Sustainability Report 2019

Shin-Etsu Chemical Co., Ltd.

Contents of Shin-Etsu Chemical Sustainability Report 2019

This report excerpted from the Sustainability Site as of June 2019.

Top Message

The Group achieved increased profits for the ninth consecutive year, and recorded its highest ever profits for the second year in a row in the fiscal year ending in March 2019 (FY 2018). The Group has also made steady progress this year in ESG[1] activities including the work to contribute toward the SDGs (Sustainable Development Goals). In this message for our Sustainability Report 2019, I would like to introduce our management objectives and our CSR activities.

President

Yasuhiko Saitoh

> Chairman's Message
Chihiro Kanagawa

Putting our Business Principle into practice

Each and every individual working at the Shin-Etsu Group is conscientiously carrying out his or her daily work under our Business Principle: "The Group strictly complies with all laws and regulations, conducts fair business practices and contributes to people's daily lives as well as to the advance of industry and society by creating value through the provision of key materials and technologies." In order to realize our Business Principle, the Shin-Etsu Group work with a two-pronged approach, "to supply key materials that meet society's needs" and "to contribute to the solution of the various issues that our planet Earth is faced with", and in FY2018, we carried out the following activities.

Strengthening ESG Activities

In August 2017, we restructured the former CSR Promotion Committee into the ESG Promotion Committee to further promote company-wide ESG activities in all aspects of our corporate activities. In FY 2018, the committee reviewed the key CSR issues[2] identified by the Group in February 2016. Following the review, the committee decided to keep all nine as key CSR issues for the Group. The Group is carrying out those initiatives to further strengthen our ESG activities.

I would like to outline our recent efforts in strengthening our ESG activities.
Firstly, we have strengthened our activities in disclosing information related to climate change. In May 2019, the Group announced our support for the recommendations from the TCFD (Task Force on Climate-related Financial Disclosures)[3]. The Group has also joined the TCFD Consortium of Japan[4]. We will strive to disclose information related to climate change in accordance with the TCFD recommendations.

Secondly, we have established "The Shin-Etsu Group Human Rights Policy". The Group has conducted its business at its sites around the world always on the basis of respecting the human rights of all individuals. In FY 2018, we decided to codify our initiatives for human rights at the Group as the Human Rights Policy. We will adhere to relevant international codes of conduct[5] and redouble our efforts to promote activities that respect human rights, in order to instill an abiding sense of respect for human rights among Group companies worldwide.

Contributing to the SDGs

The Group made a change to one of its management goals for FY 2019, seeking to "contribute to SDGs" rather than to "contribute to improving the global environment." The 17 goals of the SDGs illustrate the challenges faced equally by us all in the 21st century. In order to resolve these issues, it is important to tackle individual problems as they stand in our way, and resolve them one by one. To this end, when we consider making investments in our existing businesses or developing new products and new businesses, we set store by assessing their affinity and suitability with SDGs. As it turned out, over 97% of investment proposals at Shin-Etsu Chemical in FY 2018 were conducive to SDGs. In order for human society to achieve sustainable development and raise its quality of life while also reducing environmental impacts, it is crucial to maximize efficiency. I believe that the Group has a significant role to play in this regard. The Group will strive to achieve this goal in all aspects, be it in improving existing products or in developing new ones.

Working to Further Strengthen Our Stance for Fair Corporate Activities

Since 2010, the Group has been a member of the UN Global Compact and has carried out initiatives to put into practice its 10 principles that cover four main areas: human rights, labor standards, environment and anti-corruption. In February 2018, we signed on, as the first company to do so, to the Tokyo Principles for Strengthening Anti-Corruption Practices established by the Global Compact Network Japan[6]. Our signing on to the Tokyo Principles is compatible with our stated intention to "comply with all laws and regulations, and conduct fair business practices" indicated in our Business Principle. It also contributes to the achievement of the Goal 16 of the SDGs: "Peace, justice and strong institutions." We will incorporate the Tokyo Principles into our daily operations by sharing them throughout the Group and maintaining the anti-corruption norm as a key element in our Business Principle.

Totally Committed to Responsible Care

The Group signed and put into practice the Responsible Care®[7] Global Charter of the International Council of Chemical Associations (ICCA) in 2006. Furthermore, in 2014, we also signed the revised Responsible Care® Global Charter issued by the ICCA. In accordance with this Charter, we are continuously striving to ensure environmental conservation and to improve occupational safety and health as well as process safety and prevention. In FY 2017, a total of 23 Group offices, globally, conducted their business activities in compliance with the Charter through such means as carrying out audits of environmental and safety management.

As above, I have introduced only some aspects of the Group's CSR activities that we are presently engaged in. These activities are explained in greater detail in each chapter of this Sustainability Report.

The role of our Group is to provide such materials of value as would be considered indispensable in improving people's quality of life and in solving issues faced by the market. Through these efforts, the Group will work to achieve sustainable growth. We would be most grateful for your continued understanding and support in the future.

June 2019
Yasuhiko Saitoh, President,

1 ESG
Environment, Social and Governance (ESG) refers to the three central CSR factors expounded on by investors and others that are used to evaluate a company's CSR endeavors.

2 Key CSR issues
The Group has established nine key issues to consider in CSR. The first, " legal compliance, fair corporate activities," serves as the foundation of all our activities, followed by eight others: 1) Employees and contractor health and safety; 2) Energy-saving, resource-saving and the reduction of the environmental impact; 3) Product quality improvements and product safety control; 4) Promotion of CSR procurement and diversification of supply sources; 5) Respect for human rights, development of human resources and promotion of diversity; 6) Respect for and protection of intellectual property; 7) Contribution to industry and social initiatives and 8) Accurate and timely information disclosure and communication with stakeholders.

3 TCFD (Task Force on Climate-related Financial Disclosures)®
This task force deals with the disclosure of information on climate change, and was established in September 2015 by the FSB (Financial Stability Board). The FSB is an international organization that monitors the state of international finance and plans measures and regulations to govern it. In December 2017, the TCFD announced its recommendation that companies should analyze their own risks and opportunities based on multiple medium and long-term climate change scenarios (varied future climate scenarios with a rise in temperature of 2°C or less), and to disclose information regarding the degree to which finances will be affected.

4 TCFD Consortium of Japan
This group was established in May 2019, led by the Japanese Ministry of Economy, Trade and Industry, the Financial Services Agency, and the Ministry of the Environment. Companies, financial institutions and other organizations that are in agreement with the TCFD recommendations join forces in this consortium. All participating parties share the aim of promoting initiatives for disclosing corporate information effectively, as well as encouraging accurate decisions to be made based on this information in investments made by financial institutions and similar organizations.

5 International codes of conduct
These include the Universal Declaration of Human Rights, the ILO international labor standards, the UN Guiding Principles on Business and Human Rights, as well as the Ten Principles of the United Nations Global Compact.

6 Global Compact Network Japan (GCNJ)
Global Compact Network Japan (GCNJ) is the local Global Compact network branch that has been set up to actively work as a CSR platform in Japan. It aims to disseminate the United Nations Global Compact's mission and various key principles to management levels within companies and organizations through such means as CSR education designed for people in management, organizing study groups with different themes as well as holding various symposia. As of March 2019, more than 300 Japanese companies/groups are participating in GCNJ.

7 Responsible Care®
Activities whereby each company that handles chemical materials on a voluntary basis commits itself to improve health, safety and environmental performance in all the life-cycle processes from the development of chemical materials through manufacture, distribution, usage, final consumption and disposal up to recycling, and then making public the results of its activities and continuously engaging in dialogue with the local community and the public, while striving to maintain good communication with society.

Editorial Policy

The Shin-Etsu Group started issuing the "Environmental Report" in 2000. In 2004, the report was renamed the "Environmental and Social Report" after expanding its contents to include corporate social responsibility in general, and in 2016, the report was retitled the "CSR Report" and has been issued without interruption. Furthermore, the Group has renamed "CSR Report" to "Sustainability Report" starting in 2019 since we have begun integrating SDGs into business management, expanding the scope of our business activities to realize a sustainable society.
The Report also serves as a report on our Responsible Care programs[1].

Referenced Guidelines

GRI Standards
Ministry of the Environment "Environmental Reporting Guidelines 2018"
Ministry of the Environment "Environmental Accounting Guidelines 2005 Edition"
Global Compact Ten Principles
UN International Bill of Rights (UDHR)
UN Guiding Principles on Business and Human Rights

■ GRI Standards Content Index

Period Covered by the Report (indicated where otherwise)

Japan: April 1, 2018 to March 31, 2019
Overseas: January 1, 2018 to December 31, 2018

Organizations Covered by the Report

The report covers our 147 Group companies including Shin-Etsu Chemical Co., Ltd, herein after called the Company. The range of entities from which data were collected is in principles as stated below. Where otherwise, this is indicated in a separate note.

(1) Environmental Activity Report
The report includes data from the 124 companies of the Group.
63 manufacturing bases in Japan
118 non-manufacturing bases in Japan
49 overseas manufacturing bases
64 overseas non-manufacturing bases

(2) Environmental Accounting
The Company

(3) Other
The Group, except for the Shin-Etsu Polymer Group[2]

(4) A collection of ESG data
Consolidated companies including the Shin-Etsu Polymer Group

Previous issue: June 2018
Issued: June 2019
Next issue: scheduled for June 2020

Membership

Keidanren (Japan Business Federation)
Japan Chemical Industry Association
Vinyl Environmental Council
Plastic Waste Management Institute
The International Friendship Exchange Council
The Japan Committee for UNICEF
Global Compact Network Japan
Millennium Promise Japan, etc.

1 Responsible Care programs
A campaign encouraging enterprises that handle chemical substances to voluntarily ensure protection of the environment, health and safety in all processes, from the development of chemical substances through manufacture, distribution and utilization to final consumption, disposal or recycling, to publish the results of their activity, and to engage in dialogue and communication with society.
2 For a report on the Shin-Etsu Polymer Group, see "Shin-Etsu Polymer Sustainability Report 2019" (to be published at the end of September 2019).

UN GLOBAL COMPACT COMMUNICATION ON PROGRESS
This is our **Communication on Progress** in implementing the principles of the **United Nations Global Compact** and supporting broader UN goals.
We welcome feedback on its contents.

Responsible Care® OUR COMMITMENT TO SUSTAINABILITY

Contribution examples of the SDGs with the raw materials, technology and products of the Shin-Etsu Group

As of March 31, 2019, the Shin-Etsu Group comprises of Shin-Etsu Chemical and 147 Group companies, which share responsibility for sales, manufacturing and other operations and cooperate to develop their respective business activities.

These business activities are divided into six segments: PVC/Chlor-Alkali Business; Silicones Business; Specialty Chemicals Business; Semiconductor Silicon Business; Electronics and Functional Materials Business; and Processing,Trading & Specialized Services Business. In each of these fields, we have products with a strong market share around the world and in Japan, with the world's top share in polyvinyl chloride (PVC), semiconductor silicon, and the top domestic share for silicones.

Shin-Etsu products are a familiar part of our everyday lives and they play an essential role in society.

Please see the website for examples of SDGs contributions for each product.

Business segment

PVC/Chlor-alkali Business | Silicones Business | Specialty Chemicals Business | Semiconductor Silicon Business | Electronics and Functional Materials Business | Processing,Trading & Specialized Services Business

1 CVD (Chemical Vapor Deposition)

A method for depositing thin films onto a substrate, involving gas energized by thermal, optical, or electromagnetic radiation to cause excitation or decomposition, and involving steps such as attraction, reaction, and dissociation.

2 PVD (Physical Vapor Deposition)

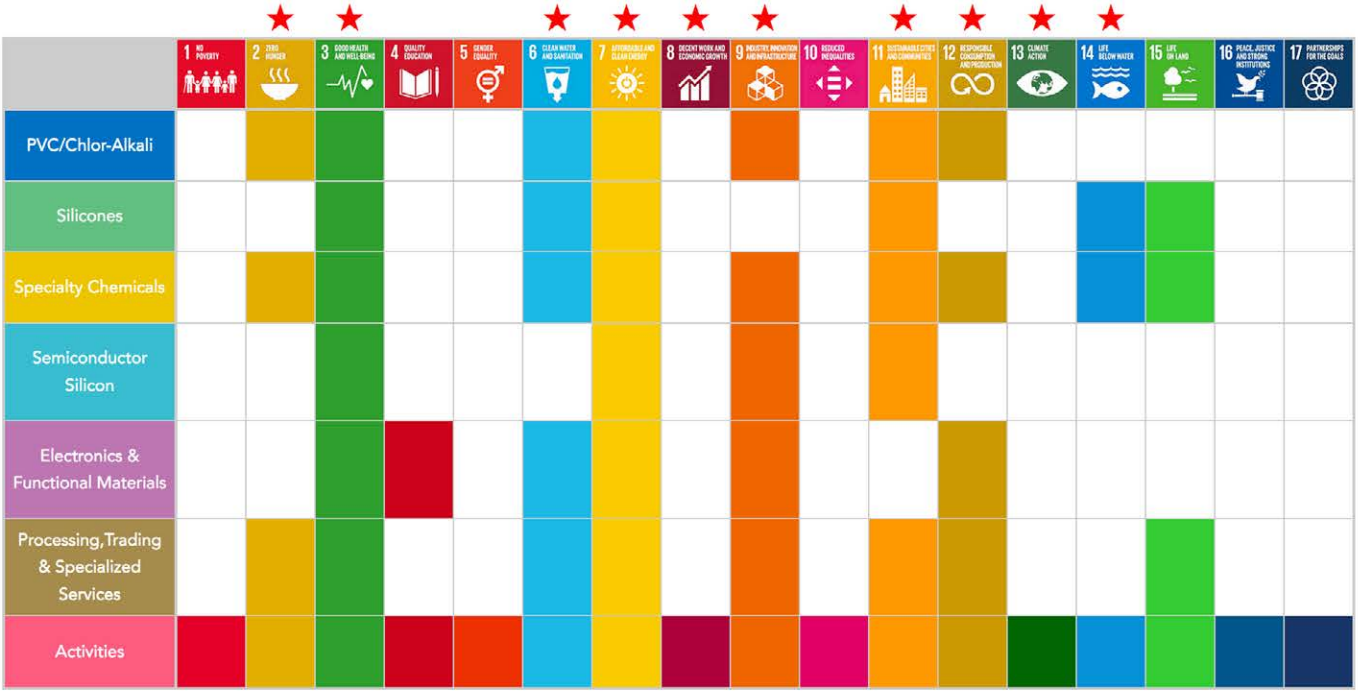
A method for depositing thin material films onto a substrate, using originally solid substances vaporized by thermal or plasma energy.

Shin-Etsu Group's products which contribute to the solution of the UN "Sustainable Development Goals (SDGs)"

The Shin-Etsu Group does its best to solve various social issues, and it implements this through our Business principle "contribute to people's daily lives as well as to the advance of industry and society by creating value through the provision of key materials and technologies."
Products borne from these efforts also contribute to solving the UN "Sustainable Development Goals(SDGs)".

SDGs contributed by Shin-Etsu Chemical products and activities

Click the SDGs icons for details.



★=10priority SDGs for the chemical sector which is suggested by WBCSD

※WBCSD(World Business Council for Sustainable Development)

WBCSD is a global, CEO organization working together to accelerate the transition to a sustainable world. Companies from around 35 countries are now participated, and working together with governments, NGOs and international organizations to share their activities and experiences on sustainable development issues.

■ Shin-Etsu Group solutions as viewed by product

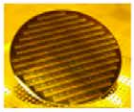
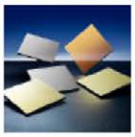
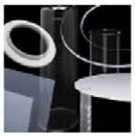
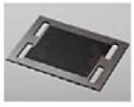
■ PVC/Chlor-Alkali Business ■ Silicones Business ■ Specialty Chemicals Business ■ Semiconductor Silicon Business
■ Electronics & Functional Materials Business ■ Processing,Trading & Specialized Services Business

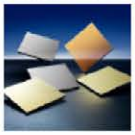
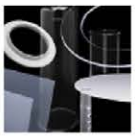
Sustainable Development Goals (SDGs)	SDGs 169 targets	Segment	Our Products	Solution Example
2 ZERO HUNGER Goal 2 ZERO HUNGER End hunger, achieve food security and improved nutrition and promote sustainable agriculture	2.4		 Polyvinyl chloride (PVC)	PVC is used for agricultural films such as vinyl plastic hothouses and plastic tunnel culture. It provides agricultural materials indispensable to grow vegetables and other crops.
			 Synthetic pheromones	Synthetic pheromones provide a new type of agricultural material that suppresses the mating of harmful insects to prevent the growth of the next generation of such insects. Since it aims only at eliminating agricultural insects, it enables the cultivation of agricultural products without disturbing the ecosystem, including many living creatures, such as these insects' natural enemies.
			 Biodegradable runner clips	Biodegradable runner clips are used to fix agricultural products during agricultural work. They do not need to be collected after use because they are decomposed by microorganisms.

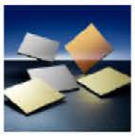
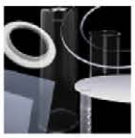
Goal 3 **GOOD HEALTH AND WELL-BEING** Ensure healthy lives and promote well-being for all at all ages	3.8		 Silicones	Silicones are used to provide contact lenses with oxygen permeability. They help enhance the performance of contact lenses.
			 Semiconductor silicon	These products are used for the joint motors of nursing care and support robots, such as to help reduce heavy workloads for nurses and caregivers, cushioning, and electronic device control.
			 Rare earth magnets	
			 Catheters	In some cases, the use of catheters enables treatment and testing without performing surgical operations.
			 Cellulose derivatives	If Cellulose derivatives are added to tablets, they enable the adjustment of the location of the tablets' dissolution, the amount dissolved, and the time required for their dissolution in the body. The bitterness and smell of tablets can be eliminated by covering them with cellulose films, making them easier to take.
	3.9			Cellulose derivatives are used to manufacture catalyst carriers and filters, which purify exhaust gas generated from the internal-combustion engines of vehicles and other systems that use gasoline or light oil. They contribute to improving the atmospheric environment by preventing the emission of NOx and SOx in exhaust gas and diesel soot, thus allowing people to lead a healthy life.
			 Sodium hypochlorite	Tap water and drinking water are made safe and sanitary by using high-quality sodium hypochlorite with less impurities to sterilize the water.
			 Vinyl acetate emulsion resin	Binder for glass wool heat insulation material that does not use organic solvent and does not generate VOC. By using this product as a heat insulating material, a safe living space can be realized without fear of sick house syndrome. It also contributes to making houses more energy efficient.
			 Acetylenic chemicals Silicone family additive agents	• It has been adopted as a water-based ink for digital printing by inkjet for its excellent ability to reduce surface tension and its defoaming properties. Relative to conventional analog printing, it contributes to low VOC, production of many kinds of products in small quantities and short delivery time, and reduction of environmental impact. • It is also used in digital printing inkjet inks for textiles. Compared with the conventional dyeing process, there is almost no loss of dyeing materials, which contributes to reducing the amount of wastewater treatment.
			 Polyvinyl alcohol	Coating the surface of tablets with polyvinyl alcohol, which has high gas barrier properties, contributes to preventing the degeneration of medicines and reducing their smells.
				The fibers of polyvinyl alcohol replace asbestos, which causes mesothelioma and pneumoconiosis. They prevent exposure to asbestos from construction materials, etc.

	3.d		 Rare earth	Rare earth is used for scintillator materials for diagnostic imaging systems such as CT scanning and PET. It contributes to reducing X-ray doses, high-speed diagnosis, and improving diagnostic accuracy.
			 Semiconductor encapsulating materials	Semiconductor encapsulating materials are used for electronic devices (such as monitors and sensors) for medical equipment (MRI and medical testers).
			 Synthetic quartz wafers	In DNA analysis, synthetic quartz wafers are used for fixed DNA sequencing boards for detection. They contribute to reducing the analytical time and improving the resolution.
			 Synthetic quartz preforms for optical fibers	Synthetic quartz fibers are used for some medical endoscopes and fiber scopes. Compared to previous ones, they reduce the burden on patients and enable more accurate diagnosis and treatment.
			 Wrapping film	Wrapping films maintain foods, etc., in a sanitary condition when storing them. They also allow them to be preserved over a long period of time.
Goal 4 QUALITY EDUCATION Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all	4.7		 Synthetic quartz wafers	Synthetic quartz wafers are used for TFT liquid crystal panels for educational data projectors at schools and other institutions. They project a larger image of the teaching materials to clarify the aims of learning and allow students to easily share what they are studying.
Goal 6 CLEAN WATER AND SANITATION Ensure availability and sustainable management of water and sanitation for all	6.1		 Sodium hypochlorite	Make tap water and drinking water safe and sanitary by using high-quality sodium hypochlorite with less impurities to sterilize the water.
			 Quartz glass for lamps	Ultraviolet lamps using quartz glass tubes sterilize super-pure water and drinking water to secure safe, high-quality water. They are also used to sterilize foodstuffs.
	6.3		 Silicones	The use of silicone antifoaming agents in sewage water suppresses the foaming of sewage discharged into rivers.
			 Synthetic pheromones	Synthetic pheromones are used to fix agricultural products during agricultural work. They help reduce the amount of agricultural chemicals used, thus reducing water contamination due to agricultural chemicals.
			 Acetylenic chemicals Silicone family additive agents	• It has been adopted as a water-based ink for digital printing by inkjet for its excellent ability to reduce surface tension and its defoaming properties. Relative to conventional analog printing, it contributes to low VOC, production of many kinds of products in small quantities and short delivery time, and reduction of environmental impact. • It is also used in digital printing inkjet inks for textiles. Compared with the conventional dyeing process, there is almost no loss of dyeing materials, which contributes to reducing the amount of wastewater treatment.

