2. Conservation of the Atmospheric Environment, the Water Environment, and the Soil Environment

(1) Measures for Conservation of the Atmospheric Environment

A. Provision of Systems for Monitoring and Observing the Atmospheric Environment

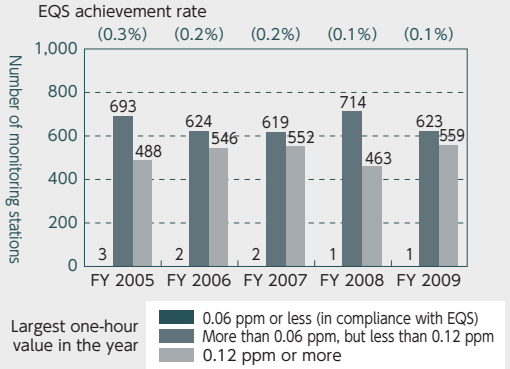
In order to ascertain the nationwide state of the atmospheric environment and obtain basic information necessary for promotion of policies for conservation of the atmosphere, Japan has established the National Ambient Air Pollution Monitoring stations (at 9 sites) and National Roadside Air Pollution Monitoring stations (at 10 sites), and has been conducting monitoring. These monitoring stations serve as standard stations for the monitoring stations set by local governments to carry out continual monitoring of the atmospheric environment, as testing stations for continuously monitoring the atmospheric environment as monitoring stations for substances that were designated by the government as hazardous air pollutants, and as background monitoring stations for air pollutants.

Japan has also been conducting monitoring based on the "Long-Term Acid Trans-boundary Air Pollution and Deposition Monitoring Program (revised in March 2009)" at 27 sites throughout the country, mainly in remote areas such as isolated islands, in order to ascertain the long-term effects of acid deposition and trans-boundary air pollution in Japan.

The government is also conducting monitoring studies on environmental radiation by monitoring atmospheric radiation mainly in remote islands where there is comparatively less influence of human activity (10 sites nationwide) and providing information about the results on the webpage "System for Disclosing Monitoring Data on Environmental Radiation (http://housyasen.taiki.go.jp/)."

Local governments are constantly monitoring atmospheric pollution at ambient air pollution monitoring stations and roadside air pollution monitoring stations, based on the Air Pollution Control Law (Law No. 97 of 1968).

Figure 2-1 Changes in the Number of Monitoring Stations by Maximum Hourly Concentration Level of Photochemical Oxidants during Daytime (Total of AAPMSs and RAPMSs) (FY 2005-FY 2009)



Source: Ministry of the Environment, FY 2009 Report on the State of Air Pollution

The national government collects that data (preliminary figures) in real time using the "Atmospheric Environmental Regional Observation System (AEROS)," nicknamed "*Soramame-kun*," and provides information on both their website and mobile website.

Also, in accordance with the environmental quality standards for fine particulate matter (PM2.5), the government conducts continuous equivalence monitoring of air pollution status using both the standard measuring method of PM 2.5 and automatic measuring instruments used for continuous monitoring of atmospheric pollution conducted based on the Air Pollution Control Law.

B. Measures Against Photochemical Oxidants (International Efforts)

As the emissions of substances that cause photochemical oxidants have been increasing in the Eastern Asian region due to recent economic growth, there are concerns about the effects on Japan's atmospheric environment. Therefore, Japan made a proposal for cooperation in scientific research on photochemical oxidants, which was agreed upon at the "9th Tripartite Environment Ministers Meeting among China, Japan, and Korea," held in December 2007. The "Tripartite Workshop on Scientific Research of Photochemical Oxidants" has been held since 2008 with the participation of researchers and policy-makers in order to share scientific knowledge about photochemical oxidants and consider future cooperation in research activities. Based on a plan for environmental cooperation that was adopted at the "12th Tripartite Environment Ministers Meeting among China, Japan, and Korea" in May 2010, efforts for collaborative research will be further strengthened.

