

Initiative on Environmental Health for Children in Japan

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環境省

Ministry of the Environment

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Our experiences in Japan

- **Pollution related Disease s**
 - **COPD** ← Air Pollution
 - **Minamata Disease** ← Methyl Mercury
 - **Itai Itai Disease** ← Cadmium
 - **Chronic Arsenic Poisoning** ← Arsenic

* COPD : Chronic obstructive pulmonary disease

Air Pollution in 1955



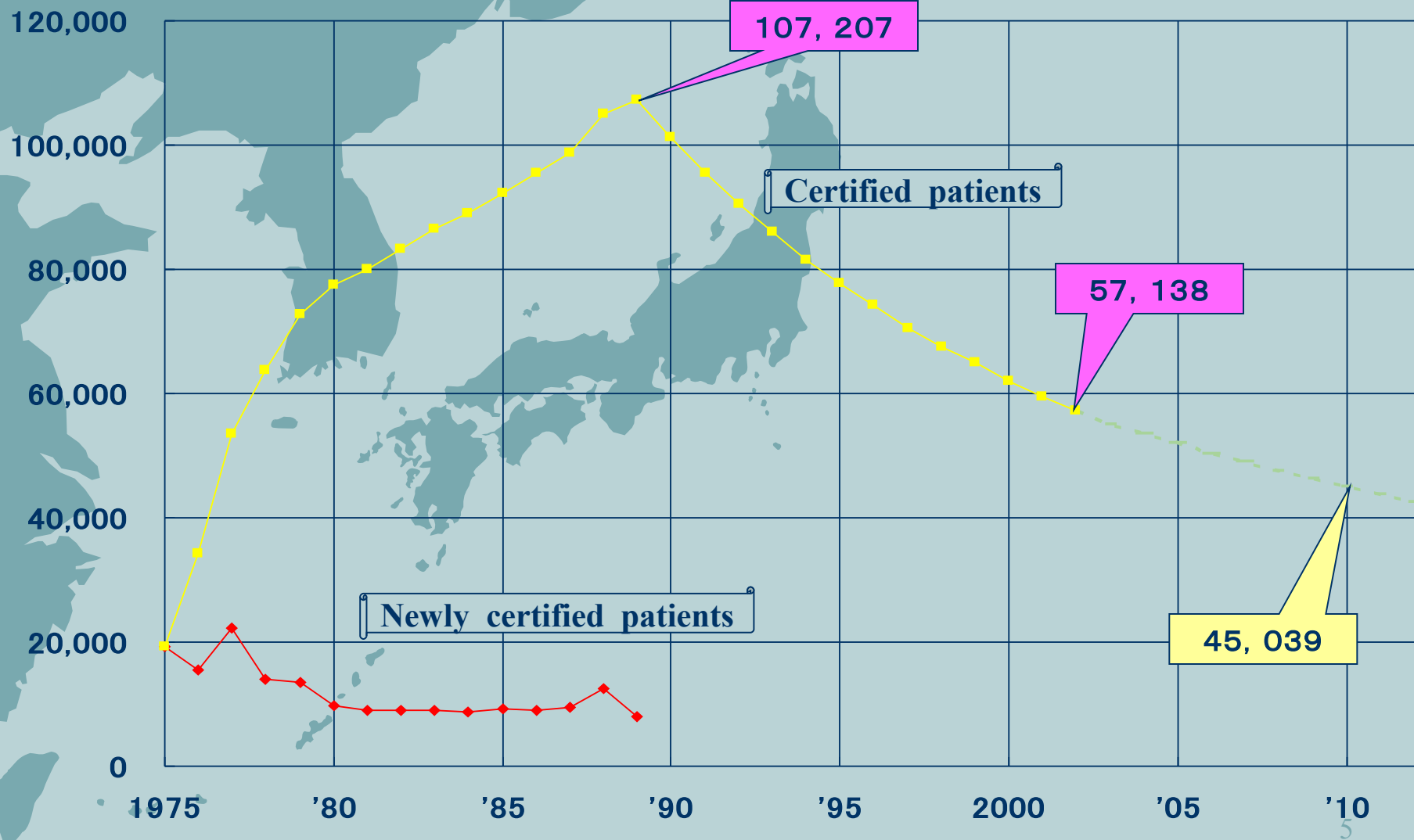
Photograph Yokkaichi-city

in 1995



Photograph Yokkaichi-city

Trend of certified COPD patients



SORA project

- Study On Respiratory disease and Automobile exhaust.
- SORA project is an epidemiological study on adverse effects on respiratory health of traffic-related air pollution, instituted by the Ministry of the Environment.
- The aim of the project is to evaluate the correlation between the onset of bronchial asthma and automobile exhaust exposure in the areas along the arterial roads

