

# Research

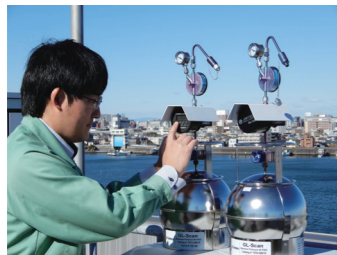
We engage in research to determine causes of environmental pollution and handle new risks to the environment.

## Investigating the causes of environmental pollution

### ● Research on air environment

#### 【Photochemical oxidants】

Air pollution in Kawasaki City has greatly improved, but photochemical smog alerts are issued every year. We are still studying the causes of photochemical oxidants and trying to work out effective countermeasures in order to prevent health hazards due to photochemical smog.



Collecting air samples



Measuring VOCs in the air

#### Photochemical oxidants

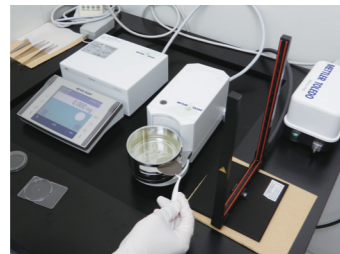
Source substances such as nitrogen oxide (NO<sub>x</sub>) from the exhaust gas of factories and vehicles and volatile organic compounds (VOCs) undergo a chemical reaction when they come into contact with strong ultraviolet rays to form photochemical oxidants. A photochemical smog alert is issued when these values are too high.

#### 【PM 2.5 (fine particulate matter)】

We conduct research to analyze sources of PM 2.5 and develop countermeasures, with the aim of a cleaner air environment.



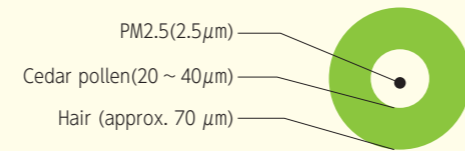
Collecting PM 2.5 in the air



Weighing PM 2.5 on a scale

#### PM2.5

"PM 2.5" indicates granular substances of a size of 2.5 μm (micrometers) or less. Because it is very small, it is said to enter deep inside the lungs and negatively impact health.



### ● Research on water environment

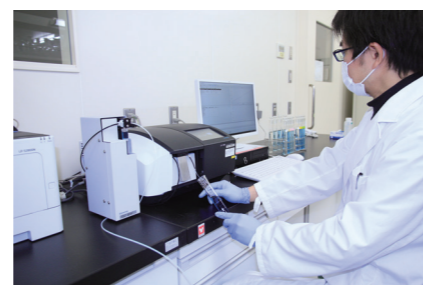
Water quality in the river and ocean has improved considerably thanks to proper treatment processes of industrial wastewater and extensively developed sewerage, but water contamination in the sea is somewhat on the rise in recent years. We further study to determine its causes in order to protect the environment.



Conducting research at Kawasaki Beach in Higashi-Ogishima East Park



Analyzing the quality of seawater



Measuring nitrogen in seawater

## Stopping harm before it happens

### ● Research on the environmental risk of chemical substances

There are numerous chemical substances around us in daily life, and many new chemical substances are created each year. They allow us to live conveniently and in abundance; however, if used incorrectly, there is a risk that some of them will negatively affect people, animals, and plants. We conduct surveys and studies on chemical substances in the environment to prevent effects on health and daily life before they happen.



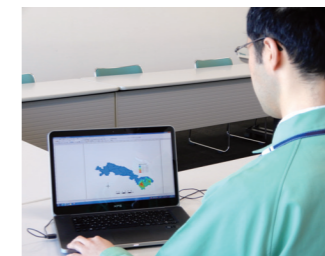
Isolating chemical substances



Condensing chemical substances



Component analysis of chemical substances



An environmental concentration simulation

#### Environmental risk

Not only toxicity but also the amount of physical intake is an important factor in whether chemical substances negatively impact plants and animals. The likelihood of negative impact is called "environmental risk."



### ● Development of analysis methods

To assess environmental risk, first we research how much of a given substance exists in the environment. However, research methods (analysis methods) have still not been established for many substances. That is why we develop new analysis methods.

Research findings and developed analysis methods are made available through presentations at academic conferences as well as in annual and other reports.



Chemicals in the Environment Research Report on Development of Analytical Methods for Chemical Substances



Annual Report of Kawasaki Environment Research Institute

Annual reports are available for download here. (Japanese only)

