

# Water Quality Protection Measures Under the Water Pollution Prevention Act

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Water Environmental Division  
Environmental Management Bureau  
Ministry of the Environment, Japan (MOEJ)

# Outline

1. Background and History of Water Quality Protection
2. Effluent Regulations under the Water Pollution Control Act including Mercury

# **1. Background and History of Water Quality Protection**

# Background: Water quality deterioration in public water areas



Sumida River (Tokyo, early 1970s)



Doukai Bay (Kita-Kyusyu city, 1960s)



Chofu seki (Tama River, Tokyo, 1970s)

# The History of Water Quality Protection (1)

## ■ Events prior to the foundation of Environmental Agency, Japan:

1956      Minamata Disease

1958      The establishment of two laws concerning water quality control

→ Law for conserving water quality of public water systems  
(Clean Water Act)

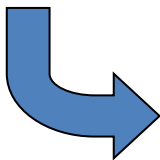
→ Law for controlling wastewater discharged from factories  
(Factory Effluent Control Act)

1960~      Niigata-Minamata Disease, Itai-Itai Disease

# The History of Water Quality Protection (2)

## ■ 1970 The enactment of the Water Pollution Control Act

Established by fundamentally reexamining the two laws concerning water quality control, which turned out to be insufficient for effectively regulating water pollution in Japan

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1. Overcoming reactive administration manners
    - transition from specified area control to national level control
    - establishment of uniform national effluent standards and additional local effluent standards (enforced from 1971).
  2. Enhancing regulations to ensure compliance with the new standards
    - direct punishment for violating regulations
  3. Unification of the legislation system

# The History of Water Quality Protection (3)

## ■ Events after the foundation of the Environment Agency

- 1973 Establishment of Law Concerning Provisional Measures for Conservation of the Environment of the Seto Island Sea
- 1978 Establishment of Law Concerning Special Measures for Conservation of the Environment of the Seto Island Sea/ amendment of the Water Pollution Control Act
- 1979 Initiation of total pollutant load control in Tokyo Bay, Ise Bay, and Seto Island Sea
- 1984 Establishment of Law Concerning Special Measures for Conservation of Lake Water Quality (Clean Lake Law)
- 1989 Amendment of the Water Pollution Control Act (Groundwater contamination)
- 1990 Amendment of the Water Pollution Control Act (Household drainage)
- 1993 Establishment of Basic Environment Act**
- 1994 Establishment of two laws concerning drinking water sources
- 1999 Establishment of Law Concerning Special Measures against Dioxins
- 2001 Foundation of MOEJ**
- 2001 Initiation of the fifth total pollutant load control, including nitrogen and phosphorus
- 2003 Establishment of the Environmental quality standard for Water Pollution, with focus on conserving aquatic organisms
- 2005 Amendment of the Clean Lake Law (establishing areas for effluent control, preserved areas around lake and reservoirs)
- 2010 Amendment of the Water Pollution Control Act (reinforcing punishments for not recording measurements, and/or false reporting)
- 2013 Amendment of the Water Pollution Control Act (omitting provisions which exclude radioactive substances as target pollutants)

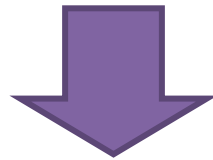
## **2. Effluent Regulations under the Water Pollution Control Act including Mercury**