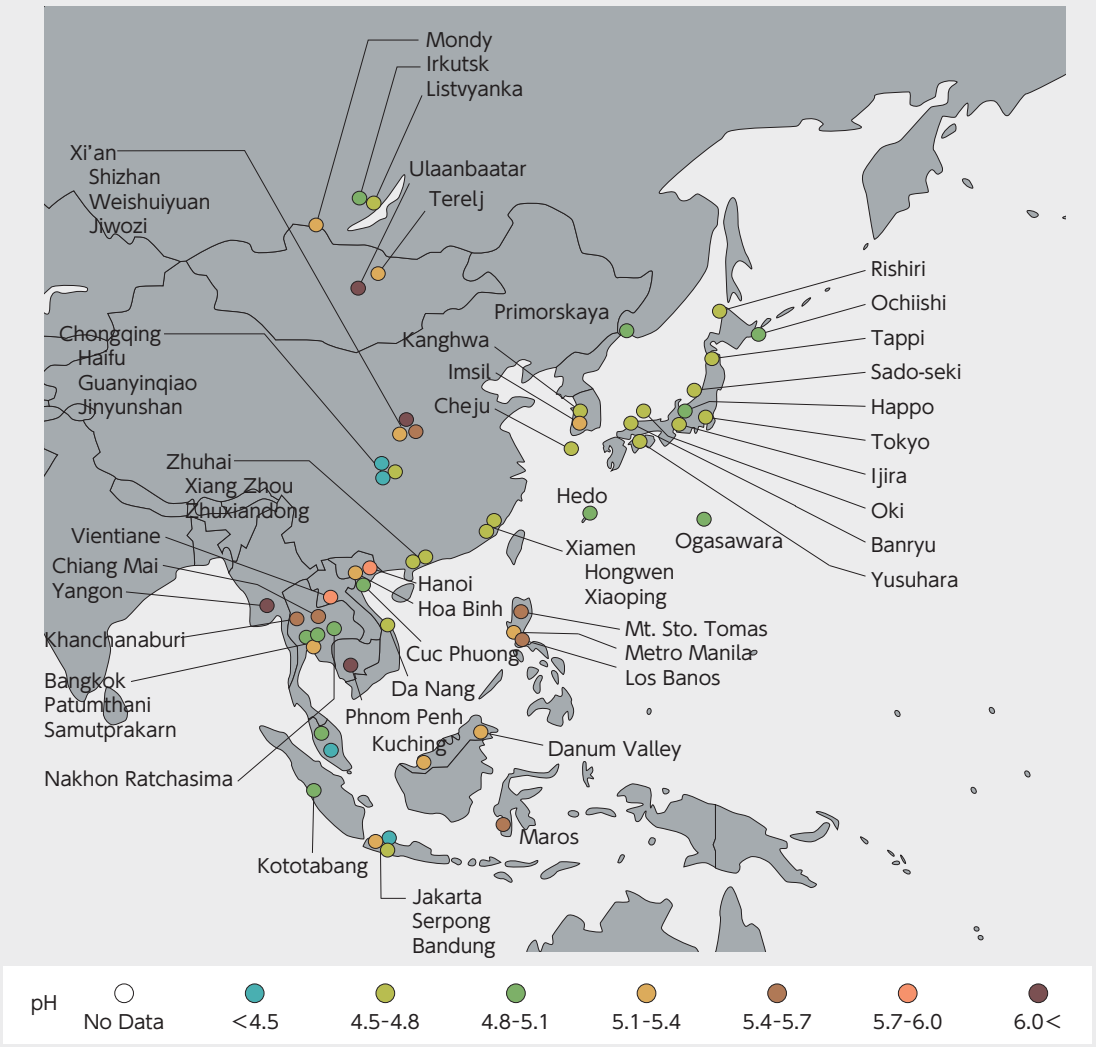
C. Measures Against Acid Deposition and Dust and Sandstorms

Recent economic expansion in the Eastern Asian region led to an increase in emissions of substances that cause acid deposition, and there are concerns that the effects of acid deposition on the ecosystem may become a serious problem in the near future.