Overall Design of the Project

① Schoolchildren Prospective Cohort Study
a five-year follow-up study program on
16,000 primary-school children

(2005-
2010)

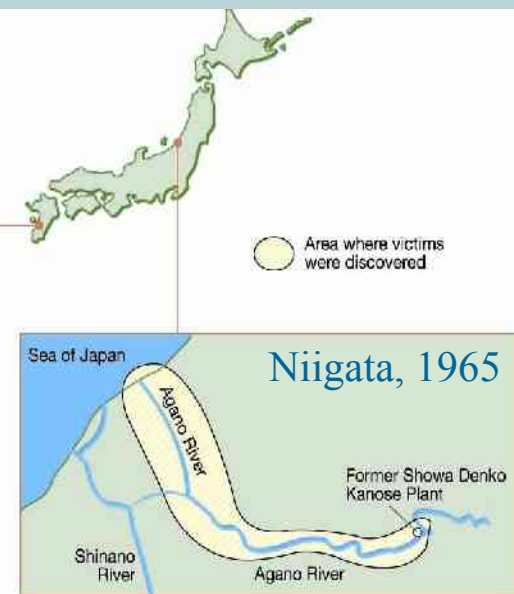
② Preschool-children case-control study

(2006-
2010)

③ Study on adults (2007 and the years to follow)

