Skimmer Dragonfly

Japanese Rhinoceros Beetle and Oriental Flower Beetle

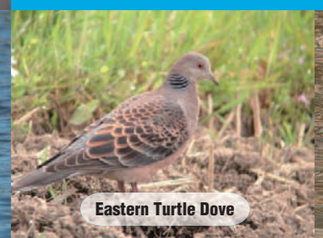
Japanese Jewel Beetle

Skylark

Collared Dove

Hawfinch

Spot-billed Duck



Eastern Turtle Dove

Moorhen

Saw Stag Beetle

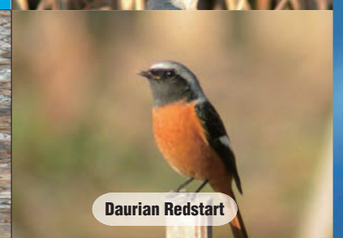
Japanese Oakblue

Yellow Tip

Angled Sunbeam

European Purple Emperor

White-breasted Kingfisher



Daurian Redstart

Life observed in the Ecology Park of the Center for Environmental Science in Saitama

When the Center was developed, the Ecology Park of the Center for Environmental Science in Saitama was created as a biotope modeled after a community wood that existed in the eastern part of the prefecture around 1950 to 1960. The Natural Environment Department conducts surveys regularly on what living organisms would come in and stay, in order to evaluate the roles of the biotope developed as an artificial ò atural environment.Ó

Access Map

Center for Environmental Science in Saitama

Phone 0480-73-8331 Fax 0480-70-2031
http://www.pref.saitama.lg.jp/soshiki/f16/

CESS

Center for Environmental Science in Saitama

“Sai no kuni” Saitama
Saitama Prefecture

KOBATON

We Now Face Enormous Global Environmental Challenges

As our economic systems raise our standards of living, they also leave us with many environmental problems brought about by our massive industry, consumption, and consequent waste production.
The Center for Environmental Science in Saitama (CESS) is dedicated to provide support for citizens and coordinate experimental research from all over the world in an effort to solve the environmental problems facing us. Institute will be our central ground for addressing environmental issues of all types.
Without the cooperation of the government, industry, and individuals, solving our complex and varied environmental problems would be close to impossible.
I sincerely hope that everyone uses the Center to help find ways of saving our environment.

Biotope

Four Functions of the Center

The Center's experiment-based exhibition provides visitors with opportunities to learn environmental problems in a relaxed and enjoyable atmosphere. The Center also offers programs and seminars to help visitors gain greater understanding of environmental problems, serving as a hub for environmental study activities.

The Center engages in international cooperation in accepting trainees from overseas and working on other human resource development activities in the environmental field. As a part of its international technical cooperation, the Center conducts monitoring and surveys related to global environmental problems.

The Center promotes comprehensive and interdisciplinary testing and research projects covering a wide range of fields from the surrounding living environment to the natural environment.
The Center encourages exchange of information and joint research projects with universities and private sector researchers. It also conducts surveys and research using the Ecology Park.

The Center collects and sends out domestic and international environment-related information.

Environmental Information Plaza

Exhibition Hall

Exhibition Pavilion Overview

Exhibit pavilion is a place where one can enjoy at the same time understand the environmental problems. The pavilion's main goal would be to make the visitor recognize the environmental problems of today by coming into direct contact and hence make a whole hearted kind effort towards disposing waste with a totally new appreciation. To have a real experience, the pavilion is divided into three zones:

- Entry zone with the main theme of "Current environment of our earth…"presents a super aerial view of earth from outer space. The view is breathtaking presenting the beauty and the astounding biodiversity of creatures coexisting in harmony and at the same time presents the environmental crisis of earth's deterioration and the danger toward the diversity.
- In this zone of earth seen from our daily life, with things or materials used in our everyday life environmental problems are presented. Hence this place would give you a chance to know and also increase your knowledge on towards how much your contributions are toward global warming.
- In the last zone, with the theme 'How you can save our mother earth', we present as a responsible citizen of our earth, from a small locality to the whole world, step by step guidelines for how each individual can really and actively make a real effort and action towards the environmental improvement.

Earth environment as today

Get a deep and whole view of earth from a little far as outer space. Mother earthÕs beauty supporting so many different creatures and different human civilizations would astonish us and at the same time could also see and get a feeling of the reality and vastness of the environmental challenge facing us.

Gaia Vision

Gaia meaning Earth in Greek is a great dome having a diameter of 3 meters and has a spherical screen giving you a feeling watching the earth surface. Siting in its cockpit and with the help of robot 'MAX' and guide 'HANA', you can navigate yourself to a place of your choice or to the position of your interest to get details.

Planet rescue adventure

An adventure game of capturing eco-angel by charging ecopower. Through the game one can enjoy at the same time learn about the environmental problems facing us.

