

ENVIRONMENTAL REPORT

2018





Industrial waste treatment, environmental protection and environmental engineering are our business that plays an important social mission of "protecting the environment and supporting industry". We will continue to promote efforts to reduce the load on the global environment and preserve it through safe and reliable incineration including difficult treatment of wastes as well as atmosphere purification and water quality improvement in our engineering business.

In fiscal 2017, we were able to achieve record-high sales as a result of prosperous condition of domestic manufacturing industry and focusing our business on the wastes difficult to treat such as low-concentration PCB waste. Internally we continued to operate the integrated management system of ISO 9001 (quality) and ISO 14001 (environment) with the aim of raising the level of management, and started the operation of a new data processing system for waste treatment. We also started company-wide efforts to "improve productivity" and "create an easy working workplace".

In the industrial waste disposal market, against a background of promotion of 3R with rising of environmental consciousness, the disposal volumes are decreasing and smaller-lot of discharge becomes popular. We are proud of our long-standing record of providing safety and security through appropriate disposal of waste, and we will promptly and reliably offer the values and services required by the market that changes with the times. Even in the market where competition will be more intense, we aim to become a company that is trusted by our customers and grows with them.

For our environmental engineering business, we introduced the business division system in fiscal 2017 with the aim of improving the competitiveness of sales and technology together. In order to protect the environment that is indispensable to our daily lives such as air and water, we will promote businesses that are based on proprietary technology.

For new businesses, we will continue research and technology development of renewable energy from waste as well as special recycling fields.

"Safety" is the basis for promoting and developing our business activities on the environmental field. Under the common recognition that "safety takes precedence over everything" is our invariable business base, we consider the change of society toward the environment conservation as an opportunity and continue a persistent challenge to become a company that is recognized and required by society.



For future of
people and nature

President and Chief Executive Officer

Katsuhiro Natake

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ENVIRONMENTAL REPORT 2018

This report introduces various initiatives including our Responsible Care (RC) activities in fiscal 2017. Until last year we used the name "RC Report", but we changed it to "Environmental Report" this time.

■ Guidelines used as reference:

Environmental Reporting Guidelines 2012
Guide to Matters Noted in Environmental Reports (3rd Edition)

■ Report period:

April 1, 2017 – March 31, 2018
Including some information from FY 2018 and about future plans

■ Reporting departments: All Kureha Ecology Management departments

■ Disclaimer

This report includes plans and forecasts. Changes in various conditions could render these forecasts inaccurate. Please note that some of the figures in the tables and graphs presented here have been revised from previous fiscal years in light of changes to calculation methods and other factors.

Corporate Philosophy

1. We tirelessly endeavor to achieve a harmonious relationship between people, society and the global environment.
2. We contribute to the enrichment and growth of the society by providing safe products and services.
3. We grow and develop ourselves with the community in which we operate.
4. We comply with laws and regulations, practice high ethical standards and operate in transparent manners as a trusted corporate citizen.
5. We develop and nurture a corporate culture which values the individuality and diversity of our employees, and optimizes creativity and teamwork within.
6. We bring passion to researching and developing technologies that are ahead of the times.

Management System Basic Policy

Concept / Goals / Objectives

Strengthening the trust placed in us by stakeholders in the community and other businesses and striving to improve corporate value by observing laws, regulations, and voluntary standards by utilizing an integrated management system to engage in activities concerning quality, the environment, and occupational safety and health.

Activity Policy

- Aiming to improve the quality of the products and services we provide and enhance customer satisfaction.
- Leveraging our experience as an environmental business to preserve the environment.
- Creating safe and secure workplaces through proactive safety and health activities.

Responsible Care Policy

(Kureha Group Policy)

- 1 Observe international rules and laws
- 2 Respect the environment and work safely
- 3 Provide society with safe products
- 4 Manage and put to good use information about the environment and safety
- 5 Forge a stronger relationship with society



About Responsible Care (RC)

Responsible Care involves continuously conducting self-improvement activities aimed at preserving "the environment, safety, and health" through all aspects of a chemical's lifecycle - from the development of chemicals to their disposal and recycling following their manufacture, distribution, usage, and final consumption - as well as maintaining an open dialogue with the community. This is done based on the principle of business operators who manufacture or handle chemicals making decisions and accepting responsibility. The Kureha Group publicly announced in 1995 that it would conduct RC activities.

Business Overview

Company Profile

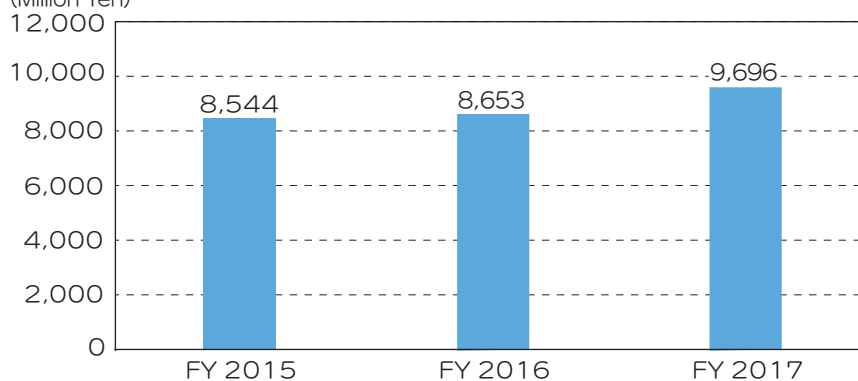
Company Name	Kureha Ecology Management Co., Ltd.
Headquarters	30 Shitanda, Nishiki-machi, Iwaki-shi, Fukushima, 974-8232 Japan
Main Business Sites	Headquarters, WASTECH Iwaki, WASTECH Kanagawa
Established	December 1, 1971
Paid-in Capital	¥240 million
Employees	347 (as of March, 2018)

Business Overview and Results

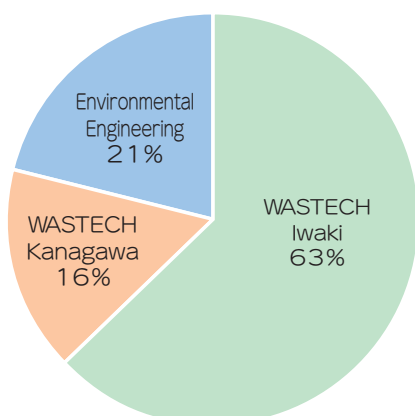
Main Businesses	Collection, transport, and disposal of industrial waste, construction (environmental engineering), electrical power generation, etc.
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Sales

(Million Yen)



Sales by Business Sector (FY 2017)



We will continue to value customers' perspectives; spare no efforts to improve the environment, contribute to society and governance; and make necessary reforms.

Management Planning Division
General Manager, Management Planning Department

Takeshi Taniguchi (at left)

General Manager, Procurement Department

Yuji Sakamoto (at right)

Environmental Considerations Related to Our Business Activities

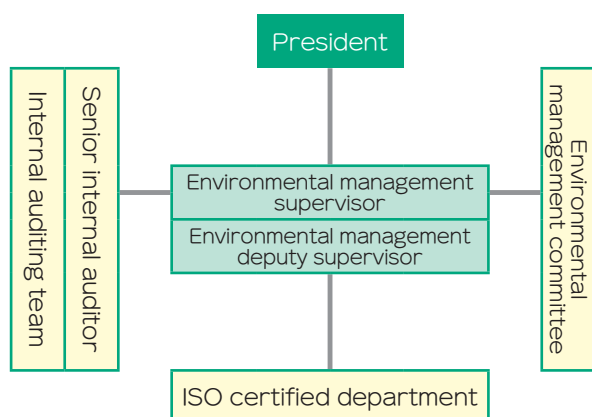
Usage of an Environmental Management System (EMS)

We held the Environmental Management Committee once a month to grasp the progress of our environmental activities. In addition, we held the Environmental Impact Review Meeting as a place to discuss the detailed progress in accordance with the standards if necessary.

Environmental objectives of ISO 14001 in FY 2017

Environmental Objectives	Goals	Results	Description
Issuance of RC report as planned and proper inventory control	Once / year each for Japanese and English versions	Achieved	RC Report 2017 was issued in both versions. Inventory control was carried out.
A lecture by a lawyer is to be held in the early November	Once / year	Achieved	Held an awareness-raising activity targeting waste disposal companies, collection and transportation companies, and disposal companies on November 2.
Upgrade document management for productivity improvement	Reduction of two types of stored documents	Achieved	Changed to storing them with electronic data instead of paper.
Maintain good relationship with external stakeholders	More than 10 times / year	Achieved	As communication with local communities, we carried out various beautification activities around us 11 times.
Switch payroll details and bonus details to Web delivery to reduce conventional custom paper by 100%	100% reduction	Achieved	Reduced custom Paper by 100%.
Reduce problems at the time of arrival of waste due to waste ordering information by 5% from the previous year	5% reduction from the previous year	Achieved, Ongoing	Could not achieve our target, but it was less than the previous year's result.
<Iwaki processing department> Zero of environmental complaints; Maintain efforts on environmental complaints	Zero	Achieved	No environmental complaint
<Kanagawa processing department> Zero of environmental complaints; Maintain efforts on environmental complaints	Zero	Achieved	No environmental complaint
"Zero" environmental accidents in external construction	Zero	Achieved	No environmental accident

Framework for Initiatives



Internal Control Concerning Environmental Reporting Reliability

We conduct internal audits of ISO 14001 once a year at all departments in the scope of certification. Since we newly acquired ISO 9001: 2015 version in FY 2016, we conducted both internal audits in accordance with both standards. In addition, examination by an external organization was conducted in June 2018.