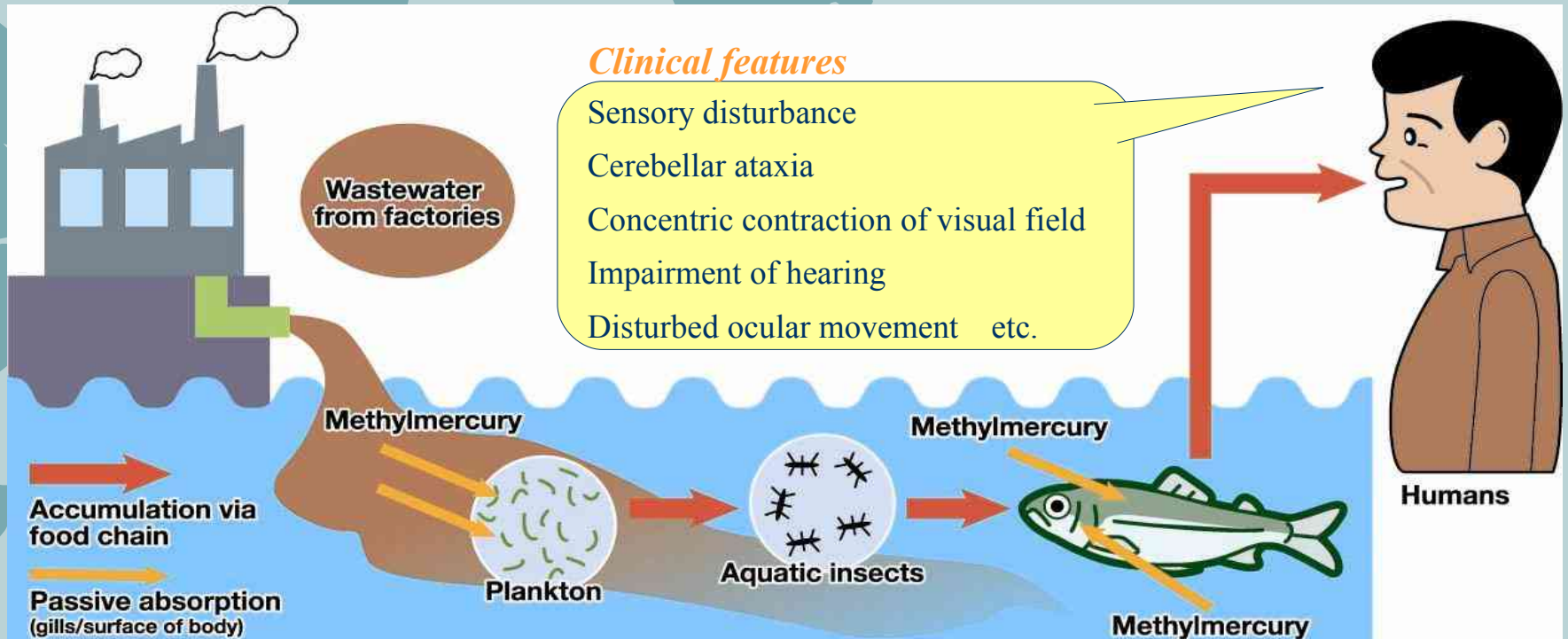
Minamata Disease

A toxic disorder of the nervous system caused by the consumption of fish and shellfish contaminated by **methylmercury** compound discharged from a chemical plant.



Clinical features

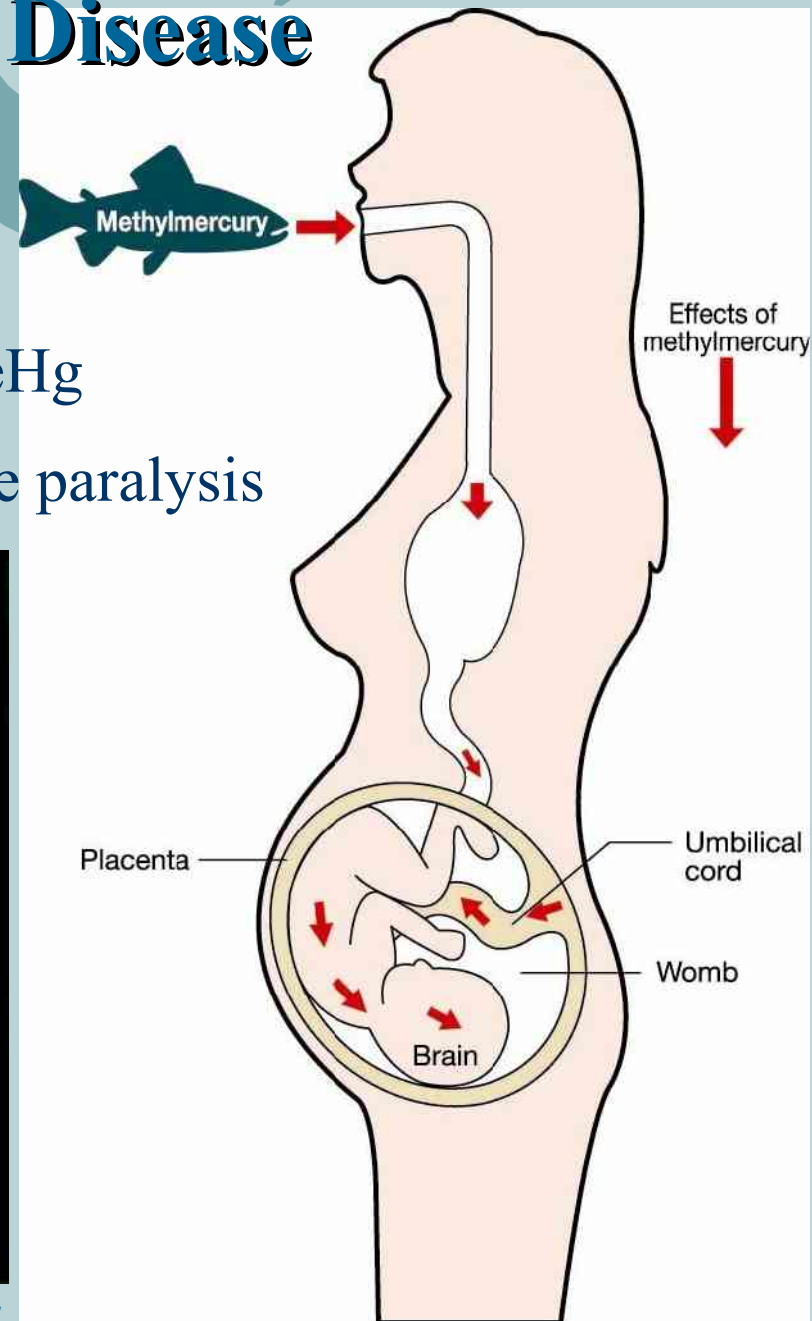
- Sensory disturbance
- Cerebellar ataxia
- Concentric contraction of visual field
- Impairment of hearing
- Disturbed ocular movement etc.



