kochi	129	127	127	124	121	114	111	108	9	9	9	9	7	6	6	6
Fukuoka	282	278	261	248	236	233	233	227	71	73	71	70	63	66	61	58
Saga	131	128	122	118	114	111	109	101	20	20	21	18	18	20	20	17
Nagasaki	133	123	124	118	116	116	108	104	26	26	26	26	24	23	22	20
Kumamoto	168	159	154	146	137	135	135	132	10	10	10	12	12	12	12	12
Oita	65	65	65	66	64	62	62	56	–	-	-	-	-	-	-	-
Miyazaki	80	78	76	70	70	69	66	63	4	5	5	6	6	6	6	6
Kagoshima	168	167	168	166	166	161	160	159	2	1	1	1	1	1	1	1
Okinawa	114	110	103	102	102	105	103	98	34	37	36	36	37	37	36	32

7.05 Notifications of specified facilities based on the Law concerning Special Measures against Dioxins (2)

(Unit: Facilities)

	Facilities subject to Gas Emission Standards								Facilities subject to Effluent Emission Standards							
	FY 2008 end	FY 2009 end	FY2010 end	FY 2011 end	FY 2012 end	FY 2013 end	FY 2014 end	FY 2015 end	FY 2008 end	FY 2009 end	FY2010 end	FY 2011 end	FY 2012 end	FY 2013 end	FY 2014 end	FY 2015 end
Sapporo	30	30	30	27	27	26	24	22	22	22	22	20	20	20	25	25
Sendai	33	31	30	33	31	27	27	27	15	13	13	32	32	22	8	14
Saitama	41	35	30	30	29	29	28	24	12	12	11	12	12	12	15	12
Chiba	55	54	52	53	48	46	45	44	36	36	36	36	35	35	34	35
Yokohama	93	91	86	85	82	82	80	79	66	68	68	67	61	61	61	59
Kawasaki	62	61	59	59	56	54	55	49	74	74	70	71	71	75	76	70
Sagamihara	36	24	22	22	20	20	19	19	50	40	35	35	33	33	29	29
Niigata	71	72	71	68	59	57	55	54	25	25	24	23	21	19	18	18
Shizuoka	89	89	77	74	69	67	64	63	24	24	22	22	22	22	22	22
Hamamatsu	67	65	64	61	60	60	54	52	20	20	20	20	20	20	15	15
Nagoya	75	74	75	72	66	63	62	58	41	42	45	45	45	45	44	44
Kyoto	76	71	73	72	71	68	65	61	31	31	33	33	31	27	26	24
Osaka	72	67	65	65	65	60	54	54	52	51	52	59	57	54	50	46
Sakai	53	55	56	53	52	50	46	44	17	17	18	16	16	16	16	13
Kobe	42	40	37	36	34	35	35	35	29	22	21	20	21	23	23	26
Okayama	63	61	58	56	52	51	49	49	17	17	16	16	15	15	10	9
Hiroshima	66	61	61	60	53	49	45	45	52	51	55	53	53	45	40	39
Kitakyushu	66	66	68	65	65	59	55	53	74	108	113	111	110	107	105	85
Fukuoka	23	23	23	23	23	23	22	20	25	25	25	25	25	25	25	24
Kumamoto	20	22	22	21	21	22	22	19	6	6	6	6	6	7	7	6
Hakodate	9	9	9	9	9	10	10	10	1	1	1	1	1	1	1	1
Asahikawa	12	12	12	12	12	10	10	10	4	4	4	4	4	4	4	4
Aomori	35	35	36	32	31	27	27	24	6	6	6	5	5	4	4	3
Morioka	28	28	29	26	23	23	22	21	3	3	3	3	3	3	2	3
Akita	19	18	18	17	17	17	17	17	15	15	15	14	14	14	14	14
Koriyama	21	18	18	17	17	18	17	17	3	3	3	3	5	3	3	3
Iwaki	37	35	36	34	32	32	32	32	29	27	34	34	36	36	39	39
Utsunomiya	27	25	25	24	24	25	24	22	22	19	19	19	19	20	20	16
Maebashi	-	39	33	32	29	30	30	30	-	12	10	12	12	12	12	12
Takasaki	-	-	-	27	27	25	24	22	-	-	-	6	6	6	6	6
Kawagoe	16	15	14	12	12	11	11	11	12	12	9	8	8	7	7	8
Koshigaya	-	-	-	-	-	-	-	9	-	-	-	-	-	-	-	5
Funabashi	21	21	18	18	16	16	18	18	2	2	2	2	1	1	2	2
Kashiwa	22	18	18	17	16	16	15	15	-	-	-	-	-	-	-	-
Hachioji	-	-	-	-	-	-	-	23	-	-	-	-	-	-	-	14
Yokosuka	17	17	17	17	19	19	19	17	21	21	20	20	21	21	21	21
Toyama	49	47	47	46	46	45	42	41	15	15	15	15	15	14	14	14
Kanazawa	31	34	33	30	30	28	26	26	5	5	9	11	9	9	9	10
Nagano	26	24	22	20	20	18	19	19	18	16	14	13	13	11	12	12
Gifu	29	29	27	26	26	26	26	27	6	6	6	6	6	6	3	9
Toyohashi	23	21	22	22	20	21	21	20	8	7	8	8	8	7	7	7
Okazaki	35	32	28	26	27	26	25	24	10	11	7	5	5	5	5	4
Toyoda	53	52	51	48	48	49	48	45	51	50	50	51	51	51	51	50
Otsu	-	16	15	15	14	13	13	12	-	5	5	7	7	7	5	6
Toyonaka	-	-	-	6	8	8	6	6	-	-	-	13	10	10	6	6
Takatsuki	14	14	14	14	14	14	13	12	19	19	19	18	18	18	18	18
Hirakata	-	-	-	-	-	-	14	14	-	-	-	-	-	-	12	11
Higashi Osaka	17	17	17	16	16	16	18	18	14	14	14	12	12	12	14	14
Himeji	74	79	78	74	74	75	75	73	45	55	56	53	57	57	55	32
Amagasaki	-	20	19	18	18	19	18	18	-	25	26	25	25	24	24	18
Nishinomiya	8	8	11	11	8	8	8	8	4	4	5	8	7	7	7	7
Nara	29	29	29	27	26	26	26	26	4	4	4	4	4	4	4	4
Wakayama	57	53	51	46	45	46	43	43	11	10	10	10	10	10	10	4
Kurashiki	70	70	70	68	66	66	63	61	45	45	45	43	43	43	41	14
Fukuyama	69	66	64	61	58	56	55	53	17	15	18	18	16	16	16	14
Shimonoseki	31	30	28	28	28	28	29	28	2	2	2	2	2	2	2	-
Takamatsu	27	26	26	25	25	24	24	24	7	7	7	7	7	7	7	7
Matsuyama	36	34	39	37	35	34	34	32	4	4	4	4	4	4	4	1
Kochi	28	27	27	27	27	25	23	22	7	7	7	7	7	6	5	5
Kurume	23	23	23	23	21	21	22	23	3	3	3	3	3	3	3	3
Nagasaki	21	19	18	17	15	15	16	16	9	9	9	7	7	7	7	7
Oita	43	44	44	42	41	39	36	32	23	23	23	23	22	22	22	2
Miyazaki	17	17	16	15	15	15	14	15	4	4	4	5	5	5	5	5
Kagoshima	38	36	35	35	34	34	34	34	7	7	7	7	7	7	7	7
Naha	-	-	-	-	-	1	1	1	-	-	-	-	-	-	-	-
Nationwide	11,769	11,364	11,058	10,686	10,380	10,054	9,786	9,487	4,090	4,083	4,070	3,980	3,943	3,834	3,769	3,440