	6.4		 PVC pipe	The use of highly durable PVC for PVC pipes and joints makes replacement of service water and sewage piping unnecessary for at least 50 years.
 Goal 7 **AFFORDABLE AND CLEAN ENERGY** Ensure access to affordable, reliable, sustainable and modern energy for all			 Polyvinyl chloride (PVC)	PVC window reduce the amount of heat that escapes from windows by 71% compared to aluminum windows.
			 Silicones	• Solar batteries can be used for 30 years or more by sealing their modules with weather-resistant, durable silicone. • Silicones are used as raw materials for ship bottom paint . By preventing marine organisms from sticking to them, the fuel efficiency of the ship is improved.. • By replacing metal parts of motor vehicles with silicone products, fuel efficiency will be improved.
			 Cellulose derivatives	Cellulose derivatives are used to mold electrolytic ceramics for solid-oxide fuel cells, which are used for the Ene-Farm home-use fuel cell.
			 Vinyl acetate emulsion resin	Binder for glass wool heat insulation material that does not use organic solvent and does not generate VOC. By using this product as a heat insulating material, a safe living space can be realized without fear of sick house syndrome. It also contributes to making houses more energy efficient.
			 Semiconductor silicon	Semiconductor devices using semiconductor silicon to enable substantial power conservation through the inverters for which they are used.
			 Rare earth magnets	• The use of rare earth magnets for the compressor motor of air-conditioning systems increases energy consumption efficiency and reduces power consumption. • The use of rare earth magnets for industrial motors increases motor efficiency and reduces power consumption. • The use of high-performance small rare earth magnets for the driving motor of hybrid cars, electric vehicles, and fuel-cell vehicles and various motors for vehicles helps reduce the overall weight of the cars or vehicles, thus increasing fuel efficiency.
			 Rare earth	Rare earth is used as a material for fluorescent substances, which convert the color of LED to white. The use of long-life LED for lighting and displays contributes to energy conservation.
	7.3		 LED encapsulating materials	Among long-life, energy-saving LED optical modules, silicone packaging materials are used for most of the major components other than LED.

			 Semiconductor encapsulating materials	
			  Photoresists、 Photomask blanks	These products are used for electronic devices that control the fuel efficiency of motor vehicles.
			 Quartz glass products for semiconductor manufacturing	
			 Silicon tetrachloride	Silicon tetrachloride is used for compounds and materials that constitute Green Tire, which improves fuel efficiency by reducing rolling resistance.
			 Wafer Cases	Wafer cases are used for transport between semiconductor silicon manufacturers and device manufactures. Their overall weight is reduced by using a smaller number of parts, and this enables reduction in energy consumption during transport.
			 Plastic tape frame Frame cassette	The weight of these products is half or less than that of the previous metallic ones, thus reducing CO_2 emissions during transport.
			 Office automation roller	Development of rollers with a particularly small external diameter contributes to reducing the power consumption of printers.
			 Shupua	Shupua consists of glass made from silicon rubber. It can be manufactured using a smaller amount of energy than glass.
			 Functionality compounds EXELAST SX series	This product is lighter than the previous rubber glass runs, contributing to lower fuel consumption for vehicles.
	7.a		 Carbon mold separator	Carbon mold separators are used as one of clean fuel cells' principal components.

Goal 9 **INDUSTRY, INNOVATION AND INFRASTRUCTURE** Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation	9.1		 Semiconductor silicon	• We provide silicon wafers that are most suitable for the miniaturization and high functionality of semiconductor devices. • It has become the core material of semiconductors indispensable for industrial innovation such as AI (artificial intelligence) and IoT (the Internet of Things: which means that everything is connected to the Internet through networks). • Semiconductor encapsulating materials contribute to development of next-generation semiconductors such as stacked three-dimensional semiconductors.
			  Photoresists、 Photomask blanks	
			 Semiconductor encapsulating materials	
			 Quartz glass products for semiconductor manufacturing	
			 Rare earth	• Rare earth is used for electronic components, which are indispensable to smartphones as they become smaller and smaller and offer increasingly high performance, as well as for the safe driving of vehicles and automated operation systems. • Highly plasma-resistant rare earth materials are attracting attention as they enhance the performance of semiconductor production equipment as semiconductor devices indispensable to AI, IoT, and smart grids evolve.
			 Synthetic quartz preforms for optical fibers	These products are used as materials for optical fibers, which are essential for the information society.
			 Synthetic quartz glass for fiber optics	
			 Oxide single crystals (Lithium Tantalate)	Oxide single crystals are used for mobile phones' SAW filters, contributing to enhancing the functions of mobile phones and improving their sound quality.
			 Polyvinyl chloride (PVC)	The use of highly durable PVC for PVC pipes and joints makes replacement of service water and sewage piping unnecessary for at least 50 years.
			 Cellulose derivatives	• Cellulose derivatives improve the resistance of bridge piers to massive earthquakes, thus making their structures stronger. • During non-excavation work for old sewage pipes, cellulose derivatives are added to heighten the liquidity of mortar to fill gaps inside the pipes.
			 Silicone/acrylic group hybrid resin	This product is used for window frame gaskets and packing. It increases the airtightness of windows by making them smoother and more durable.

9.4		Vinyl chloride-Vinyl acetate based copolymer	It has excellent pigment dispersion stability and chemical resistance, is highly soluble in solvents with low environmental impact, and is used as a raw material for environmentally-friendly gravure inks.
		Acetylenic chemicals Silicone family additive agents	• It has been adopted as a water-based ink for digital printing by inkjet for its excellent ability to reduce surface tension and its defoaming properties. Relative to conventional analog printing, it contributes to low VOC, production of many kinds of products in small quantities and short delivery time, and reduction of environmental impact. • It is also used in digital printing inkjet inks for textiles. Compared with the conventional dyeing process, there is almost no loss of dyeing materials, which contributes to reducing the amount of wastewater treatment.
		Semiconductor silicon	• It is used in electronic devices that control hybrid cars, electric cars, etc., contributing to substantial reductions in CO_2 emissions. • Promote reuse of silicon wafer shipping containers.
	 	Photoresists、 Photomask blanks	
		Semiconductor encapsulating materials	
		Quartz glass products for semiconductor manufacturing	
		Silicon tetrachloride	Silicon tetrachloride is used for compounds and materials that constitute Green Tire, which improves fuel efficiency by reducing rolling resistance.
		Input device	Conventional mechanical switches consist of many parts such as buttons and frames, but touch switches are comprised of a sheet of film. This conserves resources and reduces the weight of switches. The use of these for onboard switches leads to a reduction in the overall weight of a car, improving its fuel efficiency.
		Functionality compounds EXELAST SX series	This product is lighter than the previous rubber glass runs, contributing to lower fuel consumption for vehicles.
		PVC pipe	The use of highly durable PVC for PVC pipes and joints makes replacement of service water and sewage piping unnecessary for at least 50 years.
		Shin-Etsu self lock bantage	If water leaks from water pipes and other pipes, they can be repaired simply by stretching and winding this bandage around the pipe, which makes maintenance easy.

			 Shin-Etsu capacitor films	• The use of Shin-Etsu capacitor films makes the replacement of condensers for power transmission networks unnecessary for 30 years. • They are used for condensers at frequency converter stations (east-west interconnection) to contribute to the stable supply of electricity.
Goal 11 **SUSTAINABLE CITIES AND COMMUNITIES** Make cities and human settlements inclusive, safe, resilient and sustainable	11.1		 Polyvinyl alcohol	Polyvinyl alcohol provides the raw materials for polyvinyl butyral, which is used for the intermediate films of window glass for vehicles and buildings. It helps prevent fragments of glass from scattering when glass is broken due to an accident or similar.
	11.3		 Silicones	Highly waterproof silicone adhesive sheets are adhered to outdoor tanks or the joints of walls of viaducts. Silicone adhesive sheets have a long service life and are easier to handle than butyl rubber or urethane resin, thus contributing to the promotion of sustainable urbanization.
			 Copolymer resin emulsions	The application of wall paper coated with copolymer resin emulsions in hotels and houses help dissolve smells generated by human activities.
			 Semiconductor silicon	It is used for surveillance cameras and monitor camera sensors that protect safe life.
			 Toilet Booth	This toilet booth reduces the risk of a finger being caught in the booth. In addition, if, for example, an accident (such as a sudden illness or other unexpected event) occurs when it is being used, the door can easily be opened from the outside. These functions provide a safe toilet space.
	11.6		 Sodium hypochlorite	Tap water and drinking water are made safe and sanitary by using high-quality sodium hypochlorite with less impurities to sterilize the water.
Goal 12 **RESPONSIBLE CONSUMPTION AND PRODUCTION** Ensure sustainable consumption and production patterns	12.2		 Sodium hypochlorite	Make tap water and drinking water safe and sanitary by using high-quality sodium hypochlorite with less impurities to sterilize the water.
			 Rare earth magnets	Rare earth magnets contribute to making wind power generators highly efficient.
			 Rare earth	Rare earth is used for ceramic materials, which are indispensable to new energy systems such as wind power generation and fuel cells.
			 Anode material of lithium ion batteries	The anode material of lithium ion batteries increases the capacity and output of lithium ion secondary batteries.
			 Conductive polymer (SEPLEGYDA®)	Conductive polymers are used for hybrid electrolytic condensers with aluminum. They help reduce the quantity and area of condensers used compared to electrolytic aluminum condensers.
			 Biodegradable runner clips	iodegradable runner clips are agricultural materials used to fix agricultural products. They do not contaminate soil because they are decomposed by microorganisms in the ground after they are used.

	12.5		 Cellulose derivatives	Cellulose derivatives use natural cellulose for raw materials. They are biodegradable and return to nature after use.
			 Embossed carrier tapes	Embossed carrier tapes are used to transport minimum-chip electronic components. They contribute to resource conservation by reducing the amount of tape used and discarded compared to their predecessor products.
			 HSP	HSP is a jig plate used in the electronic component manufacturing process for fixation. The use of slightly adhesive silicones for raw materials eliminates the need for adhesive tapes. In addition, HSP can be used repeatedly.
			 Shin-Etsu polyca toff	Materials recycled from polycarbonate are used for at least 50% of the product.
Goal 14 LIFE BELOW WATER Conserve and sustainably use the oceans, seas and marine resources for sustainable development	14.1		 Cellulose derivatives	The addition of cellulose derivatives to concrete reduces its separation in water. This makes it possible to cast concrete without polluting water.
	14.2		 Silicones	Silicones are used as raw materials for ship bottom paint and antifouling agents for fishing nets. They help prevent marine organisms from sticking to them, protecting the ocean ecosystem.
Goal 15 LIFE ON LAND Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, and halt and reverse land degradation and halt biodiversity loss	15.1		 Biodegradable runner clips	Biodegradable runner clips are agricultural materials used to fix agricultural products. They do not contaminate soil because they are decomposed by microorganisms in the ground after they are used.
			 Yosaku Sheet (Fumigation Sheets)	Yosaku sheets are used to cover damaged pines when they undergo fumigation. Since they are biodegradable, they contribute to environmental protection even after they are used.
	15.4		 Synthetic pheromones	• Synthetic pheromones provide a new type of agricultural material that inhibits the mating of harmful insects to reduce the next generation of these insects. • Since they are intended to eliminate only agricultural insects, they enable cultivation of agricultural products without disturbing many organisms, including natural enemies of such insects, in the ecosystem. • They help keep down the amount of agricultural chemicals used, thereby reducing soil contamination by agricultural chemicals.
	15.5		 Silicones	The use of silicones as a spreader for agricultural chemicals makes them spread easily. As a result, the amount of agricultural chemicals sprinkled can be reduced.
	15.8			Silicones are used as raw materials for ship bottom paint. They prevent marine organisms from sticking to the ship bottom, thereby improving the fuel efficiency of ships.

Shin-Etsu Group Business Principle

The Group strictly complies with all laws and regulations, conducts fair business practices and contributes to people's daily lives as well as to the advance of industry and society by creating value through the provision of key materials and technologies.

Basic CSR Policy

The Shin-Etsu Group:

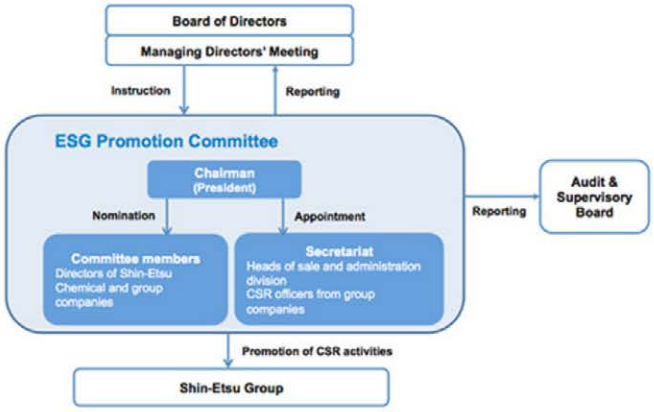
1. Will do our best to increase the Group's corporate value through sustained growth and make multifaceted contributions to society.
2. Will carry out all of our company activities by making safety always our utmost priority.
3. Will constantly pursue energy-saving, resources-saving and the reduction of the environmental impact, and seek to help create a sustainable future world in which we all live in harmony with the Earth.
4. Will endeavor to contribute to the prevention of global warming and the conservation of biodiversity by means of our cutting-edge technologies and products.
5. Will strive to respect human dignity, assure equality in employment opportunities and support the self-fulfillment of our employees.
6. Will appropriately disclose information in a timely manner.
7. Will carry out trustworthy corporate activities that are based on the integrity of the Group's ethical values.

CSR Promotion Structure

CSR Promotion Initiatives

The Group believes that it is the social responsibility of the Group to contribute to our stakeholders, such as shareholders, investors, customers, suppliers, local communities and employees.
To achieve this, we formulated the Basic CSR Policy and internal regulations and are carrying out CSR activities. In order to promote CSR activities in an effective and appropriate manner at a company wide level in all aspects of corporate activity, we have set up the ESG Promotion Committee chaired by the President, which is comprised of approximately 40 members, including directors and division heads of Shin-Etsu Chemical and CSR officers from group companies and other parties concerned.

CSR Organizational Chart



Outline of the Business Principle, Basic CSR Policy, and the Shin-Etsu Group's activities

Challenges for FY 2019

In February 2019, the ESG Promotion Committee held a general meeting to clarify the following issues that the Group should address in FY 2019. These are issues that need to be addressed by the Group as a whole, where each and every one of the members of the Committee and its Secretariat will be actively involved at each division.

1. Integration of SDGs and management
2. Human rights due diligence[1]
3. Response to TCFD[2]

ESG Promotion Committee general meeting
(February 2019, Shine Etsu Chemical Head office)

1 Human rights due diligence
An activity that a company recognizes, prevents and addresses adverse effects related to human rights both within and outside the company by repeating the PDCA cycle of (1) formulating and disclosing human rights policies, (2) assessing the impact of our business activities on human rights, and (3) negative impact prevention and correction (4) tracking and disclosing performance data.

2 TCFD (The Task Force on Climate-related Financial Disclosures)
It is a special team focusing on climate change disclosure, and was established by the Financial Stability Board (FSB) in December 2015. In July 2017, the TCFD has published a set of recommendations in which it calls for financial institutions, corporations and governments to disclose the impacts of climate change ,which was forecasted for mid to long-term, to their financial reports.

List of executives in charge of CSR initiatives

Position	Name	Current Positions (related to CSR)	Key CSR Issues
Vice Chairman	Fumio Akiya	In charge of Technologies	Key Issue 3: Product quality improvements and product safety control
President	Yasuhiko Saitoh	Chairman of ESG Promotion Committee	
Managing Director	Toshiya Akimoto	Vice Chairman of ESG Promotion Committee In charge of Public Relations, Legal Affairs and Purchasing General Manager of Office for Digitization and Digitalization Chairman of Risk Management Committee	The foundation of all activities: legal compliance, fair corporate activities Key Issue 4: Promoting CSR procurement and the diversification of supply sources Key Issue 6: Respect for and protection of intellectual property Key Issue 8: Accurate and timely information disclosure and communication with stakeholders Risk Management
Managing Director	Kenji Ikegami	In charge of General Affairs, Personnel & Labor Relations and Business Auditing	Corporate Governance Key Issue 5: Respect for human rights, the development of human resources and the promotion of diversity
Director	Toshiyuki Kasahara	General Manager of Finance & Accounting Dept. In charge of Office of the President	Corporate Governance (Fair tax payment, Operation of Group Companies)
Director	Toshio Shiobara	In charge of Patents	Key Issue 6: Respect for and protection of intellectual property
Director	Yoshimitsu Takahashi	In charge of Environmental Control & Safety	Key Issue 1: Employees and contractor health and safety Key Issue 2: Energy-saving, resource-saving and the reduction of the environmental impact

As of July 1, 2019

Participant in UN Global Compact

In November 2010, the Group has joined to the UN Global Compact. As life in society has become more complex and more diverse in recent years, the social responsibilities of enterprises have grown.
In such circumstances, the Group remains firmly committed in its Business Principle to contribute to people's living, society and industry through value creation in materials and technologies, while observing all laws and regulations as well as conducting fair corporate activities. At the same time we ensure a flexible response to changes in the social and economic environment.
The Group has also been participating in the Global Compact Network Japan since November 2010. The Group takes part in subcommittees, such as the Supply Chain and ESG to utilize information on the latest development of CSR, gained from participation, for promoting the Group's CSR.
The Group signed a document to support GCNJ's Tokyo Principles for Strengthening Anti-Corruption Practices in February 2018.

■ The foundation of all activities: legal compliance, fair corporate activities

Global Compact Ten Principles

Principle 1: Businesses should support and respect the protection of internationally proclaimed human rights; and

Principle 2: make sure that they are not complicit in human rights abuses.

Principle 3: Businesses should uphold the freedom of association and the effective recognition of the right to collective bargaining;

Principle 4: the elimination of all forms of forced and compulsory labour;

Principle 5: the effective abolition of child labour; and Principle 6: the elimination of discrimination in respect of employment and occupation.

Principle 7: Businesses should support a precautionary approach to environmental challenges;

Principle 8: undertake initiatives to promote greater environmental responsibility; and

Principle 9: encourage the development and diffusion of environmentally friendly technologies.

Principle 10: Businesses should work against corruption in all its forms, including extortion and bribery.

Evaluation from Society

The Company is incorporated in the following ESG index.

MSCI 2019 Constituent MSCI ESG Leaders Indexes

MSCI MSCI Japan ESG Select Leaders Index

FTSE4Good

FTSE Blossom Japan

Member of SNAM Sustainability Index 2019

Utilization of Supply Chain CSR Management Systems

The Group utilizes supply chain CSR management systems, such as RBA Online[1], Sedex[2] and EcoVadis[3] to disclose CSR information.

1 RBA Online
An online database organized by non-profit organization the Responsible Business Alliance (Former Electronic Industry Citizenship Coalition) for managing labor, health and safety, environment and ethics in the supply chain. Enterprises in the global electronic industry and others take part in Responsible Business Alliance.

2 Sedex
An online database organized by and named after non-profit organization Sedex, for storing and accessing data regarding ethical and responsible business practices. Enterprises in the global 28 industries, including food, automobile, cosmetics and amenity from 150 countries, have joined Sedex.

3 EcoVadis
The supply chain management system operated by the French CSR rating agency EcoVadis which is used by multinational corporations in 150 countries of North America, Asia, and Europe.

The Company considers Corporate Governance to be one of the important management tasks, and it is focusing on the following points.

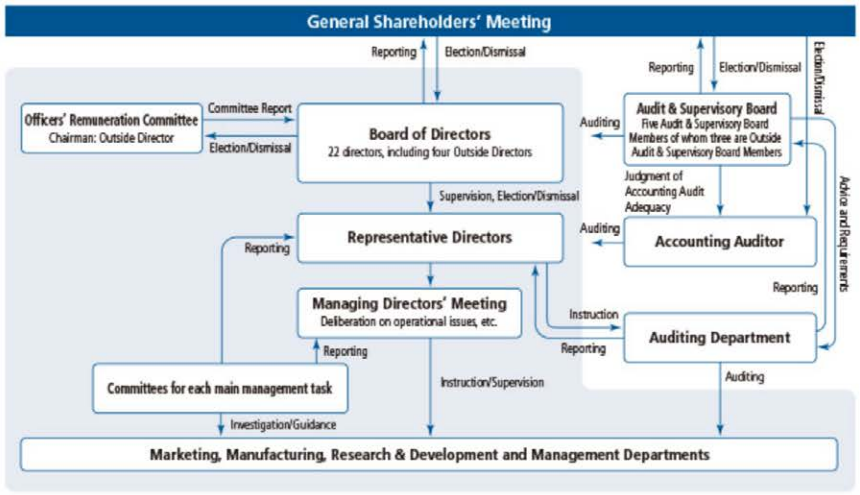
- Development of an efficient organizational structure and internal rules
- Ensuring management transparency
- Strengthening internal controls
- Timely and accurate disclosure of information

Board of Directors, Managing Directors' Meeting and Audit & Supervisory Board

The Board of Directors consists of 21 members, of whom four are Outside Directors with a wealth of corporate management experience and exceptional insight. Two organizations to discuss and decide on the execution of operations: the Board of Directors and the Managing Directors' Meeting, which are each held on one or more times a monthly basis. The Board of Directors sets out the basic principles of the Company and deliberates and makes decisions regarding key aspects of Company operations in accordance with the Companies Act, the Company articles of incorporation, etc. Meanwhile, the Managing Directors' Meeting makes deliberations and decisions on a variety of other operational issues. It is evaluated that the Board of Directors decides and reports important matters appropriately and swiftly based on the opinions collected from each of its members.

The Company has adopted an Audit & Supervisory Board system. The Audit & Supervisory Board is composed of five members, including three Outside Audit & Supervisory Board Members. As well as attending the Board of Directors meetings, Managing Directors' Meetings, and other important internal meetings, the Audit & Supervisory Board Members review documents, visit operation sites in Japan and overseas, and carry out other tasks in order to audit the execution of operations by the directors. Furthermore the Audit & Supervisory Board Members also hold monthly meetings with the Auditing Department where they receive progress reports on activities, internal auditing results, the situation of the Auditing Department activities, and other matters. In addition, they also provide advice and make requests on topics including these activities and the selection of key auditing topics.

