

Water Environment Management in Japan

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Ministry of the Environment

Countermeasure scheme

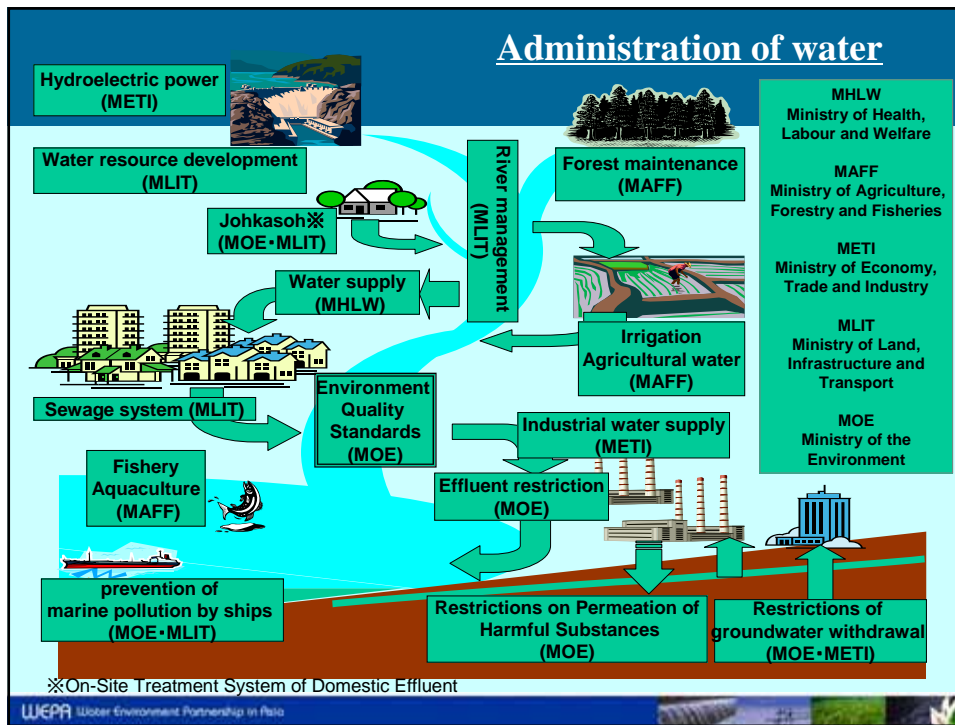
- **Environmental Quality Standards**
 - Standards as Administrative Goals in the general environment



Reach the Goal

- **Environmental Pollution Control Policies**
Ex. Effluent Limits
 - Limits of the quality of water emission from each factory





Policy System for Water Environment

General Policy: Basic Environment Law (EQSs)

Public Water Areas

Common measures

- Water Pollution Control Law
 - Factory effluent control, continuous monitoring and measures for domestic effluent

Special measures in enclosed water areas, etc.

- Lakes
 - Law Concerning Special Measures for Conservation of Lake Water Quality
- Enclosed Water Areas
 - Water Pollution Control Law (areawide total pollutant load control)
 - Law Concerning Provisional Measures for Conservation of the Environment of the Seto Inland Sea
 - Law Concerning Special Measures for the Rejuvenation of Ariake Sea and Yatsushiro Sea
- Headwater areas for drinking water supply
 - Law Concerning Special Measures for the Prevention of Water Quality in Headwater Areas for the Purpose of Preventing Specific Problems in the Drinking Water Supply
 - Law Concerning the Promotion of Projects to Preserve Water Quality in Drinking Water

Groundwater

- Water Pollution Control Law
 - Continuous monitoring of groundwater quality
 - Regulation of underground permeation of harmful substances from factories and business establishments
 - Order to take measures for purification of polluted groundwater

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The Basic Environment Law

Law No.91 of 1993 Effective on November 13,1993

- **Chapter 1 General Provisions (Articles 1-13)**
- **Chapter 2 Basic Policies for Environmental Conservation**
 - Section 1 Guidelines for Policy Formulation (Article 14)
 - Section 2 Basic Environment Plan (Article 15)
 - **Section 3 Environmental Quality Standards (Article 16)**
 - Section 4 Environmental Pollution Control in Specific Areas (Articles 17 and 18)
 - **Section 5 Implementation of Policies for Environmental Conservation by the State (Articles 19-31)**
 - Section 6 International Cooperation for Global Environmental Conservation etc. (Articles 32-35)
 - Section 7 Implementation of Policies by Local Governments (Article 36)
 - Section 8 Bearing of Costs and Financial Measures (Articles 37-40)
- **Chapter 3 Environment Council etc.**
 - Section 1 Environment Council (Articles 41-44)
 - Section 2 Conference on Environmental Pollution Control (Articles 45 and 46)

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Chapter 1 General Provisions

The Basic Environment Law

- **Article 1 (Purpose)**

The purpose of this law is to comprehensively and systematically promote policies **for environmental conservation to ensure healthy and cultured living for both the present and future generations of the nation** as well as **to contribute to the welfare of mankind**, through articulating the basic principles, clarifying the responsibilities of the State, local governments, corporations and citizens, and prescribing the basic policy considerations for environmental conservation.