Fetal Minamata Disease



- Caused by **intrauterine exposures** to MeHg
- Impairments similar to cerebral infantile paralysis



Photos by W. Eugene Smith, Minamata

Miami Declaration in 1997

- Declaration of the Environment Leaders of the Eight on children's Environmental Health
 1. **Environmental Risk Assessments & Standard Setting**
 2. **Children's Exposure to Lead**
 3. **Microbiologically Safe Drinking Water**
 4. **Air Quality**
 5. **Environmental Tobacco Smoke**
 6. **Emerging Threats to Children's Health from Endocrine Disrupting Chemicals**
 7. **Impacts of Global Climate Change to Children's Health**

SAICM in 2006

Strategic Approach to International Chemicals Management

- “Dubai Declaration” (A high-level declaration)
 - a policy for protection of children from exposure to chemicals which may pose a threat to their lives.
- "Global Action Program"
 - 1. Develop guidance materials to assist in the preparation of initial national assessments of children’s environmental health and the identification of priority concerns; develop and implement action plans to address those priority concerns.
 - 2. Establish needed infrastructure for research that will reduce uncertainty in risk assessment.
 - 3. Develop mechanisms to share and disseminate information that can be used to reduce uncertainty in risk assessment.
 - 4. Eliminate as a priority any child labour that involves hazardous substances.

Present chemical risk management with consideration for the environment health of children

- Official announcement of the "Food Safety Risk Assessment for Pregnant Women Related to Methylmercury in Seafood".
- Warning related organizations to oversee the lead (Pb) concentration in accessories for children during the manufacturing, logistics, of sales process.
- Use the children's amount of food ingested as default value when determining environmental quality standards for dioxin in the soil.

Ongoing researches concerning the environmental health of children

- SORA project
- The post birth effects of exposure to low levels of methyl mercury during the fetal development period
- The research of Japanese children's data for the health risk assessment
 - the exposure media to environmental chemicals, such as, unique activity environment and behavioral patterns of children
 - pulmonary ventilation quantities
 - soil intake amount
 - food intake quantities, etc

The Commission for Environmental Health of Children (2005-2006)

Report of the Commission (Outline)

- **Issues specific to children in the field of environmental health**
 - Vulnerabilities
 - Unique exposure route
 - Characteristics of the disposition
- **Recommendations for the direction of the research promotion and measures in the future**

Issues specific to children in the field of environmental health 1

- Vulnerabilities during the state of development
 - functions of the blood-brain barrier are incomplete until the 6th month after birth.
 - young children do not have sufficiently developed temperature regulatory and perspiratory gland functions.