# Relationship with the Minamata Convention on Mercury

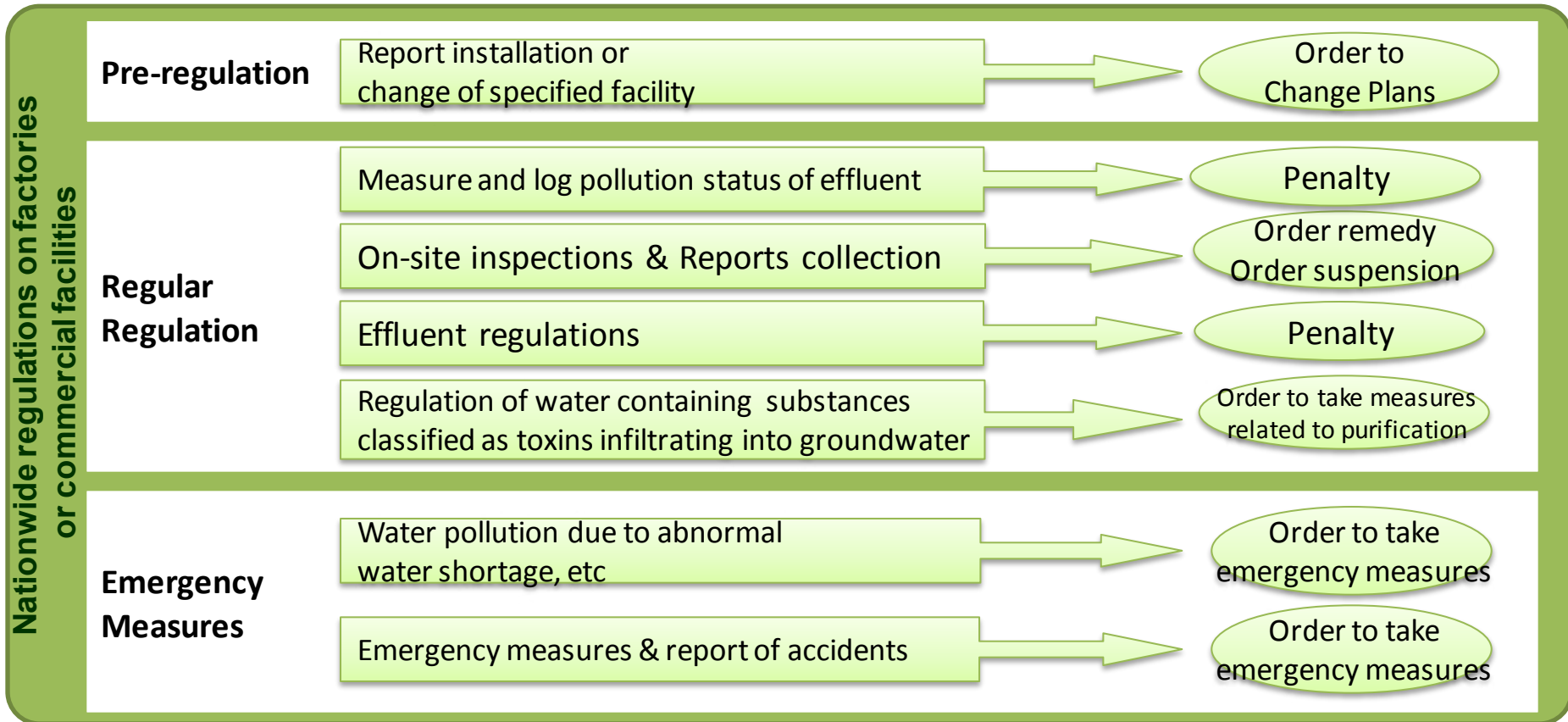
## **Article 9: Releases**

- (3) Each Party shall, no later than three years after the date of entry into force of the Convention for it and on a regular basis thereafter, identify the relevant point source categories.
- (4) A Party with relevant sources shall take measures to control releases and may prepare a national plan setting out the measures to be taken to control releases and its expected targets, goals and outcomes. Any plan shall be submitted to the Conference of the Parties within four years of the date of entry into force of the Convention for that Party.



The Water Pollution Control Act (promulgated in 1970) regulates releases of mercury into public water systems and groundwater

# How the Water Pollution Control Act Works



## Water Quality Monitoring at Public Water Area

Measurement program by prefectural government



Implementation of regular monitoring  
Announcement of monitoring results

## Domestic Wastewater Control

Designation of important areas by prefectural government



Development of a plan for promoting the implementation of domestic wastewater measures by municipalities

## Total pollutant load control in enclosed coastal seas

The government's "Fundamental Policy for Reduction of Total Pollution Load"



Establishment of "Plan for Reduction of Total Pollution Load" by prefectural governments and regulations

# Target Facilities of Effluent Control

Facility that discharges polluted water or wastewater is defined as a **specified facility** by the Water Pollution Control Act, and all factories or establishments in which specified facilities are installed (specified establishments) are subject to the Water Pollution Control Act.