Source: "Enforcement status of the Law concerning Special Measures against Dioxins," Ministry of the Environment

7.06 Specified facilities subject to Gas Emission Standards, based on the Law Concerning Special Measures against Dioxins(by type of notification)

(Units)

		March, 31 2008 Number of units installed	March, 31 2009 Number of units installed	March, 31 2010 Number of units installed	March, 31 2011 Number of units installed	March, 31 2012 Number of units installed	March, 31 2013 Number of units installed	March, 31 2014 Number of units installed	March, 31 2015 Number of units installed	March, 31 2016 Number of units installed
Sintering furnace for producing sintered ores		32	32	32	32	31	31	31	31	31
Electric furnace for steel-making		110	111	112	114	112	112	110	105	105
Zinc recovery facility	Roasting furnace	7	10	12	13	12	13	12	11	11
	Sintering furnace	2	2	5	5	5	5	6	6	6
	Blast furnace	2	2	2	3	2	2	2	2	2
	Melting furnace	3	3	2	2	2	3	3	4	4
	Drying furnace	1	2	6	9	8	8	9	10	10
	Subtotal	15	19	27	32	29	31	32	33	33
Aluminum alloy facility	Roasting furnace	22	22	27	28	30	30	29	27	27
	Melting furnace	759	756	748	731	722	689	671	677	658
	Drying furnace	62	62	60	58	54	53	52	50	52
	Subtotal	843	840	835	817	806	772	752	754	737
Waste incinerator	More than 4t/h	1,121	1,125	1,103	1,106	1,112	1,122	1,115	1,117	1,099
	More than 2t/h～less than 4t/h	1,489	1,481	1,460	1,450	1,431	1,416	1,395	1,381	1,351
	Less than 2t/h	8,510	8,161	7,793	7,499	7,165	6,896	6,619	6,365	6,131
	More than 200kg/h ～less than 2t/h	2,955	2,884	2,772	2,673	2,570	2,476	2,357	2,267	2,188
	More than 100kg～Less than 200kg	3,802	3,602	3,433	3,307	3,178	3,077	2,976	2,888	2,785
	More than 50kg/h ～less than 100kg/h	1,227	1,175	1,109	1,063	987	931	895	839	810
	Less than 50kg/h（more than 0.5m2）	526	500	479	456	430	412	391	371	348
	Subtotal	11,120	10,767	10,356	10,055	9,708	9,434	9,129	8,863	8,581
Total		12,120	11,769	11,362	11,050	10,686	10,380	10,054	9,786	9,487

Note: Tabulated the numbers of units installed in the notified facilities based on the Article 12 & 13 of the Act.

Source: "Enforcement status of the Law concerning Special Measures against Dioxins," Ministry of the Environment

7.07 Notifications from facilities subject to Effluent Emission Standards, based on the Act on Special Measures against Dioxins (by contents of notification)

(Units)

		Number of facilities at the end of Fiscal Year								
		FY 2008	FY 2009	FY 2010	FY 2011	FY 2012	FY 2013	FY 2014	FY 2015	FY 2016
Bleaching using chlorine or chlorine compound to produce sulfate cellulose (craft pulp) or sulfite cellulose (sulfite pulp.)		91	89	75	76	77	76	72	72	70
Acetylene cleaning to produce acetylene from calcium carbide.		57	56	55	55	55	57	57	57	56
Cleaning waste gas to produce sulfuric acid potassium.		0	0	0	0	0	0	0	0	0
Cleaning waste gas to produce alumina fiber.		21	22	22	22	23	27	26	26	29
Cleaning waste gas f to process gas generated from a baking furnace to produce a catalyst with a carrier.		6	7	7	7	7	7	9	10	11
Cleaning Dichloro- ethylene to produce vinyl chloride monomer.		32	32	32	32	32	32	32	32	28
Sulfuric-acid concentration, cyclohexane separation, waste gas cleaning to produce caprolactm.		5	5	3	5	5	5	5	5	5
Water cleaning facility and waste gas cleaning facility to produce chlorobenzene or dichlorobenzene.		4	2	2	2	2	2	2	5	5
Filtering treatment facility, drying facility and waste gas cleaning facility to produce 4-Chlorophthalic acid.		6	6	3	3	3	3	3	3	3
Filtering treatment facility, and waste gas cleaning facility to produce 2, 3-dichloro-1, 4-naphthoquinone.		3	3	3	3	3	3	3	3	3
Nitration derivative separation facility, nitration-reduction derivative separation facility, nitration derivative cleaning facility, nitration-reduction derivative cleaning facility, dioxazine purple cleaning facility, Hot-air drying facility used to produce dioxazine purple.		7	7	7	7	7	7	7	7	7
Roasting furnace, melting furnace, or drying furnace used to produce aluminum or the alloy thereof that are related to waste gas cleaning facility and wet-type dust collection facility.		82	80	79	80	73	72	72	64	64
Refinement facility, waste gas cleaning facility and wet-type dust collection facility that are used in collection of zinc.		16	19	38	44	45	43	43	44	45
Filtering treatment facility, refinement facility and waste gas cleaning facility used in metallic collection from a catalyst with a carrier.		254	253	252	251	249	255	246	247	233
Waste gas cleaning facility, wet-type dust collection facility and ash collection facility related to waste incinerator that discharge polluted water or waste fluid.	Waste gas cleaning facility, wet-type dust collection facility	2,215	2,199	2,137	2,110	2,003	1,976	1,899	1,825	1,782
	Ash collection facility	849	834	877	875	893	879	862	873	849
	Subtotal	3,064	3,033	3,014	2,985	2,896	2,855	2,761	2,698	2,631
Decomposition of waste PCB or process of PCB, and cleaning and decomposition of PCB polluted materials and processed PCB.		130	128	127	126	128	130	129	128	133
Plasma reaction, waste gas cleaning and wet-type dust collection for destruction of CFC.		54	59	61	62	61	61	61	63	57
Terminal processing of sewage		252	252	256	258	258	253	249	249	244
Treatment of water discharged from a factory or business establishment with a facility subject to the Effluent Emission Standards		55	54	54	58	56	55	57	58	56
Total		4,139	4,107	4,090	4,076	3,980	3,943	3,834	3,769	3,680

Note: Notifications based on the Act on Special Measures against Dioxins and permissions and the like based on the Act on Special Measures concerning Conservation of the Environment of the Seto Inland Sea are tabulated together.

Source: "Enforcement status of the Act on Special Measures against Dioxins," Ministry of the Environment

7.08 Number of notifications for new chemical compounds based on Act on the Evaluation of Chemical Substances and Regulation of their Manufacture, etc.