You and me together let us save mother earth

As citizens of Saitama prefecture, let us take a initiative of knowing the main environmental problems such as atmospheric pollution, water pollution etc. Let us start from now how to improve our local living environment and hence the whole world.

An illustrated reference book of earthÕs global warming

This book presents a view of the global environmental warming taking place allover the world. By flipping the current page with your hand, you can automatically move the pages forward or backward.

Environmental passport (Citizens of Earth 1/800)

How the pavilion changed your view on environment? Make an environmental passport of your own declarations.

Saitama's Air Environment

Earth as seen from our daily file

Here, everyday real life problems of waste, global warming etc. are presented. By making a little individual effort, get a real feeling of how each individual can actually participate in improving the environment.

Challenge ecodrive

This is a learning school for improving oneÕs conscious of getting motivated towards ecoawareness called ecodrive. With the advice and instruction of an ecodrive teacher, take an ecodrive test and obtain your ecodrive score.

Environment-friendly daily commodities

In the virtual supermarket, take a purchase of your choice and pass it through the bar code reader. The shopkeeper would let you know about environmental friendliness of the purchase.

Media workshop

Enjoy the movie presented on the large screen mingled with quiz.

ÒMessage from futureÓ
Think about the global warming with a boy, Akira, who is from a future world of 2100.

ÒExploration of SATOYAMAÓ
With a strange letter in hand, a boy goes in search of 'forest citizens'. Through coming into contact with different persons, the boy would learn about the role of SATOYAMA, that is an undeveloped woodland near populated area".

ÒWhere is the ingredients of dinner coming from?Ó
Three primary school students get to a summer camp. Making curry for dinner, they practice toward thinking about the environmental problems.

Testing and research division activities

Global environment and natural symbiosis division

Global warming countermeasures group

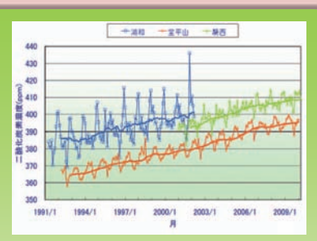
●Investigation of environmental warming and warming gas within Saitama Prefecture
● Research on impact of climate change and adaptation ●Understanding of heat-island effect

Global warming gas monitoring

The department precisely monitors carbon dioxide levels within Saitama Prefecture and reports the observational data to the World Meteorological Organization (WMO).

Atmospheric CO2 sampling system

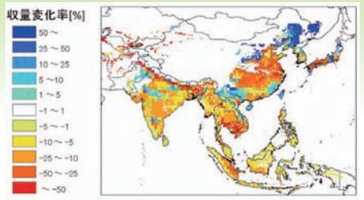
CO2 observation system



CO2 concentrations and long-term trends

Impact of climate change and adaptation

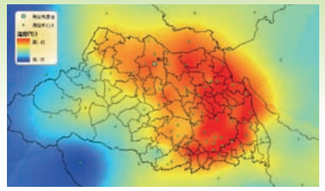
Understanding and prediction of the impact of climate change on crops and ecosystem; and formulation of adaptive actions.



Impact of climate change on the yield of paddy rice in Asia

Understanding of heat-island effect

Understanding of heat-island effect that appeared in Saitama Prefecture.



Spatial distribution of temperature in Saitama Prefecture at 2:00 PM on August 16 in 2007, when Kumagaya City made new record for maximum temperature in Japan.

Atmospheric environment group

●Atmospheric pollutants and hazardous substances ●VOCs and fine particulate matters
●Emission source of VOCs ●Air purification technology

Investigation and research on atmospheric pollutants and hazardous substances

Characterization and monitoring of VOCs and fine particulate matters (PM2.5, PM1) that have effect on human health

VOC analyzer

Fine particulate matter measuring instruments

Identification of wide-area atmospheric pollution

Investigation of rain contamination by observation of pollutants in rain water and atmosphere

Automatic wet deposition sampler

Measurement of atmospheric concentration of water-soluble gaseous and particulate matters

Investigation of VOC emission source

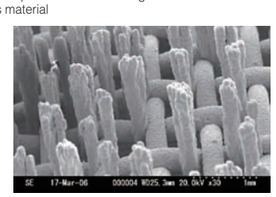
Study on reduction of VOCs emitted from industrial process, such as printing and painting

VOC measurement in a factory

VOC measurement at an exhaust vent

Research and development on air purification technology

Development of TiO2 composite materials with steric microstructure and decomposition of VOCs using this material



Fine metallic lattice structure

VOC reduction device

Natural environment group

●Understanding and elucidating effects of environmental changes and pollutions on plants
●Research on the conservation of biodiversity ●Collecting and releasing information on the natural environment

Research on environmental stress on plants

The department researches on effects of various environmental stresses, including photochemical smog (oxidant), on plants.

