

# Kawasaki Environment Research Institute (KERI)

~A research base for environmental solutions for an international society~

## Functions of K E R I

- 1 Promotion of international contribution based on outstanding environmental technologies developed and accumulated in Kawasaki City
- 2 Gathering and dissemination of information on outstanding environmental technologies and know-how developed in Kawasaki City
- 3 Research on the coexistence of both urban and Industrial development
- 4 Monitoring, surveys and research for further environmental improvement and pollution prevention
- 5 Provision of environmental education and learning opportunities in cooperation with a wide range of stakeholders

## Access

○Bus (From Kawasaki Station): (1) Take a JII (Kawa) 03 Line bus, disembark at King Skyfront Entrance. A 4-minute walk from the station; or

(2) Take a JII (Kawa) 02 Line bus, disembark at King Skyfront West. An 1-minute walk from the station.

○Train: Disembark at Kojima-shinden Station on Keikyu Daishi Line. A 15-minute walk from the station.

※Please use public transportation to visit the facility.



Colors, Future!  
いろいろって、未来。  
川崎市

## Kawasaki Environment Research Institute (KERI)

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で 検索





## ◆ PM2.5 Component Analysis ◆

KERI conducts surveys and research on PM2.5 concentrations and compositions in order to meet environmental standards.

The major emission sources of PM2.5 are factories, offices, and automobiles.



The images above show a comparison between cedar pollen and PM2.5 using a microscope. It is clear that PM2.5 is much smaller than cedar pollen which measures 20–40 μm.

※The small particles scattered on the long, thin filter fibers are PM2.5.



Major Sources of PM2.5

## ◆ Broadcast of Constant Monitoring data on Atmospheric Environment ◆

Monitoring data on the atmospheric environment, including PM2.5, can be checked on TV at home in real time.

※On TV Kanagawa, press the "d" button, select "Municipality Information – Kawasaki City" and "Air Flash Report".



# Kawasaki Environment Research Institute (KERI) overcomes environmental challenges!

KERI promotes comprehensive research to solve environmental issues through monitoring and analysis of the atmospheric environment and river water quality working in cooperation with companies in the city that possess excellent environmental technologies. KERI also gathers and disseminates information on outstanding environmental technologies and know-how for environmental protection in the city, and hosts environmental seminars for residents in order to promote regional revitalization and international contributions in the environmental field.



Environmental Technology, Kawasaki City

<http://eri-kawasaki.jp/>



## ◆ Promoting International Contribution ◆

KERI conducts comprehensive research to provide solutions for serious and complex environmental problems in developing countries.

KERI supports the transfer of Kawasaki's environmental technologies overseas through a wide range of international cooperation frameworks such as the Joint Crediting Mechanism (JCM).



## ◆ Environmental Education ◆

An environmental education program is provided using a textbook that we developed based upon aquatic biodiversity surveys.



Fieldwork in the Tama River during the summer vacation



Sampling from vessels in Kawasaki Port

## ◆ Aquatic Organism Survey & Water Quality Analysis ◆

Through surveys and analysis we aim to understand the state of these organisms in Kawasaki city. To identify the causes of water pollution, this survey and analysis also includes an analysis of water quality.



Survey on aquatic organisms in recreational amenities near rivers

## ◆ Non-regulated Chemical Substances Surveys ◆

We measure chemical concentrations in samples of air, water, sediment, and living organisms to understand environmental pollution from chemical substances.

Environmental research institutions across the nation,  
the Council of Yokohama and Kawasaki municipal and Kanagawa prefectural environmental research institutions, etc.

国立研究開発法人  
国立環境研究所  
National Institute for Environmental Studies  
National Institute for Environmental Studies (NIES)

Joint research

IGES  
Institute for Global Environmental Strategies  
(IGES)

Residents

NPOs & community-based Organizations

Enlightenment & environmental education

KAWASAKI CITY  
Kawasaki Environment Research Institute  
KERI

International contribution

Shenyang, China

United Nations Environment Programme (UNEP)

Universities

Companies





## Project Promotion Section

This section deals with general affairs & management, environmental education & study, gathering and dissemination of outstanding environmental technologies and know-how developed in Kawasaki, and promotion of international contributions.



Open laboratory for elementary school students



Observation of living organisms in the tidelands around the outlet of the Tama River

### General Affairs & Environmental Education Group

#### ► General Affairs

We deal with

- a wide range of overall management issues including general affairs, maintenance, seminars, publication of annual reports and website management,
- the operation of the Advisory Committee which appoints scholars, who specialise in environmental issues and have both domestic and international networks, in order to receive their advice and proposals,
- strengthening cooperation with the Zenkoku Kankyo Ken Kyogikai (nationwide council of environmental research institutions) and the Council of Yokohama and Kawasaki municipal and Kanagawa prefectural environmental research institutions.

#### ► Environmental Education & Study

Utilizing our research results and taking advantage of our excellent location, we cooperate with a wide range of stakeholders including NPOs and industries, to provide children and adults with learning opportunities regarding environmental issues.

