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This report can also be viewed on the Company website. [http:// www.kantodenka.co.jp](http://www.kantodenka.co.jp)

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●The report was printed with soy oil that has superior capacities in curbing volatile organic compounds emissions which cause air pollution, and ensuring paper recyclability. Kanto Denka Kogyo Co., Ltd. strives to ensure an environment-friendly attitude in its immediate matters and daily activities in order to protect people's healthy lifestyles.  
Published: December 2015

# Environmental and Social Report 2015



## 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 ensure that our unique technologies and superior services meet the requirements of our users and build a trusted company based on the principles of sincerity, creativity, prompt response and harmony with nature.

## 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 environmental conservation and safety issues, from the development, manufacture, 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, distributional safety, and risk-free international trade.
- 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 Work 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 distributional safety and risk-free transactions with customers.
- 7 Carry out 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 Ensure the protection of the environment and safety in overseas operations, technology transfers and the international trade of chemical products.
- 10 Promote risk-awareness to society as a whole, such as local communities, investors and related organizations through the widespread dissemination of our environmental and safety activities, as well as the results of those activities, in environmental reports and other materials.

### Corporate Profile

Company Name: Kanto Denka Kogyo Co., Ltd  
 Established: September 22, 1938  
 Headquarters: Waterras Annex, 2-105,  
 Kanda-Awajicho, Chiyoda-ku,  
 Tokyo 101-0063, Japan  
 TEL: 81-3-3257-0371  
 President: Jun'ichi Hasegawa  
 Capital: ¥2.877 billion  
 Employees: 554 (as of March 31, 2015)  
 Sales: ¥34.413 billion

#### ISO 9001

A majority of the products are ISO certified.  
 Shibukawa Plant JQA-1009 (certified in October 1995)  
 Mizushima Plant JQA-2254 (certified in March 1998)

#### ISO 14001

Shibukawa Plant JQA-EM0438 (certified in May 1999)  
 Mizushima Plant JQA-EM0437 (certified in May 1999)

#### OHSAS 18001

Shibukawa Plant JQA-OH0087 (certified in July 2005)  
 Mizushima Plant JQA-OH0190 (certified in May 2011)  
 (OSHMS between 2007 and 2011)

### Message from the Editorial Department

This is the 16th edition of our Environmental and Social Report, which has been in publication since 2000. Every year, we receive many feedbacks from our readers. The comments provide us both encouragement as well as constructive criticism as we strive to make the report an even better one. Our focus has always been to make this report understandable even to readers who have little interest in chemistry. In this edition, we included a feature on the 50th anniversary of the Mizushima Plant, as well as round-table discussions among the plant head manager and employees with the hope that they will increase readers' familiarity with the company. The situation surrounding our company has changed dramatically over the last 15 years, and we have adapted accordingly. Going forward, we are committed to engaging in RC activities not passively but with a new sense of mission, and we would like to ask for your guidance and cooperation in this endeavor.

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This report mainly contains environmental and social activities during FY2014 (April 1, 2014 to March 31, 2015).



The Company's Head Speaks on the Role required and the Future of Kanto Denka Kogyo

## Our goal is to become an “innovative, development-driven company” that continues to create and offer unique new products required in today's society.



President  
Jun'ichi Hasegawa

**Q:** What role does Kanto Denka Kogyo need to play?

**A:** I believe the most important role is to stably supply high-quality chemical products in safety with the process of being environmentally friendly.

We, Kanto Denka Kogyo, supply chemical products widely to industries. With our three primary businesses, fluoride fine chemicals, ferro fine chemicals, and fundamental chemicals. Either of our products is indispensable to various industries, and its high quality has given many products top market share in the world. Our most important role is to continue to stably supply those products safely and make each of it friendly to the environment. We hope to make contributions to society. Throughout those activities.

**Q:** What are your strengths in the chemical industries?

**A:** Our strength lies in our technological ability to develop chemical products with raising added value.

We are a unique company even in world standards, possessing various synthesis technologies and quality design technologies that utilize distinct compounds, including compounds composed of fluorine, chlorine, and hydrogen. In addition, we have accumulated technologies that other companies do not have—for example, nanosizing technologies were developed through ferrochemical operations. We have succeeded in developing technologies to manufacture fluorine, which is considered as the core of our business even now. We challenged to tap into niche areas

left untouched, and realized steady achievements. We take pride in being a company that makes full use of these unique technologies to develop chemical products with increasing added value. This is what we mean by being an “innovative, development-driven company.” We will continue to show our technological prowess and ambitious spirit to promptly develop, valuable products required by society.

**Q:** Which industries are you currently focusing on?

**A:** We are putting efforts into R&D in the battery materials and life science fields based on our core product fluoro fine chemicals.

There are requirement increasing in market for fluoride gases for use in semiconductors and liquid crystal panel products. We will work on providing stable supply for fluoride gases which comprise our company's revenue pillar. As regards battery materials which show a very promising future, our products receive high evaluations as one of the highest qualities in the world, and we are going to commit to create further demand for these materials. In the life science fields focusing of medicines and agrochemicals, we actively carry out R&D for new products which would contribute to society.

Looking at the market environment surrounding our company, even though there are many challenges, including demand fluctuation risk, spiraling, raw material pricings, and the presence of competitors in Asian countries, we will nevertheless work to overcome those challenges and develop into a competitive company.

**Q:** What is your task to meet customer's request?

**A:** It is the speedy development. We need to realign the organization to make all members of employees change their attitudes to involve in “full participation in development.”

As the technology rapidly progresses in the world, it has to simultaneously accomplish in a short time for both quality and reliability; words, “speed” is the source of value, and we eventually are going to be an organization to be mindful for the development and to be prompt in anything we do.

In a word, it needs to make all employees aware to be involved in “full participation in development”. This attitude is needed not only for the development of new products but also for business operations. We aim to become an organization which has a foundation for continuing to create new products and values by having all employees pool their wisdom and work together. The R&D department is particularly requested to become more than a “group of researchers,” and transform into a “group of ambitious developers.”

We, through out making these efforts, will promptly create new products meeting customers' needs, and contribute to customers' development of new products and improvements of process.

**Q:** You put the top priority on the safe and the stable operations. Can you please explain those activities?

**A:** We are going to carry out giving the highest priority to safety with organization-wide that involves all members of employees more deeply in.

Some Accidents occurred at our facilities from year 2011 to 2013, I would like once again to extend my apologies for causing significant inconvenience and concerns to local residents and members of related organizations. Based on those reflections, we have worked to clarify internal company issues with the cooperation of the outside experts in order to strengthen our system for maintaining safe operations. In order to realize it, the awareness and behavior reform of each and every employee should be achieved with intensive education for safe. We will continue to review

our educational system and methodology to enhance risk assessments and technology tradition that tends to be paid less attention through the change of generations. Furthermore, we will reinforce to work on establishing the frameworks of safety and disaster prevention in the case of emergency, and developing a wide range of treatment for business continuity planning (BCP).

I believe it is important that as we build up good relations with community members by actively participating and interacting in community involvement, so that we can show our company's activities and initiatives for safe operations.

**Q:** Reducing the environmental load is the other major topics of the company. What do you put a lot of work to make it?

**A:** We will focus on reducing greenhouse substances being emitted by our production operations.

We will pursue further reductions in the environmental footprint by utilizing environmental management systems and increasing our production efficiency; particularly, we will promote preventing global warming. The manufacturing process of our products is based on electrolysis and consumes large amount of electricity. In order to reduce CO<sub>2</sub> emissions, it is needed as much as possible to suppress power consumption required

for production operations. The fluoride gases, as one of our leading products, include many substances with high global warming potential; therefore, we should furthermore work on reducing the emission of these gases.

**Q:** Can you once again explain the role your company should fulfill in society when looking ahead to the future?

**A:** It is needed to enhance our role as an “innovative, development-driven company” so that society continues to require us in the market.