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Section 3 Environmental Quality Standards (Article 16)

The Basic Environment Law

1. **With regard to the environmental conditions related to air pollution, water pollution, soil contamination and noise, the Government shall respectively establish environmental quality Standards, the maintenance of which is desirable for the protection of human health and the conservation of the living environment.**
2. ...
3. With regard to the standards set forth in Paragraph 1, **due scientific consideration** shall always be given and such standards shall be **revised whenever necessary.**
4. The Government shall **make efforts to attain the standard** provided for in Paragraph 1 **by comprehensively and effectively implementing policies concerning environmental pollution control which are set forth in this chapter** (hereinafter referred to as the "**environmental pollution control policies**").

Section 5 Implementation of Policies for Environmental Conservation by the State (Articles 19-31)

The Basic Environment Law

Article 19 Consideration in Formulation of Policies by the State

Article 20 Promotion of Environmental Impact Assessment

Article 21 Regulations to Prevent Interference with Environmental Conservation

Article 22 Economic Measures to Prevent Interference with Environmental Conservation

Article 23 Promotion of Construction of Facilities and Other Projects for Environmental Conservation

Article 24 Promotion of Use of Products Contributing to Reduction of Environmental Load

Article 25 Education and Learning on Environmental Conservation

Article 26 Measures to Promote Voluntary Activities by Private Organizations

Article 27 Provision of Information

Article 28 Implementation of Researches

Article 29 Improvement in Systems for Monitoring and Others

Article 30 Promotion of Science and Technology

Article 31 Settlement of Environmental Pollution Disputes and Relief of Damage

Regulations to Prevent Interference with Environmental Conservation (Article 21) The Basic Environment Law

1. The Government shall take the following regulatory measures to prevent interference with environmental conservation.

(1)Regulatory measures necessary to prevent environmental pollution, inter alia, by setting the **Standards with which corporations must comply** regarding **such activities as emission of substances** causing air pollution, **water pollution**, soil contamination or offensive odors; generation of noise or vibration; and the taking of underground water causing ground subsidence.

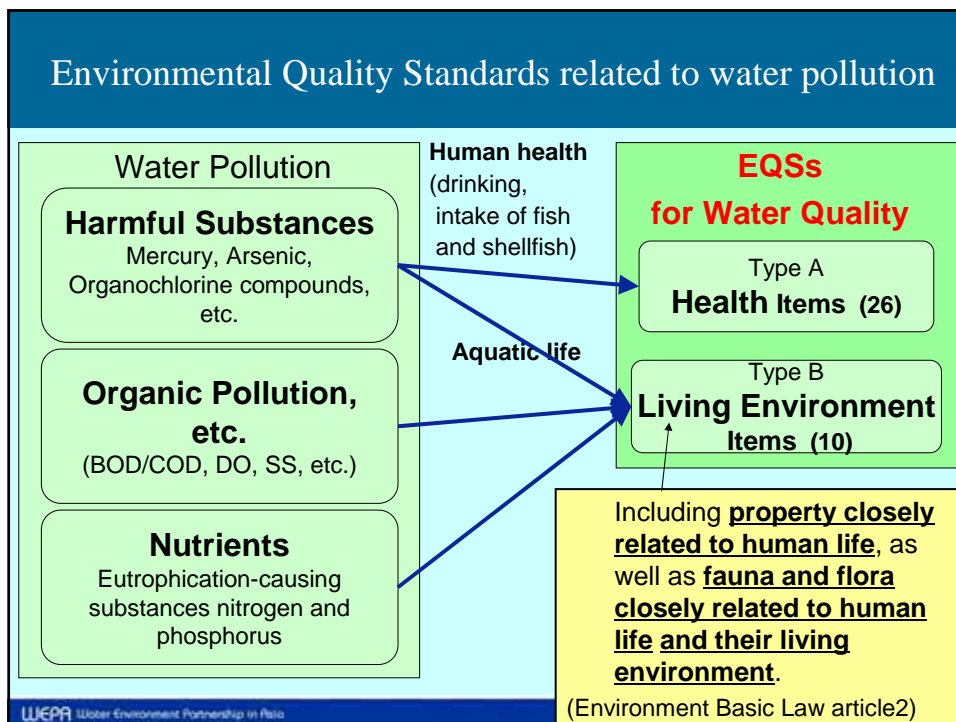
(+ other activities)

(1) Regulatory measures necessary to prevent environmental pollution with regard to **land use** and **construction of facilities** causing pollution in an area where the pollution is serious or is likely to become serious.

