

Sumitomo Heavy Industries Group

Environmental Sustainability Report

2016

Sumitomo Heavy Industries, Ltd.

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Editorial Policy

This report is intended to present our stakeholders with an organized summary of the measures and conceptual approaches taken by Sumitomo Heavy Industries Group in our environmental activities and social contribution activities.

At present we are taking measures toward achieving the objectives of the 4th Medium-Term Environmental Plan (FY2014-2016).

We hope to give our readers an understanding of an overview of the 4th Medium-Term Environmental Plan.

To that end, we have sought to make the report accessible by using plain and concise language and by making frequent use of graphs, illustrations and photographs.

Further, when issuing this report, we consulted the Environmental Reporting Guidelines (2012) and the Environmental Accounting Guidelines (2005) from the Ministry of the Environment.

Scope of the report

Sumitomo Heavy Industries, Ltd. and its group companies

Period covered by this report

April 1, 2015 - March 31, 2016

Previous issue: October 2015 Current issue: September 2016

Disclaimer

This report contains not only facts relating to the past and present of Sumitomo Heavy Industries Group but also plans, forecasts, and projections based on management plans and management policy at the time of publication. These plans, forecasts and projections are assumptions and judgments based on available information at the time of writing, and results or matters pertaining to future business activities may differ materially from the descriptions due to changing conditions.

Additionally, further examination of past data may lead to results that differ from values given in past Environmental Sustainability Reports.

With our foundation in the Sumitomo Business Spirit, we will go on providing "first-class products" and services that contribute to the realization of a sustainable society.

I would like to say thank you to all our stakeholders: Your longstanding support and understanding of our Group's corporate activity are greatly appreciated.

The Sumitomo Heavy Industries Group established the Corporate Governance Basic Policy of Sumitomo Heavy Industries in November 2015. Regarding initiatives to address environmental problems, this Basic Policy specifies that:

"By formulating a Medium-Term Environmental Plan in addition to establishing the Sumitomo Heavy Industries Group Environmental Policy, we will take positive, active measures to resolve environmental problems."

All members of the Group are acting as one to this end.

As to our specific activities, these have been promoted in the 4th Medium-Term Environmental Plan (FY2014-2016). The 4th Medium-Term Environmental Plan sets forth the following basic policies:

- Promote environmental risk management
- Contribute to achievement of a low-carbon society
- Realize a resource-recycling society
- Contribute to local communities and take measures for biodiversity



In fiscal year 2016, which is the plan's final fiscal year, we will take steps to pursue these policies and further promote environmental activities at Group companies, including those in other countries.

The business environment for the Sumitomo Heavy Industries Group is changing moment by moment, and societal demands are also changing day by day. Under these circumstances, and in light of the management situation and changes in the business environment, we took steps in 2015 to revise the Group management philosophy for the first time in 16 years. As we go forward, we will take this management philosophy as the focal point for our business activities as well as the starting position for Sumitomo Heavy Industries Group employees.

The environmental programs we have been pursuing in the Group, including our activities to prevent global warming, have always been in response to important societal demands. They have also always been in accord with the "Sumitomo Business Spirit" as well as with our new management philosophy, which declares, "Taking integrity as our principle, we will earn the high regard and trust of all our stakeholders and contribute to society."

I myself have a very keen awareness of the importance of environmental activities. Therefore I will conscientiously and steadfastly make every effort to see that the top management in each business division and every Group company as well as all the Sumitomo Heavy Industries Group employees engage in specific implementation of these activities.

In furthering the various environmental activities of the Sumitomo Heavy Industries Group described in the FY2016 edition of our Environmental Sustainability Report, I will base our approach on the recently revised management philosophy. I intend to communicate the 4th Medium-Term Environmental Plan to employees in simple, readily understandable terms so that we can elicit the maximum energy and capacity from every individual.