As we are recognizes as providing high quality products and stable supply in the world market, we succeed to have major share in the most advanced industry. All employees must be aware that our products and technologies are required in the world market, and must fulfill our social responsibility at the same time. We, therefore, will put a lot of work to create new products with high added value. Those products should be developed with the high-class technology to become No.1 in the niche industry; this is what we are aiming to do as “innovative, development-driven company”. I determine to show the strong leadership to make our company contribute eternally in society. I sincerely ask for your continued support and cooperation.



# The Mizushima Plant manufactures a wide range of high quality chemical products that support industrial development and help create the future products.

The Mizushima Plant is conveniently located in a corner of the Mizushima Petrochemical Complex, which overlooks the Seto Inland Sea by Kurashiki City, Okayama. This plant was established in 1965, one year after the Tokyo Olympic Games. Fifty years later, we manufacture chemical products that contribute to the creation of a prosperous future, including basic chemicals indispensable to industries, specialty fluorine chemicals used in lithium-ion secondary batteries and optical fibers, and organofluorine compounds used for liquid crystal materials, intermediates for pharmaceuticals, and agrochemicals.

## Mizushima Plant's Product Lineup

| [Fundamental chemicals] | [Fluorochemicals]            |
|-------------------------|------------------------------|
| ●caustic soda           | ●lithium hexafluorophosphate |
| ●sodium hypochlorite    | ●silicon tetrafluoride       |
| ●hydrochloric acid      | ●chlorine trifluoride        |
| ●trichloroethylene      | ●organofluorine compounds    |
| ●perchloroethylene      |                              |
| ●vinylidene chloride    |                              |

**What are Mizushima Plant's products used for?**

- Caustic soda is used in the to manufacture of paper/pulp, soaps/detergents, and various chemicals as well as for water treatment.
- Hydrochloric acid is an essential for manufacturing various chemicals. It is also frequently used as a food additive.

**Our friends are playing active roles in an array of settings.**

- Lithium hexafluorophosphate assume a great role as an electrolyte for lithium-ion secondary batteries, which are used in PCs, mobile phones, eco vehicles, and other devices.
- Fiber made from vinylidene chloride is highly flame-retardant and is useful for industrial clothing materials..
- Trichloroethylene and perchloroethylene are used to degrease and clean metals and machineries. They are also utilized as raw materials for alternative CFCs that do not destroy the ozone layer.

**Praised for their high quality, the products have attained top-level market share in the world!**

- Chlorine trifluoride is useful as a cleaning gas for semiconductor production equipment.
- Silicon tetrafluoride is used to manufacture optical fibers that support information communications.

**What products will be developed next?**

- Organofluorine compounds developed by our unique fluorination technologies have large potential for use in liquid crystal materials and intermediates for pharmaceuticals and agrochemicals.

**We are setting our sights even higher. The Mizushima Plant is paving the way for the future.**

- Electronics and information communications
- Life sciences
- Environment and energy
- Bio technology
- Na technology

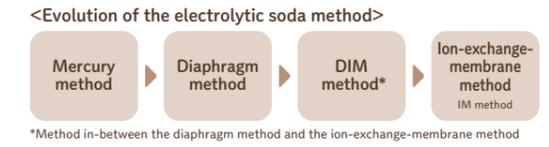
In the 1950s, petrochemical industrial complexes by conglomerates were constructed in succession in Japan's coastal areas. The Mizushima Petrochemical Complex is one of them.

## Advance to the petrochemical industrial complex

In 1965, the Mizushima Plant was established as the second plant for our business in a corner of the Mizushima Petrochemical Complex. Located in a coastal area, the Mizushima Plant facilitated the import of raw materials and the shipment of our products, offering many advantages. In addition, we are able to cooperate with companies around the complex in terms of trading the raw materials and products. Our main products, fundamental chemicals such as caustic soda, are manufactured based on the electrolytic soda method (electrolysis of salt water). Japan's largest electrolyzer at the time which utilized the mercury process was installed.

## Change of the process for caustic soda

In the 1970s, the environmental pollution caused by organic mercury from chemical plants has become a problem. Although inorganic mercury was used for soda electrolysis, we changed its manufacturing method from the mercury method to the diaphragm method in accordance with the policy of Japan. Since then, our electrolytic soda method has evolved with the aim of improving quality and reducing loads on the environmental.



## Embarking on the battery supply business

In 1997, we began to commercialize lithium hexafluorophosphate (LiPF<sub>6</sub>) used for the electrolyte of lithium-ion secondary batteries at the request of an electronics maker. We developed an entirely new manufacturing method following a three-year research period.

## Technology development hub: Mizushima Development Research Lab.

The Mizushima Development Research Lab. was established on the premises of the Mizushima Plant. We are responsible for researching high-value-added compounds, including the development of intermediates for pharmaceuticals and agrochemicals as well as organofluorine compounds used as various functional materials. In addition, we have been newly focusing on accelerating the development of battery materials. Today, we are challenging the development of high functionalization of existing products, as well as developing new products that will contribute to society.



## History of the Mizushima Plant

(The year represents the manufacturing start year of the products)

- 1965 **Mizushima Plant is established**  
caustic soda (mercury method)/ hydrochloric acid/sodium hypochlorite trichloroethylene/dichloroethane perchloroethylene/purified tetrachloroethane cyclohexane
- 1967 1,1,1-trichloroethane/vinylidene chloride
- 1968 ethylenediamines
- 1969 Begins selling hydrogen
- 1971 Starts the consignee of industrial salt by large ships Consolidates manufacturing of trichloroethylene in the Mizushima Plant
- 1976 Manufacturing conversion of caustic soda from mercury method to diaphragm method
- 1978 Environmental & Safety Department established
- 1982 Implements energy- and labor-saving by improvement of transformation facility Manufacturing conversion of caustic soda from diaphragm method to DIM method
- 1986 Manufacturing conversion of caustic soda from DIM method to IM method
- 1989 silicon tetrafluoride
- 1993 Intensive implementation of energy-saving construction work
- 1997 Installs new hydrofluoric acid electrolytic equipment lithium hexafluorophosphate chlorine trifluoride
- 1998 Acquires ISO9002 certification
- 1999 Acquires ISO14001 certification
- 2000 Changes to ISO9001 certification
- 2005 Consolidates manufacturing of caustic soda in the Mizushima Plant
- 2006 Installs continuous manufacturing apparatus of soda flakes
- 2007 Acquires OSHMS certification
- 2011 Changes to OHSAS 18001 certification
- 2015

The Mizushima Plant marks 50th anniversary

## We want to continue to challenge ourselves to creating products that will drive the next generation of Kanto Denka by coordinating among the R&D, manufacturing, production and technology, and sales departments.

The Mizushima Plant, which celebrated its 50th anniversary this year, laid its foundation by manufacturing fundamental chemicals. Today, the Plant serves as Kanto Denka's second hub for the fluorine business it excels in. The new Plant Head Manager and employees from the departments discussed with each other their thoughts and visions for the future.

### Numerous challenges have begun for the future of Kanto Denka

**Yamaguchi:** The Mizushima Plant is focusing its efforts on developing new fluorine gas products, and is also working to improve the manufacturing processes of existing fundamental chemicals. I believe you are all embarking on new challenges respectively.

**Nakamura:** I am doing R&D on organic fluorine compounds that are used in liquid crystals, medicines, and agrochemicals. Kanto Denka's R&D often starts as a response to the requests of customers. However, I think it is also necessary to shift our minds to developing technologies and products independently and proposing them to the market.

**Obayashi:** I am in charge of selling lithium hexafluorophosphate, which is a material in lithium ion secondary batteries that are indispensable to PCs, smartphones, and hybrid vehicles. I hope to actively expand its sales to lithium ion battery market, and make it a pillar product of the Mizushima Plant.