(2) -(5) ...

2. ...

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type-A**Health Items**

Environmental Quality Standards

- **1970 (7 Items)**
cadmium, cyanogen, lead, chromium (VI), arsenic, mercury, and alkyl mercury
 - **1975 (1 Item)**
PCB
 - **1993 (15 Items)**
dichloromethane, tetrachloromethane, 1,2-dichloroethane, 1,1-dichloroethylene, cis-1,2-dichloroethylene, 1,1,1-trichloroethane, 1,1,2-trichloroethane, trichloroethylene, tetrachloroethylene, 1,3-dichloropropene, thiuram, simazine, thiobencarb, benzene, and selenium
 - **1999 (3 Items)**
nitrate nitrogen and nitrite nitrogen, fluorine, and boron
- **26 items**
- Health items are applied to **surface water and ground water.**

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type-A**“Itai-itai” disease**

- Period: From around 1922
- Cause: Cd Effluent from Mining industry
- Chronic cadmium poisoning
 - ↓
 - Kidney damage
 - ↓
 - Osteomalacia
 - (softening of the bones)
 - ↓
 - (妊娠、授乳、内分泌の変調および
栄養としてのカルシウム等の不足などが誘因)
- Occurrence of disease



(From Yomiuri Shimbun Web site)

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type-A

Minamata Disease

- Period: From around 1941?
Officially identified in vicinity of Minamata Bay in 1956, and in watershed of Agano River in 1965
- Cause:
Organomercury accumulated in fish and shellfish.
Mercury compounds discharged by private companies
- Countermeasures:
Enactment of Special Measures Law Concerning Pollution-Related Health Damage (1969)



(From Minamata City Web site)

type-B

Living environment Items

Environmental Quality Standards

- **Items**
 - pH, BOD/COD, DO, Suspended Solid, Coliform group, etc
 - T-N/T-P (Nutrients) , Zn (Aquatic Life Items)
- **Designation of water area types**
 - Defined according to water body classification and its water usage.
 - Usage
 - Protection of the natural environment (Conservation of sightseeing and other environments)
 - Fishery
 - Drinking water, Irrigation water, Industrial water
 - Bathing
 - Environmental conservation (Limit of not disrupting the day-to-day lives of the population)

type-B Image of designation of water area types

Living Environment Items

Environment Minister or Prefecture Governors designate types, and set compliance period.

<Rivers>

Type	BOD	Water Area Conditions
AA	1	Nature exploration
A	2	Normal drinking water
B	3	Fishery of salmon and sweet fish
C	5	Fishery of carp and cruciam carp
D	8	Agricultural water
E	10	No foul odor

<Lakes>

Type	COD	Water Area Conditions
AA	1	Nature exploration and fishery of red salmon, etc.
A	3	Bathing, normal drinking water and fishery of salmon, sweet fish, etc.
B	5	Fishery of carp, cruciam carp, etc. and agricultural water
C	8	No foul odor

<Coastal Seas>

Type	COD	Water Area Conditions
A	2	Bathing, nature exploration and fishery of red sea bream, yellowtail, etc.
B	3	Fishery of mullet, laver, etc.
C	8	No foul odor

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type-B Damage to Fishery

Clash of fisermen and security force

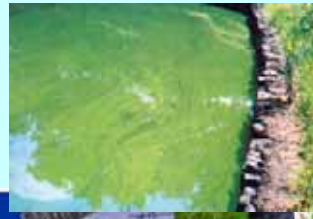
- Edogawa River in 1958
- Cause: Discharge of untreated pulp waste from paper mill
- Damage: Fish and shellfish killed in large numbers, over 60 people suffered major and minor injuries in clash with police
- Countermeasure: Enactment of former Two Water Quality Laws (1958) (旧) 水質2法

(From Urayasu City Web site)