In order to determine the current state and effects of acid deposition, and to establish regional cooperation systems related to this issue, the Acid Deposition Monitoring Network in East Asia (EANET) has been in full operation since 2001. Under the Japanese government's initiative, thirteen countries in the Eastern Asian region participate in the EANET which has accumulated reliable data by monitoring acid deposition through a common methodology.

The participating countries in the EANET continued discussion on an instrument to provide a solid base for making financial contributions to the EANET, in accordance with the decision made by the seventh session of Intergovernmental Meeting held in 2005. As a result, the "Instrument for Strengthening EANET" was adopted and signed at the 12th session of the Intergovernmental

Figure 2-2 pH of rain water in EANET region (Average pH 2005-2009)



Note 1: Based on EANET publications.
Note 2: Measurement methods were based on the EANET technical manuals, with QA/QC conducted.
Note 3: For some sites, the average pH was calculated based on following time period:

Guanyinqiao:	2005～2007	Kuching:	2008～2009
Haifu:	2008～2009	Yangon:	2007～2009
Weishuiyuan:	2005～2006	Nakhon Ratchasima:	2006～2009
Maros:	2008～2009	Cuc Phuong:	2009
Tokyo:	2007～2009	Da Nang:	2009

Source: EANET The First Assessment Report on the State of Acid Deposition in East Asia, 2007

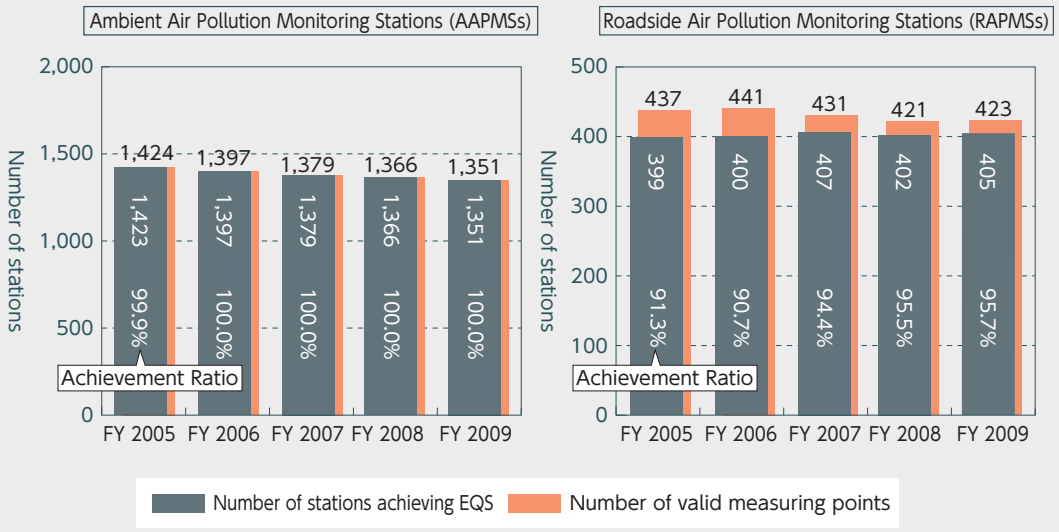
Meeting held in November 2010.

Domestically, Japan has been conducting the monitoring of wet and dry deposition, inland water including lakes, and soil and vegetation, based on the "long-term trans-boundary air pollution and acid deposition and monitoring program." This program is used for early detection of adverse effects of trans-boundary air pollution and acid deposition, better understanding of long-range transportation of air pollutant and long-term trends, and prediction of their future effects.

