2007 Environmental and Social Report
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Shin-Etsu Chemical Co., Ltd.
6-1, Otemachi 2-chome, Chiyoda-ku, Tokyo 100-0004, Japan
URL: http://www.shinetsu.co.jp/

For further information regarding this report, please contact the Public Relations Department, Shin-Etsu Chemical Co., Ltd.

Phone: +81-3-3246-5091 Fax: +81-3-3246-5096

E-mail: sec-pr@shinetsu.jp

Your opinions, inquiries, and request regarding this report are welcomed at our website:

URL: http://www.shinetsu.co.jp/e/profile/kankyo.shtml

Shin-Etsu Chemical Environmental and Social Report





Shin-Etsu Chemical Environmental and Social Report 2007

# **CSR Vision**

The Shin-Etsu Group aims to increase its corporate value in both economic and social terms while upholding the *respect for human dignity*, and giving top *safety and environmental protection-first*, as basic guiding principles for its CSR activities.

# **Corporate Mission Statement**

To contribute to people's daily lives as well as to the advance of industry and society providing *key materials* and technologies.

# Basic Policies Concerning Corporate Social Responsibility (CSR)

The Shin-Etsu Group's mission is to contribute to people's daily lives as well as to the advance of industry and society providing *key materials* and technology. To ensure that all companies in the group achieve this, Shin-Etsu places utmost priority on such core business principles as product quality and safety, fair competition, good relationships with the public and governments, careful management and protection of customer data, and sound business practices. By acting in accordance with these principles, Shin-Etsu ensures steady growth, and greater worth for the whole Group.

The Shin-Etsu Group continues to promote corporate activities while focusing on environments based on our commitment, *safety and environmental protection-first*, and strive for being trusted by our stakeholders.

Respecting for buman dignity and achieving fulfillment in life, Shin-Etsu endeavors to create a work environment in which all employees can perform their jobs easily and effectively and fully realize their potential. We forbid any discrimination the workplace, any use of compulsory labor and any use of child labor.

The Shin-Etsu Group is committed to contributing to society and to disclosing accurate and timely information to the public about the business activities and position of the Group so as to continue to gain the trust and understanding of society.

# **Editorial Policy**

This Environmental and Social Report has been prepared to inform you of the environmental activities and achievements of the Shin-Etsu Group and our approach to CSR. The Report also provides an overview of our Responsible Care activities. In the section introducing the environmental activities of Group companies, Nagano Electronics Industrial Co., Ltd. is included for the first time in addition to Shin-Etsu Handotai Co., Ltd., JAPAN VAM & POVAL CO., LTD., Nissin Chemical Industry Co., Ltd., Shin-Etsu Quartz Products Co., Ltd. and Shinano Electric Refining Co., Ltd. in this Report (p.33-36). In editing the report, we have referred to the "Environmental Accounting Guidelines" and "Environmental Reporting Guidelines" prepared by the Ministry of the Environment, Japan.

#### Period covered by the Report

From April 1, 2006 to March 31, 2007 (Regarding the challenges and approaches mentioned, some information to cover the near future is also included.)

#### Organizations covered by the Report

Shin-Etsu Chemical Co., Ltd. and the Shin-Etsu Group companies are all covered.

The scope of the data collection carried out is as follows:

#### 1. Environmental Activity Report

11 Companies: Shin-Etsu Chemical Co., Ltd., Shin-Etsu Handotai Co., Ltd., Nagano Electronics Industrial Co., Ltd., Naoetsu Electronics Co., Ltd., Mimasu Semiconductor Industry Co., Ltd., Shin-Etsu Quartz Products Co., Ltd., Yamagata Shin-Etsu Quartz Co., Ltd., Fukui Shin-Etsu Quartz Co., Ltd., Fukui Shin-Etsu Quartz Co., Ltd., Nissin Chemical Industry Co., Ltd., JAPAN VAM & POVAL CO., LTD. and Shinano Electric Refining Co., Ltd.

# 2. Environmental Accounting Shin-Etsu Chemical Co., Ltd.

#### 3. Sociality

Shin-Etsu Chemical Co., Ltd. and consolidated accounting companies, including those overseas but excluding the Shin-Etsu Polymer Group, are all covered.

- \* For the report of the Shin-Etsu Polymer Group, please refer to the "Shin-Etsu Polymer Group Environmental and Social Report, 2007."
- \* For the publishing date, the division in charge of publishing, contact point and URL, etc., please see the reverse cover.

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# **Message from the President and CEO**

# Contributing to people's daily lives as well as to the advance of industry and society through the provision of key materials and technologies



President and CFO

On the occasion of the publication of the "Shin-Etsu Chemical Environment and Social Report of 2007," I would like to report to you on the environmental and social activities of the Shin-Etsu Group:

The mission of the Shin-Etsu Group is "to contribute to people's daily lives as well as to the advance of industry and society by providing key materials and technologies."

We strive to pursue the basic management principle of contributing to society by making a profit from our operations and paying taxes. Our operations are based on fair and equitable business practices, and are in strict compliance with each host nation's laws and regulations. Based on this principle, we are managing the company in order to increase the worth of the Shin-Etsu Group and thereby meet the expectations of our shareholders.

#### Safety-first is our top priority

Every year the Shin-Etsu Group has consistently placed the utmost priority on safety-first as its top management goal for all its business operations. We have focused on safety and accident-free plant operations by throughly spreading the idea throughout our Group companies that we should never sacrifice safety in any of our efforts to improve productivity and promote rationalization.

Nevertheless, on March 20, 2007, 17 people regrettably were injured in an accident involving an explosion and subsequent fire that occurred at Shin-Etsu Chemical's methyl-cellulose manufacturing facility at its Naoetsu Plant in Niigata Prefecture, Japan. I deeply apologize and express my apologies to all those affected by this accident, including local residents, business partners and shareholders as well as our employees, and for the trouble and anxiety it caused. We continue to do our utmost to provide injured persons with the best possible treatment for the rapid recovery. Moreover, soon after the accident, we went back to the basics of plant safety by thoroughly reviewing safety measures at all of our plants with a firm determination to prevent any recurrence.

We also conducted in-depth research into all close-call incidents throughout our Group companies that might have potentially developed into serious accidents. The results were announced on our website in order to help strengthen our conand urge all of our employees to sharpen their sensitivity to safety during their daily work so that they as well as local residents can

#### Towards a sustainable society

The Shin-Etsu Group considers it our mission to help achieve a sustainable economy and society by effectively utilizing our limited resources, not only for products but also in manufacturing, research and development, and all other corporate activities, while always keeping the environment foremost in mind. Since the Kyoto Protocol went into effect, both the Japanese government and the private sector have been working on ways to reduce greenhouse gas emissions. The Shin-Etsu Group has also launched full-scale efforts to address this problem. We continue to proactively promote the development of zero-emission technology and actively participate in Responsible Care (RC) -- an initiative developed by the nation's chemical industry to voluntarily resolve environmental and safety issues.

Products from the Shin-Etsu Group are widely used in a broad range of industrial fields as well as in our daily life. With this in mind, we are focusing our efforts on manufacturing products in compliance with all applicable environmental regulations and standards. In recent years, more stringent environmental regulations for chemical materials have come into force with the enforcement of the European Union RoHS Directive, which restricts the use of certain hazardous substances in electric and electronic equipment. We were quick to adapt to this trend, and have focused on manufacturing products that live up to the trust of our global customers as well as our consumer end-users.

# Human resources are our most valuable assets

Prioritizing safety above all also means providing employees with a safe and healthy work environment. Human resources are, naturally, the most valuable resources and assets of the Shin-Etsu Group, and employees who create and foster original ideas and businesses are the foundation of our prosperity. We were also among the first to introduce a highly transparent personnel merit system that encourages every employee to work hard to pursue high goal with a bright hope for the future.

#### Corporate governance and internal controls

As one other key managerial issue, we are also actively working

from an independent perspective. To ensure objective audits, three of the five corporate auditors are external and conduct inspections of the business and management activities based on their own expertise and experience.

We are now preparing to comply with the Japanese version of the U.S. Sarbanes-Oxley Law, which aims to improve the accounting audit and to reinforce internal controls.

The Shin-Etsu Group will continue striving to put our total efforts into contributing to people's daily lives and to the advance of industry and society by providing products and technologies that emerge from our business operations based on safety as our first priority and fair business practices.

> October 2007 President and CEO Shin-Etsu Chemical Co., Ltd.

C. Kanagawa

sciousness on the importance of safety measures -- both within on strengthening corporate governance. In practical terms, four and outside the Group companies. In continuing such efforts, we out of 20 Shin-Etsu Chemical executives are external board intend to swiftly adopt strong measures for safer plant operations members, who supervise and advise the management group

# Report on the Naoetsu Plant Accident and Reinforced Safety Measures Adopted

On March 20th, at 4:26 p.m., an accident involving an explosion and subsequent fire occurred at a cellulose derivatives manufacturing facility within Shin-Etsu Chemical's Naoetsu Plant. Shin-Etsu Chemical deeply apologizes for the great trouble and anxiety that this accident has caused to many people, including local residents, our customers and our shareholders. We would like to explain here when and how it occurred and what measures we took in the aftermath of the accident.



The cellulose manufacturing facility just after the accident (March 200

# When the Accident Occurred

The accident occurred at the MC-II plant, one of the methylcellulose manufacturing facilities located at the northern end of the Naoetsu Plant, which is located in Joetsu City, Niigata Prefecture. At 4:26 p.m. on March 20th, an explosion occurred at the MC-II plant followed by a fire, which was extinguished at 11:11 p.m. the same day.

Seventeen people who were working at the site were injured in this accident (three critically, five seriously, and nine with minor injuries). On the following day, March 21st, staff members of the Naoetsu Plant visited 394 homes in the vicinity of the plant to convey the company's apologies and check on any damage that might have been caused by the accident. They confirmed one case of minor injury and 22 cases of damage to windows and doors, including broken window glass.

Shin-Etsu Chemical's President and CEO Chihiro Kanagawa held press conferences at Shin-Etsu Chemical's Head Office in Tokyo on the 22nd and in Joetsu City on the 23rd and formally apologized for the accident. President Kanagawa stated, "I am very concerned about the conditions of those people who were injured in this accident, and our company will do its best to see that they will be able to receive the best medical care possible. In addition, we will do our utmost to support the families of those who were injured, and will do our best to assist the local residents who were troubled by the need for an emergency evacuation and in other ways." Because he felt a heavy sense of responsibility as the CEO of Shin-Etsu Chemical, President

The Timeline	The Timeline of the Accident and Its Aftermath				
<b>March 20 (Tues.)</b> 4:26 p.m.	An explosion and subsequent fire accident occurred at the MC-II plant of the Naoetsu Plant.	March 26 (Mon.)	President Kanagawa instructed the company and all production affiliates in the Shin-Etsu Group to carry out a systematic review of all plant safety measures.		
5:30 p.m. 11:11 p.m.	All manufacturing facilities of the Naoetsu Plant were shut down. The Accident Countermeasures Headquarters was set up. The fire was extinguished.	April 14 (Sat.) to April 17 (Tues.)	The company obtained the understanding of local area residents for the plant to restart the operations of its cellulose manufacturing facilities.		
March 21 (Wed.)	The relevant authorities started an on-site investigation.	May 1 (Tues.)	Potentially close-call incidents were posted on our website.		
	Staff members of the Naoetsu Plant visited 394 homes of local residents to convey the company's apologies and check on any damage that might have been caused by the accident.	May 16 (Wed.)	The Joetsu Fire Department held "an experts meeting to assess the cause (s) of the accident and evaluate measures to prevent the recurrence of similar accidents."		
March 23 (Fri.)	The Accident Investigation and Safety Measure Committee was set up within the Accident Countermeasures Headquarters.	May 21 (Mon.)	The governmental authorities lifted the order to suspend operations of some of the cellulose manufacturing facilities.		
March 25 (Sun.)	All Naoetsu Plant manufacturing facilities other than the cellulose manufacturing facilities restarted operations.	May 22 (Tues.)	The cellulose manufacturing facilities sequentially restarted operations after receiving the permission of the relevant governmental authorities.		

Kanagawa also announced that he was going to voluntarily return 50 percent of his monthly salary for six months starting from March.

#### Accident Investigation and Safety Measure Committee set up

As soon as the accident occurred, Shin-Etsu Chemical established an Accident Countermeasures Headquarters that was put in charge of the company's efforts to assist the injured persons, assure the safety of local residents, and collect all accident-related information and communicate it both within and outside of the company.

On March 23, for the purpose of conducting an investigation to determine the cause or causes of the accident at the Naoetsu Plant and also to review and reinforce all safety measures, Shin-Etsu Chemical set up an Accident Investigation and Safety Measure Committee within the Accident Countermeasures Headquarters. The committee was headed by then-Senior Managing Director Fumio Akiya and Managing Director Kiichi Habata The committee also invited experts from outside the company to participate in the investigation of the cause (s) of the accident and the determination what further safety measures to adopt.

### **Determining the Most Likely Cause**

The results of the on-site investigations of the accident conducted by Shin-Etsu's investigating team, including the outside experts, indicated that the accident might have happened as follows: Static electricity induced the ignition of methylcellulose

powders, resulting in a powder dust explosion\*1, but investigations to identify the cause (s) of the accident by the authorities are still on-going\*2. The company has already adopted new safety measures designed to prevent such dust explosions.