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type-B

- **“Red Tide”** is caused by overbreeding of plankton showed up frequently, and killed a number of fish and shellfish
- **“Blue Tide”** is seawater lacking oxygen that contains hydrogen sulfur, causing fish and shellfish to suffocation
- **“Water Bloom”** is caused by overbreeding of algae plankton in lakes, which produces poison as well as bad smell

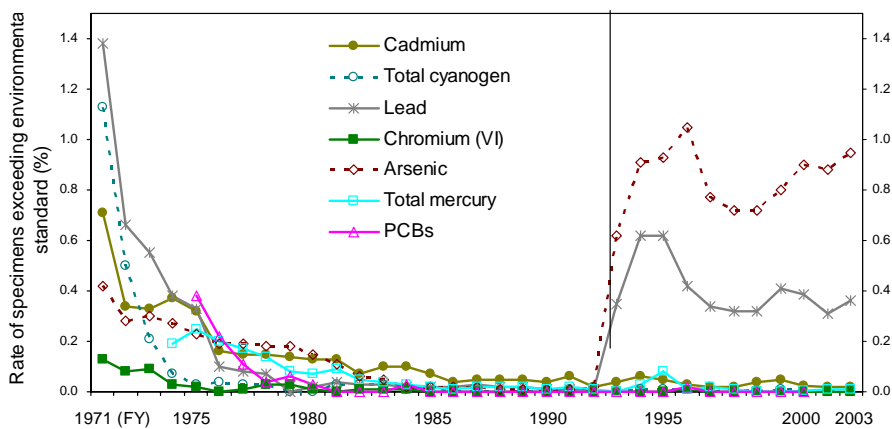


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type-A

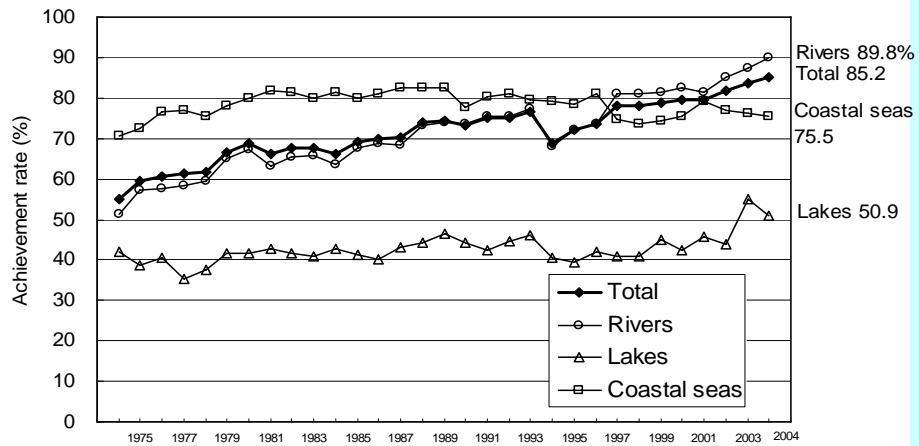
State of achievement for health items

- **The achievement status of health items has significantly improved. (Surface water)**