(Unit: Case)

	New: Regular	Fiscal Year	New: Small-quantity		
				Produced	Imported
1975	82	1975	773	469	304
1980	253	1980	1,833	937	896
1985	376	1985	3,893	2,177	1,716
1990	272	1990	6,848	4,799	2,049
1995	296	1995	8,050	5,951	2,099
2000	373	2000	10,032	7,222	2,810
2001	322	2001	10,669	7,559	3,110
2002	292	2002	11,763	8,153	3,610
2003	362	2003	13,087	8,973	4,114
2004	121	2004			

(Unit: Case)

	New: Regular	Low production amount	Intermediates			Intermediates: small quantity			New: Small quantity		
				Produced	Imported		Produced	Imported		Produced	Imported
FY 2004	238	191	425	281	144	-	-	-	14,823	9,889	4,934
FY 2005	225	194	202	102	100	-	-	-	15,923	10,650	5,273
FY 2006	284	219	170	98	72	-	-	-	17,687	11,718	5,969
FY 2007	384	242	226	113	113	-	-	-	19,641	12,694	6,947
FY 2008	378	298	172	98	74	-	-	-	21,356	13,551	7,805
FY 2009	306	271	213	114	99	-	-	-	22,860	14,111	8,749
FY 2010	321	339	266	140	126	-	-	-	25,848	-	-
FY 2011	453	311	265	120	145	-	-	-	28,547	-	-
FY 2012	454	248	259	116	143	-	-	-	31,672	-	-
FY 2013	315	234	204	80	124	-	-	-	34,056	-	-
FY 2014	367	233	231	103	128	124	42	82	36,053	-	-
FY 2015	347	220	205	87	118	203	85	118	35,357	-	-
FY 2016	321	276	124	49	75	180	76	104	35,841	-	-

Note:
For 2004 (calendar year), from Jan. to Mar.

Source: For 1975 to 2000, materials by Ministry of Economy, Trade and Industry, and for 2001 to 2015, material by Ministry of the Environment

7.09 Results of the Initial Environmental Survey

Water quality

No.	Substance registry number	Name of substances	Detection frequency Number of samples where the chemical is detected /Number of samples	Detection frequency Number of study areas where substances are detected /Number of study areas	Detection range (ng/L)	Detection limit (ng/L)
1	3	*N*-Ethylaniline	0/15	0/15	nd	13
2	5	Silver and its compounds (as Silver)	19/21	19/21	nd～120	0.6
3	6	2,4-Diaminoanisole	0/16	0/16	nd	160
4	7	2,4-Dichlorophenol	2/21	2/21	nd～8.3	1.9
5	8	*N*,*N*-Dimethylacetamide	11/20	11/20	nd～73,000	14
6	9	2,3-Dimethylaniline	0/15	0/15	nd	12
7	10	2,3,5,6-Tetrachloro-*p*-benzoquinone	0/14	0/14	nd	180
8	11	1,2,3-Trimethylbenzene	2/16	2/16	nd～11	4.8
9	13	Bis (4-aminocyclohexyl) methane (synonym: Diaminodicyclohexylmethane)	0/16	0/16	nd	14
10	14	1,3-Bis[(2,3-epoxypropyl)oxy]benzene	0/19	0/19	nd	9.7
11	15	Organictin compounds				
12	15-1	Monobutyltin compounds	7/23	7/23	nd～220	4.4
13	15-2	Dibutyltin compounds	7/22	7/22	nd～160	1.7
14	15-3	Dimethyltin compounds	6/23	6/23	nd～110	7.0

Air

No.	Substance registry number	Name of substances	Number of detected substance/Number of samples	Number of study areas where substances are detected /Number of study areas	Detection range (ng/㎥)	Detection limit (ng/㎥)
1	1	2-Hydroxyethyl acrylate	0/54	0/18	nd	58
2	2	1-Allyloxy-2,3-epoxypropane	6/48	3/16	nd～14	8.6
3	4	2,3-Epoxy-1-propanol	0/48	0/16	nd	1,000
4	12	*N*-Nitrosodimethylamine	36/36	12/12	0.17～380	0.017
5	15	Organictin compounds				
6	15-1	Monobutyltin compounds	9/42	5/14	nd～16	4.7
7	15-2	Dibutyltin compounds	0/42	0/14	nd	4.9
8	15-3	Dimethyltin compounds	1/42	1/14	nd～18	3.7

Note:
・Detection range refers to maximum and minimum values of detected sample substance.
・Indicate that surveyed areas include the vicinity of points with high emissions that were notified based on PRTR.

Source: "Environmental Survey and Monitoring of Chemicals in 2016," Ministry of the Environment

7.10 Results of the Detailed Environmental Survey

Water quality

No.	Substance registry number	Name of substances	Detection frequeny Number of samples where the chemical is detected /Number of samples	Detection frequency Number of study areas where substances are detected /Number of study areas	Detection range (ng/L)	Detection limit (ng/L)
1	2	2-(2-Ethoxyethoxy)ethanol	20/20	20/20	110～480	54
2	3	Chloroethane	9/20	9/20	nd～19	1.7
3	4	3-Chloropropene (synonym: Allyl chloride)	0/23	0/23	nd	1.1
4	5	Diethanolamine（Fresh water area）	11/12	11/12	nd～720	14
5	5	Diethanolamine（Sea water area）	6/11	6/11	nd～1,100	220
6	6	2,6-Di-tert-butyl-4-methylphenol (synonym: 2,6-Di-tert-butyl-4-cresol)	18/21	18/21	nd～43	6.2
7	7	*N*,*N*-Dimethyldodecylamine *N*-oxide	20/23	20/23	nd～25	0.5
8	8	1,5,5-Trimethyl-1-cyclohexen-3-one (synonym: Isophorone)	10/21	10/21	nd～53	7.8
9	9	Hydrazine	20/21	20/21	nd～14	0.41
10	10	1-Butanol	0/19	0/19	nd	160
11	11	Methyl ethyl ketone	20/20	20/20	79～1,300	8.1

Bottom sediment

No.	Substance registry number	Name of substances	Number of detected substance/Number of samples	Number of study areas where substances are detected /Number of study areas	Detection range (ng/g-dry)	Detection limit (ng/g-dry)
1	6	2,6-Di-tert-butyl-4-methylphenol (synonym: 2,6-Di-tert-butyl-4-cresol)	52/63	20/21	nd～32	0.37
2	7	*N*,*N*-Dimethyldodecylamine *N*-oxide	68/72	24/24	nd～3.5	0.014

Living organism

No.	Substance registry number	Name of substances	Number of detected substance/Number of samples	Number of study areas where substances are detected /Number of study areas	Detection range (ng/g-wet)	Detection limit (ng/g-wet)
3	6	2,6-Di-tert-butyl-4-methylphenol	32/36	11/12	nd～120	0.29

Air

No.	Substance registry number	Name of substances	Number of detected substance/Number of samples	Number of study areas where substances are detected /Number of study areas	Detection range (ng/g-wet)	Detection limit (ng/g-wet)
1	1	Isobutyraldehyde	0/57	0/19	nd	2,200

Note:

- Detection range refers to maximum and minimum values of detected sample substance.
- Indicate that surveyed areas include the vicinity of points with high emissions that were notified based on PRTR.

