

## ENVIRONMENTAL POLLUTION

Progress made but new challenges must be faced

### Introduction

Environmental pollution in Japan has accompanied industrialization since the Meiji period (1868-1912). In the 1960s diseases caused by factory-emitted water and air pollution were found in areas throughout Japan. The strict environmental protection measures that were subsequently implemented have reduced pollution caused by such emissions. Important problems remain to be solved, however, with action being necessary to, for example, reduce greenhouse-gas and particulate-matter emissions and increase recycling of industrial and household waste. Global environmental issues like the destruction of the ozone layer and global warming cannot be resolved by a single country, so it is clear that the cooperation of all countries is increasingly necessary to protect the environment. Japan plays an active role in this global effort.

The Third Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP3) was held in Kyoto in December 1997 and adopted the Kyoto Protocol regulating emissions of carbon dioxide and other greenhouse gases in the period of 2008 to 2012. Japan ratified the protocol in June 2002. Although the United States has refused to ratify, Russia's ratification in 2004 meant that the criteria necessary for formal implementation had been satisfied, so the treaty came into force in February 2005. Japan is moving forward with a wide range of initiatives in an effort to create a "low-carbon society" with both a healthy environment and a healthy economy.



### Minamata Bay Declared Safe

The governor of Kumamoto Prefecture declared the mercury levels in fish and shellfish from Minamata Bay safe for consumption on July 29, 1997. The governor's declaration marked the complete removal of the net that had for 23 years prevented mercury-polluted fish in the bay from entering the sea in an effort to curb the environmentally induced malady known as Minamata disease.

Organic mercury (a methylmercury compound) was released from the Chisso Minamata Plant into Minamata Bay for more than 30 years up until 1966, contaminating both people and animals. The major symptoms of Minamata disease (organic mercury poisoning) are tremors (involuntary trembling or quivering), sensory disorders in the limbs, muscular coordination failure, speech and language disorders, narrowing of the field of vision, and loss of

#### Minamata disease

This exhibition on Minamata disease was held in the city of Minamata in Kumamoto Prefecture.

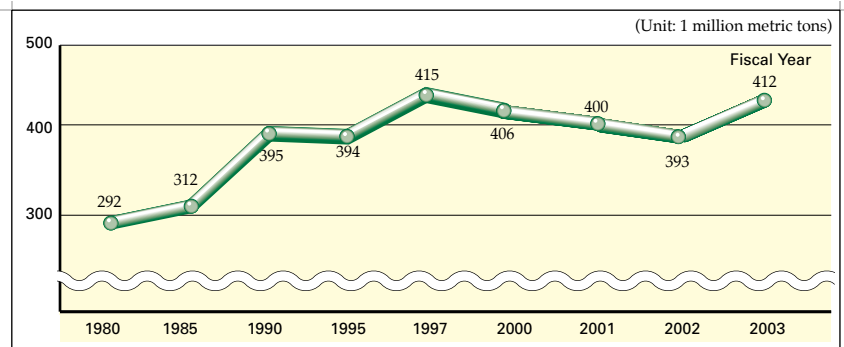
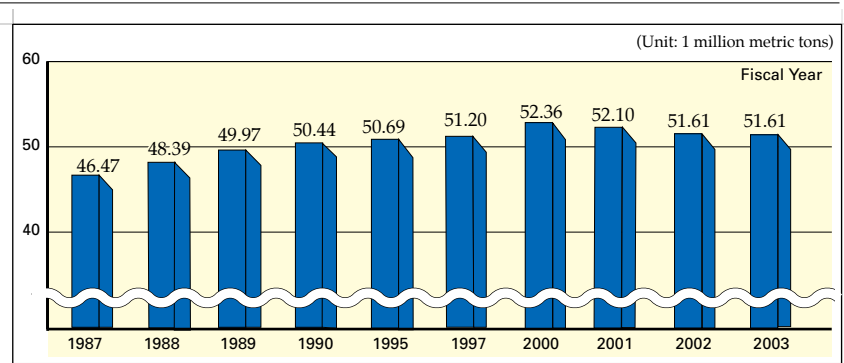
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equilibrium. Between August 1964 and July 1965, people exhibiting symptoms similar to the Minamata disease victims also appeared in great numbers in the lower part of Agano River basin in Niigata Prefecture.

Minamata disease was recognized as an environmental pollution disease in 1968. The government then established procedures for the screening and official certification of Minamata disease victims, and it paid compensation to the people so certified. Although approximately 13,000 people applied for the certification, however, only about 3,000 received it. As a result, people who had been refused certification, and therefore compensation, filed lawsuits against the national and prefectural governments and Chisso Corporation. These people for the most part saw their cases reach a settlement by the government in 1995: a lump sum was paid to non-certified victims with sensory disorders in the limbs. About 10,000 people in Kagoshima, Kumamoto, and Niigata Prefectures, including those deceased, were awarded payment. The last remaining Minamata disease compensation lawsuit, by people who had not accepted the 1995 government offer, was finally settled in 2004 with a Supreme Court ruling that recognized the administrative responsibility of the national government and Kumamoto Prefecture. In recognition that 2006 is the 50th year since the government's official acknowledgment of Minamata disease, in 2005 the government announced a number of initiatives for providing additional support to disease victims.