Here at the Sumitomo Heavy Industries Group, we hope that our efforts will result in even more of our stakeholders gaining an awareness of the Group's activities. We will then hear more of your opinions to incorporate into various of our activities, furthering our ceaseless efforts to reform ourselves, as we steadily move toward realization of the Group's objectives.

We appreciate your opinions and advice, and we will be very pleased to draw on them for our future initiatives.

President and CEO

S. Betsukawa

Outline of Sumitomo Heavy Industries Group

The Sumitomo Heavy Industries Group contributes to building an affluent society with "manufacturing" technology

(as of March 31, 2016)

Company name Founded Incorporated Head Office

Sumitomo Heavy Industries, Ltd. November 20, 1888 November 1, 1934 1-1 Osaki 2-chome, Shinagawa-ku, Tokyo Capital Number of employees Net sales

30,871,650,000 yen Consolidated: 18,491 Consolidated: 700,838 million yen

Machinery Component

Main Products Power transmission equipment, Inverters

Company

Outline



We handle speed reducers, which are devices for lowering the number of motor revolutions and raising torque. Taking part in a broad range of markets, speed reducers are used in conveyance lines at factories, in robotic joints and in the drive systems of a range of machines.



An extremely fuel-efficient product, our hydraulic excavator was the first construction machinery to win the Energy Conservation Grand Prize. Featuring outstanding maneuverability, the Good Design Award is another stellar achievement for the excavator.



We specialize in midsized tankers with a capacity in the 100,000-ton class. By narrowing down the types of ships, we have raised development efficiency and we take pride in a low fuel consumption that is in the top class for the industry.

Precision Machinery

Main Products Plastic injection molding machines, ion accelerators, laser processing systems, crvogenic equipment. precision positioning equipment, transfer molding press machines precision forgings, defense equipment



We handle injection molding machines for making plastic products, and devices for manufacturing liquid crystal and semiconductors. Among injection molding machines, products that require precision machining are one of our particular specialties.



The products include devices for diagnosing and curing cancer, forging presses for producing components for automobile engines, large cranes for shipyards and ports, steam turbines for private power generation at factories, automated warehouse systems, etc.

Main Products

Environmental Facilities & Plants

Power generation systems, industrial wastewater treatment systems, water and sewage treatment systems, landfill leachate treatment systems, air pollution control plants. process equipment for chemical plants, reactor vessels, mixing reactors, steel structures, food processing machinery



We also handle boilers that are 100% biomass fuel-compatible, and energy-saving effluent treatment facilities. Our products also include exhaust gas processing facilities that do not use water, and facilities for recovering metals from waste

Since its foundation as a repair shop for the Besshi Copper Mine in 1888, the Sumitomo Heavy Industries Group has moved in step with social and industrial development. With a manufacturing technology nurtured by a tradition spanning more than 100 years, we make use of proven technologies that "actuate and control" devices from the world of nanotechnology to gigantic structures to realize original ideas and dreams.



700.8 billion

ven

Asia (except China)

Central and South America

17.2%

China

Japan

Europe

North America

Environmental

Other

Facilities & Plants

47 49

) Oceania

Other

700.8 billion

ven

Machinery Components
 Industrial Machinery

Ships

Precision Machinery

Construction Machinery



8.9%

Japan

Europe

North America

18,491

China

Other

Asia (except China)

4

Relationship between Sumitomo Heavy Industries Group and Society

Oil refineries, shipbuilding yards, automobile factories, semiconductor industry and other industrial settings as well as the settings of daily life such as households, hospitals, elevators and escalators: the products of the Sumitomo Heavy Industries Group are involved with all these areas. Here, we introduce several products that take account of the global environment as well as the people who use them.



3 Shipbuilding Yards

Large crane

Contributes to optimization of shipbuilding. Helps raise the efficiency of shipbuilding

operation with a lifting capacity of 1,200 tons.

4 Sea

Oil tanker Implementing energy conservation on

board ships Our proprietary technologies deliver energy-conserving performance at the international top level.