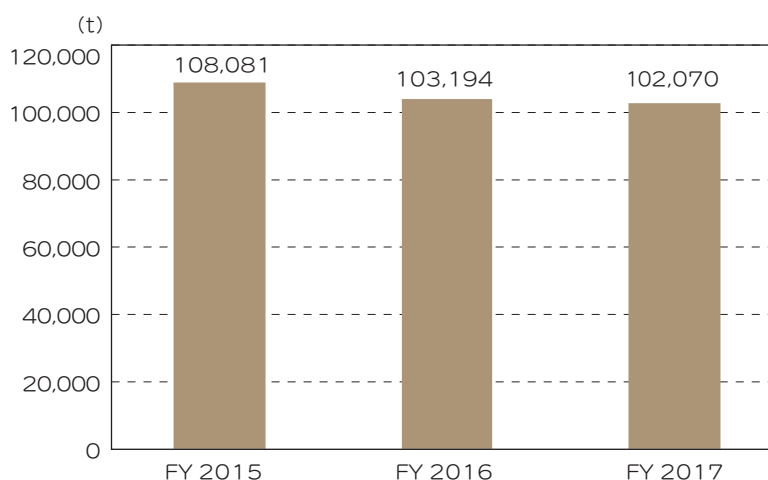
Resource Consumption, Waste Treatment Volume, and

Input



Received amount of waste

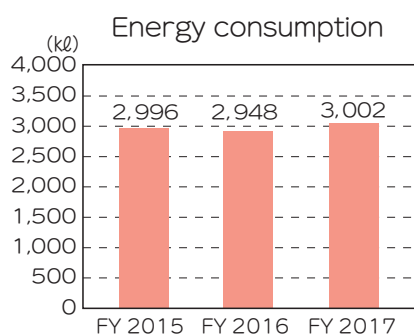
102,070t



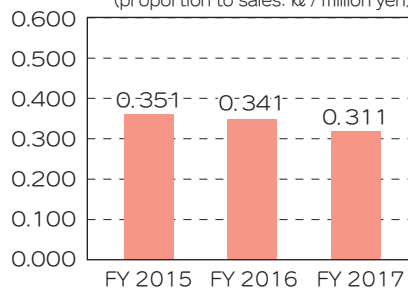
Energy consumption (crude oil equivalent)

3,002kl

In FY 2017 energy consumption increased by 1.6% compared to FY 2016, but the unit energy consumption decreased by 8.8%.



Unit energy consumption (proportion to sales: kl / million yen)

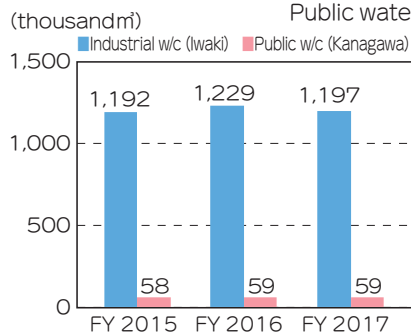


Water resource consumption

Water resource consumption: 1,256K m^3

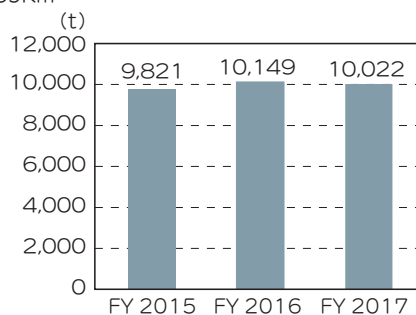
Industrial water: 1,197K m^3

Public water: 59K m^3



Raw material consumption

10,022tons



Waste treatment



WASTECH Iwaki




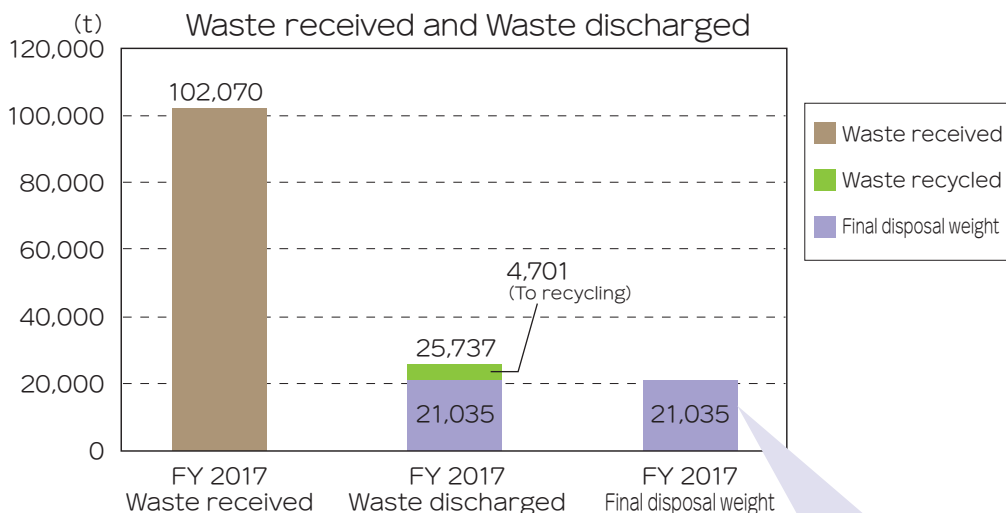
WASTECH Kanagawa

Amount of Greenhouse Gas Emission, etc.

TOTAL

Output

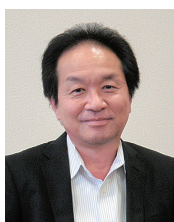
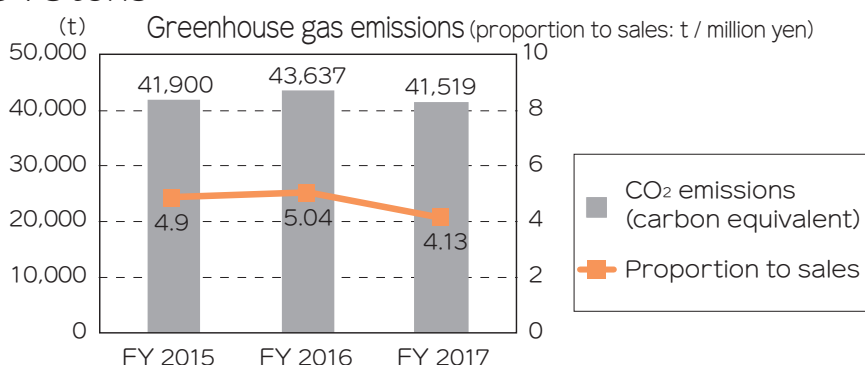
 Waste discharged 25,737tons
  Waste recycles 4,701tons
  Final disposal weight 21,035tons



 Wastewater discharged
1,197K^m

The waste discharged was reduced by a quarter of the waste received. Furthermore, because we recycled one fifth of the waste discharged, the final disposal weight was reduced to one fifth of the waste received.

 CO₂ emissions (carbon equivalent)
41,519tons



The WASTECH Division is working to reduce environmental impact by leveraging the characteristics of its two business sites in Iwaki and Kanagawa. Of particular note is the Kanagawa site's success in achieving a level of power generated from incinerator heat recovery that is more than sufficient to cover the power consumption needs of both the Iwaki and Kanagawa facilities, with excess power being supplied to third parties. This means Kureha Ecology Management conducts its waste disposal businesses without purchasing any power.