- \*1 Powder dust explosion: A phenomenon of an explosion that follows as a result of the ignition of flammable powder dust suspended in the air or oxidized gases at a certain level of density.
- \*2 : For the latest information on the accident at the Naoetsu Plant, please see our website.

#### **Doing Our Best to Support the Injured**

Seventeen people were injured in this accident and hospitalized. We will do our best to see that they all receive the best medical care possible; with their swiftest recovery in mind. Although all of the 17 injured people have been released from the hospital by the end of September, we will continue to do our best to support them.

#### **Resuming Operations at the Cellulose Manufacturing Facilities**

All cellulose-manufacturing facilities of the Naoetsu Plant were shut down after the March 20th accident. Since then, we have been preparing for the resumption of operations at all the cellulose manufacturing facilities, other than at the MC-II plant where the accident took place, in accordance with the guidance of the governmental authorities and also after obtaining the understanding of local area residents. From May 22nd, we sequentially began to resume operations at those cellulose manufacturing facilities that had obtained the permission of the authorities.

## Safety Measures

(1) The following safety measures were taken to prevent powder dust explosions in the future:

Substitution of Nitrogen Gas
The cellulose manufacturing facilities

The cellulose manufacturing facilities were sealed up and filled with nitrogen to lower the level of oxygen, which is one of three combustion elements, thereby inhibiting combustion.

#### Antistatic measures

To eliminate static electricity, which was presumably the source of the ignition, improved antistatic measures were taken for the facilities and floors, and better antistatic protection was provided for the workers through improvements in anti-static clothing and the use of antistatic bars.

#### **Dust prevention**

To prevent the accumulation of powder dust, all equipment vessels were sealed up and daily cleaning will be more rigorously carried out.

- (2) Existing safety manuals were reexamined to ensure a thorough safety education of all employees, including contract workers.
- (3) To ensure plant safety, Shin-Etsu Chemical and the production affiliates in the Shin-Etsu Group are reviewing and improving all of their plant safety measures.

#### Measures to Assure the Safety of Local Residents

Our communication system will be improved to enable plant staff to promptly contact local area residents in the event of an unexpected contingency. In addition, the protective barriers around the accident site will be reinforced, and trees will be planted in green belts between the barriers and houses in the immediate vicinity of the plant. We will also continuously and proactively work to ensure the safety of the local residents in the future.

# Disclosure of close-call incidents

Shin-Etsu Chemical is continuing to take this accident with the utmost seriousness as a matter of crucial importance, and is implementing further safety measures that are designed to eliminate even the tiniest risks lurking at the worksite. To promote further safety consciousness among all of its employees, Shin-Etsu has carried out in-house research via a questionnaire concerning close-call incidents \*1. The results were presented to the Shin-Etsu Group companies via the intranet so that everyone could share this valuable information, and it was also announced to the public on our company website\*2. It was decided to openly communicate this kind of information to the public in light of the advice President Kanagawa personally received from Hirohiko Izumida, the Governor of Niigata Prefecture. The Governor said, "To disclose close-call incidents will not only help improve your own company's safety measures, but also will lead to a more accurate understanding by the local area residents and the relevant authorities of your efforts to maintain safety."

- \* 1 close-call incidents: The incidents that came dose to but did not develop into accidents
- \* 2 URL: http://www.shinetsu.co.jp/e/profile/kankyo.shtml

# **Profile of the Shin-Etsu Group**

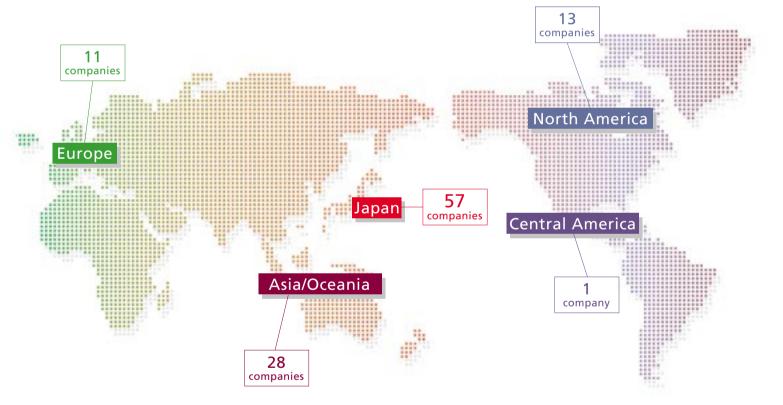
By achieving a globally unrivalled level of technology, quality and cost competitiveness, and through our proactive efforts in CSR activities, we aim to become a group of companies which society can trust.

As of March 31, 2007, the Shin-Etsu Group comprises Shin-Etsu Chemical Co., Ltd., 94 subsidiaries and 15 affiliates. Shin-Etsu Chemical Co., Ltd. and its subsidiaries and affiliates share responsibility for sales, manufacturing and other operations, and mutually cooperate to develop their respective business activities.

These business activities are divided into three business sectors: Organic and Inorganic Chemicals, Electronics Materials,

and Functional Materials and Others. Each business sector can boast products that either have the largest global market share, such as PVC, Semiconductor silicon, Photomask substrates for LCDs, and Rare earth magnets for hard disk drives (HDDs), or have the largest market share in Japan, such as Silicones.

The Group's products are used in countless everyday applications and are integral to the advancement of society.



#### **Principal Shin-Etsu Group Companies**

#### Japanese Domestic Group

Shin-Etsu Chemical Co., Ltd., Shin-Etsu Handotai Co., Ltd., Shin-Etsu Polymer Co., Ltd., Shin-Etsu Engineering Co., Ltd., Nagano Electronics Industrial Co., Ltd., Naoetsu Electronics Co., Ltd., Shin-Etsu Astech Co., Ltd., Mimasu Semiconductor Industry Co., Ltd., Shin-Etsu Quartz Products Co., Ltd., Kashima Vinyl Chloride Monomer Co., Ltd., etc.

#### Overseas Group

Shintech Inc., Shin-Etsu Handotai America, Inc., S.E.H. Malaysia Sdn. Bhd., Shin-Etsu PVC B.V., SE Tylose GmbH & Co. KG, Shin-Etsu Handotai Europe, Ltd., Shin-Etsu Handotai Taiwan Co., Ltd., etc.

 $\ensuremath{^{\star}}$  The profile of the Shin-Etsu Group also includes the Shin-Etsu Polymer Group.

#### **Product Information**

#### Guide for Materials

#### Semiconductor materials

As the world's leading supplier of semiconductor-related materials, we provide a diverse range of materials, indispensable for the manufacture of silicon wafers and semiconductors. Furthermore, we also deal in synthetic quartz photomask substrates, gases, chemicals and jigs used in their manufacture.

#### **Electronic materials**

Through our involvement with a wide range of products, including silicones, rare earth magnets and liquid fluoroelastomers, we are contributing to an improvement in the performance, function and reliability of many sorts of devices such as electrical home appliances, communication equipment and computers.

#### Optical materials

Using both natural and synthetic quartz as a basis, we are developing a diversified range of optical materials, including synthetic quartz preform for optical fibers and assorted optical parts. We supply a wide range of items, ranging from raw materials through to processed products.

# Architectural/civil engineering materials

We are responding to a wide range of needs in the architecture and civil engineering fields by providing various building/civil engineering items, such as sealing materials, coating materials, and admixtures for building materials, etc.

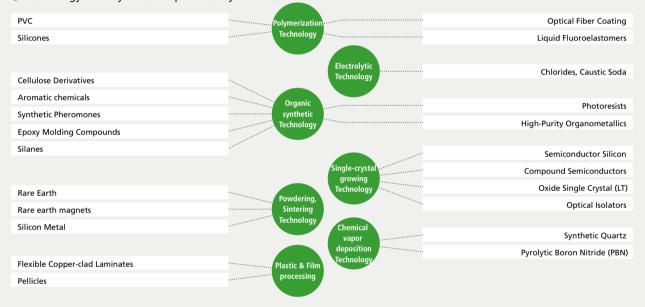
#### **Environmentally friendly materials**

Our products such as PVC, silicones, and synthetic pheromones are contributing to resource saving, energy saving and reduced environmental burdens.

#### **Automobile-related materials**

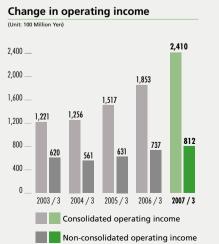
Because of their wide diversity and varied characteristics, our products are expected to be crucial for the development of new automobile technologies in the areas of improved reliability, size and weight reduction, and environmental responsiveness.

#### Technology and key materials provided by Shin-Etsu



# **Financial Highlights**

# Change in sales (Unit: 100 Million Yen) 12,000 — 10,000 — 8,000 — 7,975 8,328 6,000 — 4,000 — 2,000 — 0 — 2003 / 3 2004 / 3 2005 / 3 2006 / 3 2007 / 3 Consolidated sales Non-consolidated sales





\*The report on the final accounts includes the Shin-Etsu Polymer Group.

# HIGHLIGHT

# **TOPICS**

Succeeded in developing lead-free optical isolators for optical communications parts, which complies with the European RoHS Directive\*1

# The hard work of two researchers led to the development of a new technology

Shin-Etsu Chemical successfully manufactured the world's first lead-free optical isolators that comply with the European RoHS Directive. Until now, Faraday rotators,\*2 which are main component parts of optical isolators, contained lead; however, this newly developed technology has made it possible to totally eliminate the lead element in optical isolators.

The European Union (EU) issued to eradicate the lead contained in electric and electronic equipment in principle by specifying it as one of the environmentally controlled substances in its RoHS Directive enforced in July 2006. However, the EU also issued a tentative measure to allow the lead to be contained in optical isolators, which are incorporated in communications equipment, because it is technically difficult to eliminate lead from such products. A technical innovation to make isolators lead free is therefore eagerly anticipated for early and complete compliance with the regulations.

- \*1 RoHS Directive: Stands for the restriction of the use of certain hazardous substances in electrical and electronic equipment, aiming to minimize negative effects on health and the environmental impact throughout the lifecycle of products from manufacturing to disposal.
- \*2 Faraday rotator: An element that controls the angles of forward and backward lights using the Faraday effect which is a phenomenon whereby the plane of polarization of light rotates when the light in the magnetic field is passing parallel to the magnetic field.



#### What is the optical isolator?

Optical isolators are set in such devices as laser modules. Such isolators permit optical light that is emitted by a laser diode to be transmitted in only one direction. They are used to protect laser diodes because they block the adverse effect of return beams that go back to the laser diodes from the optical fiber transmission channels and amplifiers. These optical devices are indispensable for reliable, large-scale communications.



Satoru Fukuda and Toshihiko Ryuoh The Advanced Functional Materials Research Center

#### Interview to the researchers

Two researchers were behind the scene of our success in producing lead-free optical isolators. They are Toshihiko Ryuoh and Satoru Fukuda, of Advanced Functional Materials Research Center. Ryuoh has been engaged in the research of Faraday elements for more than 30 years, while Fukuda has a career of more than 20 years as a researcher. Knowing that the exemption of optical isolators had been discussed before the RoHS Directive was enforced, said Ryuoh, he felt a sense of crisis for anticipation that "accepting the exemption may increase our reliance on overseas production, even though the product is developed in Japan."

Research had been carried on with integrated "experience" of the two. "I had the 'absolute confidence' of achievement because of the experiments I had done for the non-inclusion of lead oxide," said Ryuoh about his feeling at the beginning of the research while Fukuda recalled he was uneasy about whether they could obtain answers. Research does not mean "doing this results in this" but their experience and sensibility allowed steady progress. While seeking the cooperation of analysts and the manufacturing division, they devoted themselves to the research, working seven days a week in the final stage, and finally succeeded in eliminating the lead content. Fukuda confessed, "Honestly speaking, I was relieved to find an answer rather than feeling happy." Ryuoh continued, "Closely observe the subject, touch it, and think it over, that's the most important. I am delighted my belief could lead to the development."

The crown of their labor is now attracting the attention of device manufacturers worldwide.

# **Campaign Finance Activities in Concert with World Refugee Day**

# Donation from the Shin-Etsu Group

Agreeing the activities of the Japan for UNHCR (United Nations High Commissioner for Refugees in Japan), the Shin-Etsu Group placed donation boxes at headquarters, branch offices and plants for a month from June 1 to 30, 2006 to raise contributions in concert with June 20th World Refugee Day.

The donations were distributed to Japan for UNHCR, afterward were distributed UNHCR agencies around the world through UNHCR for supportive actions to provide housing, education and medical aid, etc. for about 20 million refugees.



Etsu Handotai, contributes to the donation box, which is a recycled vinyl chloride product distributed free of charge by the Vinyl

# What Can Be Purchased with Our Donation (Example)

\* The items listed below are an example of how our donation can be used,











Textbooks for 150 children in refugee camps

263 water containers

# Shintech Inc. received the Large Company Outstanding Business Partner Award

# Congratulatory Message from U.S. Senator



from Louisiana.

Shintech Inc., a subsidiary in the U.S., received the Large Company Outstanding Business Partner Award from the Iberville Chamber of Commerce, Louisiana.

