

# Safety, Environmental and Social Report

—2019



#### About the Cover

Hydrogen fluoride (HF) is a raw material needed to produce Kanto Denka's signature fluorochemical products. Fluorite, the mineral form of calcium fluoride ( $\text{CaF}_2$ ), is a crucial resource for obtaining hydrogen fluoride. The cover motif is a photo that captures this fluorite sparkling brightly in a way that reflects the spirit of Kanto Denka Kogyo.



Safety & Environment Department Technical Division  
Yusen Building, 2-3-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan Phone: +81-3-4236-8816

This report can also be viewed on the Company website at <https://www.kantodenka.co.jp/english/>



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Kanto Denka Kogyo Co., Ltd. takes an environmentally friendly approach in its daily activities in order to protect people's healthy lifestyles.



**Management Principles**

Through the quest for constant corporate growth and acquisition of optimum profits, Kanto Denka is working with all its shareholders, users and employees to create a successful company and prosperous society. To achieve this end, we are endeavoring to meet the requirements of our users with our unique technologies and customer-oriented services, and to build a trusted company based on our motto, “sincerity, creativity, prompt response and harmony with nature.”

**Principles of Conduct**

- ◆ Put the customer first at all times, and act courteously and with passion.
- ◆ Observe relevant laws and regulations as well as company regulations, and act openly.
- ◆ Practice 5S & PDCA, and make a commitment to efforts to develop a safe and people-friendly work environment.
- ◆ Strive to improve our own abilities while nurturing the next generation, and aim to be professionals at what we do.
- ◆ Develop products, using creative technology, that our customers can use with a feeling of security.
- ◆ Strive to conserve and act in harmony with the environment in order to develop an affluent society.

We aim to be an Innovative,  
Development-driven Company  
that Contributes to Society  
Through Superior Original Products.



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**Editorial Policy**

The Kanto Denka Group believes that we, as good corporate citizens, have a mission to society to contribute to making peoples’ lives safer and more enriching. Therefore, we strive to find solutions for social issues.

We have been issuing these reports since 2000 in order to communicate the group’s principles, approach, and initiatives concerning safety, the environment, and society to all stakeholders.

Report period: Although this report has been compiled using data regarding activities that took place between April 1, 2018 and March 31, 2019, content concerning matters from April 2019 and after has also been included due to its importance and urgency.

Report scope: Kanto Denka Kogyo Co., Ltd. and group companies

Over the 80 years since Kanto Denka Kogyo was founded in 1938, we have handled products including acids, alkalis, chlorine, fluorine, and metal fine powders and we have cultivated technological knowledge and expertise that has enabled successes such as becoming the first company in Japan to develop original technology for hydrofluoric acid electrolysis.

In 2019 we formulated our new three-year medium-term management plan—Journey to 1000. Under this plan, we will strive to achieve consolidated net sales of ¥100 billion in FY2024 through the core strategies of “promote expansion of the fine chemicals business,” “raise the level of the production technology,” “create new businesses promptly,” “strengthen the collective capabilities of the Group,” and “shift to ESG-conscious management while increasing corporate value.”

We will promote management that is conscious of ESG and the SDGs in order to make social contributions while increasing corporate value, thereby contributing to the realization of a sustainable society. We will also adopt the processes and products demanded by the environment and society and promote recycling and the use of semiconductor gases that have low global warming potential. Furthermore, we will use our core technologies, such as our signature electrolysis and fluorination technologies, to continue

developing products that have a greater beneficial effect on society the more they are used.

It has been five years since we established “Giving the highest priority to safety,” “Being a profitable company,” and “Development by and for everyone,” as the prime initiatives of our business activity. These have improved our employees’ awareness regarding safety, profitability, and improvement and have become fixed within our activities. We will continue to advance these going forward in order to raise the work satisfaction of each individual employee.

Under an even more balanced management foundation, we aim to have realized an environment in which everyone can work with a sense of safety and satisfaction and to have become an Innovative, Development-driven Company that contributes to society through superior original products by the 90th anniversary of the company’s founding. I hope you will continue to lend your support going forward.

Jun’ichi Hasegawa  
President



## Kanto Denka Products for a Better Life

Kanto Denka products are used as materials for a wide range of products that modern society cannot live without. Here we introduce these products using familiar scenes from our everyday lives.

### Fluorochemicals

We use our proprietary fluorination technology to supply products including various materials that are an essential part of products such as semiconductors and liquid crystals.

### Materials of batteries

The market for lithium-ion rechargeable batteries is forecast to expand and we produce electrolytic products that are used as materials for these batteries.

### Fundamental chemicals

We produce compounds and raw materials for use in a variety of industries. These play an important role in industrial development and people's everyday lives.

### Ferrochemicals

We produce raw materials for the developer in copiers and printers that cater for a range of needs.



**1**  
LCD panels and electronic components

We provide special gas products such as gases etching, cleaning, and electrical insulation. We are focusing on the development and supply of gases that have low global warming potential.

#### Fluorochemicals

Nitrogen trifluoride, Methyl fluoride, Carbonyl sulfide, and others



**2**  
High capacity electrical substations

We are helping to make high capacity electrical substations smaller through excellent insulation.

#### Fluorochemicals

Sulfur hexafluoride



**3**  
Optical fibers

We provide materials to fabricate the optical fibers that facilitate today's information-communication society.

#### Fluorochemicals

Silicon tetrafluoride



**4**  
Electric vehicles

We are contributing to realizing a more environmentally friendly society by supplying high-grade products that meet the strict requirements for rechargeable batteries.

#### Materials of batteries

Lithium hexafluorophosphate, Lithium tetrafluoroborate



**5**  
Smartphones and mobile devices

With product quality that is among the world's best, we are helping to improve the performance and lifespan of lithium-ion rechargeable batteries.

#### Materials of batteries

Lithium hexafluorophosphate, Lithium tetrafluoroborate



**6**  
Paper and pulp

We reach out to everyone through the raw materials we supply for making paper and pulp products, including newspapers, magazines and cardboard.

#### Fundamental chemicals

Liquid caustic soda, Caustic soda flakes



**7**  
Soaps and detergents

We support sanitary living by providing the main materials for soaps, bleaches, and disinfectants.

#### Fundamental chemicals

Liquid caustic soda, Caustic soda flakes, Sodium hypochlorite



**8**  
Flavor enhancers

Our fundamental chemicals are also used in the manufacturing processes for flavor enhancers, making food even more delicious.

#### Fundamental chemicals

Hydrochloric acid



**9**  
Water treatment

Our products are used in water treatment, providing safer drinking water and conserving the environment.

#### Fundamental chemicals

Liquid caustic soda, Caustic soda flakes, Sodium hypochlorite



**10**  
Copiers and printers

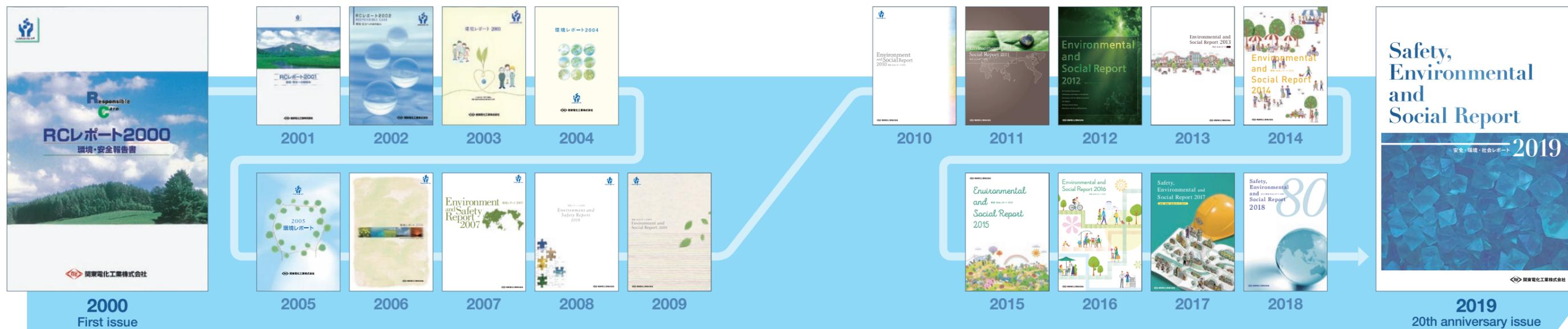
Our products are meeting the need for recording media capable of storing images with increasingly higher quality, including realizing developer that is highly durable. We also provide a line-up of environmentally friendly products that do not contain heavy metals.

#### Ferrochemicals

Carrier, Magnetite

# 20 Years of RC Reports

You can find PDF versions of our RC Reports here:  
<https://www.kantodenka.co.jp/english/environment/>



## What We Aim to Share through the RC Reports

RC (Responsible Care) is a voluntary initiative by chemicals companies to ensure safety, maintain health and protect the environment in all their chemicals processes, from development and production through to distribution, use, final consumption and disposal. Participants also commit to disclosing the outcomes of those processes and engaging in open interaction and communication with the community. We strive to disclose our implementation of this initiative to the community and communicate with stakeholders by compiling the details of our endeavors into a report.

Kanto Denka published our first RC Report in 2000 under the name *Environmental Report*. Since then we have issued a report annually and within this, we have constantly revised its content so that it meets the requirements of society. Consequently, the title of these reports has also evolved in line with these changes, and this 20th anniversary edition is titled *Safety, Environmental and Social Report 2019*.

Going forward we will continue to communicate with our shareholders through sincere information disclosure.

## Kanto Denka RC Report Values

### Delivering the authentic voice of our employees

Kanto Denka gives the highest priority to safety and one of the distinctive features of our RC report is the Safety Message section, in which individual employees share their commitment to safety. In addition to demonstrating this commitment to customers and others in the community, these safety messages also provide inspiration to colleagues and become a source of motivation that advances daily safety activities.



### Disclosing accurate data

We have made disclosing accurate data a priority since the very first issue. We recognize that the environmental impact of our plants is of great interest to people in the community and in addition to sharing results regarding Kanto Denka as a whole, in the Site Report section we also provide detailed data concerning results at both our Shibukawa Plant and our Mizushima Plant. We will continue striving to disclose accurate data.



### Making people more familiar with chemistry and Kanto Denka

We try to use easy-to-understand descriptions and avoid industry terminology in order to make the report accessible to people who are not so familiar with chemistry. In compiling this report, we consider how to make it easier to read and relate to, such as increasing the number of illustrations and photos used in depicting the company, so that our readers can become more familiar with chemistry and Kanto Denka.