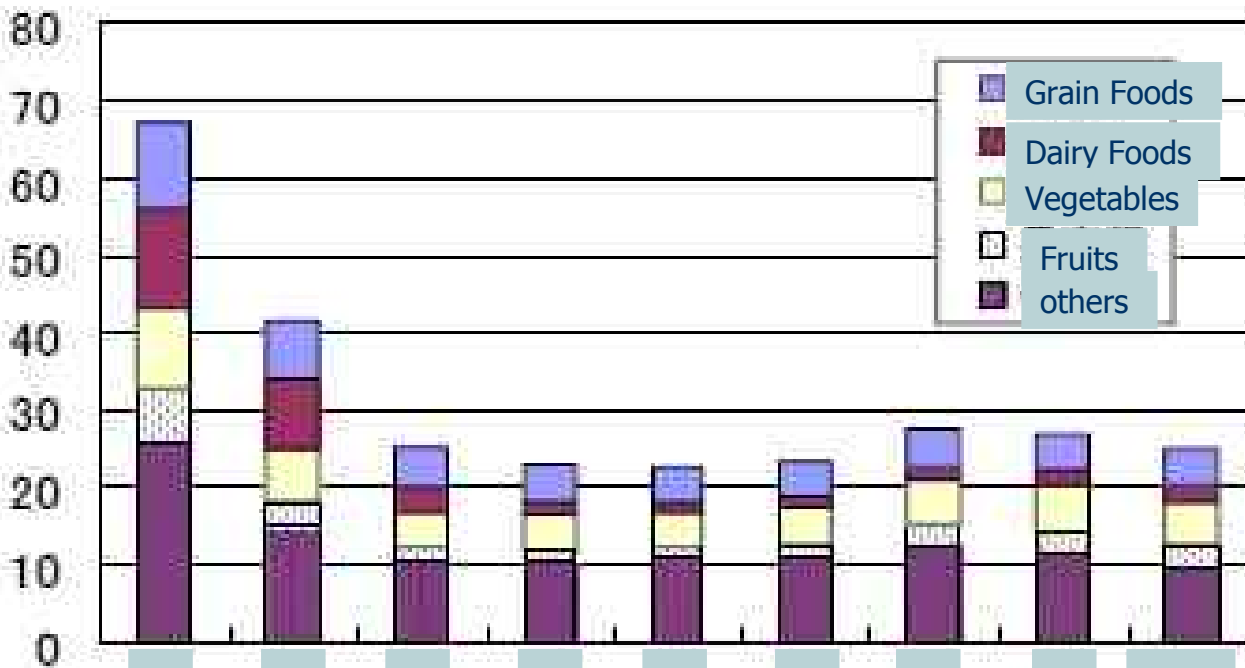
Issues specific to children in the field of environmental health 2

- Unique exposure route
 - unique food intake manner (milk, fruit, etc)
 - unique behavior("mouthing", crawl, the space of infants inhabit, etc)



Food Intake per Age and Weight by Food Groups (Based on the data from “The National Nutrition Survey in Japan, 2002”)