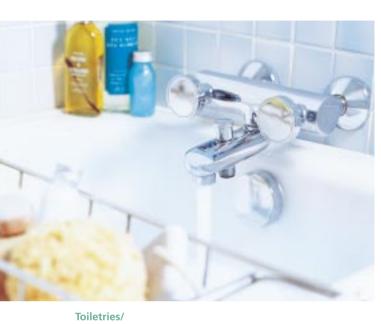
It received a letter from Senate David Vitter of Louisiana mentioning his congratulations for the award. He appraised Shintech as a company to "live locally, buy locally, and hire locally" in Louisiana.

Shintech has contributed to the region through businesses, and achieved satisfactory results in its CSR activities.

# HIGHLIGHT 2

# Challenge of Shin-Etsu

# Our products are used in everyday life for diverse purposes to support a life of affluence.



**Products used: Silicones and Cellulose derivatives** 

making those toiletries highly functional and efficient.

Toiletries such as liquid body soap, shampoo and rinsing agents are

indispensable for keeping the body clean and are an essential part of

comfortable daily life. Silicone and Cellulose derivatives are useful for



Cosmetics/ **Product used: Silicones** 

The materials used for cosmetics need to meet many requirements to ensure safety and stability, preventing negative effects on the environment and so on. Silicone has been used for cosmetics for over 40 years because of its outstanding nature, but its use is especially increasing these days for highly functional cosmetics, which are gaining popularity among consumers. Silicone used in this area aims to improve the functionality of various cosmetic products, including skin-care, make-up and hair-care products.



Bath agents/ **Product used: Aromatic chemicals** 

Acetylene-based Aromatic chemicals are used for bath products that relieve daily fatigue and enhance their aromatic effect. Aromatic chemicals are also used in various other products such as cosmetics, essences, soap, aromatic substances and food.



reduce fuel and light expenses, as well as prevent

dew condensation and reduce noise. For this reason,

they help create a comfortable and healthy housing

environment, and have attracted increasing attention as a building material capable of also

easing environmental burdens.

**PVC** sashes/Product used: **PVC** 



#### Water pipes/Product used: PVC

Many kinds of PVC products help support our comfortable lifestyles and one example is the water pipes we use to channel water and sewage. Although they are normally out of sight, they are vital for our daily lives. Since PVC is highly durable, with anti-rust and anti-corrosion properties, it is often used as a material for water pipes.



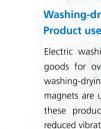
# Resin siding panels (exterior decoration boards)/

Polyma-Panel\*, a resin siding panel, is an exterior decoration board used for architectural purposes, which possesses high durability and economic efficiency. Since it is highly durable, it needs hardly any maintenance and can maintain its beautiful appearance for a long time. Its ability to withstand freezing damage in cold regions or salt corrosion in coastal regions also means it is widely distributed throughout Japan, from northernmost Hokkaido to southernmost Okinawa.



## Fluorescent lamps/Product used: Rare earths

Our daily life in homes and offices would not be possible without lighting. Rare earths are used as fluorescent materials for three-band fluorescent lamps, which are not only brighter and richer in color, but have six times longer life, and a quarter of the power consumption compared to incandescent lamps. They are noted as energy-saving and environmentally friendly lighting.



## Washing-drying machine/ **Product used: Rare earth magnets**

Electric washing machines have become common household goods for over a decade. Now, more useful and functional washing-drying machines are bestsellers in stores. Rare earth magnets are used in the motors for the rotating mechanisms of these products, ensuring smooth and stable rotation with reduced vibration and noise as well as saving energy.





# Personal computers and cellular telephones/ Products used: Silicon wafers, Rare earth magnets

Silicon wafers are used as a substrate for IC (Integrated Circuits), which are an essential part of digital products such as personal computers, cellular telephones and liquid crystal display televisions. Rare earth magnets, with their strong magnetic forces, are vital for voice coil motors (VCM) for hard disk drives (HDD). The latter enable heads and arms to operate at super high speeds when reading and writing data. As these devices become progressively smaller and lighter they contribute to higher quality and energy savings.



## Liquid crystal display televisions/ Product used: Synthetic quartz photomask substrate

Nowadays, TV and personal computers display units no longer consist of CRT but rather flat panel displays (FPD). Above all, liquid crystal displays (LCD) are becoming increasingly common. Synthetic quartz photomask substrates have high chemical durability, high optical transmission, high heat resistance and low thermal expansion, and fulfil a role in the manufacture of liquid crystal panels as photographic negative. Synthetic quartz is also utilized in photomasks for LSIs and optical fibers, and supports the development of a highly information-based society.

<sup>\*</sup> Polyma-Panel is a product of Shin-Etsu Polymer Co., Ltd

# Management Systems

# **Corporate Governance**

The enhancement of corporate governance is the most important task in CSR management.

#### **Board of Directors/Managing Directors' Meeting**

The Board of Directors consists of 20 members, four of whom are external directors with broad management experience. By minimizing the number of members, Shin-Etsu is working to establish a system capable of faster decision-making and more flexible management.

The Board of Directors determines the Company's fundamental policies, and deliberates and decides upon important business operations in light of the Japanese Corporate Law and the Company's articles of incorporation. The Managing Directors' Meeting engages in deliberation and determination concerning a variety of other business operations.

#### **Statutory Auditors**

We have adopted a statutory auditor system. In order to improve and strengthen the audit function, three of the five auditors are external. Statutory auditors attend not only meetings of the Board of Directors and Managing Directors, but also other important in-company meetings, and carry out all audits concerning our business operations. In addition, the auditors hold regular monthly meetings with the Auditing Department, where they receive progress reports on all activities and internal auditing results, give advice on activity details and audit themes, and request further investigation when necessary.

#### • Shin-Etsu's Corporate Governance Structure

#### Officers' Remuneration Committee

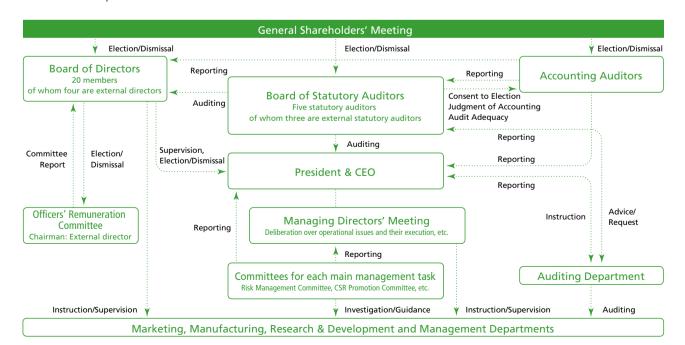
The Officers' Remuneration Committee chaired by an external director and consisting of a further three directors, carries out all deliberation and evaluation of board members' remuneration and submits its recommendations to the Board of Directors, based on the Regulations of the Officers' Remuneration Committee.

#### **Auditing on Operation**

The Auditing Department is a specific department, dedicated to taking charge of all matters concerning internal operation audits and internal control systems. This Department also strives to further strengthen corporate governance.

#### **Risk Management Committee**

Chaired by a managing director, this committee's role is to identify and take preventive measures regarding the various kinds of risk that could possibly occur as a result of the Shin-Etsu Group's business operations.



\*For further details of our corporate governance, please refer to the "Report on Corporate Governance."

URL: http://www.shinetsu.co.jp/j/profile/cg.shtml (Only in Japanese)

# **Compliance**

Through the concerted efforts of the Company and all directors and employees, we are trying to ensure the establishment of a thorough and comprehensive system for compliance.

Shin-Etsu Chemical believes it our obligation to comply with laws and regulations in our business activities, and always includes compliance in our periodical managerial objectives.

#### **Thoroughgoing Awareness of Compliance**

In cases where legal statutes concerning corporate activities are newly established or revised, the Legal Department leads efforts to notify all employees throughout the Shin-Etsu Group and conducts explanatory meetings. In the event that illegal activities are discovered at other companies, reminder notices are transmitted throughout the Group, with the intention of continually raising awareness of compliance issues.

#### **Compliance Pledge**

A Compliance Pledge has been introduced, to be taken by Company directors and employees, all of whom pledge to conduct their daily business activities in the spirit of compliance. Anyone who violates the Pledge is severely punished.

#### **Compliance Consultation Office**

We have set up a Compliance Consultation Office, whose role is to support every staff member of the Shin-Etsu Group in conducting their business activities in strict compliance with all laws, government regulations and in-company rules.

This office strictly protects the privacy of all those who use it, ensures that they are not subjected to any disadvantages, investigates all information obtained from consultations, and formulates appropriate countermeasures. Under the Compliance Consultation and Notification Regulations, no one using the Office can be disadvantaged in any way or lose their job because of any consultation or notification.

#### **Information Management System**

The Company has developed a fundamental policy concerning information security in order to ensure the confidentiality, safety and stability of its information assets and prevent the leakage of important information concerning our customers and business partners. We are constructing an information asset management system, have appointed an officer responsible for information control, and are striving to manage its information in accordance with established information management regulations and standards.

#### **Protection of Personal Information**

In response to the Law Concerning the Protection of Personal Information, which came into force on April 1, 2005, we formulated a personal information protection policy that is now posted on the company's website\*. Moreover, we hold explanatory meetings within the Group related to compliance with all relevant laws, and are making exhaustive efforts related to the appropriate handling and protection of personal information.

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\* Personal Information Protection Policy: URL: http://www.shinetsu.co.jp/j/about/hogo.shtml

• Flow of seeking advice or reporting information on compliance



# **CSR Promotion System/Environmental Management Promotion System**

By revisiting the very basis of Corporate Social Responsibility, we are now approaching CSR activities with a new outlook.

#### **CSR Promotion System**

Since Fiscal Year 2005, we have been promoting various activities by setting up the new position of Officer responsible for CSR and the CSR Promotion Committee. Based on the acknowledgment that "CSR is a Corporate Activity itself," the CSR Promotion Committee reviews the actions undertaken by Shin-Etsu at a corporate level, and ensures that any positive aspects are retained while any points needing to be improved are rectified, and continues to support those activities that can further enhance the corporate value of the Shin-Etsu Group.

To further promote and develop CSR Activities at a Group level, the Committee has made special efforts to assess the status of the promotion of CSR Activities in the Group companies, both in Japan and abroad, and has focused on improving the promotion system for Shin-Etsu Chemicals, which is seen as the core of promotion activities. The Group will keep working on CSR promotion activities while revisiting the original question of just what is the social responsibility of a corporate body.

#### **Environmental Management Promotion System**

In order to promote environmental management, we are addressing specific problems related to environmental protection via the "Shin-Etsu Group Environment Control and Safety Meeting", chaired by the officer responsible for environmental control and safety. With the participation of those persons in charge of environment and safety, the "Shin-Etsu Group Environment Control and Safety Meeting" addresses environmental protection and safety issues affecting the Group as a whole. As for Environmental Control and Safety Guidelines and Safety and Health Guidelines, the Environmental Control and Safety Department of the Head Office has compiled all the required guidelines and is in charge of their promotion and further development. The Environmental Control and Safety Departments at each plant and business establishment are providing support for the manufacturing departments and performing public relation activities in association with local governments, related governmental offices and industrial organizations, etc.

#### **Environment control and safety audits**

Regular environment and safety audits and special audits with

specific themes are performed and verified in accordance with the activities of all safety assurance operations.



Environment control and safety audits at the Takefu Plan

#### • Shin-Etsu Group CSR Promotion System



• Shin-Etsu Group Environmental Management Promotion System



# **Environmental Charter**

Environmental CharterWe will keep pursuing *safety and environmental* protection-first as the basis of our management, and continue to contribute to the establishment of a sustainable society.

The Shin-Etsu Group conducts its business activities with *safety* and environmental protection-first as its basic corporate philosophy. We place a high priority on technological developments capable of contributing to the reduction of environmental burdens, and conduct thorough environmental management at all stages, from the design of products and manufacturing facilities through to the creation of an efficient manufacturing system.

We have been striving to achieve the above goals by establishing objectives in each business and unit based on the "Environmental Charter." We will continue to pursue *safety and environmental protection-first* and implement environmental initiatives contributing to the construction of a sustainable society.

# Review Action Continual improvement Do Implementation

# **Environmental Charter**

# I. Fundamental Principle

The Shin-Etsu Group recognizes that global environmental protection is one of the most important issues facing humankind. We believe in the fundamental principle of pursuing environmental protection in every aspect of our business activities as we aim to help create a society in which the issue of global warming can be effectively addressed and sustainable development is possible.

# II. Action Guidelines

- We strive to accurately anticipate any effects that our business activities might have on the environment, and we comprehensively implement policies focused on the strict control of chemical substances, conservation of resources and energy, recycling of materials and reduction of waste products.
  - We endeavor to continually improve the local, regional and global environment.
- We fully comply with national and international laws, regulations, and agreements related to the environment.

  Moreover, we also strive to prevent environmental pollution and work together with local societies to achieve this goal.
- 3 In developing new products and technologies, we aim at minimizing any adverse environmental effects from the fundamental research and design phases through to the manufacturing, distribution, usage, and disposal phases.
- By means of Group Company training programs and internal communications regarding environmental protection, we strive to raise the consciousness of all employees about environmental matters.

  Furthermore, with deep regard for the local, regional and global environment, we promote a wide range of environmental protection activities.
- To promote environmental protection activities, we organize to effectively carry out environmental management activities. Environmental Management Systems Establishment of Policy Implementation Auditing Review Continual improvement

# Shin-Etsu's core environmental and safety principles

We shall promptly establish a safe plant operation system, which prevents the recurrence of accidents, and will strive hard to regain our credibility.