Environmental Management Supervisor
(Senior Managing Director, WASTECH Division Manager)

Tsukasa Horiguchi

WASTECH Iwaki

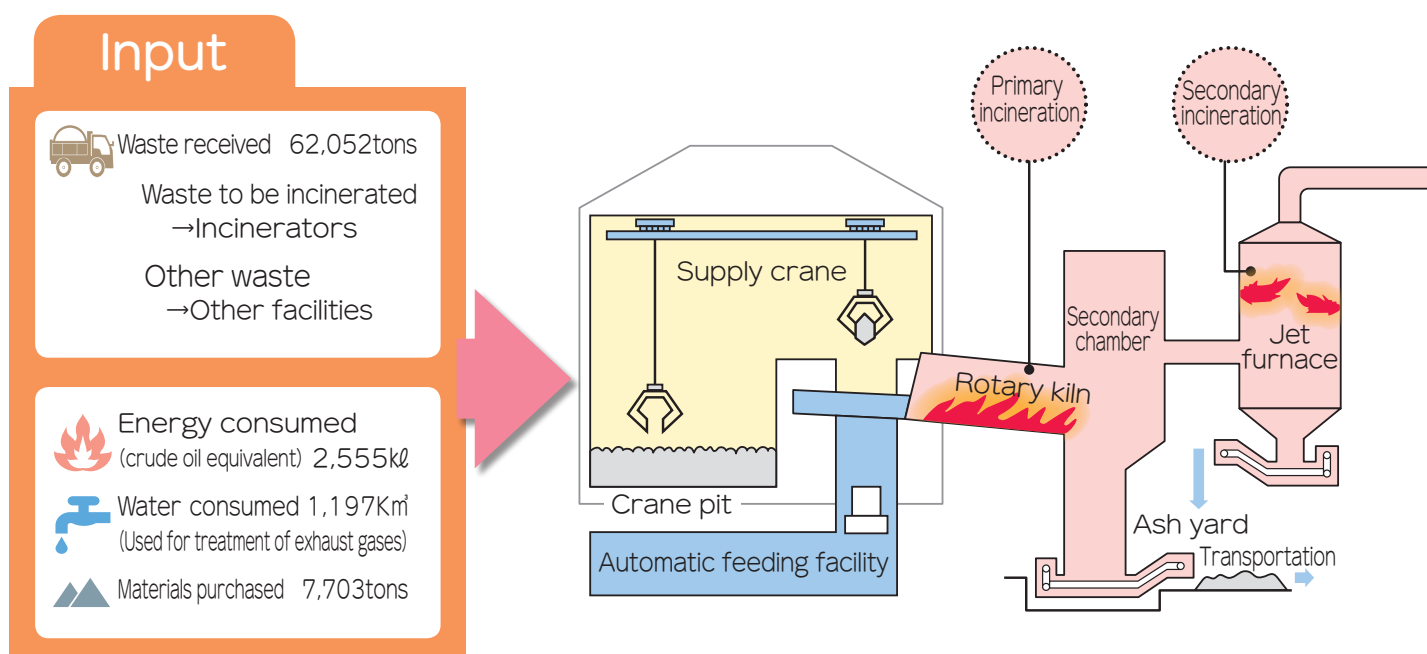
In the Unit 7 and Unit 8 incinerators of WASTECH Iwaki, various kinds of waste such as sludge containing chlorine and silicon, waste plastics, waste acid, waste alkali and medical waste is handled.



Unit 7 Incinerator

Unit 7 & 8 Incinerators

Rotary kiln type



Unit 7 incinerator

Incineration of sludge: 182 m³ / day
 Incineration of waste oil: 110 m³ / day
 Incineration of waste plastics: 104 t / day
 Decomposition of cyanide compound: 202 m³ / day
 Incineration of industrial waste: 238 t / day

Unit 8 incinerator

Incineration of sludge: 182 m³ / day
 Incineration of waste oil: 118 m³ / day
 Incineration of waste plastics: 104 t / day
 Decomposition of cyanide compound: 266 m³ / day
 Incineration of industrial waste: 238 t / day



Weigh Station



Unit 8 Incinerator

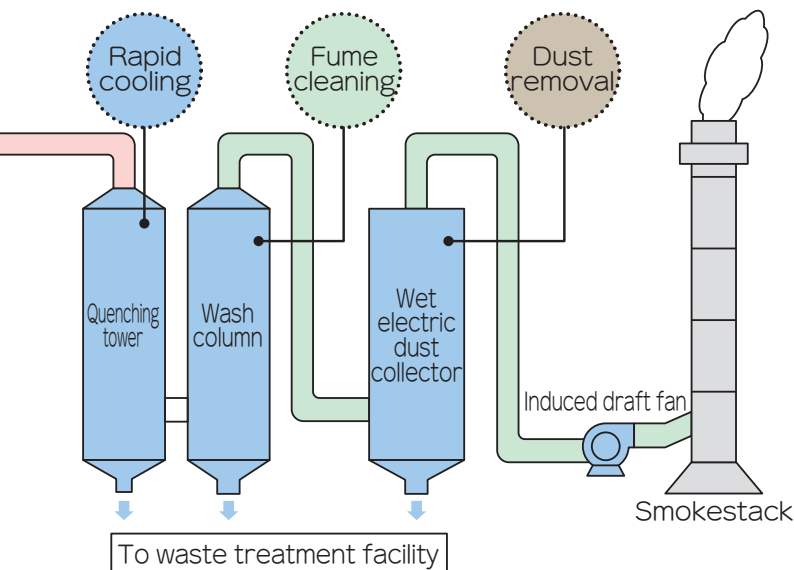


We set the targets below for FY 2017 and successfully achieved all of them:

1. Zero human injury
2. Zero environmental complaint
3. Reduction of unplanned outages

In FY 2018, all of us will continue to strive to achieve our targets. We will keep contributing to the society by "safely" treating waste entrusted by customers, providing "safe feeling" to stakeholders including community resident, and maintaining our operations "stably".

Operating Director / Deputy Division Manager of WASTECH Iwaki
(Manager of Iwaki Processing Dept.) **Hideki Kojima**



Output

Waste discharged
14,999tons

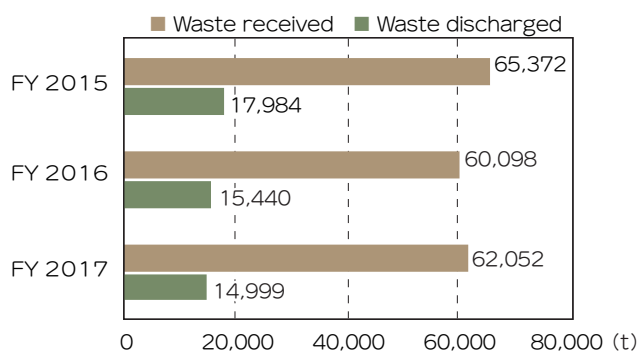
Waste recycled
1,899tons

Final disposal weight
13,100tons

Wastewater
1,197Km³

CO₂ emissions
(carbon equivalent)
22,322tons

Waste received and Waste discharged



Breakdown of waste discharged (t)



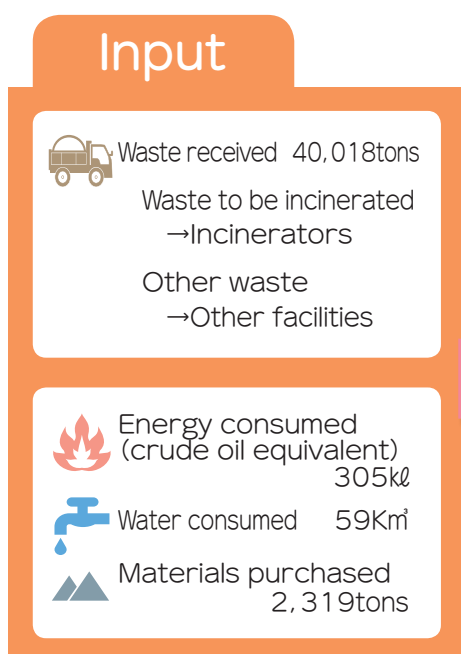
WASTECH Kanagawa

In WASTECH Kanagawa, we handle industrial waste safely with combustion technology, generate electricity from waste and use exhaust heat effectively. We are trying to contribute to minimization of fossil fuel use by making full use of operation know-how so that we can supply more electricity from a wide variety of waste materials with different calorific values and properties.



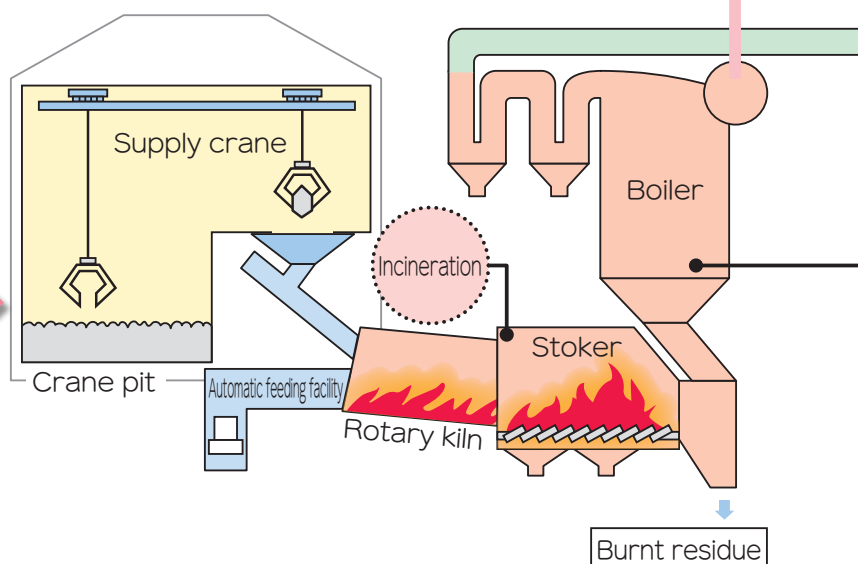
We are proud that we properly process the waste entrusted by customers and return the electricity that we generate with waste to society ... The mantra of Kanagawa Processing Dept. is **"safe comes first!"**.