5 Harbors

Container transfer crane

Resolves environmental issues caused by heavy fuel consumption, black smoke and other exhaust gases. By adopting a hybrid system, we have kept maximum engine output to about 1/3, reduced fuel consumption by approximately 60%, and reduced exhaust gas.



Delivering high productivity with high precision and high quality Compatible with 20 nm ultrafine LSI. Implants ion in wafers.

7 Automobile Factories

Precision speed reducers

No wobbling at inversion Widely used in fields where precise control is required such as welding robots, etc.

Forging press Largest in the world at 16,000 tons

Plays a part in a range of forging scenarios from compact machinery to the world's largest machines.





8 Hospitals

Cyclotron for PET

We continue to lead in tracer RI pharmaceutical systems for PET systems. Discovers cancers of less than 1 cm in the early stages.

Proton cancer therapy system

More compact than the onventional system Capable of pinpointing and picking off cancer cells, outstanding in terms of its gentle therapy effect on the patient's body.





labor at use.

8

Cryocooler for

MRI systems

The simple structure saves

13 Power Generating Facilities

Biomass boiler

Contributes to the global environment by utilizing diverse fuels.

Creates power and steam from a variety of fuels including biomass fuels where high-efficiency use has been difficult in the past.



14

Dry-type desulphurization denitrification system

Contributes to processing SOx, NOx and dioxins in exhaust gas. with confidence an results that responneeds of the times.

Treats exhaust gas without using water.

15





We are proud to have delivered about 6,500 turbines to approximately 80 countries worldwide.



13



Speed reducers

A history of trust spanning more than half a century The compact design trims weight by 30%.

10 Construction Sites

Hydraulic excavators

We contribute to reducing the burden on the environment worldwide. Delivering a 20% improvement in fuel consumption.

First construction machinery to receive Energy Conservation Grand Prize (FY2007).



Sewage Treatment Plan

11 Underground Parking Lots

 Mechanical parking garage

Maximum effective utilization of limited space Facilitating faster removal times and

higher storage capacity (about 170 vehicles per unit).

12 Oil RefineriesCoke drums

Responds to wide-ranging customer needs with a sophisticated quality assurance system.

At oil refineries, the coke drums are capable of processing heavy oil in the most efficient manner.



12

11

production equipment Delivering high positioning precision

on the order of nanometers

14 Televisions and PCs

Semiconductor and liquid

We handle the XY stages used for precision positioning of FPD and semiconductor manufacturing equipment.

15 Mobile Phones, DVDs and CDs

Plastic injection molding machine

Approaching next-to-zero waste, defects or difficulty Compatible with precision micro-molding.





Yokohama Factory contributes to biodiversity with rooftop vegetable garden

- Sumitomo Heavy Industries Modern, Ltd. -



Sumitomo Heavy Industries Modern, Ltd., has built a rooftop vegetable garden at its Yokohama Factory. This originally started in 1994, when the Yokohama No. 1 Factory was being built, and we took measures to address the factory greening ratio. After that, we began putting potted trees in offices, dining halls, and meeting rooms to contribute to increased greening. This developed into our rooftop vegetable garden.

Our initial purpose was to raise the greening ratio of the factory. The dining hall and meeting rooms were located on the fourth floor, and the view from the dining hall was of beautiful, luxuriant green, so gradually the fourth floor became a place where employees liked to come and relax on breaks. Visitors coming to our meeting rooms also began showing interest in the greenery. Every year in late July we invite employees' families to gather here for a beer party. The employees' children enjoy the event, as well, and it is contributing greatly to our feeling of closeness with employees and their families.

In fiscal year 2015, we also started the rooftop vegetable garden, and in that year we planted watermelon and bitter gourds. At the get-together with employees in fiscal year 2015, the watermelons grown here were used by the children in watermelon splitting games, with the watermelons later enjoyed by everybody there. In fiscal year 2016, eggplant and beefsteak plants were grown in the garden, and the produce was shared with employees. The lawn does not need maintaining over the winter. The grass grows very quickly during the summer, however, so we cut it every three weeks to keep it in good condition.