## Measures Against Pollution

Japan experienced a number of serious forms of environmental pollution from the 1960s to the 1970s. Besides Minamata disease, a series of other pollution-related diseases surfaced, one after another, such as *itai-itai* disease, which broke out in the Jinzu-gawa river basin in Toyama Prefecture; respiratory disorders in the Tokyo-Yokohama, Nagoya, and Osaka-Kobe industrial belts; and chronic arsenic poisoning in the Toroku district in Miyazaki Prefecture. These forms of pollution occurred as a result of the



priority placed on rapid economic growth and the downplay of standards to protect people's health and safety. The consequences led to Japan's setting strict regulations to protect the environment from the 1960s onward.

The regulation on soot and smoke emissions, enacted in 1962, was absorbed into the Air Pollution Control Law in 1968. The Water Quality Conservation Law and Factory Wastewater Control Law, both enacted in 1958, were integrated into the Water Pollution Control Law in 1970. The Pollution Countermeasures Basic Law passed in 1967 sought to create common principles and policies for pollution control in all government agencies and to promote an integrated effort to clean up the environment. The Basic Law indicates the responsibilities of the central government, local governments, and business firms with regard to controlling pollution. In addition, the Basic Law laid the framework for establishing environmental quality standards, drafting pollution-control programs, and aiding victims of diseases caused by pollution. In 1972, no-fault liability for compensation, which holds businesses responsible for health problems resulting from pollution (whether accidental or not), was introduced into various laws.

In 1993 the Basic Law for Environmental Pollution Control was replaced by the Basic Environmental Law, which was enacted to facilitate implementation of comprehensive and systematic measures to protect the environment. Under this new Basic Law, Japan is actively working to promote environmental preservation worldwide through international cooperation and a rethinking of high-volume consumption

**Total Yearly Volume of General (Non-Industrial) Waste in Japan (top)**  
Source: Ministry of the Environment, *Quality of the Environment in Japan*

**Total Yearly Industrial Waste in Japan (bottom)**  
Source: Ministry of the Environment, *Quality of the Environment in Japan*

practices in society. In 1997 the Environmental Impact Assessment Law was enacted. This law defines requirements for assessment of the environmental impact of large-scale public- and private-sector projects.

In 2001 The Environment Agency, which had been created in 1971, was upgraded to cabinet ministry level, becoming the Ministry of the Environment.

## Waste Treatment and Recycling

An issue that has become the focus of attention in Japan is disposal of industrial waste discharged by factories and businesses. The Waste Management and Public Cleansing Law of 1970 regulates the methods of disposal of certain wastes emitted by factories and businesses, such as soot, sludge, waste oil, and discarded plastic, plus other wastes. Industrial wastes discharged in Japan amounted to 412 million tons in fiscal 2003, which is about eight times the volume of general waste from homes and offices.

The Waste Management and Public Cleansing Law, as revised in June 1997, imposes stiff penalties on illegal waste disposal. The number of cases of illegal dumping has been declining, but the occurrence of several large-volume cases in fiscal 2003 and 2004 prompted the Ministry of the Environment to increase the number of staff assigned to waste and recycling monitoring.

The amount of general (non-industrial) waste generated in Japan has exceeded 50 million tons a year since 1990. This has increased the emphasis on recycling in Japan, which has one of the highest used paper recycling rates in the world. The implementation of the Receptacle Packaging Recycle Law in April 1997 placed the responsibility for recycling polyethylene terephthalate (PET) bottles, glass bottles, and paper and plastic packaging on the manufacturer.

The Fundamental Law for Establishing a Sound Material-Cycle Society was enacted in 2000 to serve as the basis for a comprehensive and systematic approach to waste and recycling. It was followed by a number of other new recycling laws covering specific areas such



**Itabashi Incineration Plant**

This waste incineration facility is located in Tokyo's Itabashi Ward.  
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as home appliances, food waste, construction materials, automobiles, and personal computers.

On an international level, Japan proposed the "3R Initiative" at a G8 summit in 2004. Approved by the G8 nations, this initiative seeks to globally promote the 3Rs (reduce, reuse, and recycle) with the objectives of reducing the amount of waste created, reusing materials where possible, and then recycling them when they can't be reused.

## Other Pollution Problems

**Dioxin:** Because of the limited land area in Japan, securing space to dispose of trash is a perennial issue. Japan has resorted to burning trash as a matter of necessity. In the 1990s pollution from dioxin released by trash incinerators became a major issue in society. The term "dioxin" refers to the compound tetrachlorodibenzo-p-dioxin, which has a propensity to accumulate in the body and to cause cancer and birth defects.