Manager of Kanagawa Processing Department
Manabu Hasegawa



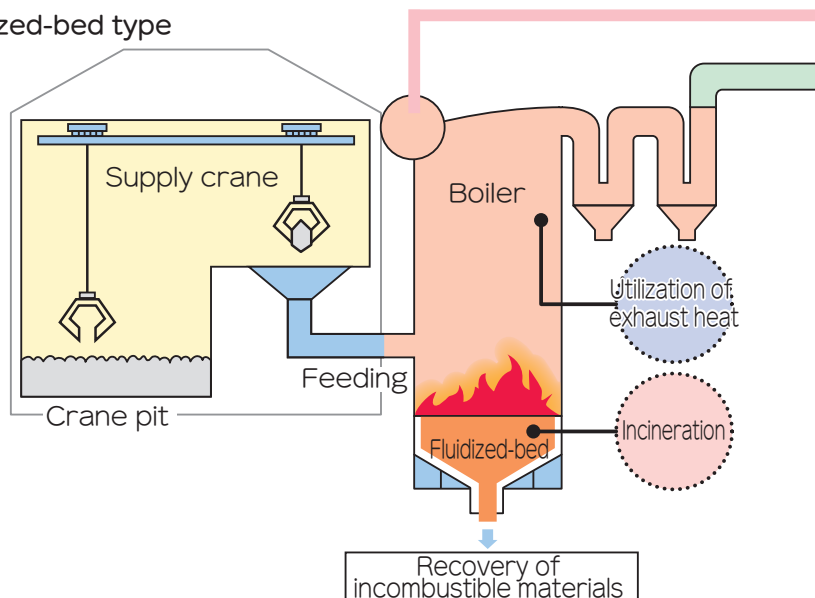
Unit 1 & 2 Incinerators

Rotary kiln stoker type



Unit 3 Incinerator

Fluidized-bed type



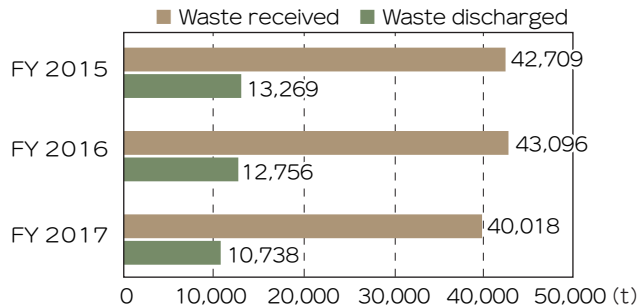
Total of Unit 1 & 2 incinerators

Incineration of mixture: 140 t / day
Incineration of sludge: 112 m³ / day
Incineration of waste oil: 150 m³ / day
Incineration of waste plastics: 80 t / day
Incineration of other industrial wastes: 230 t / day

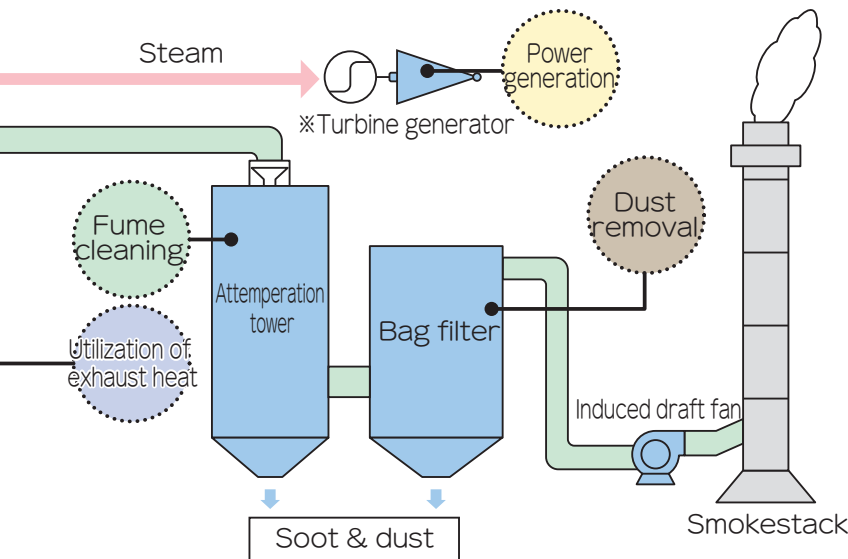
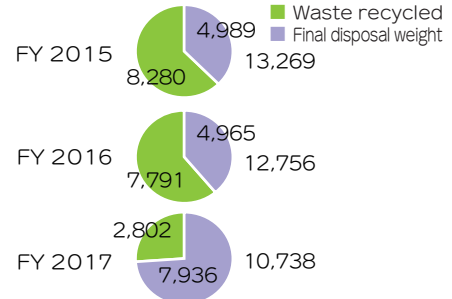
Unit 3 incinerator

Incineration of mixture: 70 t / day
Incineration of sludge: 48 m³ / day
Incineration of waste oil: 75 m³ / day
Incineration of waste plastics: 40 t / day
Incineration of other industrial wastes: 115 t / day

Waste received and Waste discharged



Breakdown of waste discharged (t)



Output



Wastewater (Note) 0Km³

CO₂ emissions (carbon equivalent) 19,107 tons

(Note) In WASTECH Kanagawa, we use a closed system (a system that reuses wastewater without discharging it outside).

Kawasaki Logistics Center

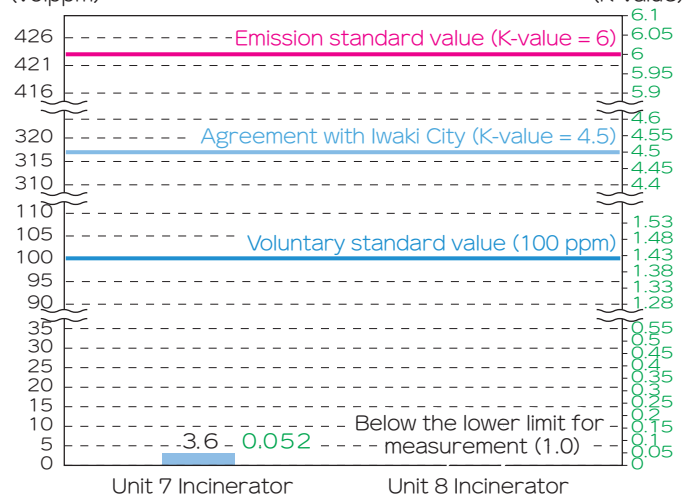


"Kawasaki Logistics Center" is a waste transit / storage facility adjacent to WASTECH Kanagawa. Waste carried in small vehicles will be transported to WASTECH Iwaki in our heavy-duty vehicles for disposal. We operate the facility while paying careful attention to the transportation efficiency.

In FY 2017, we stayed within voluntary limits and complied with regulatory emissions standards for concentrations of sulfur oxide, hydrogen chloride, nitrogen oxide, and soot emitted from our incinerators through proper maintenance and management of waste treatment facilities.

*Emissions standards presented here are those indicated in the Air Pollution Control Act.

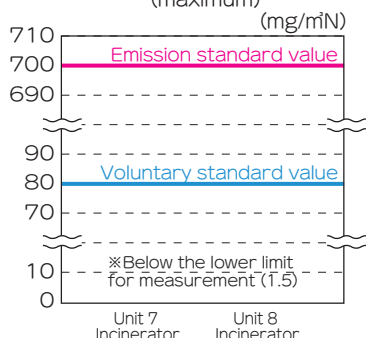
(volppm) Sulfur oxide concentrations (maximum) (K-value)



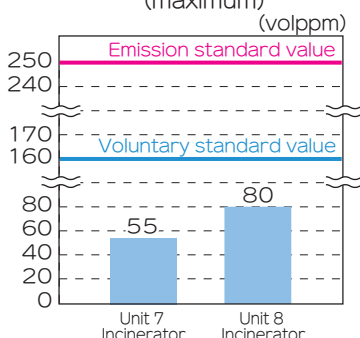
※ For sulfur oxide concentration, the K-value of the emission standard value (air pollution control law) is 6. In case of Iwaki City, the K-value in the pollution prevention agreement is 4.5 for each incinerator. WESTECH Iwaki converted the K-value to ppm and our voluntary standard value is set to be 100 ppm.

※ For the maximum values in this fiscal year, the K-value of Unit 7 incinerator was 0.05 and that of Unit 8 was below the lower limit.