We intend to continue caring for our lawn and rooftop vegetable garden to keep them growing into the future.



Caring for the lawn





Watermelon splitting game

Get-together with employees

Budget- and environment-friendly heat and power supply facility enters operation

- Sumitomo (SHI) Cyclo Drive Germany GmbH -



In October 2015, the main factory of Sumitomo (SHI) Cyclo Drive Germany (SCG) in Markt Indersdorf renovated its combined heat and power plant (CHP) with new equipment. The old equipment from before used oil as fuel, while the new equipment uses natural gas. The existing boilers were also refitted at the same time to allow the use of natural gas as fuel. In addition to reducing the total fuel cost, the new equipment is also environmentally friendly, cutting annual carbon dioxide (CO_2) emissions by as much as 220 tons.

The newly introduced power generating equipment has a capacity of 50 KW/h. This corresponds to approximately 10% of the electric power



used at the SCG main factory. It has also achieved an energy efficiency of up to 89% by recovering the heat generated while generating power and using it for heating.

Construction of the new installation took three months. The work was completed before the start of Germany's cold winter, however, and the equipment is providing electricity and heat to this factory. We intend to take good care of this budget- and environment-friendly equipment and make good use of it.

Biodiversity initiatives by the Sumitomo Heavy Industries PTC Sales Co., Ltd. Hokkaido Office and Sapporo Service Group

- Sumitomo Heavy Industries PTC Sales Co., Ltd. -

Sumitomo Heavy Industries PTC Sales Co., Ltd. Hokkaido Office and Sapporo Service Group are located in a residential area, and they have built flower-beds and planted flowers along their property boundary that faces the street. This section used to be overgrown with field horsetails that required laborious weeding. As an environmental initiative, however, everyone joined in rooting out the field horsetails, adding soil, spreading fertilizer, and building flower-beds. In July, lavender blooms beautifully and pleases the eyes of passersby.

The aim was initially to beautify the property, but the measure to make this a workplace with flowers heightened the employees' motivation. Now all the on-site members join together in actively caring for the flower-beds. This is a company base located in the natural setting of Japan's north, where the landscape from autumn until the following spring has nothing green growing in it. Therefore we have tried to make an environment that makes people feel better during the brief summer, and we plan to continue this initiative going forward.



Flower-bed

Sumitomo Heavy Industries Group 4th Medium-Term Environmental Plan

At the Sumitomo Heavy Industries Group, we aim to realize the "Excellent Eco Factory" that contributes to the realization of a sustainable society by holding fast to the "Sumitomo Business Spirit" and setting our sights on achieving a low-carbon society in 2020.

Contributing to the Prevention of Global Warming in Both Product Use and Production

- 4th Medium-Term Environmental Plan Focuses on the amount of contribution to reducing CO₂ emissions from product usage -

Our Group's 4th Medium-Term Environmental Plan has the achievement of a low-carbon society as a major component. We are aiming for a 25% reduction in CO₂ emissions from global production and a 15% reduction in CO₂ emissions from product use. We have been taking measures for some time to reduce CO₂ emissions during production, and now we are putting additional focus on the amount of contribution to reducing CO₂ emissions from product usage. This will further reinforce our CO₂ reduction activities working through both products and services.

"The amount of contribution to reducing CO_2 emissions from product usage" refers to the size of the CO_2 reduction that we anticipate from the development of new products with greater energy-conservation performance than the older products (FY2008 standard). In order to increase the amount of contribution to reducing CO_2 emissions from product usage, we are setting fiscal year targets for the increase of the number of our proprietary environmentally friendly products and the expansion of our sales of those products. An overwhelmingly large part of lifecycle CO_2 emissions for our Group's products comes during product use, at 96%. This amount must be reduced. We will take steps to develop and popularize products with greater energy efficiency. Our aim is to contribute to the realization of a low-carbon society.