Source: "Environmental Survey and Monitoring of Chemicals in 2016," Ministry of the Environment

7.11 Results of Environmental Monitoring (1)

Registry Numbers	Target substance	Water quality (pg/L)		Bottom sediment (pg/g-dry)		Organism (pg/g-wet)						Air (pg/m³)	
						Seashells		Fish		Birds		1st (Warm season)	
		Range (Detection Frequency)	Average	Range (Detection Frequency)	Average	Range (Detection Frequency)	Average	Range (Detection Frequency)	Average	Range (Detection Frequency)	Average	Range (Detection Frequency)	Average
1	PCBs	34～4,200 (48/48)	200	nd～1,100,000 (61/62)	6,400	580～9,600 (3/3)	2,400	1,300～180,000 (19/19)	11,000	5,000 (1/1)	5,000	17～950 (35/35)	98
2	HCB	4.2～140 (48/48)	15	4.4～17,000 (62/62)	100	tr(14)～120 (3/3)	35	43～1,700 (19/19)	170	760 (1/1)	760	74～170 (35/35)	120
3	Aldrin												
4	Dieldrin												
5	Endrin												
6	DDT and its derivatives												
6-1	*p,p'*-DDT											0.18～13 (35/35)	1.5
6-2	*p,p'*-DDE											0.31～34 (35/35)	2.4
6-3	*p,p'*-DDD											nd～tr(0.31) (17/35)	nd
6-4	*o,p'*-DDT											0.14～6.8 (35/35)	0.99
6-5	*o,p'*-DDE											nd～1.1 (34/35)	0.25
6-6	*o,p'*-DDD											nd～0.37 (25/35)	tr(0.09)
7	Chlordane derivatives												
7-1	cis-Chlordane												
7-2	trans-Chlordane												
7-3	Oxychlordane												
7-4	*cis*-Nonachlor												
7-5	*trans*-Nonachlor												
8	Heptachlor derivatives												
8-1	Heptachlor					nd～tr(1.7) (1/3)	nd	nd～9.2 (9/19)	nd	nd (0/1)	nd	0.43～49 (35/35)	8.7
8-2	*cis-Heptachlor epoxide*					7.2～91 (3/3)	21	3.2～190 (19/19)	33	20 (1/1)	20	tr(0.4)～4.7 (35/35)	1.4
8-3	*trans*-Heptachlor epoxide					nd (0/3)	nd	nd～10 (5/19)	nd	nd (0/1)	nd	nd (0/35)	nd
9	Toxaphenes												
9-1	Parlar-26					nd～tr(17) (2/3)	tr(10)	nd～400 (13/19)	26	tr(10) (1/1)	tr(10)		
9-2	Parlar-50					nd～tr(16) (2/3)	tr(11)	nd～640 (13/19)	tr(25)	nd (0/1)	nd		
9-3	Parlar-62					nd (0/3)	nd	nd～320 (2/19)	nd	nd (0/1)	nd		
10	Mirex												
11	HCHs												
11-1	*α*-HCH	8.7～610 (48/48)	48	1.1～9,600 (62/62)	97	3.5～25 (3/3)	11	tr(1.3)～180 (19/19)	19	13 (1/1)	13	8.8～300 (35/35)	33
11-2	*β*-HCH	21～1,100 (48/48)	130	2.5～5,900 (62/62)	160	13～69 (3/3)	34	6.0～390 (19/19)	56	57 (1/1)	57	0.36～34 (35/35)	3.0
11-3	*γ-HCH(synonym : Lindane)*	2.6～110 (48/48)	17	tr(0.3)～2.800 (62/62)	29	tr(3.6)～14 (3/3)	7.3	nd～42 (14/19)	6.1	nd (0/1)	nd	1.4～51 (35/35)	8.3
11-4	*δ*-HCH	0.8～310 (48/48)	7.2	tr(0.4)～2.900 (62/62)	27	nd～tr(1.5) (1/3)	nd	nd～17 (12/19)	tr(1.7)	nd (0/1)	nd	nd～22 (32/35)	0.55
12	Chlordecone												

7.11 Results of Environmental Monitoring (2)

Registry Numbers	Target substance	Water quality (pg/L)		Bottom sediment (pg/g-dry)		Organism (pg/g-wet)						Air (pg/m³)	
						Seashells		Fish		Birds		1st (Warm season)	
		Range (Detection Frequency)	Average	Range (Detection Frequency)	Average	Range (Detection Frequency)	Average	Range (Detection Frequency)	Average	Range (Detection Frequency)	Average	Range (Detection Frequency)	Average
13	Hexabromobiphenyl derivatives			nd～15 (9/62)	nd	nd (0/3)	nd	nd (0/19)	nd	nd (0/1)	nd	nd～1.1 (2/35)	nd
14	Polybrominated diphenyl ether derivatives (4-10 bromide)												
14-1	Tetrabromodiphenyl ether derivatives	tr(1.2)～ 40 (48/48)	4.3	nd～1,400 (44/62)	30	32～89 (3/3)	48	tr(14)～580 (19/19)	90	36 (1/1)	36	nd～2.7 (30/35)	tr(0.3)
14-2	Pentabromodiphenyl ether derivatives	nd～31 (34/48)	tr(3.0)	nd～1,300 (44/62)	23	16～20 (3/3)	18	nd～140 (18/19)	22	22 (1/1)	22	nd～0.9 (6/35)	nd
14-3	Hexabromodiphenyl ether derivatives	nd～12 (5/48)	nd	nd～820 (42/62)	11	nd～41 (2/3)	tr(8.5)	nd～250 (18/19)	44	30 (1/1)	30	nd～2 (3/35)	nd
14-4	Heptabromodiphenyl ether derivatives	nd～28 (9/48)	nd	nd～1,800 (44/62)	16	nd～tr(11) (1/3)	nd	nd～44 (4/19)	nd	tr(11) (1/1)	tr(11)	nd～tr(0.6) (2/35)	nd
14-5	Octabromodiphenyl ether derivatives	nd～36 (31/48)	2.3	nd～1,400 (41/62)	58	nd (0/3)	nd	nd～60 (9/19)	tr(7)	tr(5) (1/1)	tr(5)	nd～3.8 (9/35)	nd
14-6	Nonabromodiphenyl ether derivatives	nd～330 (47/48)	36	nd～11,000 (55/62)	300	nd～tr(11) (1/3)	nd	nd～35 (6/19)	nd	tr(12) (1/1)	tr(12)	nd～12 (14/35)	nd
14-7	Decabromodiphenyl ether	140～13,000 (48/48)	720	40～ 490.000 (62/62)	6,600	nd～tr(70) (1/3)	nd	nd～380 (5/19)	nd	tr(90) (1/1)	tr(90)	nd～61 (30/35)	4.2
15	Perfluorooctane sulfonic acid (PFOS)	120～4,700 (48/48)	630	7～2,200 (62/62)	91	nd～210 (2/3)	8.1	nd～2,500 (18/19)	91	790 (1/1)	790	0.59～8.8 (35/35)	2.8
16	Perfluorooctane acid (PFOA)	310～17,000 (48/48)	1,400	8～270 (62/62)	48	nd～26 (2/3)	tr(6.5)	nd～99 (11/19)	tr(6.0)	31 (1/1)	31	tr(3.7)～ 260 (35/35)	19
17	Pentachlorobenzene	3.0～180 (48/48)	13	2.4～2,600 (62/62)	65	tr(7.4)～18 (3/3)	tr(11)	tr(4.5)～230 (18/19)	26	53 (1/1)	53	34～170 (35/35)	67
18	Endosulfans												
18-1	α-Endosulfan					nd～130 (1/3)	nd	nd～tr(49) (1/19)	nd	nd (0/1)	nd	1.6～140 (35/35)	10
18-2	β-Endosulfan					nd～tr(22) (1/3)	nd	nd～tr(11) (1/19)	nd	nd (0/1)	nd	nd～38 (33/35)	0.7
19	1,2,5,6,9,10-Hexabromocyclododecane derivatives												
19-1	α-1,2,5,6,9,10-Hexabromocyclododecane			nd～27,000 (47/62)	390	150～560 (3/3)	260	nd～3,000 (18/19)	160	80 (1/1)	80	nd～30 (26/35)	tr(0.7)
19-2	β-1,2,5,6,9,10-Hexabromocyclododecane			nd～7,600 (33/62)	130	nd～tr(30) (2/3)	tr(10)	nd～tr(20) (2/19)	nd	nd (0/1)	nd	nd～3.9 (7/35)	nd
19-3	γ-1,2,5,6,9,10-Hexabromocyclododecane			nd～60,000 (48/62)	330	tr(20)～200 (3/3)	70	nd～230 (10/19)	tr(20)	tr(10) (1/1)	tr(10)	nd～4.4 (11/35)	nd
19-4	δ-1,2,5,6,9,10-Hexabromocyclododecane			nd (0/62)	nd	nd (0/3)	nd	nd～tr(20) (1/19)	nd	nd (0/1)	nd	nd～1.9 (1/35)	nd
19-5	ε-1,2,5,6,9,10-Hexabromocyclododecane			nd (0/62)	nd	nd～tr(10) (1/3)	nd	nd～tr(10) (1/19)	nd	nd (0/1)	nd	nd (0/35)	nd
20	N,N-dimethylformamid					nd～580 (2/3)	70	nd～390 (13/19)	tr(50)	tr(20) (1/1)	tr(20)		
21	Hexachlorobuta-1,3-diene											70～2,100 (34/34)	1,100
22	Pentachlorophenol	nd～26,000 (25/48)	130										