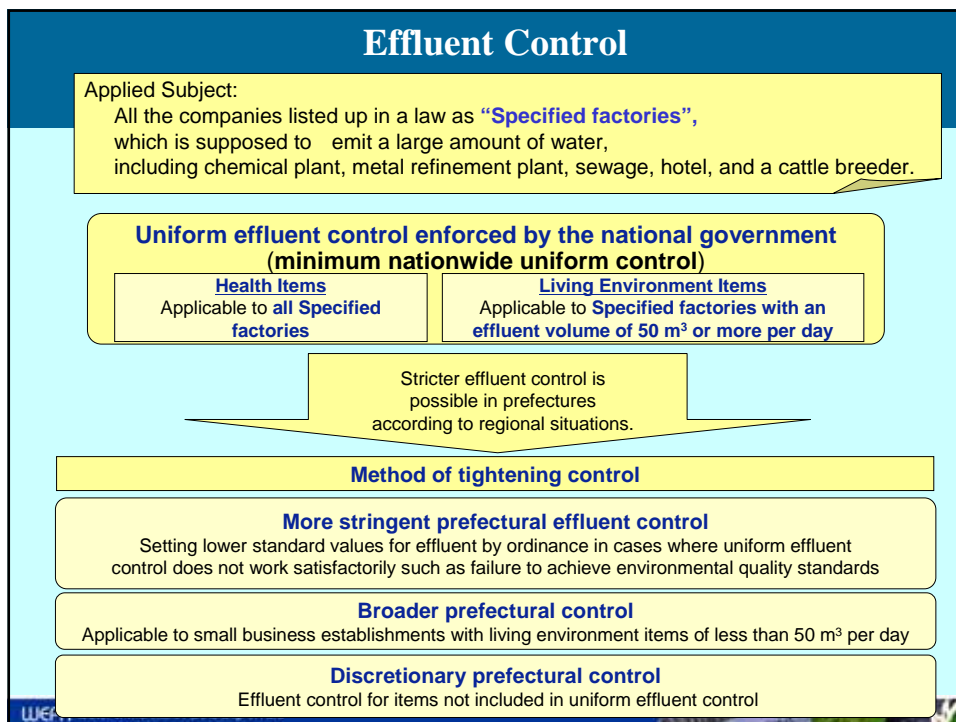
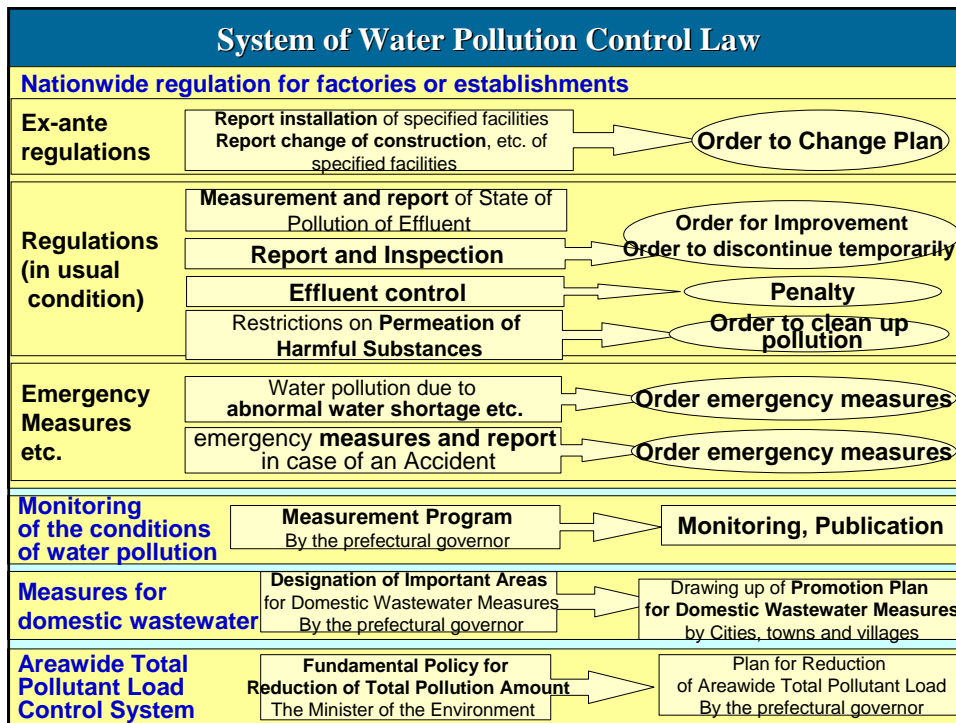
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type-B


State of achievement
for living environment itemsFeatures of Water Pollution Control Law
(1970)

1. Overcomes “after the fact” administration
 - Shift from regulated area system to nationwide regulation
 - Unified regulatory standards plus additional standards
2. Regulations strengthened to ensure compliance of standards
 - directly imposed penalties for violations
3. Unification of principles behind legislation