Meanwhile, our efforts to reduce CO_2 emissions during production are lowering CO_2 from our factories in Japan every year. Our actual records show a 40% reduction from 2004. However, due to an increase in the number of factories overseas, CO_2 emissions increased, leading to a significant overall increase in combined overseas and domestic CO_2 emissions. The 4th Medium-Term Environmental Plan sets a global reduction target of 25% in FY2020, and calls for energy conservation at our factories outside Japan.



Changes in Environmental Management Activities at the Sumite

Sumitomo Heavy Industries Group Established environmental policy

From FY 1995 Established Sumitomo Heavy Industries Environmental Policy (1997) Established Sumitomo Heavy Industries Group Environmental Policy (1999) (Pollution prevention activities, ISO 14001 acquisition and support)

2000

1995

Environmental Management Activities

FY2000-2004

Pollution prevention activities, ISO 14001 acquisition and support Waste reduction and recycling



Basic Policies of the 4th Medium-Term Environmental Plan

Promote environmental risk management We will take steps to reduce environmental risks and aim to achieve zero environmental accidents.

We will expand our environmental risk assessments to all our business establishments, including factories outside Japan, take steps to prevent environmental accidents. and maintain our zero accident record.

Contribute to the achievement of a low-carbon society

We have long been taking measures to reduce $\rm CO_2$ emissions during production, and in addition we are reinforcing our activities to reduce $\rm CO_2$ emissions during product use.

3 Realize a resource-recycling society

We will continue to reduce the amount of waste we generate and pursue zero emissions.

Contribute to local communities and take measures for biodiversity

We will participate in local community activities in every region, and contribute to the protection of a diversity of organisms by afforestation at our factories and other such activities.



Environmentally friendly products from Sumitomo Heavy Industries Environment Co., Ltd.

- Contributing to protection of the local water environment -

Sumitomo Heavy Industries Environment Co. Ltd. has business in three key areas: Business relating to water treatment equipment and facilities for the private sector (environmental plant business); business relating to water and sewage facilities for government and other public organizations (water and sewage business); and business relating to measurement and analysis of water quality, the atmosphere, gases, and so on (measurement and analysis business). With a central focus on treatment of factory wastewater, the environmental plant business will reinforce and enlarge the products it has been building up to positions of strength. At the same time, it will powerfully advance its development of new products and new technology. In the water and sewage business, our company will strengthen the commercial appeal of its unique unit equipment (powerful products and single-unit equipment), while promoting development and sales expansion. In the measurement and analysis business, our company is building on the water treatment, bio treatment, and exhaust gas treatment technologies and other knowhow we have cultivated over many years of experience and is taking steps to raise the level and expand the scope of its plant testing as well as its various types of measurement and analysis technologies. These products have been very well received by local governments and other such organizations in every region. Sumitomo Heavy Industries Environment Co. Ltd. equipment is in operation at locations in various areas, and we are contributing to protection of the local water environment.

As a result, we have received awards and commendations of all kinds under various criteria, such as the quality of our products as well as for our safety management and scheduling control during construction.

Going forward, we intend to continue with our research and development and place our high-performance, high-quality products in active use in every region. In this way, we aim to become an enterprise that contributes to the global environment and to society.

FY2014

- Japan Sewage Works Agency, "Excellence in Works FY2014"
- (Part 3 Construction of Water Treatment Facility, Nakatsu Terminal Treatment Plant, Nakatsu City)
- Japan Sewage Works Agency, "FY2014 Excellence as Contractor"
- Tokyo Metropolitan Government Bureau of Sewerage, "Commendation for Excellence as Works Contractor"
- Tokyo Metropolitan Government Bureau of Sewerage, "Commendation for On-Site Excellence in Safety Management" (Reconstruction of Mechanical Equipment for North System Reaction Tank, Shingashi Water Reclamation Center)
- Yokohama City, "FY2014 Commendation from Yokohama City for Excellence in Works"
- (Construction of Recycling Facility for Water Treated by Tsuzuki Wastewater Treatment Plant)