## Example:

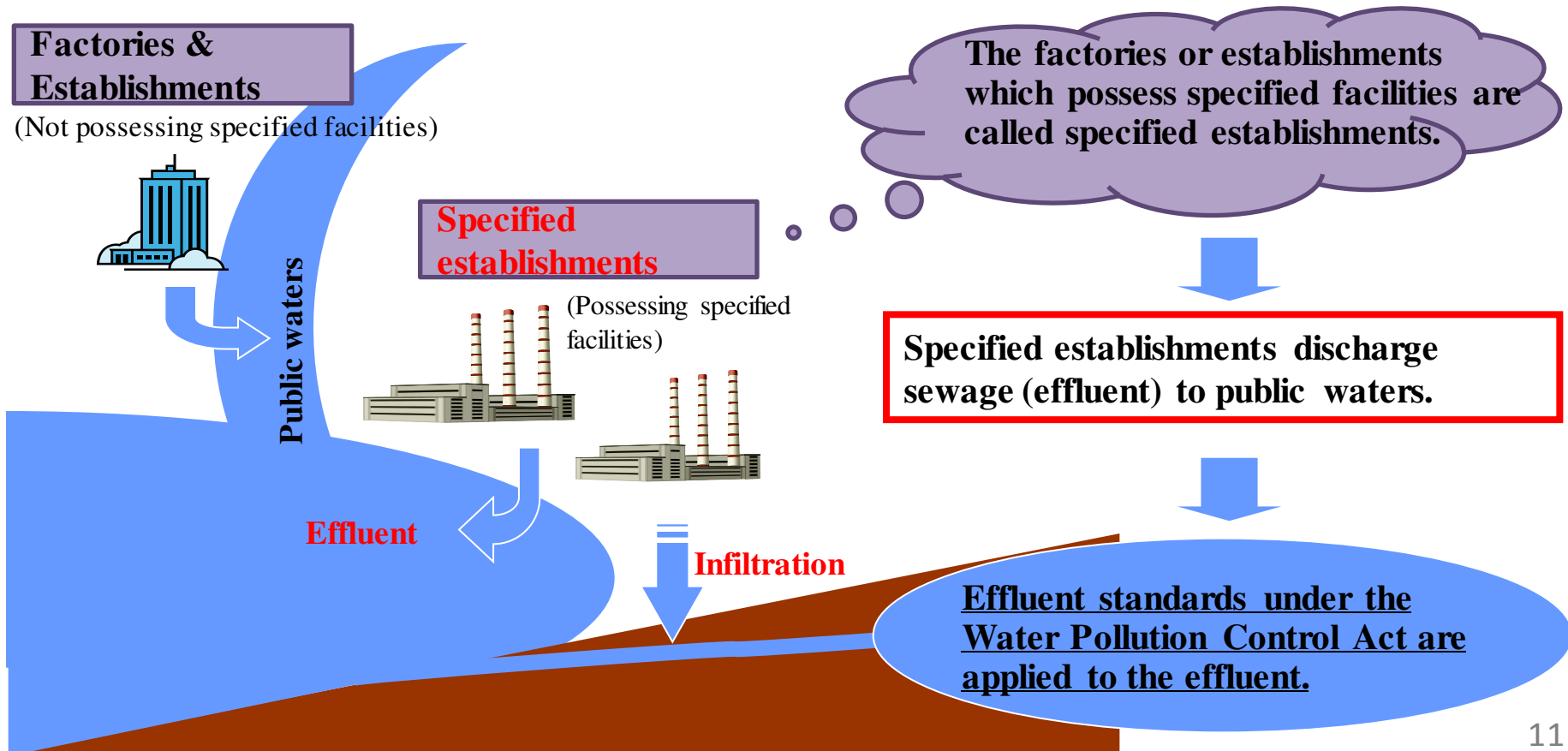
- Facilities to be used for **mining**, etc.
- Facilities devoted to **stock raising, agriculture**, etc.
- Facilities to be used for various types of **food manufacturing**, etc.
- Facilities to be used for **forestry**, etc.
- Facilities to be used for **pulp manufacturing**, etc.
- Facilities to be used for **medical goods manufacturing**, etc.
- Facilities to be used for **cement products manufacturing**, etc.
- Facilities to be used for **steel or nonferrous metals manufacturing** and facilities to be used for **other types of manufacturing**
- **Hotel businesses, restaurants, laundry businesses, photograph development businesses, hospitals, scientific and technological research facilities**
- **Waste disposal sites**
- **Final sewage treatment facilities, joint waste water treatment plants,**  
And so on...