Regarding dust and sandstorms (DSS), regional cooperation in measures against DSS in the Northeast Asian region has been discussed at meetings such as the Tripartite Director General Meeting on Dust and Sandstorms among China, Japan and Korea. Collaborative research activities on DSS launched in 2008, based on the agreement reached at the "9th Tripartite Environmental Ministers Meeting" among China, Japan and Korea) held in December 2007. Efforts will be further strengthened in light of the collaborative plan on environmental cooperation adopted at the "12th Tripartite Environment Ministers Meeting among China, Japan, and Korea" in May 2010.

Domestically, Japan has been conducting fact-finding studies since FY 2002 to determine the physical properties (e.g. particle diameter) and chemical properties (e.g. chemical components) of DSS, with studies being conducted at five sites. In addition, a monitoring network with advanced DSS observation equipment (i.e. Light Detection and Ranging, or LIDAR equipment) is being established under cooperation with the National Institute for Environmental Studies in order to ascertain the state of DSS inflows to Japan and to contribute to the creation of an international monitoring network. Furthermore,

Figure 2-3 Changes in Achievement of Nitrogen Dioxide EQS (FY 2005 to FY 2009)



Source: Ministry of the Environment, "FY 2009 Monitoring Results of Hazardous Air Pollutants,"

real-time observation data gained at a monitoring network composed of the LIDAR equipment installed in Japan and other countries has been provided on a website of the Ministry of the Environment, since FY 2007.

(2) Measures to Conserve Water Environment

A. Setting Environmental Quality Standards

Currently, the Environmental Quality Standards for water pollution covering substance related to health items, include 27 substances set for public waters and 28 substances set for groundwater, such as cadmium, lead and other heavy metals, trichloroethylene and other organochlorine compounds, and simazine and other agricultural chemicals. In FY 2010, the government made a reassessment of the cadmium standard values. Also, the government conducted the water quality measurements and gathering of knowledge and experiences for items other than those covered by water quality EQSs, such as specified monitoring items (currently 26 substances for public waters and 24 items for groundwater).

As for substances related to the conservation of the living environment, various standards have been established for items such as BOD, COD, dissolved oxygen (DO), total nitrogen, total phosphorus, and total zinc. For the purpose of water-utilization, the environmental quality standards are specified for each type of designated water area. Also, the government studied the nation-wide soundness indicators of water environment. "*Mizube-no-Sukoyakasa-Shihyou* (*Mizu-Shirabe*)," which had been organized as indicators for realizing good water environment according to regional characteristics, as well as the assessment of water quality. The government also conducted long-term continuous measurements for setting environmental standards such as lower-layer DO in oceans and lakes.

B. Measures for Conserving Water Environments in Public Waters (Lakes and Enclosed Coastal Seas)

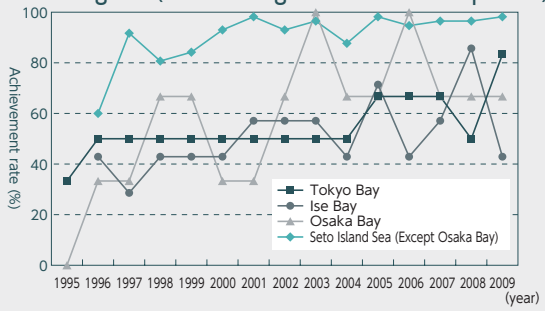
As a measure against eutrophication in lakes, the Water Pollution Contorol Law regulates the nitrogen and phosphorus in charged effluent. There are 320 lakes under the nitrogen control, and 1,393 lakes under phosphorus control. The Environmental Quality Standards (EQS) of nitrogen and phosphorus in lakes are specified for each type of designated water area for a total of 115 water regions including Lake Biwa.