Mizushima Plant Manager  
Yasunari Yamaguchi

**Okamoto:** I am in charge of manufacturing trichloroethylene, which is utilized as a raw material for alternatives to HFCs as well as a metal detergent. Facility management

and operation management are critical for manufacturing high quality products in a safe and stable manner. We are also giving considerations to reducing the environmental footprint. In addition, the plant as a whole is taking measures for the disposal of drainage and exhaust gases.



Fine Chemicals Sales Department-III  
Tsutomu Obayashi

**Katayama:** I oversee the technologies at the Mizushima Plant, including developing new technologies, improving existing technologies and product quality, and promoting safety. Currently, we are focusing on increasing profitability by improving the operating requirements of trichloroethylene manufacturing equipment. We propose improvements to the manufacturing department, and together, we explore solutions.

### Strengthening cross-departmental coordination that is becoming increasingly important

**Yamaguchi:** While Kanto Denka's top priority is to create new products, I expect that coordination among manufacturing, sales, and R&D will become ever more important for swiftly responding to the market's needs.



As regards existing businesses as well as, it is important that we increase the linkages among the businesses of each department.

**Katayama:** Because production and technology work involve many departments, I keenly sense the importance of communication. In working with the manufacturing department to improve technologies, I give priority to our targets and make sure I let them know why this activity is needed or what effects can be attained by completing this activity. In implementing improvement plans, I request equipment adjustments to the plant facility department, and quality and environmental adjustments to the plant quality and environment conservation department. Ultimately, we make a wide range of adjustments with the related departments at the head office.

**Obayashi:** I believe sales serves as a bridge between the customers and the plant. Therefore, I make it my No. 1 priority to maintain communication with the manufacturing department. In the lithium ion battery industry that we are in, the market changes quickly. Often-times, the situation today is entirely different from the situation yesterday. For this reason, orders often change, and I ensure that I constantly share information with the manufacturing department.

**Okamoto:** Yes, teamwork is vital. Although this is just my own personal experience, after I realized that there are limits to

what I can do by myself, I began to ask for the opinions of not only my seniors and supervisors, but also my junior colleagues. This taught me about how important it is to maintain harmony among people. Furthermore, to solve the problems of the manufacturing department, I began to think about the company as a whole to find what was the best solution at that moment in time.

**Nakamura:** At Kanto Denka, employees have linkages across departments, and it is easy to consult with each other. Back when I had little experience, I became the leader of a certain theme and had to spearhead the launch of a facility. At that time, I was able to overcome my hurdles by receiving advice from managerial-level people from other departments.



Deputy Manager, Production Engineering Department  
Shinsuke Katayama

**Katayama:** It is the same with me. Whenever I face obstacles, I make a point of actively consulting with the members of my department. As the saying goes, two heads are better than one. The problem solves itself in the course of our discussion. If the problem cannot be solved within the department, I consult another person and then another person. Our company has a spirit of everybody coming together to solve a problem.

### To make Kanto Denka a more dynamic company, continuing to challenge ourselves without fearing change

**Yamaguchi:** The Mizushima Plant has contributed to society through its high quality products for over half a century since its founding. To continue to play a concrete role, it is critical that we continue to challenge ourselves without fearing change. What do you all think?

**Obayashi:** My challenge is to expand the battery materials business. The market for this business is sure to grow, even amid the calls to reduce the environmental footprint. This growth is supported by the increasing vehicle ownership in China, the United States' Zero Emission Vehicle (ZEV) program that requires a certain percentage of vehicles to be non-polluting, and Europe's stricter fuel efficiency regulations. The battery materials business has the potential to develop into a major pillar business of our company. Given also its social importance, the sales department will do everything it can to expand this business.

**Okamoto:** The manufacturing department's top mission is to maintain safe and stable production. To accomplish this, we hope to thoroughly educate not only operation methods but also theories. This will allow each and every employee to understand why such and such a task must be performed, as well as more appropriate responses to be taken whenever there is a problem. Areas or tasks that require caution need constant training. Facility preservation is another key task. Our trichloroethylene manufacturing facility has achieved very stable operations as a result of strengthening our inspections and maintenance. Their were times when we had useful proposals that emerged from the realizations of junior employees who were still not very knowledgeable about the process. Facility preservation is ultimately also linked to safety.



Manager, Production Department- I, Section-II  
Takemi Okamoto

**Katayama:** In any department, it is very important to carefully train junior employees. For Kanto Denka's further development, I hope to train many professionals who are constantly thinking and translating their ideas into action.

**Yamaguchi:** It is my belief that good products come out of workplaces where everyone can work at ease with a sense of pride. In this sense as well, it is essential to prioritize education and ensure safe and stable production.



Chief Researcher, Mizushima Development Research Lab.  
Yutaka Nakamura

**Nakamura:** I hope to make the business I am in charge of one of the pillar businesses of Kanto Denka. I would also like to challenge myself to develop materials that have unprecedented concepts. Additionally, I hope to engage in activities that will lead to the collection and recycling of specific substances which are found in the waste that results from product use and liquid waste. As a member of the chemical industry, I also consider it my duty to challenge myself to making products non-polluting and developing eco-friendly products.

**Obayashi:** Our company's products all have high quality that we can boast to the world. While they may not stand out, the products are all indispensable to society. I anticipate that they will become even more important in the coming years.

**Yamaguchi:** Kanto Denka's Management Principles state, "ensure that our unique technologies and superior services meet the requirements of our users." For a manufacturer, it is a significant strength to have unique characteristics that other companies do not have, including services. Moreover, instead of giving attention only to leading-edge sectors, I hope to demonstrate Kanto Denka's presence also in fundamental sectors that underlie society. Let us all aim to make the Mizushima Plant a dynamic plant which brings together the special qualities of the respective businesses, and which we can all take pride in as our workplace.

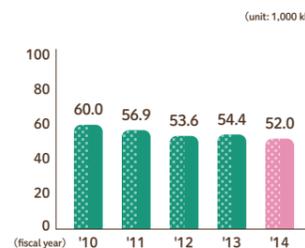
## Site Report

### Mizushima Plant

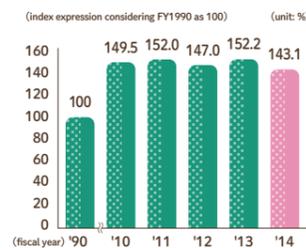
4-4-8, Matsue, Kurashiki City, Okayama

- Plant area: approximately 185,000 square meters
- Number of employees: 145 (as of March 31, 2015)
- Products: [Fundamental chemicals] caustic soda, sodium hypochlorite, hydrochloric acid, trichloroethylene, vinylidene chloride and perchloroethylene [Fluorochemicals] lithium hexafluorophosphate, silicon tetrafluoride, chlorine trifluoride, and organic fluorine compounds

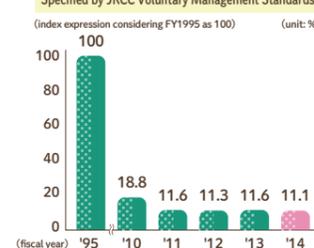
#### Trends in Energy Consumption in Crude Oil Equivalent



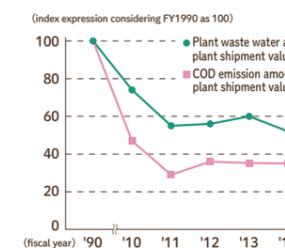
#### Trends in CO<sub>2</sub> Emissions



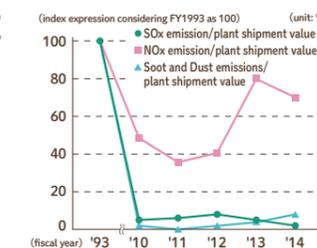
#### Trends in Emission Amounts of Substances Specified by JRCC Voluntary Management Standards



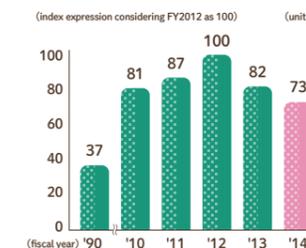
#### Trends in Plant Waste Water and COD



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



#### Trends in Industrial Waste Amount Levels



## In pursuit of more efficient development and production, with safety as a top priority. Paving the way for future by creating new products.

