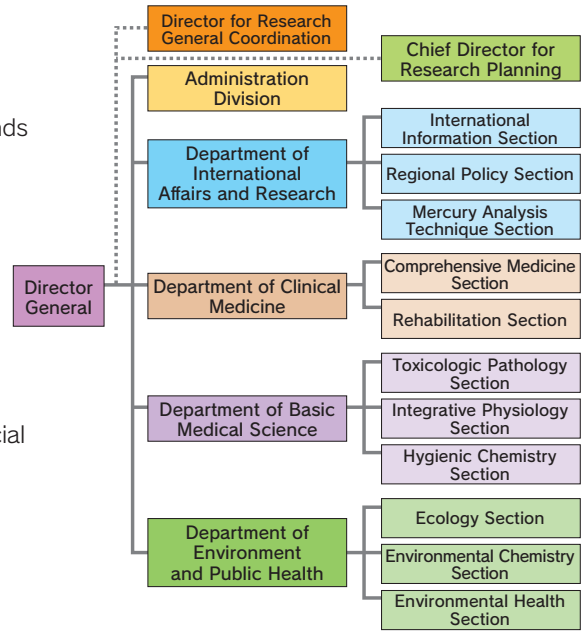
Ministry of the Environment, Japan

National Institute for Minamata Disease

(National Institute for Minamata Disease and a distant view of Minamata City)

History and Organization

1956	Official recognition of Minamata disease
1965	Official recognition of Minamata disease in Niigata
1968	Official government announcement that Minamata disease is caused by methylmercury (MeHg) compounds in factory effluents
1971	Establishment of Environmental Agency
1978	Establishment of National Institute for Minamata disease (NIMD)
1986	Designation of NIMD as a WHO Collaborating Centre
2001	Renaming of Environmental Agency as Ministry of the Environment Opening of Minamata Disease Archives
2006	Participation in the 50th anniversary project of the official recognition of Minamata disease
2010	Legal designation of Minamata Disease Archives as a research institute for managing academic materials
2013	The Conference of Plenipotentiaries on the Minamata Convention on Mercury in Minamata and Kumamoto



Long-term Aim and Mid-term Plan

Long-term aim

The long-term aim of NIMD is to prevent the recurrence of environmental pollution in Japan and worldwide, and to contribute to improving the well-being of affected areas. This will be achieved through comprehensive investigations and surveys of Minamata disease and MeHg—the cause of Minamata disease, collation of data and published research findings, and provision of information on them.

Mid-term plan 2015 (2015-2019)

The research plan will be reviewed as needed.

Priority Research and Activities

- ○ Investigation into the health effects of MeHg
- ○ Investigation into the environmental dynamics of MeHg
- ○ Contribution to the improvement of community welfare
- ○ Contribution to international cooperation

Basic Guidelines for Research and Activities

■Promotion of Project Research

To promote research in important fields by using a cross-sectional team consisting of NIMD personnel and external investigators

■Promotion of Fundamental Research

To improve long-term research abilities and train NIMD personnel

■Activities

To address matters associated with regional and international contributions throughout NIMD

System for Research and Activities

To classify project and fundamental research and related activities into six groups based on specific purposes, and to promote cross-sectional research investigations and activities

Previous Achievements

Key study results (cited by researchers worldwide)

- ■ Impact of MeHg on developing fetuses
- ■ Involvement of oxidative stress in MeHg toxicity
- ■ Mechanism of MeHg toxicity in the central nervous system

International contribution

■Field study on mercury contamination as well as educational and technical dissemination of mercury monitoring techniques (see figure in right-hand panel)

■Acceptance of overseas trainees

Training in mercury analysis technique and imparting of education regarding MeHg toxicity and Minamata disease

■Monitoring of mercury concentrations in the air

Cooperation with the EU-led global monitoring project

■International forum for mercury (NIMD Forum)