For the lakes whose water quality could be sufficiently conserved by the regulations of the Water Pollution Control Law alone, the regulation will be applied based on the Law concerning Special Measures for Preservation of Lake Water Quality (Law No. 61 of 1984), and the lake will be designated as a lake that requires the emergency restoration of lake water quality, followed by the development of a plan for the conservation of water quality and measures such as construction of sewage systems, water quality conservation projects such as river purification, and regulations for various sources of pollution. Also, the government conducted studies in order to clarify the pollution structure of lakes including Lake Biwa and to understand the relationship between phytoplankton and changes in ratios of nitrogen and phosphorus.

Among area-wide enclosed coastal areas, the Total Pollutant Load Control System (TPLCS), with COD, nitrogen and phosphorus as the target reduction items (designated items), has been implemented in the Tokyo Bay, Ise Bay, and the Seto Inland Sea, where populations and industries are concentrated and it is therefore difficult to achieve and maintain EQSs for water pollution by effluent concentration control alone. Specifically, with respect to the pollution amounts emitted from factories and businesses which are larger than a certain scale in designated areas, the measures for industrial water

discharge have been taken under guidance to observe the standards for total pollutant load control established by the governors based on a scope by the Minister of the Environment. In addition, the measures covering daily life water discharge, by maintaining sewage systems, septic tanks, agricultural community effluent treatment facilities and local night soil treatment facilities, have continued to be taken in accordance with the situation of each area, as well as, improvement of combined sewer systems. and other related measures. As a result, the water quality in these enclosed coastal areas is tending to improve, but the achievement rate of EQSs for COD, total nitrogen, and total phosphorous remains incompletely accomplished (however, most of the environmental standards for total nitrogen and total phosphorous have been achieved in the Seto Inland Sea, except for Osaka Bay), and the challenges associated with enriched nutrients have being on going.

Figure 2-4 Changes in EQS Achievement Rate in Three Coastal Regions (Total Nitrogen and Total Phosphorus)



Source: Measurement Results of Water Quality in Public Waters (Ministry of the Environment)

(3) Measures for Conserving the Soil Environment

A. Counter measures Soil Contamination in Urban Areas

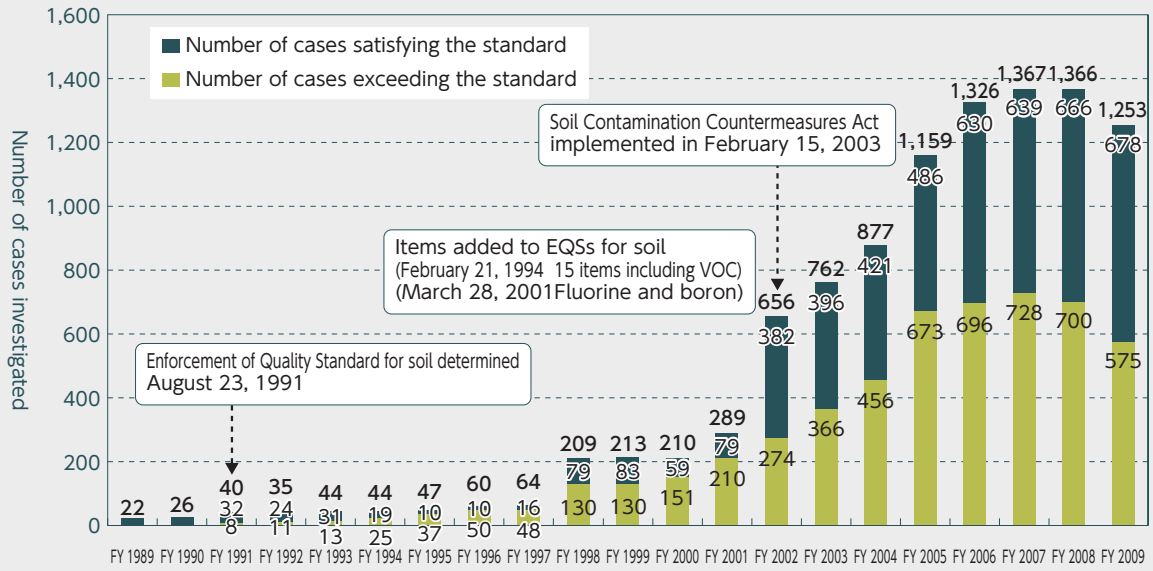
Based on the Soil Contamination Countermeasures Act, the government is conducting the investigation of lands used as sites for a plant or workplace in order to identify decommissioned specified Facilities Using Hazardous Substances. Up to the end of March 2010, 1,487 studies have been conducted since that law was enacted, and as a result of those studies, 435 sites have been found to exceed designation standards and have been registered as contaminated by designated hazardous substances (of those, 233 lands have already been de-registered after removal of contaminated soil).