#### Major Events

- Open Laboratory
- Observation of Living Organisms in Tidelands
- Environmental Science Summer School



Environmental Science Summer School (study tour to a water treatment center)



Asia-Pacific Eco-Business Forum



Environmental Technology Seminars for Shenyang City

### International Expansion & Environmental Technology Information Group

#### ► Cooperation with UNEP

Taking advantage of the outstanding environmental technologies and know-how developed and accumulated in Kawasaki City, as well as our experiences in environmental conservation, the Group organizes two major events - "Eco-town project" and "Asia-Pacific Eco Business Forum" - in cooperation with UNEP to promote international contributions.

#### ► Accepting Visitors and Guests from Overseas

The Group accepts overseas visitors and provides a training program to provide know-how on environmental issues and measures, as well as technologies that industries located in Kawasaki city have developed and accumulated. Since 1997 the Group has also been accepting environmental technology trainees from Shenyang, our friendship city in China.

#### ► Gathering and Dissemination of Information on Outstanding Environmental Technology and Know-how

The Group collects information on outstanding environmental technologies and know-how developed in Kawasaki and disseminates this information both domestically and internationally through the archive space, portal sites and our brochure entitled "Environmental Technologies from Kawasaki to the World."



UNEP Eco-town Workshop 2013



## Urban Environment Section

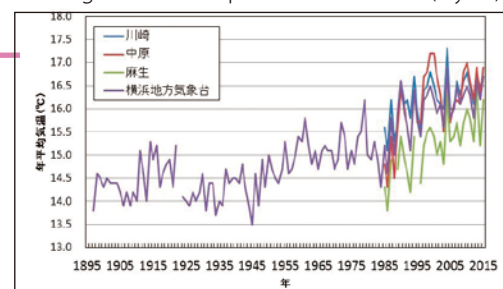
The Section promotes research with the aim of developing a sustainable and low carbon society.

### Urban Environment Research Group

#### ► Survey and Research on Global Warming Countermeasures & Environmentally friendly Energy use

The Group conducts surveys and research related to global warming and environmental friendly energy use. In order to propose and promote countermeasures for global warming mitigation, we conduct analyses on greenhouse gas emissions and surveys on the heat island phenomenon in Kawasaki in order to identify how temperature is distributed within the city.

Average Annual Temperature in Kawasaki (5-year)



### Industry-Academia-Government-Citizen Collaboration Group

#### ► Joint Research by Industry, Government, Academia and Citizens

This Group conducts collaborative research on environmental technologies together with companies, research institutions, and NPOs.

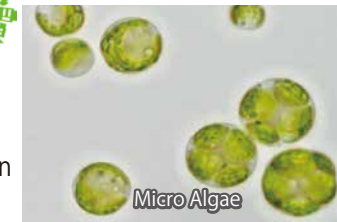
Kawasaki City supports joint research and development by providing research fields and disseminating information. Creating opportunities to develop environmental technologies will lead to the accumulation of environmental technologies and research in the City, and the results of this will then be returned to the community.



Preliminary consultation is provided as needed.



Research on air-conditioning systems utilizing geothermal heat



Micro Algae



Multicomponent aerosol analyzer



Effectiveness validation of melting injection type coating for thermal barrier

#### Examples of collaborative research

- Research on air-conditioning systems utilizing geothermal heat
- Research on development of a new mass culture system for micro algae
- Field assessment of a multicomponent aerosol analyzer
- Effectiveness validation of melting injection type coating for thermal barrier

### International cooperation/research project team

#### ► International cooperation/research

The Group conducts the three research projects listed below, fully utilizing accumulated knowledge and human resources as well as organizational networks in order to propose solutions for diverse, broad environmental issues.

- (1) International cooperation through transferring environmental technologies developed and accumulated in Kawasaki
- (2) Comprehensive research with the aim of developing a low-carbon society
- (3) Comprehensive research on environmental measures

Using various international cooperation frameworks the Group transfers know-how and environmental technologies, developed and accumulated through our experiences in environmental conservation, to developing countries which now face a wide range of environmental issues.

The Group also conducts research which focuses on necessary mechanisms for lifestyle changes in order to realize a sustainable and low carbon society in Kawasaki city.



Condition of left uncontrolled wastes in Bandung City





# Environmental Risk Assessment Section

This Section conducts surveys and research, focusing on how to minimize or prevent environmental pollution and the risks derived from chemical substances, from the preventive and precautionary approaches to environmental pollutions.