The Shibukawa Plant produces fluorochemicals and ferrochemicals. It has world-leading capacities and technologies for manufacturing fluorine gases. Taking advantage of these strengths, the Plant supplies a variety of fluorochemicals to the industry world. The Plant Head Manager and employees discuss the current situation of the Shibukawa Plant which aims to respond to the demand growth and evolve further.

### The key to growth is high-quality fluorochemicals

**Hayashi:** I have been involved in R&D for many years, and recently, I was appointed Plant Head Manager of the Shibukawa Plant. I am committed to creating a dynamic workplace with the employees. Today, I look forward to reflecting upon the present and future of the Shibukawa Plant with all of you.

**Tanaka:** The role of my department, which is the Development & Marketing Department, is to develop new products from a wide range of angles and come up with new businesses that will drive the future. By finding out the market's needs and communicating information about our company's unique technologies, we hope to connect our research lab and the market and create new products.



Shibukawa Plant Manager  
Masatomo Hayashi

**Fujikawa:** Our company's strengths are indeed our unique electrolysis technologies as well as technologies that utilize fluorine (F<sub>2</sub>) and hydrofluoric acid (HF). Owing to the use of these technologies, our products have seen a steady growth in demand.

**Horii:** I am in charge of the operations related to production, development, and safety improvements at the Plant. Process improvements and cost-cutting measures are inevitable both for achieving safe and stable production and increasing our competitiveness.

**Nagashima:** As a sales representative, I sell specialty fluorine gases to semiconductor companies and LCD manufacturers in Japan and overseas. Every day, I collect and analyze a wide range of information, identify market trends, and work on developing both product applications and the market.

### Pursuing facility expansion and quicker development while giving top priority to safe operations

**Hayashi:** At the Shibukawa Plant, we are putting particular efforts into special material gases that are essential for manufacturing semiconductors and liquid crystal display. Efforts are being made to expand our facilities to be able to meet the needs of our customers. In addition, creating new products is a key task. In this day and age when the market moves quickly, speedy development is particularly vital.

**Tanaka:** I also make it a priority to respond to customers' requests in a speedy manner. How quickly we can satisfy the customers' requested



characteristics will be critical. Furthermore, follow-ups to ensure that the results obtained at our research lab are reproduced at the customer's lab and with the customer's production machine are indispensable.



Fine Chemicals Sales Department-II  
Yoshimi Nagashima

**Nagashima:** The sales department is also requested to carry out proactive activities. The Plant Head Manager has asked us to obtain and analyze diverse information from customers, share accurate information with the R&D and manufacturing departments, and lead the way forward.

**Horii:** The Production Engineering Department makes an effort to always maintain close links with the other departments. To assure active exchanges of views and coordination, our task ahead is to integrate the management of reports and manufacturing technologies by creating and sharing e-files.

### Aiming to foster a corporate culture that makes safety and environmental improvements on a day-to-day basis

**Hayashi:** In terms of various corporate activities, No. 1 is safety, No. 2 is quality, and No. 3 is production. Priority must be given to safe operations in everything we do. In addition, protecting the environment is the company's responsibility and must be taken into account in its operations. I hope to foster a corporate culture for safety and the environment that ensures risk reduction and makes improvements one by one.



Manager, Development & Marketing Department  
Sachiyo Tanaka

**Fujikawa:** To maintain safety, it is essential that the seeds of risks are eliminated while they are small, and that routine renovations are conducted to keep facilities stable. As for safety education, at every morning's meeting or at the monthly round-table talks, activities are held to increase knowledge and safety awareness necessary for operations. We also continuously approach and chat with subordinates every day to create an environment in which they can feel comfortable talking to us. We always make an effort to check the workplace situation.

**Tanaka:** In regard to the environment, we consider that contributing to our customers' process improvements and quality improvements using Kanto Denka's unique technologies in turn leads to reducing the environmental footprint. In developing new products, we select materials with low environmental footprint.

**Fujikawa:** The manufacturing department takes a variety of measures

to make improvements to reduce greenhouse gas emissions. In particular, the installation of combustion abatement systems has made a significant contribution. We also make efforts to cut various costs by changing viewpoints, as well as reduce waste and increase the efficiency of equipment that utilize electricity.

**Hayashi:** Decreasing the emissions of specialty fluorine gases is crucial for our plant, which produces these gases that have significant impact on global warming. As a company we will continue to make active investments and develop technologies to make environmental improvements.

### All employees will pool their efforts to make the Shibukawa Plant an even more trusted plant

**Hayashi:** Looking ahead to the future of the Shibukawa Plant, it will be important to improve our technological capacity. I believe technological improvements will become the driving force for further development, which will also allow us to create new products.



Manager, Production Department-II, Section-I  
Toru Fujikawa

**Horii:** If we think about our company ten years from now, I perceive that we need to give greater weight to new products. Simultaneously, I hope we can establish product recycling technologies. Especially as tungsten hexafluoride is a product that is made from rare metal, it is vital that we promote recycling.

**Fujikawa:** The key will be to what extent we can develop and supply

valuable products to our client semiconductor companies. At the same time, it is important to develop systems that will not be influenced by changes in the market environment, such as the diversification of raw material suppliers.



Production Engineering Department  
Shunichi Horii

**Nagashima:** The semiconductor and liquid crystal industries will keep on growing. Seeing this as an opportunity to sell our products, we intend to work sincerely to meet the demands of our customers.

**Tanaka:** Our company's R&D themes are deliberated and decided at the research theme committee. In addition to this, our company has a system allowing all employees to make proposals, enabling each and every employee to participate in research activities. It is indeed an all-employee-participatory development system. Through these systems, we can expect to come up with new development themes from a variety of viewpoints.

**Hayashi:** I have been engaged in development for many years. I have experienced numerous times both the joy of creating a good product and the regret that comes with losing to a rival company. The hardships involved in creating products may not be obvious to customers. However, the times I felt that customers noticed our hardships and appreciated our work made it all the worthwhile. Today, I renewed my determination that I will work to make the Shibukawa Plant an even more trusted plant by pooling our efforts together and aiming to develop new products that have world-leading quality.

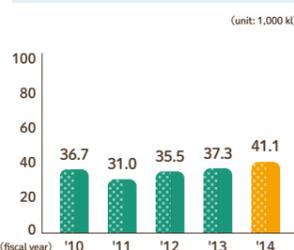
## Site Report

### Shibukawa Plant

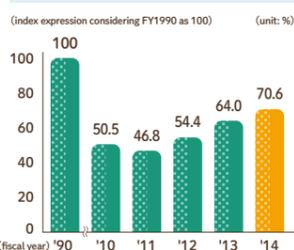
1497 Shibukawa,  
Shibukawa City, Gunma

- Plant area: approximately 138,000 square meters
- Number of employees: 256 (as of March 31, 2015)
- Products: [Ferrochemicals] carriers, magnetite  
[Fluorochemicals] sulfur hexafluoride, carbon tetrafluoride, tungsten hexafluoride, nitrogen trifluoride, hexafluoroethane, trifluoromethane, others

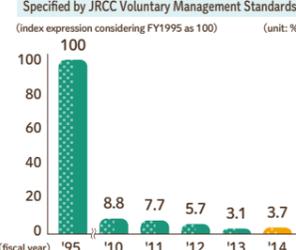
Trends in Energy Consumption in Crude Oil Equivalent



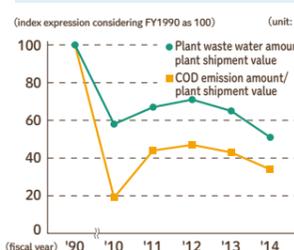
Trends in CO<sub>2</sub> Emissions



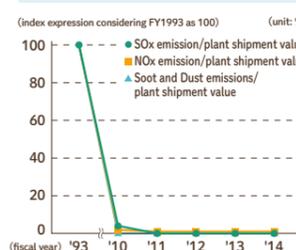
Trends in Emission Amounts of Substances Specified by JRCC Voluntary Management Standards



