<Reference> Environmental Quality Standards - 2

C

Item class	Adaptability of the habitat status of aquatic life	Standard value: Total zinc
Aquatic life A	Water bodies inhabited by aquatic organisms such as char, salmon, and trout, and also their prey, which favour relatively low-temperature ranges.	≤ 0.03 mg/L
Special aquatic life A	Water bodies categorized in "Aquatic life A" need to be conserved in particular as breeding or nursery grounds for the aquatic life categorized in "Aquatic life A".	≤ 0.03 mg/L
Aquatic life B	Water bodies inhabited by aquatic organisms such as carp and crucian, and also their prey, which favor relatively high-temperature ranges.	≤ 0.03 mg/L
Special aquatic life B	Water bodies categorized in "Aquatic life B" need to be conserved in particular as breeding or nursery grounds for the aquatic life categorized in "Aquatic life B".	≤ 0.03 mg/L

3. Coastal Waters

A

Item class	Water use	Standard value: Hydrogen-ion concentration (pH)	Chemical oxygen demand (COD)	Dissolved oxygen (DO)	Total coliform	N-hexane Extract (oil, etc.)
A	Fishery class 1, bathing, conservation of the natural environment, and uses listed in B-C	7.8 ≤ pH ≤ 8.3	≤ 2 mg/L	≥ 7.5 mg/L	≤ 1,000 MPN/100 mL	Not detectable
B	Fishery class 2, industrial water and the uses listed in C	7.8 ≤ pH ≤ 8.3	≤ 3 mg/L	≥ 5 mg/L	—	Not detectable
C	Conservation of the environment	7.0 ≤ pH ≤ 8.3	≤ 8 mg/L	≥ 2 mg/L	—	

Remark Total coliform should be 70MPN/100ml or less for the fishery class 1 to cultivate oyster to be eaten raw.

Notes:
1. Conservation of the natural environment: Conservation of sightseeing and other environments
2. Fishery class 1: For such marine products as red sea bream, yellowtail, and seaweed, and marine products for fishery class 2
   Fishery class 2: Such marine products as mullet and dried seaweed
3. Conservation of the environment: Limit of not disrupting the day-to-day lives of the population (including things likes walks along the beach)

B

Item class	Water use	Standard value: Total nitrogen	Total phosphorus
I	Conservation of the natural environment and uses listed in II-IV (except fishery classes 2 and 3)	≤ 0.2 mg/L	≤ 0.02 mg/L
II	Fishery class 1, bathing, and the uses listed in III-IV (except fishery classes 2 and 3)	≤ 0.3 mg/L	≤ 0.03 mg/L
III	Fishery class 2 and the uses listed in IV (except fishery class 3)	≤ 0.6 mg/L	≤ 0.05 mg/L
IV	Fishery class 3, industrial water, and conservation of habitable environments for marine biota	≤ 1 mg/L	≤ 0.09 mg/L

Remarks
1. Standard values are set in terms of annual averages.
2. Standard values are applicable only to marine areas where marine phytoplankton blooms may occur.

Notes:
1. Conservation of the natural environment: Conservation of sightseeing and other environments
2. Fishery class 1: A large variety of fish, including benthic fish and shellfish, are taken in good balance and stably
   Fishery class 2: Marine products (mainly fish) are taken with the exception of some benthic fish and shellfish
   Fishery class 3: Specific types of marine products highly resistant to pollution mainly taken
3. Conservation of habitable environments for marine biota: Level where bottom-dwelling organisms can habitat year-round

C

Item class	Adaptability of the habitat status of aquatic life	Standard value: Total zinc
Class A organisms	Water areas inhabited by aquatic life	≤ 0.02 mg/L
Special class A organisms	Of the water areas inhabited by Class A organisms, those that should be conserved as spawning/rearing areas of aquatic life	≤ 0.01 mg/L

Monitored Substances, water bodies, class and guideline values for the conservation of aquatic life