The Law Concerning Special Measures Against Dioxin went into effect in 1999. This law included provisions for dioxin emission regulation, the monitoring of effects on health and the environment, and the preparation of government plans for reducing emissions. Japan achieved its target for dioxin emission reduction in 2004, when emissions were estimated to be approximately 95% less than those in 1997. Daily dioxin intake has also been steadily decreasing and is now estimated to be less than the tolerable daily intake level of 4 picograms per kilogram of body weight.

**Vehicle emissions:** As a result of the imposition of various rules and regulations, considerable progress has been made in limiting air pollution from factory smokestacks, but in Japan's major cities air pollution from the



**Outer Central Breakwater Landfill Site**

This huge landfill site located on reclaimed land in Tokyo Bay is used for disposal of solid waste generated by Tokyo's 23 wards.  
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nitrogen oxides and particulate matter emitted by motor vehicles continues to cause health problems. The majority of the particulate matter and approximately 80% of the nitrogen oxides emitted by motor vehicles comes from diesel engines. To address this problem, in 2002 the national government implemented legislation adding particulate matter restrictions to existing nitrogen oxide restrictions. In addition, restrictions that apply to trucks, buses, and diesel passenger cars limit the types of vehicles that can be operated in designated major metropolitan areas.

Dissatisfied with the pace of national government efforts to reduce air pollution, in 2003 Tokyo, Saitama, Chiba, and Kanagawa prefectures implemented even stricter rules covering the particulate matter emissions of diesel trucks and buses. Vehicles that do not meet the new standards have to be replaced or have special filters installed.

**High-tech pollution:** Another issue in Japan is environmental pollution that is caused by high-tech pollution created by cutting-edge industries, such as integrated circuit production. Ground water pollution is caused by solvents. Examples are trichloroethylene, used for washing integrated circuits, and tetrachloroethylene, used largely in dry cleaning. Both of these chemicals are carcinogenic. The Water Pollution Control Law, revised in 1989, incorporated regulations to restrict toxic substances in ground water, including these two. A further revision, in 1996, granted governors the power to order the polluter to be responsible for clean up.

**Other pollution types:** The government has taken measures to cope with a variety of other forms of pollution and environmental disruption, including noise, vibration, ground subsidence, offensive odors, and pollution by agricultural chemicals. The number of complaints about noise is greater than for any other type of pollution. The greatest number of complaints concern noise from factories, but

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| 1878 | Drainage from the Ashio Copper Mine, Tochigi Prefecture, contaminates nearby rivers.   |
| 1893 | Air pollution from the Besshi Mine Field, Ehime Prefecture, is first noticed.  |
| 1953 | Minamata disease appears in Kumamoto Prefecture.   |
| 1955 | First public reports of <i>itai-itai</i> disease, previously diagnosed by a doctor in Toyama Prefecture.                                       |
| 1963 | Marked increase in the number of cases of asthma in Yokkaichi, Mie Prefecture, is first connected to air pollution from an industrial complex. |
| 1964 | Minamata disease appears in Niigata Prefecture.  |
| 1967 | Pollution Countermeasures Basic Law is passed.   |
| 1968 | Air Pollution Control Law is passed.   |
| 1971 | Environment Agency is established.   |
| 1972 | Nature Conservation Law is passed.   |
| 1974 | National Institute for Environmental Study is established.   |
| 1980 | Research begins on acid rain.  |
| 1983 | Dioxin is found in emissions from trash incineration.  |
| 1988 | Ozonosphere Protection Law is passed, with provisions to reduce the use of chlorofluorocarbons.  |
| 1989 | Air Pollution Control Law is amended to control the use of asbestos.   |
| 1993 | Basic Environmental Law is enacted.  |
| 1995 | Minamata disease victim organizations accept a government offer to provide support to the victims.   |
|      | Sodium leak occurs at the Power Reactor and Nuclear Fuel Development Corporation's fast breeder reactor "Monju."                               |
| 1997 | Radiation leak occurs at the Tokai nuclear fuel reprocessing plant operated by the Power Reactor and Nuclear Fuel Development Corporation.     |
|      | Third Conference of Parties to the United Nations Framework Convention on Climate Change held in Kyoto.  |
|      | Receptacle Packaging Recycle Law is implemented.   |
| 1999 | Environmental Impact Assessment Law is implemented.  |
|      | Accident at JCO Co., Ltd. exposes workers to high levels of radiation; surrounding residents are evacuated.                                    |
|      | Law Concerning Special Measures Against Dioxin is implemented.   |
| 2000 | Fundamental Law for Establishing a Sound Material-Cycle Society is implemented.  |
|      | Environment Agency is upgraded to Ministry of the Environment.   |
| 2001 | Specific Household Electrical Appliance Recycling Law is implemented.  |
|      | Law Concerning the Promotion of the Recycling of Food Resources is implemented.  |
| 2002 | Law Concerning the Recycling of Construction Materials is implemented.   |
|      | Law for Recycling of Scrapped Automobiles is implemented.  |
|      | Restrictions on particulate matter vehicle emissions are added to nitrogen oxide restrictions.   |

construction, traffic, airport, and railroad noise have all generated a considerable number of complaints.

## Pollution and Pollution Control in Japan