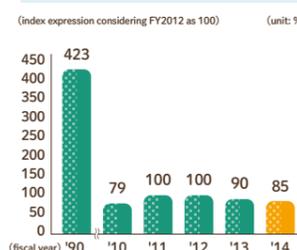
Trends in Plant Waste Water and COD



Trends in SO<sub>x</sub>, NO<sub>x</sub>, Soot and Dust Emission Levels



Trends in Industrial Waste Amount Levels



# RC Promotion Organization

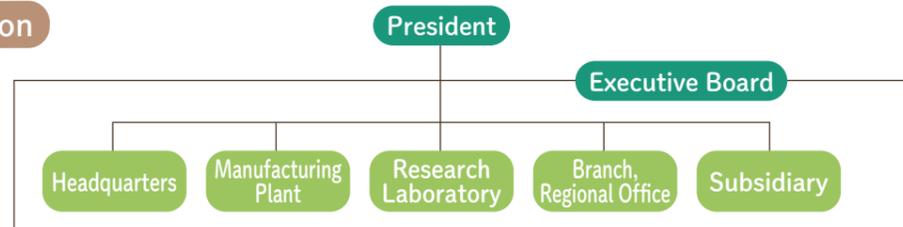
In order to ensure responsible care (RC) and compliance, each RC promotion organization at Kanto Denka continuously conducts self-audit and evaluation, provides guidance and education, and conducts improvement activities, in addition to other activities.



## Efforts Geared toward CSR

Kanto Denka believes that we, as a good corporate citizen, have a mission to society to contribute to making peoples' lives safer and more enriching. In order to achieve this goal, we strive to give priority to compliance and risk management in our business practices. Simultaneously, we endeavor to build a corporate culture for making a contribution to communities in which our facilities are located and for putting into practice initiatives for protecting the environment.

## Organization



### RC Promotion Council

Chairman: President  
 Members: Chairmen of subcommittees and a few appointed by the President  
 Office: Environment & Safety Department  
 Formulation of fiscal year, and medium- and long-term RC policies. Deliberation and decision on important issues related to RC activities across the entire company including their performance.

Oversees three subcommittees as well as deliberates and decides on the promotion and auditing issues of each committee.

**Environmental and Safety Protection Committee**  
 Promotion and audit of RC activities across all operational areas.

**Quality Control 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 recognition of purpose of use.

### 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  
 Attitude toward antisocial forces and organizations  
 Ensure the reliability and accuracy of financial reporting

### Compliance

**Compliance and Risk Management Committee**  
 The Compliance and Risk Management Committee is responsible for managing compliance and risk management. The Committee promotes various activities aimed at reducing risk and observing relevant laws, regulations and corporate ethics.

**The Internal Auditing Department**  
 The Internal Auditing Department carries out internal audits for all operations under the direct supervision of the President. The Department also independently evaluates the status of development and administration of internal control in accordance with the Basic Policies on Financial Reporting set forth by the Board of Directors.

## Audit Structure

### Self-auditing

Each facility works to achieve continuous improvements in RC activities through the evaluation of our RC measures by linking them to the ISO14001 and OHSAS18001 systems. The results of these self-audits are reflected in the next RC objectives and plans report.

### Auditing of Each Facility

The Environmental and Safety Protection Committee, the Quality Management Committee and Logistics Safety Committee once a year, respectively, conduct auditing of goals, plans, implementation systems, and performance evaluation of self-audits in all facilities. Furthermore, corrective action for some defects found at audit and sharing the common knowledge to the other department should be accomplished so that we could strengthen our management systems.

### Overall Auditing

Overall auditing involves deliberation and evaluation by the RC Promotion Council of results of auditing carried out by the Environmental and Safety Protection Committee, Quality Control Committee, and Logistics Safety Committee. The results of evaluation of overall auditing are then reflected in management policies, objectives, and the implementation plans for the following fiscal year.



### Internal Notification System (Hot line)

In order to respond promptly to breaches of compliance or to prevent them from happening, directors/employees of Kanto Denka are required to swiftly report information on breaches of compliance to the General Manager of the Personnel and General Affairs Dept., the Auditor, or to lawyers outside the company. In addition, the rules stipulate that the person making the notification must not be treated disadvantageously.

### Protection of Personal Information

We have formulated and publicized a basic policy regarding the protection of personal information, and are clarifying the rules regarding the storage and disposal of personal information. We have set forth various stipulations, including those for ensuring confidentiality of personal information for persons leaving the company.

# Performance and Targets in RC Activities

Reduce environmental impact while promoting growth strategy. Continue to ensure a foundation of safe operations. To achieve these targets, Kanto Denka positions achieving the RC action targets as one of the most prioritized issues towards which the entire company is working together.

## FY2014 Performance in RC Activities

|   |   |   |  |
|---|---|---|--|
| 1 | No Accidents and No Injuries            | Workplace Injuries: 1<br>Accidents at Company Facilities: 0 | Target<br>● Workplace Injuries: Zero (zero workplace injuries among the employees and contractors)<br>● Accidents at Company Facilities: Zero          |
| 2 | Saving Resources                        | 2% Reduction  | Target<br>Reduce the quantity of principal raw materials against plant production volume to a level lower than the FY2012 results.                     |
| 3 | Saving Energy                           | 9% Increase   | Target<br>Reduce energy consumption (crude oil equivalent) per unit of production volume by 3% of FY2012 levels.                                       |
| 4 | Reduction of Greenhouse Gases Emissions | 47% Reduction   | Target<br>Reduce CO <sub>2</sub> equivalent greenhouse gases emissions by 25% of FY1990 levels.  |
| 5 | Reduction of Environmental Pollutants   | 27% Increase  | Target<br>Reduction of the emission intensity of chemicals specified as PRTR by JCIA to a level lower than the FY2012 results.                         |
| 6 | Reduction of Industrial Waste           | 24% Reduction   | Target<br>Reduce landfill industrial emissions outside our plant to a level lower than the FY2012 results (2,500 tons) by raising the recycling ratio. |

## FY2015 RC Action Target (third year objective of the 9th Three-Year Plan)

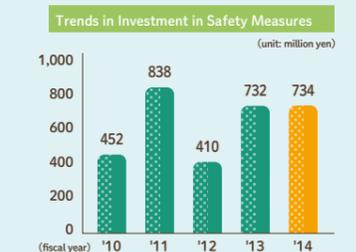
|   |   |                                |  |
|---|---|--------------------------------|--|
| 1 | No Accidents and No Injuries            | 0 Incidents                    | Target<br>● Workplace Injuries: Zero (zero workplace injuries among the employees and contractors)<br>● Accidents at Company Facilities: Zero          |
| 2 | Saving Resources                        | Less than FY2012 actual levels | Target<br>Reduce the quantity of principal raw materials against plant production volume to a level lower than the FY2012 results.                     |
| 3 | Saving Energy                           | 3% Reduction                   | Target<br>Reduce energy consumption (crude oil equivalent) per unit of production volume by 3% of FY2012 levels.                                       |
| 4 | Reduction of Greenhouse Gases Emissions | 75% Reduction                  | Target<br>Reduce CO <sub>2</sub> equivalent greenhouse gases emissions by 75% of FY1990 levels.  |
| 5 | Reduction of Environmental Pollutants   | Less than FY2012 actual levels | Target<br>Reduction of the emission intensity of chemicals specified as PRTR by JCIA to a level lower than the FY2012 results.                         |
| 6 | Reduction of Industrial Waste           | Less than FY2012 actual levels | Target<br>Reduce landfill industrial emissions outside our plant to a level lower than the FY2012 results (2,500 tons) by raising the recycling ratio. |



## Investment for the Achievement of RC Action Targets

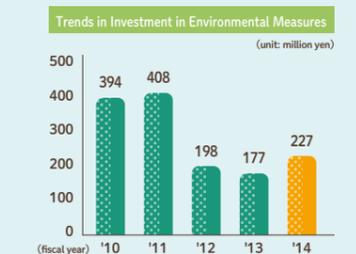
### Investment in Safety Measures

We have made efforts to improve our work environments and increase safety awareness by making investments with a focus on safety measures, which are essential for sustaining our safe operations, including the improvement of manufacturing facilities, strengthening of education and training within the Company, and participation in external workshops.