Monitored item	Water bodies	Class	Guideline values
Chloroform	Rivers and lakes	Aquatic life A	≤ 0.7 mg/L
		Special aquatic life A	≤ 0.006 mg/L
		Aquatic life B	≤ 3 mg/L
		Special aquatic life B	≤ 3 mg/L
	Coastal waters	Aquatic life A	≤ 0.8 mg/L
		Special aquatic life A	≤ 0.8 mg/L
Phenol	Rivers and lakes	Aquatic life A	≤ 0.05 mg/L
		Special aquatic life A	≤ 0.01 mg/L
		Aquatic life B	≤ 0.08 mg/L
		Special aquatic life B	≤ 0.01 mg/L
	Coastal waters	Aquatic life A	≤ 2 mg/L
		Special aquatic life A	≤ 0.2 mg/L
Formaldehyde	Rivers and lakes	Aquatic life A	≤ 1 mg/L
		Special aquatic life A	≤ 1 mg/L
		Aquatic life B	≤ 1 mg/L
		Special aquatic life B	≤ 1 mg/L
	Coastal waters	Aquatic life A	≤ 0.3 mg/L
		Special aquatic life A	≤ 0.03 mg/L

Reference **Environmental Quality standards are posted on the following website:**
http://www.env.go.jp/kijun/index.html

■ Environmental quality standards for soil

In accordance with the Basic Environment Law, environmental quality standards for soil are in place for 27 items to protect human health and conserve the living environment; they are reviewed as needed, based on up-to-date scientific findings.
These environmental quality standards for soil contamination consist of the elution standards (designed to ensure that groundwater is purified and conserve the recharge capacity of soil) and the farmland standards (designed to conserve the capacity of soil to produce foods), each of which serves as the basis to detect the presence of contamination and come up with pollution control measures.

Item	Environmental requirements
Cadmium	0.01 mg per 1 L of sample, and < 1 mg per 1 kg of rice (for farmlands)
Total cyanogen	Not detectable in samples
Organic phosphates*	Not detectable in samples
Lead	0.01 mg per 1 L of sample
Hexavalent chromium	0.05 mg per 1 L of sample
Arsenic	0.01 mg per 1 L of sample, and < 15 mg per 1 kg of soil (for paddy fields)
Total mercury	0.0005 mg per 1 L of sample
Alkyl mercury	Not detectable in samples
PCB	Not detectable in samples
Copper	< 125 mg per 1 kg of soil (for paddy fields)
Dichloromethane	0.02 mg per 1 L of sample
Carbon tetrachloride	0.002 mg per 1 L of sample
1,2- Dichloroethane	0.004 mg per 1 L of sample
1,1-Dichloroethylene	0.02 mg per 1 L of sample
1,2-cis-Dichloroethylene	0.04 mg per 1 L of sample
1,1,1- Trichloroethane	1 mg per 1 L of sample
1,1,2- Trichloroethane	0.006 mg per 1 L of sample
Trichloroethylene	0.03 mg per 1 L of sample
Tetrachloroethylene	0.01 mg per 1 L of sample
1,3-Dichloropropene	0.002 mg per 1 L of sample
Thiram	0.006 mg per 1 L of sample
Simazine	0.003 mg per 1 L of sample
Thiobencarb	0.02 mg per 1 L of sample
Benzene	0.01 mg per 1 L of sample
Selenium	0.01 mg per 1 L of sample
Fluorine	0.8 mg per 1 L of sample
Boron	1 mg per 1 L of sample

* Organic phosphates refer to parathion, methyl parathion, methyl demeton and EPN

Note: The above standards are not applicable to:
1) Places where natural toxic substances exist such as the vicinities of mineral veins
2) Places designated for storage of toxic materials such as waste disposal sites

■ Environmental standards for contamination caused by dioxins

Based on the Law Concerning Special Measures Against Dioxins, the tolerable daily intake of dioxins is set at 4 pg-TEQ 1 kg body weight 1 day – which serves as the basis for the dioxins control measures taken by the government and municipalities. Accordingly, environmental standards for dioxins contamination are set for the atmosphere, water quality, bottom sediments and soil.