Corporate Governance System at Shin-Etsu Chemical



As of June 27, 2019

■ Board of Directors

Outside Directors

For the purpose of the fulfilled advisory and supervisory functions of management from an independent position, the Company welcomes four Outside Directors. Advice has been obtained from Outside Directors about the enhancement of growth strategy and governance. We believe that these points are extremely important in order to raise corporate value.

Outside Director List

Name	Status of significant other positions held
Frank Peter Popoff	Former CEO, The Dow Chemical Company (US)
Tsuyoshi Miyazaki	Former Representative Director and President, Former Representative Director and Chairman and current Advisor, Mitsubishi Logistics Corporation
Toshihiko Fukui	Former Governor, the Bank of Japan; President, The Canon Institute for Global Studies; Outside Director, Kikkoman Corporation
Hiroshi Komiyama	Former President, The University of Tokyo; Chairman, Mitsubishi Research Institute, Inc.

As of June 27, 2019

From the left, Toshihiko Fukui, Hiroshi Komiyama, Frank Peter Popoff, Tsuyoshi Miyazaki

Outside Audit & Supervisory Board Members

For the purpose of the fulfilled advisory and supervisory functions on management through an independent position, the Company welcomes three Outside Audit & Supervisory Board Members. They are auditing the Company's management as experts in their respective fields or from a broad point of view based on corporate management experience. Audits by the outside Audit & Supervisory Board Members are contributing to ensure the Company's compliance system.

Outside Audit & Supervisory Board Member List

Name	Status of significant other positions held
Taku Fukui	Lawyer Managing Partner, Kashiwagi Sogo Law Offices; Professor, Keio University Law School; Outside Director, YAMAHA CORPORATION
Yoshihito Kosaka	Certified Public Accountant; Certified Public Tax Accountant; Counselor, Kisaragi Audit Corporation; Outside Director, Star Mica Co., Ltd.
Kiyoshi Nagano	Former Representative Director, Chairman and President, former JASDAQ Securities Exchange, Inc.; Outside Director, LEC INC.

As of June 27, 2019

From the left, Yoshihito Kosaka, Kiyoshi Nagano, Taku Fukui

Officers' Remuneration Committee

The Officers' Remuneration Committee has been in place to ensure transparency and validity in the process of determining Directors' remuneration, nominating candidates for Executives, Directors, and Audit & Supervisory Board Members, and other processes. The committee consists of five directors, with Outside Director Frank Peter Popoff as chairman. Mainly through its biannual regular meetings and telephone meetings called as required, the committee comprehensively reviews the evaluation results of the contribution to business performance and management of each director in each fiscal year, and reports this to the Board of Directors.

Internal Control System and Operational Audit

The Company has formulated a Basic Policy on Internal Controls to help put in place "structures to ensure that the execution of duties by the directors is fully compliant with relevant legislation and the articles of incorporation, and structures to ensure the propriety of business operations within the corporate group consisting of its subsidiaries as well as this corporation and other corporate business", as stipulated by the Companies Act and an Ordinance of the Ministry of Justice.

Internal controls are an important management responsibility at the Company. Accordingly, the internal control system is structured and implemented in accordance with the above policy. It is subjected to constant review to make the system more appropriate and efficient.

Internal operation audits and assessment of internal controls over financial reporting are handled by the Auditing Department. The results of these audits and assessments are reported to board members including Outside Directors and Outside Audit & Supervisory Board Members to strengthen coordination between Auditing Department and Outside Directors and Audit & Supervisory Board Members.

Tax Policy

In its Business Principle, the Group states that it strictly complies with all laws and regulations and conducts fair business practices. Based on this, each and every one of the Group's personnel is performing his/her daily work duties sincerely. We believe that one of the Group's contributions to society is to pay the appropriate amount of taxes in accordance with local laws and regulations.Total corporate tax paid in Fiscal 2018 was 121.5 billion yen in consolidated basis.

Operation of Group Companies

The Company aims for development of the whole Group by supporting and respecting the autonomy of the Group companies. Group companies are managed on the basis of the Shin-Etsu Chemical Group Company Operational Regulations. The 95 companies that are consolidated subsidiaries are conducting prior consultation and reporting on the following projects.

(1) Prior Consultation Item Example

- Capital increase or decrease, mergers, dissolutions, amendments to the Articles of Incorporation
- New business and capital investment plan
- Transfer or acquisition of business
- Appointment and dismissal or transfer of officers and seconded executives

(2) Reporting Item Example

- Operations review
- Financial results
- Risk information recognized by Group companies
- Important information such as deficiencies in internal control

Furthermore, by holding meetings which are attended by the presidents of our main Group companies one or more times each year, we actively promote the sharing and exchange of information among Group companies.

- Corporate Governance Report
- ESG Data

Risk Management Regulations

The Company has established the Risk Management Regulations. Comprehensive risk considered in carrying out business activities in the Company and the Group are specifically defined in a long-term perspective in the regulations. In addition, risk handling methods and a risk management system has been established.

Risks Defined in Risk Management Regulations

(1) Risk factors related to business activities

1. Business risks
2. Research and development risks
3. Production and quality management risks
4. Sales risks
5. Purchasing risks
6. Finance and accounting risks
7. Personnel and labor risks
8. Environment and safety risks
9. Information management risks
10. Intellectual property, contract, and litigation risks
11. Fraud risks
12. Country risks
13. Legal risks
14. Other

(2) Risk factors not related to business activities

1. Risks caused by economic factors
2. Risks caused by social factors
3. Risks caused by governmental factors
4. Risks caused by scientific and/or technical factors
5. Risks caused by natural environmental factors and/or disasters
6. Other

Risk Management Committee

The Risk Management Committee has been established. The Committee constructs risk management structures, establishes regulations, and works to identify and prevent potential washout of risks arising in connection with the operations of the Company. The Committee also promotes broad-based activities such as the development of business continuity planning, education, and information provision. The Committee reports directly to the Board of Directors, the Audit & Supervisory Board, and the Managing Directors' Meeting on major issues in risk management.

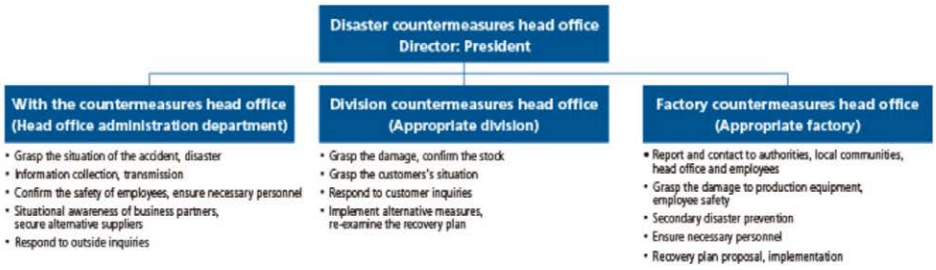
Handling in the Business Continuity Plan and during an Emergency

The Group offers a number of products used in special applications in state-of-the-art industries and has a high market share in products not only in Japan but around the world. For that reason, if these products cannot be supplied due to an accident or serious disaster such as a massive earthquake or fire, it will have an effect on society.

In the Company, each division and each plant is preparing for a disaster and accident and formulates a business continuity plan on the basis of the Companywide Business Continuity Management Regulations.

In addition, if a disaster or accident occurs, we will work using the structure shown below. Each of the countermeasures head office and organizations carry out emergency response and recovery support on the basis of pre-defined business standards.

System and major response operation in the occurrence of a disaster or accident



Response training for large-scale earthquakes
(July 2018, Shin-Etsu Chemical Takefu Plant))

Specifying Shin-Etsu Group Key CSR Issues

In order to practice the Business Principle to "The Group strictly complies with all laws and regulations, conducts fair business practices and contributes to people's daily lives as well as to the advance of industry and society by creating value through the provision of key materials and technologies." we have been working on a wide variety of activities.
What the Group must address in particular was defined as "Key CSR Issues" through the following procedure in fiscal 2015.
Having targets set for each Key CSR issues, we will work and evaluate to improve the current situation in order to achieve the targets.

Process of Specifying Key CSR Issues

1 Clarifying Key CSR Issues

In the Committee, the following investigations were done for all of the Company's departments and major domestic Group companies.

1. Stakeholders for each department and each company are reconfirmed.
2. In reference to ISO26000 core subjects, Key CSR Issues are listed in each department and each company.
3. Level of importance of each key issue for the Group as well as for stakeholders is scored. Each point of the importance.

2 Creating a scatter plot of Key CSR Issues and organizing them

The Committee created a scatter plot of key issues on the basis of the key issues and their scores submitted by each department and each company. The result showed that the majority of key issues were "very important" issues.

The Committee organized the listed key issues and also created a draft of Key CSR Issues with these being reflected in the scatter plot.

Key CSR Issues Scatter Plot

3 Interviews with Outside Directors

Individual interviews were conducted with all Outside Directors with prepared proposal. The followings are the suggestions and opinions provided in the interviews.

1. Compliance with Laws and Regulations are related to all the other issues.
2. All of the Key CSR Issues listed are equally important for the Group, and it is difficult to prioritize them.
3. The Group should clarify what we are aiming at as a goal as the Group specify Key CSR Issues.

4 Re-examination in the Committee and approved by the management

Based on the suggestions and opinions from the Outside Directors, the Committee has re-examined key issues. The Managing Directors' Meeting, which is the decision-making body with all the directors and audit & supervisory board members also examined and has decided the items in the figure below to be Key CSR Issues of the Group.

In addition, in December 2018, the ESG Promotion Committee discussed the key issues and their materiality that had been reviewed by all departments of the Company and major Group companies in Japan, and decided to continue to address the key issues identified in 2015.

The Group will work equally on all of these Key CSR Issues without an order.

Shin-Etsu Group Aims

Contributions to the Earth's future

Strengthen existing businesses

Create new businesses

The foundation of all activities:
legal compliance, fair corporate activities

Key Issue 1:
Employees and contractor health and safety

Key Issue 2:
Energy-saving, resource-saving and the reduction of the environmental impact

Key Issue 3:
Product quality improvements and product safety control

Key Issue 4:
Promoting CSR procurement and the diversification of supply sources

Key Issue 5:
Respect for human rights, the development of human resources and the promotion of diversity

Key Issue 6:
Respect for and protection of intellectual property

Key Issue 7:
Contribution to industry and social initiatives

Key Issue 8:
Accurate and timely information disclosure and communication with stakeholders

Diagram of the Shin-Etsu Group's various relationships

The foundation of all activities: legal compliance, fair corporate activities

Policy

Officers and employees will work together to make all-out efforts for compliance and to conduct business fairly.

Ensuring Full Compliance Awareness

The Group emphasizes the importance of Compliance with Laws and Regulations in the Business Principle and annual Management Objectives.
In the event of promulgation of or amendments to legislation pertaining to corporate activities, the Legal Department serves in a central role by issuing internal bulletins and disseminating knowledge of these changes. Also, serial articles explaining important laws and regulations have been published in our corporate newsletter in order to promote understanding of them.
All of the officers and employees submit a Compliance Pledge to the Company. For the eventuality of inappropriate action occurring, disciplinary measures are available.
In addition, officers and employees can consult with and report to the Compliance Consultation Office if they discover a violation of a law, regulations, ethical codes, or the Company's regulations, including the Anti-Bribery Regulations, or if they experience acts of harassment. The Office then carries out a detailed investigation in response to the information received. With necessary investigations, the Office will take necessary corrective actions. Confidentiality will be maintained for consulters and whistleblowers. There is no unfavorable treatment as a reason for consulting and reporting.

Lecture meeting regarding compliance with the Unfair Competition Prevention Act (August 2018, Shin-Etsu Chemical Head office)

Initiatives Aimed at Preventing Corruption

The Company has created the Anti-Bribery Regulations and prohibits actions that involve unfair transfer of profit from or to parties such as domestic or foreign government officials, customers and suppliers. Moreover, by having a Compliance Pledge, we assuredly prevent the provision of unfair benefits or unfair demands in respect to our customers, domestic or foreign government officials and suppliers. Also, the status of compliance with ethical standards is one item included in personal evaluations. Furthermore, we provide internal training and lectures by outside instructors to prevent bribery and carry out regular internal audits for corruption, embezzlement and bribery.

Supporting GCNJ's "Tokyo Principles for Strengthening Anti-Corruption Practices"

The Group's Business Principle includes "observe all laws and regulations as well as conducting fair corporate activities," and it is working to prevent corruption, including bribery. Since the Global Compact Network Japan's Tokyo Principles for Strengthening Anti-Corruption Practices correspond with the Group's current policy and initiatives for preventing corruption, we immediately decided to support them and became a signatory to them in February 2018.
We will continue to make it a principle to comply with laws and regulations and carry out business activities fairly and work to conduct business in accordance with the Tokyo Principles and our internal anti-corruption regulations.

■ GCNJ's "Tokyo Principles for Strengthening Anti-Corruption Practices" (only Japanese available)

Export Control

From the viewpoint of maintaining world peace and security, the Company has created the "Control Program on Security Control" to comply with the Foreign Exchange and Foreign Trade Act and other export related legislation. The followings are our initiatives based on this program.

- Classification, customer review and transaction review when exporting products
- Internal audit
- Training officers and employees and instruction to Group companies

Cutting Ties with Anti-social Forces

The Group declares in its the Basic Policy on Internal Controls that the Group shall adopt a consistently resolute attitude towards anti-social forces and shall take measures necessary to cut itself off from any and all associations with them. In accordance with this policy, we will endeavor to develop internal systems under the leadership of the department in charge of managing these issues. At the same time, we are promoting the signing of memorandums and letters of confirmation regarding the exclusion of anti-social forces with customers and business partners.
In addition, we are working closely with external specialized agencies.

■ ESG Data

Key Issue 1: Employees and contractor health and safety

Policy

The Group will work to create a comfortable and safe workplace whose goals are to "Zero serious accident" and to "Achieve zero lost time accident."

Occupational Safety

We annually create the Shin-Etsu Group Environmental Safety Management Plan in accordance with the Responsible Care Codes[1] and set goals using numerical numbers.
Each of Group's plant clarifies every single possibility that could cause any kind of injury or illness and works hard to mitigate those risks.
If it is found that there are intolerable risks in the workplace, various safety measures are taken, and examples include providing workers with individual protective tools, posting safety signs in dangerous areas, and locking out[2] and tagging out[3]. Safety devices are attached to machinery and equipment, and other safety measures include making machinery and equipment fail-safe[4] and foolproof[5], interlocking[6] them, and putting up protective walls. In addition, there are KY[7] hazard prediction activities e.g. pointing and calling prior to work and reconfirming safety.
Furthermore, the workers are taking measures against unsafe areas by regularly collecting "close calls and other incidents of concern" from case examples of workers who have experienced close-call incidents and matters of concern. At the same time, we share our risk information and prevent similar accidents by disclosing this risk information internally and externally.

Close-calls Incidents Topics

2019.07.31	Updated of Close-Call (Hiyari-Hatto) Incidents
2019.01.31	Updated of Close-Call (Hiyari-Hatto) Incidents
2018.07.31	Updated of Close-Call (Hiyari-Hatto) Incidents
2018.01.31	Updated of Close-Call (Hiyari-Hatto) Incidents
2017.07.31	Updated of Close-Call (Hiyari-Hatto) Incidents
2017.01.31	Updated of Close-Call (Hiyari-Hatto) Incidents
2016.07.29	Updated of Close-Call (Hiyari-Hatto) Incidents
2016.02.24	Updated of Close-Call (Hiyari-Hatto) Incidents
2015.07.31	Updated of Close-Call (Hiyari-Hatto) Incidents

1 Responsible Care Codes
Six principle areas are addressed when implementing Responsible Care: environmental preservation, process safety (and disaster prevention), occupational health and safety, distribution safety, chemical and product safety, and social dialogue (with the public). The codes initiatives in these areas, together with the Management System Codes required for operating all the above.
2 Lock out
Blocking the power source by locking the switches and other units of machinery and equipment so that they cannot be operated.
3 Tag out
Attaching tags to areas where machinery and equipment are locked out. This means that operating the machinery and equipment is prohibited until the tags are removed.
4 Fail-safe
Controlling equipment and systems so that they always operate safely if a problem occurs due to a mistaken operation or malfunction.
5 Foolproof
Taking measures in advance so that safety is ensured even if workers operate machinery and equipment mistakenly.
6 Interlock
One of the concepts for safety devices and mechanisms in which machinery and equipment do not work unless certain conditions are met.
7 KY
Hazard prediction activities. Workers learn safe working methods prior to getting into workplace in order to prevent the occurrence of possible disease or injuries.

Process Safety and Disaster Prevention Plan

Prevention of serious accidents is a top priority in the Group, and we continue to work on a variety of safety and disaster prevention activities. Countermeasures are taken against dangerous places identified through process risk assessments, and pipes and equipment that have become obsolete are maintained and managed, mainly through scheduled maintenance.
Since FY2013 we have worked to enhance safety management by performing risk evaluations and by implementing effective safety measures, particularly of envisaged abnormal plant conditions.
The Company has been participating in the Japan Society for Safety Engineering's Japan Safety Competency Center since its inauguration in FY2012. Each plant uses the Center's "Safety Evaluation System" to further improve the situation and works even harder on the Process Safety and Prevention Plan.

4M[1] factor analysis workshop(June 2018, Shinano Electric Refining Co.,Ltd.)

1 4M factor analysis
A method to analyze factors such as accident cases in terms of Man, Machine, Media and Management.

Results of safety management activities (Shin-Etsu Chemical)

	FY2016	FY2017	FY2018
Number of improvements	4,313	4,651	8,909

Education and Drills

To keep plant operation constantly safe, it is important for each workers working on our Group's operation sites to improve his /her skills and knowledge and be aware of danger. For that purpose we provide safety education on the risks of handling materials and processes and possible dangers involving processes as well as simulating possible dangers for employee and contractors. In addition, we work on handing down operation at skills for manufacturing equipment. Furthermore, we are working to foster an awareness of safety by creating a workplace culture in which operation processes and rules are observed.
We plan and conduct emergency drills for abnormal situations such as major earthquakes or fires.

Drill for rescue of injured people from high places (October 2018, Shin-Etsu Chemical Naoetsu Plant)

Scaffold assembly drill (August 2018, Shin-Etsu Chemical Kashima Plant)

Environmental Control and Safety Audits

In order to confirm that activities such as environmental conservation, occupational safety and health, process safety and prevention plan are carried out as planned, the Group conducts an internal audit at domestic and overseas operation sites. In FY 2018, audits were conducted at 25 domestic and overseas operation sites.The results of audits are also reported to top management. In referring to cases from other companies in FY2013, we communicated revisions to "Nonroutine Work Safety Measures" within the company. As in FY2017, their implementation status in FY2018 was chosen as a special audit theme.

Environmental and safety audit at overseas group company (December 2018, Shin-Etsu Silicone Taiwan)

Health Considerations

We are working to prevent possible diseases through encouraging employees to take health checks, offering health counseling on life style diseases as well as promoting measures on mental health and activities for health promotion and fitness. In addition, we are conducting prevention of and raising awareness toward infectious diseases including new strains of influenza.
Our head office and branch offices have a Health Committee, and each plant has a Safety and Health Committee. The committee works to improve the workplace environment and to promote worker's health with advice and information from industrial physicians. We also have special programs such as physical fitness checks and seminars which help workers to maintain and improve their physical conditions.
Furthermore, we have set up Family Health Consultation with our health insurance union and an insurance company. It is available 24 hours a day. This consultation can also be used by the family members of employees.

Health lecture (October 2018, Naoetsu Electronics)

Mental health training for managers (August 2018, Shin-Etsu Chemical Gunma Complex)

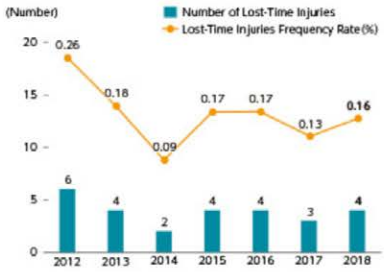
Targets and Results

Every fiscal year, the Group creates environmental and safety management plans based on Responsible Care Code. The entire Group works on key issues such as the prevention of major disasters including explosions and fires and industrial accidents according to the management plan prepared.

■ Targets, Implementation Status, Evaluation, and Planned Implementation Items

Reporting of Accidents and Lost Time Accident

In FY2018, there were no serious accidents but four lost-time injuries in the Group companies in Japan. We have analyzed causes for each accident and reviewed safety on handling hazardous materials and possible hazardous operations to eliminate possible injuries and also secure equipment safety, and have implemented appropriate safety measures.
Also, we are working on revising the operation manuals to help prevent re-occurrence of the accidents.
We will continue to work on preventing work-related accidents complying with what was described above.
The occurrence of work-related accidents is reported to the Directors and division heads at monthly business report meetings.



Number of Lost-Time accident and Changes in Frequency Rates (Group companies in Japan*)

* Because the definition of occupational accidents differs between Japan and overseas, we do not disclose overseas Group companies' accident statistics. If definition of occupational accident is internationally unified, we consider disclosing.

■ ESG Data

CSR Key Issue 1 Targets and Results

The safety targets and results for FY2018 and safety targets for FY2019 are as listed below.