# We have been carrying out an overall inspection of work procedures so as to eliminate any potential accident risks

On March 20, an accident involving an explosion and subsequent fire occurred at a cellulose manufacturing facility at the Naoetsu Plant of Shin-Etsu Chemical. I sincerely apologize to all of the people involved for the trouble and anxiety caused.

The Shin-Etsu Group has continuously made efforts to eliminate potential risks in every work process, in accord with our basic management policy of placing the utmost priority on *safety and environmental protection-first*. However, as a result of the Naoetsu accident, we were made painfully aware that there are some of our safety measures should have been further improved. We had been accustomed to safety for so long that our sensitivity to detect possible danger points might have diminished. We have seriously reflected upon this situation.

By admitting this fact straightforwardly and scrutinizing the background of the accident, we went right back to our first principles, *safety and environmental protection-first*, in order to reaffirm potential risks in all production processes and further strengthen our safety measures. An instruction was issued by President Kanagawa immediately after the accident, calling for thoroughly implementing plant safety, and a thorough and complete inspection was carried out throughout Shin-Etsu group companies. The results were closely investigated by experts, both inside and outside the group, and the conclusions of the investigators were taken into account in establishing a system to ensure safety and prevent the recurrence of accidents.

At the same time, all employees, including production control staff and supervising chiefs, engineering staff and operators, were asked to identify the processes and procedures which appeared dangerous, and make proposals for improvements from their own perspective and at their own workplaces. As a result, nearly 4,000 proposals were submitted at four Shin-Etsu Chemical plants alone, in addition to considerable useful advice and recommendations from other group companies. These proposals and measures were publicized on our website as examples of close-call incidents, with the intention of widely disseminating the information to be shared among those both inside and outside the group.

Through these efforts, the management honestly and practically implemented the proposed measures, which would further improve safety in work places, and moreover, workplace communications have also been considerably enhanced. A climate where it is possible to openly explain and listen to incorrect aspects of routine work is being created based on everyday

communication, which, I believe, is a cornerstone of safety. Revealing to the public information about close-call incidents was highly evaluated as a useful approach for safety measures from both inside and outside of the group. We will continue these activities to widely share information with the public.

# We are taking steps to regain our credibility, which is a major post-accident priority

The cellulose facilities at the Naoetsu Plant, which shut down entirely after the accident, have been restarted sequentially It was decided that SE Tylose GmbH & Co. in Germany will assist in the production and supply of pharmaceutical-use cellulose, allowing us to have completely independent supply systems in both Japan and Germany.

To resolve the largest remaining issue for the Shin-Etsu Group, regaining our credibility, our top priority *safety and environmental protection-first* has gained more importance than ever before. All of our efforts continue to be focused on building a system in which no accidents will occur and regaining our credibility.

# Ensuring safety and environmental protection-first through RC activities

Responsible Care (RC) is an initiative that has gained importance in the global chemical industry for fulfilling its societal responsibilities. Shin-Etsu Chemical has also positioned RC activities as the most important pillar for realizing its basic policy of *safety and environmental protection-first*, and has decided to expand RC-related activities. As part of this policy, we have been subject to third party inspections for RC activities from FY 2006.

In addition, we commenced fresh efforts from FY 2006 to set annual targets for environmental protection to be achieved during the fiscal year, mainly at a production affiliate of the Shin-Etsu Group. As efforts to achieve the targets for FY2006 have proceeded as planned, this effort, including target-setting

and proceedings for confirmation of target achievement, will be expanded group-wide in the future by making use of the Group's environment and security committee meeting.



Kiichi Habata Managing Director in charge of Environment Control and Safety Shin-Etsu Chemical Co., Ltd.

# Challenges and Results of Shin-Etsu Chemical in Fiscal Year 2006

Achieving zero environmental accidents and medium-term environmental objectives were the challenges of Shin-Etsu Chemical in Fiscal Year 2006. At the same time, we underwent inspections by external inspectors to review our RC activities and tried to correct what was pointed out by the inspectors.

# **Medium-Term Environmental Objectives**

- A reduction in greenhouse gas emissions to 66% of the 1990 level in terms of the energy consumption rate in 2010.
- Achievement of zero emissions (buried waste under 1%) in 2010.

In the Fiscal Year 2006, an explosion and subsequent fire accident occurred in March 2007 in our Naoetsu Plant, but we did not have any other environmental accident. The energy consumption rate in the medium-term objectives exceeded the target value, 72 percent of the 1990 level, and the amount of buried waste in zero emission objectives was reduced to 1.6 percent. The results of inspections of our RC activities are shown below.

#### Inspections of RC Activities

Shin-Etsu Chemical strives to maintain safety and preserve the environment according to our management policy *safety and environmental protection-first*. As part of our efforts, we have been promoting Responsible Care (RC) activities since 1995, which are participated in by chemical companies worldwide.

RC activities are voluntary management activities by the chemical industry to protect the environment, safety and health.

Environmental preservation, process safety, occupational health and safety, chemical and product safety, distribution safety, and social dialogue are included in RC activities.

Because of the voluntary nature, we felt the necessity for third-party assessment on our RC activities, and underwent inspections by outside inspectors in addition to in-house audits on the PDCA of RC activities.

In April 2006, we underwent inspections on two terms, "Environmental Preservation" and "Process Safety" in Gunma Complex and Kashima Plant. The assessments by the inspectors were:

- Safety measures for waste processing and facilities are reliably carried out and the level is high.
- Emergency training is assuredly conducted with the understanding and cooperation of neighboring local residents.
- Efforts are made to prevent accidents, according to an "on-site review from the worker's perspective".
- Unique ideas devised for the horizontal deployment of past experience are commendable.
- $\bullet$  Further strengthening of internal audits by the plant manager is to be expected.

These results will surely be fed back to our RC activities. Outside inspections will be extended to other plants and inspection items in future.



# Tasks for 2007 of Shin-Etsu Chemical

- 1. Promote zero accidents that affect the environment.
- 2. Strive to achieve medium-term objectives in 2010.
  - (1) Introduction of co-generation facilities to reduce greenhouse gas emissions and further improve the energy consumption rate.
  - (2) Assurance of 3R (reduce, reuse and recycle) in our efforts to achieve zero emission (buried waste under 1%)

# Environment and safety initiatives

# **Emergency Response and Safety Measures**

To ensure the safety and security of local residents and employees by taking every possible measure to keep the workplace safe and prevent accidents.

Ensuring the safety and security of local people and improving the environment where our employees can work in safety every day is our duty as a corporate body. We have therefore established ensuring safety and environmental protection as mutually inseparable, top priority components of the basic guidelines used for all our business practices.

The Shin-Etsu Group handles and manufactures a variety of chemical substances as raw materials. Although the chemicals we use are useful to society, some of them are, by their very nature, also harmful to human health. For that reason, the Group abides by all laws and regulations regarding chemicals, making all necessary efforts to prevent outside pollution and enforcing appropriate controls.

#### **Emergency Response System**

As the Shin-Etsu Group uses many kinds of chemicals, there is the possibility of a large-scale disaster occurring and involving both employees and local people in the event of an accident. In preparation for the possibility of such an accident, disaster or large-scale earthquake, we have arranged a company-wide emergency response system and also established relevant procedures. We verify the efficiency of our response procedures by performing regular drills.

As well as the accident and disaster drills carried out in each plant and business establishment, divisional drills are also practiced for fires caused by explosions and for leaks of dangerous materials. All necessary equipment and materials are also prepared in the event of an accident-taking place outside the company premises, such as during transportation.

Above all else, in consideration of recent accidents in Japan and abroad, we have strengthened our response capabilities for emergency situations as follows:

- Establishment of Emergency Communication Systems (inside the company, in conjunction with public agencies such as fire departments, and in collaboration with the local community)
- Quantitative assessment of disasters using simulations
- Improvement and reinforcement of equipment and materials for emergency measures (including providing support for people outside the company)
- Execution of plant-wide and divisional drills based on specific accident scenarios
- Provision of and education on the use of Yellow Cards (in response to accidents occurring during transportation)
- Implementation of Container Yellow Cards

#### **Safety Measures for Chemical Substances**

The Shin-Etsu Group handles, manufactures and sells a variety of chemical substances, including many hazardous substances, which are flammable, explosive, toxic, poisonous, and corrosive. Such dangerous substances should be handled according to their properties, and strict observation of the handling rules represents the basics of safety measures. There are many laws and regulations for hazardous substances, and compliance with these is in effect to take safety measures.

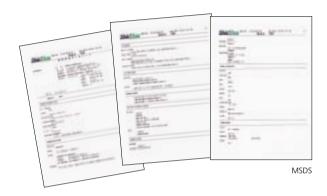
We issue MSDS\*1 for each of the hazardous chemical substances. When these hazardous materials are used in the plant, observing the MSDS is to keep employees' safety, and prevent mechanical failure and accidents in facilities. When these materials are shipped as products, an MSDS is created for each product and delivered to the customer with the product. The MSDS is actively used by the customer to ensure safety.

Ensuring safety during transportation is also required. The Shin-Etsu Group issues a Yellow Card\*<sup>2</sup> for bulk transportation, or a Container Yellow Card\*<sup>3</sup> for the transportation of small quantities of chemicals. As the Labor Safety and Sanitation Law was revised in December 2006, GHS\*<sup>4</sup> was also introduced as the hazardous material sign.

The Shin-Etsu Group reports the amount of atmospheric emissions of chemical substances we handle in accordance with the PRTR Law\*<sup>5</sup>. At the same time, we strive to reduce emissions, and make our utmost efforts to develop less hazardous materials. In developing and manufacturing Small Amount of New Specific Chemical Substances\*<sup>6</sup> or New Specific Chemical Substances\*<sup>7</sup>, we make sure of safety and submit notifications in accordance with the Law concerning the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.\*<sup>8</sup>.

#### \*1 MSDS

MSDS stands for the "Material Safety Data Sheet", on which all relevant data concerning the chemical in question is described in order to handle chemicals safely and prevent any accident from occurring. When a business operator delivers chemicals or products containing chemicals to another business operator, the MSDS must be attached.



\*2 Yellow Card

The cards on which all relevant information on treatment required in case of an accident during transportation is described. These are prepared in the interests of safety and handed over to the carrier whenever chemicals are transported and retained by the carrier throughout delivery.



#### \*3 Container Yellow Cards:

A yellow card is issued for the tank lorry for bulk transportation, while a label indicating safety information is attached to every container for transporting a small quantity of chemicals alone or with other materials or goods. What to be entered is internationally accorded

\*4 GHS (The Globally Harmonized System of Classification and Labeling of Chemicals):

An internationally accorded system that addresses the classification of chemicals by the types of hazard, in accordance with labels and safety data sheets.

\*5 PRTR Law (Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management): Law Concerning Reporting, etc. of Release to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management.

#### \*6 Small Amount of New Specific Chemical Substances:

The notification of new chemical substances is obligatory under the two below-mentioned laws, regardless of how small the amount manufactured or dealt with is.

#### \*7 New Specific Chemical Substances:

The Law Concerning the Examination and Regulation of Manufacture, etc., of Chemical Substances and the Labor Safety and Sanitation Law establish reporting duties with respect to new specific chemical substances.

\*8 Law Concerning the Evaluation of Chemical Substances and Regulation of Their Manufacture, etc.:

A Law Concerning Examination and Regulation of Manufacture, etc. of Chemical Substances



Water discharge exer



First-aid training for a person facing cardiac or respiratory arrest

#### **Safety Measures for Facilities**

Various types of machines and facilities are used in the factories of the Shin-Etsu Group for various purposes, including production, environmental conservation, utilities, and physical distribution. A large amount of energy is required for operating these machines and facilities. There are the facilities for processing hazardous and toxic materials, those operating at high pressures, and machines and facilities that become extremely hot or cold.

The machines and facilities in factories ease the labor of workers, but are potentially dangerous, as suggested above. In the event of an accident in the plant, many people will get injured, and the influence on neighboring residents may be serious. Our safety measures for machines and facilities are therefore focused on identifying the risk factors in advance to minimize the risks of an accident.

A number of techniques are available to identify risk factors, but HAZOP\* is typically used in chemical plants. The most effective plans are proposed for the risk factors identified with various techniques, and the safety review board, including factory managers in its members, investigates and approves the proposed safety plans. The plans are then presented to all group companies for their approval and put into practice.

Because of the seriousness of the damage caused by accidents in factory machines or facilities, adequate preparedness for accidents is very important. Emergency drills are conducted at individual sections and across the plant in addition to damage simulation to predict the scope of damage, preparation of equipment for dealing with accidents, and implementation of an emergency communication system.

#### **Promotion of Green Procurement**

Our green procurement criteria applied to the materials required for manufacturing processes, including main raw materials and secondary materials such as packaging materials, are extensively introduced to our customers to disseminate and promote environmental conservation activities and the acquisition of the ISO14001 certificate. Our basic policy for procurement, based on the basic CSR policy, is publicized on our website. We also visit our main and target business partners in order to inspect, assess and follow up their CSR.

In our business dealings henceforth, we will prioritize procurement from suppliers that are actively implementing CSR activities, including environmental protection activities.