### Investment in Environmental Measures

In FY2014, we made environment investments mainly for items such as reducing greenhouse gas emissions and promoting energy conservation.



### Working to create the future

I am striving to reduce as many safety risks as possible. In addition, understanding that the improvement of safety awareness among the workers at the plants is the shortcut to "No Accidents and No Injuries," I am working to enlighten and educate employees.

Shibukawa Plant  
 Environment & Safety Department  
 Deputy Manager  
 Yasuyuki Kamekawa



# Working towards Safety



Applying the new safety measures formulated in 2013 to day-to-day operations, Kanto Denka works to realize thoroughgoing safety behavior and the reduction of risk factors, as well as making efforts to strengthen the corporate culture, which prioritizes safety operations.

## No Accidents and No Injuries

RC action target

### Zero cases of work-related accidents and equipment accidents

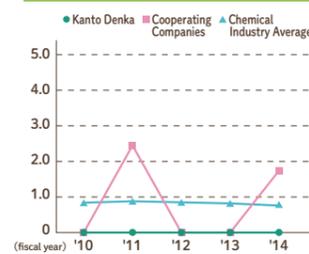
With the objective of achieving “No Accidents and No Injuries,” all employees at Kanto Denka and cooperating companies are working to “create a culture of safety” and to “create a workplace where people can work actively and in good health.” However, four equipment accidents occurred at facilities between 2011 and 2013. Luckily, there was no human suffering or damage to the surroundings of the facilities.

Kanto Denka is working to ensure that such accidents will never occur again by reinforcing the safety management of our facilities and improving the handling of chemicals, as well as by implementing the enhancement of safety education and redevelopment of procedure documents with the aim of increasing our employees’ risk awareness. As a result, in FY2014, one minor work-related accident occurred at a cooperating company but no fatal accidents occurred. We will continue to work proactively towards the realization of “No Accidents and No Injuries.”



The safety first tower

Frequency Rate of Lost Work-time Accidents



Trend in the number of facility accidents

| Fiscal year         | '10 | '11 | '12 | '13 | '14 |
|---------------------|-----|-----|-----|-----|-----|
| Number of accidents | 0   | 1   | 1   | 2   | 0   |

\*Frequency Rate  
The frequency rate of lost work-time accidents is an index showing the number of deaths/injuries per one million hours worked. It is based on a by-industry nationwide study, carried out by the Ministry of Health, Labor and Welfare, and adjusted for company size and number of hours worked.



Based on the concept of risk assessment, we promote the elimination of potential risks as well as the expansion and enhancement of safety measures.

## Safety Activities at our Plants

### Implementation of safety education

In order to reduce potential risk factors underlying occupational injuries on a regular basis, we are aiming for more effective safety measures through provisions such as safety education during the morning meeting tailored to specific types of work. We are also improving work processes at each site as necessary in order to ensure that the safety measures are enforced.

### Implementation of KYT (Kiken Yochi Training: Danger Prognosis Training)

In order to make clear what dangers the work entails, we gather near accident cases into a database and make use of it for KYT. Furthermore, once a month at each workplace, a meeting is held to discuss solutions based on these near-accident cases, and solutions for minimizing the risk factors are implemented continuously.

### Safety Measures for Mechanical Equipment

In addition to risk assessments of newly-built or added machinery, we conduct safety inspections based on test operation plans and periodic inspections in compliance with regulations. We also create and routinely review operating manuals, and thereby, promote safety measures for mechanical equipment.

### Implementing Disaster Prevention Drills

At the Shibukawa and Mizushima plants, in preparation for accidents and industrial accidents, plant disaster self-prevention teams, workplace disaster self-prevention teams, fire-fighting squads, rescue teams, and other relevant teams are brought together to form Kanto Denka’s disaster self-prevention group. Disaster prevention drills and joint training exercises with public fire departments are carried out on a regular basis. In addition, at each plant we carry out monthly and departmental disaster prevention drills, as well as emergency contact drills for our day and night duty staff.



Joint training exercise with the public fire department



PL labels  
These labels give product safety information



Special gas transport vehicles make delivering products safer

## Safety Measures for Chemical Substances

As a company that handles large amounts of chemical substances, Kanto Denka pays utmost consideration to their safe management. Our chemical substances are managed in line with the Guidelines on Management of Chemical Substances incorporated in the PRTR Law, the Industrial Safety and Health Law, and the Poisonous and Deleterious Substance Control Law, and are verified by third parties such as ISO 14001 and OHSAS18001. With respect to poisonous and deleterious substances which require careful handling, we are strengthening their safety management by ensuring segregation management and implementing procedural manuals.

### Warning Labels Based on PL (Product Liability)

All of our products are affixed with PL labels listing handling precautions. The Quality Control Committee carries out company-wide audits, including checks of the Shibukawa and Mizushima Plants and their research laboratories, to ensure that product safety measures based on the Product Liability Law are being followed. Their findings are then reported to the RC Promotion Council.

\*The PL (Product Liability) Law  
The PL (Product Liability) Law is a law stating that if the consumer can prove defects in a product, the manufacturer’s responsibility will be questioned regardless of whether the fault lies with the manufacturer or not, and was entered into force in 1994. As a result of this law, companies are required to pursue even stricter safety standards.



The Yellow Card is an emergency contact card printed on yellow paper, which details the steps that a driver or assistant must take in the event of a traffic accident involving chemical substance or high-pressure gas, as well as the measures the fire department, police, and other emergency services should take.

## Logistics Safety

Kanto Denka is working to reduce potential risk factors in distribution through such measures as preventing deformation and damage of containers, securing the environment and safety of filling stations and distribution centers, and implementing a user facility improvement program. As part of these efforts, our Logistics Safety Committee is conducting safety auditing for each office and transporter.

### Ensuring Safety in Emergencies

In order to ensure safety in the event of an accident, it is a requirement for all transportation companies to have the Yellow Card and SDS (Safety Data Sheet) documents at all times during transportation. The documents contain emergency contact numbers and details of emergency steps to be taken during emergencies.

### User Facility Improvement Program

Since 1996, Kanto Denka has been implementing ongoing activities to improve customers’ facilities. If a driver finds environmental or safety anomalies at a customer site, Kanto Denka investigates it based on the transporter’s report. At a later date, we make a recommendation for improvement and recommend that the customer take the appropriate steps. As a result, 126 out of 133 improvement requests made in the past have been taken and implemented.

## Building the foundation towards safe and stable operations

Kanto Denka works on the promotion of awareness that prioritizes safety and action reform, and produces positive and steady results.

In 2013, Kanto Denka conducted a periodic safety audit emphasizing the understanding of actual situations in each office and worked to clarify the problems hidden in the workplace, with the help of an external consultant. Based on the problems revealed through the above efforts, we determined seven priority issues and formulated the following improvement plans. In 2014, all of the offices and employees at Kanto Denka committed to implement the improvement plans. We will continue these new initiatives to establish their outcomes in the day-to-day operations and will make efforts to achieve “No Accidents and No Injuries.”

- Shifting of the educational focus from “one to many” to “one to one.”
- Standardizing and enhancing the contents of procedure manuals and know-how documents (Based on the knowledge and experiences of veteran employees, enhance the contents that need to be handed down to younger employees).
- Clarifying the response procedures in the case where non-regular work and unpredictable events have occurred.
- Creating a mechanism to re-ensure the practice of “report, contact and consultation,” which meets the environment of a workplace involving shift work.
- Re-clarifying potential risks based on the accidents and troubles which have occurred in the past.
- Implementing a timely revision schedule to surely reflect modified contents into the procedure.
- Implementing legal and safety education utilizing consultants and external organizations. And other plans.