Notes:

- "Average" menas a geometric mean. "nd (less than the lower limit of detection value)" was calculated as 1/2 of the lower limit of a detection value.
- Detection rage is based on the number of samples and detection frequency is based on the number of surveyed areas/sites, therefore can be shown as "nd ～"even if a target substance is detected in all areas/sites.
- Shaded areas refer to media out of scope of the survey.

7.11 Results of Environmental Monitoring (3)

Registry Number	Target substance	Water quality (pg/L)	Bottom Sediment (pg/g-dry)	Organism (pg/g-wet)	Air (pg/m³)
1	PCBs	21 7.3	62 22	52 17	5.9 2.0
2	HCB	1.8 0.6	3 1	20 6.5	0.5 0.2
3	Aldrin				
4	Dieldrin				
5	Endrin				
6	DDTs				
6-1	p,p'-DDT				0.15 0.05
6-2	p,p'-DDE				0.12 0.04
6-3	p,p'-DDD				0.33 0.11
6-4	o,p'-DDT				0.12 0.04
6-5	o,p'-DDE				0.18 0.06
6-6	o,p'-DDD				0.20 0.07
7	Chlordane derivatives （Reference）				
7-1	cis-Chlordane （Reference）				
7-2	trans-Chlordone （Reference）				
7-3	Oxychlordane （Reference）				
7-4	cis-Nonachlor （Reference）				
7-5	trans-Nonachlor （Reference）				
8	Heptachlors				
8-1	Heptachlor			3.0 1	0.19 0.06
8-2	cis-Heptachlor epoxide			2.1 0.8	0.5 0.2
8-3	trans-Heptachlor epoxide			7 3	0.03 0.01
9	Toxaphenes（Reference）				
9-1	Parlar-26（refernce）			23 9	
9-2	Parlar-50（refernce）			30 10	
9-3	Parlar-62（refernce）			150 60	
10	Mirex（refernce）				
11	HCHs				
11-1	α-HCH	1.2 0.4	0.7 0.3	3.0 1.0	0.17 0.06
11-2	β-HCH	1.2 0.4	0.8 0.3	3.0 1.0	0.25 0.08
11-3	γ-HCH（Synonym: Lindane）	0.9 0.3	0.5 0.2	4.8 1.6	0.19 0.06
11-4	δ-HCH	0.3 0.1	0.5 0.2	2.1 0.8	0.15 0.05

Registry Number	Target substance	Water quality (pg/L)	Bottom Sediment (pg/g-dry)	Organism (pg/g-wet)	Air(pg/m³)
12	Chlordecone (Reference)				
13	Hexabromobiphenyl derivatives (Reference)		0.8 0.3	14 5	0.06 0.02
14	Polybrominated diphenyl ether derivatives (4～10 bromide)				
14-1	Tetrabromodiphenyl ether derivatives	3.6 1.2	21 7	15 6	0.4 0.1
14-2	Pentabromodiphenyl ether derivatives	6.3 2.1	18 6	13 5	0.6 0.2
14-3	Hexabromodiphenyl ether derivatives	1.5 0.6	3 1	12 5	1.1 0.4
14-4	Heptabromodiphenyl ether derivatives	2.0 0.8	3 1	12 5	1.3 0.4
14-5	Octabromodiphenyl ether derivatives	1.5 0.6	48 16	14 5	1.1 0.4
14-6	Nonabromodiphenyl ether derivatives	6 2	24 8	23 9	3.2 1.1
14-7	Decabromodiphenyl ether	18 7	40 20	170 70	2.2 0.7
15	Perfluorooctane sulfonic acid (PFOS)	29 11	3 1	4 2	0.19 0.06
16	Perfluorooctane acid (PFOA)	56 22	3 1	10 3.4	4.2 1.4
17	Pentachlorobenzene	1.5 0.5	1.5 0.5	12 4.0	0.6 0.2
18	Endosulfans				
18-1	α-Endosulfan			120 38	1.0 0.3
18-2	β-Endosulfan			32 11	0.5 0.2
19	1,2,5,6,9,10-Hexabromocyclododecane derivatives				
19-1	α-1,2,5,6,9,10-Hexabromocyclododecane		150 60	30 10	0.9 0.3
19-2	β-1,2,5,6,9,10-Hexabromocyclododecane		150 60	30 10	0.8 0.3
19-3	ε-1,2,5,6,9,10-Hexabromocyclododecane		110 42	30 10	0.8 0.3
19-4	ε-1,2,5,6,9,10-Hexabromocyclododecane		180 70	30 10	1.9 0.6
19-5	ε-1,2,5,6,9,10-Hexabromocyclododecane		130 51	30 10	0.9 0.3
20	Perfluorooctane acid (PFOA)*			54 18	
21	hexachlorobutadiene, HCBD（Reference）				29 11
22	Pentachlorophenol	260 85			

Notes:

・Upper row refers to lower limit of quantification and lower row refers to detection limit.

・* refers to the total of lower limits of quantification by each homologue or relevant substance.

・Shaded areas refer to media out of the scope of the survey.