#### **Responses to Green Procurement Surveys**

The European Union (EU) enacted the RoHS Directive from July 2007, and REACH from June 1, 2007. Other nations have also put similar regulations concerning chemical substance management into force. We need information management throughout the supply chain for products containing hazardous chemicals. In response, many of our customers are requesting us to issue certificates of control for the chemical substances contained in our products.

Shin-Etsu Chemical supplies a large variety of products as a *key materials* manufacturer, and issues various types of certificates in response to our customers. The number of Green Procurement Certificates by Shin-Etsu Chemical issued is increasing yearly and stood at 8,185 in Fiscal Year 2006.

# **Control of Food Additives and Pharmaceutical Products**

Cellulose and silicone are *key materials* used in certain food additive and pharmaceuticals. Since they are products directly related to human health, the Group pays close attention to their quality control and compliance with all relevant laws and regulations.

#### **Safety Measures for Employees**

The Shin-Etsu Group takes all sorts of safety measures for employees, but the awareness of employees about their own responsibility, not responsibilities of others, for protecting themselves is the basics of our safety measures for protecting employees from accidents due to human error or unsafe behavior. Based on the fact that humans tend to make mistakes, prevention of human error is included in the safety measures for facilities.

Various machines and facilities are used in our manufactur-

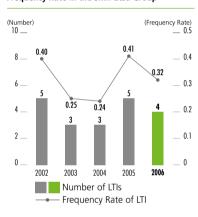
ing factories for processing a variety of chemical substances. "Tangible" safety measures are taken for these machines and facilities, and we also put our focus on the "intangible" aspects of the same, namely education on the correct operation of the machines and facilities. Workers are also educated on the purpose and effect of protective gear and repeatedly told to wear it. In addition, a scheme for the Promotion of Zero-Accidents was launched, and risk prediction training, potentially serious error proposals, prevention, risk assessment, and hazard experience training have been carried out on all Group company sites.

The work environment is continuously improved in our effort to maintain the health of workers, and the density of substances handled at workplaces is measured to ensure it is within the control level. The installation of local exhaust systems and changes to substances less harmful to workers are also promoted.

Throughout the Shin-Etsu Group there were 24 injuries in total, 4 LTIs and 20 Non-LTIs in Fiscal Year 2006. Most injuries are caused by accidents due to unsafe behavior or human error, such as being pinched or caught in the machine. We promote "intangible" safety measures as listed below.

\* The statistics for occupational accidents are for the period from January to December 2006. The number of injured in the accident in the Naoetsu Plant in March 2007 is not included.

Change in the Number of LTIs and Frequency Rate in the Shin-Etsu Group



#### **Review of Safety Measures**

Based on management policy safety and environmental protection-first, the Shin-Etsu Group have made every effort to prevent serious accidents, and the plants, branch offices and affiliates have taken their own safety and environmental measures according to the characteristics of facilities, processes and raw materials, intermediates and products.

Despite such efforts, an accident of explosion and fire occurred on March 20, 2007 in the Naoetsu Plant of Shin-Etsu



Special safety audits in the Naoetsu Plant

Chemical, and as many as 17 people were injured. The message "Beware of Factory Safety" was issued by the President and CEO Kanagawa of Shin-Etsu Chemical, and a thorough and complete inspection of safety was carried out in all plants and branch offices. In addition, an urgent questionnaire concerning potential danger was carried out for all employees to collect information on work that might be dangerous and proposals for improvements.

Reflecting on the accident, an extensive safety check was carried out to identify all risk factors in all chemical substances handled, processes and procedures, and countermeasures were taken for those causing accidents. The implementation of these safety measures has been checked in the special safety audits from June 2007.

Responses from employees for the questionnaire concerning potential danger are fed back to the safety measures as required, and made available on the Shin-Etsu Chemical website for sharing information among group companies. Group wide sharing and the utilization of the proposals for potentially serious error cases are also planned. The proposals from group companies will be made public on our website in future.

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<sup>\*</sup> HAZOP (Hazard and Operability Study):

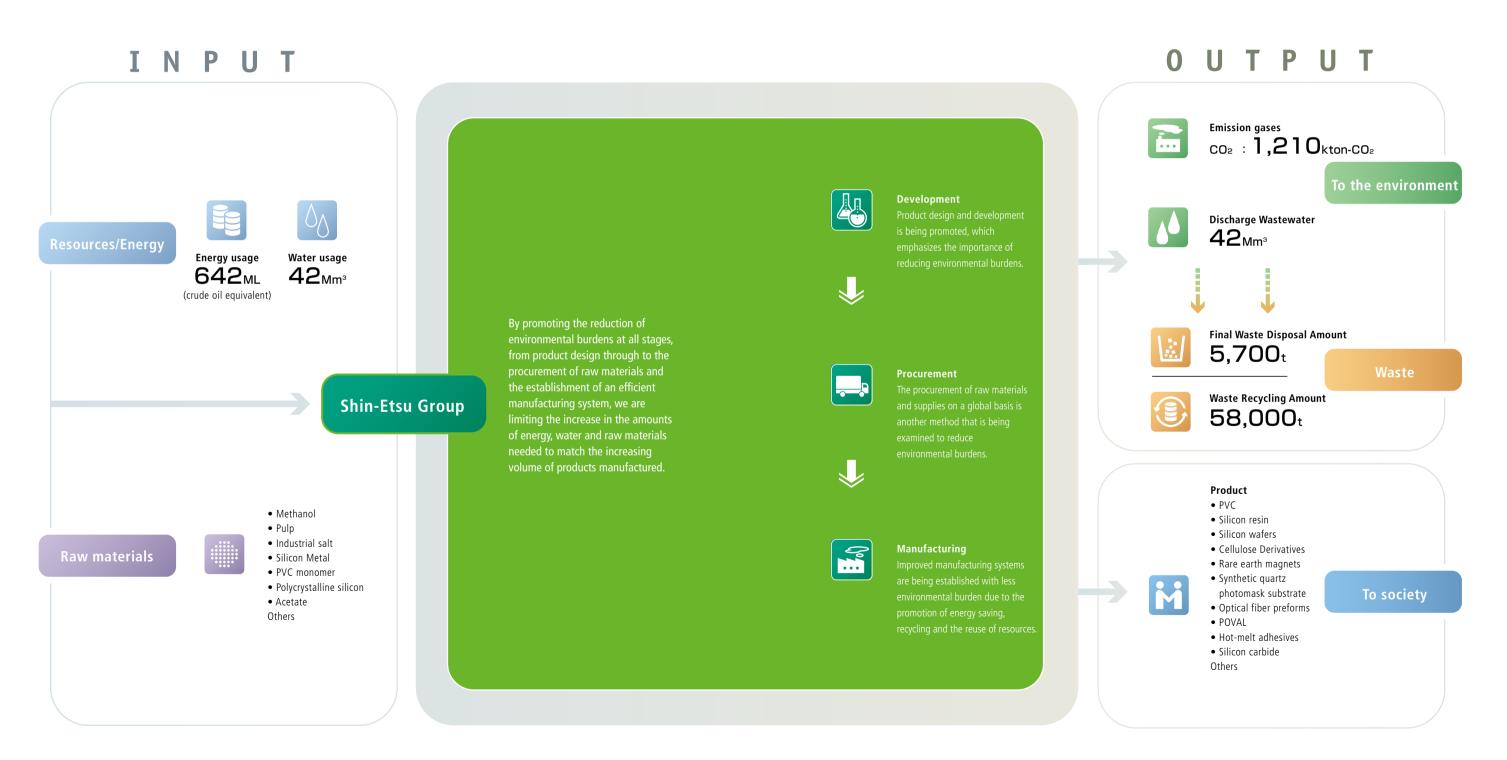
HAZOP is designed to facilitate improvement in work procedures and facilities by anticipating potential malfunctions in manufacturing facilities and the resultant environmental pollution brought about by changes in operating conditions. HAZOP is conducted whenever a new facility is at the design stage, and is implemented by the designers and managers to ensure that a high degree of safety is designed into the facility right from the start. Existing facilities are also subject to HAZOP, in which their operators participate, and this is reflected in the improvements made to operating procedures and facilities.

# Environment and safety initiatives

# Reducing environmental burdens resulting from business activities INPUT/OUTPUT

As a *key material* manufacturer, we aim to reduce environmental impact, not only for our own benefit but also for that of the whole society, by developing advanced technologies.

The Shin-Etsu Group intends to implement a management environment to reduce environmental loads and risks and increase energy efficiency via our own business activities. At the same time, our mission is to offer new materials that can contribute to reducing environmental loads and increasing energy efficiency across society, through the development of advanced technologies as a leading material manufacturer.



<sup>\*</sup> The numbers are a total of 11 companies: Shin-Etsu Chemical Co., Ltd., Shin-Etsu Handotai Co., Ltd., Nagano Electronics Industrial Co., Ltd., Naoetsu Electronics Co., Ltd., Mimasu Semiconductor Industry Co., Ltd., Shin-Etsu Quartz Products Co., Ltd., Yamagata Shin-Etsu Quartz Co., Ltd., Fukui Shin-Etsu Quartz Co., Ltd., Nissin Chemical Industry, JAPAN VAM & POVAL CO., LtD. and Shinano Electric Refining Co., Ltd in Fiscal Year 2006.

Environment and safety initiatives

Environmental Activity Report

# Environment and safety initiatives

# **Environmental Activity Report**

In order to realize energy saving and prevent global warming, all relevant issues are being addressed, including environmental burden reduction, environmental protection, and resource recycling.

#### **Energy saving and the Prevention of Global Warming**

#### ■ Reduction of energy usage

The Shin-Etsu Group manufactures a variety of products. A range of energy sources are used, including electricity, fuel oil, kerosene, diesel oil, liquefied petroleum gas, liquefied natural gas and steam. Most suitable energies are selected for manufacturing facilities and utilities used in the processes, such as reaction, purification, synthesis, and machining.

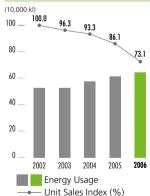
Although overall energy usage is increasing, following increased Group-wide production, each company and plant is also striving to save energy.

<Examples of our approach>

- Extensive use of co-generation systems
- Improvements in energy saving by facility: Improved efficiency, productivity, and insulation, etc.
- Heat recovery from waste

The amount of energy consumed by the Shin-Etsu Group in Fiscal Year 2006 was 642,000 kiloliters (in terms of crude oil), an increase of 29,000 kiloliters from Fiscal Year 2005, whereas an improvement of 13 percent in terms of sales unit, thanks to the efforts of group companies to save energy. This means an overall improvement of 27 percent in five years from Fiscal Year 2002.

# Energy Usage (crude oil equivalent)



# ■ Prevention of Global Warming and Pollution Abatement Measures

The Shin-Etsu Group is trying to reduce greenhouse gases to stop global warming, and minimize discharged air pollutants in our pollution abatement measures.

 $CO_2$  emissions have been increasing with the increased use of energy, but efforts to reduce  $CO_2$  emissions are made in every company and plant. Some of our affiliates use a specific

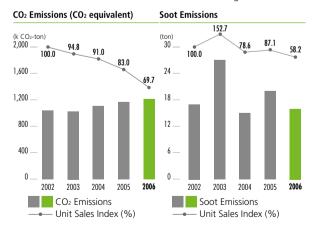
CFC as refrigerant, but it is strictly managed so as not to be released in the air. Air pollutants such as soot dust, nitrogen oxides (NOx), and sulfur oxides (SOx) have been kept unchanged or reduced through the efforts of individual companies and plants. Emission gases from boilers and incinerators are regulated by laws, regulations and ordinances. We not only abide by all these regulations but are also reducing emissions even further. We regularly measure levels of soot, NOx and SOx and monitor their impact on the atmosphere.

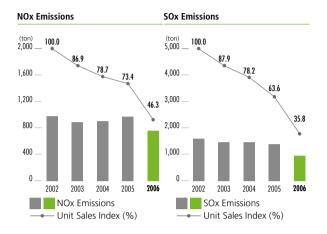
<Examples of our approach>

- Promotion of energy saving by introducing co-generation systems, etc.
- Switch to fuels, such as liquefied natural gas, with less CO<sub>2</sub> and air pollutant emissions
- Addition of a pollutant treatment facility and installation of a recovery facility
- Improvement of the combustion method

Energy-caused CO<sub>2</sub> emissions in the Shin-Etsu Group in Fiscal Year 2006 totaled 1,210k CO<sub>2</sub>-ton, a slight increase of 40k CO<sub>2</sub>-ton from Fiscal Year 2005, whereas an improvement of 13 percent in terms of sales unit. Overall, a 30 percent improvement was achieved from the FY<sub>2</sub>002 level.

The amount of soot dust was 16 tons. The quantity of emissions depends on the year, but is steadily decreasing. NOx and SOx emissions are 760 tons and 960 tons respectively. The combined emissions of these chemicals are decreasing.





