Environmental Quality Standards for Water Pollution

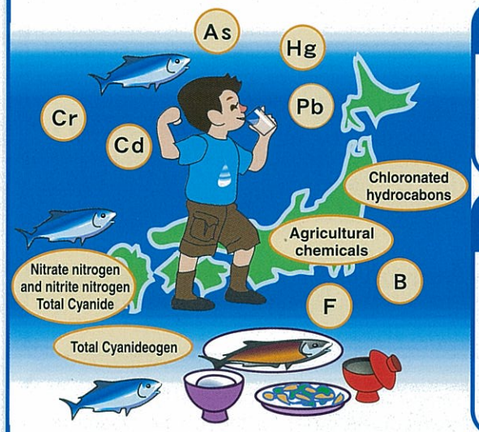
*See references for details about environmental quality standards

■ Environmental quality standards

Environmental quality standards have been established as part of the government's objectives (standards that are to be followed) related to the setting of environmental parameters for water pollution, air pollution, soil pollution and noise to prevent health hazards and conserve the living environment. They are set by the Ministry of the Environment in line with the Basic Environment Law.

■ Environmental quality standards for the protection of human health (health items)

Substances that could have an impact on human health through pollution of the water environment are classified into health items. Specifically, common standards are in place for the concentrations of 26 substances.



■ Designation of health items

From the viewpoint of toxicity to humans and presence in the water environment, substances that could have an impact on human health through pollution of the water environment, and hence should be controlled properly, are designated.

■ Standard values for health items

A standard value is set for each substance based on the results of scientific research and on a consideration of the risk of lifelong exposure to it. Specifically, it is set based on the health impact of the oral ingestion of each substance, taking into account the health impact of water pollution on foods (bioconcentration in fish and seafoods).

■ Monitored substances

Substances that are deemed to be related to the protection of human health but are not usually detected in river water, etc. are classified as monitored items. While no environmental standards are set for these substances, efforts are underway to collect scientific data on them. A total of 27 substances have been designated, while administrative agencies are monitoring their levels in the water environment.

***Investigated items**

"Investigated items" consist of 300 substances, each of which involves a low (or unknown) level of "water environmental risk" but scientific data are needed to ascertain their levels in the environment and their possible combined impact on human health.

Q 1. What measures are in place for waters where environmental quality standards are not met?

A 1. Environmental quality standards are absolutely administrative objectives. The competent administrative agencies are thus promoting a series of measures, some of which include regulation of pollution sources and improvement of sewerage and other systems.

Q 2. Are those who discharge effluent that does not meet the environmental quality standards penalized?

A 2. "Effluent standards" are in place and those who discharge effluent that does not meet the standards are liable to penalties (refer to Page 9). Environmental quality standards need to be regarded as administrative objectives, as mentioned above. Failure to meet them, therefore, does not result in legal actions. Those who are responsible for pollution are not penalized. However, failure to achieve the environmental quality standards suggests that the measures in place must be improved. Accordingly, the government and municipalities will take additional measures, including more rigorous regulations, to ensure that the standards are met. Administrative agencies may call for action, requesting the cooperation of those involved.

■ Environmental quality standards for water pollution

Environmental quality standards for water pollution are target levels for water quality that are to be achieved and maintained in public waters (rives, lakes, harbors, coastal seas, etc.) and groundwater. These standards are established to achieve two major goals: the protection of human health and the conservation of the living environment.

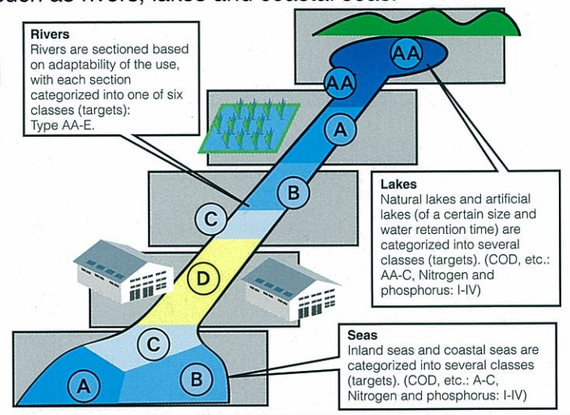
■ Environmental standards for the conservation of the living environment (living environment items)

The standards are designed to conserve the properties as well as the fauna and flora and their habitats that are closely related to the living of people. Accordingly, standard values are set for water quality parameters in order to conserve public water bodies such as rivers, lakes and coastal seas.