Community contribution

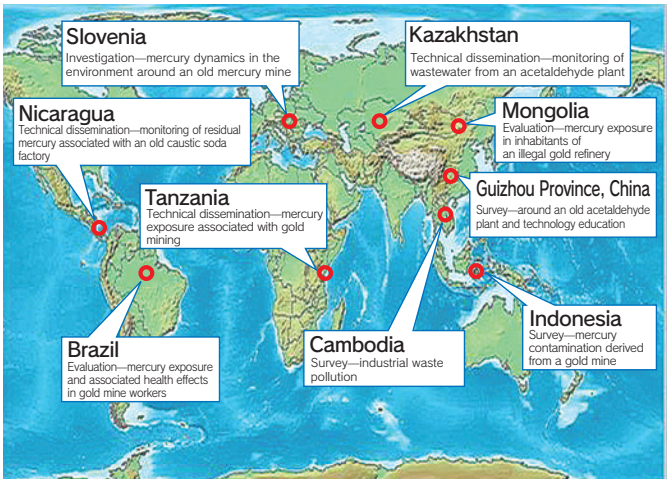
■Periodic environmental monitoring of mercury in Minamata Bay

■Community development project for home-care support

Partnership with external institutes

■Cooperative research with universities and other institutions in Japan and overseas

■Conclusion of the agreement with joint graduate school and enhanced partnership



Major NIMD cooperative efforts regarding mercury problems on a global scale

Research Overview

Project Research

Basic research on prevention and treatment of MeHg toxicity

We will examine the effects of drugs and medical attention on MeHg toxicity using cultured cells and experimental animals in order to provide both prevention and treatment of MeHg poisoning. (Pathomechanism Group)

Study to evaluate the effect of MeHg exposure and therapy on human health

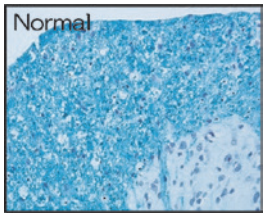
In addition to studying the objective diagnostic methods of MeHg poisoning by using magnetoencephalography (MEG) and magnetic resonance imaging (MRI), we have been developing an effective therapy based on the pathogenetic mechanism of symptoms. (Clinical Group)

Research on air-sea exchange of mercury and its magnification among biota in some areas of the sea around the islands of Japan using atmospheric mercury monitoring network

We are investigating the air-sea exchange of mercury and its magnification among biota in some areas of the sea around Japan. In addition, long-term monitoring of mercury in the air and rainwater will continue for evaluating the effectiveness of the Minamata Convention on Mercury. (Nature Environment Group)

Development of a simple method for the determination of MeHg in least developed countries

We are committed to assist in the protection of human health in least developed countries by developing a simplified tool for monitoring exposure to MeHg. (International Contribution Group)



Vacuolar degeneration of the spinal cord (arrows indicate degeneration sites in a MeHg-injured rat)

Gold extraction by forming a mercury amalgam in a small scale gold mining

MEG (left) and MRI (right) examination for the study of MeHg intoxication

Fundamental Research

1 Pathomechanism Group

The aim of this group is to elucidate the molecular mechanisms and toxic action of MeHg. The results will contribute to an understanding of the early pathological condition and an assessment of toxicity as well as to the development of therapy and protection based on the molecular mechanisms of MeHg toxicity.

2 Social and Information Service Group

The aim of this group is to research the regional revitalization of policy and vision of the local governments. The results will connect to the policy proposal on Minamata. Another objective is to elucidate the problems related to risk perception of MeHg in society and to practice effective dissemination and communication about relevant risk information.

3 Exposure and Health Effects Assessment Group

This group is conducting epidemiological surveys in some populations that are exposed to high levels of MeHg. The group also conducts basic research concerning segments of the population that are particularly sensitive to MeHg exposure, such as fetuses or people suffering from various diseases, to contribute to appropriate risk assessment.