#### Boiler Emission Gas Monitoring Result Table: Naoetsu Plant

	Regulation value	2002	2003	2004	2005	2006
Soot (g/Nm³)	<0.25	<0.045	<0.02	<0.02	<0.03	<0.01
NOx (ppm)	<150	<130	<110	<83	<110	<99
SOx (k value)	<74	<1.5	<1.1	<1.2	<2.6	<0.1

# Incinerator Emission Gas Monitoring Result Table: Gunma Complex Regulation value

	Regulation value	2002	2003	2004	2005	2006
Soot (g/Nm³)	<0.15	<0.01	< 0.03	<0.01	<0.02	<0.004
NOx (ppm)	<250	<100	<90	<100	<110	<62
SOx (k value)	<17.5	<1	<1	<0.55	<0.51	<0.47
Hydrogen chloride (mg/Nm³)	<700	<74	<54	<28	<62	<24
Dioxin (ng/Nm³)	<5	<0.01	<0.01	<0.01	<0.01	<0.01

#### ■ Prevention of water pollution

The Shin-Etsu Group uses a large quantity of industrial water, groundwater, and tap water for manufacturing and cleaning products, and maintaining and managing facilities. The wastewater is discharged into rivers after being checked for compliance with laws and regulations specifying the limits. pH\*1, BOD\*2, SS\*3 and COD\*4 are measured on a regular basis to monitor their effects on water quality. We are also trying to reduce the use of water.

<Examples of our approach>

- Improvement and expansion of waste water treatment equipment
- Leveling of effluent water quality and volume
- Recycling and reuse of cooling water

The total discharge wastewater amount produced by the Shin-Etsu Group in Fiscal Year 2006 was 42,000 kilotons, registering an increase of 2,200 kilotons from Fiscal Year 2005, while a 12% improvement was achieved in emissions per unit of sales. COD emissions totaled 950 tons, an increase of 50 tons from Fiscal Year 2005, while emissions per unit of sales improved by 9%.

\*1 nH

 $\label{thm:hydrogen} \begin{tabular}{ll} Hydrogen ion concentration (-log[H+]) indicating acidity (<\!pH7), neutrality (=\!pH7) and alkalinity (>\!pH7) of water solution. \end{tabular}$ 

\*2 BOD:

Biochemical Oxygen Demand (BOD): This indicates the amount of oxygen required for water-borne micro-organisms to break down contaminants in water. This value is a measure of the degree of water pollution.
\*3 SS:

Suspended Solids (SS): These are organic and mineral particles suspended in water. They are a major cause of turbidity, and have a significant impact on aquatic life. \*4 COD:

Chemical Oxygen Demand (COD): This is the amount of oxygen required to degrade the organic compounds of wastewater. A higher COD value means more-polluted wastewater.

#### Effluent water quality monitoring: Gunma Complex

	Regulation value	2002	2003	2004	2005	2006
рН	5.8~8.6	6.6~7.7	6.8~7.3	6.7~7.4	6.3~7.5	6.4~7.8
BOD (mg/L)	<25.0	<18.0	<22.0	<17.0	<14.0	<25.0
SS (mg/L)	<50.0	<44.0	<41.0	<43.0	<38.0	<31.0

# Total Discharge Wastewater Amount COD Emissions



#### ■ Waste Management

Various types of waste, including unreacted raw materials, by-product materials, defective products, and broken or unnecessary goods, are produced in various manufacturing processes. The Shin-Etsu Group uses 3R (reduce, reuse, and recycle) techniques to reduce such waste for the effective use of limited earth resources. We also periodically inspect the contractors to check their proper handling of waste consigned to them.

Environment and safety initiatives

Environmental Activity Report

# Environment and safety initiatives

<Examples of our approach>

- Utilization of inorganic sludge as a raw material for cement/steel
- Utilization of organic sludge as a fertilizer
- Reuse of acids and alkalis through separate recovery
- Thermal recycling of waste oil and waste solvent
- In-house incineration, in-house disposal
- Separate recycling of valuable metals

The amount of recycled waste by the Shin-Etsu Group in Fiscal Year 2006 totaled 58,000 tons, an increase of 6,000 tons from Fiscal Year 2005. Recycling proceeds satisfactorily. The final amount of waste disposed of was 5,700 tons.

Emissions per unit of sales improved by 73% from Fiscal Year 2002.



## **Other Environmental Protection Activities**

#### ■ Facility Accidents

Three facility related accidents occurred in Fiscal Year 2006 in the Shin-Etsu Group.

The first case of accident was caused by insulating materials ignited during welding by a construction contractor. It did not expand into a fire and the worker suffered a minor injury, but smoke and abnormal odor filled the air. Stricter measures were taken to control the use of fire by contractors. The second accident was caused by the cover (grating) of a side ditch in the plant, which was hit by a tank lorry and struck a fuel tank. Grating covers were bolted for safe driving in the plant. A small quantity of fuel leaked from the lorry and flowed into the drainage ditch, but had little impact on the environment as it was processed with oil dispersant and oil mats. The third accident was a fire in the drying equipment. When black smoke was discharged, the equipment was urgently stopped to confirm safety. The cause of fire was inspected, and safety measures and operation procedures were improved.

These accidents did not cause occupational injuries.

#### ■ Physical distribution accidents

Two tank lorry accidents occurred during the transportation of products, and the drivers were injured. Part of the chemical products spilled out, but thanks to the cooperation of nearby factories and the prompt action of the transportation company, it did not develop into a serious environmental accident involving the surrounding area.

#### ■ Soil pollution

At each of our plants, ground water and soil quality are monitored and the pollution status is checked. However, no soil pollution has yet been identified at any of our plants.

#### ■ Education on the Environment and Safety

Environmental security and accident prevention requires not only the correct response at a facility level, but also effective actions by all personnel involved.

Many training sessions are therefore organized regarding environmental and safety operations. Safety education, environmental education, and education on chemical handling is also implemented for accident prevention.

Various education and training sessions are also carried out regularly for various job classes and titles.

<Examples of Safety and Environment Education>

- New employee education, transferred personnel education, newly appointed manager education
- RST education (Article 60 of the Labor Safety and Sanitation Law, "Safety and health education for foremen and others")
- Risk prediction training, risk assessment training
- Experiment and training on combustion and explosions, Low voltage electricity handling education and Chemical substance handling education
- Experience study/Facility maintenance and security education
- Environmental Management System (ISO 14001) education, etc.

#### ■ Safety and Environment Qualifications

Many different machines and facilities are used for our manufacturing activities. Education and training sessions are therefore organized to cover the operation and management of all equipment and machinery.

When legal qualifications are required, personnel acquire the relevant qualification or attend appropriate technical training.

<Examples of legal qualifications regarding safety and the environment>

- High pressure gas production safety controller (High Pressure Gas Safety Law)
- Pollution control manager (Law Concerning the Improvement of Pollution Prevention Systems in Specific Factories)
- Hazardous materials engineer (Fire Service Law)
- Health supervisor (Labor Safety and Sanitation Law)
- Operations chief for various operations (as set down in the rules of the Labor Safety and Sanitation Law)
- Specially controlled industrial waste control manager (Waste Disposal and Public Cleansing Law), etc.

#### ■ Training

Although we are fully prepared for accident and disaster prevention, accidents cannot be completely ruled out. We therefore implement emergency response training to prevent the spread of any damage and promptly calm the situation in the eventuality of an accident. Apart from the training carried out at each workplace, we also organize a general drill assuming that a large-scale accident or disaster has occurred. This drill takes

place with the cooperation of the local fire department, if necessary, and is open to the public.

#### ■ Environmental Activities at the Industry level

Shin-Etsu Chemical takes part in the activities of the Japan Chemical Industry Association, Vinyl Environmental Council and Plastic Waste Management Institute, etc. Moreover, it is striving to improve the safety management and environmental control levels of each of its companies and cooperating with member companies in the industry. We are also undertaking public relations activities on research and enhanced understanding regarding chemical substances and technical support.

<Examples of environmental activities undertaken in cooperation with the industry>

- Harmful air pollutant reduction activity, volatile organic compound reduction activity
- Support for the LRI (Long-range Research Initiative)
- Introduction to the benefits of PVC and promoting recycling of the same
- Support for waste plastics recycling

# **Environmental Accounting**

Investments and expenses in Fiscal Year 2006 of Shin-Etsu Chemical, spent on reducing environmental loads, such as air pollution, water pollution, and the emissions of chemical substances in the air, saving energy for conserving the global environment, reducing waste to improve resource recycling, and recycling used goods were computed in accordance with the Environmental Accounting Guidelines prepared by the Ministry of the Environment, Japan.

The cumulative capital investment related to environmental protection over the past decade has amounted to approximately 20.5 billion Yen.

<Main investments>

- Introduction of a cogeneration facility
- Expansion of wastewater treatment equipment
- Installation of waste disposal and recovery facilities
- Improvement of dust collecting facility
- Improvement of the industrial waste disposal yard
- Promotion of energy saving and installation of an energy recovering facility
- Environmental improvement, etc. of areas around other plants

## **Environmental Costs in Fiscal 2006**

(Millions of yen)

			(
Category	Details	Investment	Expenditure
Business area costs:			
1. Pollution prevention cost	Air, water, noise and other types of pollution prevention measures	722	3,038
2. Global environment conservation cost	Energy conservation and global warming prevention measures	3,322	851
3. Resource circulation cost	Waste prevention, recycling and other measures	159	1,584
Upstream and downstream costs	Green purchasing and container and packaging measures	0	9
Administration cost	Environmental management, monitoring environmental impacts and education measures	0	442
Research and development cost	Environmentally conscious product and process research and development	0	969
Social activity cost	Donations and contributions to environment protection	13	171
Environmental remediation cost	Assessment, handling and other costs related to environmental degradation	15	303
Total		4,231	7,367

#### Social Activities

# **Relations with Employees**

It is people that create and support technology. We aim to provide ideal working conditions.

The Shin-Etsu Group respects fundamental human rights, and implements a variety of approaches in order to establish a work-place environment that is easy to work in and help realize an affluent life that enables each of our employees to be healthy and to make the most of his/her potential and career.

#### **Safety and Occupational Health**

#### ■ Health Considerations

To further decrease the number of sick, we are focusing on the promotion of fitness and physical strength development activity, and by improvements to the regular health consultation service, health guidance for lifestyle-related diseases and mental health treatment, etc. For those working long hours, interviews and guidance are provided by an industrial physician.

Fitness and Physical Strength Development Promotion Committees are also being established in each plant and business establishment where they organize physical strength monitoring and hold seminars and events for physical strength improvement in cooperation with local Medical Treatment Rooms. A Family Health Consultation Desk has also been established in the corporate health insurance society to help ensure the health of employees' families.



lealth class for improving health

#### **Respect for Human Rights**

#### ■ The Human Rights Enlightenment Promotion Committee

We respect the human dignity of all individuals. To help accomplish this, the Human Rights Enlightenment Promotion Committee implements initiatives to ensure that work environments are free of all racial, gender and other forms of discrimination and are places where all employees can work together in a spirit of mutual trust.

In addition, Shin-Etsu belongs to both the Industrial Federation for Human Rights, Tokyo, and the Industrial Federation for Anti-Discrimination, Osaka. Our employees participate in training sessions held by both federations in an effort to raise staff awareness of human rights.

# ■ Performance-based Personnel Evaluation Systems and Equal Opportunities

We have introduced a performance-based personnel evaluation system (for wages, promotions and transfers, etc.) that is applied equally to both genders. The system has proven useful for increasing employees' motivation, as their treatment reflects the way in which they meet their challenges to achieve higher goals.

In order to operate the personnel evaluation system in a fair and appropriate manner, the evaluation standards are made available to all employees and evaluation training is organized for all managers. All possible steps are taken to ensure that all evaluation is carried out according to the uniform standards.

Communication between the evaluator and the person being evaluated is ensured by holding two interviews per year.

A Communication Sheet is also prepared between each staff member and his/her immediate superior. This sheet is utilized for further capacity building by ensuring mutual confirmation of the superior's expectations, the subordinate's desires, target setting for the next six months, and feedback on achievements discussed during the interview.

# **Education/Training and self-enlightenment**

#### ■ Auditing Student System

We established an auditing student system in 1962. In this system, designed to help mid-level employees upgrade their skills, about 10 employees chosen from several operators and others at plant manufacturing sites are sent to study at university for one year. In the 45 years since this system was introduced, 472 employees have completed the program and now function as leaders at their respective job sites.

#### ■ Participation in CEO 40s Training

Mid-level employees are sent on the "CEO 40s Program," conducted by President Iwao Nakatani of Tama University, as part of our efforts to foster executive candidates. Those who have attended the courses apply the knowledge gained by establishing project teams throughout the Company.

#### **■** Career Development Support System

In order to support individual career development, we offer bonuses to employees who have obtained official certification, and, in addition, offer correspondence courses, online learning courses for those who have completed two years of study abroad or attended other educational programs.

#### **Benefits**

#### ■ BAKER-KANAGAWA Japan-U.S. Scholarship Program

This new scholarship program was set up for the children of Japanese employees of the Shin-Etsu Group to go to universities in the United States. The program is the brainchild of Mr. Robert Baker, former president of Dow Chemical Japan Ltd. and former chairman of the American Chamber of Commerce in Japan, and Mr. Kanagawa, president of Shin-Etsu Chemical under their common idea to foster internationally active human resources and deepen the exchange between Japan and the U.S.

#### **■** Bullet Train Commuting Benefits

Since 1989, Shin-Etsu has allowed commuting by Shinkansen bullet train at company expense. This has allowed more employees to own houses and enables personnel who are reassigned to headquarters from business locations in Gunma and Fukushima prefectures to transfer jobs without changing their lifestyles. As of July 2007, 77 employees were taking advantage of this Company offer.