### Working to create the future

I am working towards resolving the safety and environmental issues at the plant. I planned a three-year improvement plan and am promoting it. I also consider information exchanges with relevant departments, neighboring companies and supervisory authorities.

Yasuji Oguma, Environment Safety Manager, Quality Environment & Safety Department



### Working to create the future

Positioning myself between our customers and plants, I am working hard to ensure stable supplies of product and to realize the optimization of production activities. In addition, I am committed to shipping products (particularly hazardous materials) with the highest priority on safety and security.

Headquarters  
Fundamental  
Chemicals  
Sales Department  
Yuji Ueno



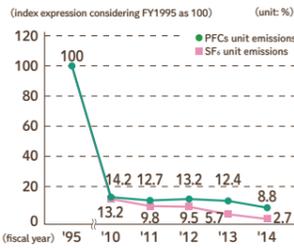
## Reduction of PFCs and SF<sub>6</sub> Emissions

### Target

**JCIA's Voluntary Action Plan.**  
90% reduction in PFCs unit emission and 90% reduction in SF<sub>6</sub> unit emissions of 1995 levels, and maintain this level.

Kanto Denka manufactures PFCs and SF<sub>6</sub> gases that are indispensable in the electronic devices industry. As these gases have a high global warming effect, Kanto Denka, as part of JCIA's Voluntary Action, has undertaken efforts to reduce the gas emissions in cooperation with other five companies within Japan. During this fiscal year, we have set a new future plan with the target of the reduction of PFCs unit emission and SF<sub>6</sub> unit emission by 90% respectively compared with FY1995, as well as the maintenance of this level. Also, in FY2014, Kanto Denka achieved this target independently.

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



**\*Greenhouse Gases**  
Greenhouse gases are identified as substances that cause global warming, including carbon dioxide, dinitrogen monoxide, methane and hydrofluorocarbons (HFCs), as well as perfluorocarbons (PFCs) and sulfur hexafluoride (SF<sub>6</sub>), both of which are handled by Kanto Denka.

**\*PFCs**  
PFCs are compounds consisting of fluorine and carbon. Kanto Denka produces tetrafluoromethane (CF<sub>4</sub>), hexafluoroethane (C<sub>2</sub>F<sub>6</sub>), octafluoropropane (C<sub>3</sub>F<sub>8</sub>), and octafluorocyclobutane (c-C<sub>4</sub>F<sub>8</sub>).

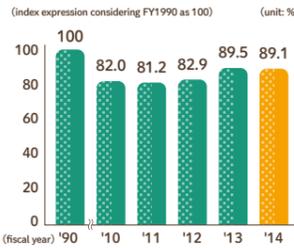
## Reduction of Carbon Dioxide Emissions

### Target

**10% reduction compared with FY1990**

Since 2013, carbon dioxide emissions have increased due to the increase in the overall production volume, but an over 10% reduction against the base year has continued. Going forward, we will strive to achieve further reduction of emissions through fuel substitution and other methods.

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



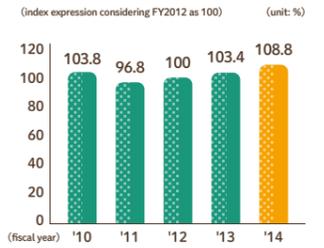
## Reduction of Energy Consumption

### RC action target

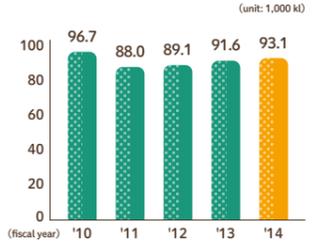
**Reduce energy consumption (crude oil equivalent) per unit of production volume by 3% of FY2012 levels.**

Since 2012, along with the increase in production, energy consumption volume has been increasing year by year. In FY2014, specific energy consumption increased to 108.8, considering FY2012 as 100, due to an overall increase in production, which involves a process with large specific energy consumption. Moving forward, we will strive to continuously improve production efficiency and contain energy use, as well as promote the reduction of specific energy consumption.

Trends in Specific Energy Consumption



Trends in Energy Consumption in Crude Oil Equivalent



**\*Specific energy consumption**  
This index indicates how much energy is being consumed in the production of a certain given quantity of products. The lower the figure, the more energy conserved in the manufacturing process.

## Coexistence with the Global Environment

Kanto Denka aims to achieve energy conservation and zero emissions by setting our own environmental quality standards and continuing through conducting day-to-day operations by each employee.

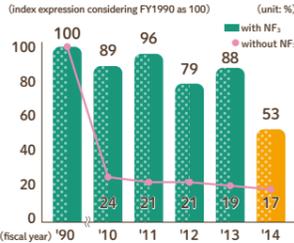
## Reduction of Greenhouse Gases Emissions

### RC action target

**Reduce CO<sub>2</sub> equivalent greenhouse gases emissions by 25% of FY1990 levels**

From an early stage, Kanto Denka has been working to reduce nitrogen trifluoride (NF<sub>3</sub>) emissions, which was newly designated as the subject to reductions. In FY2014, we implemented equipment upgrade to promote significant reductions of NF<sub>3</sub> emissions. This has produced a positive result of the reduction of greenhouse substances emissions by 35% compared with the previous fiscal year.

Trends in Greenhouse Gases Emissions



## Saving Resources

### RC action target

**Reduce the quantity of principal raw materials against plant production volume to a level lower than the FY2012 results.**

As aggregating data on saving resources is significantly affected by the soaring unit cost of raw materials, Kanto Denka is switching over to a calculation method (\*) that can accurately display results without being affected by unspecified elements. By enhancing the yield of our products, in FY2014 we tried to achieve a 2% improvement compared to FY2012 levels.

(\*)Calculation is based on "Base Unit = Quantity of Raw Materials Consumed (t) / Production Volume (t)"

Trends in Raw Material Consumption



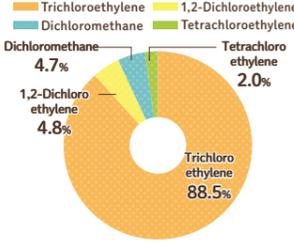
## Target for Reduction of Substances Specified by Management Standards Emission Amounts of JRCC Voluntary

### Target

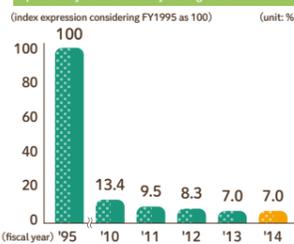
**Manufacturing facilities' reduction of emission amounts of substances specified by JRCC Voluntary Management Standards**

Kanto Denka currently manufactures four out of 12 substances specified by the Japan Responsible Care Committee (JRCC) for priority reduction in atmospheric emissions, which are trichloroethylene (TCE), tetrachloroethylene (PCE), 1, 2-dichloroethane (EDC), and dichloromethane. We will put our utmost effort into the reduction of TCE emissions due to the large amount of the emissions.

Breakdown of Substances Emitted in FY2014



Trends in Emission Amounts of Substances Specified by JRCC Voluntary Management Standards



## Reduction of the emissions of environmental pollutants

### RC action target

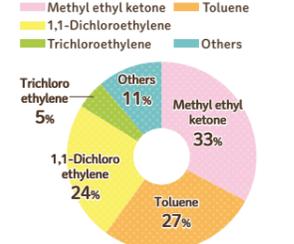
**Reduction of the emission amounts of PRTR-designated chemical substances by JCIA to a level lower than the FY2012 results.**

Kanto Denka handles 18 substances (including those less than 1 ton) that are specified as PRTR by law, but we manage substances in accordance with the larger range of substances specified by JCIA. In FY2014, we handled 242,000 tons of the 30 substances specified as PRTR by JCIA. The emissions amount was 28.6 tons, and the emissions unit was 0.118kg for every 1 ton handled.