Standards that serve as the basis for dioxins control measures

Tolerable daily intake (TDI): ... 4 pg-TEQ/kg body weight/day
Environmental standards
- Water quality ... Annual average value ≤ 1 pg-TEQ/L
- Bottom sediments ... ≤ 150 pg-TEQ/g
- Soil ... ≤ 1,000 pg-TEQ/g (Survey standard value: 250 pg-TEQ/g)*

* For soil, additional surveys should be conducted if the results exceed the standard value.

<Reference> State of Achievement of Environmental Standards - 1

State of achievement of environmental standards (public water areas)

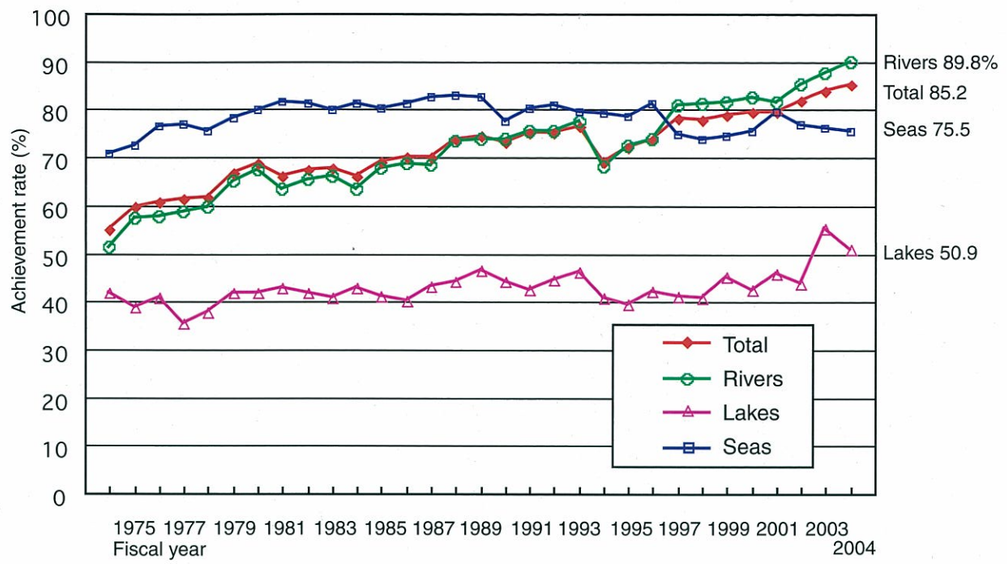
The quality of public water areas is improving overall. In particular, contamination due to toxic substances (health items) such as cadmium and cyanogen has been very significantly reduced, with no major pollution identified across the country.
However, levels of organic pollution (living environment items), which has an impact on the use of water, remains as high as ever, particularly in enclosed water areas such as lakes, basins and inland seas.

Table 1 State of achievement of health item environmental standards (2004)

Measurement item	Number of points surveyed	Number of points not meeting the standards
Cadmium	4,587	0 (0)
Total cyanide	4,182	0 (0)
Lead	4,703	6 (6)
Chromium(VI)	4,312	0 (0)
Arsenic	4,688	20 (22)
Total mercury	4,527	0 (0)
Alkyl mercury	1,412	0 (0)
PCBs	2,443	0 (0)
Dichloromethane	3,690	1 (1)
Tetrachloroethlene	3,709	0 (0)
1,2- Dichloroethane	3,685	1 (1)
1,1-Dichloroethylene	3,670	0 (0)
cis-1,2- Dichloroethylene	3,673	0 (0)
1,1,1- Trichloroethane	3,718	0 (0)
1,1,2- Trichloroethane	3,670	0 (0)
Trichloroethylene	3,835	0 (0)
Tetrachloroethylene	3,837	0 (0)
1,3-Dichloropropene	3,731	0 (0)
Thiram	3,658	0 (0)
Simazine	3,648	0 (0)
Thiobencarb	3,654	0 (0)
Benzene	3,632	0 (0)
Selenium	3,661	0 (0)
Nitrate-N and nitrite-N	4,274	4 (4)
Fluorine	3,007	11 (9)
Boron	2,863	0 (0)
Total (number of monitoring points)	5,703 (5,708)	42 (41)
Environmental standards achievement rate	99.3% (99.3%)	