Based on the Revised SCCA that was enacted in April 2010, a test for engineers to obtain qualifications as a Technical Manager, which is a position required to be present at designated investigation institutions based on the Revised SCCA was conducted in December 2010. Also, in July 2010. the government provided the Guidelines (an interim version) for businesses conducting investigations and taking measures based on the Revised Soil Contamination Countermeasures Act. Studies were also conducted to promote the prevention technologies and investigations covering low-cost and low environmental impact problems.

B. Measures against Soil Contamination on Agricultural Land

Of the 7,487ha of areas where contaminant amounts in excess of standards were detected, as of the end of March 2010 6,577ha (72 areas) had been designated as areas where measures are to be planned against soil contamination of agricultural land, 6,492ha (72 areas) of that had plans formulated for measures against soil contamination, and countermeasure work has been completed for 6,620ha (a 88.4% ratio of progress). Temporary measures until completion of countermeasure work in areas contaminated with cadmium. The development, demonstration, and promotion of technologies

Figure 2-5 Number of Soil Contamination Cases Identified by Fiscal Year



Source: Ministry of the Environment, "The Results of the Survey on Enforcement Status of the Soil Contamination Countermeasures Act & Numbers and Trends of Soil Contamination Investigations and Countermeasures in the FY 2009"

to limit crops that absorbing cadmium from soil are also being conducted.

In April 2010, the content standard for cadmium in rice based on the Food Sanitation Act was revised from less than 1.0ppm to below 0.4ppm. As a result, from June onward, designation requirements for areas of soil on agricultural land requiring countermeasure was changed from "areas with 1mg or more" per 1kg of rice to "areas with more than 0.4mg" per 1kg of rice by promulgating and enacting the government ordinance on the Partial Amendment to the Enforcement Ordinance of the Agricultural Land Soil Pollution Prevention Act.

3. Building a Sound Material-Cycle Society

(1) Let's Start Practicing the 3Rs

A. Introduction

In Part 1, we gave an overview of the waste and recycling situation in Asia and the rest of the world and reviewed the directions of overseas expansion by venous industries, from the perspective of how Japan can contribute to solution of the world's problems with waste. In this section, we will take a look at the state of Japan's progress toward building a sound material-cycle society.

B. In Order to reduce Waste Generation. Start from What We Can Do

The Basic Act on Establishing a Sound Material-Cycle Society prioritizes various measures for waste and recycling. That is, the priorities are assign to generation control, second to reuse, third to recycle, fourth to heat recovery, and then finally to proper treatment. An inspection report for the progress of the FY 2010 Basic Plan for Establishing a Sound Material-Cycle Society pointed out that efforts for the first-priority, generation control are insufficient. Here we will look at generation control.

Figure 3-1 shows changes in Japan's generation of municipal solid waste by type. In recent years, kitchen waste and paper waste made up approximately 70% of the total. For that reason, we will focus particularly on generation control of kitchen and paper waste.

1) Generation control of kitchen waste (particularly untouched food and leftovers)

The photograph (from Kyoto City survey results) shows untouched food (food that was disposed of without being eaten at all) that was disposed of as municipal solid

Figure 3-1 Volume of Municipal Solid Waste by Type (Breakdown)