## Message from the Editorial Staff

This year marks 20 years since we published *Environmental Report*, our first RC report, back in 2000. We have been able to share messages about the direction we are taking in regard to safety, environmental conservation, quality, and production improvements with all stakeholders. Now, the company is taking another step forward as we aim to achieve net sales of ¥100 billion. In the future I hope we can share new messages from a different perspective.



**Director in charge**  
**Fuyuhiko Ishii**  
 Director and Managing Executive Officer  
 Technical Div.  
 New Products Development Div.

As the company celebrates 80 years since its founding, this fiscal year we launch activities under the newly formulated medium-term management plan. This provides us with an opportunity to consider once again the importance of fulfilling our social responsibilities so that we can continue to operate safely as a company that is trusted by society.



**Production staff**  
**Shun'ichi Akiyama**  
 General Manager  
 Production Engineering Dept.,  
 Safety & Environment Dept.  
 Technical Div.



**Production staff**  
**Yuuki Moriyama**  
 Production Engineering Dept.  
 Technical Div.

Although I work at a chemicals company, I'm actually more of a liberal arts-type person. My understanding of chemistry is probably similar to a lot of our readers. I decided to turn this weakness into a strength and focused on creating a report that can help a general reader understand and become more familiar with chemistry.

# Approach to the SDGs

## SUSTAINABLE DEVELOPMENT GOALS



## SDGs—Goals toward Realizing a Sustainable Society

### Sustainable Development Goals

The SDGs were adopted at a UN summit in 2015 and comprise 17 goals that the world needs to achieve by 2030 in order to realize a sustainable society. A large number of people representing governments, NGOs, and companies participated in discussions to set the goals based on the principle that it was essential to involve people from a variety of different backgrounds.

The goals are shared by the entire world, including both developed and developing nations, and tackle challenges that are thought to be difficult to overcome, such as ending poverty and eradicating hunger. Achieving these goals will require not only the efforts of each individual, but also the kind of innovation that will transform society. Therefore, companies are also expected to play a key role in accomplishing the SDGs.

We can also expect society-transforming innovation to lead to new business opportunities. Kanto Denka supports the principles behind the SDGs and will contribute to achieving them through our business activities.

#### Director's Thoughts

Looking once again at the 17 goals and 169 targets of the SDGs, I noticed that there were a lot of areas where they overlap with our Management Principles and Principles of Conduct. These areas include “create a prosperous society” and “sincerity, creativity, prompt response and harmony with nature,” in the Management Principles and “develop products, using creative technology, that our customers can use with a feeling of security” and “strive to conserve and act in harmony with the environment” in the Principles of Conduct. In other words, I think we have been trying to accomplish the goals of the SDGs since before the term SDGs entered common usage. Going forward, we will continue to contribute to the development of a sustainable society as an Innovative, Development-driven Company.



**Yukio Takaie**  
Director and Managing Executive Officer

## Kanto Denka Products and the SDGs

### Fluorochemicals

#### Relevant SDGs and initiatives



The Fluorochemicals Department produces and sells fluorine-containing specialty gases, primarily for the semiconductor and LCD industries. These industries are pioneering technological innovation, including 5G communications, AI, IoT, driverless technology, OLED TVs, and foldable smartphones, and a large volume of our gases are used in manufacturing processes for the memory chips, LSI, sensors, LCD, and OLED that are essential for realizing these technologies. Going forward, we will make even greater contributions to industrial technological innovation by providing a safe and stable supply of high-quality products.



**Akira Muranushi**  
General Manager  
Fine Chemicals Sales Dept.-II  
Business Div.

### Materials of batteries

#### Relevant SDGs and initiatives



Rechargeable lithium-ion batteries are playing a significant role in realizing a clean energy society that can help solve global issues such as global warming and worsening air pollution. We produce and sell the electrolytic materials that are crucial for manufacturing these batteries. Products such as smartphones, which have significantly improved the convenience of modern lifestyles, also use Kanto Denka battery materials. Going forward we will make a social contribution by playing our part in building a sustainable society.



**Ikuo Maeda**  
General Manager  
Fine Chemicals Sales Dept.-III  
Business Div.

### Fundamental chemicals

#### Relevant SDGs and initiatives



The Fundamental Chemicals Department uses saltwater electrolysis to produce and sell caustic soda, chlorine compounds and other materials. An example of an application for our chlorine compounds is cleaning metal components. They offer superior cost efficiency, flame resistance, and recyclability compared to other cleaning agents. We will contribute to environmental conservation and health promotion contained within the SDGs by providing users with guidance regarding appropriate usage and distributing awareness-raising materials.



**Masanobu Shirokura**  
General Manager  
Fundamental Chemicals Sales Dept.  
Business Div.

### Ferrochemicals

#### Relevant SDGs and initiatives



The Ferrochemicals Department produces and sells carriers that are used in copiers and copy machine developers. Electrophotographic technology was one of the major inventions of the 20th century and had a huge effect on the economy. This technology has continued to evolve from large-sized printing machines to the devices we see in offices and homes today and its contribution to society is wide-ranging.

Currently we are implementing processes that reduce the volatile substances in our products and striving to reduce our environmental impact and save on resources through long-life design.



**Masami Ida**  
General Manager  
Production Dept.-III, Shibukawa Plant  
Fine Chemicals Sales Dept.-I  
Business Div.

## Toward a 100-year-old factory trusted by society and making employees proud

The Shibukawa Plant celebrates its 80th anniversary in December 2019. We operate multiple production sites outside Japan to gain a better position to purchase raw materials and to supply products to customers from locations closer to them. By leveraging this advantage, we are rapidly shifting to a business model that is geared toward improving customer satisfaction and price competitiveness. Amid such major changes in the business environment, the role of the Shibukawa Plant, one of our production sites in Japan, has even greater importance as a mother factory originating and disseminating new technologies and as a trailblazer for our other plants. Our goal is to enable the Shibukawa Plant to support other factories with its technologies as well as products, and to contribute to society. To this end, the plant is heading for its 100th anniversary and beyond. Under the slogan of “Safe and Stable Production,” we aim to win further trust from society and ensure that all staff can work with pride and confidence.

**Yasunari Yamaguchi**

Director and Executive Officer, Shibukawa Plant Manager



This plant manufactures a wide range of products, ranging from fluorochemical products used in semiconductors and LCD panels through to the carriers used in copiers and printers. Through its efforts to ensure safe and stable operation and to improve its production capacity, the plant is supporting the growth of the industry.

### Products

#### Ferrochemicals

- Carrier
- Magnetite

#### Fluorochemicals

- Carbontetrafluoride
- Ethane hexafluoride
- Sulfur hexafluoride
- Carbonyl sulfide
- Fluorine gas mixture
- Methyl fluoride
- Octafluoropropane
- Hexafluoro-1,3-butadiene
- Iodine pentafluoride
- Difluoromethane
- Trifluoromethane
- Octafluorocyclobutane
- Nitrogen trifluoride
- Tungsten hexafluoride

### Certifications

- ISO 9001/JQA-1009 (certified in October 1995)  
A majority of the products are ISO certified.
- ISO 14001/JQA-EM0438 (certified in May 1999)
- OHSAS 18001/JQA-OH0087 (certified in July 2005)



### Location

1497, Shibukawa, Shibukawa City, Gunma, Japan

### Plant area

Approx. 138,000 m<sup>2</sup>

### Number of employees

238 (as of March 31, 2019)

## Shibukawa Plant Tour



### 7 Daily pre-work meeting

Meetings held in each workplace before work begins are always attended by staff from the Safety & Environment Department who give instructions on safety and thorough risk avoidance (The photo shows a meeting during shutdown maintenance. Meetings usually take place indoors on each team's shop floor).



### 1 Safety tower

Erected in hopes of eliminating plant accidents and injuries, and to represent our pledge of "Safety First."



### 2 Safety awareness messages

Slogans to promote safety and prevent plant accidents and injuries, and to represent our pledge of "Safety First."



### 3 Precautions against heatstroke

This electronic board shows the heat index (WBGT).



### 6 Combustion abatement system

Striving to reduce emissions of environmentally harmful substances from the processes of producing fluorochemicals and ferrochemicals.



### 5 Risk awareness equipment

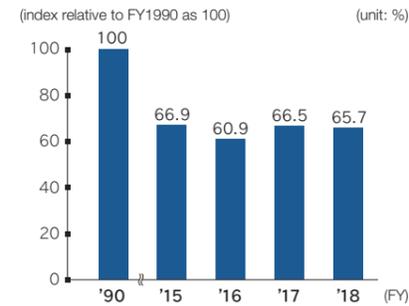
Employees are trained here to enhance their risk awareness and develop their ability to detect potential hazards in their day-to-day work.



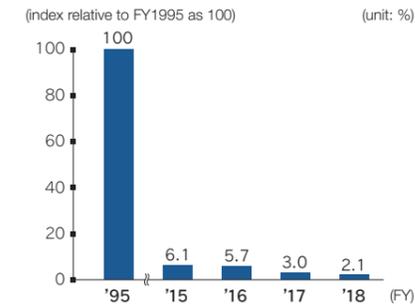
### 4 Green workplace

Making the workplace more pleasant and contributing to environmental conservation.

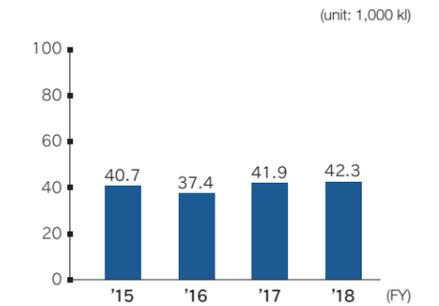
### Trends in CO<sub>2</sub> Emissions



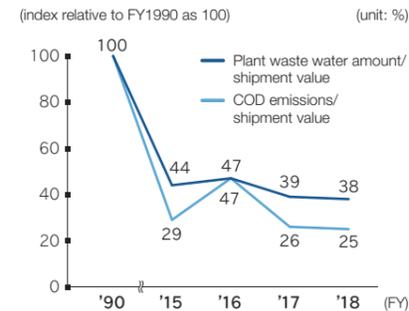
### Trends in Emission Amounts of Substances Specified in Voluntary Management Standards



### Trends in Energy Consumption in Crude Oil Equivalent



### Trends in Plant Waste Water and COD

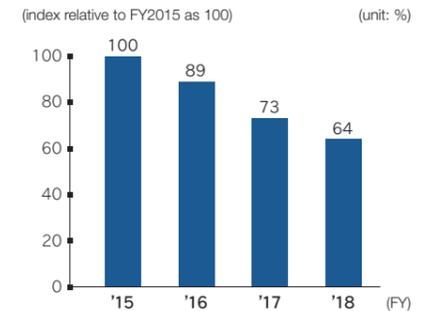


### Trends in SO<sub>x</sub>, NO<sub>x</sub>, Soot and Dust Emissions

FY	'15	'16	'17	'18
SO <sub>x</sub>	0.00	0.00	0.00	0.00
NO <sub>x</sub>	0.53	1.11	1.10	1.16
Soot and Dust	0.14	0.18	0.17	0.18

\* Emission/shipment value

### Trends in Amounts of Industrial Wastes



## Safety and health inspection by Gunma Labor Bureau

The Gunma Labor Bureau visited the plant to conduct safety and health inspections and examined our risk awareness equipment, safety activities in manufacturing areas, and environmental conservation efforts using waste gas combustion systems. The inspectors found the plant well-maintained, and suggested that we continue to manage equipment that takes routine inspections and preparedness for natural disasters into consideration, and to create a workplace where employees can work happily. Recognizing that safety and health activities never end, we will constantly keep working to improve them.