Item	Priority Issues (Target)	Implementation Status for Fiscal 2018	Evaluation	Planned Implementation Items for Fiscal 2019
Management System	1. Continuous improvement and implementation of the health and safety management system	• Communication by the plant manager and division heads of their commitment and active involvement • Appropriate implementation of the PDCA cycle[1] based on the health and safety management system • Promotion of effective safety activities through substantial discussions during internal audits	◎	• Communication by the plant manager and division heads of their commitment and active involvement (ongoing) • Appropriate implementation of the PDCA cycle based on the health and safety management system(ongoing) • Promotion of effective safety activities through substantial internal audits (audit the effectiveness of PDCA cycle and safety activities)
	2. Qualitative improvement of environmental safety audits	• Appropriate follow-up on the matters pointed out during environmental safety audits • Qualitative improvement of environmental safety audits at affiliated companies in the plant area • Active involvement at overseas manufacturing bases through guidance and auditing	◎	• Appropriate follow-up on the matters pointed out during environmental safety audits (ongoing) • Qualitative improvement of environmental safety audits at affiliated companies in the plant area (ongoing) • Active involvement at overseas manufacturing bases through guidance and auditing(ongoing)
	3. Thorough change management	• Confirmation of application of MOC[2] rules at the plants and thorough compliance with them • Risk assessment at the time of 4M[3] change	◎	• Confirmation of application of MOC[2] rules at the plants and thorough compliance with them (ongoing) • Risk assessment at the time of 4M[3] change(ongoing)
Process Safety and Prevention Plan	1. Zero serious accident	• Achieved target of zero serious accident	◎	• Zero serious accident
	2. Facility and process safety improvement	• Process risk assessment, including periodic reviews • Safety measures for non-routine work and unsafe operations, as well as continuing to consider accident trouble cases • Obtain and examine information on internal and external accidents and disasters related to one's division • Investigation of application of guidelines for the handling of combustible powder and liquids • Application of Security Evaluation System by the Japan Safety Competency Center	○	• Implementation of planned process risk assessment(ongoing) • Safety measures for non-routine work and unsafe operations, as well as continuing to consider accident trouble cases (ongoing) • Maintenance and utilization of safety basic information • Proper operation of alarms and interlocks
	3. Improvement of facilities and maintenance management	• Thorough investigation of equipment trouble causes, recurrence prevention and design technology improvement • Implementation and improvement of equipment maintenance (conservation management for aging piping and equipment through activities like planned repairs)	○	• Thorough investigation of equipment trouble causes, recurrence prevention and design technology improvement (ongoing) • Improvement of equipment maintenance (Construction of function maintenance and management method of safety equipment and safety system and planned repair of old pipes and equipment)
	4. Reliable emergency response	• Consider estimating and minimizing damage if the worst situations such as serious accidents and massive earthquakes occur • Maintenance of emergency-response criteria / manuals • Review and implement business continuity planning training	○	• Consider estimating and minimizing damage if the worst situations such as serious accidents and massive earthquakes occur(ongoing) • Maintenance of emergency-response criteria/manuals (ongoing) • Review and implement business continuity planning training (ongoing)
	5. Plant security enhancement	• Strengthen prevention measures against external intruders • Provide visitors to the plants with risk information and inform them of evacuation methods if an accident or disaster occurs	○	• Strengthen prevention measures against external intruders (ongoing) • Provide visitors to the plants with risk information and inform them of evacuation methods if an accident or disaster occurs(ongoing)
Occupational Safety	1. Achieve zero labor accidents requiring an absence of a day or more	• The Shin-Etsu Group: four people • Shin-Etsu Chemical: one people	×	• Achieve zero labor accidents requiring an absence of a day or more
	2. Rate of labor accidents not accompanied by an of absence a day or more: 0.5 or less	• The Shin-Etsu Group achieved its goal with a rate of 0.74 • Shin-Etsu Chemical: 0.67	×	• Rate of labor accidents not accompanied by an absence of a day or more: 0.5 or less
	3. Human error reduction	• Prevent accidents caused by human error	○	• Prevention of accidents and disasters due to human errors (ongoing)
	4. Improve work safety	• Promoting “zero accident” activities (practiced Hazard prediction activities, pointing and calling, and 5S[4] activities) • Implemented improvement and promotion of close-call incident proposals and improvement proposals (set promotion goals) • Implemented assured horizontal expansion of accident examples of the Group companies • Cultivate a safety culture in which rules and manuals are followed	○	• Promoting “zero accident” activities (practiced Hazard prediction activities, pointing and calling, and 5S activities) (ongoing) • Activation and promotion of close-call incident proposals and improvement proposals (set promotion goals) (ongoing) • Implemented assured horizontal expansion of accident examples of the Group companies (ongoing) • Cultivate a safety culture in which rules and manuals are followed(ongoing)
	5. Review and reorganize work manuals and ensure strict compliance	• Implement of planned review of work manual maintenance • Work manual content enhancement • Confirm the compliance of work manuals	◎	• Implement of planned review and content enhancement of work manual maintenance (routine, non-routine, emergency response etc.) • Confirm the compliance of work manuals
	6. Work risk assessment	• Implement work risk assessment based on plans Risk assessment as stipulated in the Industrial Safety and Health Act Risk assessment for dangerous and non-routine work at one's workplace Appropriate reflection of risk assessment results in future work Improvement of work risk assessment skills	○	• Implement work risk assessment based on plans(Central Labor Accident Prevention Association[5] method or procedure HAZOP[6]) Risk assessment as stipulated in the Industrial Safety and Health Act Risk assessment for dangerous and non-routine work at one's workplace
	7. Safety measures of construction and non-routine work	• Clarify work instructions and procedures and implement hazard prediction activities • Apply thorough construction rules • Clarification of responsibilities of divisions that request construction work and those which perform it, and reliable implementation of work for which they are responsible	○	• Clarify work instructions and procedures and implement hazard prediction activities (ongoing) • Clarification and solid performance of implementation matters such as construction start permission, safety management during construction, delivery, completion confirmation, etc. • Providing safety information to construction contractors, thorough education of plant rules, etc.
	8. Training and drill promotion	• Planned implementation of education and training • Promote acquisition of qualifications	○	• Plan promotion of education and training (ongoing) • Promote acquisition of qualifications (ongoing) • Active introduction of awards and prize systems for voluntary safety activities
	9. Ensuring subcontracting safety	• Stronger guidance for and follow-up on safety management at companies to which, as a manufacturer, the Company outsources its operations • Provide and review safety information such as the results of work environment measurements, danger and hazardous information (SDS) and work manuals	○	• Active involvement in safety management at companies to which, as a manufacturer, the Company outsources its operations • Implementation of sufficient safety education
Occupational health	1. Create and maintain a comfortable workplace environment	• Implemented working environment measurements and promote working environment improvements based on the results • Implement chemical substance handling education and strict wearing of chemical protective equipment as well as confirmation of compliance status for wearing protective equipment • Appropriate implementation under the Industrial Safety and Health Law • Appropriate reporting, communication, and consultation, as well as promotion of good communication	◎	• Implemented working environment measurements and promote working environment improvements based on the results (ongoing) • Implement chemical substance handling education and strict wearing of chemical protective equipment as well as confirmation of compliance status for wearing protective equipment (ongoing) • Appropriate implementation under the Industrial Safety and Health Law (ongoing) • Appropriate reporting, communication, and consultation, as well as promotion of good communication(ongoing)
	2. Promote physical and mental health wellbeing	• Implement concrete guidance, etc., and effective utilization of health check results • Appropriate compliance with additional inspection criteria due to regulatory amendments • Promotion of specific activities to build mental and physical health (such as stress check)	○	• Implement concrete guidance, etc. and effective utilization of health check results (ongoing) • Appropriate compliance with additional inspection criteria due to regulatory amendments (ongoing) • Promotion of specific activities to build mental and physical health (ongoing)

1 PDCA cycle
One of the method to smoothly carry out management tasks such as production control and quality control in business activities. To improve business operating continually by repeating the four steps such as Plan (P) → Do (D) → Check (C) → Act (A).
2 MOC
Management of change
3 4M
It is the first letter "M" of four words for man, machines, media and management.
4 5S activities
It is the first letter "S" of five Japanese words for seiri seiton (organize and order things), seiso (cleaning), seiketsu (cleanliness), and shitsuke (bringing-up).
5 Central Labor Accident Prevention Association
A corporation for the purpose of public interest established in 1979 with the approval of the Minister of Labor (currently: Minister of Health, Labor and Welfare) under the Labor Accident Prevention Group Act. It aims to improve safety and health and to eliminate occupational accidents through promotion of voluntary occupational accident prevention activities by business owners.
6 HAZOP
Hazard and Operability Study. Standard process hazard analysis methods in the chemical process industry.
* Evaluation standards
◎: Goal achieved ○: Goal basically achieved △: 50% achieved ×: Far from achieved

Key Issue 2: Energy-saving, resource-saving and the reduction of the environmental impact

Policy

The Group will meet various environmental challenges for the future of the earth.

› **Environment Management** › Response to climate change › Water resource conservation, water pollutant elimination
› Waste reduction › Resource recycling › Conservation of biodiversity initiatives, pollutant countermeasures
› Environmental Accounting

Environment Management

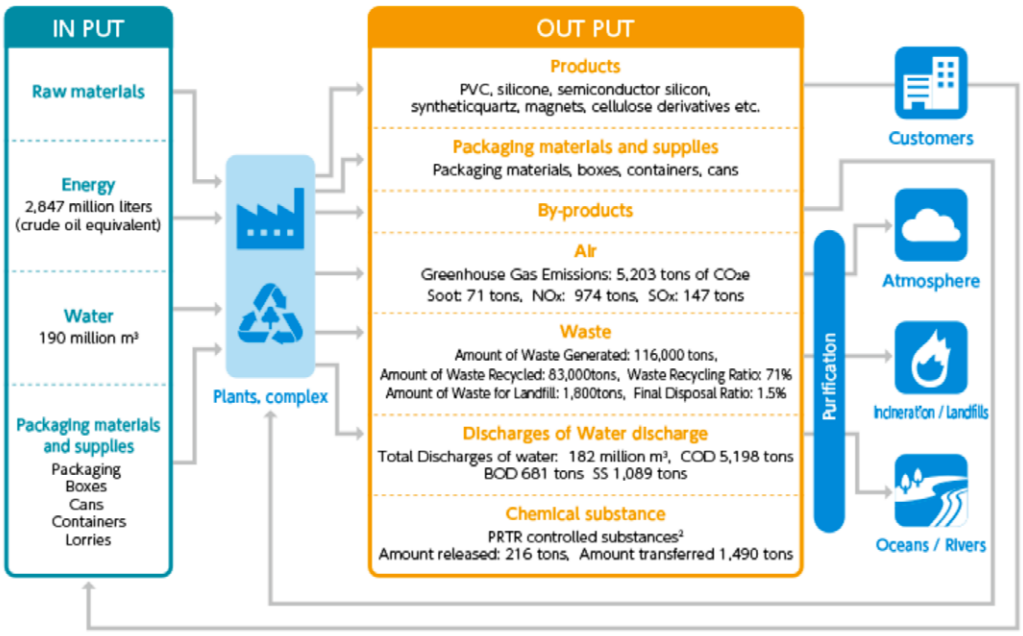
Environment Management System

The Group works on Energy savings, waste and chemical substance management. We annually create the Shin-Etsu Group Environmental Safety Management Plan in accordance with the Responsible Care Codes[1] and set goals using numerical numbers. The Company and all the Group companies set goals annually according to this plan and work on their activities. Annual activity results are reported to the director in charge of the environment control at the Group Environmental Protection Conference.
In order to increase the level of activity, each plant and the Group companies perform several internal audits a year to check if their goals are appropriately set and the progress they have achieved. In addition, we check the activities and achievements plants have made also through periodical environmental control and safety audits. The results of audits are reported to top management.

Promoting the Reduction of Environmental Impact

The Group constantly works so that manufacturing products will have the least influence on the environment. Furthermore, we do examinations so that our products will have the least environmental influence, which is also energy saving as well as resource saving. Research, Manufacturing and Sales divisions are united to develop such products. These well-examined products are used in various fields including manufacturing industry, our daily lives as well as renewable energy industry.

Reducing the Environmental Impact of Business Activities



1 Responsible Care Codes
Six principle areas are addressed when implementing Responsible Care: environmental preservation, process safety (and disaster prevention), occupational health and safety, distribution safety, chemical and product safety, and social dialogue (with the public). The codes initiatives in these areas, together with the Management System Codes required for operating all the above.

2 PRTR controlled substances
462 substances designated as Class I designated chemical substances from the "Pollutant Release and Transfer Register in the Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management."

* In order to clearly define the power consumption reduction efforts, the average power-CO2 conversion factor from 2000 to2009 is used.
* Waste standards and PRTR controlled substances differs from country to country, the figures for the Company and Group companies in Japan were counted.
* Waste recycling ratio indicates the ratio of an amount recycled to total waste generated.
* Final disposal ratio indicates the ratio of an amount of landfill waste to total waste generated.

Targets and Results

The following are Targets and Results for environmental protection and chemical substance management for FY2018 as well as Targets for FY2019.

- Target, Implementation Status, Evaluation, and Planned Implementation Items

Environmental Certification

In 1996, Shin-Etsu Chemical's Gunma Complex obtained ISO 14001 certification, becoming the first facility of a major chemical company in Japan to achieve such certification. The Group has continued to obtain ISO 14001 certification, the international standard for environmental management systems.

- ISO 14001 Certification of the Shin-Etsu Group
- ESG Data

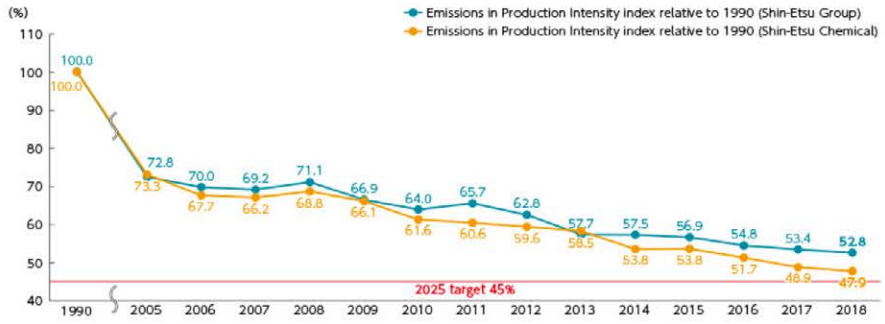
Response to Climate Change

Mid-term target	Reduce the greenhouse gas emissions in production intensity to 45% of the 1990 level by 2025.
Results and evaluation in FY2018	The Shin-Etsu Group was at 52.8%, and Shin-Etsu Chemical was at 47.9%.

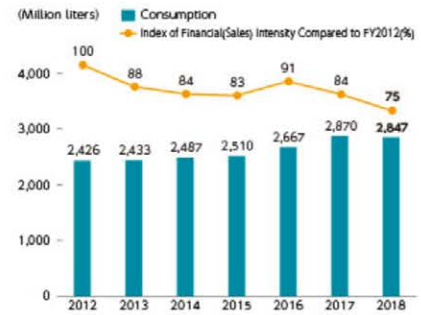
FY2018 target	Reduce energy consumption in production intensity at an annualized rate of 1%
FY2018 results	The annualized reduction rate from FY2015 to FY2018 was 3.7% for Shin-Etsu Chemical and 2.2% for Shin-Etsu Group.
FY2018 evaluation	Both the Group and the Company achieved the target.
FY2019 target	Reduce energy consumption in production intensity at an annualized rate of 1%

The Group regards the global climate change as a critical issue to be resolved, and the ESG Promotion Committee, chaired by the President, comprehensively covers climate change issues. Starting from FY2010, the Group promoted energy savings and installation of a cogeneration system in order to achieve the mid-term goal which is "Reduce the greenhouse gas emission in production intensity to 50% of the 1990 level by 2015". Furthermore, in FY2016, we set a new mid-term target of "Reduce the greenhouse gas emissions in production intensity to 45% of the 1990 level by 2025", and we have been working towards that goal. In FY2018, we started reducing power consumption by deploying cogeneration systems with gas turbines as well as improving electrolytic cells with high-performance ion-exchange membranes, among other initiatives. Regarding the greenhouse gas emissions intensity for FY2018, the Group and the Company achieved 52.8% and 47.9% of the 1990 level respectively. Also in May 2019, The Shin-Etsu Group announced our support for the recommendations from the TCFD[1]. We also participated in the "TCFD Consortium of Japan"[2]. We will continue to disclose information regarding climate change in line with the TCFD recommendations.

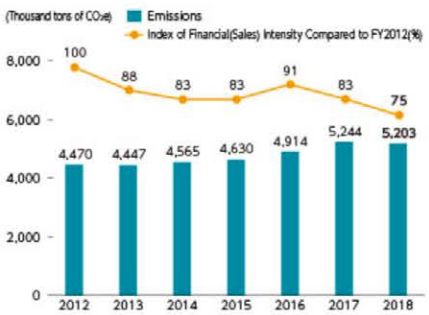
Changes in Greenhouse Gas Emissions in Production Intensity Relative to FY1990 Level



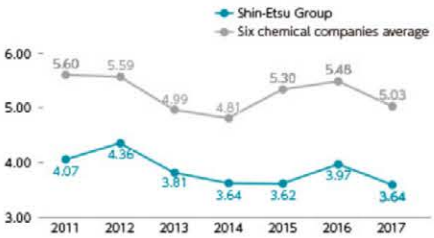
Energy Consumption (crude oil equivalent)



Greenhouse Gas Emission Volume Trends



Greenhouse Gas Emission Volume Trends (Sales intensity)



* Intensity=emission(CO_2-tons) / Consolidated or non-consolidated sales(million yen)

* Scope of aggregation of greenhouse gas emissions
  Shin-Etsu Group: Group companies include nonconsolidation
  Five chemical companies(expect Shin-Etsu Group): 3 consolidated, 1 major group companies, 1 non-consolidated

TCFD Consortium of Japan Establishment general meeting（May, 2019）

■ Environmental Data

1 TCFD

TCFD (The Task Force on Climate-related Financial Disclosures) It is a special team focusing on climate change disclosure, and was established by the Financial Stability Board (FSB) in September 2015. In July 2017, the TCFD has published a set of recommendations in which it calls for financial institutions, corporations and governments to disclose the impacts of climate change ,which was forecasted for mid to long-term, to their financial reports.

2 TCFD Consortium of Japan

It is a group established by the Ministry of Economy, Trade and Industry, the Financial Services Agency, and the Ministry of Environment in May 2019.Companies and financial institutions who agree with the recommendations from TCFD aim to promote the effective disclosure of information by companies and the efforts to link the disclosed information to appropriate investment decisions by financial institutions or any other investors.

Thermal energy recycling initiatives

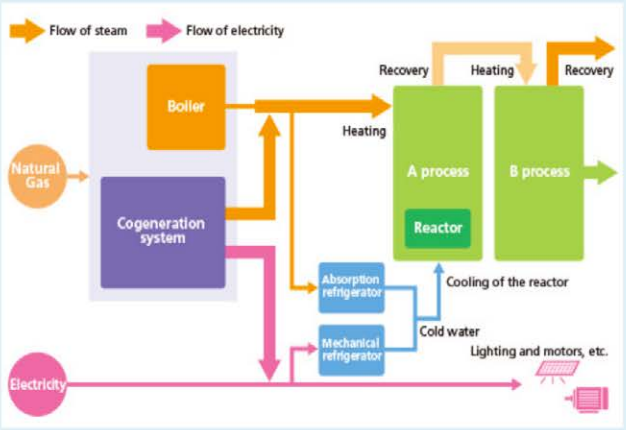
Each plant in Shin-Etsu Chemical is working on the recycling of thermal energy.

■ Cogeneration promotion

Steam and electricity are produced in a plant using a cogeneration system[1]. Electricity made with the cogeneration system is supporting the operation of manufacturing facilities. In addition, steam is being used for heating and thermal insulation for manufacturing equipment. Steam used for heating will not be emitted but will be reused for manufacturing equipment in which steam with lower temperature can be used. The steam is finally changed into water to be collected and recycled.

■ Waste heat recovery

Heat is recovered from the production process and is used as thermal energy in another process. Furthermore, the remaining waste heat is mainly collected as steam to make cold water in the absorption refrigerator. This chilled water is used for cooling the manufacturing equipment, etc.



Flow of steam and electricity at the plant

1 Cogeneration system (heat and power combined)

This system generates power with engines, turbines and fuel cells using natural gas, petroleum, liquefied petroleum gas, etc. and simultaneously collects heat which would be generated.

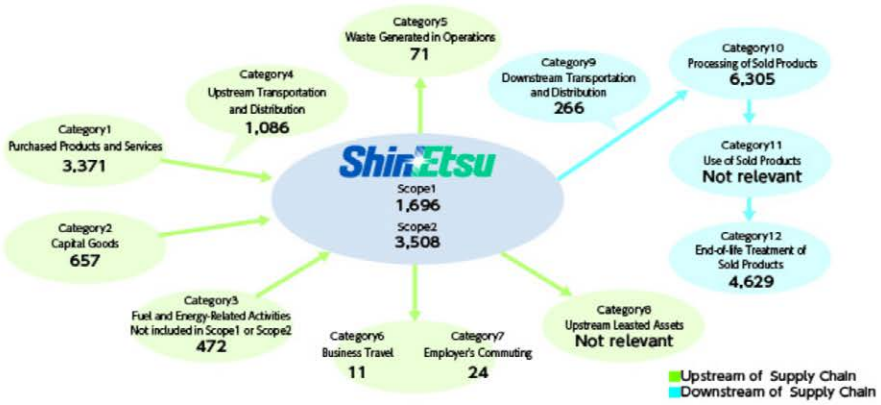
Scope 3 Greenhouse Gas Emissions

The Group's Scope 3 greenhouse gas emissions for FY2018 were 16,892 thousand tons of CO_2, amounting to 76% in the supply chain[1].

1 Supply chain
All stages of a product from raw material production until it reaches the final customer.

■ Environmental Data

Scope 3 Emissions by Category in FY2018 (unit: thousand of tons CO_2e)



* Greenhouse Gas Emission Calculation Range
SCOPE 1: Direct emissions from facilities it owns or governs (example: emissions during combustion of materials such as heavy oil and natural gas).
SCOPE 2: Emissions during production of purchased energy (example: emissions during power generation of purchased power).
SCOPE 3: Emissions from the supply chain.