Visible damage caused to morning glory by oxidants

Growth inhibition of *Tacai* due to oxidants

Tree decline in the subalpine zone

Research on the conservation of rare wildlife

The department engages in research to conserve rare wildlife, such as *Musashi Tomiyo* and *Miyama Sukashi Yuri*.

Musashi Tomiyo: Species desinated for protection by a SaitamaPerfecture ordinance, and fish of the prefecture

Miyama Sukashi Yuri: Species designated for protection by a Saitama Prefecture ordinance

Establishment and application of a natural environment database

The department constructs a database on life in Saitama Prefecture and analyzes the habitat conditions of wildlife.

Saitama Prefecture Biodiversity Database (Web version)

Main equipments and analytical instruments

High resolution gas chromatograph mass spectrometer	Element analyzer
Gas chromatograph mass spectrometer	Volatile organic compounds analysis system
Gas chromatograph	Mercury analyzer
Liquid chromatograph mass spectrometer	Total nitrogen/total phosphorous analyzer
High performance liquid chromatograph	Cell counter system
Ion chromatograph	Carbon dioxides monitoring system
Inductively coupled plasma mass spectrometer	Open top chamber
Inductively coupled plasma atomic emission spectrometer	Environment-controlled gas-exposure system
Atomic absorption spectrophotometer	Infrared thermography camera
X-ray diffractometer	PM2.5 low volume sampler
Wavelength dispersive X-ray fluorescence spectrometer	Constant temperature and humidity room (balance room)
Scanning electron microscope	Chemical hazard area
Fluorophotometric analyzer	Clean room (VOC analysis room)
Ultraviolet and visible spectrophotometer	Anechoic room

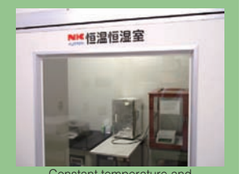
Gas chromatograph mass spectrometer

Scanning electron microscope

Inductively coupled plasma mass spectrometer

Open top chamber

X-ray diffractometer



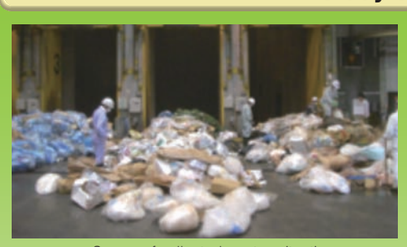
Constant temperature and humidity room

Material cycles division

Material cycles and waste management group

●Research for support of the comprehensive waste management plan including the generation of domestic and industrial waste and their final disposal

Study on resource recycling system



Survey of collected wastes situation

Development of the resource recycling system with consideration for regional characteristics.

Development of the sustainable and environment-friendly life-cycle of wastes.

Development of environment-friendly gypsum board

Study on Intermediate treatment

Investigation of thermal recovery on incinerator
Improvement of separation efficiency

Storage plant of separated construction waste

Study on Final disposal engineering

Study on chemicals emitted from landfill
Development of monitoring method

Lysimeter experiment for landfill simulation

Action for illegal dumping site

Development of survey method. Removal of environmental problems caused by wastes

Remove of dangers at illegal dumping site

Chemical substances group

● Environmental researches on hazardous chemicals such as persistent organic pollutants (POPs) and emerging contaminants

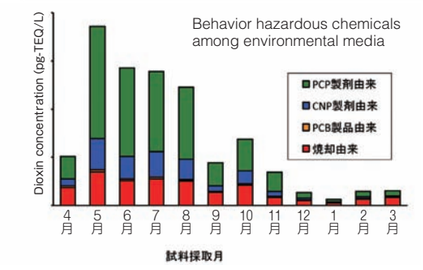
Monitoring hazardous chemicals

Investigation on chemical levels and assessment of environmental risks

Sampling for dioxin analysis

High resolution GC/MS analysis

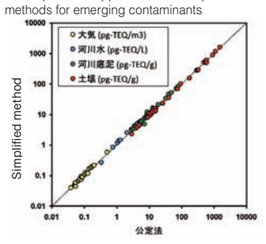
Fate analysis of hazardous chemicals



Trend of dioxin concentrations and estimated source apportionment in river water

Development of techniques

Development of applications and improvement of analytical methods for emerging contaminants



Development of simplified analytical method for dioxins

Optimization of analytical method

Water and Geo-Environment division

Water environment group

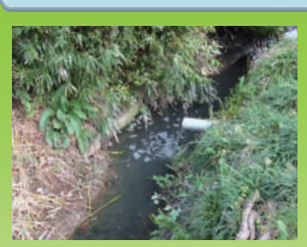
●Researches on water environmental pollutants ●Researches on watershed management
●Researches on water environmental protection ●Researches on wastewater treatment process