**As of the end of  
FY2015,  
approx. 260,000  
specified  
establishments**

# Uniform National Effluent Standards (Concentration Regulation)

- The effluent control of the Water Pollution Control Act stipulates effluent standards (Uniform National Effluent Standards) that are uniform across all industries for the specified establishments throughout the country.
- The control is carried out using the so-called **“direct penalty system”** by which **penalties can be applied simply because of excess concentrations.**



# Uniform Effluent Standards

Living environment item	Standard
Hydrogen ion concentration (pH)	Other than sea area: 5.8 – 8.6 Sea area: 5.0 – 9.0.
Biochemical oxygen demand (BOD)	160 mg/L (Daily mean value: 120 mg/L)
Chemical oxygen demand (COD)	160 mg/L (Daily mean value: 120 mg/L)
Suspended solids (SS)	200 mg/L (Daily mean value: 150 mg/L)
Normal-hexane extracts content (mineral oils content)	5 mg/L
Normal-hexane extracts content (animal and plant fats content)	30 mg/L
Phenols content	5 mg/L
Copper content	3 mg/L
Zinc content	2 mg/L
Soluble iron content	10 mg/L
Soluble manganese content	10 mg/L
Chromium content	2 mg/L
Coliform group number	Daily mean value: 3,000/cm <sup>3</sup>
Nitrogen content	120 mg/L (Daily mean value: 60 mg/L)
Phosphorus content	16 mg/L (Daily mean value: 8 mg/L)

Note: The effluent standards listed in this table apply to factories or business facilities which on discharge 50m<sup>3</sup> or more effluent per day on average.

(\*) The total amount of: NH-N multiplied by 0.4, NO<sub>2</sub>-N, and NO<sub>3</sub>-N.

Health item (Hazardous substance)	Standard
Cadmium and its compounds	0.03mg/L
Cyanide compounds	1mg/L
Organic phosphorous compounds (Parathion, Methyl Parathion, Methyl Demeton, and EPN only)	1mg/L
Lead and its compounds	0.1mg/L
Chromium (VI)	0.5mg/L
Arsenic and its compounds	0.1mg/L
<b>Total mercury</b>	<b>0.005mg/L</b>
<b>Alkyl mercury compounds</b>	<b>Not detected</b>
PCBs	0.003mg/L
Trichloroethylene	0.1mg/L
Tetrachloroethylene	0.1mg/L
Dichloromethane	0.2mg/L
Carbon tetrachloride	0.02mg/L
1,2-Dichloroethane	0.04mg/L
1,1-Dichloroethylene	1mg/L
cis-1,2-Dichloroethylene	0.4mg/L
1,1,1-Trichloroethane	3mg/L
1,1,2-Trichloroethane	0.06mg/L
1,3-Dichloropropene	0.02mg/L
Thiram	0.06mg/L
Simazine	0.03mg/L
Thiobencarb	0.2mg/L
Benzene	0.1mg/L
Selenium and its compounds	0.1mg/L
Boron and its compounds	Other than sea area: 10 mgB/L Sea area: 230 mgB/L
Fluoride and its compounds	Other than sea area: 8 mgB/L Sea area: 1 mgB/L
Ammonia, Ammonium compounds, Nitrate and its compounds	(*) 100mg/L
1,4-Dioxane	0.5mg/L

