■ Environmental quality standards for water pollution

The basic Environment Low establishes two kinds of Environmental Quality Standard (EQS) relating to water pollution: environmental water quality standards for protecting human health, and environmental water quality standards for protecting the living environment. Each type of standard establishes levels desirable for achieving and maintaining public-water and other water-quality policy objectives.

Currently, EQSs have been established for 26 substances relating to human health, including cadmium and total cyanide. Environmental standards were established for groundwater quality in March 1997. Additionally, 27 other substances have been designated as "monitoring substances." These substances have not been made directly into EQSs as of the present time, but they have been identified as needing further observation.

EQSs have also been established relating to the living environment, including standards for biochemical oxygen demand (BOD), Chemical oxygen demand(COD), and dissolved oxgen(DO). Further, EQS have been established for nitrogen and phosphorus levels in lakes/reservoirs and sea/coastal areas, in order to prevent eutrophication.

Additional environmental quality standards were established in 2003 for total zinc to conserve aquatic life. Moreover, 3 other substances have been designated as "monitoring substances."

■ Environmental quality standards for human health

Standards

Item	Standard values
Cadmium	≤ 0.01 mg/L
Total cyanide	Not detectable
Lead	≤ 0.01 mg/L
Hexavalent chromium	≤ 0.05 mg/L
Arsenic	≤ 0.01 mg/L
Total mercury	≤ 0.0005 mg/L
Alkyl mercury	Not detectable
PCBs	Not detectable
Dichloromethane	≤ 0.02 mg/L
Carbon tetrachloride	≤ 0.002 mg/L
1,2- Dichloroethane	≤ 0.004 mg/L
1,1-Dichloroethylene	≤ 0.02 mg/L
Cis 1.2-Dichloroethylene	≤ 0.04 mg/L
1,1,1- Trichloroethane	≤ 1 mg/L
1,1,2- Trichloroethane	≤ 0.006 mg/L
Trichloroethylene	≤ 0.03 mg/L
Tetrachloroethylene	≤ 0.01 mg/L
1,3-Dichloropropene	≤ 0.002 mg/L
Thiram	≤ 0.006 mg/L
Simazine	≤ 0.003 mg/L
Thiobencarb	≤ 0.02 mg/L
Benzene	≤ 0.01 mg/L
Selenium	≤ 0.01 mg/L
Nitrate nitrogen and nitrite nitrogen	≤ 10 mg/L
Fluoride	≤ 0.8 mg/L
Boron	≤ 1 mg/L

Monitored substances and guideline values

Categories	Guideline values
Chloroform	≤ 0.06 mg/L
trans1,2-Dichloroethylene	≤ 0.04 mg/L
1,2- Dichlor propane	≤ 0.06mg/L
p- Dichlor benzene	≤ 0.2 mg/L
Isoxathion	≤ 0.008 mg/L
Diazinon	≤ 0.005 mg/L
Fenitrothion (MEP)	≤ 0.003 mg/L
Isoprothiolane	≤ 0.04 mg/L
Oxine copper (organocopper)	≤ 0.04 mg/L
Chlorothalonil (TPN)	≤ 0.05 mg/L
Propyzamide	≤ 0.008 mg/L
EPN	≤ 0.006 mg/L
Dichlorvos (DDVP)	≤ 0.008 mg/L
Fenobucarb (BPMC)	≤ 0.03 mg/L
Iprobenfos (IBP)	≤ 0.008 mg/L
Chlornitrofen (CNP)	–
Toluene	≤ 0.6 mg/L
Xylene	≤ 0.4 mg/L
Diethylhexyl phthalate	≤ 0.06 mg/L
Nickel	–
Molybdenum	≤ 0.07 mg/L
Antimony	≤ 0.02 mg/L
Vinyl chloride monomer	≤ 0.002 mg/L
Epichlorohydrin	≤ 0.0004 mg/L
1,4-Dioxane	≤ 0.05 mg/L
Total manganese	≤ 0.2 mg/L
Uranium	≤ 0.002 mg/L

Remarks
1. Standard values are for annual average values. However, the value for total cyanide is the maximum value.
2. "Not detectable" means that when the substance is measured by the specified method, the amount is less than the quantitative limit defined by that method.
3. The standard values for boron and fluoride are not applied to coastal waters.

■ Environmental quality standards for conservation of the living environment

1. Rivers (excluding lakes)

A

Item class	Water use	Standard value				
		Hydrogen-ion concentration (pH)	Biochemical oxygen demand (BOD)	Suspended solids (SS)	Dissolved oxygen (DO)	Total coliform
AA	Water supply class 1, conservation of natural environment, and uses listed in A-E	6.5 ≤ pH ≤ 8.5	≤ 1 mg/L	≤ 25 mg/L	≥ 7.5 mg/L	≤ 50 MPN/100mL
A	Water supply class 2, fishery class 1, bathing and uses listed in B-E	6.5 ≤ pH ≤ 8.5	≤ 2 mg/L	≤ 25 mg/L	≥ 7.5 mg/L	≤ 1,000 MPN/100mL
B	Water supply class 3, fishery class 2, and uses listed in C-E	6.5 ≤ pH ≤ 8.5	≤ 3 mg/L	≤ 25 mg/L	≥ 5 mg/L	≤ 5,000 MPN/100mL
C	Fishery class 3, industrial water class 1, and uses listed in D-E	6.5 ≤ pH ≤ 8.5	≤ 5 mg/L	≤ 50 mg/L	≥ 5 mg/L	—
D	Industrial water class 2, agricultural water, and uses listed in E	6.0 ≤ pH ≤ 8.5	≤ 8 mg/L	≤ 100 mg/L	≥ 2 mg/L	—
E	Industry water class 3 and conservation of environment	6.0 ≤ pH ≤ 8.5	≤ 10 mg/L	Floating matter such as garbage should not be observed.	≥ 2 mg/L	—

Remarks: 1. Standard values are based on daily average values. The same applies to the standard values of lakes and coastal waters.
2. At intake for agriculture, pH shall be between 6.0 and 7.5 and DO shall be more than 5mg/l. The same applies to the standard values of lakes.