## Making our plant safer, less harmful to the environment, and conducive to local communities and society

The Mizushima Plant manufactures fundamental chemicals, materials of batteries, and fluorochemicals. We cannot continue our business without being trusted by our stakeholders, and so it is essential to earn the trust from local residents, customers, and workers here. First, we will enhance safety, reassure local residents by reducing our environmental impact, and contribute more to local communities and society. Second, we pursue customer satisfaction by improving both the quality and stability of our manufacturing and by speeding up our services from the customer's perspective. Further, we create a workplace where employees can work more comfortably and safely, stay motivated to improve, and speak frankly, while finding happiness and fulfillment in work. I will keep striving to make our employees proud to work at this plant.

### Masatomo Hayashi

Senior Executive Officer, Mizushima Plant Manager



This plant supplies world-leading chemical products to assist in a wide range of manufacturing processes, including fundamental chemicals that are indispensable to industry and battery materials, an area in which demand is growing year by year. It also focuses on production innovations and the development of new and original technologies.

#### Products

##### Fundamental chemicals

- Liquid caustic soda
- Caustic soda flakes
- Hydrochloric acid
- Sodium hypochlorite
- Trichloroethylene

##### Materials of batteries

- Lithium hexafluorophosphate
- Lithium tetrafluoroborate

##### Fluorochemicals

- Silicon tetrafluoride
- Chlorine trifluoride
- Organic fluorine compounds

#### Certifications

- ISO 9001/JQA-2254 (certified in March 1998)  
A majority of the products are ISO certified.
- ISO 14001/JQA-EM0437 (certified in May 1999)
- OHSAS 18001/JQA-OH0190 (certified in May 2011)  
OSHMS-compliant management in 2006 to 2011



#### Location

4-4-8, Matsue, Kurashiki City, Okayama, Japan

#### Plant area

Approx. 185,000 m<sup>2</sup>

#### Number of employees

197 (as of March 31, 2019)

### Mizushima Plant Tour



#### 7 Green workplace

Employees look after the plants and trees to make their workplace greener.



#### 1 "Be Safe" message

A large sign at the plant entrance symbolizes our wish for a safe trip home and helps raise safety awareness.



#### 2 Safety message board

By highlighting the number of accident- and injury-free days, the board reminds us of safety at work.



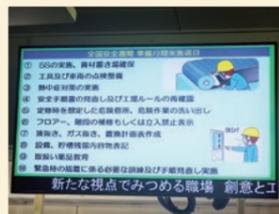
#### 6 Precautions against heatstroke

To prevent heatstroke, candies and oral rehydration solutions are available at multiple locations in the plant.



#### 5 Risk awareness equipment

Known as the Kansui Safety Academy, this facility is used for risk awareness training to cultivate workers' ability to recognize potential risk factors in the workplace.



#### 4 Digital signage

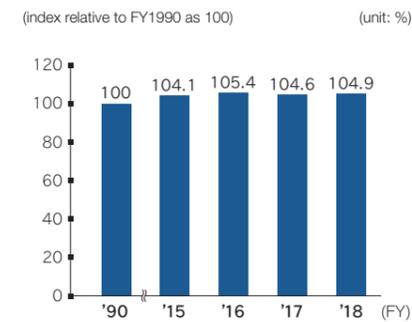
Every shop floor has a large LCD panel to draw greater attention to safety-related information.



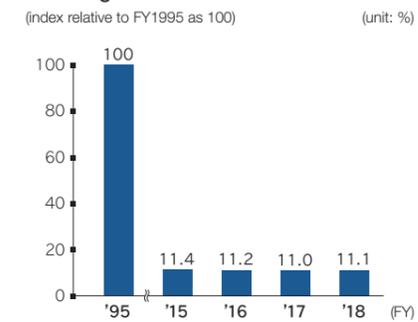
#### 3 Safety tower

As a symbol of employees' commitment to safety, the tower watches over the Mizushima Plant as it strives to eliminate accidents and injuries.

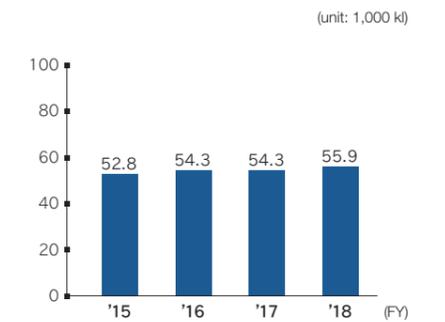
#### Trends in CO<sub>2</sub> Emissions



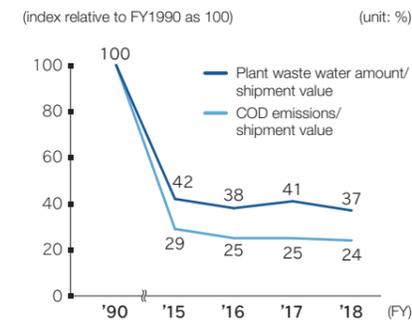
#### Trends in Emission Amounts of Substances Specified in Voluntary Management Standards



#### Trends in Energy Consumption in Crude Oil Equivalent



#### Trends in Plant Waste Water and COD



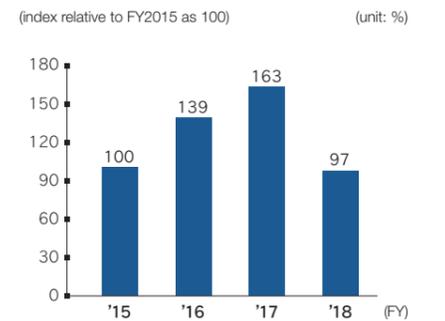
#### Trends in SO<sub>x</sub>, NO<sub>x</sub>, Soot and Dust Emissions

(index\* relative to FY1993 as 100) (unit: %)

FY	'15	'16	'17	'18
SO <sub>x</sub>	1.61	1.51	1.13	0.93
NO <sub>x</sub>	75.97	56.96	59.45	48.83
Soot and Dust	5.96	4.62	5.07	4.36

\* Emission/shipment value

#### Trends in Amounts of Industrial Wastes



### Joint industrial safety activities with partner companies

The Mizushima Plant is committed to preventing industrial accidents involving partner companies. Together with these companies, we conduct KY (*Kiken Yochi*, or hazard prediction) activities, safety training, and evacuation drills. Both sides also share information and carry out safety patrols to ensure that all workers at the site address safety from the same viewpoint and with the same awareness. We will continue working to build an environment in which all employees at the plant can work safely without worries.



## RC Promotion Organization

### Fundamental Principles and Basic Policies on the Environment and Safety Issues

#### Fundamental Principles

The conservation of the global environment is one of humankind's common responsibilities. In all our operational activities, based on the principle of self-responsibility, we pay due consideration to the environment and safety, from the development, manufacturing, distribution, and use of our products, to how they are disposed of.

#### Basic Policies

1. Carry out comprehensive environmental and safety management in such areas as environmental protection, operational safety and disaster prevention, occupational health and safety, chemical product safety, logistics safety, and international trade safety.
2. Ensure the safety of employees and areas in the vicinity of company facilities by working to achieve no accidents and no operation incidents.
3. Make efforts to save energy and resources and reduce the amount of industrial waste generated as a result of operations.
4. Ensure the development and introduction of products and manufacturing processes that take environmental and safety issues into account.
5. Strictly comply with laws, regulations and agreements related to the environment and safety, as well as establish and meet our own stricter voluntary standards in these areas.
6. Promote logistics safety and risk-free transactions with customers.
7. Carry out the Environmental and Safety Audits.
8. Collect information on the environment and safety related to products, and thoroughly disseminate the information to employees and customers.
9. Take care to ensure the protection of the environment and safety in overseas operations, technology transfers and the international trade of chemical products.
10. Promote risk-awareness in society by widely publicizing the details and results of our environmental and safety activities through environmental reports and other materials like local communities, investors and related organizations.

### Audit System

Our RC audit system consists of three types of auditing: self-auditing, in which each facility evaluates its own performance; facility auditing, which is conducted by committees; and overall auditing, in which the RC Promotion Council discusses and assesses the results of facility audits. Continuous improvements are fostered as self-audit results are reflected in the next RC objectives and plans, while overall audit results are incorporated into management policies, objectives, and implementation plans for the following fiscal year.

In FY2018, facility auditing conducted by the Safety and Environment Committee was integrated with that conducted by the Quality Management Committee.

The audit system has also been strengthened with the introduction of audit preparatory meetings and audit follow-up, to pay more attention to the PDCA process.



### Organization

The **RC Promotion Council** is chaired by the President and consists of the chairpersons of its subcommittees and a few members appointed by the President. With the Safety & Environment Department serving as the secretariat, the Committee is responsible for formulating RC policies for each fiscal year and over the medium- to long-term, deliberating and deciding on important issues related to company-wide RC activities, overseeing three subcommittees, and discussing and coordinating RC promotion and audit issues.