Notes
1. Numbers in parentheses are the results for fiscal 2003.
2. As for fluorine and boron, the points surveyed do not include seas, and rivers/lakes where the standards were not met due to the influence of seawater.
3. The total number of points not meeting the standards is an actual number; a point where more than two items of the standards are not met is counted as one non-conforming point. In fiscal 2004, there was one point where two items of the standards were not met.

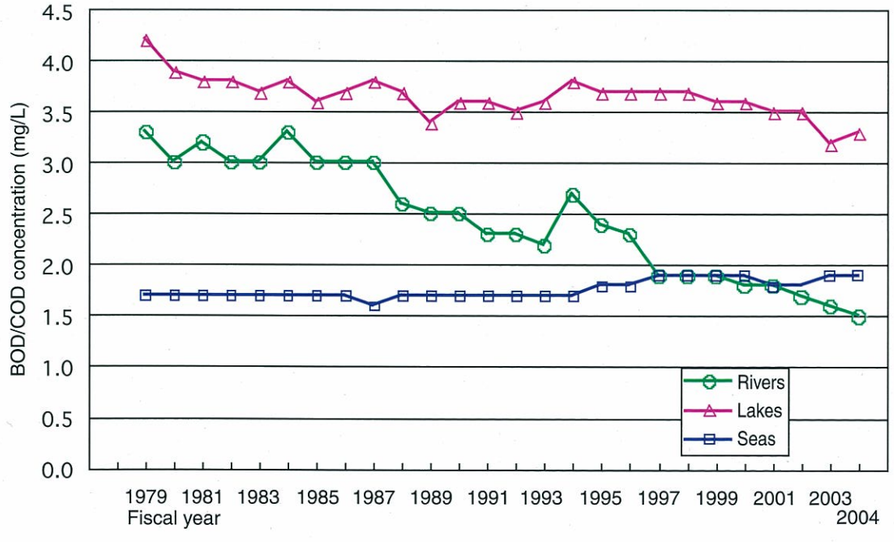
Figure 1 Trends in achievement of BOD/COD environmental standards



Remarks 1. BOD for rivers and COD for lakes and seas
2. Achievement rate (%) = (The number of water areas meeting the standards / The number of water areas applicable) × 100

Source: Measurement results of the quality of public water areas in fiscal 2004, Ministry of the Environment