Notes: 1. Nature conservation: Conservation of sightseeing and other environments
2. Water supply class 1: Purify water using filters and other simple means
Water supply class 2: Purify water using sedimentation filters and other ordinary means
Water supply class 3: Purify water using pre-treatment and other advanced methods
3. Fishery class 1: For such oligosaprobic members of the Salmonidae (salmon/trout) species as Salmo masou and Salvelinus leuconmaenisu, and marine products for fishery class 2 and 3
Fishery class 2: For such alpha-oligosaprobic marine products as the Salmonidae (salmon/trout) species, sweetfish, and marine products for fishery class 3
Fishery class 3: For such beta-oligosaprobic marine products as carp and crucian
4. Industrial water class 1: Water purified using sedimentation and other ordinary means
Industrial water class 2: Purify water using chemical additives and other advanced means
Industrial water class 3: Purify water using special means
5. Environmental conservation: Limit of not disrupting the day-to-day lives of the population

B

Item class	Adaptability to aquatic life habitat conditions	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

Remarks: Standard values are based on annual average values (including those for lakes and seas)

2. Lakes (natural lakes and reservoirs that have 10 million cubic meters of water or more)

A

Item class	Water use	Standard value				
		Hydrogen-ion concentration (pH)	Chemical oxygen demand (COD)	Suspended solids (SS)	Dissolved oxygen (DO)	Total coliform
AA	Water supply class 1, fishery class 1, conservation of natural environment, and uses listed in A-C	6.5 ≤ pH ≤ 8.5	≤ 1 mg/L	≤ 1 mg/L	≥ 7.5 mg/L	≤ 50 MPN/100mL
A	Water supply classes 2 and 3, fishery class 2, bathing, and uses listed in B-C	6.5 ≤ pH ≤ 8.5	≤ 3 mg/L	≤ 5 mg/L	≥ 7.5 mg/L	≤ 1,000 MPN/100mL
B	Fishery class 3, industrial water class 1, agricultural water, and uses listed in C	6.5 ≤ pH ≤ 8.5	≤ 5 mg/L	≤ 15 mg/L	≥ 5 mg/L	—
C	Industrial water class 2 and conservation of the environment	6.0 ≤ pH ≤ 8.5	≤ 8 mg/L	Floating matter such as garbage should not be observed.	≥ 2 mg/L	—

Notes: 1. Conservation of the natural environment: conservation of sightseeing and other environments
2. Water supply class 1: Purify water using filters and other simple means
Water supply class 2/3: Purify water using sedimentation filters and other ordinary means, and pre-treatment and other advanced methods
3. Fishery class 1: For such marine products inhabiting oligotrophic lakes as sockeye salmon, and marine products for fishery class 2 and 3
Fishery class 2: For such marine products inhabiting oligotrophic lakes as the Salmonidae (salmon/trout) species, sweetfish, and marine products for fishery class3
Fishery class 3: For such marine products inhabiting oligotrophic lakes as koi and crucian carp
4. Industrial water class 1: Water purified using sedimentation and other ordinary means
Industrial water class 2: Purify water using such advanced means as chemical additives and special purification means
5. 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 natural environment and uses listed in II-V	≤ 0.1 mg/L	≤ 0.005 mg/L
II	Water supply classes 1, 2, and 3 (except special types), fishery class 1, bathing, and uses listed in III-V	≤ 0.2 mg/L	≤ 0.01 mg/L
III	Water supply class 3 (special types) and uses listed in IV-V	≤ 0.4 mg/L	≤ 0.03 mg/L
IV	Fishery class 2 and uses listed in V	≤ 0.6 mg/L	≤ 0.05 mg/L
V	Fishery class 3, industrial water, agricultural water, and conservation of the environment	≤ 1 mg/L	≤ 0.1 mg/L

Remarks: 1. Standard values are set in terms of annual averages.
2. Standard values are applicable only to the lakes and reservoirs where phytoplankton bloom may occur, and standard values for total nitrogen are applicable to lakes and reservoirs where nitrogen limits phytoplankton growth.
3. Standard values for total phosphorus are not applicable to agricultural water uses.

Notes: 1. Conservation of the natural environment: Conservation of sightseeing and other environments
2. Water supply class 1: Purify water using filters and other simple means
Water supply class 2: Purify water using sedimentation filters and other ordinary means
Water supply class 3: Purify water using pre-treatment and other advanced methods (a "special item" is a special purification means capable of removing odor-producing substances)
3. Fishery class 1: For such marine products as the Salmonidae (salmon/trout) species, sweetfish, and marine products for fishery class 2 and 3
Fishery class 2: For such marine products as smelt and marine products for fishery class 3
Fishery class 3: Such marine products as koi and crunian carp
4. Conservation of the environment: Limit of not disrupting the day-to-day lives of the population (including things likes walks along the beach)

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