#### Safety and Environment Committee

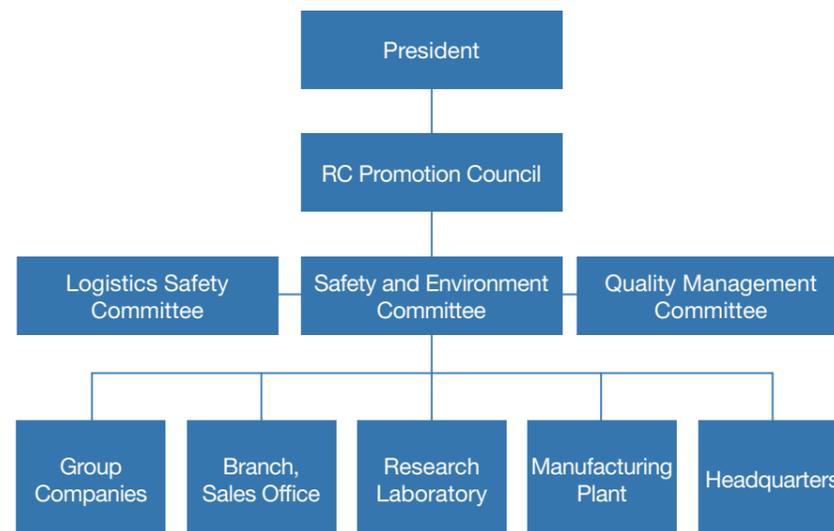
Promotion and audit of RC activities across all operational areas.

#### Quality Management Committee

Promotion and audit of quality control issues, such as PL and quality certification.

#### Logistics Safety Committee

Promotion and audit of environmental and safety preparations related to the external transport of chemical products and customers' delivery facilities, and understanding the purpose of use.



## RC Action Targets and Performance

### The 7th RC Action Targets

Among our 7th RC Action Targets, we successfully reached the target levels in the following areas: no accidents and no injuries, saving energy (Mizushima Plant only), and reduction of greenhouse gas emissions. Although we fell short of fulfilling the other action targets, our efforts resulted in improved performance in most of the areas.

RC Action Targets for FY2016–2018 (three-year plan)		Results in FY2016		Results in FY2017		Results in FY2018	
<b>1</b>	<b>No Accidents and No Injuries</b> 0 incidents	Workplace Injuries	Facility Accidents	Workplace Injuries	Facility Accidents	Workplace Injuries	Facility Accidents
		0	0	0	1	0	0
Target	<ul style="list-style-type: none"> <li>• Zero Workplace Injuries (zero workplace injuries among the employees and contractors)</li> <li>• Zero Facility Accidents</li> </ul>	Our activities include raising safety awareness, implementing KY before starting work each day, regularly receiving guidance from industrial safety consultants, and sharing close-call accidents. In FY2018, we successfully achieved zero workplace injuries.					
<b>2</b>	<b>Saving Resources</b> 3% reduction	2% increase		5% increase		5.5% increase	
Target	Reduce the quantity of principal raw materials against plant production volume by 3% of FY2015 levels. <b>Reduction of 1% every year</b>	Our raw material consumption intensity worsened despite our efforts to improve it in every business segment. Since our Fundamental Chemicals Department deals with far greater amounts of raw materials than the other divisions, overall intensity evaluations for major raw materials used in all the divisions have inevitably depended heavily on the performance of the Fundamental Chemicals Department. We will search for an adequate evaluation method.					
<b>3</b>	<b>Saving Energy</b> 3% reduction	Shibukawa Plant	Mizushima Plant	Shibukawa Plant	Mizushima Plant	Shibukawa Plant	Mizushima Plant
		0.5% reduction	1.1% reduction	1.2% reduction	2.2% reduction	0.9% reduction	3.1% reduction
Target	Reduce energy consumption (crude oil equivalent) per unit of production volume by 3% of FY2015 levels. <b>Reduction of 1% every year</b>	Both plants strategically implement measures to conserve energy for their high energy-consuming facilities. When ramping up production, the Shibukawa Plant had to operate under a load exceeding the adequate level for energy conservation, which resulted in less energy-saving effects, falling short of the target. The Mizushima Plant succeeded in achieving the target as energy-saving measures worked effectively.					
<b>4</b>	<b>Reduction of GHG Emissions</b> 84% reduction	73% reduction		83% reduction		84% reduction	
Target	Reduce CO <sub>2</sub> equivalent greenhouse gas (GHG) emissions by 84% of FY1990 levels. <b>Reduction of 2% every year</b>	To reduce emissions of substances with high global warming potential (GWP), we enhanced the collection equipment in individual processes and installed multiple abatement systems that use combustion treatment. This resulted in the successful achievement of the reduction target. We will continue measures to address detailed sources of emissions.					
<b>5</b>	<b>Reduction of Environmental Pollutants</b> 30% reduction	15% increase		24% increase		22% reduction	
Target	Reduce the emission intensity of chemicals specified as PRTR by JCA by 30% of FY2015 levels. <b>Reduction of 10% every year</b>	A new combustion treatment system was installed to reduce the increasing emissions of organic solvents. Although this measure has proved effective, we fell short of the target due to the increase in alcohol emissions. While our total emissions of environmental pollutants remain at low levels, we intend to continue reduction efforts.					
<b>6</b>	<b>Reduction of Industrial Wastes</b> 15% reduction	32% increase		51% increase		8% reduction	
Target	Reduce landfill industrial emissions outside our plant by 15% of FY2015 levels by raising the recycling ratio. <b>Reduction of 5% every year</b>	The amount of industrial wastes from the Mizushima Plant has been increasing in line with higher production. However, its landfill wastes began to decline in 2018, although still below the reduction target, as we found new recycling destinations.					

## The 8th RC Action Targets

We will take the following measures to achieve the 8th RC Action Targets:

- (1) **Actions for no accidents and no injuries:** Strengthen safety measures by effectively using the PDCA cycle based on the 5S method
- (2) **Energy-saving measures:** Foster improvements in the intensity of our high power-consuming facilities and promote the effective use of excess hydrogen
- (3) **Reduction of industrial wastes for landfill:** Diversify recycling destinations and improve raw material consumption intensity associated with the generation of industrial waste
- (4) **Reduction of environmental pollutants:** Analyze the causes of increasing pollutants and enhance countermeasures
- (5) **Reduction of GHG emissions:** Implement measures to address detailed sources toward reducing emissions of substances with high global warming potential and power-conservation measures to cut CO<sub>2</sub> emissions

### RC Action Target for FY2019–2021 (three-year plan)

<b>1</b> No Accidents and No Injuries	<b>0</b> incidents	<b>Target</b> <ul style="list-style-type: none"> <li>• Zero Workplace Injuries</li> <li>• Zero Facility Accidents</li> </ul>
<b>2</b> Saving Energy	<b>3%</b> reduction	<b>Target</b> <ul style="list-style-type: none"> <li>• Reduce energy consumption (crude oil equivalent) per unit of production volume by 3% of FY2018 levels.</li> <li><b>Reduction of 1% every year</b></li> </ul>
<b>3</b> Reduction of Industrial Wastes	<b>15%</b> reduction	<b>Target</b> <ul style="list-style-type: none"> <li>• Reduce landfill industrial emissions outside our plant by 15% of FY2018 levels by raising the recycling ratio.</li> <li><b>Reduction of 5% every year</b></li> </ul>
<b>4</b> Reduction of Environmental Pollutants	<b>30%</b> reduction	<b>Target</b> <ul style="list-style-type: none"> <li>• Reduce emissions of chemicals specified by JCIA (in PRTR reports) by 30% of FY2018 levels.</li> <li><b>Reduction of 10% every year</b></li> </ul>
<b>5</b> Reduction of GHG Emissions	<b>10%</b> reduction	<b>Target</b> <ul style="list-style-type: none"> <li>• Reduce CO<sub>2</sub> equivalent greenhouse gas (GHG) emissions by 86% of FY1990 levels.</li> <li>Reduction of 0.7% every year</li> <li>• Reduce emissions by 10% of FY2018 levels.</li> <li><b>Reduction of 3.3% every year</b></li> </ul>

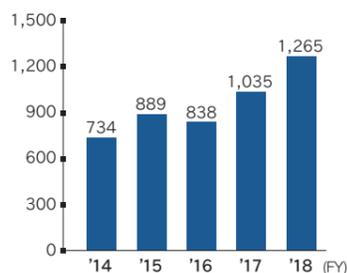
## Investment for the Achievement of RC Action Targets

### Investment in Safety Measures

Investments are focused on building the foundation to support safety measures, such as building and enhancing risk awareness. We continue to invest in safety in line with the “Giving the highest priority to safety” principle. The value of such investments has been rising year after year, reflecting our commitment to improving the working environment and raising safety awareness.

#### Trends in Investment in Safety Measures

(unit: million yen)

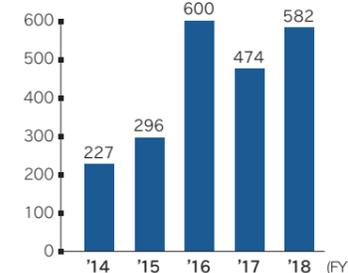


### Investment in Environmental Measures

To conserve the environment, we continuously invest in environmental measures such as saving resources and energy and reducing GHG emissions, environmental pollutants and industrial wastes.

#### Trends in Investment in Environmental Measures

(unit: million yen)



My department manufactures many types of fluorine-containing specialty gases. As we deal with chemical products that need to be handled with special care, we promote safety by identifying high-risk, unsafe tasks and points and conducting monthly workplace patrols with the full participation of everyone. We also recognize the importance of visualizing tasks and have devised a system to visualize the operating status of each manufacturing process. I am determined to make our workplace safer by raising the safety awareness of all members of the team.



**Shogo Masauji**  
Senior Manager  
Production Dept.-II, Sec.-II  
Shibukawa Plant

As we expand into overseas markets, I have more chances to make business trips abroad. To ensure safety while staying overseas where I am exposed to more risks than in Japan, I make sure to prepare well before leaving and to act cautiously once I arrive. In particular, I am careful about the following:

1. Understanding the transport situation at the destination
2. Arranging a reliable driver in advance
3. Always looking left and right before crossing the road
4. Always buckling up

**Yu Ying Ying**  
Chief  
Overseas Business  
Development Dept.

We strive to develop safe and stable manufacturing technologies that generate less waste. To perform experiments safely, we conduct KY (*Kiken Yochi*: hazard prediction) every day on my experiments and on the way I handle chemicals, which allow us to assess and identify hazards and take appropriate actions. In addition to hazard prediction, we continue to follow the basic safety procedures, such as pointing and calling and 5S practices, to help eliminate accidents and injuries in the workplace.



**Kazuki Kurihara**  
Chief  
Research & Development Center  
New Products Development Div.

“Do not cause an accident.” “Do not get injured.”... these are common precautions, but I always keep them in mind because they are so important. My work often involves potential danger, such as working with valves in elevated places or performing operations requiring a strong force. In such situations, I stay on the safe side and take proper actions after considering how I can get the job done safely.