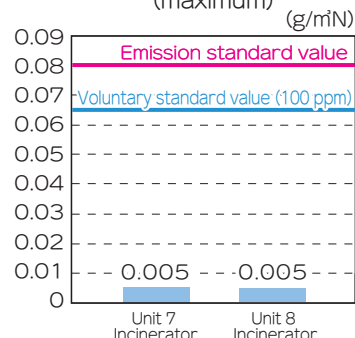
Hydrogen chloride concentrations (maximum) (mg/m³N)



Nitrogen oxide concentrations (maximum) (volppm)



Soot & dust concentrations (maximum) (g/m³N)



Release and transfer of chemical substances

There are 31 substances applicable to Pollutant Release and Transfer Register Law (PRTR Law), and we properly submitted notifications. In this report we picked up dioxins, among priority substances and benzene, trichloroethylene and tetrachloroethylene among designated substances of the Supplementary Provisions to the Air Pollution Control Law.

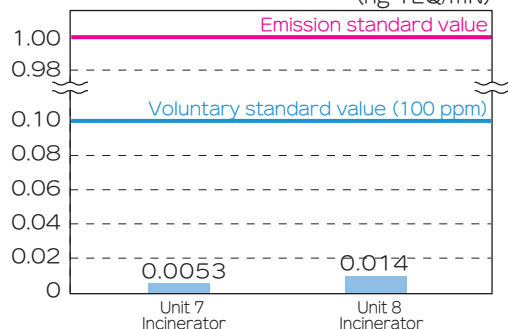
Transfer of dioxins:
0.51 g/year

Release of benzene:
14 g/year

Release of trichloroethylene:
5.4 kg/year

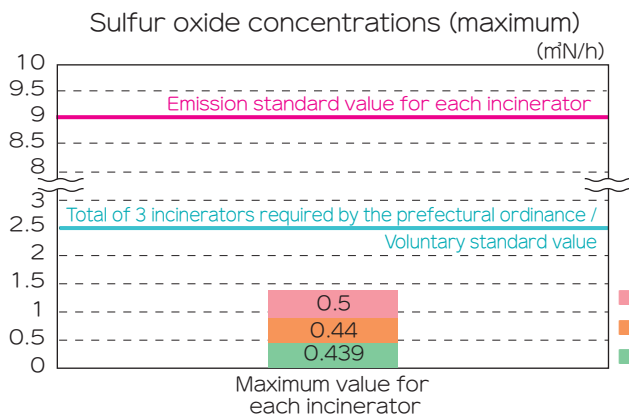
Release of tetrachloroethylene:
5.4 kg/year

Dioxins concentrations (maximum) (ng-TEQ/m³N)

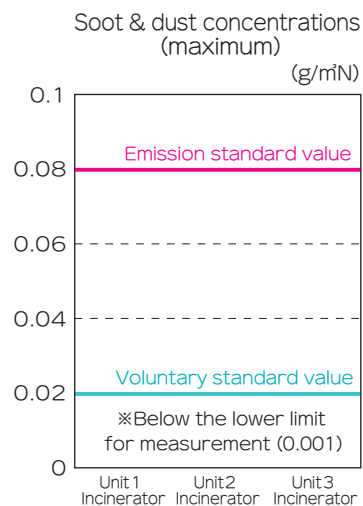
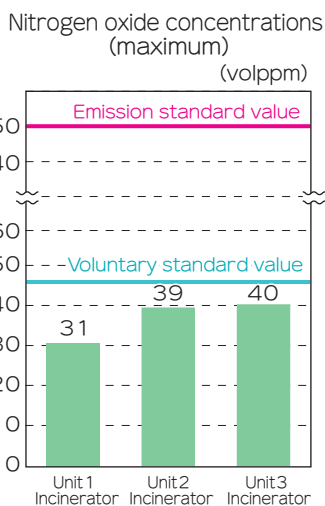
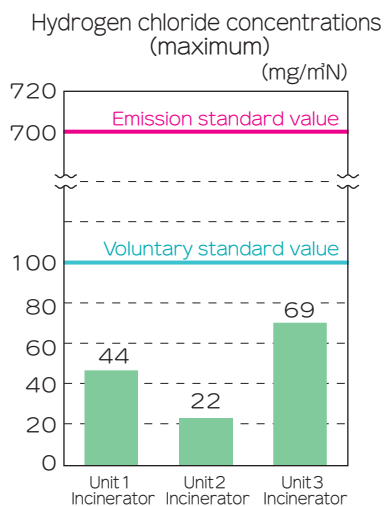


For dioxins, we comply with the emission standards of laws and regulations because the measurements were all below our voluntary standard value.

of Various Discharged Materials



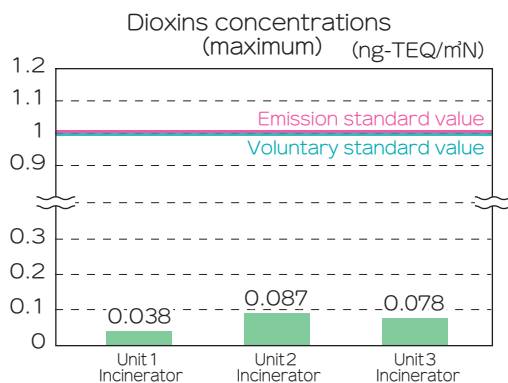
※For sulfur oxide concentration, the K-value of the emission standard value (air pollution control law) is 9.07 mN/h for each incinerator. Then, the Kanagawa prefecture's ordinance requires the total K-value of the three incinerators of WASTECH Kanagawa to be 2.52 mN/h. The measurements were far below the K-value for each incinerator as well as the total K-value.



Release and transfer of chemical substances

There is 1 substance applicable to Pollutant Release and Transfer Register Law (PRTR Law), and we properly submitted a notification.

Transfer of dioxins:
8.6 g/year



For dioxins, we comply with the emission standards of laws and regulations because the measurements were all below our voluntary standard value.

Environmental Engineering Business



As the department working in the forefront of the Company's Environmental Engineering Business, the Environmental Sales Department seeks to preserve and protect the global environment through operations conducted in Japan and overseas, working to drive further adoption of environmentally-friendly equipment that uses our proprietary technologies.

General Manager of Environmental Sales Department **Akihiro Shirato**

VOC effluent gas treatment equipment Solvent recovery, deodorization, and effluent gas treatment system "GASTAK"

Our GASTAK is revolutionary exhaust gas treatment equipment aimed at recovering the organic solvent contained in the exhaust gas and removing harmful and malodorous substances in the exhaust gas.

GASTAK®

"Convertech"

Excerpt from Converting Technical
Institute's magazine



We contribute to environmental preservation of the earth through the manufacture and delivery of environmental equipment.

Water treatment equipment

Calcium hydroxide solution injection equipment, "HONESTLIMER"

The calcium hydroxide solution injection device called "HONESTLIMER" for water suppliers has been introduced at water purification plants throughout the country. This device prevents the corrosion of and dramatically extends the service life of water facilities (water purification and distribution pipes), improving water quality and creating safe and delicious water.

Calcium hydroxide solution injection equipment
(Photo: courtesy of the Tokyo Metropolitan
Government Bureau of Waterworks, Nagasawa Purification Plant)



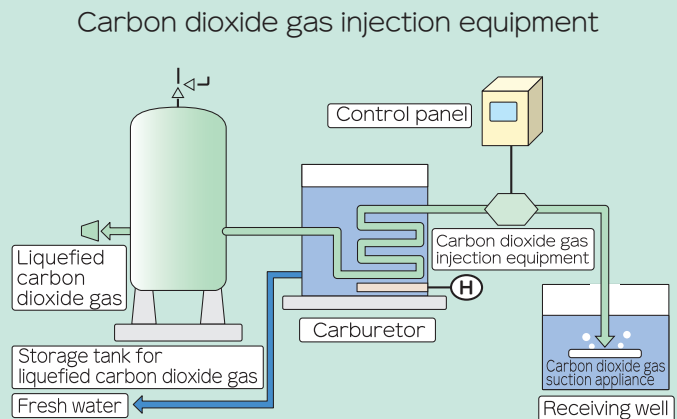


The Engineering Technology Department continually provides engineering solutions from the customer's standpoint through a comprehensive and responsible system that handles everything from the basic planning of environment-related equipment to design, construction, trial operation, and delivery.

General Manager of Environmental Engineering Department **Akihiro Ito**

Carbon dioxide gas injection equipment

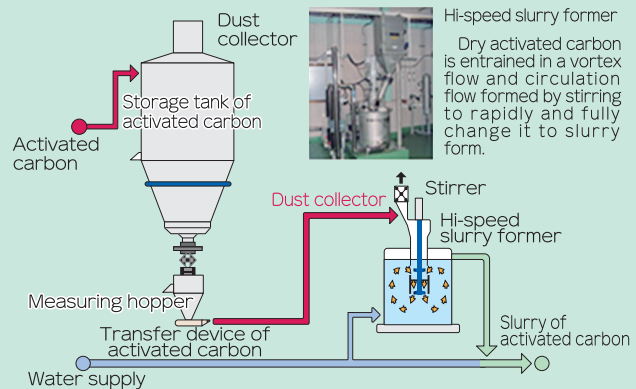
When purifying raw water with a high pH, it is necessary to properly control the raw water's pH during performing coagulation. There are many types of chemicals used to lower pH values, but our injection equipment uses carbon dioxide gas for its superiority in terms of safety and handling.