## ■ Childcare and Nursing-care Systems

Our childcare leave system permits employees to take leave till their children have reached the age of 18 months\* in cases where parents are unable to secure places for their children in nursery schools, and the system has been utilized by many employees.

As for nursing-care leave, under certain conditions, employees can take a maximum of 1 year of leave per eligible family member. One person used the system in Fiscal Year 2006.

# Number of employees who have taken child-care leave (Fiscal Year 2006)

Shin-Etsu Chemical (non-consolidated)	8(male:1; female:7)
Consolidated companies in Japan	23(male:1; female:22)
Consolidated companies total*	119(male:18; female:101)

<sup>\*</sup> The length of child-care leave differs from country to country as the program is based on the local laws of each host country.

#### ■ Accumulated Holidays

Employees are granted a certain number of annual paid holidays in accordance with labor regulations. In the event that those holidays are not taken, they are treated as accumulated holidays, which are then carried over to the next year and may be utilized as family-care leave days or as days off for injury or illness. From July 2007, this system will be applied to those who work as volunteers in disaster regions, or donors for organ or bone marrow transplants.

#### ■ Other Systems

In the event of the death of an employee, we have set up a scholarship system to support surviving children and family members. Because the Company has group long-term accident and indemnity insurance, workers may still receive a portion of their salaries, should they be unable to work due to long-term illness or injury. In addition, we have established asset-building schemes, a shareholding system, and a mutual aid society to provide support for weddings, births or sudden hospitalizations of family members.

### Using the child-care leave system

# I spent happy times with my child. I was overwhelmed with gratitude.



Naomi Saisu Human Resources Department

Child rearing was unbelievably tiring for me. Days passed before I anticipated it. I had to concentrate on my child and had little time to spare for myself, but in retrospect, those days were just valuable. I have gained so many things through child rearing.

When I decided to take child-care leave, my colleagues in the office gave me a lot of heart-warming words. I was little anxious about going back to work because I conveyed my hopes and questions to my boss and personnel in charge by mail and telephone.

I chose short working hours soon after the new child-care system was introduced from July 1. All of these are just possible thanks to the understanding and cooperation of the company and my colleagues. I deeply thank all of them. Now I am working hard in my office and at home while being comforted by the smiling child.

<sup>\*</sup> The system will be expanded to cover ages three and younger from July 2007. Employees with children under the age of three can choose shorter working hours with a limit of two hours a day.

#### Social Activities

# **Communication with Local Society**

By way of our plants and business establishments, we are making efforts to maintain communications with local society.

The Shin-Etsu Group continues its efforts to deepen mutual understanding by promoting various communication activities; aimed at building a trusting relationship with a variety of stakeholders in society as well as successfully realizing its mission to ensure that its global customers are satisfied with its business activities.

#### **Educational Support Activities**

## ■ Dispatch of a lecturer to open a class at an

## elementary school

Masato Kori of the Magnetic Materials Research Center (Fukui Prefecture) gave a lecture titled "Our life and industrial production" as a guest teacher in an open class of social study for 5th graders of Shimosho Elementary School in Ono city. The lecture aimed to let the children know the technologies supporting the Japanese industry and learn the splendor of "monozukuri" or making things in Japan. For this reason, Shin-Etsu Chemical, which produces the strongest rare earth magnets in the world in Fukui Prefecture, was asked to dispatch a lecturer, and sent a lecturer as part of our support for regional education.

Magnetic Materials Research Center

Kori described, in an easy-to-understand manner, the strength of magnets, the secret of their strength, and their use, while also showing samples of rare earth magnets. He stressed the requirement of enhanced technological strength for protecting Japanese industry. The children were surprised at the strength of magnets when actually touching them, and listened to the lecture with a gleam in their eyes.

In the general study after the lesson, the Ono City Board of Education spokesman expressed his impression that "Japan is based on monozukuri. It is very important to let children know these efforts made by Japanese companies".



#### ■ 32nd year of Summer School

The Naoetsu Plant organizes a "Summer School" for senior children (4th to 6th graders) at local elementary schools every year. The summer school mainly helps children do their homework during summer vacation, in daily two-hour sessions, with learning in the first hour, and recreation in the last hour, and our recruits mainly take part in the teacher's role. 10 employees of the Naoetsu Plant, 1 to 2 years after entering the company, joined in the event in 2006.

The summer school was commenced as part of our efforts to communicate with local people and contribute to the region, and 2006 was the 32nd summer school. A total of 191 children participated in this summer event.



# ■ Work experience and study venue offered to regional schoolsl

The Gunma Complex has accepted students of regional schools under the work experience and study scheme, and offered a place for social education. The work experience education of Annaka Daiichi Junior High School has been carried out every year. Six 2nd graders and a teacher visited the complex in 2006, and experienced experiments to eliminate foam and forming using silicone products.

19 students and a teacher from Tomioka High School came to look around the laboratories for studying occupation from the standpoint of their future after graduating from university.



Students from Annaka Daiichi Junior High School listening to explanation

#### **Communication with the Local Communities**

# ■ Cultural lecture meeting with former sumo wrestler Mai-no-Umi

Sponsored by the Public Benefit Trust Shin-Etsu Chemical Regional Culture Promotion Fund, established as part of the commemoration of the 60th anniversary of Shin-Etsu Chemical, a cultural lecture meeting was held at Region Plaza Joetsu in Joetsu City. It was the 20th such meeting, and this time invited Mai-no-Umi, a former sumo wrestler ranked in fourth highest place and familiar with his nickname "Ushiwakamaru" (childhood name of an ancient hero in Japan) in the Heisei era.

He fascinated a capacity audience of about 480 by his talk about the episodes when he had just entered the sumo world, meetings with the former grand champions Akebono and Konishiki, and inside stories of the sumo world. The hall was filled with laughter.



The audience applauded the talk by Mai-no-Umi

#### ■ Cooperation to "Green FX Horticultural Team"

Simcoa Operations (Australia) is an organization acting in its region. It formed a reciprocal partnership with the "Green FX Horticultural Team," and recently joined in work to restore and maintain the grounds and facilities in the premises, around the company and inside the park.

The Green FX Horticultural Team is a regional body of a nonprofit organization, Bunbury Pathways that gives people recovering from mental illness the opportunity for personal fulfillment and social integration. For the Green FX Horticultural Team, part-

nership with Simcoa Operations has been invaluable in achieving horticultural skills and self-development for all involved.



The Green FX Horticultural Team working in the Simcoa's main offices

#### **Participation in Local Events**

# ■ Co-sponsoring the Ansei Toh-ashi - Samurai

## Marathon Competition every year

In Annaka City, where the Gunma Complex is located, the Ansei Toh-ashi (Samurai Marathon Competition) is organized every year. In the 32nd meet this year, many Shin-Etsu Group employees participated, and a total of 1,325 people competed.

This competition is a well-known marathon competition in Japan, in which participants run in fancy-dress costumes depicting Samurai, Ninja and cartoon film characters, etc. There are two courses, the Checking Station course (20.35km) and Mountain Path course (29.17km). We co-sponsor this event every year



Shin-Etsu Group employees participated

# Other Activities

# ■ Periodical blood donation campaign and bone marrow donor registry

Alam) Sdn. Bhd. (Malaysia) participated.

Our plants are involved in regular blood donation activities twice a year as part of their social contribution. In 2006, a total of 633 people at the 5 domestic plants (Naoetsu, Takefu, Gunma, Kashima and Shirakawa), and 123 people at the S.E.H. (Shah

A bone marrow donor registry was carried out at the Shirakawa Plant of Shin-Etsu Handotai, and 13 people regis-



Chemical Environmental and Social Report 2007 Efforts of the Shin-Etsu Group Companies

# Efforts of the Shin-Etsu Group Companies

Safety and environmental protection-first is keywords throughout all Shin-Etsu Group companies.

Each of the Group companies is conscious of the key characteristics of our business and actively implements environmental protection activities.

Based on the Environmental Charter adopted in 1998, each of the Group companies prepares its own environmental policy and carries out environmental protection activities.

This report describes the efforts made for environmental protection by Nagano Electronics Industrial Co., Ltd., Shin-Etsu Handotai Co., Ltd., Shin-Etsu Ouartz Products Co., Ltd., JAPAN VAM & POVAL CO., LTD., Nissin Chemical Industry Co., Ltd. and Shinano Electric Refining Co., Ltd.

# Nagano Electronics Industrial Co., Ltd.

# The proactive acquisition of international standards with focus on the environment and quality

Nagano Electronic Industry was founded in 1964 by a joint venture of Shin-Etsu Chemical and Fujikoshi Machinery Corp. Its technical capabilities and research and development experience, accumulated since the foundation of the company, enable it to pursue highly competitive, ultraprecision engineering technology. Its main business is to manufacture silicone wafers by "cutting, grinding and polishing" single-crystal silicone (ingots) supplied by Shin-Etsu Handotai with its ultraprecision processing technology.

The company has proactively acquired international standards, based on its belief that it is the social responsibility of Nagano Electronic Industry to take the environment into account and ensure quality. It acquired the environmental certificate, ISO14001 in February 1998 as part of its efforts to manage the environment.

It also acquired the quality management certificate ISO9002 in April 1994, the QS9000 certificate in June 2003, and a certificate that meets automaker's requirements, ISO/TS16949 in August 2005.



Kazushige Ichikawa Nagano Electronics Industrial Co., Ltd.

# Chikuma Plant with environmentally friendly, state-of-the-art facilities

The progress of industries around us is just outstanding. We are also guick to develop technologies and configure manufacturing systems as infrastructures to take a further step forward. In 2006, the Chikuma Plant was completed for producing 300mm wafers.

The plant is equipped with environmentally friendly, stateof-the-art facilities. For example, energy saving is achieved with the free space cooling function, and natural gas is used to reduce CO<sub>2</sub> emissions. Our device extends to the recycling of water used in manufacturing processes to suppress the total amount. In the area of safety and health, automated facilities ensure safety, and elimination of organic solvents improves the work environment.







Norio Takahashi Manager, Environmental Control and Safety

#### **Activities to Reduce Environmental Loads**

Nagano Electronic Industry believes the "Conservation of global environment is a major issue for everyone," and places its basic philosophy of environmentally friendly and better corporate activities with efforts to protect the natural environment in its environmental policies. The company implements production and education based on this philosophy, in consideration of compliance with environment related laws and regulations, the promotion of environmental management systems, and environmental conservation.

It sets objectives to reduce the environmental loads every guarter. In the fiscal year of 2006, improvements were observed in every aspect. 92.0% of the FY2002 level was achieved for the amount of energy used, 97.6% for the total discharge of wastewater, and 49.9% for the final disposal of waste in terms of sales unit. To reduce waste, cut and ground materials are recycled.

# Nagano Electronic Industry Won "Nagano Labor Bureau **Director's Superior Prize" for Safety and Health Activities**

Every year, the Nagano Labor Bureau in Nagano Prefecture presents prizes to corporations and individuals contributing to safety and health, and Nagano Electronic Industry won the "Nagano Labor Bureau Director's Superior Prize" in 2007. The prize was awarded probably because of zero-accident and zero-injury records of the company for more than 6,500,000 consecutive hours, thanks to its proactive actions, such as on-site patrols by safety and health managers, and activities concerning safety and health management, including a monthly safety patrol by the hazardous and toxic substance prevention committee.

The Shin-Etsu Group just experienced an explosion and fire

accident in its Naotetsu Plant in March 2007. Having learned a variable lesson from the accident, we also reviewed our safety management, and improved our facilities and manuals. We also urged employees to make proposals to improve safety and potentially serious error cases via a questionnaire, and carried out the necessary measures and education. As safety has top priority, we will continue to make our utmost efforts to prevent accidents and promote safety through improvements of facilities based on risk assessment, prediction of danger, safety education and training, etc. in order to update the zero-accident and zero-injury record.

#### **Contribution to Local Society**

As "People Behind Superb Quality" and "People Behind Superb Technology" are our motto, we focus on the management of the health of employees, including mental health.

Our efforts to provide employees with safe and comfortable workplaces were awarded by the Nagano Labor Bureau Office with the Comfortable Workplace Promotion Program in February 2007.

We also communicate with local people by cleaning the streets around the company every year. Around 90 employees joined the event this year. In addition, we actively promote activities contributing to society, for example, with cooperation to local fire brigades, and donations to local festivals and Bon Festival Dance.