4 Nature Environment Group

This group investigates the spread and impact of environmental pollution by mercury. Studies are being conducted on mercury dynamics and the impact on the marine environment and ecosystem in Minamata Bay and its surrounding areas in the sea as well as the changing chemical form and transport of mercury in the air.

5 International Contribution Group

The aim of this group is to prevent mercury pollution and through a support of mercury study, promote the formation of a network of researchers in every developing country that has mercury pollution.

Efforts for regional revitalization with Minamata citizens

Collection of hair which is useful as an indicator for MeHg exposure

Continuous monitoring of mercury in the rainwater using an automatic wet-only sampler

Overview of Activities

1 Clinical Group

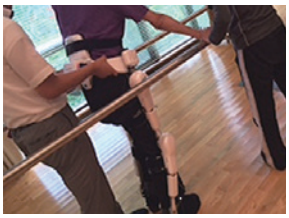
- In addition to day care and rehabilitation services for outpatients with Minamata disease (mainly fetal and infantile Minamata disease), seminars are held to disseminate information on these matters and required skills.
- We have been supporting the care of elderly people in the area damaged by Minamata disease in cooperation with social welfare councils of Minamata and Izumi city.
- We also digitize the pathological specimens and other materials for permanent preservation.

2 Social and Information Service Group

- Minamata Disease Archives has actively collected data and materials associated with Minamata disease and mercury. These data and materials will be utilized for the presently ongoing research. In addition, an information service will be provided via the exhibition room and lecture hall.
- We measure the level of mercury in the hair for interested visitors and provide information about MeHg intake.

3 International Contribution Group

- We are conducting international cooperation studies with developing countries by inviting foreign researchers or dispatching researchers from NIMD. Additionally, we are undertaking training and a technology transfer for the acquisition of the analysis technique of mercury.
- In order to discuss and disseminate information on the outcomes of mercury study among mercury researchers, we invite mercury researchers from across the world for NIMD forum.
- We support the International Conference of Mercury as a Global Pollutant (ICMGP) through a satellite workshop that is organized by NIMD.
- We will create plans for the prevention of damage to the health by providing information on mercury and measuring the total mercury concentration in hair samples that are collected from the residents of countries facing mercury pollution.



Gait training with Hybrid Assistive Limbs (HAL)

Community living

NIMD forum

International cooperation with JICA (Kazakhstan)

Minamata Disease Archives

Minamata Disease Archives was established as an attached facility of NIMD in 2001. It serves a number of functions such as promoting a better understanding of Minamata disease, communicating the lessons learned from Minamata disease and mercury, and contributing to the development of research on these fields.

- Organization and provision of documents and materials on Minamata disease and mercury
- To provide information through exhibitions and lectures
- To organize meetings for an academic and scientific exchange on issues related to Minamata disease

Minamata Disease Archives

NIMD Logo.

The river and sea of Minamata are depicted in the form of the Japanese letter for "水 (water)". The victims of Minamata disease are symbolized as an adult on the left side and as a fetus on the right. We created this logo in blue and green; while being beautiful natural colors per se, the usage also implies that we must never again have victims of environmental pollution.

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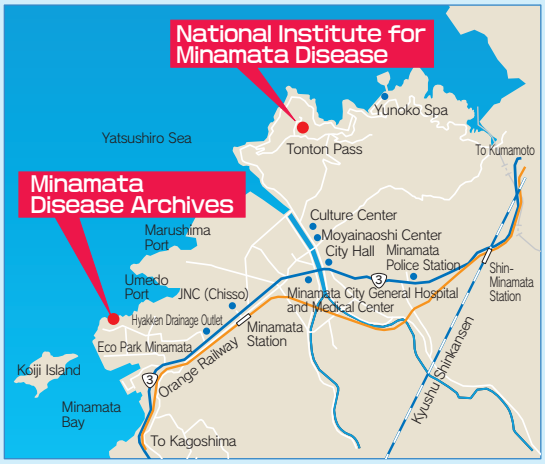

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