type-A **Effluent Limits**
health items



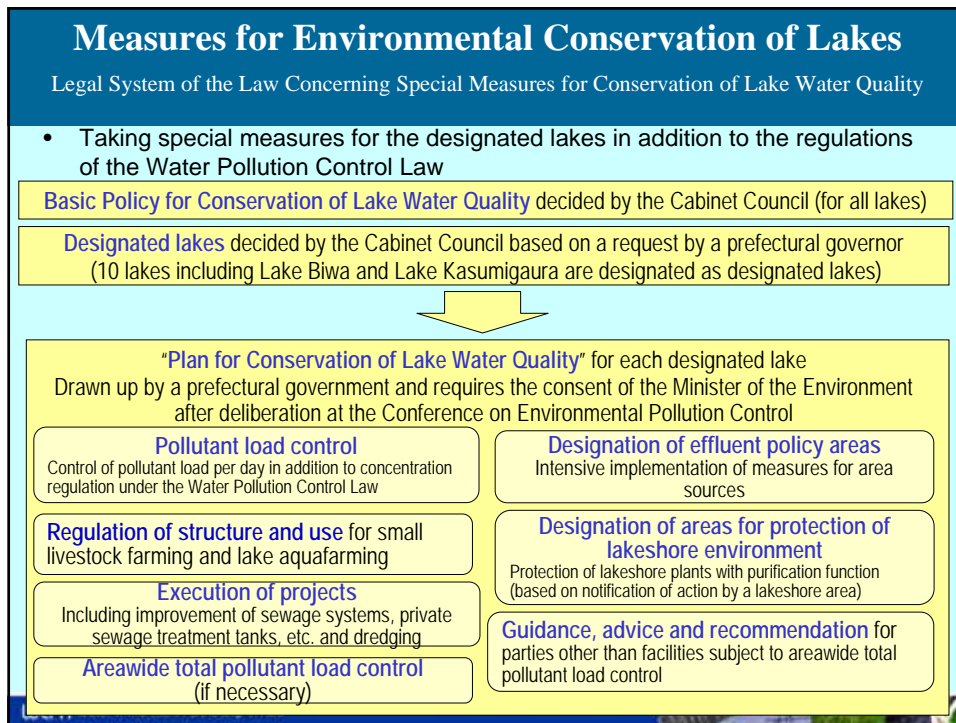
① Harmful substances:
 <items>: same as EQSs for health items
 <level> : Ten times thicker than the levels of EQS
 (ex) Hg → EQS:0.0005mg/L
 Effluent Limits: 0.005mg/L
 <subject>: Uniformed figure for every specified factory

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type-B **Effluent Limits**
living environment items

② Substances related to living environments:
 <items> Living environment EQSs and others
 (pH, BOD/COD, SS, T-N, T-P, coliform, etc.)
 <level> BOD/COD, SS, T-N, T-P : level of the effluent from household septic tank.
 Total Coliform : The level which can guarantee by chlorine sterilization method (Sewage plant)
 Others
 <subject>“specified company” that emits 50m³ waste water on average.

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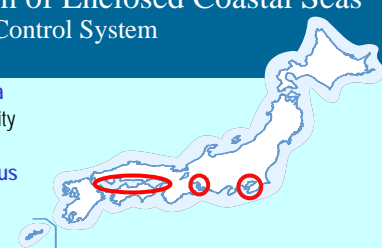
Measures for Environmental Conservation of Enclosed Coastal Seas

Differences in Water Quality Conservation System among Coastal Seas

Coastal seas		Enclosed coastal seas			Other coastal seas	
		Seto Inland Sea	Tokyo Bay and Ise Bay	Other enclosed coastal seas	Other coastal seas	
Effluent standards	Health items	○	○	○	○	
	Living environment items	COD, etc.	○	○	○	○
		N·P	○	○	○	-
Areawide total pollutant load control		○	○	-	-	
Specified facilities		License	Notification	Notification	Notification	

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Measures for Environmental Conservation of Enclosed Coastal Seas Areawide Total Pollutant Load Control System



Reducing pollutant load flowing into a certain enclosed coastal sea within a specified period (5 years) for the improvement of its water quality
 Target coastal seas: **Tokyo Bay, Ise Bay and the Seto Inland Sea**
 Target items: COD (from the 1st control), and nitrogen and phosphorus (from the 5th control)
 The 5th areawide total pollutant load control (target year: 2004) ended, and the 6th control is now under consideration.

Basic Policy for Reduction of Areawide Total Pollutant Load

The Minister of the Environment determines a 5-year reduction target volume and other related matters for each target coastal sea.

Plan for Reduction of Areawide Total Pollutant Load

Prefectural governors draw up a plan for the reduction target volume and means for achieving the target for each pollution source, which is subject to the approval of the Minister of the Environment.

Measurement and control of pollutant load by the **Standard for Areawide Total Pollutant Load Control**
 (for factories and business establishments with an effluent volume of 50 m³ per day)
 Obligations to **measure and record** pollutant load
The order to take improvement measures for the possibility of excess of pollutant load

Guidance, advice and recommendation for pollutant load reduction
 (for small business establishments, livestock farming, aquafarming, agriculture, general households, etc.)

Execution of projects such as improvement and sophistication of sewage systems, private sewage treatment tanks, etc.