■ Categorization into classes

"Living environment items" include biochemical oxygen demand (BOD), chemical oxygen demand (COD), total nitrogen (T-N), total phosphorus (T-P), etc. These parameters are grouped according to "class" (e.g., Class AA-E for rivers) and the adaptability of the use of each water body, with standard values set for them.
Specifically, each water area is categorized into one of several classes, with a target set for it*.

* As for water bodies that extend across more than two prefectures, the government sets targets for principal ones; those for the other water bodies are set by the prefectural governments concerned.



■ Major intended use

Tap water
Conservation of tap water sources

Natural environment conservation
Conservation of scenic landscapes

Fisheries
Conservation of water quality required for fisheries

Swimming
Conservation of water quality required for swimming

Industrial water
Conservation of industrial water

Agricultural water
Conservation of agricultural water

Environmental conservation
Conservation of the environment required to facilitate a basically comfortable everyday life

Conservation of natural habitats
Conservation of the environment required for the survival of the benthic organisms

■ Environmental quality standards for the conservation of aquatic life

Target values are set as part of environmental quality standards for substances that could have an impact on aquatic life.

Q 3. What are the living environment items?

A 3. Typical items include the following:

BOD (biochemical oxygen demand): BOD is a measure of the quantity of oxygen consumed by microorganisms during the decomposition of organic matter in water; it is a typical index of organic pollution in rivers.

COD (chemical oxygen demand): COD is a measure of the quantity of oxygen consumed by chemical oxidation of organic matter in water; it is a typical index of organic pollution in lakes, seas, etc.

SS (suspended solids): Suspended solids refer to suspended particulates in water – e.g., clay particles, mineral particles, zooplankton/phytoplankton (or their remains), and the sediments of organic matter and metals contained in industrial wastewater.

T-N (total nitrogen) and T-P (total phosphorus): T-N and T-P refer to the total quantity of nitrogen compounds and phosphorus compounds, respectively. While nitrogen and phosphorus are both essential for the growth of plants, they can cause eutrophication and red tides if present in large quantities.

Water Quality Monitoring

*See references for details about achievement of environmental standards

The water quality is being monitored at about 9,000 points in public water areas across the country (rivers, lakes and seas) , and groundwater.

- ◆ Monitoring of the water quality characteristics of each water area
- ◆ Monitoring of changes and trends in the water quality on a long-term basis
- ◆ Early detection of water pollution

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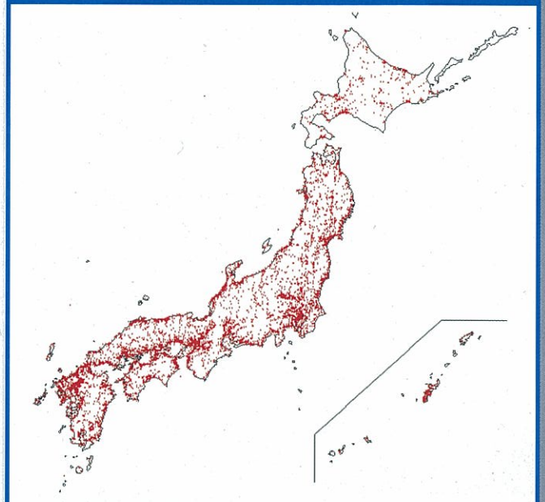
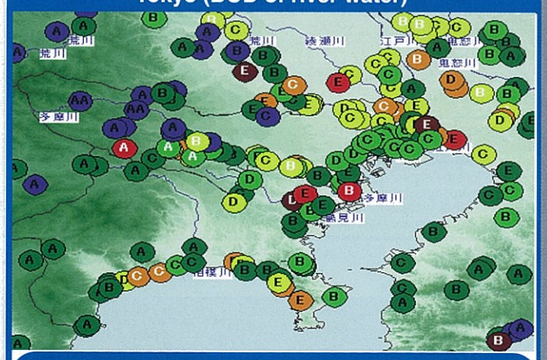
- ◆ Achievement and maintenance of water environment standards
- ◆ Proper handling of water pollution accidents
- ◆ Implementation of environmental conservation measures