**Wakana Ishimoto**  
Logistic Sec.  
Administration Dept.  
Mizushima Plant

When arranging to deliver products, I prioritize securing sufficient lead time for delivery to our customers. To prevent misloading and delayed deliveries, the lead time must be suited to the delivery destination and conditions. I discuss the cargo volume and delivery schedule with the carrier and determine the loading place and the means of transport appropriate to the inventory status and delivery time while consulting with other departments of the plant. I will continue to perform my duties with awareness that I can contribute to safety by ensuring on-time delivery based on arrangements with enough leeway.



**Tomoko Matsuoka**  
Nagoya Office

I focus on pre-work KY activities. It is important to reflect on past accidents and draw lessons for the future; but I have learned from experience that it is too late to think about safety only after an accident has occurred. I always try to foresee possible issues, such as what would be a safer procedure and what could cause injuries, so that we can carry out our work with fewer worries.



**Hiroto Ishii**  
Senior Manager  
Production Dept.  
Sec.-II  
Kanto Denka Fine Products KOREA

## Safety Education at Kanto Denka

We engage in safety activities that are participated in by all employees in an aim to thoroughly implement the principle of “Giving the highest priority of safety.” We conduct various forms of safety education aimed at improving the sensitivity of each and every employee toward safety and increasing knowledge of safety management.

### Safety Behavior Criteria

- 1 Pre-work *Kiken Yochi* (KY: hazard prediction) reminders and awareness checks shall be performed, and the causes of any hazards checked and eliminated before any work is carried out.
- 2 All work shall be monitored and checked to ensure that it is carried out in accordance with the instructions given by the manager or supervisor.
- 3 Unsafe activities shall not be tolerated under any circumstances and safety shall not be compromised.
- 4 Instructions shall be clear, detailed and appropriate for the type of work, and those responsible shall confirm that those instructions have been understood correctly.
- 5 Persons receiving instructions shall always query any instructions that they cannot understand and shall not engage in work while they are still unsure.
- 6 Where workers lack experience, the responsible manager or supervisor shall provide detailed instructions and work permits and shall monitor the work.
- 7 Instructions and coaching shall be provided based on the principles of the “*Sangen Shugi*” (“three actuals” philosophy).
- 8 Managers and supervisors shall communicate orders and instructions to the employees actually carrying out the work, including partner company contractors, and shall confirm that such communication is thoroughly carried out.
- 9 Training shall be persistent and repeated until the content is fully understood.
- 10 In plants, the Production Department, Plant Protection Department and original contractor shall be fully aware of their rights and responsibilities and shall issue instructions in accordance with those responsibilities.

**安全行動基準**

1. 作業前に気づかせ、気づきの危険予知(KY)を行い、危険要因を取り除き、危険な要因を確認させた後、作業を行わせること。
2. 管理・監督者は指示通りに作業を行っているか監視・確認すること。
3. 不安全行動は絶対に許さず、変換しないこと。
4. 指示は作業内容に応じて明確且つ具体的に言い、理解しているか確認すること。
5. 指示を受けた者にはわからないことは必ず質問して、あいまいな状態で作業を行わないこと。
6. 指示には管理・監督者がきめ細かく指示・確認すること。
7. 主観のもと行うこと。
8. 指導が作業を行う末端の社員、協力会社員に伝えていることを確認すること。
9. 教育は徹底よく、繰り返し、理解されるまで行うこと。
10. 工事体製造部、施設部、工事元請け業者が責任と権限を自覚し、それぞれの責任をもって指示を行うこと。

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### Risk Awareness Equipment

We installed risk awareness equipment at the Shibukawa and Mizushima plants in FY2017. While knowledge and experience are essential for cultivating a capacity to spot potential sources of danger during day-to-day work, we cannot allow people to experience an actual accident or disaster. By experiencing dangerous situations in safety with this risk awareness equipment, it is possible to accumulate such knowledge and experience. We are constantly introducing new devices as we work to enhance the equipment. Participants have said they have become more sensitive toward safety by experiencing conditions they do not normally experience. We will continue this form of education going forward with the inclusion of partner company contractors as well.



Experiencing the risk when using a stepladder



Experiencing the risk of getting stuck in rotating equipment



Experiencing the risk of residual liquid leakage



Experiencing a reduction in mistakes from pointing and calling

### Other Forms of Safety Education

We are working to eliminate unsafe situations and practices by constantly conducting pre-work meeting, work procedure improvements, and safety education according to the type of work. We also set a Safety Day every month, on which we conduct safety education and patrols so that past accidents are not forgotten. This safety education is wide-ranging and includes practical education such as protective clothing education and education for people working in high places, in addition to education on putting pointing and calling into practice, SDS reading, and individual risk avoidance. This training aims to improve the safety awareness and skills of employees. In addition, we also develop risk avoidance trainers and workplace supervisor health & safety trainers and encourage active participation in external safety and health workshops.



Training for wearing protective clothing



Safety guidance from an occupational safety consultant



Group education for instilling pointing and calling



Training for using full-harness type crash prevention equipment

## Safety Activities at Our Plants

We have continued to implement a wide range of initiatives to improve the effectiveness of safety, including the introduction of the Assistant Manager system to reform safety activities at workplaces from the perspective of the production sites themselves, the thorough implementation of safe basic practices (pointing and calling, *kiiken yochi*, etc.), and the reinforcement and diversification of safety displays.

### No Accidents and No Injuries

#### RC action target

### Zero Workplace Injuries (zero workplace injuries among the employees and contractors), Zero Facility Accidents

By giving the highest priority to safety throughout the company, Kanto Denka is endeavoring to achieve a record of no accidents and no injuries by focusing its efforts on production site-led safety activities and on raising safety awareness among its employees. In fiscal 2018, there were no workplace injuries or accidents at a company facility. Going forward, we will actively conduct suitable activities as we continue to strive for continued safe and stable operations.

#### Trends in the Frequency of Lost Work-time Accidents

FY	'15	'16	'17	'18
Kanto Denka	1.93	0.00	0.00	0.00
Cooperating Company	0.00	0.00	0.00	0.00
Chemical Industry Average	0.81	0.88	0.81	0.90

#### Trends in Severity of Accidents Involving Loss of Work Time

FY	'15	'16	'17	'18
Kanto Denka	0.01	0.00	0.00	0.00
Cooperating Company	0.00	0.00	0.00	0.00
Chemical Industry Average	0.04	0.03	0.09	0.06

#### Trends in Occurrence of Facility Accidents

FY	'15	'16	'17	'18
Number of accidents	1	0	1	0

### Speeding up Safety Activities

We have implemented the Improvements Required Campaign (Shibukawa Plant) and Equipment Improvement Task Force (Mizushima Plant) in an effort to speed up safety activities. Tags are attached to unsafe areas discovered in the field in order to call attention. In the case of minor unsafe areas, the responsible department will make improvements as soon as possible, and if massive improvements are needed, improvements will be made in cooperation with the entire plant. Dramatic improvements have been made to unsafe areas as a result of these activities.



Handrails increased to reduce the risk of falls



Attention raised by attaching tags to unsafe areas discovered

### Implementing Various Drills

Plants have their own disaster prevention groups, which run regular disaster prevention drills and rescue drills. Joint training exercises with public fire departments are also conducted regularly. We also carry out disaster prevention drills, emergency contact drills, and emergency response drills for each plant.



Joint training exercise with public fire department in preparation for a fire at a high location



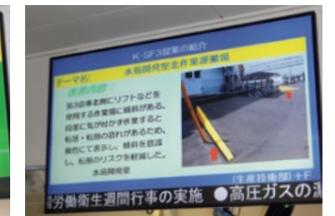
Preparing for an emergency through repeated drills

### Visualization and Exhibition of Information

We promote the visualization of information by indicating safety targets and progress for each workplace. In addition, we work toward the exhibition of information through the utilization of digital signage that uses large LCD panels. These panels show various information that includes monthly safety slogans and occupational accident information, announcements for each workplace, and short comics related to safety.



Raising awareness on no accidents and no injuries through exhibition



Introduction of examples of equipment improvements to each workplace

### Measures for Preventing Heatstroke

We have made first aid sets including cooling materials and simple thermometers available as a measure to prevent heatstroke. We also try to help employees with salt supplementation by making a wide range of goods available that include sports drinks, candies, and pickled plums. In addition, we invite external lecturers to conduct group education with the aim of raising attention and awareness of the issue.



Equipping each workplace with a first aid set for heatstroke



External lecturer invited for heatstroke prevention education

## Working towards Safety

### Quality Safety Measures

To fulfill our pledge of the best quality and safety to customers, we conduct a variety of initiatives in an aim to improve the awareness of quality through education and improve productivity through revisions to operations and efficiency improvements.

#### Introduction of Cutting-edge Analysis Technologies

Kanto Denka works to improve analysis technologies in both intangible and tangible aspects. During FY2018, we proactively invested in the adoption of cutting-edge analysis technologies, mounted high-sensitivity analyzer to improve the accuracy of analysis, and actively conducted trials and studies on new analysis technologies in order to assess high-quality products in a more multi-faceted and correct manner.

Also, focused on quality education, we conduct education to enhance quality control levels, including quality trend management points, cause analysis methods, and quality risk identification tools. Analysis engineers work to acquire and hone skills in advanced technologies through active participation in seminars by external specialist organization, in addition to internal education and training.



High-sensitivity gas analyzer



High-sensitivity moisture analyzer

#### Promotion of Analysis Automation

The Company is promoting the gradual automation of analysis work. The prevention of human errors and improvements in operational efficiency can be expected through automation. Tungsten hexafluoride automatic analysis technologies were announced at an improvement cases announcement meeting held by customers in FY2018, and these technologies were highly praised. It was a valuable opportunity to directly exchange views with customers. We will work to further improve productivity and provide safety and security to customers.



Prevention of human errors through automation



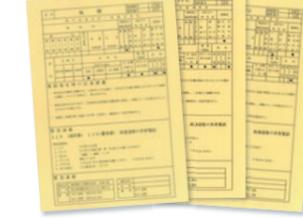
Sharing improvement cases with customers

### Logistics Safety

Kanto Denka is making every effort to minimize potential risk factors in product distribution. To ensure safety in times of emergency, we require employees to always carry a yellow card and safety data sheet, and we have also entered contracts with external disaster prevention organizations and established systems for responding to leaks and fires.