Monitoring of Water Quality

- Monitoring by prefectural governments, etc.
- **Number of measurement stations in 2004 (Surface water)**

	Rivers	Lakes	Coastal seas
A: Health items	4,077	431	1,195
B: Living environment items	4,621	752	3,228

- Number of specimens in 2004
 - Health items: 269,127, Living environment items: 429,054
- **Number of measurement stations in 2004 (Ground water)**

	Overall survey	Survey of the area around contaminated wells	Regular monitoring of contaminated wells
A: Health items	4,955	1,866	5,170

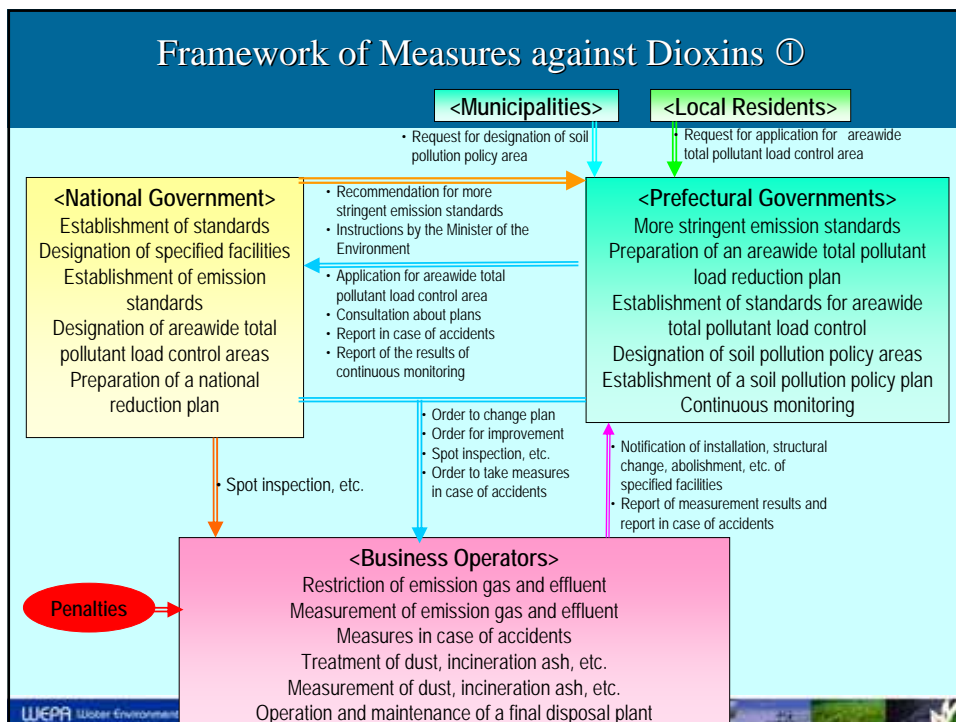
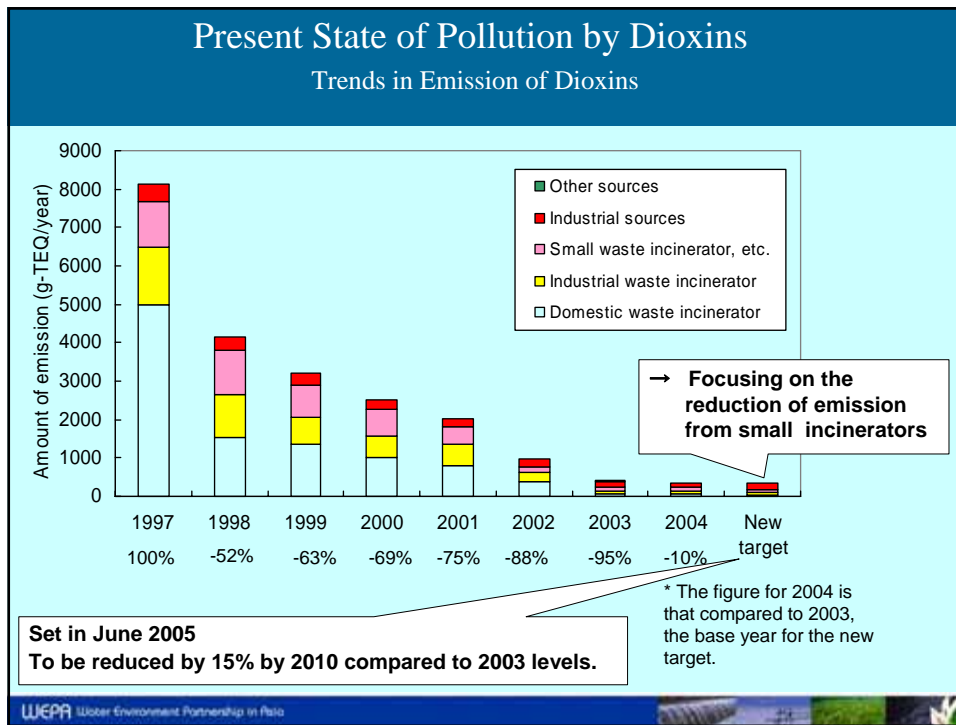
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Future Direction of Water Quality Monitoring

Continuous Monitoring of Water Quality (3)

- The subsidies to local public bodies for water quality monitoring were terminated in fiscal 2005.
- Tax sources will be transferred to local public bodies.
- The national government needs to provide **concept of and standards for stations, frequency and accuracy of measurement** so that local public bodies are able to conduct **efficient and effective water quality monitoring at their discretion**.