Researches on environmental pollutants

Analysis of organic contaminants using GC/MS

Researches on
・occurrence of environmental pollutants
・toxicity to aquatic organisms
・effective water purification involved evaluating contamination mechanisms in rivers and lakes

Researches on environmental protection



A stream contaminated remarkably by domestic wastewater

Researches on
・strategic improvements on past problems like monitoring water quality in rivers in Saitama prefecture
・evaluation of mechanism of new problems like eutrophication in rivers
・Prompt feedback to the administration

Researches on watershed managementv

Researches on
・protection and creation of habitats of native species which are not involved in past watershed protection based on human activities such as water utilization and flood control
・securing the importance of new concepts “familiarity” to rivers and lakes

Habitat evaluation of threatened fish and shellfish species at experiment ponds

Researches on wastewater treatment process

Researches on
・development of techniques for reducing pollutants discharge by upgrade of wastewater treatment process

Sampling at a wastewater treatment plant

Environmental geotechnology group

●Research to mitigate damages, such as from geo-pollution and earthquakes
●Research to facilitate appropriate use of land and underground resources
●Clarify mechanisms of soil and groundwater contamination and development of investigation methods

Development of simple analysis methods for soil and groundwater

On-site analysis of soil and groundwater contamination

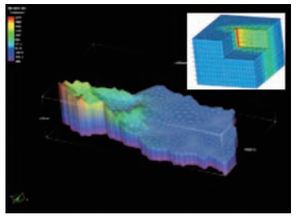
Implementation of the method
●Survey on lead contamination of soil at shooting ranges
●Survey on soil contamination near waste disposal sites
●Analysis on distribution and speciation of arsenic in groundwater

Study for management and analysis of Geo-environmental information

Acquisition, management and sharing of various Geo-environmental information (Geology, Subsurface temperature, Groundwater quality, Groundwater level etc.) and analysis of higher-order information.

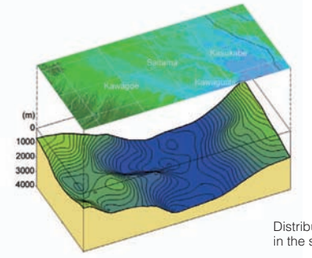
Research for Borehole heat exchanger system

Investigation of subsurface environment for expansion of Borehole heat exchanger system



Analysis of subsurface thermal environment

Establishment of environmental research techniques using geophysical exploration



Development of exploration techniques for environmental research and estimation of underground structure

Distribution of the basement depth in the south of Saitama

Supporting Environmental Education

To address environmental problems, regulations on factories and offices alone have limitations. The Center provides support for environmental learning for the general public to help individuals think on their own what they can do to preserve the environment.

Sainokuni Environmental University

The University is designed to foster persons who will lead local environmental preservation and environmental education activities.

Public Programs

The Center offers a variety of programs for all ages from children to adults to learn environmental issues in a relaxed and enjoyable atmosphere.

Ecology Park Class

Experiment class for residents of the prefecture

Imminent Environment Observation Network

Through extending to people the opportunity to conduct a survey of the imminent environment, the Center aims to raise their awareness of environmental problems.

Visiting lecture

Visiting lectures on environmental issues are delivered to a school or to local community by researchers from CESS. Sometimes the lecture includes an on the spot exercise to get real experience depending on the topic of the lecture.

Seminar on the Local Environment

In cooperation with municipalities, the Center hosts seminars on the theme of local environmental problems.

Environmental Information Plaza

The Environmental Information Plaza is equipped with personal computers available for visitors and lends books.

International Contribution Activities

The Center for Environmental Science in Saitama (CESS) contributes to global environmental conservation.

Examples of International Contributions

- ○**Acceptance of trainees from:**
  - ●China and Thailand
- ○**Research exchange with overseas research institutes**
  - ●Shanxi Agrcultural University, China
  - ●Shanghai University, China
  - ●Cheju National University, South Korea
  - ●The Environmental Research and Training Center in Thailand
- ○**Dispatching technical experts to :**
  - ●China,Thailand and South Korea SriLanka,Bangladesh

An expert dispatched to Thailand

Study Interchange with the Shanghai University,China

The Center is visited by an expert from Algeria.

Coopration of the analysis

The Center actively promotes joint research projects and cooperates in research projects with overseas universities and external research institutes.

The Center cooperates with Asian countries to help their endeavors to develop human resources and technology transfer.

In Asia, some countries still face conventional industrial pollution, including air pollution and water contamination. They are confronted with serious environmental pollution and are struggling to hammer out countermeasures.
In Japan, a host of technologies and know-how that address pollution issues are accumulated by local governments that actually dealt with pollution problems on site. Therefore, the Center accepts trainees and dispatches its staff in order to share the know-how, technologies and experiences of the prefecture with other countries.