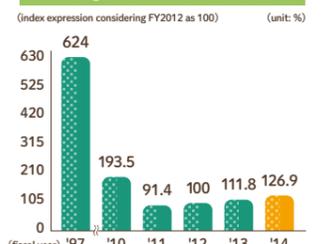
### \*PRTR

The PRTR (Pollutant Release & Transfer Register) is a reporting and management system to help identify the quantity of chemical substances released into the environment, including the atmosphere, water sources, and the soil, and the quantity processed as waste materials. In Japan, the PRTR Law came into force in March 2001. The release and transfer quantities reported by companies are made public by the relevant authorities annually.

Breakdown of the 28.6 tons of Emissions in FY2014



Trends in Emission Amounts of PRTR-designated Chemical Substances



## Working to create the future

In order to leave a good environment to the next generations, I am working to conduct research and development with a wide perspective and a sense of speed. My daily life, in which I strive towards a high goal, is fulfilling.

Shibukawa Development Research Laboratory  
Kumiko Sueto





## Reduction of Plant Waste Water and COD

### Target

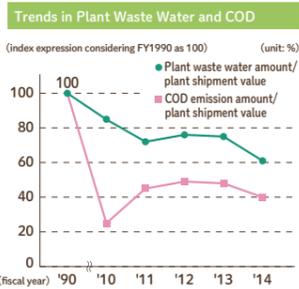
Reduction of the amount of plant waste water and COD emissions

Kanto Denka has been working to reduce the volume of plant waste water and COD emissions, by taking actions including recovering pollutant substances in our manufacturing facilities. In FY2014, there was a significant improvement compared to the previous year.

\*COD (Chemical Oxygen Demand)  
One indicator of pollution in water is the amount of oxygen necessary to decompose pollutants and other substances in water. The lower this figure is, the cleaner the water.



Discharged water (cleaned at the plant)



## Reduction of Industrial Waste

### RC action target

Reduce landfill industrial emissions outside our plant to a level lower than the FY2012 results by raising the recycling ratio.

Kanto Denka has been making proactive efforts to reduce the generation of waste products by controlling and reducing the volume of waste products while promoting recycling. Although the volume of industrial waste has temporarily increased in recent years due to the launch of new facilities, we have also contributed to the reduction of waste since FY2013 by improving the raw materials consumption.

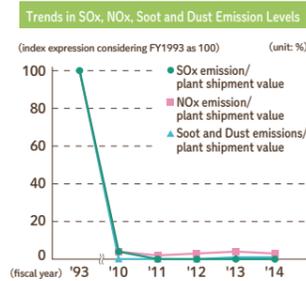


## Reduction of SOx, NOx, and Soot and Dust Emissions

### 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 by stably operating emissions equipment. In recent years, we have maintained low levels of emissions for all of these substances.



## The Amount of Emissions of Greenhouse Gases: Report based on the Law Concerning the Promotion of the Measures to Cope with Global Warming

Kanto Denka reports data in accordance with the Mandatory Greenhouse Gas Accounting and Reporting System based on Japan's Law Concerning the Promotion of Measures to Cope with Global Warming. The volume of CO<sub>2</sub> equivalent emissions in FY2014 amounted to 0.31 million tons. In March 2009, Kanto Denka installed a combustion facility in order to suppress the emissions of the substances, which have a high global warming potential. The facility has continued to operate steadily ever since, and has had an even greater effect than anticipated.

|                                    | Figures for 2010 (official) | Figures for 2011 (official) | Figures for 2012 (official) | Figures for 2013 (reported) | Figures for 2014 (reported) |
|------------------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|-----------------------------|
| Originating from energy            | 21.3                        | 21.6                        | 21.5                        | 23.2                        | 23.1                        |
| *Emissions of PFCs, etc.           | 17.8                        | 14.5                        | 15.1                        | 11.7                        | 7.3                         |
| Originating from distribution fuel | 0.6                         | 0.6                         | 0.5                         | 0.6                         | 0.6                         |
| <b>Total</b>                       | <b>39.7</b>                 | <b>36.7</b>                 | <b>37.1</b>                 | <b>35.5</b>                 | <b>31.0</b>                 |

\*Emissions of PFCs etc. Emissions of PFCs+HFCs+SF<sub>6</sub> Unit: 10,000 tons of CO<sub>2</sub>

### Working to create the future

Responding to the request for research and analysis on products, I am striving to ensure the accuracy and speed of my work. I am also committed to providing education for transferring knowledge and skills to the next generations.

Yoshiyuki Sato, Manager, Quality Control Section, Quality & Environment & Safety Department, Mizushima Plant



## Interaction with the Local Community

Many employees continuously participate in opportunities for interacting with local people and social contribution activities.



### Working to create the future

I am working on the ways to respond to the "My Number" system, which is deeply related to my job. I am doing my best to handle this smoothly and with as little burden as possible on other employees.



Yuko Inui Personnel & General Affairs Department, Headquarters

### RC Briefing Sessions

We introduce the initiatives of responsible care activities, which are a core responsibility of companies that produce and handle chemical substances.

### Local Community Roundtable Meetings

We hold roundtable meetings with our plants neighbors multiple times a year. We listen to the views of the local community and address their questions or concerns.

### Plant Tours

Plant tours are offered as needed, and opinion exchanges are also held regarding operational safety and environmental activities.

### Greenery Activities

Kanto Denka promotes greenery at its plants and offices to conserve the environment and create comfortable workplaces.

### Clean-up Activities

In addition to cleaning the area around its plants, Kanto Denka participates in city- and district-led clean-up events as well as clean-up activities conducted by neighboring communities.

### Blood Donation Activities

Many employees at Kanto Denka cooperate with blood donation activities. The company has received the Golden Order of Merit from the Japanese Red Cross Society and a letter of appreciation from the Ministry of Health, Labour and Welfare.



A scene of blood donation



Japanese Red Cross Society Golden Order of Merit



A letter of appreciation from the Ministry of Health, Labour and Welfare



Greening activity for median strips on national road

### NPO Shibukawa Regional Monozukuri Council

Employees of the Shibukawa Plant participate in the activity by the Shibukawa Regional Monozukuri Council, which works to contribute to the beautification of the environment in the local community. The bonds of friendship with the local people have also deepened through this activity.

## Aiming to Create Dynamic Workplaces

### Creating Pleasant Working Environment

A hotline for consultation regarding mental healthcare and various types of harassment is open and experts from relevant fields provide support with our employees. Kanto Denka also offers plenty of other welfare programs such as maternity leave, childcare leave and reduced working hours scheme as well as childcare leave program for male employees. In addition, internal rules such as nursing care leave regulations and senior employees (re-employment) regulations have been established and are in operation.

### Offering a Wide Range of Employee Training Programs

Kanto Denka offers mental health training sessions and sexual harassment training, as well as different training sessions depending on employees' ranks. We also offer elective correspondence courses to support the independent studies of employees.

### K-SF<sup>3</sup> Activities

As a business improvement activity, we operate our unique K-SF<sup>3</sup> (Kantodenka Step Forward Cube) system. "Cube" indicates our initiatives from the viewpoint of productivity (product quality), safety and the environment, and in 2014 we received approximately 580 proposals from individuals and various voluntary offices. Every year, excellent activities are honored on our founding anniversary.

### "Ryoyu-Kai" Activities

Ryoyu-Kai provides opportunities for employees outside of the workplace to cultivate their friendship. Through various club and other activities, employees meet and interact with their colleagues whom they do not usually have a chance to interact with in their work.



Industrial Physician's Lecture



AED Workshop

### Cultural Festival

At the Mizushima plant, works such as photographs, crafts, and bonsai are called for and displayed. It is also open to visitors for viewing.



### Holding a variety of workshops and lectures

Lectures and workshops that will be useful for the employees' day-to-day health and safety, such as lectures given by invited industrial physicians, traffic safety lectures by instructors from police stations, and the AED workshops.