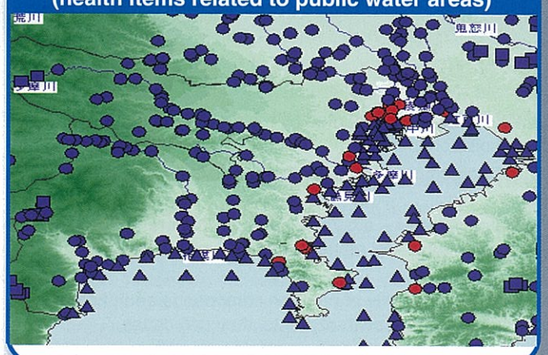
Monitoring points in public water areas



Monitoring points in and around Tokyo (BOD of river water)



Monitoring points in and around Tokyo (health items related to public water areas)



Prefectural Government

(Measurement of the water quality in rivers, lakes, seas and groundwater)

◆ **Working out of water quality monitoring points**

- The program is developed to efficiently monitor the water quality in cooperation with the Ministry of Land, Infrastructure and Transport and government-designated cities.

Consultation

◆ **Water quality measurement**

- Health items (cadmium, total cyanide, etc.)
- Living environment items (BOD, COD, item for conservation of aquatic organisms)

Water Sampling

Analysis

Sending of measurement data

◆ **Compilation of water quality measurement data**

- Proper handling of water pollution accidents
- Approaches to be taken for water areas where environmental standards are not met or yet to be met

Announcement

Instructions, notifications and technical advice required for water quality monitoring

Ministry of the Environment

◆ **Incorporation into environmental conservation measures**

- Environmental standards, effluent regulations
- Analytical methods, survey methods
- Standards for processing survey data
- Handling of water pollution accidents

Practical using of data

Report of results

Gathering, analysis and constructing database of water quality measurement results across the country

Announcement

Ministry of Land, Infrastructure and Transport

(Water quality measurements in major sections of first-class rivers)

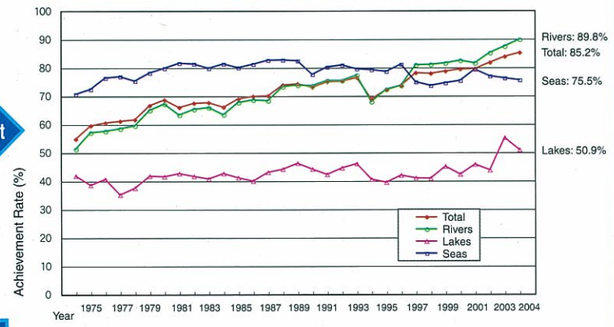
- ◆ Water quality measurement
- ◆ Water quality measurement data

Information disclosure

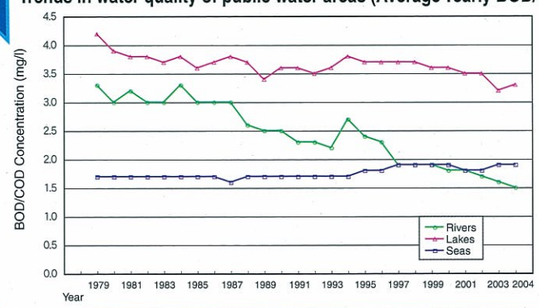
- ◆ White papers
- ◆ Websites
- ◆ Reports of water quality measurement results
- ◆ Water quality comprehensive information website

http//www.env.go.jp/water/mizu_site/index.html

Trends in achievement of BOD/COD environmental Standards



Trends in water quality of public water areas (Average Yearly BOD/COD)