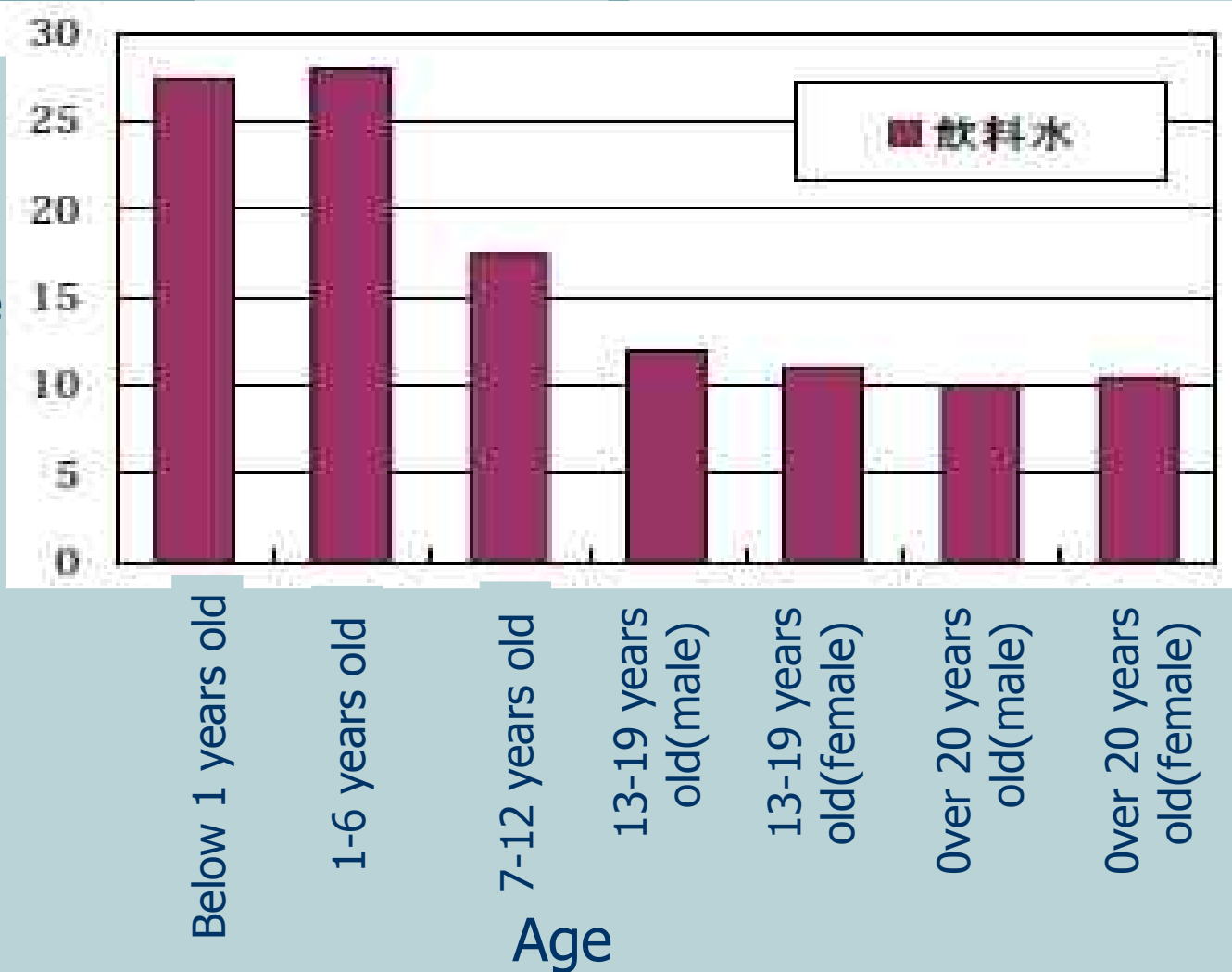
Food Intake per Age and Weight (g/kg/day)



Age

Fluid Intake per Age and Weight (Laura M.P. et al.1992 [ILSI Press, 1992])

Fluid Intake
(g/kg/day)



Issues specific to the children in the field of environmental health 3

- Characteristics of the disposition of hazardous materials from the environment
 - the physiological functions available during the development period.
 - **digestive absorption rate of suckling babies**
 - **The distribution of chemicals in the body varies depending on the constitution of water and fat in the body.**
 - **enzymatic activity varies on the age**
 - **hazardous materials excreted via the kidney varies on the renal function**

Recommendations for the direction of the research promotion and measures in the future

1. Necessity to raise issues from the viewpoint of environmental health for children
2. Enhancement of research infrastructure
3. Promotion of priority projects
4. Promotion of the risk assessment for paying attention to route of the exposure and Vulnerabilities of children
5. Promotion of risk communication
6. Cooperation between government agencies and international organizations



Promotion of priority projects

1. Make up the data book for the exposure assessment of children to chemicals in the environment
2. Development of health risk assessment methods for children, paying attention to the vulnerability of children
3. Promotion of epidemiological research on children and the environment
4. Promotion of the specimen banking system in the field of health risk assessment
5. Research on ways of providing healthcare and welfare, etc. related to children environmental health

Our Challenges



Project 1. Research to assess the health risk that pays special attention to Vulnerabilities of the children

Project 2. Epidemiological research concerning the relations between the environment that surrounds children and health

Project 1.

The research to assess the health risk that pays special attention to Vulnerabilities of the children

- Collection of data to assess the exposure of children to chemicals in the environment
- Risk communication
- Development of evaluation methods for the health effects of chemicals in the environment, with regard to the sensibility of children



Project 2.

The epidemiological research concerning the relations between the environment that surrounds children and health

in July; The meeting to discuss issues related to the epidemiological research for children



- Support for the ongoing epidemiological researches in Japan
- Possibility of the data linkage or meta analysis between the ongoing epidemiological researches
- Initiation of new epidemiological research
- Share the fruit acquired from these researches with public (risk communication)

END
Thank you