Source: "Chemicals in the Environment FY2016," Ministry of the Environment, “Report on Environmental Survey and Monitoring of Chemicals FY 2015" (A list of values of detection limit)

7.12 Amount of releases and transfers based on PRTR by industry

Industry	Reported numbers	Releases (kg/year)					Transfers (kg/year)			Total amount of Releases and transfers (kg/year)	Rate
		Air	Public waters	Soil	Landfill	Total	Waste transfer	Transfer to sewage	Total		
Mining and smelting	22	2	124,132	1,900	26,379	152,412	1,020	0	1,020	153,432	0.04%
oil and natural gas industry	25	16,067	192,457	0	0	208,524	83	0	83	208,607	0.06%
Manufacturing	13,019	133,812,552	2,630,106	1,112	7,396,498	143,840,267	219,205,407	1,176,323	220,381,730	364,221,998	96.40%
Manufacture of food	443	2,949,208	1,220	0	0	2,950,428	291,315	1,710	293,024	3,243,452	0.86%
Manufacture of beverages, tobacco and feed	134	15,053	50	1	0	15,104	32,236	0	32,236	47,340	0.01%
Manufacture of textile mill products	169	1,816,174	130,657	0	0	1,946,832	1,061,039	60,410	1,121,449	3,068,281	0.81%
Manufacture of apparel and other finished products made from fabrics and similar materials	26	82,901	8,638	0	0	91,539	153,504	510	154,014	245,553	0.06%
Manufacture of lumber and wood products	201	1,422,517	813	177	0	1,423,507	56,761	21	56,782	1,480,289	0.39%
Manufacture of furniture and fixtures	89	660,480	7	0	0	660,487	182,587	49	182,636	843,123	0.22%
Manufacture of pulp, paper and paper products	425	5,780,528	198,219	0	270	5,979,018	1,472,903	5,077	1,477,980	7,456,997	1.97%
Publishing, printing and allied industries	311	6,599,219	8	0	0	6,599,227	2,091,601	191	2,091,793	8,691,019	2.30%
Manufacture of chemical and allied products	2,321	17,046,865	1,168,580	234	96	18,215,775	83,355,199	790,460	84,145,659	102,361,434	27.09%
Manufacture of petroleum and coal products	601	1,139,249	60,009	0	0	1,199,257	693,131	23,873	717,004	1,916,261	0.51%
Manufacture of plastic products	1,075	17,923,502	8,867	17	0	17,932,386	10,718,036	26,617	10,744,653	28,677,039	7.59%
Manufacture of rubber products	297	5,868,086	4,642	0	0	5,872,728	1,223,929	1,900	1,225,829	7,098,557	1.88%
Manufacture of leather, tanning, leather products and fur skins	22	91,242	14	0	0	91,257	45,417	12,590	58,007	149,263	0.04%
Manufacture of ceramic, stone and clay products	575	3,277,160	35,284	2	110	3,312,556	14,594,975	18,011	14,612,986	17,925,541	4.74%
Manufacture of iron and steel	379	2,928,944	368,458	0	26,100	3,323,502	67,689,552	6,637	67,696,189	71,019,691	18.80%
Manufacture of non-ferrous metals and products	540	1,684,831	296,195	8	7,369,918	9,350,953	5,845,494	31,811	5,877,305	15,228,257	4.03%
Manufacture of fabricated metal products	1,792	12,409,191	81,291	670	3	12,491,156	10,630,922	27,098	10,658,020	23,149,176	6.13%
Manufacture of general machinery	820	8,028,960	1,837	3	0	8,030,800	2,391,742	6,100	2,397,842	10,428,642	2.76%
Manufacture of electrical machinery, equipment and supplies	1,294	5,162,060	158,096	0	0	5,320,156	10,305,305	124,513	10,429,818	15,749,974	4.17%
Manufacture of transportation equipment	1,167	36,766,783	63,212	0	0	36,829,995	4,645,256	35,221	4,680,476	41,510,471	10.99%
Manufacture of precision instruments and	240	955,985	43,848	0	0	999,833	1,249,682	2,997	1,252,679	2,252,512	0.60%
Manufacture of ordnance and accessories	6	10,332	0	0	0	10,332	3,365	0	3,365	13,697	0.00%
Miscellaneous manufacturing industries	92	1,193,280	163	0	0	1,193,442	471,457	529	471,986	1,665,428	0.44%
Electricity industry	216	347,391	2,317	0	0	349,709	512,521	6,403	518,924	868,633	0.23%
Gas industry	35	23,625	0	0	0	23,625	0	0	0	23,625	0.01%
Heat supply industry	15	1,306	1,800	0	0	3,106	0	1,200	1,200	4,306	0.00%
Sewage industry	2,012	1,187	3,913,072	19	0	3,914,277	68,389	3,039	71,427	3,985,705	1.05%
Railway industry	57	74,165	0	0	0	74,165	180,901	162	181,062	255,227	0.07%
Warehouse industry	128	805,151	12,046	0	0	817,197	69,081	0	69,081	886,278	0.23%
Petroleum wholesale industry	480	960,281	0	0	0	960,281	4,824	0	4,824	965,105	0.26%
Scrap iron wholesale industry	7	42	0	0	0	42	5,233	0	5,233	5,275	0.00%
Automobile maintenance industry	8	8,342	0	0	0	8,342	3,128	0	3,128	11,470	0.00%
Fuel retail industry	16,094	2,844,786	1	1	0	2,844,787	1,054	0	1,054	2,845,841	0.75%
Laundry industry	152	189,450	98	0	0	189,548	188,411	3,276	191,686	381,235	0.10%
Photography industry	2	4,000	0	0	0	4,000	2,100	0	2,100	6,100	0.00%
Automobile maintenance industry	157	296,095	0	0	0	296,095	42,520	0	42,520	338,615	0.09%
Machinery and equipment repair industry	22	71,473	321	0	0	71,794	42,090	3,100	45,190	116,984	0.03%
Product testing industry	29	4,057	0	0	0	4,057	69,730	0	69,730	73,787	0.02%
Measurement certification industry	36	10,182	4,100	0	0	14,282	88,629	96	88,725	103,007	0.03%
Household waste disposal industry	1,756	929	78,273	1	1	79,203	14,591	176	14,767	93,970	0.02%
Industrial waste disposal industry	473	39,148	133,478	0	44	172,671	614,877	2	614,879	787,549	0.21%
Medical and other health services	118	10,863	0	0	0	10,863	52,367	0	52,367	63,230	0.02%
Higher educational institutions	141	97,739	294	0	0	98,033	651,773	776	652,549	750,582	0.20%
Research institutes for natural science	270	39,020	68	21	0	39,109	628,023	295	628,318	667,427	0.18%
Industry covered	35,274	139,657,850	7,092,563	3,053	7,422,921	154,176,387	222,446,752	1,194,847	223,641,598	377,817,985	100%
Rate (%)		36.96%	1.88%	0.00%	1.96%	40.81%	58.88%	0.32%	59.19%	100%	

Note:

"Total amount of Releases and transfers", being sums of the data (having 1 digit after the decimal place except Dioxins) reported by each business entities, are represented in an integer format by rounding off at the first decimal digit. Thus, the sums of each row or columns in this table may not foot.