Shin-Etsu Chemical's products that contribute to actions to combat climate change

The Group's products are contributing to actions to combat climate change, as they are used for a wide range of final products worldwide. This helps achieve Goal 7 of the Sustainable Development Goals (SDGs), "Affordable and clean energy," and Goal 13 of the SDGs, "Climate action." Sales in FY2018 of products that contributed to these two goals were 155 billion yen.

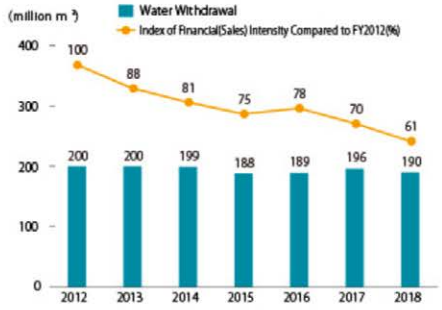
■ Shin-Etsu Group's products which contribute to the solution of the UN "Sustainable Development Goals (SDGs)"
■ Shin-Etsu Group Products and Technologies that Contribute to Environmental Conservation

Water Resource Conservation, Water Pollutant Elimination

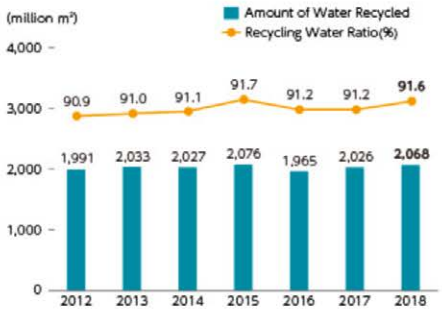
FY2018 target	Achieve 1% reduction of water withdrawal in intensity at an annualized rate Achieve 1% reduction of water pollutant discharge in intensity at an annualized rate
FY2018results	The annualized reduction rate from FY2015 to FY2018 was 6.6% in the water withdrawal volume and 1.4% in the BOD emissions amount
FY2018 evaluation	The BOD emission reduction rate didn't achieve the target.
FY2019 target	Achieve 1% reduction of water withdrawal in intensity at an annualized rate Achieve 1% reduction of water pollutant discharge in intensity at an annualized rate

The Group's major manufacturing plants are located where clean water is abundant. However, due to the scarcity of water in many regions of the world, the United Nations Environment Program (UNEP) has predicted that water scarcity in some regions will become serious by the year 2025.
The Group carries out water risk assessments and works proactively to conserve water resources on a routine basis by reducing water withdrawal, ensuring water is recycled, and implementing thorough wastewater purification and water quality management.We also comply with regulations concerning water contaminants in emitting water so that the water we discharge will be of sufficient quality with sufficient values. We also check the water quality ourselves for verification. In FY2018, BOD emissions were reduced by deploying membrane separation equipment in wastewater treatment facilities.

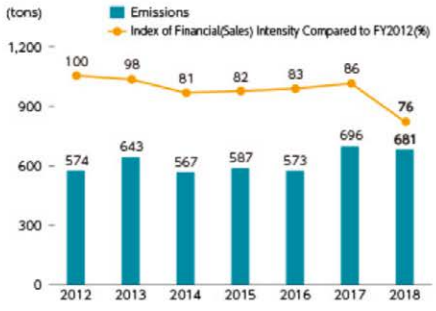
Water Withdrawal Trends



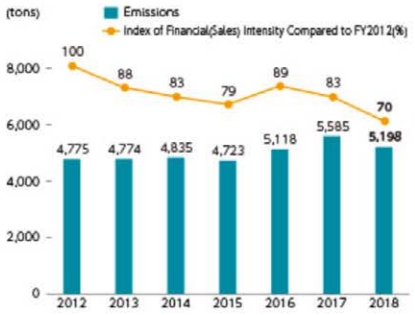
Amount of Water Recycled Trends



BOD Emissions Trends



COD Emissions Trends



- ESG Data
- Environmental Data

Water Resource Conservation Efforts by the Shin-Etsu Chemical Gunma Complex

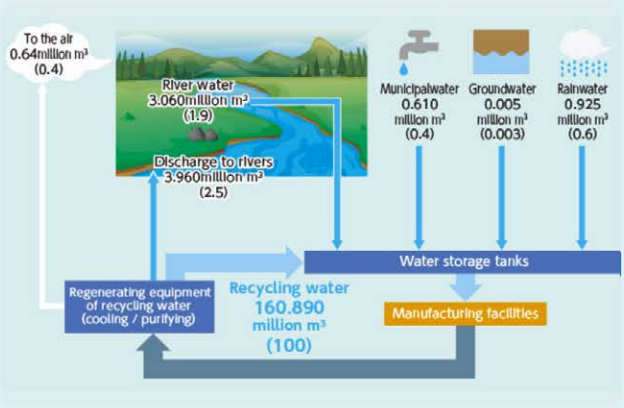
The Shin-Etsu Chemical Gunma Complex manufactures highly functional materials such as silicones. Located inland in the south-west region of Gunma prefecture, the Complex draws its water required for manufacturing almost from nearby rivers and purifies the wastewater from the Complex before discharging.

The Gunma Complex is situated in a rich natural environment. Downstream from the nearby rivers sits the Tokyo metropolitan area where these rivers sustain the daily lives of its residents as well as industry and agriculture. Although the manufacturing of chemical products requires large quantities of water, the Complex strives to conserve valuable water resources by keeping its water intake from these rivers to a minimum. For this reason, the Complex **reuses** as much water as possible in its manufacturing and water cooling processes by **recycling** and **circulating** water and **ensuring there is no water leakage outside of the Complex**.

Besides **purifying** the water before return to the rivers, **rigorous water quality management** is also applied. The Complex strives to maintain optimum conditions by continually monitoring the operating status of water treatment facilities and conducts regular water quality analysis of discharged water to verify that it is in strict compliance with high water standards. Furthermore, they separate rainwater to prevent inflow of rainwater during heavy downpours as a measure to protect their treatment facilities from being damaged by natural disaster. In addition, since 2014 they have been carrying out seismic strengthening works assuming large-scale earthquakes.

By effectively utilizing limited water resources, the Gunma Complex will continue to fulfill its responsibility as an upstream located production base.

Water Flow at the Shin-Etsu Chemical Gunma Complex (FY2018)



Rainwater Utilization at Overseas Group Company

Calls are increasing for the protection of the world's water resources, and since its foundation Asia Silicones Monomer Limited has been making effective use of the plentiful rainfall it enjoys in its location in Thailand.

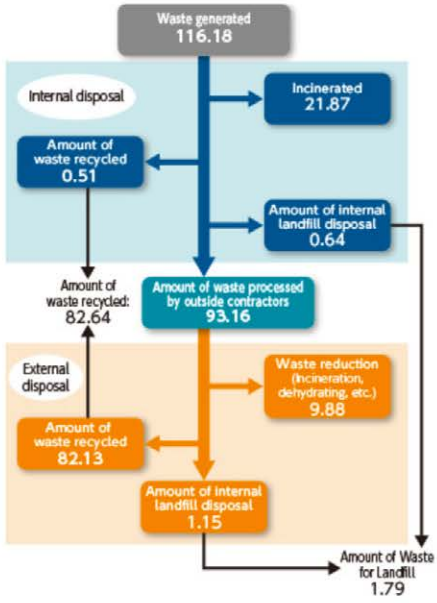
It stores rainwater in storage tanks on-site, using it for industrial water and as coolant for waste gas incinerator. It always maintains a reserve of rainwater for use in fire fighting in the event of an emergency. It also supplies Group company Shin-Etsu Silicones Thailand and its nearby partners with rainwater for uses such as industrial water.

Waste Reduction

FY2018 target	Achieve zero waste emissions (landfill waste 1% or less of the final amount of all waste generated)
FY2018 results	The final waste landfill disposal rate was 1.54% in the Shin-Etsu Group and 1.54% in Shin-Etsu Chemical
FY2018 evaluation	The target was not achieved
FY2019 target	Achieve zero waste emissions Promotion of reduction of waste generation in intensity

Since the production volume in FY2018 increased substantially compared to FY2017, the amount of waste generated, the amount of waste recycled, and the amount of waste for landfills all increased. In FY 2018, we endeavored to reduce waste sulfuric acid by refining and recycling it, and reduce wastewater sludge by readjusting polymer coagulants and neutralizing agents.
Due to the characteristics of the manufacturing formula, a zero waste emission, which the Group aimed at, could not be achieved because there is a process where a certain amount of residue occurs. We will continue to work on fewer emissions and less waste for landfills.
We have external contractors to handle our disposals. We check to confirm that the contractor properly handles disposals by regularly inspecting their operation.

Flow of Waste Disposal (thousand tons)



Amount of Waste Recycled

Amount of Waste for Landfill

Environmental Data

* The figures are aggregated only for Shin-Etsu Chemical and group companies in Japan because waste standards differ from country to country.

Waste Recycling at Overseas Group Company

Drew Harris
General Manager - Production

Simcoa's Waste Utilization

As an environmental initiative, Simcoa in Australia, manufactures and sells silicon metal, is committed to waste utilization. The waste utilization not only reduces environmental impact but also results in waste materials becoming a valuable resource by treating them as a by-product, and as such, the company is positively working towards reuse. Charcoal is one example of a way in which waste materials are utilized. Wood from forest clearing for a bauxite mining operation is processed to produce charcoal. Previously, the wood from the forest clearing operations was partially burnt, however, in 2004 the company began producing charcoal for incineration with the goal of effectively using the resource as a by-product.

Currently, Simcoa uses 100,000 tons of wood to produce 25,000 tons of charcoal each year. The source for the wood is felled trees from the bauxite mining operation, plantation wood, waste from sawmill and so on.

Other examples of waste utilization in addition to charcoal are listed below. We hope these example initiatives help to demonstrate our commitment to the environment and waste utilization.

Examples of Simcoa's Waste Utilization

Silica fume	Amorphous silica fume is a by-product of silicon metal. Initially when Simcoa began operations, there was no market for silica fume and the waste had to be buried in an on-site landfill. Simcoa developed a market in Australia for silica fume as an additive to increase the strength of cement, and has sold its silica fume for the past 25 years.
Charcoal fines	Fine charcoal is screened off from the lump charcoal because it cannot be used in the silicon metal furnaces and is sold for the production of barbecue briquettes.
Dross	A certain amount of slag[1] is generated as a by-product during the manufacturing process of silicon metal. Slag is treated as a waste product by most silicon smelters, however, Simcoa sells this slag as a resource for producers of steel for deoxidization.
Sawdust and wood mulch	Sawdust and wood mulch are generated during cutting timber. It is sold for use in soil improvement. Investigations are underway into the potential use of this by-product for biomass energy generation in the future.
Undersized quaitz	As some of the quartz rock recovered from the quartz mine is too small for use in the silicon metal furnaces, it is sold as flux materials for use in metallurgical operations and as decorative stone for use with concrete.

1 Slag
Slag is a waste produced when molten metal is separated into fractions during metal smelting.

■ Simcoa Operations

Resource Recycling

The Group collaborates with customers and related industry groups, using cutting-edge technologies to recover used products, extract resources, and reuse them in the Group's products. Through these initiatives, it is possible to reduce the waste output of our customers and the Group itself. We are also contributing to environmental conservation through reuse of resources.

Rare Earth Magnet Resource Recycling

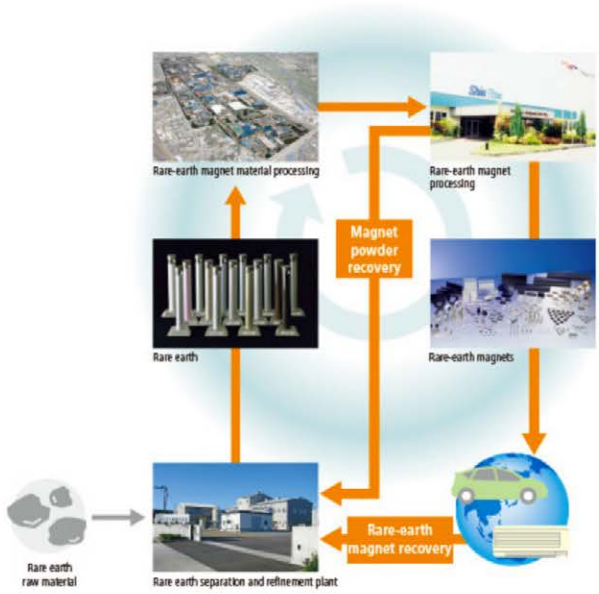
The Group manufactures rare earth magnets by our integrated production process using separation and refinement techniques to extract rare earth magnets from rare earth raw materials.
As one of the measures to achieve stable procurement of raw materials, since 2007, the Group has been recycling magnet powder generated by our rare earth magnets manufacturing processes. Furthermore, since March 2013, we have also been developing techniques for recycling rare earth magnets used in recovered power-saving air conditioners and hybrid cars in order to re-use resources.
These initiatives have made it possible to reduce the environmental impact that comes along with resource development and to safely and securely protect the valuable rare earth resource. The Group's rare earth magnets create significant economic and social value as recycled products and also contribute significantly to energy conservation.

Recycling of PVC Products

Initiatives for the recycling of products containing PVC are making progress. There are various methods for recycling PVC, the most common of which is material recycling.
Material recycling uses used PVC products as raw materials to create new PVC products. PVC pipes, flooring materials and other PVC products are not greatly influenced by foreign substance contamination, so various kinds of recycling are conducted for those products. In particular, 60% of used PVC pipes and joints are recycled for reuse in new PVC pipes and joints, and 70% of agricultural film is recycled for use in flooring material.

- Vinyl Environmental Council

Rare Earth Magnet Resource Recycling Process



Recycling use of product shipping cartons

Shin-Etsu Chemical started recycling product shipping cartons for heat-dissipating silicone grease from FY2018. Heat-dissipating silicone grease must be transported frozen to stabilize product quality. Therefore, we used dry ice to cool products in disposable boxes in transit in the past. As a result of extensive research conducted collaboratively with customers, the Company has successfully replaced packaging with newly developed packaging that can be recycled multiple times while maintaining optimal temperatures. In addition, this new packaging eliminates the need for dry ice, resulting in a reduction of 28.2 tons of carbon dioxide per year.

Marine plastic problem

One of the issues that cannot be ignored as a chemical manufacturer is the marine plastic problem. We believe that there are business opportunities since the problem is unlikely to be resolved with existing products. It is therefore all the more worth taking on the challenge for Shin-Etsu Chemical Group. Together with the Japan Initiative for Marine Environment[1], the Group is taking on the challenge of developing new products and technologies to resolve this problem, whereby leading to the expansion and growth of our business.

1 Japan Initiative for Marine Environment
An organization established in September 2018 by the Japan Chemical Industry Association, the Japan Plastics Industry Federation, the Plastics Waste Management Institute, the Japan Petrochemical Industry Association, and the Vinyl Environmental Council to address the marine plastic waste problem as the whole chemical industry.

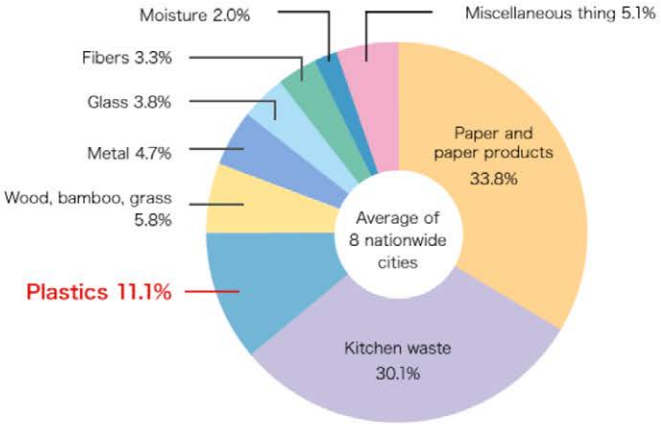
■ Current status of plastic disposal in Japan

Amount of plastic waste

The FY2017 survey by the Ministry of the Environment on the Use and Disposal of Containers and Packaging Waste shows that of 43,170 thousand tons of general waste produced a year, plastic waste accounted for 4,790 thousand tons (11.1%).

Source: Plastic Waste Management Institute (PWMI) "An Introduction to Plastic Recycling 2018"

Composition of garbage discharged at garbage stations (percentage wet weight)



Survey target:
For each of 8 cities (Tohoku: 1, Kanto: 4, Chubu: 1, Kansai: 1,Kyushu: 1), household garbage was discharged in 3 types of districts having the following characteristics.

District A: relatively old residential district of detached houses;
District B: recently developed residential district of detached houses;
District C: apartments.

Survey period :
August 2017 ～ December 2017

Source: Ministry of the Environment. Use, discharge fact-finding of waste containers and packaging discharged (FY2017)

Recycling of Polyvinyl Chloride (PVC)

The total amount of waste plastic emissions including industrial waste in Japan in 2017 was 9,030 thousand tons per year, of which the amount of PVC waste was 680 thousand tons per year (7.5%).

Total recycling amount(2017, domestic)

Production of plastics	11,020	
Plastic waste discharge	9,030	
Recycling	Recycling amount	Recycling ratio
Material recycling	2,110	23%
Chemical recycling	400	4%
Thermal recycling	5,240	58%
Total	7,750	86%

(thousand tons)

86% of waste plastic in Japan is recycled by one of three methods: "material recycling," "chemical recycling," and "thermal recycling."

Material recycling amount(2017, domestic)

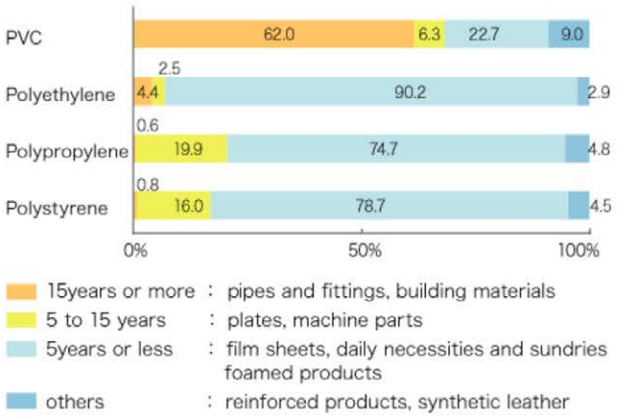
By plastic type	Plastic waste		Material recycling		
	Amount (thousand tons)	Composition ratio	Amount (thousand tons)	Composition ratio	Recycling ratio
Polyethylene	3,070	34%	310	15%	10%
Polypropylene	2,010	22%	390	18%	19%
Polystyrene	1,070	12%	210	10%	20%
Polyvinylchloride	680	7.5%	310	15%	46%
Others	2,210	24%	890	42%	40%
Total	9,030	100%	2,110	100%	23%

Material recycling is a method where waste plastics are reprocessed into similar or different plastic products.
Regarding used PVC, 310 thousand tons per year (46%) is recycled through material recycling.

Source: Plastic Waste Management Institute "The Status of Production, Disposal, Recycling and Processing of Plastics 2017—Material Flowchart"

Polyvinylchloride (PVC) applications

Use and service life of various plastics(2011, domestic)[1]



PVC products are characterized by their long product life span. For example, the quality of PVC water and sewage pipes hardly deteriorates even after 50 years. More than 60% of PVC products have a useful life of 15 years or more.[1]

Demand Composition of PVC by Industry Sector(2016, domestic)[2]

Application	Demand (thousand tons)	Composition ratio
Housing and civil engineering	580	56%
Plant equipment	110	11%
Miscellaneous goods and others	80	8%
Wheels	70	7%
Containers and packaging	60	6%
Export products	60	5%
Agriculture, forestry, and fishery products	40	4%
Electrical and mechanical equipment	40	4%
Total	1,020	100%

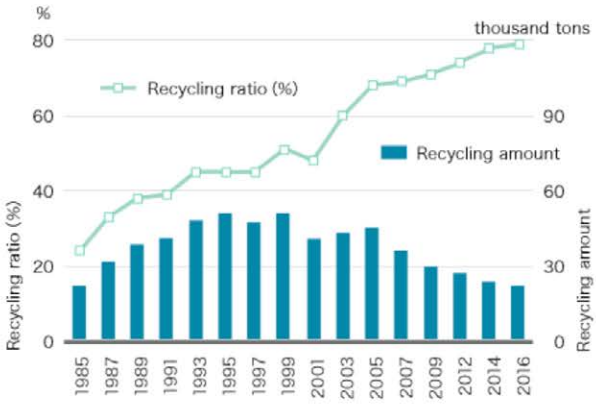
Of PVC applications, 60 thousand tons are used for containers and packaging, which is drawing attention for the ocean-plastics pollution problem.[2]

1 Source: Data compiled by Vinyl Environmental Council (VEC) based on the Current Survey of Production of the Ministry of Economy, Trade and Industry.

2 Source: Vinyl Environmental Council. Web site

Case studies of environmental measures for Polyvinylchloride (PVC)

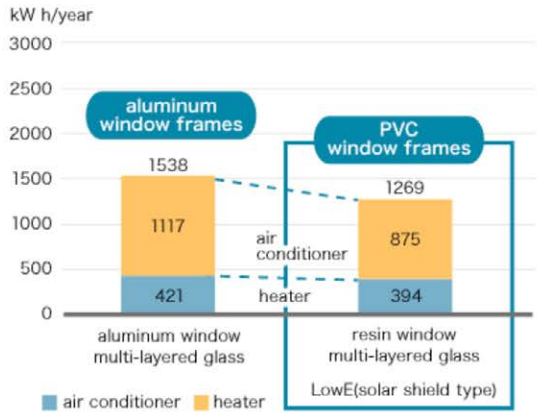
Changes in material recycling of agricultural PVC products[3]



We are continuing our efforts to improve the recycling rate of PVC.