Figure 2 Trends in BOD/COD concentrations in rivers, lakes and seas

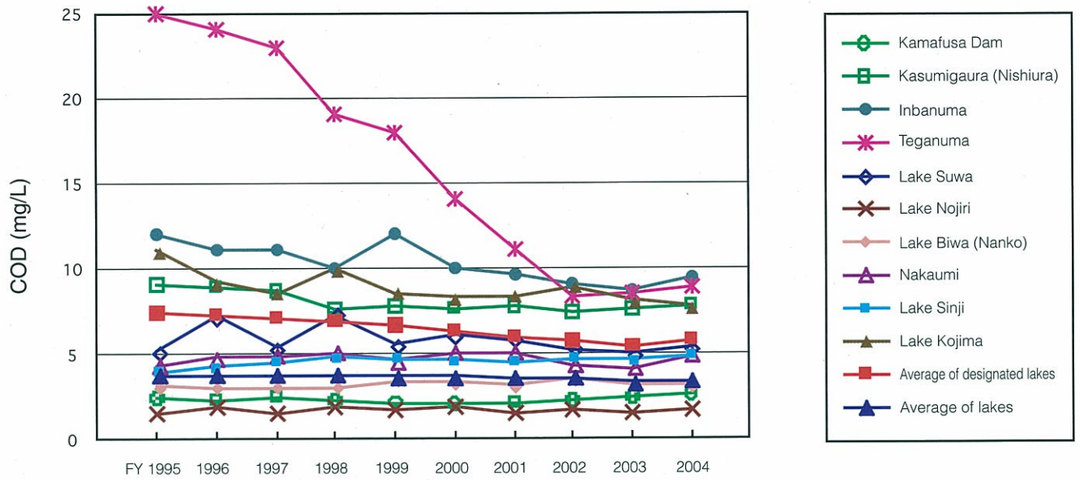


Remark Concentrations are calculated based on the annual average values at environmental standard points.

Source: Measurement results of the quality of public water areas in fiscal 2004, Ministry of the Environment

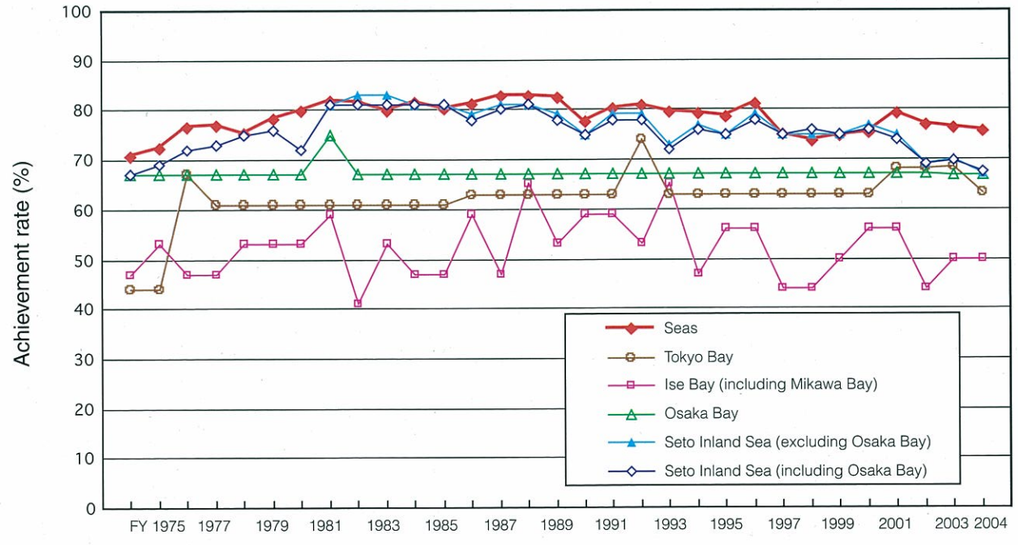
<Reference> State of Achievement of Environmental Standards - 2

Figure 3 Trends in water quality of designated lakes (average annual COD over the past 10 years)



Source: Measurement results of the quality of public water areas in fiscal 2004, Ministry of the Environment

Figure 4 Trends in achievement of COD environmental standards in enclosed coastal seas



Source: Measurement results of the quality of public water areas in fiscal 2004, Ministry of the Environment

[Reference] Measurement data on the quality of public water areas
Water quality comprehensive information website:
http://www.env.go.jp/water/mizu.site/index.html

■ Status of the achievement of environmental quality standard for groundwater

Table 1 shows the results of a monitoring survey of groundwater quality in fiscal 2004 to monitor the overall quality of regional groundwater. The excess rate of the environmental quality standard stood around 5.5% for nitrate/nitrite nitrogen, the highest percentage of all items. In fact, the results of surveys conducted so far indicate that excess rate of EQSs have been higher for nitrate/nitrite nitrogen; for VOCs such as tetrachloroethylene, they have been almost stable over the past couple of years (see Figure 1), though they dipped slightly when the regulations on the infiltration of effluent into the ground come into effect in 1989 in accordance with the amendment of Water Pollution Control Law. On the other hand, the results of a questionnaire sent to prefectural governments on groundwater pollution show that a total of 3,120 wells were not in compliance with the standards as of the end of fiscal 2004, the details of which are shown in Figure 2.