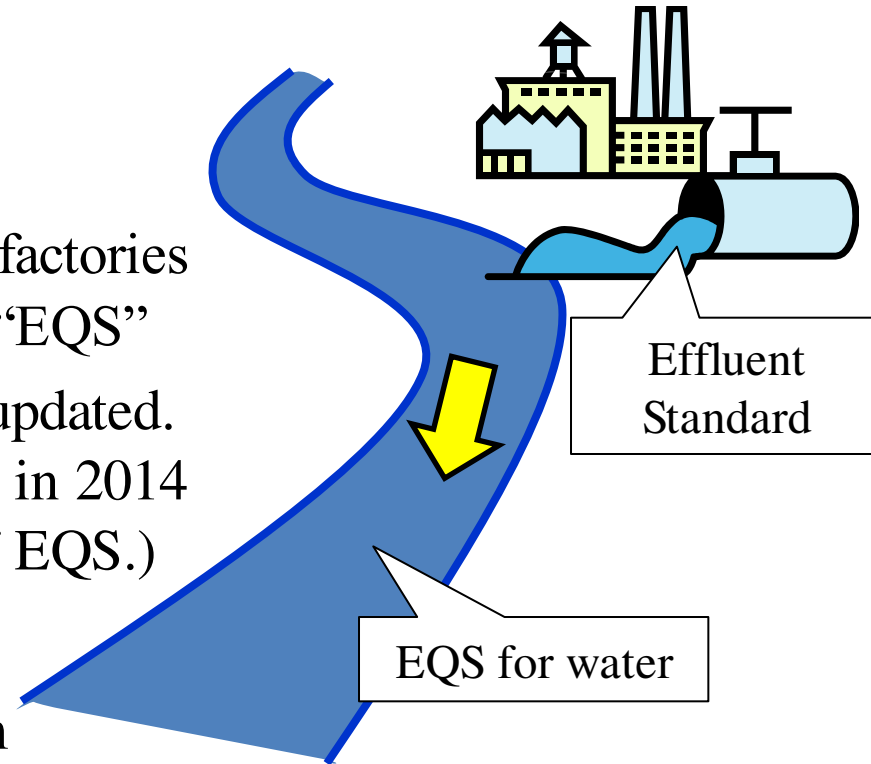
# EQS and Effluent standards

## Environmental Quality Standard (EQS)

- Established by the Basic Environmental Act as part of the government's objectives (standards that are to be followed) to prevent health hazards and conserve the living environment.

## Effluent Standards

- “Effluent Standards”** are applied on factories and establishments in order to satisfy “EQS”
- Has been continuously reviewed and updated. (e.g. that for cadmium became stricter in 2014 in conjunction with the amendment of EQS.)
- For some specific business categories that face difficulty to meet the uniform effluent standard for a specific item, **a provisional effluent standard** is applied by specifying a time limit.



# Effluent Standards and Prefectural Standards

**Uniform effluent standards prescribed by the national government**  
(a national minimum regulation)

**Hazardous substances**  
applied to all Specified establishments

applied to **Specified establishments**  
where effluent is 50m<sup>3</sup>/day or more

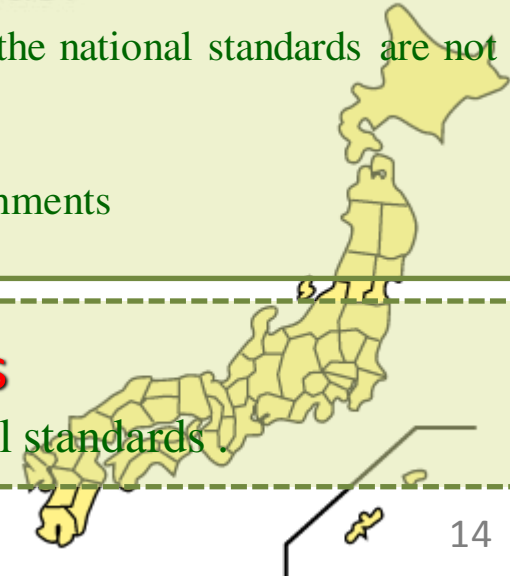
Prefectural governments  
authorized to tighten controls,  
according to local conditions

## **More Stringent Prefectural Standards:**

- Set more stringent effluent standard values by prefectural ordinances if the national standards are not sufficient (for example, when EQS cannot be achieved).
- Extend application of the Living Environment Items to factories/establishments with less than 50 m<sup>3</sup>/day wastewater discharge.

## **Extended Prefectural Regulations**

- Introduce additional effluent control items on top of the national standards.



< Water >

<http://www.env.go.jp/en/water/index.html>