(Data created by VEC based on statistical data of the Ministry of Agriculture, Fisheries and Food)

Energy-saving effect of resin (PVC) window frames[4]



The use of PVC window frames can reduce power consumption from air conditioning by approximately 20% compared with aluminum window frames[4] carbon dioxide emissions are expected to be reduced by more than 100 kg annually per house.[5]

(Assuming that the solar shield type of low-E (low-emissivity) glass is used to prevent sunlight in summer.)

3 Source: Vinyl Environmental Council. Web site

4 Source: The 13th Meeting of the Institute of Life Cycle Assessment, Japan with the theme "Life Cycle Assessment of Resin Window Frames and Greenhouse Gas (GHG) Emission Reduction Contribution"

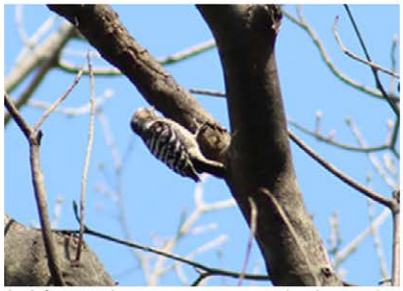
5 Source: Emissions are calculated using the CO_2 emission factors provided by TEPCO through its report on "CO_2 emissions, CO_2 emissions per basic unit and electricity sales."

Conservation of Biodiversity Initiatives, Pollutant Countermeasures

Conservation of Biodiversity

The Group aims for environmentally considerate product design starting already from the product development stage. At the same time, we are also meeting our responsibility as a chemical company by working actively to ensure strict control of chemical substances, mitigate global warming, reduce energy consumption, reduce the amount of waste generated, prevent water pollution, and make other environmental contributions. We are also engaged in activities such as tree planting in our plant site in compliance with the Factory Location Act (Japanese law) and voluntary river cleaning in areas neighboring our plants. Furthermore, we request that our suppliers implement environmental conservation initiatives in accordance with our CSR procurement guidelines. The Group preserves the earth's ecosystem through these efforts.

Nearby river cleanup effort (June 2018, Shin-Etsu Chemical Takefu Plant)



Animals and plants that live and grow in the plant site (From the left, squirrels, Japanese pigmy woodpeckers, and Kirishima azaleas/Shin-Etsu Handotai Shirakawa Plant)

Pulp supplires' biodiversity conservation efforts

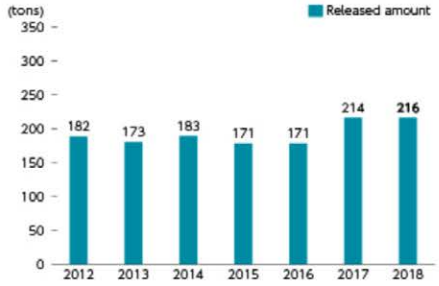
We have bought pulp derived from wood as the main raw material of cellulose derivatives in the Group. Upon purchase, we ask all our pulp suppliers to consider conservation of biodiversity, and we have confirmed that they all have obtained national and/or international forest certifications. In addition, we work hard to know about our pulp suppliers' activities on biodiversity activities.

Release of Chemical Substance

The Group has chemical substances which requires strict release management. The Group works on reducing chemical release with proper manufacturing processes as well as establishing the proper operation conditions of pollutant treatment facilities. In addition, the Group reports the amount of chemical substance released and moved in natural environment according to the PRTR system[1] in the PRTR Law[2]. The Group does not use or produce substances that fall under the Stockholm Convention on Persistent Organic Pollutants[3].

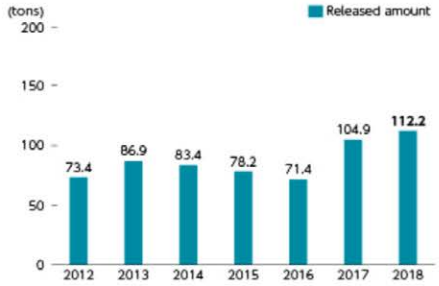
1 PRTR system
Chemical substance release and transfer notification based on the "Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof."
2 PRTR Law
Short for "Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof." A law intended to promote improved self-directed control of chemical substances by business operators, in order to prevent the risk of damage to the environment.
3 Stockholm Convention on Persistent Organic Pollutants
It is a convention that prohibits or restricts the production, use, export or import of designated substances for the purpose of reducing persistent organic pollutants that would require immediate attention. It is also known as the Stockholm Convention or POPs Convention.

PRTR Controlled Substance: Total Release Trends

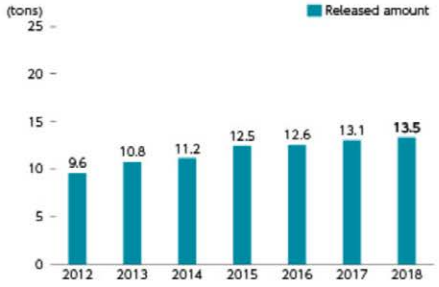


PRTR Controlled Substance: Total Amount Transferred Trends

PRTR Controlled Substance: Chloromethane Release Trends



PRTR Controlled Substance: Chloroethylene Release Trends



Environmental Data

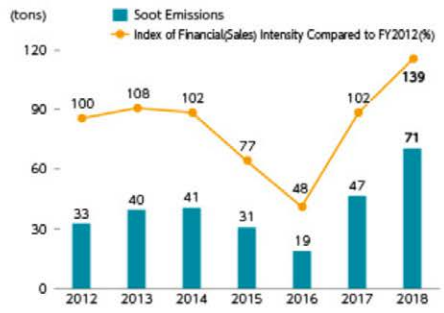
* The figures are aggregated only for Shin-Etsu Chemical and group companies in Japan.
* The amount of emissions of substances designated by the PRTR system changes depending on production volume.

Prevention of Air Pollution

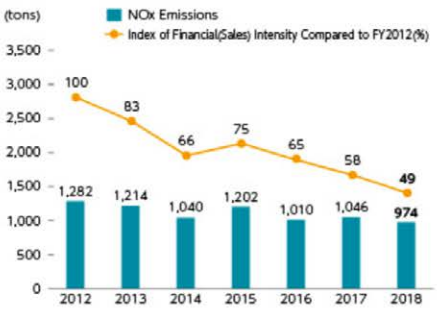
The Group is working to reduce emissions of air pollutants by setting emission reduction targets at each of our Group companies and by converting to fuel components with less sulfur. Each group company carried out regular investigations on emitted gas to confirm compliance with laws and regulations.

In FY2018, production volume increased substantially, but NOx and SOx emissions decreased

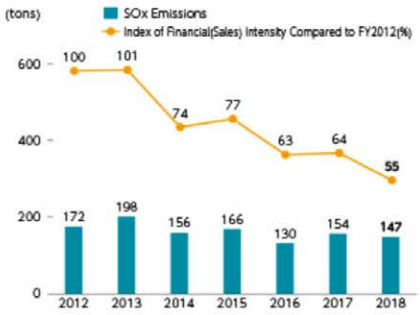
Soot Emissions Trends



NOx Emissions Trends



SOx Emissions Trends



- ESG Data
- Environmental Data

Initiatives for Reducing Emissions of Substances Governed by Environmental Regulations

The manufacturing processes used by the Shin-Etsu Group do not discharge waste water or waste gas byproducts as-is into the atmosphere or rivers, instead extract substances which can be used as fuel or raw materials, thoroughly recycling them and rendering them harmless before eliminating them. Below are some examples.

The cellulose derivatives manufacturing processes of the Shin-Etsu Chemical Naoetsu Plant use caustic soda to process pulp created from trees. The result then undergoes reactions with chemicals such as methyl chloride to produce cellulose derivatives products.

The waste gasses created by this process contain environmental pollutants such as VOC and PRTR controlled substances. The processes also create water with a high concentration of salt. These waste gasses are incinerated, producing a gas consisting of carbon dioxide and water vapor. The waste water is highly concentrated salt water, which is used as a raw material in electrolysis process.

This manufacturing process also creates water with high BOD values, containing organic compounds. This waste water is treated by anaerobic water treatment equipment[1], separating most of the organic compounds in the waste water into methane gas and carbon dioxide. The methane gas is then used as fuel for the plant's boilers. The amount of methane gas produced each year is equivalent to 3 million liters in crude oil equivalent, and accounts for 20% to 30% of the fuel used by the boilers.

The waste water discharged from the anaerobic water treatment equipment contains some undecomposed organic compounds, so it undergoes additional treatment using aerobic water treatment equipment[2], purifying it to BOD levels below discharge reguratory standard levels before discharging it.

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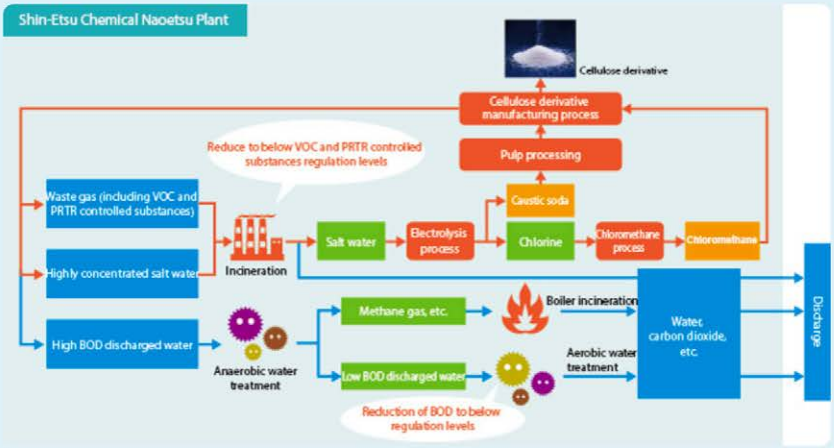
1 Anaerobic water treatment equipment
Equipment which processes water containing high concentrations of organic substances in the closed oxygen-free environment, using bacteria which do not require oxygen to break the organic substances down into substances such as methane gas.

2 Aerobic water treatment equipment
Equipment which uses bacteria which require oxygen to break organic substances down into carbon dioxide and water.



Prevention of Soil Pollution

Groundwater and soil monitoring at each plant is being carried out in accordance with the Soil Contamination Countermeasures Act, and we make sure that we are in compliance with laws and regulations. In FY2018, at its plant sites, the Company monitored groundwater and soil as total of 188.

Environmental Accounting

In FY2018, the Company referring calculated to the Environmental Accounting Guidelines 2005 prepared by the Ministry of the Environment in Japan calculated the investments and expenditures involved in the reduction of the environmental impact of air pollution, water pollution, environmental release of chemical substances, etc.; energy-saving measures to conserve the global environment; and waste reduction and recycling to improve reuse of resources.

Environmental Conservation Costs in FY2018

million yen

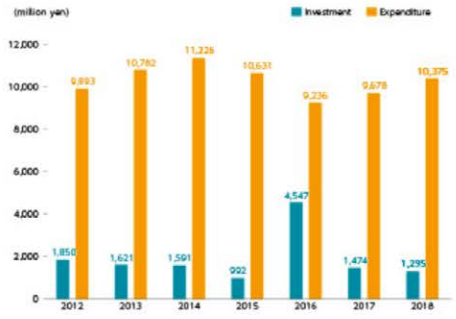
Category	Details	Inventment	Expenditure
Plant area costs		1,280	8,379
(1)Pollution prevention cpsts	Prevention measures for air, water, noise and other type of pollution	627	3,172
(2)Global envirenmental conservation costs	Energy saving and global warming mitigation measures	329	3,439
(3)Resource recycling costs	Waste reduction, recycling and other measures	323	1,769
Upstream and downstream costs	Green purchasing and container and packaging measures	0	26
Administration costs	Environmental management, environmental impact monitoring and enbironmental education measures	14	426
Research and development costs	Research and development of environmentally conscious products and processes	0	1,481
Social engagement costs	Donations and contributions to environmental saving	1	35
Environmental remediation costs	Assessment, handling and other costs related to environmental pollution	0	28
Total		1,295	10,375

Economic Benefits of Environmental Accounting in FY2018

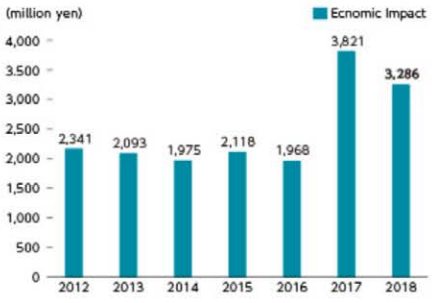
million yen

Details of benefits	Economic benefit
Energy saving	725
Improved production efficiency	2,388
Production process	2,220
Secondary materials costs	168
Reduction in waste treatment costs	4
Profit from sale of valuable resources	169
Total	3,286

Cost of Environmental Conservation: Investment and Expenditure



Ecnomic Impact



The FY2018 targets and results and FY2019 targets for environmental protection and management of chemical substances are as listed below.

Item	Priority Issues (Target)	Implementation Status for Fiscal 2018	Evaluation	Planned Implementation Items for Fiscal 2019
Management System	1. Continuous improvement and implementation of the environmental management system	• Set qualitative plans to meet environmental challenges • Implement plans and achieve goals without fail through activities leveled throughout the year • Conduct substantial internal audits	◎	• Set qualitative plans to meet environmental challenges (ongoing) • Implement plans and achieve goals without fail through activities leveled throughout the year (ongoing) • Conduct substantial internal audits (ongoing)
	2. Qualitative improvement of environmental safety audits	• Appropriate follow-up on the matters pointed out during environmental safety audits • Qualitative improvement of environmental safety audits for affiliated companies at the plant area • Active involvement at overseas manufacturing bases through guidance and auditing	◎	• Appropriate follow-up on the matters pointed out during environmental safety audits • Qualitative improvement of environmental safety audits for affiliated companies at the plant area • Active involvement at overseas manufacturing bases through guidance and auditing
Environmental conservation	1. Zero environmental accidents	• Achieved target of zero environmental accidents	◎	• Zero environmental accidents
	2. Thorough environmental management	• Continued appropriate compliance with environmental laws and regulations	◎	• Appropriate compliance with environmental laws and regulations (ongoing)
	3. Promotion of energy savings (Reduce energy consumption by an average annual rate of 1% per unit production)	• The Shin-Etsu Group: Reduced by 2.2% annually on average • Shin-Etsu Chemical: Reduced by 3.7% annually on average	◎	• Reduce energy consumption by an average annual rate of 1% per unit production
	4. Reducing greenhouse gas emissions (Intensity reduction to 54% of 1990 level by fiscal 2025)	• The Group reduced to 52.8% and the Company 47.9% compared to fiscal 1990 • Periodic inspection based on the Act on Rational Use and Proper Management of Fluorocarbons and reporting to the national government on the amount of leakage calculated	○	• Reduction to 45% of 1990 level in intensity by fiscal 2025 • Periodic inspection based on the Act on Rational Use and Proper Management of Fluorocarbons and reporting to the national government on the amount of leakage calculated (ongoing)
	5. Reduce waste (Achieve zero waste emissions (waste to landfill ratio to 1% or less))	• The Shin-Etsu Group: Landfill waste to total waste ratio of 1.54% • Shin-Etsu Chemical: Landfill waste to total waste ratio of 1.54%	△	• Promote achievement of zero waste emissions (waste to landfill ratio to 1% or less) • Promotion of waste generation reduction through intensity unit
	6. Reduced emissions of substances causing water pollution or air pollution (Reduction in intensity at annualized rate of 1%)	• Reduced at an annualized rate of 1.4% for BOD[1] • Incresed at an annualized rate of 23.0% for soot • Reduced at an annualized rate of 9.9% for SOx • Regular review and strict compliance with specific facility using hazardous substances pertaining to the Water Quality Pollution Control Act and installation standards for designated storage facilities • Promotion of separation of process wastewater and rainwater discharged (including cooling water) and the laying of pipes installed in the rainwater drainage way on the ground	△	• Regular review and strict compliance with specific facility using hazardous substances pertaining to the Water Quality Pollution Control Act and installation standards for designated storage facilities (ongoing) • Promotion of separation of process wastewater and rainwater discharged (including cooling water) and the laying of pipes installed in the rainwater drainage way on the ground (ongoing)
	7. Reduction in water withdrawals (Reduction in intensity at an annualized rate of 1%)	• The Shin-Etsu Group: reduced at an annualized rate of 6.6% • Shin-Etsu Chemical: reduced at an annualized rate of 7.1%	◎	• Reduction in intensity at an annualized rate of 1% • Plan and implement measures for improving recycling water ratio
Chemical substance management	1. Thorough new chemical substance management	• Thorough management of permitted production volumes (confirmed) and production results • Communicated reporting of harmful substance information, etc., at the time of acquisition	◎	• Thorough management of permitted production volumes (confirmed) and production results (ongoing) • Communicated reporting of harmful substance information, etc., at the time of acquisition (ongoing)
	2. Compliance with legal and other requirements for chemical substance control	• Responded to revisions and strict compliance with the Chemical Substances Control Law[2], Industrial Safety and Health Act, PRTR Law[3], and Poisonous and Deleterious Substances Control Act • Strict compliance with overseas laws and regulations • Implement control of PCB waste and dispose required by the deadline (Deadline: 2020)	◎	• Respond to revisions and strict compliance with Chemical Substances Control Law, Industrial Safety and Health Act, PRTR Law, and Poisonous and Deleterious Substances Control Act (ongoing) • Compliance with overseas laws and regulations (ongoing) • Implement control of PCB waste and dispose required by the deadline (Deadline: 2022)
	3. Information disclosure on the harmfulness of chemical substances	• Information disclosure and awareness raising of substances handled by contractors and subcontractors	○	• Confirmation of well-known situations and information provision related to substances handled by contractors and subcontractors (ongoing)

1 BOD (Biochemical Oxygen Demand)
Biochemical oxygen consumption. The amount of oxygen required when decomposing contaminants in the water by microorganisms. This indicates the degree of water pollution.

2 Chemical Substances Control Law
Short for the "Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc." A law intended to prevent environmental pollution by chemical substances that can be harmful to human health or to ecosystems.

3 PRTR Law
Short for the "Act on Confirmation, etc. of Release Amounts of Specific Chemical Substances in the Environment and Promotion of Improvements to the Management Thereof." A law intended to promote improved self-directed control of chemical substances by business operators, in order to prevent the risk of damage to the environment.

* Intensity unit
A measure calculated from the production volume of a reference product.
* Average annual rate for implementation
Average annual reduction rate from fiscal 2015 to fiscal 2018
* Evaluation standards
◎: Goal achieved ○: Goal basically achieved △: 50% achieved ×: Far from achieved

Key Issue 3: Product quality improvements and product safety control

Policy

The Group will stably provide high-quality products to customers.

Quality Control

The Group is making a continuous effort on stable supply of the high quality products for the customers.
We have established a robust quality management system to improve customer satisfaction, and are continuously striving to improve quality, stability and efficiency. Each the Company's division and/or Group companies are promoting quality control activities. The sales department, research and development department, manufacturing department and quality assurance department cooperate in roles as in the following in order to meet the requests of our customers.

Sales department

Listen to the customer requests, and promptly and accurately inform our research and development department as well as the manufacturing department of them.

Research and development department as well as the manufacturing department

Utilize the customer requests for the improvement of existing products and research and development of new products. Also actively working on the automation of the manufacturing process to prevent careless human errors caused by assumptions and misunderstanding by workers

Quality assurance department

Make a final confirmation on product taking into account the product characteristics and the customers use
We have enhanced the accuracy of quality measurement by advancing the automation of measurement processes to eliminate variations derived from quality measurement personnel, sample preparation, and measurement procedures. In addition, measurement results are stored and shared in the database to prevent typing errors when creating inspection tables and labels.

Almost all of the Group's manufacturing bases, both domestic and overseas, have obtained certification of the quality control systems such as ISO 9001, IATF169491, etc.

We have also established a strict rule to respond to all quality inquiries from customers within 48 hours of receipt .

■ ISO 9001 Certification of the Shin-Etsu Group

1 IATF16949
It is a quality management system for automotive industry.

Quality Audits and Support

To solve the zero quality problem, the claim and complaint information from the customers are closely examined. In internal quality audits, we check quality control activities and quality control systems to ensure that necessary improvements are being implemented properly.
Also, quality control activities are evaluated according to two different viewpoints, which are the customers' viewpoint and quality cost viewpoint. We work to find the root cause of quality issues and to make an effort toward the recurrence prevention.
Furthermore, Six Sigma[1] programs are deployed on a company-wide basis in order to improve the quality level.

Quality audit (June 2018, Shin-Etsu Chemical Naoetsu Plant)

The 18th debrief session of the results of Shin-Etsu Six Sigma (February 2018, Shin-Etsu Chemical Head office)

1 Six Sigma programs
Quality improvement method developed by Motorola in the 1980s. Focused on processes where quality variation appears, it is designed to minimize variation within the processes and thereby reduce the incidence of quality defects. This approach has been adopted across the Group.

Product Safety Control

Product safety is being managed from product development to delivery based on internal regulations.
Regarding the safety of new chemical substances, risk assessment and confirmation for environment and health is performed at the development stage.
Regarding the development of new chemical substances, we focus on products as well as their manufacturing technologies which do not use hazardous substances that have been designated by the Industrial Health and Safety Law and Chemical Substances Control Law[1], as well as the EU RoHS risk assessment Directive[2].
Furthermore, we ensure to submit necessary notifications and reports according to laws and regulations.
Customers are offered information such as product hazards and risks in the form of SDS[3] in order to ensure proper transmission of information to the value chain.
In addition, customers are requested to handle products safely by complying with laws and regulations, installing abatement equipment, wearing protective equipment, etc through SDS.
As a product transportation safety measure, we issue Yellow Cards[4] and/or Container Yellow Cards[5] that are affixed to containers. Furthermore, pictorial indication of hazard and harm is also implemented in accordance with GHS[6].
In accordance with the Industrial Safety and Health Act, we also implemented pictorial indication of hazard and harm in accordance with GHS6 on product containers and packaging.