Effluent Regulations

*See reference for details about uniform effluent standards

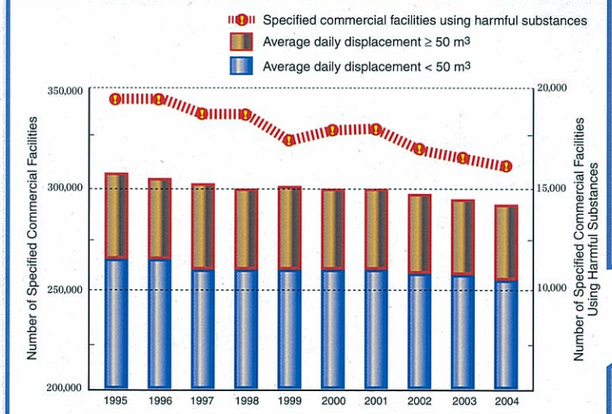
The Water Pollution Control Law establishes standards for effluent from factories and other commercial facilities ('specified commercial facilities') having facilities for the discharge of wastewater into public waters ('specified facilities'). The standard sets specific concentrations for various substances, for both human-health and living-environment substances. As of end-fiscal 2004, these regulations applied to more than 290,000 factories and other commercial facilities.

Specified Commercial Facilities

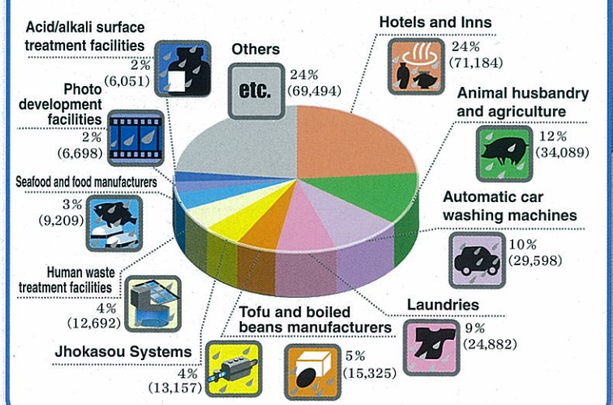
What are specified commercial facilities using harmful substances?

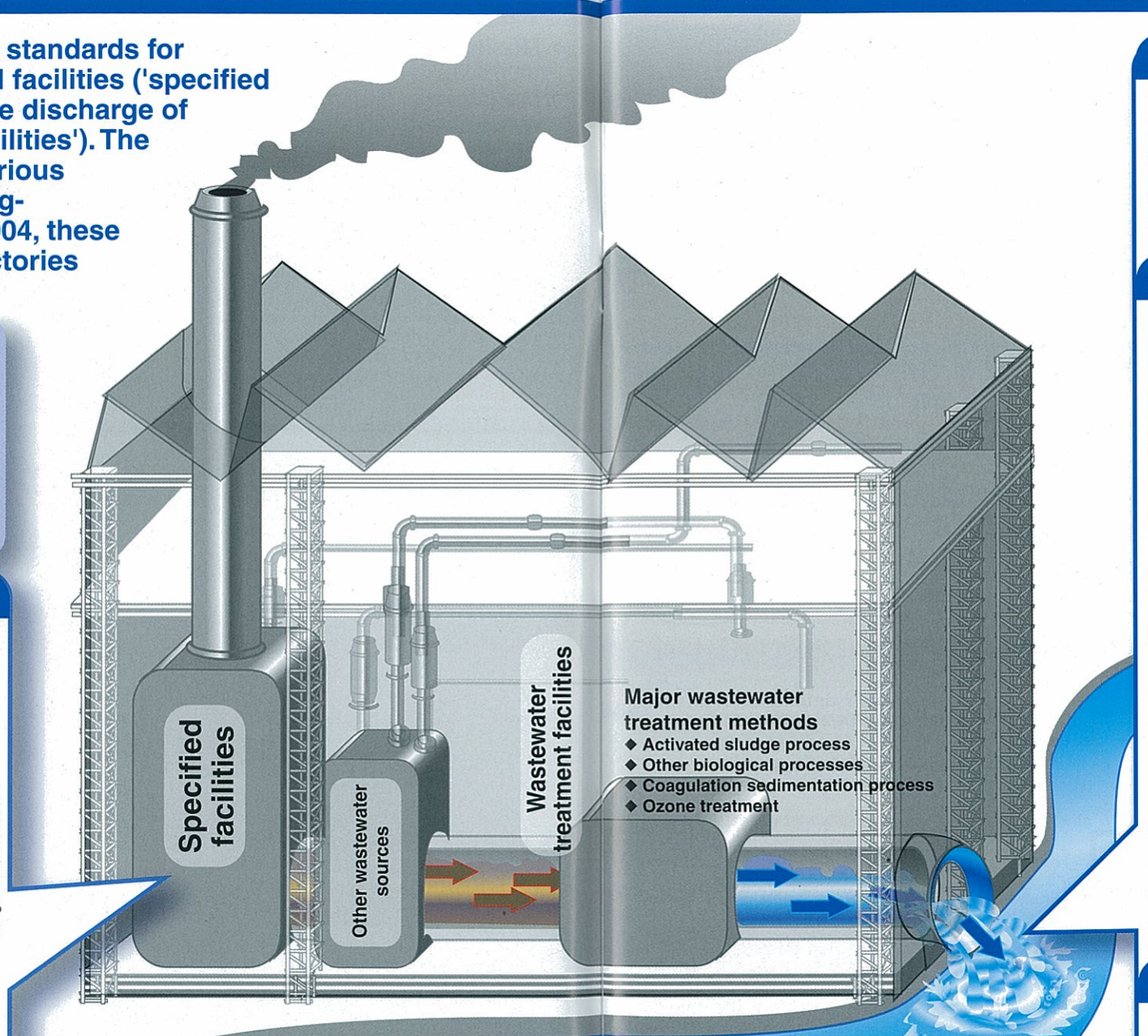
They refer to factories and other commercial facilities having specified facilities to produce, use and dispose of harmful substances such as cadmium and cyanide.