**Company Outline** 

Nagano Electronics Industrial Co., Ltd. Representative: Kazushige Ichikawa, President Location of Main Office: Chikuma City, Nagano Prefecture Businesses: Ultraprecision processing of semiconductor silicon wafers and other electronic materials and new materials

	Environmental Target	Fundamental Philosophy	Measures for Environmental Conservation	Safety and Occupational Health
Shin-Etsu Handotai Co., Ltd.  Representative:     Fumio Akiya, President Location of Main Office:     Chiyoda-ku , Tokyo Businesses:     Manufacture and sale of High-Purity Semiconductor Silicon and Compound Semiconductors	While expanding our global business activities, we will continue to engage in environmental management in accordance with the Environmental Charter of the Shin-Etsu Group, regarding this as one of our most important tasks	In keeping with the philosophy of "Corporate activities friendly to both earth and humans" and to help realize a society that supports sustainable development, we consider the management of the environment, safety and health as our most important managerial tasks.	An Environmental Safety Liaison Conference was setup with the environmental safety managing executive as the chairman, and the environmental safety department managers of the Shin-Etsu Handotai Group as the members of the conference to discuss and determine matters concerning environmental safety management. An Environmental Safety Management Plan is set up at the beginning of each fiscal year as a common guideline across the Shin-Etsu Handotai Group. According to the plan, the factories are operated by promoting free space cooling systems and 3R (reduce, reuse, and recycle) as a means to stop global warming.  Environmental safety management at each plant is reviewed in the "Safety and Environment Committee" held every month and by the relevant plant manager in accordance with the ISO14001 system. In addition, total confirmation is made by environmental safety audits more than once a year to upgrade the level of environmental safety.	The focus is on the improvement of facilities and work procedures through various measures, including a proactive study of work-place safety, HAZOP and risk assessment. At the same time, efforts are made to ensure safety through various activities, including regular safety inspections and proposals to improvements.  For the health of workers, our efforts are also made to improve the work environment and prevent occupational illnesses via periodical health examinations and assessment of the work environment. Mental health is also actively taken care of.
Shin-Etsu Quartz Products Co., Ltd.  Representative: Hiroshi Matsuzaki, President Location of Main Office: Shinjuku-ku, Tokyo Businesses: Manufacture and sale of Synthetic Quartz	Group wide efforts to promote the environmental management policies of the Shin-Etsu Quarts Products Group based on the Environmental Charter of the Shin-Etsu Group	As our responsibility as a business consuming a large amount of gases and electric power, environmental conservation is promoted based on resource and energy saving and reduction in waste.	As for global warming measures, our goal is to reduce emissions in CO <sub>2</sub> unit. Chemical substances are handled so as to prevent atmospheric and water pollution. We are also trying to raise the awareness of employees for green procurement and compliance with the EU RoHS Directive. The hydrofluoric acid used for cleaning quartz glass is strictly controlled to avoid any outflow to groundwater or rivers and contaminate the environment.	We play close attention to the prevention of occupational accidents, with the horizontal expansion of unified intentions through the safety and health committee set up at each plant and branch office, and a regular meeting, including the head office.  Environmental measures, and risk management in terms of safety and health, quality control, and other issues are improved by enhancing the effect of each issue with unified management throughout the plants.
JAPAN VAM & POVAL CO., LTD.  Representative: Hirokazu Okamoto, Representative Director and President Location of Main Office: Sakai City, Osaka Prefecture Businesses: Manufacture and sale of vinyl acetate, poval and vinyl carboxylate	We contribute to maintaining the health of the Earth and its ecosystems, while always taking the impacts that our activities may be having on all aspects of the environment fully into consideration.	The basis of our environmental protection and safety system is the prevention of accidents before they occur. Based on the motto "Don't Harm Ourselves, Don't Harm Others," we have established a system covering all work carried out by our employees.	In consideration of the environment, we converted from Bunker A fuel oil to liquefied natural gas in 1992, reducing the global warming potential resulting from our energy usage to approximately 70% of the 1990 level. We are also devising new ways to recover raw materials through our unique manufacturing processes. As an example of our approach to the development of new eco-friendly products, POVAL is a hydrosoluble synthetic polymer, which is becoming increasingly popular. In future, we will continue our efforts to manufacture products that contribute to reducing environmental burdens.	We take all possible measures for disaster prevention since we have many manufacturing processes in which dangerous substances are handled. We are paying special attention to the risk of fire and we work on countermeasures against static electricity, such as flow speed control, the application of bonding, and intensive facility inspections.  Since our main office and plant are located in the Sakai Senboku Coastal Complex, we are a member, and are engaged in various collaborative activities with governmental organizations aimed at promoting the region by establishing a council and carrying out disaster drills and other such actions.
Nissin Chemical Industry Co., Ltd.  Representative: Yoshiyuki Miyazawa, President Location of Main Office: Echizen City, Fukui Prefecture Businesses: Manufacture and sale of PVC modified resins, synthetic resin emulsions, silicone modified resins, hot-melt adhesives and acetylene series chemicals	Since we have many manufacturing facilities that handle high pressure gases and other dangerous substances, we will continue to operate in accordance with the <i>safety and environmental protection-first</i> , using this as both a Management Policy and an Environmental Target.	We will promote increased understanding of our company through dialogue with a variety of stakeholders, including representatives of the local community and regulatory authorities. We aim to ensure safe operations and the improvement of energy efficiency.	We have installed a gas recovery system in order to regulate exhaust emissions and for the combustion of off-gases. In addition, we have progressively expanded our effluent treatment facilities in response to the increased production of our main products.  The use of PVC emulsion in the surface treatment of PVC wallpaper is increasing and now comprises almost 80% of all wallpaper used for offices and housing. We are also focusing on the enhancement of eco-friendly products.	In order to improve our safety measures and reduce the risk of accidents in transit, we are adopting a system of transportation based on modal shift. When we receive a supply of PVC monomer raw material from the Kashima Plant of Shin-Etsu Chemical, its transportation from Japan Railway's Kamisu Station to Minami-Fukui Station is contracted to Japan Freight Railway Co., Ltd.  We are also exchanging information and sharing know-how with the Takefu Plant of Shin-Etsu Chemical, adjacent to our own company, and proactive efforts are being made to implement Green Procurement procedures with our customers.
Shinano Electric Refining Co., Ltd.  Representative: Kai Yasuoka, President Location of Main Office: Chiyoda-ku, Tokyo Businesses: Manufacture and sale of grinding and abrasive powders, fire-resistant materials and PVA grinding wheels	We will make ongoing improvements to the management of chemical substances, energy saving, resource saving, recycling, and the reduction of waste through the accurate assessment of their environmental impacts.	We pay close attention to the safety of both the regional and global environment and that of our employees. In order to implement this philosophy, we are estab- lishing Action Guidelines that prioritize Safety and Environmental Protection-First.	In order to address the problem of waste, we are promoting recycling of a large amount of effluent sludge. Recycling of waste as materials for cement, steel and recycled sand is underway, and improvements of the recycling rate are planned by exploiting new applications.  We established a medium-term environmental measures plan as a measure to improve the environment. We are also now promoting environmental improvements, such as reduced workplace noise and soot levels.	In order to raise the awareness of all employees of safety, prediction of danger prior to the start of work is promoted, with the focus of prediction changed every time.  A system of proposals for concerns, potentially serious errors, and dangerous places is implemented, and if the proposal cannot be resolved on site, it is discussed at a specific safety measure meeting to draw up a response to the proposals.

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# **History of Environmental Activities**

#### Measures taken by the Shin-Etsu Group

Sep. 1955 Education and training committees established

Apr. 1953 Work manuals and standards formulated

Nov. 1998 First Environmental Report published

Nov. 1999 Company-wide hearing on environmental issues

Mar. 1961	R&D Committee and Chemical Industry Council established
lun. 1961	Safety Council established
Oct. 1961	First safety audit carried out
Nov. 1966	Safety Health and Hygiene Committee established
Nov. 1970	Environmental Control & Safety Department established
Oct. 1971	Wastewater treatment facility completed at Isobe Plant
Mar. 1972	Large-scale hydrochloric acid recovery facility (byproduct incinerator)
	completed at Kashima Vinyl Monomer plant
Nov. 1973	Company wide emergency council established
eb. 1974	Environmental Control & Safety Departments in each plant placed under
	the direct jurisdiction of plant general managers
Aug. 1975	Environmental Control & Safety Management Regulations and
	Emergency Response Regulations formulated
Oct. 1989	CFC Control Countermeasures Committee established
May 1990	Global Environment Issues Countermeasures Committee established (by
	reorganizing the CFC Control Countermeasures Committee)
Mar. 1995	Participation in Responsible Care (RC) promotion
Iul. 1996	ISO 14001 certification obtained for the Gunma Complex
Dec. 1997	ISO 14001 certification obtained for all production plants of Shin-Etsu
	Handotai
Aug. 1998	Environmental Charter adopted

Mar. 2000	ISO 14001 certification obtained for all production plants of Shin-Etsu
	Chamical

Jan. 1999 ISO 14001 certification obtained for JAPAN VAM & POVAL CO., LTD.

	Chemical
Apr. 2000	ISO 14001 certification obtained for Nissin Chemical Industry
May 2000	Final disposal facility completed at the Gunma Complex
Oct. 2001	Waste disposal facility completed at the Naoetsu Plant
Mar. 2003	Attended First International Conference on Green and Sustainable
	Chamistry (CSC TOKYO 2002)

	Chemistry (doc 10k10 2003)
Apr. 2005	Corporate Social Responsibility (CSR) Promotion Committee establish
Jul. 2005	Waste-recycling system at Naoetsu Plant began full-scale operation

# External Assessments

Oct. 2005 Environmental Charter revised

FTSE4 Good

## Rating

37

Moody's Investors Service, Inc. has classified Shin-Etsu Chemical Co., Ltd.'s long-term debts as A1

#### Memberships

Nippon 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, etc.

As of March 31, 2007

#### Safety/Environment/Industrial Health-related Commendation Results

1953

1960

1970		
1980	Nov. 1988	Fukui Prefectural Governor's Award for Excellent Manufacturer of High- Pressure Gases (Shin-Etsu Handotai/Takefu)
1990	Sep. 1992	International Trade and Industry Minister's Award for Excellent Green Factory (Shin-Etsu Handotai/Shirakawa)
	Oct. 1993	Osaka Prefectural Governor's Award for Excellent Manufacturer Related to High-Pressure Gases (JAPAN VAM & POVAL)
	Nov. 1994	Achieved 13,300,000 disaster-free hours, a 3rd class disaster free record (Shin-Etsu Handotai/Shirakawa)
	Jun. 1996	Prime Minister's Commendations for Outstanding Contribution to the
	Oct. 1996	National Greening Campaign (Shin-Etsu Handotai/Shirakawa) Minister of International Trade and Industry Award for Excellent Manufacturing Facility of High-Pressure Gases (Shin-Etsu
	Jun. 1997	Chemical/Gunma) Fire Defense Agency Director General's Prize for superior handling of hazardous materials (Shin-Etsu Chemical/Gunma)
	Jun. 1997	Fire Defense Agency Director General's Prize for superior handling of hazardous materials (JAPAN VAM & POVAL)
	Nov. 1998	Superior High-Pressure Gas Production Facility Award from the Head of the Kinki Bureau of Economy, Trade and Industry (Shin-Etsu
	Jul. 1999	Handotai/Takefu) Superior High-Pressure Gas Production Facility Award from the Head of the Kanto Bureau of Economy, Trade and Industry (Shin-Etsu Chemical/Kashima)
2000	Jun. 2000	Fire Defense Agency Director General's Prize for superior handling of hazardous materials (JAPAN VAM & POVAL)
	Jul. 2000	Minister of Labor Superior Prize (Nissin Chemical Industry)
	Jul. 2000 Nov. 2000	Minister of Labor Superior Prize (Naoetsu Electronics Industrial) Superior High-Pressure Gas Production Facility Award from the Head of
		the Kinki Bureau of Economy, Trade and Industry (Shin-Etsu Quartz Products/Takefu)
	Oct. 2001	Minister of Health, Labor and Welfare's commendation for industrial hygiene activities (Shin-Etsu Quartz Products/Takefu)
	Oct. 2001	Minister of Economy, Trade and Industry Award for Superior High- Pressure Gas Production Facility (Shin-Etsu Chemical/Kashima)
	Oct. 2002	Thirty-Year disaster-free Special Achievement Award from the Japan Soda Industry Association (Shin-Etsu Chemical/Naoetsu)
	Nov. 2002	Superior High-Pressure Gas Production Facility Award from the Head of th Kinki Bureau of Economy, Trade and Industry (Fukui Shin-Etsu Quartz)
	Jul. 2003	Superior High-Pressure Gas Production Facility Award from the Head of the Kanto Bureau of Economy, Trade and Industry (Shin-Etsu
	Aug. 2003	Chemical/Kashima) Achieved 7,000,000 disaster-free hours, a 1st class disaster-free record (Shin-Etsu Handotai/Isobe)
	Aug. 2003 Jul. 2005	Achieved 5th class disaster-free record (Naoetsu Electronics Industrial) Excellent Safety and Hygiene Workplace Award from the Minister of Health, Labor and Welfare (Shin-Etsu Chemical/Kashima)
	Dec. 2005	Commendation of the Malaysian Ministry of Human Resources (a counterpart of the Japanese Health, Labour and Welfare Ministry) for One of
		Five Domestic Companies in Malaysia for Excellence in Safety and Occupational Health Management (S.E.H.(Shah Alam) Sdn. Bhd.)

Nagano Labor Bureau Director's Superior Prize (Nagano Electronics

# **RC** Audits

#### Responsible Care (RC) Audits

Aiming to further improve its RC activities, Shin-Etsu Chemical carries out RC audits. These audits involve the verification of all Group activities and reports by the Japan Responsible Care Council (JRCC).

RC audits are conducted in accordance with the "Fundamental Policy of the Japan Chemical Industry Association for Environment and Safety" (Revised edition, 2005) and the "Responsible Care Codes"\*. The verification process aims to improve the quality of RC activities by providing objective evaluations of the content and results of RC activities carried out by JRCC members, and serves to enhance the credibility of RC activities by publishing the results and ensuring accountability.

\* 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 cover initiatives in these areas, together with the Management System Codes required for operating all the above.