1 Chemical Substances Control Law
Short for "Act on the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc." A law intended to prevent environmental pollution by chemical substances that can be harmful to human health or to ecosystems.
2 RoHS (Restriction of the Use of Certain Hazardous Substances) Directive
EU directive on restricting the use of certain hazardous substances in electrical and electronic equipment.
3 SDS (Safety Data Sheet)
SDS lists the physical and chemical properties of the chemical substance together with harmfulness and emergency response procedures. Designed to promote safer use of chemical substances and prevent accidents and incidents, SDS are supplied by manufacturers, importers and distributors to customers at the point of sales or shipment.
4 Yellow Cards
The yellow cards are cards on which all relevant information on treatment required in case of an accident during transportation of chemical substances is described.
The cards are handed to the transport contractor to be brought by tanker lorry or other means at the time of transportation.
5 Container Yellow Cards
The standard yellow card system is not suitable for use with mixed cargoes and small-lot deliveries. Instead, each container carries a label displaying safety information such as UN number of chemical name and emergency response procedure number.
6 GHS (The Globally Harmonized System of Classification and Labeling of Chemicals)
Internationally standardized system of classification and labeling of chemicals.

■ ESG Data

Key Issue 4: Promoting CSR procurement and the diversification of supply sources

Policy

The Group will procure fairly and build an environmentally conscious supply chain.

Basic Procurement Policy

This policy is ensured in the Group and posted on the website. Suppliers are expected to understand the Basic Procurement Policy and asked to incorporate the content of the Policy into their supply contracts.
In addition, in order to gain a deeper understanding of the Basic Procurement Policy, we have created the CSR Procurement Guidelines, which we publish on our website.
We held an explanatory meeting of the guidelines for suppliers in July 2017 and January 2018. It was to ask suppliers for understanding and cooperation to our promotion of CSR procurement.
In January 2018, we established the Supplier Hotline to ensure the transparency and fairness of transactions between the Group and suppliers.

Shin-Etsu Group's Basic Procurement Policy

1. Legal compliance

As the most important of its management objectives, the Company conducts all of its business activities in a law-abiding spirit. Each and every staff member is made fully aware of corporate social responsibilities and they carry out their business activities in strict conformity with the law, business ethics and the various rules and regulations of the Company. In its purchase and procurement activities, the Company acts in good faith and in a fair manner, and does not practice favoritism, nor make improper demands. In addition, based on mutual trust, not only between the Company and the suppliers that the Company directly procures from, but also with vendors in the linked supply chain, all those companies involved carry out their business activities in strict accordance with the principal labor standards of International Labor Organization (ILO), any laws and regulations related to protection of the environment andbusiness transactions including those of small- and medium-size enterprises.

2. Promotion of corporate social responsibility

The Company places primary importance on corporate social responsibility (CSR) activities.. For the promotion of CSR, the cooperation of all the Company's suppliers is essential, and we ask you to comply with the Company's policies in the areas listed below. At the same time, we will strive to maintain mutual trust and close, friendly relationships.

(1) Strive to strengthen and promote conformance with social norms, business ethics and laws.

(2) Place first priority on assuring safety, protection against disasters and effective environmental preservation(Cooperate in "Green" environmentally friendly purchasing and procurement activities, and at the same time, each person should have a consciousness of the importance of these issues.

(3) Conduct risk management activities such as paying attention for accurate and fair disclosure of information on assuring the delivery of safe and reliable products and taking speedy measures to deal with various contingencies

(4) Resperct for human rigths and promote anti-discriminatory practice. Comply with the labor standards of the International Labor Organization (ILO) and prohibit unfair labor practices.

(5) Protect against the disclosure of classified information, personal confidentiality and respect the rights of the third party's intellectual property.

(6) Pay attention to biodiversity preservstion.

(7) Avoid the purchase of conflict minerals that directly or indirectly finance or benefit armed groups in the Democratic Republic of the Congo or adjoing countries.

3. Supplier selection

The Company follows an open-door policy regarding its purchasing activities and globally seeks suppliers based on open, fair, impartial and equal-opportunity principles. The company selects suppliers in a rational and comprehensive manner, taking into consideration the following core considerations:

1. Globally competitive in product quality, price, delivery time and supply stability
2. Objective standards such as suppliers' management stability, reliability and technological superiority.
3. Matters as mentioned in "2. Promotion of corporate social responsibility" above

4. Development and review of the suppliers

The Company provides suppliers with the essential information necessary for transactions and also cooperates with suppliers' VA and VE improvement activities as well as in activities related to the maintenance and improvement of product and service quality. The Company also routinely or as necessary promotes evaluation and review of suppliers' performance.

＊VA:Value Analysis, VE:Value Engineering
Method for developing high value new products satisfying customers and improving existing products

- Shin-Etsu Group CSR Procurement Guidelines
- Supplier Hotline

Compliance with the Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors

Staff members in charge of purchasing and procurement attend seminars on the Subcontract Act to gain an understanding of the Act. We also conduct regular internal audits of subcontracting transactions to ensure full compliance with the Subcontract Act. In addition, we make sure that all the subcontractors that are subject to the Subcontract Act are in full compliance by periodically checking the details of existing transactions and reports on new transactions.

Internal auditing for compliance with the Act against Delay in Payment of Subcontract Proceeds, Etc. to Subcontractors (December 2018, Shin-Etsu Chemical Gunma Complex)

Initiatives Aimed at Eliminating the Use of Conflict Minerals

In our Basic Procurement Policy, the Group has declared our dedication to eliminating conflict minerals[1] from all product procurement. We ask that all suppliers adhere to this policy, and we regularly perform studies of pertinent minerals, tracking their production all the way back to the smeltery level.

1 Conflict minerals
Minerals used to fund armed groups in conflict areas in the Democratic Republic of the Congo and its neighboring countries. These conflict minerals are tantalum, tin, gold, tungsten, and their derivatives.

Procurement Audit

By asking business partners to reply to a supplier CSR procurement questionnaire, we confirm whether they conduct business activities in accordance with the Group's CSR Procurement Guidelines. Additionally, we visit suppliers in Japan and overseas whenever necessary to carry out audits.

Procurement Conferences

The Purchasing Department holds a company-wide meeting every six months with all purchasing department personnel company-wide to discuss material procurement. This meeting is not only for reporting material procurement but also for training purchasing department personnel according to the Guidelines for CSR Procurement and checking the status of CSR procurement as well as learning the latest examples of CSR Procurement inside and outside the Company.

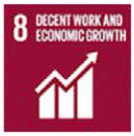
Procurement conference (March 2019, Shin-Etsu Chemical Head office)

Control of Chemical Substances Used as Raw Materials

The Group checks the ISO 14001 acquisition status of business partners and considers giving a priority to do business with suppliers that have ISO certification so as to purchase materials of lower environmental impact. On making contracts on specifications for raw material supply, we work to confirm the following.

- The suppliers' use of chemical substances that impact the environment in products and packaging, compliance with the relevant laws and regulations
- Compliance with the RoHS Directive
- Substance management using SDS / chemSHERPA

Key Issue 5: Respect for human rights, the development of human resources and the promotion of diversity



Policy

Establishment of The Shin-Etsu Group Human Rights Policy

The Shin-Etsu Group has been engaged in business activities based on an ongoing respect for human rights at all its business sites around the world. The Company's commitment to respecting human rights is outlined in The Shin-EtsuGroup Human Rights Policy, which is to be painstakingly implemented in the Group and communicated outside the Company.

The Shin-Etsu Group Human Rights Policy

Shin-Etsu Group (the "Group") engages in business based on its Business Principle, "The Group strictly complies with all laws and regulations, conducts fair business practices and contributes to people's daily lives as well as to the advance of industry and society by creating value through the provision of key materials and technologies." The foundation of this is respect for human rights. The Group respects the human rights of all individuals. All our Group companies worldwide respect human rights perpetually in accordance with the international code of conduct[1] and actively promote the following actions to respect human rights.

Respect for Human Rights

1. Prohibition of discrimination
We do not discriminate at all on the basis of nationality, race, ethnicity, gender, religion, personal views, beliefs, age, social status, disability, sexual orientation, gender identification, labor union participation, health, marital status, political opinion, or any other status.
2. Prohibition of damaging human dignity
We do not in any case conduct sexual harassment, power harassment, maternity harassment or any other acts that damage human dignity.
3. Protection of privacy
We protect the privacy of individuals and handle personal information properly in accordance with the applicable laws and regulations of each country.
4. Respect for basic labor rights
We respect the workers' right to organize, the right of collective bargaining, and further rights given to workers to establish, maintain, and improve trust and good cooperative relationships through dialogue between labor and management.
5. Prohibition of child labor and forced labor
We prohibit our operations in all countries and regions from using child labor in accordance with the applicable laws and regulations of each country. We also prohibit the use of forced labor.

1 "International code of conduct" follows:
The Universal Declaration of Human Rights, ILO International Labour Standards, UN Guiding Principles on Business and Human Rights, UN Global Compact's 10 Principles, etc.

Activities for Respecting Human Rights

1. Human rights awareness

The people responsible for human resources in each business site and company of the Group will strive to develop the proper understanding of human rights and awareness of respect for human rights through activities including education for employees on human rights.

2. Human resources development

The Group will create an environment in which diverse individuals can work at their full capacity and equally give all employees opportunities aligned with their aptitudes to develop and utilize their abilities.

3. Working environment

The Group will make efforts to create a sound and comfortable working environment and to ensure safety.

4. Prevention of human rights infringement

The Group will make efforts to prevent the infringement of human rights in the course of business activities by conducting human rights due diligence[1] in accordance with the UN Guiding Principles on Business and Human Rights.

5. Measures for handling issues

If there are concerns regarding human rights infringement in our business activities, the Group will take appropriate measures promptly to resolve them.

6. Promotion of respect for human rights

The Group will encourage all people associated with the Group to comply with international standards for human rights.

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1 "Human rights due diligence" means:
To regularly implement the identification, evaluation, preventative/corrective measures, investigation, monitoring, and information disclosure of human rights risks in accordance with the Group's human rights policy.

Established on May 21, 2019

Respect for Human Rights

Observance of International Labor Standards

The Group respects the human rights of employees in accordance with the international labor standards through the International Labour Organization (ILO), and never discriminates employees on the basis of race, age, gender, sexual orientation, ethnic or national origin, disabilities or religion.
To this end, the Company confirms with its consolidated companies every year whether respect of human rights, labor management, and employment are being appropriately implemented following laws and regulations in their respective countries and regions. In addition, when building a new plant, its impact on the region in terms of human rights is taken into consideration.

Confirmation Items concerning Respecting Human Rights

Prohibition of child labor, proper working hours, decent wages, proper employment contract in writing, prohibition of inhuman treatment, prohibition of discrimination, freedom of association

Efforts for human rights awareness

The Group has established a Human Rights Enlightenment Promotion Committee. This committee holds regular human rights awareness training for directors and employees. Human rights Q & A are serialized in our internal company newspaper, and we compile a human rights enlightenment motto to coincide with our annual human rights week in December.
Furthermore, the Company has been a member of both the Tokyo Industrial Federation for Human Rights and the Osaka Dowa / Human Rights Issues Industrial Federation and participates proactively in events held by both federations as well as training sessions held by administrative organizations.

Human rights awareness training (January 2019, Shin-Etsu Chemical Osaka Branch)

Education/Training and Personal Development

The Group supports employees to grow through various training systems. The training system has training for different staff grades, global communication training, auditing student system, environmental education, safety education and mental health education.

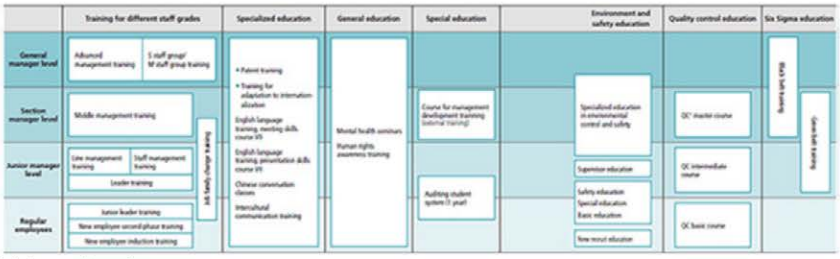
Global communication training

The Group is expanding its business activities throughout the world. Competency to communicate in foreign languages is therefore an essential skill for smooth operations. Therefore, the Company offers the following kinds of training.
- English language training (meeting skills course and presentation skills course)
- Cross-cultural communication training
- Chinese conversation classes

Auditing student system for employees

In 1962, the Company established an auditing student system for employees. Under the learning system with the goal of improving the workforce, up to about ten operators at manufacturing sites of the Group each year are chosen and sent to study at universities for one year. In the 56 years since the system was introduced, a total of 536 employees have completed the program and are now functioning in various workplaces.

Training system list



(click to enlarge)

Continuing Chinese languages classes

Du Yan, lecturer in Chinese

I have been in charge of Chinese-language classes at Shin-Etsu Chemical since about 20 years ago. At first, these classes were like an association of those who liked to study the language, and I taught language useful for travel and other things, such as about the history and culture of China and the disposition of Chinese people. But since four years ago, I have emphasized students' efforts to pursue their studies and reviewed the content of classes so that the language could be used for daily operations. The students are enthusiastic about learning Chinese, and some of them have passed the Chinese Proficiency Test. Recently, one student reported, "I was able to exchange emails with business partners in Chinese," and another said, "I was able to talk directly with people at the company I visited on a business trip, and the negotiations went well." I am very happy to receive such reports.
I will strive to teach Chinese in an easy-to-understand way so that students can use it effectively.

Chinese languages classes (May 2018, Shin-Etsu Chemical Head Office)

Performance-based Personnel Evaluation Systems and Equal Opportunities

The Group has introduced an employee evaluation system that emphasizes employee ability and work performance. This system is working for improving employees' motivation, as their treatment reflects their performance, attitude, and evaluations of how they meet their challenges to achieve higher goals.
To operate the personnel system in a fair and appropriate manner, evaluation training is provided for all managers who conduct performance review so that they can carry out personnel evaluations in a fair way.
Transparency is increased by making evaluation standards available and disclosing the results. In addition, there is a system of interviews between an evaluator and the person who is evaluated to ensure that they can communicate successfully.
During interviews, each staff member and his/her immediate supervisor are using Communication Sheets to ensure mutual awareness of the supervisor's expectations and are setting half-year goals. Furthermore, feedback on progress is given for further ability development.

Promotion of Diversity

Active promotion of diverse human resources

As a group engaged in business operations around the world, the Group hires local employees at overseas group companies and hires foreign nationals in Japan. The entire Group is also working to proactively employ people with disabilities and create environments where it is easy for them to work.
Furthermore, in order to promote women's participation and advancement, the Group has set a goal of 5 years from FY 2016 and is working on it. In FY2018, we achieved the target number of female managers.

Goals to promote women's participation and advancement

In the next five years from FY2016, the Company will target that:
1. The rate of hiring women is 40% for administrative positions and 10% for engineering positions.
2. The number of women in managerial positions including junior manager level will be doubled compared to the number in FY2014.

Changes in the number of female managers compared to the 2014 level

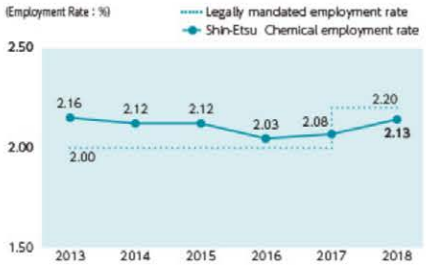
April 2017	April 2018	April 2019
Approx.150%	Approx.170%	Approx.220%

Raising retirement age

In April 2019, the Company raised the retirement age from 60 to 65 after continuing discussions with the Shin-Etsu Chemical Labor Union. It is the first system at a major Japanese chemical company. After age 60, 80% of salary at age 59 will be paid. In addition, raising and promotion based on personnel evaluation will also be implemented.
By adjusting the employment environment after the age of 60, skilled workers at manufacturing sites will be able to pass on the technology and experience to the next generation.

■ ESG data

Employment Rate of Persons with Disabilities




Wheelchair Ramps (Shin-Etsu Chemical Gunma Complex)

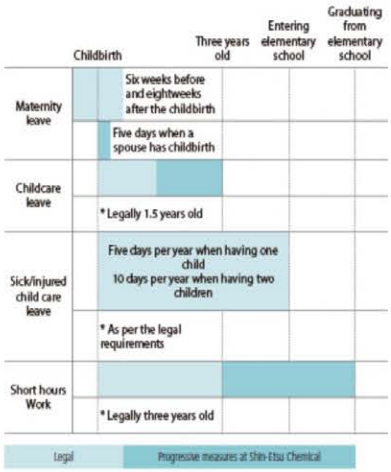
* The legally mandated employment rate has been 2.2% since April 2018.

System for work-life balance

Childcare support system

The Group supports employees having and raising children. The Company has published the Childbirth and Child Care Guidebook, which summarizes the governmental systems and procedures related to childbirth and child care. Employees can use the Company's childcare leave system for children up to three years old. About 40 employees on average use the childcare leave system in the Company and consolidated companies in Japan. In addition, employees can use the shorter working hour system and shorten their working hours for a maximum of two hours a day. This system can be used until children graduate from elementary school. Furthermore, three days of paid leave are granted when a spouse delivers a child.
Childcare is supported according to local laws and regulations in overseas Group companies.

Main system for childcare support (Shin-Etsu Chemical)



* Since October 2017, employees can take child care leave until their child becomes aged two, if they meet certain conditions.

Number of Employees Who have Taken Childcare Leave

	FY2014		FY2015		FY2016		FY2017		FY2018	
	Male	Female	Male	Female	Male	Female	Male	Female	Male	Female
Shin-Etsu Chemical (Non-consolidated)	2	8	0	6	0	9	0	8	0	11
Consolidated in Japan	5	52	2	42	0	44	0	39	1	35
Consolidated	56	86	44	73	68	72	77	69	90	100

* The length of childcare leave differs from country to country, as the program is based on local law.

Nursing care leave system

The Group has a nursing care leave system as shown in the chart on the right. The system enables employees to work in the Company while caring for elders. The Nursing Care Guidebook is issued in which all the necessary information on our nursing care system and care insurance is provided. Furthermore, we started "health care and nursing support" services in FY2014 and provide counseling by external experts.

Main system for the care system (Shin-Etsu Chemical)

	93 days		One year
Care leave			
	* Legally 93 days		
Measures such as short-time work, etc. *			
	* Legally 93 days		
Time off for nursing care	Five days per year when having one person to be cared for 10 days per year when having two persons to be cared for		
	* As per the legal requirements		

* Flextime system, measures to start/finish early or late

Legal | Progressive measures at Shin-Etsu Chemical

Number of people obtaining nursing care leave

	FY2014	FY2015	FY2016	FY2017	FY2018
Consolidated in Japan	3	3	1	2	0

Welfare and Benefits

Saved holidays system

If a certain number of annual paid holidays granted in accordance with labor regulations have expired without being taken, a certain number of days can be treated as saved holidays. Employees may use these saved holidays for nursing care, for injury or illness, for volunteer work for regional disasters or for donating organs or bone marrow transplants.

Counseling hot line for employees

As a counseling service for trouble with work or other issues, we have set up Dial Shin-Etsu, which is staffed by external counselors who are specialists from outside of the Company. Consultations are received anonymously and treated with strict confidentiality, but if requested by the consulter, the counselor will contact the Personnel and Labor Relations Department to discuss possible solutions.

Shinkansen commuting allowance system

Since 1989, the Group has allowed commuting by Shinkansen at company expense. This system is promoting more employees to own houses. It also enables personnel who are reassigned to head office from plants and other business sites in Gunma and Fukushima prefectures to transfer to jobs in Tokyo without changing their lifestyles. As of March 2018, 77 employees use this system.

Other systems

The Dr. Kanagawa scholarship was established in June 2012 for employees to study at St. Clark State College in Washington, USA for one year. This scholarship was enabled due to the trusting relationship which was built over many years between the College and our Chairman, Dr. Kanagawa.
In addition, we have established asset-building schemes, an employee shareholding system, and a mutual aid society to provide support for weddings, childbirth, and sudden hospitalization of family members.

Welfare and benefits facilities

We have dormitories and company housing near the head office and plants for employees who live outside the commuting area. We also have directly operated recreational facilities in Kanagawa, Shizuoka, Fukushima and Niigata prefectures. The Group's employees can use these facilities with family and friends. Furthermore, we have partnerships with external recreational facilities, and subsidies are given to the users.

Shin-Etsu Chemical Hakone Shinsensou (Kanagawa prefecture)

Labor-management Relations

The Company engages in various dialogues with the Shin-Etsu Chemical Labor Union to promote mutual understanding between labor and management. The Central Labor-Management Meeting is held once a month at the head office attended by top management. They engage in thorough discussions with labor union regarding subjects such as management policy, and outline information about individual businesses, and the personnel system. Also, each business site holds a monthly Local Labor Meeting with the local branch of the Shin-Etsu Chemical Labor Union.
Repeated dialogues and discussions between labor and management deepen mutual understanding and trust and facilitate the expansion of business operations in which staff and management can come together to carry out speedy responses to the changing business environment.

* Personnel subject to CSR Key Issue 5 in the Shin-Etsu Group are the employees of and loaned employees from Shin-Etsu Chemical.

■ ESG Data

Key Issue 6: Respect for and protection of intellectual property

Policy

The Group will respect all intellectual property and manage information assets appropriately.

Intellectual Property Management

The Company has established the Basic Regulations for Intellectual Property which has set regulations regarding acquisition, management, and utilization of intellectual property. On the basis of these regulations, we acquire useful intellectual property with high exclusivity and we proect such intellectual property from infringement by third parties. These regulations also require respect for the rights regarding all intellectual property of third parties.
Moreover, information in forms such as an annual report is disclosed to allow all persons involved with the Group to have a precise collection of the status of the Group's intellectual property assets. In addition, employees who have devised useful inventions, improvements and devices in business have been awarded in systems such as the following.