■ Number of Specified Commercial Facilities (Specified Commercial Facilities Using Harmful Substances)



■ Top 10 Specified Commercial Facilities (Specified Facilities)

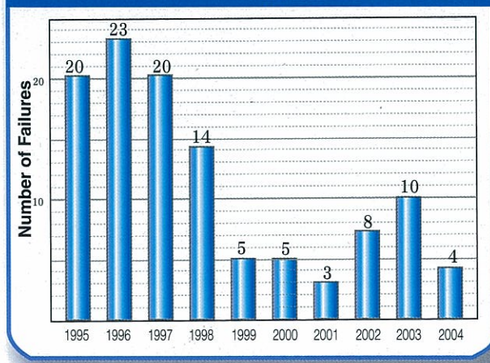




■ Effluent discharge control

Article 12-1 of the Water Pollution Control Law prohibits the discharge of effluent that is not in compliance with effluent standards.
Failure to comply with the standards may result in up to six months in jail or a fine of up to 500,000 yen.

■ Number of Failures to Comply with Effluent Standards



■ Uniform Effluent Standards

The uniform (national) effluent standards define 27 substances relating to human health, including cadmium and cyanide, and 15 substances relating to the living environment, including pH, BOD. The living environment items, meanwhile, are applicable to specified commercial facilities discharging more than 50 m3 of effluent per day on average.

■ Stringent Effluent Standards Imposed by Prefectural Governments

Achieving Environmental Quality Standards through uniform effluent standards may not be possible in some water bodies where there are many pollution producers. In such water bodies, the prefectural governments, through their municipal laws, may define stricter standards in addition to the uniform standards of the national government. Stringent effluent standards are defined according to the local situations in each of the nation's prefectures. The numbers in parentheses are daily average values.

■ Example of Stringent Effluent Standards

Water quality item	Prefecture A		Uniform Standards (mg/ℓ)
	Water Area A (mg/ℓ)	Water Area B (mg/ℓ)	
Cadmium and its compounds	Not detectable	/	0.1
Cyanide compounds	Not detectable	/	1
Organic phosphorus compounds	Not detectable	0.2	1
Lead and its compounds	0.05	/	0.1
Sexivalent chrome compounds	0.05	/	0.5
Arsenic and its compounds	0.01	/	0.1
Flouride and its compounds	0.8	/	8 (Non-Coastal Regions) 15 (Coastal Regions)
BOD	15(10)	25(20)	160(120)
COD	15(10)	25(20)	160(120)
SS	30(20)	70(40)	200(150)
Phenols	0.005	0.5	5
Copper	1	1	3
Zinc	1	1	5
Dissolved iron	0.3	3	10
Dissolved manganese	0.3	1	10
Chromium	0.1	/	2
Nickel	0.3	1	/

■ Effluent Regulations