Special gas transport vehicle



Yellow Cards



Safety data sheets



PL labels

#### Customer Facility Improvement Activities

Customer facility improvement activities are activities for developing an environment that enables the safe delivery of products. We work together with distributors that actually deliver our products to customers and conduct independent investigations on defects after delivering to the customer's facilities. In addition, we ask customers for cooperation to make improvements and take to actions based on the results of these investigations. A total of 148 improvement measures have been implemented up until now as a result of these activities that have been conducted for more than 20 years. For customers to use our products safely and securely, we will continue working together with customers and distributors, helping to ensure safety in product delivery.

#### Cooperation with Distributors

We have established the Distribution Safety Sectional Meeting in both the Shibukawa and Mizushima regions as part of the Logistics Safety Committee that is a subordinate organization of the RC Promotion Council. As a forum for cooperation and mutual growth, the Distribution Safety Sectional Meeting is formed of the Company and distributors, and contributes to improvements in distribution quality. In the Meeting activities, we make various efforts including the lively exchange of opinions and sharing of information for the safe and secure transport of products, in addition to joint safety patrols on distribution equipment at our plants. As a company that handles hazardous materials, we will work together to fulfill our responsibility to customers and society by collaborating with distributors for improving distribution quality through the Meeting activities going forward.

## Environmental Initiatives

### Reduction of PFCs, SF<sub>6</sub> and NF<sub>3</sub> Emissions

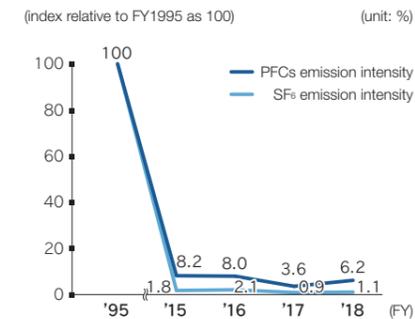
#### Target

#### JCIA Voluntary Action Plan

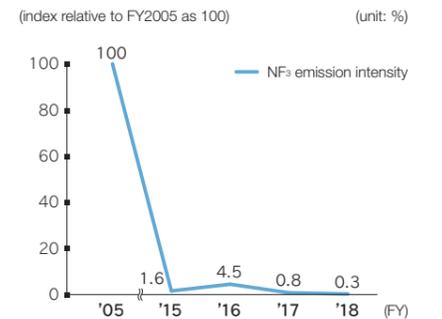
**90% reduction in PFCs emission intensity and 90% reduction in SF<sub>6</sub> emission intensity of 1995 levels, and maintain this level.**  
**60% reduction in NF<sub>3</sub> emission intensity of 1995 levels by 2020 and 85% by 2030**

The Company works to reduce emissions of PFCs, sulfur hexafluoride (SF<sub>6</sub>) and nitrogen trifluoride (NF<sub>3</sub>) that have a high global warming effect in cooperation with seven other companies in Japan as part of Japan Chemical Industry Association's (JCIA) Voluntary Action. The reductions in unit emissions for FY2018 by the Company in FY2018 were 93.8% for PFCs, 98.9% for SF<sub>6</sub>, and 99.7% for NF<sub>3</sub>, and the targets in JCIA's Voluntary Action have been achieved.

#### ◆ Trends in Reduction of PFCs and SF<sub>6</sub> Emissions



#### ◆ Trends in Reduction of NF<sub>3</sub> Emissions



### Reduction of GHG

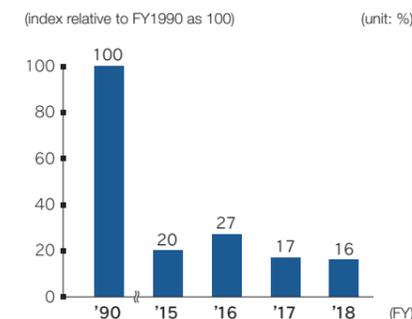
#### RC action target

**Reduce CO<sub>2</sub> equivalent greenhouse gases (GHG) emissions by 84% of FY1990 levels.**

**Reduction of 2% every year**

The substances that contribute to global warming that we are trying to reduce emissions of CO<sub>2</sub>, PFCs, HFCs, SF<sub>6</sub>, and NF<sub>3</sub>, and we set and conduct activities based on RC action targets to reduce the total emissions of these substances. Working to reduce CO<sub>2</sub> going forward will be an important issue.

#### ◆ Trends in GHG Emissions



### Saving Resources

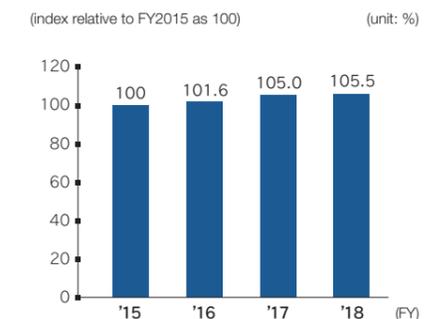
#### RC action target

**Reduce the quantity of principal raw materials against plant production volume by 3% of FY2015 levels.**

**Reduction of 1% every year**

Although we implemented improvement measures to reduce raw materials per unit of output in FY2018, raw materials per unit of output deteriorated as a result of fluctuations in raw materials per unit of output in some businesses with high handling volumes. We will consider an appropriate assessment method going forward.

#### ◆ Trends in Raw Material Consumption



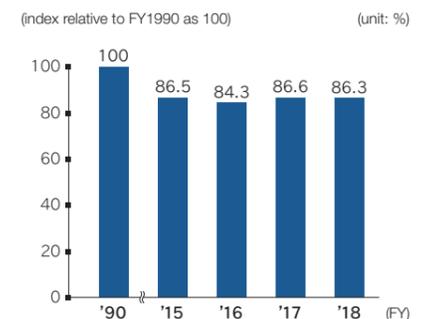
### Reduction of CO<sub>2</sub>

#### Target

**Reduce by 10% emissions compared with FY1990.**

We have achieved our target of a 10% reduction on FY1990 levels in 1998 and has since continued to achieve sustained reductions of at least 10%. In future years, we will work to further reduce emissions by reducing electric power consumption per unit of output.

#### ◆ Trends in CO<sub>2</sub> Emissions



# Environmental Initiatives

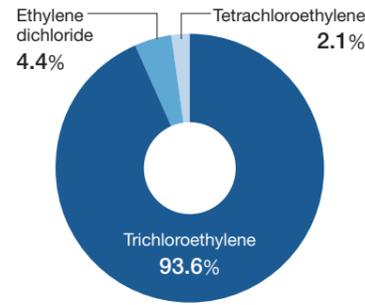
## Trends in Emission Amounts of Substances Specified in Voluntary Management Standards

**Target**  
Reduce emissions of voluntarily controlled substances (specified in the JRCC's standards) released from manufacturing facilities.

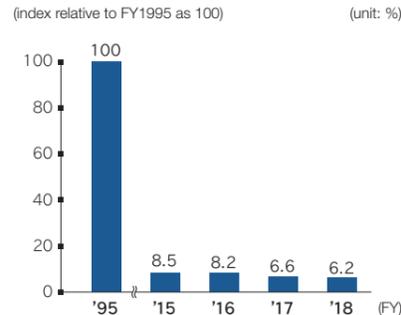
Kanto Denka has designated trichloroethylene, tetrachloroethylene, Ethylene dichloride and dichloromethane as the four voluntarily managed substances\* and is working to reduce their atmospheric emissions. We will strengthen measures in response to trichloroethylene that accounts for a high percentage of emissions in the future.

\* These substances were chosen as being among the 12 substances prioritized by the Japan Responsible Care Committee (JRCC) for reductions in atmospheric emissions.

◆ Breakdown of emissions in FY2018



◆ Trends in Emission Amounts of Substances Specified in Voluntary Management Standards



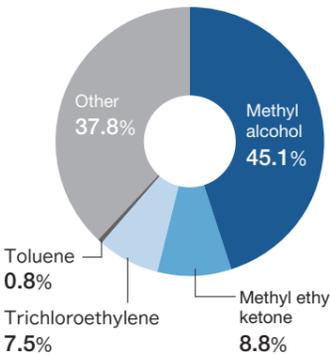
## Reduction of Environmental Pollutants

**RC action target**  
Reduce the emission intensity of chemicals specified as PRTR by JCIA by 30% of FY2015 levels.  
**Reduction of 10% every year**

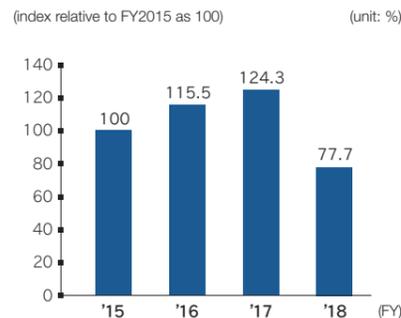
Kanto Denka uses the JCIA method\* to manage chemical substances. In FY2018, Kanto Denka handled 18 PRTR target substances using the JCIA method with a total weight of 240,000 t. Emissions totaled 19.1 t, which equates to 80 g of unit emissions per ton handled. Going forward, we will strengthen measures in response to methyl alcohol that had high volumes of emissions.

\* The JCIA method covers a greater number of substances than PRTR target substances under the law and requires more stringent management.

◆ Breakdown of Emissions (19.1 t) in FY2018



◆ Trends in Emissions of PRTR-specified Chemical Substances

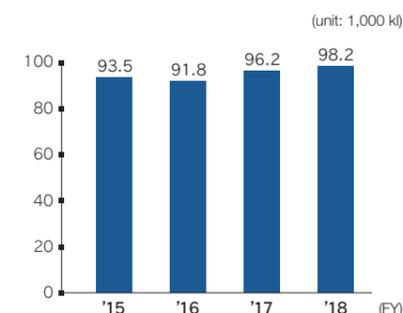


## Reduction of Energy Consumption

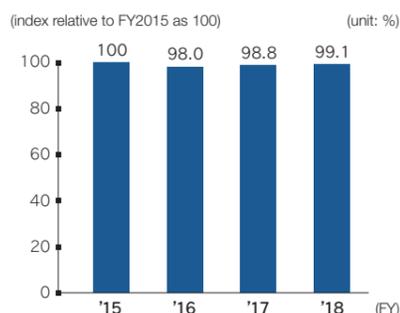
**RC action target**  
Reduce energy consumption (crude oil equivalent) per unit of production volume by 3% of FY2015 levels.  
**Reduction of 1% every year**

While we have been proactive with initiatives such as installing high-efficiency electrolytic cells and reducing vapor intensity, increased production led to a high operation load, meaning that energy use actually increased in FY2018. With further intensity improvements in our production facilities, we will also see progress in reductions. Moreover, we plan to effectively use surplus hydrogen generated in the production process.