FY2015

- Tokyo Metropolitan Government Bureau of Sewerage, "Commendation for Excellence of Contractor Construction Work Record"
- Gunma Prefecture, "FY2015 Gunma Prefecture Commendation for Construction Work (Prefectural Land Development Department Director Commendation)"
- (Part 2, New Reaction Tank Facility Construction, Kiryu Water Purification Center)
- Gunma Prefecture General Sewerage Office, "FY2015 Gunma Prefecture General Sewerage Office Commendation for Construction Work"
- (New Construction of Final Sedimentation Tank Facilities, No. 1 Water Treatment System, Okutone Water Purification Center) • Japan Sewage Works Agency, "FY2015 Excellent Works Safety Contractor"
- Sludge Treatment Facility Construction, Sewerage Treatment Center, Yuuki City)
 Yokosuka City, Kanagawa Prefecture, "Recognition for Excellence in Works"
- Yokosuka City, Kanagawa Prefecture, "Recognition for Excellence in Works" (New Construction of Final Sedimentation Tank Facilities, Shimomachi Treatment Center)





Environmental Management System

At Sumitomo Heavy Industries Group, we have been promoting environmental management with awareness that business corporations have social responsibilities for protecting the global environment, for preserving the local environment, and for engaging in economic activities that are oriented toward recycling.

Sumitomo Heavy Industries Group Environmental Philosophy

The Sumitomo Heavy Industries Group contributes to implementing sustainable development of society by holding fast to the "Sumitomo Business Spirit."

The Sumitomo Heavy Industries Group is taking action across the Group to protect the global environment.

Environmental Policy

Environmental Management Implemented on the Basis of the Sumitomo Heavy Industries Group Basic Environmental Policy

In 1992, we established the Environmental Committee to promote environmental protection and compliance in local communities. In September 1997, we established the Sumitomo Heavy Industries Environmental Policy in order to drive home the message of environmental management.

In addition, in order to clarify the basic policy of activities across the Group, we established the Sumitomo Heavy Industries Group Environmental Policy in November 1999, expanding environmental management across the Group as a whole including overseas facilities.

Sumitomo Heavy Industries Group Environmental Policy



Environmental Management

Assign Expert Environmental Committee Members and Develope a System to Manage Our Performance on Environmental Objectives

As a corporate group that is expanding its business globally, the Sumitomo Heavy Industries Group considers environmental activities to be social responsibilities. We are therefore aiming to improve the environmental management conducted by every organization belonging to our Group, and to raise it to a high level.

The scope of management extends to our works, business divisions, branches, and Group companies inside and outside Japan. We have assigned expert Environmental Committee members to them and developed a system to manage their performance on environmental objectives.

We have established the Environmental Management Division at the head office. It is engaged in on-going environmental management that extends to drafting mediumterm environmental plans, formulating environmental objectives for each fiscal year, promoting the implementation of plans and objectives, and developing human resources.



Environmental Management Audit

Conduct audits of Every Works and Group Company in Japan and Each of Our Local Corporations Outside Japan

The Environmental Management Division of the head office conducts one environmental audit of every works and Group company in Japan every year. These audits cover the whole of environmental management, including environmental risk assessment and global warming prevention activities. The audit results are evaluated on a five-level scale in each department, using our company's own proprietary evaluation criteria, and then reported to the Executive Board. We take these steps with the aim of raising the levels.

The Environmental Management Division also conducts systematic audits of each of our local corporations outside Japan, taking into account the environmental impact of each company. The principal purpose is to achieve objectives for environmental risk reduction and global warming prevention activities. The audit results are evaluated on a five-level scale, just as with the audits in Japan, and reported to the Executive Board. Audits were carried out at eight factories in China in fiscal year 2013; at five factories in China, two factories in Vietnam, one factory in Indonesia and two factories in the Philippines and two factories in China in fiscal year 2015. Audits will be carried out at two factories in Vietnam and four factories in China in fiscal year 2016.