Dry powdered activated carbon injection equipment

Dry powdered activated carbon injection equipment stores and injects dry powdered activated carbon useful for removing oils and taste and odor causing substances such as mold smells in raw water.

Dry powdered activated carbon injection equipment



SHALLOW CLEAN

Water bloom, which is caused by cyanobacteria in lakes, marshes, and reservoirs as a result of the eutrophication of rivers, lakes, and marshes, is becoming a problem. "SHALLOW CLEAN" focuses on light as an essential element of water bloom, and blocks out all but the necessary minimum of light on a section of a water surface to control abnormal growth of algae without destroying the water's ecosystem.



Before SHALLOW CLEAN was installed

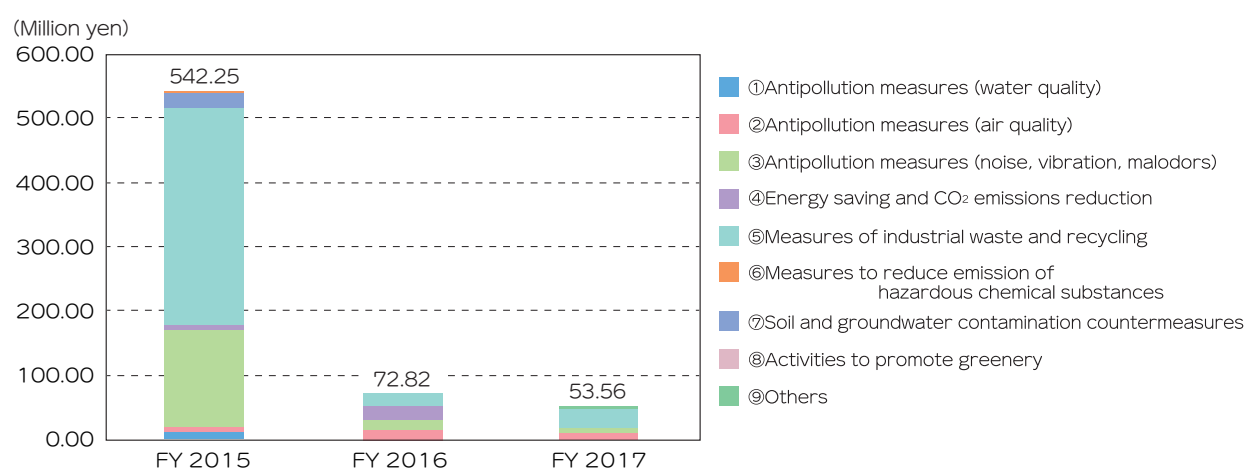


84 days after SHALLOW CLEAN was installed



The Economic Aspect of Eco-Conscious Management

Environmental Resource Investment



Environmental Resource Investment

A large investment project was completed in 2015 and we were able to achieve the expected results.

From fiscal 2016 onwards, while continuing pollution control measures in ② and ③, we are investing in various directions including ④ introduction of hybrid heavy machinery for energy saving and CO₂ emission reduction (FY 2016), and ⑤ introduction of thermal analysis equipment as measures against industrial waste and recycling (FY 2017).

Environmental Resource Investment

(Million yen)

Category	2015	2016	2017
①Antipollution measures (water quality)	12.23	0.00	0.60
②Antipollution measures (air quality)	8.90	17.11	10.52
③Antipollution measures(noise, vibration, malodors)	149.56	15.45	8.01
④Energy saving and CO ₂ emissions reduction	6.84	23.20	0.00
⑤Measures of industrial waste and recycling	338.06	17.06	30.46
⑥Measures to reduce emission of hazardous chemical substances	0.00	0.00	0.00
⑦Soil and groundwater contamination countermeasures	23.90	0.00	0.00
⑧Activities to promote greenery	2.76	0.00	0.00
⑨Others	0.00	0.00	3.97
Total	542.25	72.82	53.56

Compliance with Environmental Laws and Regulations

Compliance with environmental laws and regulations in FY 2017

In our management system basic policy, we state our commitment to "observing laws, regulations, and voluntary standards." In order to comply with laws and regulations, we use the certification we acquired in 1998 for the International Standard ISO14001 and evaluate the registration and state of compliance of laws and regulations. As a result of evaluation, we confirm that observance is in a state.

Main environmental laws and regulations and compliance evaluations

No.	Name of Law	Subject Matter	No.	Name of Law	Subject Matter
1	Pollution control agreement (between Iwaki City and Kureha Ecology Management)	Measures to prevent air pollution	8	Article 12, Section 3, Paragraph 7 of the Waste Management and Cleaning Act	Reporting the status of industrial waste management form issuance, etc.
		Measures to prevent vibration, noise, etc.	9	Article 14 and Article 14, Section 4 of the Waste Management and Cleaning Act	Standards concerning industrial waste and specially controlled industrial waste collection and transport business permits
		Measures to prevent odors	10	Article 4, Section 4, Paragraph 2 of the Waste Management and Cleaning Act	Periodic inspections of industrial waste treatment facilities by local government
		Air pollution measurement	11	Article 16, Section 5 of Fire Services Act	Official on-site inspections of hazardous material sites
		Odorous substance and industrial waste measurement	12	Article 5, Section 2 of the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof (PRTR Act)	Requirements related to reporting Class I Designated Chemical Substance emissions and transfers
2	Pollution control agreement (between Kureha Corporation and Kureha Ecology Management)	Wastewater standards	13	Article 15 of the Act on the Rational Use of Energy	Requirements related to the regular reporting of energy consumption by specified business operators
		Wastewater measurement	14	Article 14, Section 5 of the Water Pollution Control Act	Periodic inspections of specified facilities using hazardous substance and specified storage facilities
3	Article 28 of the Act on Special Measures Against Dioxins	Surveys of dioxin pollution in effluent gas and wastewater	15	Mercury waste guidelines	Environmentally sound processing related to mercury waste
4	Article 1, Ministerial Ordinance on Standards for Verification concerning Industrial Wastes containing Metals, etc.	Standards for landfill disposal for cinders and dewatered sludge	16	Guideline concerning the collection, transport of low concentration PCB waste Guideline concerning the treatment of low concentration	PCBs Standards for the collection, transport, and treatment of low-concentration PCB waste
5	Article 15, Section 2, Paragraph 3 of the Waste Management and Cleaning Act	Standards for the maintenance and management of waste treatment facilities	17	Act on Rationalized Use and Proper Management of Fluorocarbons	Reporting of fluorocarbon destruction
6	Article 6, Section 3, Paragraph 5 of the Waste Management and Cleaning Act	Standards for the storage of industrial waste and specially controlled industrial waste	18	Tokyo Metropolitan Ordinance on Environmental Preservation Kanagawa Prefecture Ordinance to Preserve the Living Environment Chiba Prefecture Ordinance to Limit Particle Matter Emissions from Diesel Vehicles Saitama Prefecture Ordinance to Preserve the Living Environment	Diesel vehicle operation regulations
7	Article 26, Act on Promotion of Global Warming Countermeasure	Report on greenhouse gas emissions calculated			

With Local Communities

Exchange meeting with communities



We are inviting community residents for an observation tour of WASTECH Iwaki on a regular basis.

Participated in the 'Let's Run Together!' of the alma mater

Our employees were invited and participated in the event of "Let's run together!" held at the elementary school in Iwaki City. This event is held with the aim of nurturing the pleasure of running and the attitude of carrying things through to the end by the graduates who have the experience of running Hakone Ekiden and the boys and girls of the school running together. We value the relationship with the children who will be responsible for the next generation of the local communities.

November 17, 2017



Environmental Initiatives

Cleaning volunteer

We participated in the beautification activities of the Binta River banks.

October 21, 2017



Illegally dumped waste removal activities

We participated in illegally dumped waste removal activities carried out in the National Monitoring Week of Illegal Dumping of Waste and removed illegally dumped waste.

June 2, 2017



Measures against global warming

Ministry of the Environment promotes "Cool Biz" and "Warm Biz" as measures because it is important to control global warming and to encourage energy conservation. We set the "Cool Biz" period to be May 1st to October 31st, and the "Warm Biz" period November 1st to April 30th to enlighten power saving.

Solar power generation on the rooftop of Head Office.