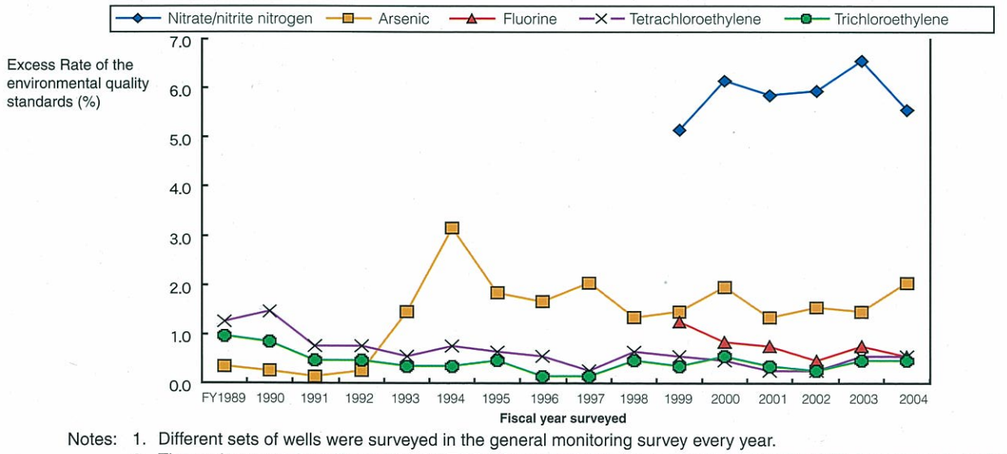
Table 1 Excess rate of environmental quality standard for groundwater (fiscal 2004)

Item	Number of locations surveyed	Number of the wells exceeded the environmental quality standards	Excess Rate of the environmental quality standards (%)
Cadmium	3,247	0	0
Total cyanide	2,723	0	0
Lead	3,566	14	0.4
Chromium(VI)	3,420	0	0
Arsenic	3,666	74	2.0
Total mercury	3,235	5	0.2
Alkyl mercury	993	0	0
PCBs	1,899	0	0
Dichloromethane	3,535	0	0
Carbon tetrachloride	3,661	4	0.1
1,2- dichloroethane	3,267	0	0
1,1-dichloroethylene	3,744	2	0.1
Cis 1,2- dichloroethylene	3,743	5	0.1

Item	Number of locations surveyed	Number of the wells exceeded the environmental quality standards	Excess Rate of the environmental quality standards (%)
1,1,1- trichloroethane	3,990	0	0
1,1,2- Trichloroethane	3,259	1	0.0
Trichloroethylene	4,234	18	0.4
Tetrachloroethylene	4,248	22	0.5
1,3-dichloropropene	3,043	0	0
Thiram	2,472	0	0
Simazine	2,628	0	0
Thiobencarb	2,539	0	0
Benzene	3,524	0	0
Selenium	2,698	1	0.0
Nitrate nitrogen and nitrite nitrogen	4,260	235	5.5
Fluorine	3,542	19	0.5
Boron	3,499	8	0.2
Total (actual number of wells)	4,955	387	7.8

Source: Results of FY2004 Morning Survey of Groundwater Quality, Ministry of the Environment

Figure 1 Changes in Rate of Wells Exceeding the EQSs (Survey to monitor the quality of regional groundwater)



Notes:
1. Different sets of wells were surveyed in the general monitoring survey every year.
2. The environmental quality standards (EQSs) for groundwater were established in FY 1997. Assessment standards were used before the establishment of the EQSs. (The assessment standard for arsenic was revised from "0.05mg/L or less" to "0.01 mg/L or less".)
3. Nitrate-N/nitrite-N, fluorine and boron were added to the list of substances for which EQSs shall be set in 1999.

Source: Results of FY2004 Morning Survey of Groundwater Quality, Ministry of the Environment