Environmental Objectives (Medium-Term Plan) and Results

We formulated the fourth medium-term environmental plan, for which FY2016 was the final year, and worked to reduce environmental impact.

Overall view of the FY2015 environmental impact (Sumitomo Heavy Industries Group, domestic)



*2 VOC: Volatile Organic Compounds

Environmental Accounting for FY2015

Active Investment in Administration and Maintenance of ISO 14001 Standards

As a yardstick for measuring the investment, expenditure and effect of environmental protection, we have conducted environmental accounting in accordance with the Environmental Accounting Guidelines, 2005, issued by the Ministry of the Environment.

	Unit: million year									
	Costs for environment protection							Eff	ectiveness of er	nvironmental protection
				Investme	nt amount	Co	osts	Econom	nic effect	Mala and and
	Category	Details of the main activities and the	e effects	2014	2015	2014	2015	2014	2015	Main content
(1) (Costs within Business Areas (Sites)	Maintenance and amortization of environmental equipment and facilities	impact reduction	435	457	732	630	205	223	
	(1) - 1 Costs for Preventing Pollution	Maintenance management of facilities for preve and water pollution and measurement of noise facilities	ntion of air pollution and vibration of	157	59	198	210	0		
akdown	(1) - 2 Costs for Global Environment Protection	Investment in energy-saving measures (electric power monitoring, energy-saving equip upgrades, etc.)	ment, lighting	234	271	59	58	-47	67	Cost reduction with introduction of energy conservation, natural energy
Brea	(1) - 3 Resource Recycling	Investment in waste material reduction and recy	cling (recycling,	44	127	475	363	0		Reducing landfill by separating rubbish, cost reduction by cutting back on waste
	Costs	16036)						252	156	Proceeds from sale of valuables, etc.
(2) Upstream and Downstream Costs Reduction of product packaging material, recycling of use of reverse side of paper		ing of appliances,	2	2	6	3				
(3) I (Management Activity Costs	Administration and maintenance of ISO 14001 s of green areas	tandards, expansion	18	4	1,230	825			
(4) F [Research and Development Costs	Research and development to reduce the environ products, research and development of environ	nmental impact of mental equipment	1,873	2,096	852	622			
(5) Social Activity Costs Local er		Local environmental protection and greening ac	tivities	0	0	1	1			
(6) Cost of dealing with environmental damage		Levies on air pollution loads; share of green bel compensation	ts and pollution	0	0	0	0			
			Total	2,328	2,559	2,821	2,081	205	223	

Environmental Initiatives

Environmental Objectives (Medium-Term Plan) and Results

General Overview of Fiscal Year 2015 Activities and the 4th Medium-Term Environmental Plan (2014-2016)

Targets Achieved in 15 out of 18 Items

We promoted the 4th Medium-Term Environmental Plan (FY2014-2016), for which fiscal year 2016 is the final target year. The fiscal year 2015 targets under the 4th Medium-Term Environmental Plan (FY2014-2016) and the status of achievement of fiscal year 2015 activities are shown below.