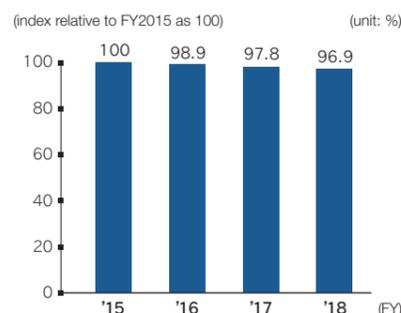
◆ Trends in Energy Consumption in Crude Oil Equivalent



◆ Trends in Unit Energy Consumption Shibukawa Plant



◆ Trends in Unit Energy Consumption Mizushima Plant

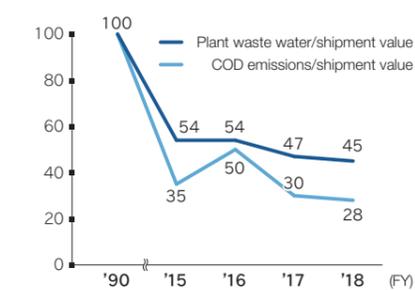


## Reduction of Plant Waste Water and COD

**Target**  
Reduction of the amount of plant waste water and COD emissions

Kanto Denka has been working to reduce the volume of plant waste water and COD emissions via actions like the recovery pollutant substances in our manufacturing facilities. This has resulted in reductions compared to the previous fiscal year in FY2018. Going forward, we will be working to further reduce emissions.

◆ Trends in Plant Waste Water and COD (index relative to FY1990 as 100) (unit: %)



Discharged water (cleaned at the plant)

## Reduction of SOx, NOx, and Soot and Dust Emissions

**Target**  
Reduction of emissions in accordance with voluntary management standards

We are working to reduce the emissions of atmospheric pollutants, namely SOx (sulfur oxides), NOx (nitrogen oxides) and Soot and Dust through stable operation of abatement equipment. Going forward, we will continue to fulfill facility management and operations management to keep these environmental pollutants at a low level.

◆ Trends in SOx, NOx, Soot and Dust Emissions (index\* relative to FY1993 as 100) (unit: %)

FY	'15	'16	'17	'18
SOx	0.06	0.07	0.05	0.04
NOx	2.82	3.22	3.13	2.91
Soot and Dust	0.53	0.53	0.53	0.49

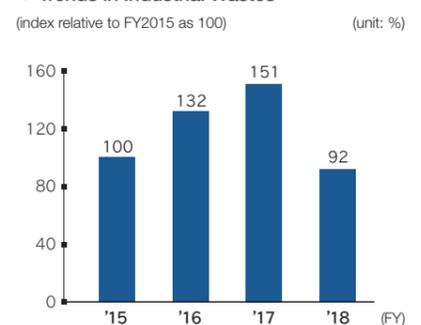
\* Emission/shipment value

## Reduction of Industrial Wastes

**RC action target**  
Reduce landfill industrial emissions outside our plant by 15% of FY2015 levels by raising the recycling ratio.  
**Reduction of 5% every year**

Although industrial waste destined for landfill has continued to increase in recent years due to increased production, results were achieved in FY2018 from the recycling of the sludge that was produced. We will implement measures to improve the raw material yield in order to reduce the amount of sludge produced in the future.

◆ Trends in Industrial Wastes (index relative to FY2015 as 100) (unit: %)



## The Emissions of Greenhouse Gases Report Based on the Act on Promotion of Global Warming Countermeasures

Kanto Denka reports data in accordance with the "Mandatory Greenhouse Gas Accounting, Reporting and Disclosure System." The volume of emissions in FY2018 amounted to 293,000 t of CO<sub>2</sub>. We have focused on reducing emissions of NF<sub>3</sub> recently and achieved results.

◆ Official and reported values from 2015 to 2018

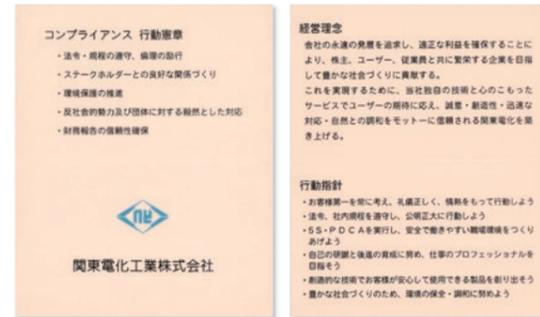
	2015 (official)	2016 (official)	2017 (official)	2018 (reported)
Originating from energy	22.4	21.9	22.4	22.4
Emissions of PFCs, etc.*	6.4	6.7	3.9	5.0
Emissions of NF <sub>3</sub>	7.5	18.9	3.6	1.2
Originating from distribution fuel	0.6	0.7	0.7	0.7
Total	36.9	48.2	30.6	29.3

\* Emissions of PFCs, etc.: Total emissions of PFCs + HFCs + SF<sub>6</sub>

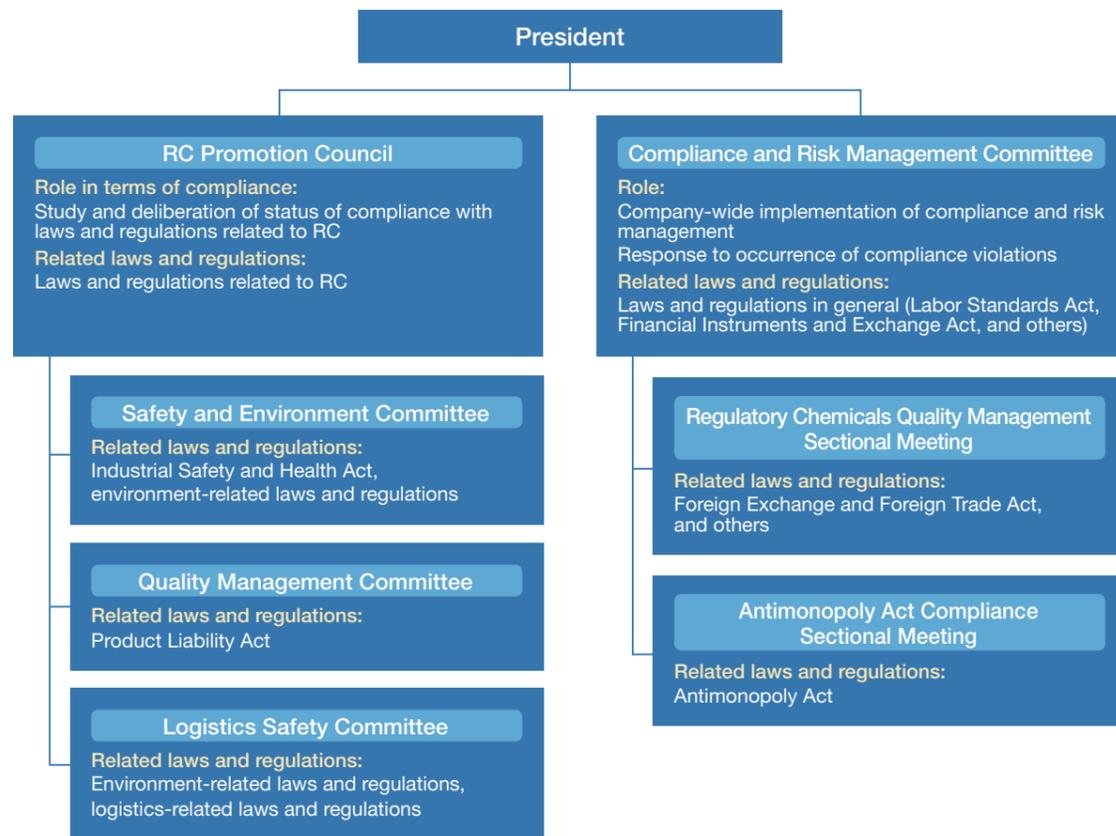
(Unit: 10,000 t of CO<sub>2</sub>)

## Compliance Action Charter

- Compliance with relevant laws and regulations, and strict enforcement of ethical practices
- Building favorable relations with stakeholders
- Practices to conserve the environment
- Resolute attitude toward antisocial forces and organizations
- Ensuring the reliability and accuracy of financial reporting



## Compliance structure



### Internal Auditing Department

From an independent viewpoint as an organization under the direct supervision of the President, the Internal Auditing Department evaluates and expresses opinions on whether the Company's business activities are in compliance with laws and regulations, the articles of incorporation, and related rules and whether they are being managed effectively and efficiently. It also conducts audits that contribute to the achievement of management targets by working to correct and prevent fraud and malpractice. The Department also evaluates the status of development and administration of the internal control system in accordance with the Basic Policies on Financial Reporting set forth by the Board of Directors.

### Internal Notification System

In order to respond promptly to breaches of compliance or to prevent them from happening, directors and employees of Kanto Denka are required to swiftly report information on breaches of compliance. Such information is reported to the General Manager of the Personnel Department, General Manager of the Legal and General Affairs Department, the Standing Auditor, or to lawyers outside the company. Kanto Denka responds appropriately to these issues after investigating the facts, and the corporate rules stipulate that the person making the notification must not be treated disadvantageously.

### Measures to Prevent Information Leaks

We have clarified rules on the retention and disposal of information, including the Information Security Guidelines concerning the prevention of the leakage of internal data, as well as the Basic Policy on the Protection of Personal Information, the Rules for the Protection of Personal Information, and the Rules for the Handling of Specific Personal Information concerning the protection of personal information. We have set forth various stipulations, some of which require ex-employees of Kanto Denka to thoroughly observe the confidentiality, thereby preventing the leakage of information.

## Work-Life Balance

We promote the creation of comfortable working environments so that employees can feel secure in achieving a balance between work and family life. We have introduced a variety of systems to this end including a flex-time system, accumulated paid leave system, various special leave systems, maternity leave and child rearing leave, nursing care leave, and re-employment for employees reaching retirement age.

We aim to create a more comfortable working environment through repeated improvements including increasing the number of years that can be acquired for reduced working hours for childcare and increasing the limit on half-day leave that can be acquired in a year. The annual leave acquisition rate is 73%, and a high acquisition rate has been maintained for many years thanks to an environment that makes it easy to acquire leave.

## Promoting the Active Participation of Women

We have set targets as a general business owner action plan based on the Act on Promotion of Women's Participation and Advancement in the Workplace, and we are strengthening the appointment of women to career-track positions and the promotion of women to management positions. In addition, we are supporting the participation of women in various positions through systems including nursing care leave, maternity/childcare leave, and reduced working hours, as well as nursing leave for children that can be acquired in half-day units.