Actual compensation awards

A system to recognize and award employees who greatly contributed to the company by creating an invention or idea which brought great profit to the company in the form of patents

Multiple inventor awards

A system to recognize employees who have made a large number of inventions and who have acquired a large number of patent rights in the Company

■ ESG Data

Selected as a "Top 100 Global Innovator" for the eighth consecutive year

For the eighth consecutive year, the Company has been awarded the Top 100 Global Innovator 2018, which identifies and celebrates the world's most innovative companies and organizations.
The award is granted by Clarivate Analytics (United States)—a global information services company that analyzes intellectual property and patent trends based on its patent data— to the world's leading companies and organizations engaged in protecting original inventions with intellectual property rights, and successfully commercializing them.

From the left: Clarisato Analytics Co., Ltd. Director: Atsuko Tanahashi, Company director in charge of patent relations Toshio Shiohara, Company General Manager of Patents: Toru Kubota(March 2019, Shin-Etsu Chemical head office)

Initiatives for Information Asset Management

For daily business operations and smooth communication, it is extremely important to use information assets effectively. On the other hand, the risk of information being leaked or otherwise mishandled is growing due to inappropriate management of information assets. For this reason, all personnel who handle information are required to understand the importance of information assets and manage and use them properly. In case of emergencies, by preventing its expansion and effects on other operations, they must make the greatest possible effort to maintain information security on a Group-wide basis.
Regulations are set under the Information Asset Management Basic Policy to protect, utilize, control and manage information assets.
Furthermore, related rules and regulations such as Information Asset Management Standards set details concerning, handling, management, retention period and discarding of all the information concerning our customers and suppliers. In addition, we have formulated the Standards for Preventing Technology Leaks in order to prevent the outflow of technologies.
We also carry out training and implementation related to the Information Asset Management Department, regularly conduct checks on the status of compliance with the Information Asset Management Regulations and other regulations, and perform internal audits.

Protection of Personal Information

In order to properly protect personal information in accordance with the Act on the Protection of Personal Information, we have established our Privacy Policy, which is available on our website.
Moreover, we have been providing education on law and regulations and holding lectures regarding personal information protection in trainings for each staff grade in order to ensure the appropriate handling and protection of personal information.
Group companies in the EU area comply with the EU's General Data Protection Regulation (GDPR)[1], which came into force in May 2018.

1 General Data Protection Regulation (GDPR)
The General Data Protection Regulation stipulates on the handling and transfer of personal information. EU member countries had their own regulations to protect personal data, and these regulations were unified under the General Data Protection Regulation in May 2018.

Cyber Security

In preparation for cyber-attacks, we have bolstered our surveillance system with an intrusion detection service that operates 24 hours a day, 365 days a year, receive security diagnoses from outside contractors, and continue to take necessary security measures.
We have also deployed a system for preventing targeted email attacks. In addition to measures for preventing intrusions, we are strengthening our measures for detecting and analyzing attacks. Furthermore, we have separated the information network from the control network to minimize the impact of any incidents.
We also conduct targeted email attack drills every year to raise security awareness of employees while establishing a system to respond to possible incidents.

Key Issue 7: Contribution to industry and social initiatives

Policy

The Group is promoting communication with local communities in order to build relationships of trust with a wide range of stakeholders in society.

Fundraising for U.N. World Refugee Day

Japan

UNHCR (Office of the United Nations High Commissioner for Refugees) supports world refugees who are driven out of their homes by conflict, persecution and disaster.
Since 2006, the Group have supported world refugees through the collection of donations in the company for World Refugee Day (June 20), which was established by The United Nations, and we have donated them to the UNHCR through the Japan Association for UNHCR. Furthermore, we have implemented matching gift programs since 2012.

Hosting of the Great East Japan Earthquake Disaster Relief Marché

Japan

Every March, the Great East Japan Earthquake Disaster Relief Marche has been held since 2012 at Asahi Seimei Ohtemachi Building where the Shin-Etsu Chemical Head Office is located. In cooperation with Shin-Etsu Chemical and Shin-Etsu Handotai Co., Ltd., local specialties from Fukushima, Iwate, and Miyagi prefectures are sold. This is a way of supporting disaster relief activities while our being in Tokyo.

Summer School for Elementary School Student (Naoetsu)

Japan

The Naoetsu Plant has held an annual summer school, organized mainly by new employees, for local children in the upper grades of elementary school since 1975. The program is a two-hour program, with the first half learning and the second half recreational.

Contribution to Society Activities at Overseas Group Company

Shintech Inc. Contribution to society activities

Rick Gros

Site Services Manager,

Shintech Louisiana, LLC

Since before startup of the first Shintech Louisiana plant in 2000, the company has been actively involved in organizations, sponsorships, leadership development, and civic activities that further the development and success of the communities in which we live and work.

Several Shintech employees and contractors returned to "Safety Town" for the ninth year in a row. "Safety Town" is a safety program designed for kindergartners to help educate them in the proper way to cross streets, ride bikes, handle emergencies (such as home fires) and other safety related issues.

Furthermore, for the past seven years, the employees of Shintech Louisiana, LLC, SE Tylose LA, LLC and many of the plant contractors have collected toys during the Christmas holidays to benefit Children's Hospital in Baton Rouge. A group representing Shintech and SE Tylose employees and contractors has made the annual delivery of toys to the hospital. The hospital playroom is a special place for children to relax, socialize and enjoy an array of fun and educational activities. With Shintech and SE Tylose's help, the playroom is now stocked with enough games, toys, and electronic equipment for children of all ages to enjoy.

Community involvement is important to the longterm success of Shintech. It benefits the long-term well-being of our employees, our families, our friends and those who will both join us and succeed us as we continue to grow. As a recognized good neighbor, it is our privilege to be located in our community, and we work hard to support those around us.

Key Issue 8: Accurate and timely information disclosure and communication with stakeholders

Policy

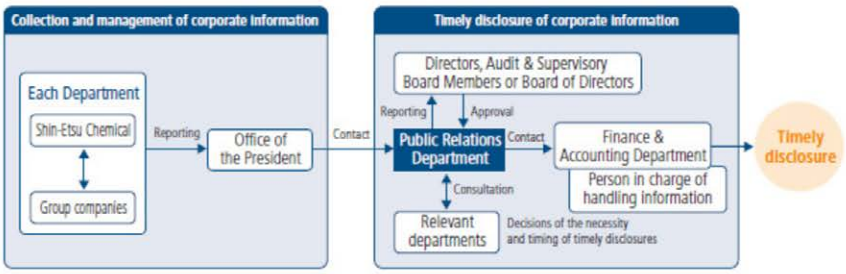
The Group will use various opportunities to continue dialogues with stakeholders.

Information Disclosure

TThe Group believes the appropriate and timely disclosure of company information promotes of stakeholder understanding, and also leads to proper evaluations of the market.
In accordance with the regulations regarding information disclosure set by the stock exchange and the Financial Instruments and Exchange Act, the Company has formulated internal regulations regarding collection, management, and timely disclosure of corporate information. These regulations include the Regulations on Timely Disclosure of Corporate Information and the Rules on Regulation of Insider Trading. These rules are communicated to all of the departments in the Company and Group companies to promote smooth and timely disclosure.
For non-financial information, we are actively making voluntary disclosures such as posting information on the Company's website, publicizing through the news media, the Annual Report, financial statements and other reports.

■ Investors

State of the internal system for timely disclosure



Presentations to individual investors
(October 2018, Shin-Etsu Chemical Head Office)

Dialogue with Stakeholders

The Group, through a variety of methods and opportunities, is carrying out an active dialogue with stakeholders. We believe that this effort contributes to a sustainable growth of the Group and increases corporate value.

Major communication method and opportunity

Shareholders and Investors
General Shareholders' Meeting Earnings presentations and conference call for analysts and institutional investors (4 times a year) Plant tour for analysts and institutional investors (once a year) One-on-one meetings with analysts (about 300 times a year) Small meetings and conferences hosted by securities companies (6 times: FY2018) Presentations to individual investors. (6 times : FY2018) Information provided by the homepage, Annual Report, etc.
Customers
Day-to-day communications by sales representatives Information provided by the homepage, exhibitions, etc.
Suppliers
Day-to-day communications by the Purchasing Department Supplier Hotline
Local communities
Dialogue with bodies such as local governments Participation in local events
Employees
Dialogue and consultation with Labor Unions Information provided by the company magazine and intranet

Plant tour for securities analysts and institutional investors
(January 2018, Shin-Etsu Chemical Naoetsu plant)

Customer-sponsored Responsible Care Seminar
(May 2019)

Responsible Care regional dialogue
(February 2019, Shin-Etsu Chemical Kashima plant)

Participation in the Ministry of the Environment's Environmental Reporting Platform Development Pilot Project

The Company has participated in the Environmental Reporting Platform Development Pilot Project hosted by the Ministry of the Environment since 2013. Following the global trend, it is expected that in Japan, too, ESG investments[1] will expand in the future. Today, however, companies disclose non-financial information which provide materials for investment decisions, at their own discretion, so it is difficult for investors to obtain and compare information equally. In 2013, in order to improve this situation, the Ministry of the Environment led the world in building a system to disclose non-financial information, particularly environmental information, and began verification tests of the system. This system is expected to allow companies to disclose non-financial information in a format that enables investors to compare it with information from others and promote active dialogues between companies and investors and other stakeholders.
We hope that investors and many other stakeholders will inspect the information disclosed under this project and obtain a deeper understanding of our CSR initiatives.

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1 ESG investment
An investment method in which investors pay attention to not only corporate financial information, but also to non-financial information, such as initiatives for the environment (E), social (S), and governance (G).

Reference

- Participating companies in the Environmental Reporting Platform Development Pilot Project in FY2016 and invitation of applications from investors and the like (only Japanese available)
(Ministry of the Environment's news release dated June 20, 2016)
- ESG dialogue platform for the Environmental Reporting Platform Development Pilot Project

Corporate Goverenance

Aspect	Classification	Scope	Unit	FY2016	FY2017	FY2018
Number of Board Directors	Directors	Non-consolidated	Persons	23	22	22
	Outside directors	Non-consolidated	Persons	4	4	4
	Women on the board	Non-consolidated	Persons	0	0	0
Number of Audit & Supervisory Boards	Audit & Supervisory Boards	Non-consolidated	Persons	5	5	5
	Outside Audit & Supervisory Boards	Non-consolidated	Persons	3	3	3
	Women on the Audit & Supervisory Boards	Non-consolidated	Persons	0	0	0
Structure of Officers' Remuneration Committee	Independent outside directors ratio	Non-consolidated	%	20	20	20
Remuneration of directors	Excluding outside directors	Non-consolidated	Millions of yen	1,539	1,615	1,635
Remuneration of Audit & Supervisory Boards	Excluding the Audit & Supervisory Boards	Non-consolidated	Millions of yen	40	40	40
Remuneration of Outside directors and the Audit & Supervisory Boards		Non-consolidated	Millions of yen	155	149	149
Payments of income taxes		Consolidated in Japan	Millions of yen	46,203	49,987	69,274
		Consolidated in overseas	Millions of yen	16,692	24,804	52,314
Amount of political contributions		Non-consolidated	Millions of yen	0	2	2

* Please refer to Investors for details on financial information.

The foundation of all activities: legal compliance, fair corporate activities

Aspect	Classification	Scope	Unit	FY2016	FY2017	FY2018
Number of violators of the Anti-Bribery Regulations		Consolidated	Persons	-	0	0
Total costs of penalties regarding corruption		Consolidated	Yen	-	0	0

Key Issue 1: Employees and contractor health and safety

Aspect	Classification	Scope	Unit	FY2016	FY2017	FY2018
Management	OHSAS18001 certification ratio[1](Employees)	Consolidated manufacturing companies	%	32	38	39
Occupational health and safety	Number participants in safety training (Total number of persons)	Non-consolidated	Persons	7,970	9,751	11,774
		Consolidated	Persons	22,166	24,829	28,013
	Lost-time incident rate[2]	Group companies in Japan[3]	-	0.17	0.13	0.16
		Industry average (JCIA)	-	0.35	0.36	0.30
	Rate of accidents not accompanied by an of absence a day[2]	Group companies in Japan	-	0.82	0.50	0.74
	Lost-time injuries severity rate[2]	Non-consolidated	-	0.05	0.00	0.01
		Industry average (JCIA)	-	0.009	0.035	0.026
	Number of work-related employee fatalities	Consolidated	Persons	0	0	0

1 OHSAS18001 certification ratio
The plants which does not have OHSAS18001 certification has a occupational health and safety management system the same level as OHSAS18001.
2 Lost-time incident rate and Rate of accidents not accompanied by an of absence a day and Lost-time injuries severity rate
These were calculated in calender year.
3 Group companies in Japan
This is subject to consolidated companies and some companies which are exempt from consolidation in Japan.

Key Issue 2: Energy-saving, resource-saving and the reduction of the environmental impact

Aspect	Classification	Scope	Unit	FY2016	FY2017	FY2018
Management	ISO14001 certification ratio[1] (Plants)	Non-consolidated	%	100	100	100
		Consolidated plants	%	65	67	70
	Total costs of environmental fines and penalties	Shin-Etsu Chemical	Yen	0	0	0
		Consolidated in Japan	Yen	0	0	0
Response to climate change	GHG Scope1 emissions	The Group[2]	Thousand tons of CO_2e	1,650	1,734	1,696
	GHG Scope2 emissions	The Group	Thousand tons of CO_2e	3,264	3,510	3,507
	GHG Scope3 emissions	The Group	Thousand tons of CO_2e	14,803	16,754	16,892
Water resource conservation	Warer use[3]	Non-consolidated	Million m^3	414	429	436
		The Group	Million m^3	2,154	2,222	2,258
	Water withdrawals	Non-consolidated	Million m^3	19	20	19
		The Group	Million m^3	189	196	190
	Water recycle	Non-consolidated	Million m^3	396	410	416
		The Group	Million m^3	1,965	2,026	2,068
	Water recycle ratio	Non-consolidated	%	96	95	96
		The Group	%	91	91	92
	Water discharge	Non-consolidated	Million m^3	19	20	20
		The Group	Million m^3	179	187	182
Air emissions	Soot	Non-consolidated	t	11	13	18
		The Group	t	19	47	71
	NOx	Non-consolidated	t	512	541	508
		The Group	t	1,010	1,046	974
	SOx	Non-consolidated	t	20	30	24
		The Group	t	130	154	147
	VOC[4]	Non-consolidated	t	193	268	293

1 ISO14001 certification ratio
The plants which does not have ISO14001 certification has a occupational health and safety management system the same level as ISO14001
2 The Group
This is subject to consolidated companies and some companies which are exempt from consolidation.
3 Warer use
Amount of water withdrawals and water discharge
4 VOC
VOC emissions increased since revised estimated object substance from FY2017.
* Please refer to the Environmental Data for more details on Environmental Data.

Key Issue 3: Product quality improvements and product safety control

Aspect	Classification	Scope	Unit	FY2016	FY2017	FY2018
Product safety training	Number participants (Total number of persons)	Non-consolidated	Persons	7,970	9,751	11,774
		Consolidated	Persons	22,166	19,593	21,170

Key Issue 5: Respect for human rights, the development of human resources and the promotion of diversity

Aspect	Classification	Scope	Unit	FY2016	FY2017	FY2018
Employees	Number of employees by region	Japan	Persons	8,020	8,160	8,381
		Asia/Oceania	Persons	7,026	7,623	8,689
		Latin America	Persons	0	0	0
		United States	Persons	2,738	2,916	3,149
		Europe	Persons	1,422	1,456	1,516
		Consolidated	Persons	19,206	20,155	21,735
	Number of employees (male)	Consolidated	Persons	14,188	14,695	15,770
	Number of employees (female)	Consolidated	Persons	5,018	5,460	5,965
	Turnover rates	Non-consolidated	%	-	0.6	0.9
		Consolidated	%	-	11.1	13.0
	Voluntary turnover rates	Non-consolidated	%	0.8	0.4	0.7
		Consolidated	%	9.6	10.6	12.7
Human rights	Number of child labour	Consolidated	Persons	0	0	0
	Number of forced labour	Consolidated	Persons	0	0	0
Diversity	Employment rate of persons with disabilities	Non-consolidated	%	2.03	2.08	2.13
	The number of women in managerial positions including junior manager level	Non-consolidated	Persons	27	33	41
		Consolidated	Persons	-	324	392

Work-life balance	Number of employees who have taken childcare leave[1] (female)	Non-consolidated	Persons	9	8	11
		Consolidated	Persons	72	69	100
		Consolidated in Japan	Persons	44	39	35
		Consolidated in overseas	Persons	28	30	65
	Number of employees who have taken childcare leave (male)	Non-consolidated	Persons	0	0	0
		Consolidated	Persons	68	77	90
		Consolidated in Japan	Persons	0	0	1
		Consolidated in overseas	Persons	68	77	89
	Number of people obtaining nursing care leave	Consolidated in Japan	Persons	1	2	0

1 Number of employees who have taken childcare leave
The length of childcare leave differs from country to country, as the program is based on local law.

Key Issue 6: Respect for and protection of intellectual property

Aspect	Classification	Scope	Unit	FY2016	FY2017	FY2018
Patents acquired	Japan	Main group companies[1]	Number of patents	697	591	577
	Overseas	Main group companies	Number of patents	1,325	1,591	1,202
	Asia/Oceania	Main group companies	Number of patents	642	724	543
	North America	Main group companies	Number of patents	220	265	220
	Europe	Main group companies	Number of patents	458	595	435
	Other	Main group companies	Number of patents	5	7	4
	Total	Main group companies	Number of patents	2,022	2,182	1,779
Patents held	Japan	Main group companies	Number of patents	7,355	7,562	7,702
	Overseas	Main group companies	Number of patents	10,951	12,007	12,671
	Asia/Oceania	Main group companies	Number of patents	4,707	5,314	5,707
	North America	Main group companies	Number of patents	2,924	3,077	3,162
	Europe	Main group companies	Number of patents	3,286	3,578	3,755
	Other	Main group companies	Number of patents	34	38	47
	Total	Main group companies	Number of patents	18,306	19,569	20,373

1 Main group companies
This is subject to main manufacturing companies and some manufacturing companies which are exempt from consolidation.

Key Issue 7: Contribution to industry and social initiatives

Aspect	Classification	Scope	Unit	FY2016	FY2017	FY2018
Total Amount of donations		Consolidated	Millions of yen	98	82	118

レスポンシブル・ケア®

「信越化学サステナビリティレポート2019」

第三者検証 意見書

2019年7月30日

信越化学工業株式会社
代表取締役社長　斉藤 恭彦　殿

一般社団法人　日本化学工業協会
レスポンシブル・ケア検証センター長
永松 茂樹

■検証の目的

本検証は、信越化学工業株式会社が作成した「信越化学サステナビリティレポート2019」（以後、報告書と略す）に記載された下記の事項について、レスポンシブル・ケア検証センターが化学業界の専門家の意見を表明することを目的としています。

1) パフォーマンス指標（数値）の算出・集計方法の合理性及び数値の正確性
2) 数値以外の記載情報の正確性
3) レスポンシブル・ケア活動の内容
4) 報告書の特徴

■検証の手順

・本社において、各サイト（事業所、工場等）から報告される数値の集計方法の合理性、及び数値以外の記載情報の正確性について調査を行いました。 調査は、報告書の内容について各業務責任者及び報告書作成責任者に質問すること、並びに彼らより資料提示と説明を受けることにより行いました。
・直江津工場において、本社に報告する数値の算出方法の合理性、数値の正確性、及び数値以外の記載情報の正確性の調査を行いました。調査は、各業務責任者及び報告書作成責任者に質問すること、資料提示・説明を受けること、並びに現地での現物確認を含む証拠物件との照合により行いました。
・数値及び記載情報の調査についてはサンプリング手法を適用しました。

■意見

1) パフォーマンス指標（数値）の算出・集計方法の合理性及び数値の正確性について
・数値の算出・集計方法は、本社及び直江津工場において、合理的な方法を採用しています。
・調査した範囲において、パフォーマンスの数値は正確に算出・集計されています。

2) 数値以外の記載情報の正確性について
・報告書に記載された情報は、正確であることを確認しました。原案段階では表現の適切性あるいは用語の整合性等に関し、若干問題があることを指摘しましたが、現報告書では修正されており、現在修正すべき重要な事項は認められません。

3) レスポンシブル・ケア活動の内容について
・CSR活動では、法令遵守・公正な企業活動、安全・健康、環境、品質、人間尊重、知的財産尊重、社会貢献、情報開示・対話など各課題を明示し、着実に実行されていることを評価します。特に温室効果ガスの削減では、目標を達成するとともに、スコープ3の集計をいち早く行い、情報開示を行っていることを評価します。
・保安防災では、非定常作業の安全対策の確立を目指し、継続して対策の実効性・高度化を図っていること、また、環境保安監査で更なる改善を指摘し、高度な安全、リスク低減を目指していることを評価します。
・直江津工場では、ポカミス防止に向けた取り組み、手順HAZOPによるプロセス・操作の問題点の抽出・対策の検討等を毎月開催のゼロ災担当者会議で数件ずつ発表し、事例の共有化・水平展開を図っていること、ヒヤリハット活動も活発で、改善提案と連結させ実効を挙げていることを評価します。

4) 報告書の特徴について
・ESG活動および持続可能な開発目標SDGsに対する取り組みの強化を図るべく、CSRレポートを発展的に見直し、サステナビリティレポートと装いを新たに発行しています。全体の構成が分かり易く、読み易くなっています。本レポートはWeb版として発行されていますが、PDF版のダウンロードも可能にしています。

- 以 上 -

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