## Research on Environmental Chemicals Group

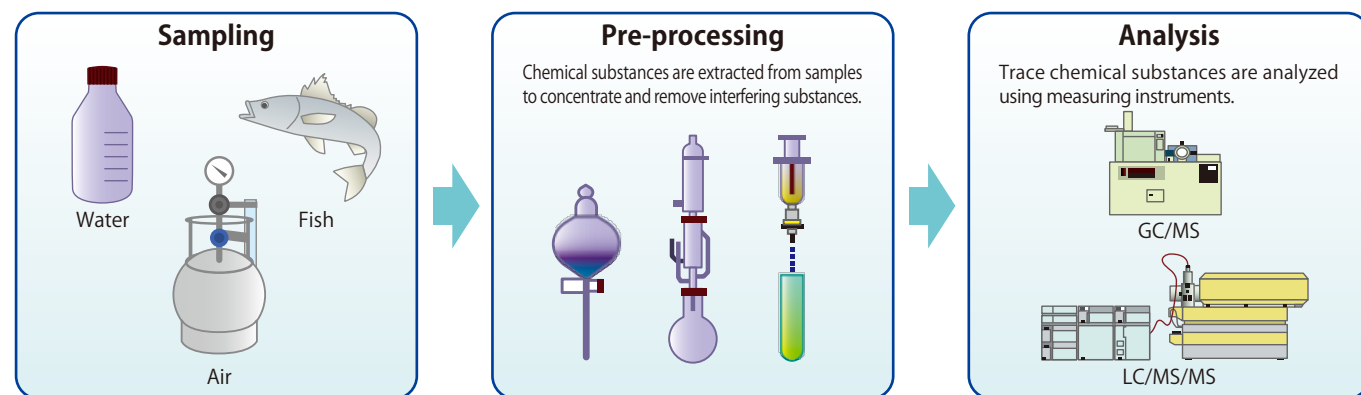
### ► Survey and Research on Environmental Chemicals

The Group conducts environmental surveys on non-regulated chemical substances in air, water, sediment and living organisms in order to understand the situation of environmental pollution caused by chemical substances.

### ► Development of analytical methods for non-regulated chemical substances

We are also in charge of developing new analytical methods for non-regulated chemical substances whose concentration needs to be checked mainly due to growing concerns on their toxicities and persistence in the environment.

### Survey Flow of Chemical Substance



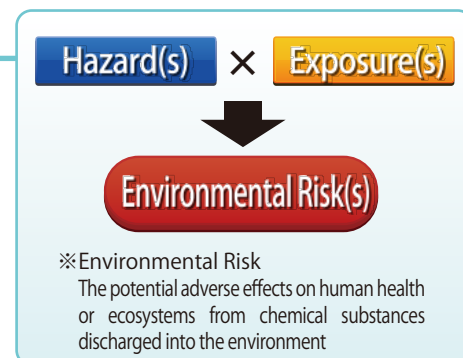
## Environmental Risk Assessment Group

### ► Survey and Research on Environmental Risks derived from Chemical Substances

The Group assesses hazardousness and exposure to chemical substances in the environment, based on identification of adverse impacts on human health and ecosystems

### ► Survey and Research on Hazardous Air Pollutants

The Group monitors the atmospheric concentration of volatile organic compounds (VOCs), including benzene, which may have serious impacts on health over time even at low concentrations.



## Biological Survey and Research Group

### ► Aquatic Organism Survey

The Group conducts a survey on water quality and aquatic organisms in rivers, tidelands, and seas in order to create better aquatic environments based on understanding the state of aquatic plants and animals in Kawasaki city.

### ► Biological Survey and Research

Ecotoxicity tests are conducted on fish, crustaceans, and algae to assess the combined impacts derived from diverse chemical substances contained in rivers and waste water.



# Regional Environment & Pollution Monitoring Section

The Section promotes environmental safety and security for residents in Kawasaki city through strengthening atmospheric monitoring. This includes the monitoring of radiation, conducting surveys and research on air and water pollution, and responding to water environment accidents.

## Atmospheric Research Group

### ► Survey and Research on PM2.5

The Group conducts component surveys and analyses on PM2.5 for use in discussing administrative measures to meet environmental standards.

### ► Environmental Survey on Asbestos

The survey mainly focuses on ambient concentration and projection at disassembly sites in Kawasaki in order to eradicate public concern about the health impacts of exposure to asbestos.

### ► Survey on Acid Rain

This survey examines various impacts on buildings and ecosystems, including defoliation and soil acidification, caused by acid rain.

### ► Survey on Dust Fall

We continue to conduct environmental surveys on dust fall, one of the indices of air pollution that has been measured since the 1960s.



## Water Environment Research Section

### ► Survey on Business Facilities' Waste Water Quality and their Operation Processes

The survey analyzes waste water discharged from business facilities to check compliance with the regulatory standards.

### ► Continual Survey and Research on Contaminated Wells and Soil Contamination in the Surrounding Environment

The survey analyzes groundwater below business facilities which deal with specific hazardous substances in order to assess water quality of the wells in surrounding areas.

### ► Accident Response to Water Quality Problems in Public Water Systems

Water quality is analyzed to identify major causes when rivers become cloudy or fish die-off is observed.



## Environmental Pollution Monitoring Group

### ► Continuous Air Quality Monitoring in the General Environment and Road side

Air quality in Kawasaki city is automatically monitored at 18 stations, including 9 stations for general air measurement and 9 stations for automobile exhaust measurement. Measurement data is transmitted to the Kawasaki Environment Research Institute (KERI) and the City Office, and then disclosed in real time on the Kawasaki City official website and via TV Kanagawa data broadcasting.

### ► Radioactivity measurement and Analysis

(Environmental radioactivity monitoring around nuclear radiation-related facilities)

Based on the regional disaster prevention plan of Kawasaki City, we keep measuring radioactivity level of surrounding area of nuclear research facilities within Kawasaki City.