### Experiences as the First Woman in an Administrative Career-track Position

I joined the Company in FY2016 as the first woman in an administrative career-track position. I am currently responsible for the purchase and receipt of raw materials that is a critical operation directly connected to products at the Shibukawa Plant. Going forward, as an employee in a career-track position, I hope to share the knowledge and experience that I have learned near the production field and be a human resource that can widely utilized. Women in career-track positions are joining the Company every year and pursuing careers at various work locations. At the same time, I also feel that our employee benefit programs are gradually becoming more generous, including an extension in the period of time that reduced working hours can be acquired. I look forward to enjoying a flexible working style according to my lifestyle in the future, welcoming many coworkers.



**Manami Nishimura**  
Production Coordination Sec.  
Production Coordination Dept.  
Shibukawa Plant

## Human Resources Education

At Kanto Denka, we conduct various in-house training, such as languages, anti-harassments, and trainee-specific training according to age and rank, as well as a wide range of optional correspondence courses. In addition, we are actively engaged in human resources education including first-aid and emergency medical care workshops by instructors from the fire department, exhibitions on maintenance and servicing, lectures by occupational health physicians, and internal education related to safety, the environment, and quality by the responsible department.



## Health Management

### Medical Examinations

Regular medical examinations are conducted every year for all employees. If there are any findings in the examination or re-examination is required, the Company covers the costs for the re-examination, and health guidance is provided by an occupational health physician or public health nurse. In addition, special medical examinations based on the Industrial Safety and Health Act are conducted, as well as medical examinations before and after overseas assignments for employees assigned overseas.

### Mental Health Care

We focus on not only physical health care, but also mental health care so that employees can live healthy lives. We open a Mental and Physical Health Contact point, and assign a mental health representative to each office. Also, we provide information on partner organizations and public institutions involved with mental health through the internal intranet. In addition, we have a structure capable of enabling a smooth return to work in coordination with an occupational health physician for people who have taken leave.

## Labor Union

Kanto Denka and the Kanto Denka Labor Unions have established positive labor-management relationships based on respect and trust for their mutual positions. Opinions are exchanged between labor and management in an aim for a better work environment at the Health and Safety Committee held every month and the Regular Labor-management Negotiation Meeting that is held twice a year.

## Aiming for Vibrant Workplaces

### Cultural Festival

A cultural festival is held each year at the Mizushima Plant, with many photographs, craft works, bonsai, and other exhibits elaborated by employees and their families on display. These works can also be viewed by visitors, and the event has been well received.



### Ryoyukai Activities

The Ryoyukai runs various activities, such as viewings, bowling outings and staff travel that provide an opportunity for workers to get to know each other. The club brings employees together away from work where they can talk about other things and deepen their friendships.



## Interaction with the Local Community

### Green Workplace

Kanto Denka is greening its factory precincts in order to create more pleasant workplaces and preserve the environment. The Company also encourages the active participation of employees through efforts including memorial tree planting for the coming of age and the establishment of green areas under the name of departments.



### NPO “Shibukawa Wide Area Manufacturing Council”

Shibukawa Plant employees take part in the activities of the Shibukawa Wide Area Manufacturing Council aimed at beautifying the local environment and combating global warming by growing flowers and greenery. Planting flowers along roads helps to significantly decrease the litter that is thrown away by passing cars and people. These activities provide a channel for deeper engagement with people in the local community.



### RC Briefings

Responsible care activities are a responsibility of companies that handle chemical substances. We take part in RC Briefings held by the JCIA where we discuss the Kanto Denka RC activities.

### Internship

By taking part in the Kanto Denka internship program, students gain a deeper understanding of the company and the chemicals industry.

### Clean-up Activities

As well as regular clean-ups in the areas around its plants that include weeding and picking up trash, Kanto Denka also participates in city or district group clean-up events and clean-up activities organized by neighboring communities in an aim to beautify the environment around the plant.



### Plant Tours

Plant tours are available at any time for a wide range of age groups in order to deepen understanding of Kanto Denka, and they offer an opportunity to exchange views on safe operations and environmental activities that are then used to influence plant management.

### Blood Donation Activities

Large numbers of employees have cooperated in donating blood for many years, resulting in several commendations over the years from Japanese Red Cross Society and the Ministry of Health, Labour and Welfare. We continue such as efforts as a form of social contribution going forward.



### Local Community Social Gathering

These events are held several times a year for people living in neighborhoods adjacent to our plants. These social gatherings are aimed at building trust in the community by responding to the questions and doubts of people from the local community.

### Participation in Regional Events

Kanto Denka takes part in local festivals and other events so that our employees can each engage with local residents and get to know them better.

### Interaction with Neighboring Companies

Regular meetings are held with three neighboring companies at the Shibukawa Plant and with five neighboring companies in the industrial complex at the Mizushima Plant. We consider coordination between companies and safety in the local community through exchanging opinions regarding safety and environmental activities.

### Engagement with the Local Community

Shibukawa Plant celebrates its 80th anniversary in December 2019, and I believe that it is the understanding of everyone in the local community that has enabled us to have continued safe and stable operations since the launch of operations up until now. We value communication with people in the local community and deepen such interaction through various opportunities that include active participation in local events and holding plant tours and internships. In addition, we hold study meetings with city officers and other companies operating in Shibukawa, aiming at broadly communicating the initiatives of Kanto Denka. Going forward, we continue to deepen interaction with people in the local community and build up a Shibukawa Plant that is trusted as always putting a priority on safety first.

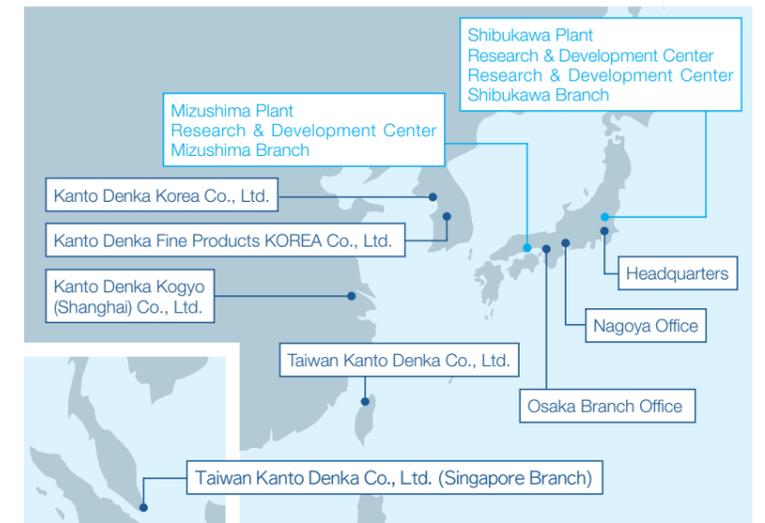
**Seichi Yoshida**  
Vice Plant Manager  
Shibukawa Plant



## Company Information

### Corporate Profile

Company Name: Kanto Denka Kogyo Co., Ltd.  
 Established: September 22, 1938  
 Headquarters: Yusen Building, 2-3-2, Marunouchi, Chiyoda-ku, Tokyo 100-0005, Japan  
 Phone: +81-3-4236-8801  
 President: Jun'ichi Hasegawa  
 Capital: ¥2.877 billion  
 Employees: 620 (as of March 31, 2019)  
 Sales: ¥50.632 billion



### Network

#### Headquarters

Yusen Building,  
2-3-2, Marunouchi, Chiyoda-ku,  
Tokyo 100-0005, Japan  
Phone: +81-3-4236-8801

#### Osaka Branch Office

Seiwa Umeda Building,  
2-12-7, Sonezaki, Kita-ku,  
Osaka 530-0057, Japan  
Phone: +81-6-6366-0681

#### Nagoya Office

Nagoya Mitsui Building Main Wing  
1-24-30, Meiekinami, Nakamura-ku, Nagoya City,  
Aichi 450-0003, Japan  
Phone: +81-52-571-1371

#### Shibukawa Plant

1497, Shibukawa,  
Shibukawa City,  
Gunma 377-8513, Japan  
Phone: +81-279-23-3211

#### Mizushima Plant

4-4-8, Matsue,  
Kurashiki City,  
Okayama 712-8533, Japan  
Phone: +81-86-455-5231

#### Kanto Denka Fine Products KOREA Co., Ltd.

176, 5 Sandan 1-ro, Susin-myeon,  
Dongnam-gu, Cheonan City,  
Chungcheongnam-do, Republic of Korea  
Phone: +82-41-569-4562

#### Research & Development Center

425, Kanai,  
Shibukawa City,  
Gunma 377-0027, Japan  
Phone: +81-279-23-2712

#### Research & Development Center Shibukawa Branch

1497, Shibukawa, Shibukawa City,  
Gunma 377-8513, Japan  
Phone: +81-279-22-3533

#### Research & Development Center Mizushima Branch

4-4-8, Matsue, Kurashiki City,  
Okayama 712-8533, Japan  
Phone: +81-86-455-5234

#### Kanto Denka Korea Co., Ltd.

329, 27, Seochojungang-ro 24-gil,  
Seocho-gu, Seoul, Republic of Korea  
Phone: +82-2-3471-2360

#### Kanto Denka Kogyo (Shanghai) Co., Ltd.

Room 3506, The Place Tower B, 100 Zunyi Road,  
Changning District, Shanghai 200051, China  
Phone: +86-21-6278-7004

#### Taiwan Kanto Denka Co., Ltd.

17F-8, No.118, Ciyun Rd., East Dist,  
Hsinchu City 30072, Taiwan (R.O.C.)  
Phone: 886-3-577-1575

#### Taiwan Kanto Denka Co., Ltd. (Singapore Branch)

11 Beach Road #03-01 Crasco Building Singapore 189675  
Phone: +65-3157-5974

### Establishment of Kanto Denka Fine Products KOREA Co., Ltd.

In November 2017, we established Kanto Denka Fine Products KOREA Co., Ltd. as our first overseas production site.

It will produce fluorochemicals for semiconductors and LCDs, as well as carrying out research and development regarding these products. Demand for fluorochemical products for semiconductors and LCDs in South Korea is growing rapidly and by establishing a local production site, we will be able to respond properly to our customers' needs. We also think this is an important step in terms of business continuity planning. Construction of facilities is now complete and preparations for full-scale production are underway. We hope you will support this new endeavor with the same warm advice and guidance you always provide Kanto Denka.