Effort to Reduce Environmental Impact

Thermal Recovery Efforts at WASTECH Kanagawa

WASTECH Kanagawa is capable of generating up to 4,800 kWh of electricity with a thermal recovery system that recovers combustion heat from three incinerators. We use the generated electricity to power its own facilities and sells the surplus to a power utility. In this way, surplus energy is returned to society in the form of electrical power and we reduce our impact on the environment.

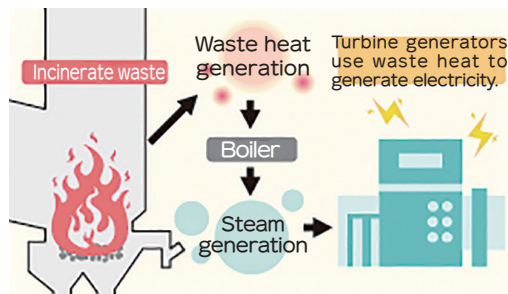
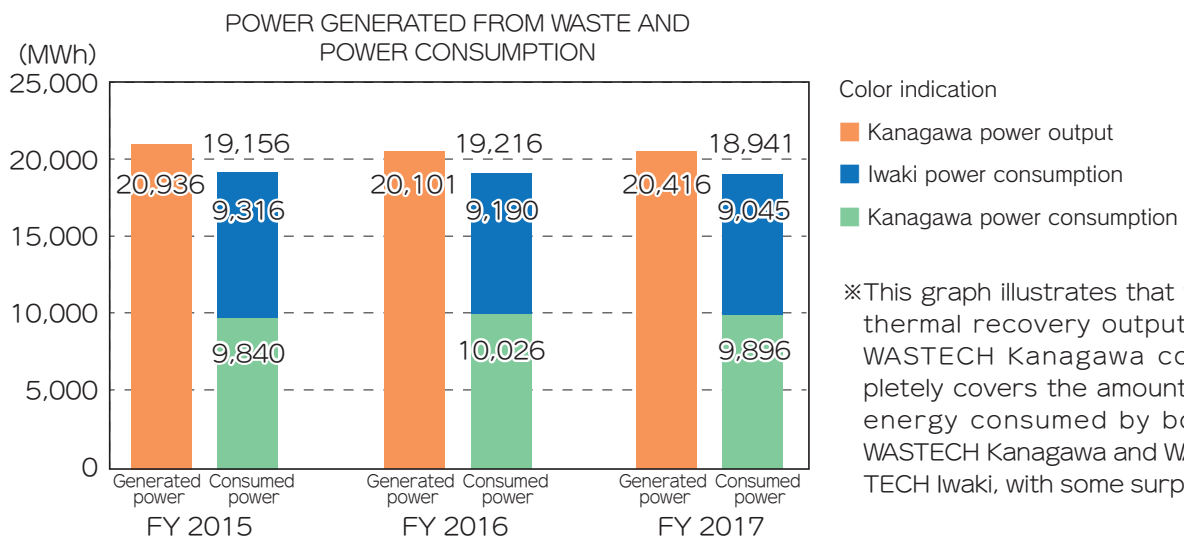


Image of thermal recovery



Turbine generator



Material Recycle

We recycle a part of our waste discharged after the intermediate treatment by outsourcing it. The photograph is an example of using recycled products provided by Chuo Denki Kogyo Co., Ltd. (contractor).

An example used as leveling material for a photovoltaic power generation facility

Recycled material from waste






Low-Concentration and Trace-Level PCB Waste Treatment

Detoxification overview

We are processing safely and surely at the following facilities that have been certified as harmless by the Minister of the Environment.

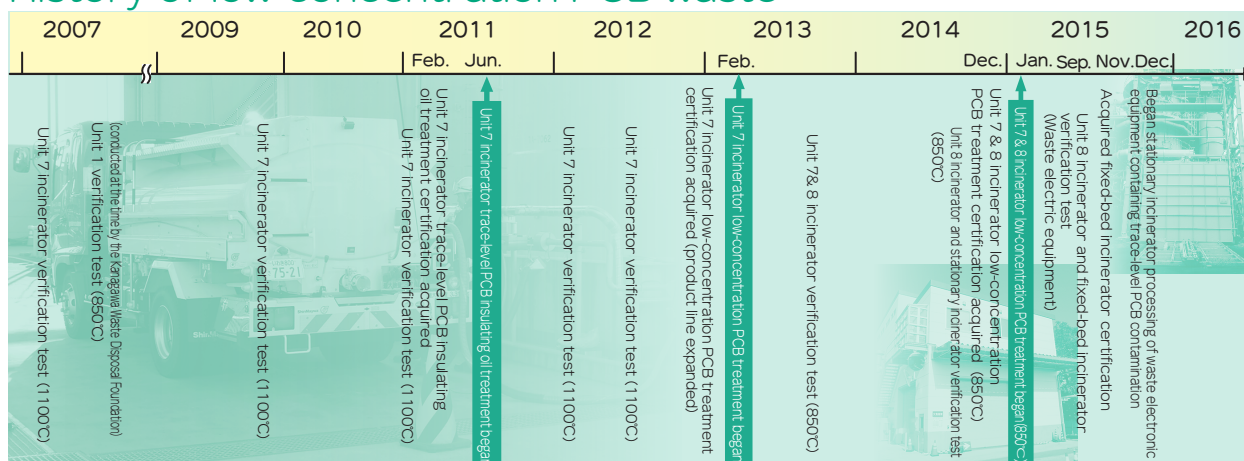
Topic	Details
Facility name	Unit 7 incinerator (rotary kiln incinerator) Unit 8 incinerator (rotary kiln incinerator, fixed bed incinerator)
Facility types	Facilities that incinerate waste polychlorinated biphenyl or other polychlorinated biphenyl contaminants or material processed from polychlorinated biphenyl
Facility location	WASTECH Iwaki
Waste collection and transport	Yes (in Japan)

We can treat all of the low-concentration PCB wastes in the table below.

	Low-concentration PCB waste	
	Waste electronic equipment, etc. with trace-level PCB contamination	Waste containing low-concentration PCBs
Low-concentration PCB waste oil 	Insulation oil with trace-level PCB contamination Electrical equipment or insulating oil (used in OF cables) with PCB micro contamination	Waste oil containing low-concentration PCBs Waste oil, etc. with a PCB concentration of 5,000 mg/kg or less (mainly fluid)
Low-concentration PCB waste 	Trace-level PCB contaminants Objects contaminated through insulation oil with trace-level PCB contamination	Low concentration PCB contaminants Sludge with PCB concentrations of 5,000 mg/kg or less; and PCB contaminated unwanted substances including paper waste, wood waste, textile waste, plastic waste, scrap metal, ceramic waste, and unwanted substances such as concrete chunks (including scrap metal) with PCB concentrations of 5,000 mg/kg or less
Low-concentration PCB-treated Materials 	Trace-level PCB treated materials Objects treated in order to dispose of trace-level PCB waste oil or low concentration PCB contaminants	These are treated to dispose of PCB waste, and have a PCB concentration of 5,000 mg/kg or less (for scrap metal, etc., the PCB concentration of deposits is considered)

The trace PCB contaminants include waste electrical devices (bodies).

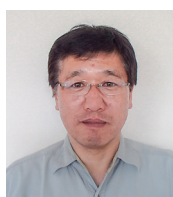
History of low-concentration PCB waste



Trace-level PCB and low concentration PCB waste treated to date

Fiscal year	Treated volume (ton)
2015	3,104
2016	2,543
2017	1,908

Deadline for treatment : 2027.3.31
(Enforcement of Order of Law Concerning Special Measures against PCB Waste)



Regarding the detoxification of our low concentration PCB contaminants, experienced operators are working hard daily with the motto of safety and security.

Assistant Section Manager, Low-Concentration PCB Sales Section
Toyokatsu Suzuki

Review of Safety System and Reconstruction of Safety Culture

Regarding review of safety system and reconstruction of safety culture

In FY 2017, we truly realized that we had to review our safety system and restructure our safety culture as soon as possible.

Regarding safety culture, we are currently working on grasping the actual level by using the evaluation table arranged for internal use based on the security evaluation system of the security improvement center. As a result of the evaluation, we will identify weak points of our safety culture to improve them. Moreover, we will not only overcome the weakness but also advance the overall level.

Regarding the safety management system, we will rebuild the system in which the head of the department should be more involved in securing safety and hygiene, and will promote activities to achieve higher levels of safety and hygiene. Also, we will increase the frequency of patrols by our senior officers and instruct the entire company to raise the safety system and safety culture level.

We review all processes so as not to cause disasters similar to the past ones and reduce their possibilities focusing on the equipment and work procedures. Also, if it is difficult to deal with the problems, we will make administrators strictly review the safety to prevent the occurrence of similar disasters.

We are committed to health and safety activities bearing “safety takes precedence over everything” in mind, so that not only employees but everyone involved can laugh with their families without injury.

Safety and Health Activities

FY 2017

Safety and Health Management Policy
Kureha Ecology Management Co., Ltd.