Source: "Overview of the PRTR system in FY 2015," Ministry of the Environment

7.13 Amounts of releases and transfers based on PRTR by prefecture

	Reported numbers	Releases (kg / year)					Transfers (kg / year)			Total of Releases and transfers (kg / year)	Rate
		Air	Public waters	Soil	Landfill	Total	Waste transfer	Transfer to sewage	Total		
Hokkaido	1,894	1,795,986	382,420	3	314	2,178,724	1,952,005	1,331	1,953,336	4,132,060	1.09%
Aomori	434	505,725	105,318	0	1	611,044	1,029,064	199	1,029,263	1,640,307	0.43%
Iwate	517	1,377,665	51,139	21	0	1,428,825	1,243,878	4,267	1,248,145	2,676,970	0.71%
Miyagi	716	1,123,476	115,839	0	126,008	1,365,323	865,132	3,212	868,344	2,233,667	0.59%
Akita	480	459,247	111,114	3	2,737,570	3,307,934	1,285,460	1	1,285,462	4,593,396	1.22%
Yamagata	477	721,501	40,149	0	0	761,649	1,817,512	8,012	1,825,524	2,587,173	0.68%
Fukushima	899	2,660,327	277,725	0	0	2,938,052	4,826,348	0	4,826,348	7,764,400	2.06%
Ibaraki	1,125	6,438,835	138,778	0	25,000	6,602,614	6,047,659	415,436	6,463,094	13,065,708	3.46%
Tochigi	737	4,804,450	77,234	0	0	4,881,684	3,830,030	9,487	3,839,517	8,721,201	2.31%
Gunma	780	4,200,695	61,310	0	96	4,262,101	4,368,015	102,776	4,470,791	8,732,891	2.31%
Saitama	1,539	7,107,442	239,556	0	0	7,346,998	9,615,665	58,203	9,673,868	17,020,866	4.51%
Chiba	1,312	5,705,934	306,182	58	0	6,012,174	17,274,053	1,336	17,275,389	23,287,563	6.16%
Tokyo	1,168	1,241,308	420,759	0	0	1,662,067	2,052,042	21,656	2,073,698	3,735,765	0.99%
Kanagawa	1,421	5,267,529	284,081	0	0	5,551,611	8,141,853	180,168	8,322,020	13,873,631	3.67%
Niigata	992	2,207,082	280,719	85	230,000	2,717,886	3,250,548	866	3,251,413	5,969,299	1.58%
Toyama	517	1,583,119	129,637	0	0	1,712,756	4,015,364	191	4,015,555	5,728,311	1.52%
Ishikawa	445	1,733,238	169,135	0	0	1,902,373	2,444,017	449	2,444,466	4,346,839	1.15%
Fukui	358	1,926,648	70,972	0	0	1,997,620	4,190,821	30,268	4,221,089	6,218,709	1.65%
Yamanashi	326	1,381,980	9,176	0	0	1,391,155	608,708	1,363	610,071	2,001,226	0.53%
Nagano	1,149	1,654,600	103,645	0	0	1,758,245	979,809	11,249	991,058	2,749,303	0.73%
Gifu	883	4,158,107	60,551	0	1,359,899	5,578,556	3,082,128	2,524	3,084,652	8,663,208	2.29%
Shizuoka	1,499	7,356,746	186,798	1	0	7,543,545	5,294,813	13,192	5,308,006	12,851,551	3.40%
Aichi	2,049	10,509,387	387,761	1	0	10,897,150	29,439,524	42,698	29,482,223	40,379,372	10.69%
Mie	773	4,606,658	148,492	2	0	4,755,153	5,140,305	389	5,140,694	9,895,846	2.62%
Shiga	634	3,390,378	34,579	0	0	3,424,957	3,753,376	23,561	3,776,937	7,201,894	1.91%
Kyoto	568	1,834,037	119,454	0	0	1,953,491	1,204,352	106,225	1,310,576	3,264,067	0.86%
Osaka	1,579	3,562,414	588,674	0	0	4,151,088	12,523,813	52,559	12,576,371	16,727,459	4.43%
Hyogo	1,531	6,264,219	359,331	8	1,924	6,625,483	14,217,774	57,111	14,274,884	20,900,367	5.53%
Nara	300	460,830	23,442	0	0	484,272	673,378	96	673,474	1,157,745	0.31%
Wakayama	277	974,323	55,154	8	0	1,029,485	2,387,043	1,878	2,388,922	3,418,407	0.90%
Tottori	238	547,071	4,589	0	0	551,660	226,090	1,203	227,293	778,953	0.21%
Shimane	255	1,982,447	98,824	0	0	2,081,270	980,736	40	980,776	3,062,046	0.81%
Okayama	829	3,962,251	171,235	1	110	4,133,597	9,157,462	11,577	9,169,039	13,302,636	3.52%
Hiroshima	865	6,375,957	200,762	191	2,937,885	9,514,795	4,602,004	10,488	4,612,492	14,127,287	3.74%
Yamaguchi	540	3,507,357	335,438	83	0	3,842,878	11,155,906	246	11,156,152	14,999,029	3.97%
Tokushima	277	429,810	42,936	0	0	472,746	659,546	0	659,546	1,132,292	0.30%
Kagawa	379	4,482,368	34,317	0	0	4,516,685	1,159,672	3,557	1,163,230	5,679,915	1.50%
Ehime	515	4,989,537	128,700	10	4,114	5,122,361	6,023,506	0	6,023,506	11,145,866	2.95%
Kochi	180	451,887	15,063	0	0	466,950	109,708	3,900	113,608	580,558	0.15%
Fukuoka	1,194	6,164,992	182,617	670	0	6,348,279	17,134,304	5,281	17,139,585	23,487,864	6.22%
Saga	332	1,843,948	19,611	9	0	1,863,567	689,165	124	689,289	2,552,856	0.68%
Nagasaki	356	3,659,974	46,740	0	0	3,706,714	377,187	3,611	380,798	4,087,511	1.08%
Kumamoto	554	1,917,018	120,785	0	0	2,037,803	4,999,011	2,508	5,001,518	7,039,321	1.86%
Oita	391	1,401,788	75,110	0	0	1,476,898	2,762,824	680	2,763,504	4,240,402	1.12%
Miyazaki	326	326,949	140,415	0	0	467,364	4,495,745	930	4,496,675	4,964,039	1.31%
Kagoshima	452	416,851	123,118	1,900	0	541,869	123,322	4	123,326	665,195	0.18%
Okinawa	212	183,760	13,180	0	0	196,940	236,072	0	236,072	433,012	0.11%
Nationwide	35,274	139,657,850	7,092,563	3,053	7,422,921	154,176,387	222,446,752	1,194,847	223,641,598	377,817,985	100%
Rate (%)		36.96%	1.88%	0.00%	1.96%	40.81%	58.88%	0.32%	59.19%	100%	

Note:

"Total amount of Releases and transfers", being sums of the data (having 1 digit after the decimal place except Dioxins) reported by each business entities, are represented in an integer format by rounding off at the first decimal digit. Thus, the sums of each row or columns in this table may not foot.