Framework of Measures against Dioxins ②

Policy Targets and Achievement Status for Measures against Dioxins
(the policy target for emission is the previous one)

Target	Standard value, etc.	Achievement status
Emission	Reduction by about 90% from FY 1997 to the end of FY 2002	95% reduction (as of FY 2003) (Achievement of the reduction target)
Environmental levels (environmental quality standards)	Air 0.6 pg-TEQ/m ³ Water quality 1 pg-TEQ/L Bottom sediment 150 pg-TEQ/g Soil 1000 pg-TEQ/g	Achievement rate of environmental quality standards -Air 100.0% -Quality of public water 97.9% -Bottom sediment of public water 99.7% (as of FY 2004)
Human intake (tolerable daily intake)	4 pg-TEQ/BWkg/day	1.35 pg-TEQ/BWkg/day (as of FY 2003)

Thank you for your attention !

- 参考ファイル

type-B Dissolved oxygen and Oxygen Demand

Basic parameters related to water pollution

- The most basic water pollution is **water hypoxia**.
 - Lower oxygen concentration of water causes various problems such as foul odor and decrease of aquatic life.
- In order to indicate the degree of water pollution, **dissolved oxygen (DO)**, as a direct indicator, and **oxygen demand (OD)**, measured as oxygen consumed by substances, are used.
- This oxygen demand includes
 - BOD, measured using microorganisms (rivers)
 - COD, measured using chemical substances (lakes and sea areas)

Registration to build a factory

- Building “Specified companies” requires a registration to the Prefecture Governor.
- Registration includes,,,
 - * Structure of the factory
 - * Methods of purifying waste water
 - * Pollutant level and Amount of waste water
- Governor can order a modification or abolition of the plan

Regulation tool

- When Governor finds the probability of violation of the effluent limits, he can order the factory to get improved, or stop the emission.
- Violation of the limits will result directly in the penalty.
(The former law required improvement order and the its violation, before the imposition of the penalty.)

Additional Limits by the Governor

- Prefecture Governors are enabled to stipulate the additional effluent limits on the existing unified regulatory ones.
- This system allows Governor's initiative to achieve the desirable water environment considering the residents' demand or the state of the local economy.

Measurement by the factory

- The specified factories are required to measure and record the pollution level of the emitted waste water.
- The measurement methods are unified in a law, so that they should be regulated in a fair way.

Survey and release of the pollution level of the waters

- The Prefecture Governors are required to survey the pollution level of the general waters.
- The measurement methods are unified in a law, so that the information be comparable, and the state of the waters throughout Japan can be grasped.
- The Governors are required to release the state of the pollution in the waters under their jurisdiction.

Measures for Domestic Effluent ①

Water Pollution Control Law

[Responsibilities and Obligations of Concerned Parties]

National government:	dissemination of knowledge, and technical and financial support for local public bodies
Prefectural governments:	implementation of policies for a large area and comprehensive coordination of policies administered by municipalities
Municipalities:	improvement of domestic effluent treatment facilities such as sewage systems, raising of awareness, etc.
Citizens:	proper disposal of cookery refuse, waste cooking oil, etc., proper use of detergents, and cooperation with administrative policies



Execution of projects
Improvement of sewage systems, rural community sewerage, private sewage treatment tanks, etc.

Measures at home
Measures at kitchens such as disposal of cookery refuse and oil

[Important Areas for Domestic Effluent Measures]

Designation of important areas for domestic effluent measures by prefectural governors



Drawing up of a promotion plan for domestic effluent measures by municipalities



Execution of policies such as improvement of facilities and promotion of domestic effluent measures



Sewage Water Law (the Ministry of Land, Infrastructure and Transport): approval system for project plans, etc.

Private Sewerage System Law (Waste Management and Recycling Department of the Ministry of the Environment, and the Ministry of Land, Infrastructure and Transport): notification system for installation, prohibition of new installation of flush toilet wastewater treatment tank, standards for operation and maintenance, etc.

Measures for Domestic Effluent ②

Treatment Methods of Domestic Effluent and their Prevalence Rate