**Work in safety with
a sound mind and health body!**

- Conduct risk assessments to achieve zero-accident workplace
- Taking a moment to assess situations by pointing and calling
- Create cheery workplaces that emphasize good communication

Highlighted Activities in FY 2017

- ① Enforce "touch and call" act throughout the company
- ② Special patrols by the president and directors
- ③ Managers make all drivers aware of carefulness
- ④ Verify operation plans for business vehicles
- ⑤ Enforce and ensure practice of pointing and calling
- ⑥ Conduct broadcasts to raise safety awareness
- ⑦ Conduct mental health improvement activities



President patrol at WASTECH Iwaki



President patrol at WASTECH Kanagawa

Risk Assessment

Concept of risk assessment

"The frequency of occurrence of hazardous condition", "the possibility of leading to injury" and "severity of injury" should have scores according to their magnitude.

Then, the four risk levels should be identified based on the risk the total scores of the three items above.

Risk assessments are being done throughout the Kureha Group.

Kureha Ecology Management follows the procedure below and takes countermeasures with priority given to higher risks.

- ① Identify all dangers and hazards
- ② Assume and evaluate risks arising from identified dangers and hazards
- ③ Clarify what measures should be taken giving priority to worker protection

We've already addressed all level IV and III risks—the most serious risks—and have been focusing on level II and I risks successively. We also conduct additional risk assessments whenever new operations arise or there are changes to working environments or conditions.

Safety and Health Activities

Pointing and calling

"Pointing and calling" involves physically pointing to work that is to be done and calling out the name of the operation or action to be performed.

We adapt the Pointing and calling. Employees are instructed to point and call in many different situations, including when they are working, operating a vehicle, or walking through a plant. Contractor personnel are also encouraged to point and call when performing work inside a plant.

As a result of efforts to raise awareness for and educate employees about pointing and calling, the FY 2017 point and call rate came close to 100%. We continue to enforce this policy going forward.

POINT AND CALL RATES (%)

Action	FY 2015	FY 2016	FY 2017
Workers	96.9	99.0	99.8
Forklift drivers	98.8	99.6	100
Large vehicle drivers	98.6	99.4	99.5
Passenger vehicle drivers	98.9	100	98.6
2 and 4 ton vehicles	97.8	99.3	98.8



Emergency drills and safety patrols

Kureha Ecology Management handles hazardous or toxic substances regulated by the Fire Services Act. We conduct emergency drills to prepare for situations that ought never to occur, changing the locations and conditions of the situation every time to ready employees for a wide range of scenarios. The Nakoso Fire Department of the Iwaki City Firefighting Division provides support and supervision for comprehensive emergency drills conducted at WASTECH Iwaki. We also invited representatives of local residents to observe efforts made by our employees to prepare for emergencies.



Emergency drills at WASTECH Iwaki (October 19, 2017)



Emergency drills at WASTECH Kanagawa (October 14, 2017)

Patrol by Managers

Managers conduct monthly patrols. Patrol members from multiple departments find problematic areas and potential risks from a variety of viewpoints, and then measures are taken to address them. A number of issues concerning trip hazards (falling down stairs) were identified in fiscal 2017, and are accounted for in the table below of FY 2016 near misses.

FY 2017 Accident Occurrence

	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total	FY 2016
Personal disaster	Fatal accident									1			1	0
	Lost time accident		1										1	0
	Non-lost time accident												0	1
	Minor injury					2							2	1
	Major Near-Miss												0	0
Property damage accident			1	2	1	3			1		1	1	10	8
Traffic accident	1	1	2	1	1	1		2	2		6	1	18	19
Others													0	1
Total	1	2	3	3	2	6	0	2	3	1	7	2	32	30

※ "Traffic accident" is an accident on roads etc. outside our site.

※ Equipment damage due to vehicles at the waste disposal companies etc. is included in the property damage accident.

※ Accidents caused by external workers are not included.

FY 2017 Near Misses (Nearly escaped accidents)

Type	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Total
Crush accidents	1	1	3	1	2	5	1	2	1	3	4	4	28
Caught-in injuries	0	0	1	1	2	0	0	0	0	0	0	0	4
Fall injuries	25	15	16	24	14	24	22	25	17	20	28	23	253
Falls from height	4	2	3	3	1	4	6	2	0	7	6	0	38
Puncture wounds or lacerations	6	7	4	3	6	4	2	4	0	5	1	1	43
Contusions	5	7	4	9	8	11	10	8	8	4	4	7	85
Falling/flying objects	3	1	3	2	4	10	7	1	2	7	2	3	45
Eye injuries	3	2	0	2	3	0	1	2	2	1	1	1	18
Chemical burns	7	9	7	5	13	9	12	11	10	3	0	4	90
Electric shocks	0	0	0	0	0	0	0	0	0	0	0	0	0
Traffic accidents	33	47	37	31	53	39	44	38	35	29	40	39	465
Equipment damage	2	2	0	1	4	1	3	0	1	0	0	3	17
Other accidents	3	2	8	6	8	11	6	4	2	4	1	3	58
Total	92	95	86	88	118	118	114	97	78	83	87	88	1,144

Lecture on Health

For the purpose of raising employees' awareness of health, a lecturer was invited from Japan Industrial Safety and Health Association to talk about "prevention and improvement of metabolic syndrome".



FY 2017 in Review

In FY 2017 we began restructuring the safety culture. We will steadily review and strengthen the safety management system, improve facilities, share information on dangerous places, clarify work procedures, review the construction management system, and review the procedure of risk assessment so that we can improve our safety and health activities.

Various Initiatives

Lecture for Business Partners



Since 2014, we have held a “Lecture on Responsibility of Waste Generator” by our corporate lawyer and had business partners including those who collect, transport and dispose waste. The lecture which became the fourth was on the subject “Revision of the Waste Disposal Act in 2017 and Featured Cases” and the main points of revision of the waste disposal system were described. We will continue to understand the laws & regulations related to waste disposal and improve awareness of compliance.

Observation Tour of WASTECH Kanagawa

A lot of people visit WASTECH Kanagawa for observation tour throughout the year. The guests are so various including school officials, corporate representatives, community members and general individuals. Students from overseas also visit us to learn about waste disposal system in Japan.



The photo shows a scene of the tour of students from Malaysia.

Improvement Reporting System: Safety Campaign

We have an "Improvement Reporting System" for daily work improvement. This time, we invited improvement reports from employees under the title of "Safety Campaign". Among many reports, efforts to prevent accidents were highly evaluated. We will invite improvement proposals from various perspectives for better work.



S Class Evaluation for 3 consecutive years as an energy-saving excellent operator

In 2016 the Agency for Natural Resources and Energy started the "Business Classification Evaluation System" in order to urge operators who use energy at factories and other plants to further rationalize their energy use. This system classifies all business operators who submit periodic reports (factory etc.) stipulated by the Energy Conservation Law into four stages of S, A, B, C, and responds according to the classes (to praise excellent operators as "S class" by publishing them by the industry type, while to investigate more rigorously "under B class" as stagnant operators). We received S class evaluation as an excellent energy-saving operator for 3 consecutive years from FY 2015.

~Our Energy Conservation Efforts~

We use waste oil and recycled oil to contribute to the saving of fossil fuel resources such as heavy oil. In addition, we operate incinerators under optimal operating conditions to improve combustion efficiency (= energy conservation).

Also, we are generating electricity using waste heat generated when waste is treated in WASTECH Kanagawa. The generated electricity is not only used in the facility, but it is also sold.



Harassment training



We conducted training related to harassment, which is recently taken up as an important issue frequently. We are working on creating a workplace where each employee respects each other under the harassment-free and easy-to-work environment.

We will continue to make constant efforts as a company rooted in the community that treasures the harmony among people, society and the global environment.

History

December 1971	Establishment of Kureha Kompo Co., Ltd.
October 1975	Name is changed to Kureha Gyomu Co., Ltd
March 1977	Permission is acquired to conduct operations to collect, transport, and dispose of industrial waste in Fukushima Prefecture
July 1984	Name is changed to Kureha Kankyo Co., Ltd.
October 1986	Unit 7 incinerator is developed, installed, and operated in-house
May 1993	The Unit 8 incinerator is developed, installed, and operated in-house
March 1998	ISO14001 certification is acquired
April 1998	Unit 7 incinerator is renewed in-house
April 2006	The company name is changed to Kureha Ecology Management Co., Ltd.
June 2006	Paid-in capital is increased to ¥240 million
April 2010	The Kanagawa Plant is opened
April 2011	The Kawasaki Logistics Center is opened
April 2012	The Environmental Solutions Unit is opened
April 2014	WASTECH Park becomes WASTECH Iwaki and the Kanagawa Plant becomes WASTECH Kanagawa
March 2017	ISO9001 certification is acquired

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For waste-related inquiries

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This report is also published on our website:
<http://www.kurekan.co.jp/information/>

MEMO



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Exhibition area



Regional Exchange Hall



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