Source: "Overview of the PRTR system in FY 2015," Ministry of the Environment

7.14 Reported releases and estimated releases by prefecture

	Reported numbers	Reported releases (kg / year)	Estimated releases (kg / year)					Total of Reported releases and estimated releases (kg/year)	Rate
			From Industries subject to reporting	From Industries NOT subject to reporting	From Households	From mobile sources	Subtotal		
Hokkaido	1,894	2,178,724	1,653,665	6,387,294	1,268,553	2,820,561	12,130,074	14,308,797	3.73%
Aomori	434	611,044	420,209	2,535,918	906,234	839,761	4,702,122	5,313,166	1.39%
Iwate	517	1,428,825	384,096	1,262,126	766,451	922,331	3,335,003	4,763,828	1.24%
Miyagi	716	1,365,323	655,286	1,103,716	824,891	1,124,479	3,708,373	5,073,695	1.32%
Akita	480	3,307,934	414,896	772,831	623,400	636,825	2,447,951	5,755,885	1.50%
Yamagata	477	761,649	482,707	918,889	468,204	722,151	2,591,952	3,353,601	0.87%
Fukushima	899	2,938,052	1,052,705	1,099,686	1,034,231	1,088,772	4,275,394	7,213,446	1.88%
Ibaraki	1,125	6,602,614	1,534,462	3,573,135	1,506,079	1,763,219	8,376,896	14,979,510	3.91%
Tochigi	737	4,881,684	827,732	1,216,171	934,460	1,322,149	4,300,512	9,182,196	2.39%
Gunma	780	4,262,101	1,001,004	2,655,697	1,180,058	1,252,863	6,089,621	10,351,722	2.70%
Saitama	1,539	7,346,998	2,436,194	1,720,190	2,339,688	2,322,117	8,818,190	16,165,188	4.22%
Chiba	1,312	6,012,174	1,537,703	3,509,196	2,378,901	2,263,744	9,689,543	15,701,717	4.10%
Tokyo	1,168	1,662,067	3,937,740	8,185,764	1,633,732	2,643,768	16,401,004	18,063,071	4.71%
Kanagawa	1,421	5,551,611	2,297,298	3,926,275	1,491,928	2,178,698	9,894,200	15,445,811	4.03%
Niigata	992	2,717,886	987,022	1,488,781	1,144,620	1,295,283	4,915,707	7,633,592	1.99%
Toyama	517	1,712,756	466,484	803,974	394,084	561,252	2,225,793	3,938,550	1.03%
Ishikawa	445	1,902,373	586,640	771,354	444,943	597,304	2,400,241	4,302,614	1.12%
Fukui	358	1,997,620	429,722	719,976	319,784	530,960	2,000,442	3,998,062	1.04%
Yamanashi	326	1,391,155	420,627	519,478	457,520	669,850	2,067,475	3,458,630	0.90%
Nagano	1,149	1,758,245	888,652	1,475,884	758,677	1,509,862	4,633,076	6,391,320	1.67%
Gifu	883	5,578,556	922,072	948,043	940,594	1,210,970	4,021,678	9,600,235	2.50%
Shizuoka	1,499	7,543,545	1,685,027	2,019,499	1,884,279	1,789,609	7,378,414	14,921,959	3.89%
Aichi	2,049	10,897,150	3,280,819	3,512,769	2,947,866	2,557,603	12,299,058	23,196,207	6.05%
Mie	773	4,755,153	706,708	804,834	998,206	1,288,725	3,798,473	8,553,626	2.23%
Shiga	634	3,424,957	447,613	362,074	430,335	862,595	2,102,617	5,527,575	1.44%
Kyoto	568	1,953,491	1,050,436	669,865	625,732	1,041,114	3,387,146	5,340,637	1.39%
Osaka	1,579	4,151,088	3,447,829	3,006,771	1,771,316	2,020,130	10,246,046	14,397,134	3.76%
Hyogo	1,531	6,625,483	1,771,117	1,370,232	1,289,181	1,783,301	6,213,832	12,839,314	3.35%
Nara	300	484,272	401,834	312,444	547,977	733,078	1,995,334	2,479,606	0.65%
Wakayama	277	1,029,485	353,659	999,030	816,860	614,167	2,783,716	3,813,201	0.99%
Tottori	238	551,660	171,189	463,172	310,869	448,101	1,393,331	1,944,990	0.51%
Shimane	255	2,081,270	247,136	573,796	494,816	524,824	1,840,573	3,921,843	1.02%
Okayama	829	4,133,597	654,393	904,042	949,667	1,038,467	3,546,569	7,680,166	2.00%
Hiroshima	865	9,514,795	1,110,898	1,578,354	1,207,561	1,354,465	5,251,277	14,766,072	3.85%
Yamaguchi	540	3,842,878	463,410	2,955,624	672,073	862,954	4,954,060	8,796,938	2.29%
Tokushima	277	472,746	422,708	859,702	639,890	467,408	2,389,708	2,862,454	0.75%
Kagawa	379	4,516,685	344,123	522,486	588,547	591,263	2,046,419	6,563,104	1.71%
Ehime	515	5,122,361	543,878	1,303,266	866,739	800,553	3,514,437	8,636,797	2.25%
Kochi	180	466,950	242,222	1,052,338	504,794	440,362	2,239,716	2,706,666	0.71%
Fukuoka	1,194	6,348,279	1,509,823	2,577,483	1,675,790	1,760,192	7,523,287	13,871,566	3.62%
Saga	332	1,863,567	264,145	824,314	470,020	642,524	2,201,004	4,064,571	1.06%
Nagasaki	356	3,706,714	610,671	1,337,414	776,753	820,800	3,545,637	7,252,351	1.89%
Kumamoto	554	2,037,803	598,973	1,987,544	817,160	1,057,153	4,460,830	6,498,633	1.70%
Oita	391	1,476,898	370,540	703,926	765,170	795,625	2,635,261	4,112,159	1.07%
Miyazaki	326	467,364	360,745	2,002,204	609,009	711,758	3,683,716	4,151,080	1.08%
Kagoshima	452	541,869	526,171	2,813,058	946,944	907,060	5,193,233	5,735,103	1.50%
Okinawa	212	196,940	475,461	739,493	714,700	660,032	2,589,687	2,786,627	0.73%
Nationwide	35,274	154,176,387	45,398,444	81,850,113	46,139,288	55,831,785	229,219,631	383,396,018	100%
Rate(%)		40.21%	11.84%	21.35%	12.03%	14.56%	59.79%	100%	

Notes:

・Part of mobile sources can't be allocated to each prefecture, thus the total of all prefectures and "Total" are not consistent.

・"Total amount of Releases and transfers", being sums of the data (having 1 digit after the decimal place except Dioxins) reported by each business entities, are represented in an integer format by rounding off at the first decimal digit. Thus, the sums of each row or columns in this table may not foot.

Source: "Overview of the PRTR system in FY 2015," Ministry of the Environment

7.15 PRTR top ten substances of reported releases and transfers

（Unit: t / year）

PRTR chemicals	Reported releases	Reported transfers	Reported releases and Reported transfers in total
Toluene	52,452	34,534	86,986
Manganese and its compounds	2,297	51,017	53,314
Xylene	28,058	8,391	36,448
Chromium and chromium(III) compounds	157	21,511	21,668
Ethylbenzene	14,891	3,417	18,308
Hydrogen fluoride and its water-soluble salts	1,957	14,953	16,910
Methyl chlorides	9,878	6,955	16,833
n - Hexane	10,171	3,681	13,851
N,N-dimethylformamide	2,087	6,459	8,546
Ferric chlorides	4,096	4,138	8,234

Note:

・Due to rounding off, total may not be consistent with the sum of a row.

Source: "Overview of the PRTR system in FY 2015," Ministry of the Environment

7.16 PRTR top ten substances of reported releases and estimated releases

(Unit: t / year)

PRTR chemicals	Reported releases	Estimated Releases	Reported releases and releases outside notification in total
Toluene	52,452	40,870	93,323
Xylene	28,058	40,269	68,326
Ethylbenzene	14,891	18,151	33,042
Polyoxyethylene alkyl ether (C=12-15)	89	20,765	20,854
n-Hexane	10,171	6,616	16,786
Dichloromethane (alias: methylene dichloride)	9,878	1,835	11,713
Linear alkylbenzene sulfonate (C=10-14)	13	11,171	11,185
Dichlorobenzene	96	8,538	8,634
D-D	4	8,435	8,439
Chlorodifluoromethane (alias HCFC-22)	183	8,191	8,374

Source: "Overview of the PRTR system in FY 2015," Ministry of the Environment