Index	Item	4th Medium-Term Environmental Plan (2014-2016)	Targets in FY2015	Achievements in FY2015	Evaluation
	 Zero environmental accidents (legal violations) 	Continue zero environmental accidents (legal violations) Expand environmental risk assessments in Japan and to other countries	Continue zero environmental accidents (legal violations) Expand environmental risk assessments in Japan and to other countries	Continuing achieving zero environmental accidents (legal violations) Expanding environmental risk assessments in Japan and to other countries	0
Environmental	② Increase in the number of ISO 14001 certifications	Total number of factories outside Japan that have acquired certification rises to 17 or more	Total number of factories outside Japan that have acquired certification is 15	Certification acquired by a total of 17 overseas factories in 16 companies	0
wanagement	③ Expansion of the scope of the Consolidated Environmental Management	Expand to marketing and service centers outside Japan Expand local guidance by head office and periodic environmental audits to all principal manufacturing bases outside Japan	 Expand to marketing and service centers outside Japan Expand local guidance by head office and periodic environmental audits to all principal manufacturing bases outside Japan 	Environmental audits conducted at two factories in China and two factories in the Philippines	0
	$\textcircled{0}$ Reduction in CO_2 emissions at works and offices	 In Japan: In FY2016, 32% reduction compared to FY2004 Global (Japan + overseas): 22% reduction compared to FY1990 	In Japan: 31% reduction compared to FY2004 Global (Japan + overseas): 21% reduction compared to FY1990	 In Japan: 29% reduction compared to FY2004 Global (Japan + overseas): 25% reduction compared to FY1990 	Δ
Prevention of Global Warming	② Improved energy productivity Energy productivity = Net sales/CO ₂ emissions	 In Japan: In FY2016, 10% improvement compared to FY2008 Outside Japan: In FY2016, 3% improvement compared to FY2013 	 In Japan: Improvement by 9% compared to FY2008 Outside Japan: 2% improvement compared to FY2013 	 In Japan: Improvement by 13% compared to FY2008 Outside Japan: 7% improvement compared to FY2013 	0
	③ Promotion of green logistics (Reduction in CO ₂ emissions during transportation)	By FY2016, 10% reduction per basic unit of transportation against FY2006 benchmark	9% reduction per basic unit of transportation against FY2006 benchmark	12% reduction per basic unit of transportation against FY2006 benchmark	0
Evenneion of Line up	① Expansion in environmentally friendly products	Number of products certified as environmentally friendly: 23 15% annual reduction in CO ₂ emissions from product use (Contribution to reduction is equivalent to 270,000 tons annually)	 Number of products certified as environmentally friendly: 21 13% annual reduction in CO₂ emissions from product use 	 Actual number of products certified as environmentally friendly: 19 products 19% annual reduction in CO₂ emissions from product use 	Δ
of Environmentally Friendly Products	 Promotion of measures for green procurement (purchase of raw materials and components) 	 Promote green procurement (purchase of raw materials and components) 	 Promote green procurement (purchase of raw materials and components) 	Continue promotion of green procurement (purchase of raw materials and components)	0
	③ Responding to chemical substance regulations that apply to our products	 Expand operation of system for managing chemical substances 	 Expand operation of system for managing chemical substances 	Continue operation of system for managing chemical substances	0
	④ Reduction of product packaging material	10% reduction compared to FY2010 by basic sales unit	10% reduction compared to FY2010 by basic sales unit	18% reduction compared to FY2010 by basic sales unit	0
	① Reduction of waste emissions	 In Japan: Generated volume reduced 13% compared to FY2007 3% reduction in both Japan and other countries compared to FY2013 basic unit 	 In Japan: Generated volume reduced 13% compared to FY2007 2% reduction in both Japan and other countries compared to FY2013 basic unit 	In Japan: Generated volume reduced 8% compared to FY2007 In Japan: 12% increase compared to FY2013 basic unit Outside Japan: 3% increase compared to FY2013 basic unit	×
Promotion of Resource	② Achievement of zero emissions	 In Japan: Continued by all sites Outside Japan: 95% or higher rate of non-landfill treatment 	 In Japan: Continued by all sites Outside Japan: 94% or higher rate of non-landfill treatment 	 In Japan: Continued by all sites Outside Japan: 95% of non-landfill treatment 	0
Recycling	③ Reduction in paper usage	 In Japan: Maintenance management (autonomously assigned issues) Outside Japan: 6% reduction compared to FY2013 by basic sales unit 	In Japan: Maintenance management (autonomously assigned issues) Outside Japan: 2% reduction compared to FY2013 by basic sales unit	In Japan: Continue maintenance management Outside Japan: 4% reduction compared to FY2013 by basic sales unit	0
	④ Reducing Water Consumption	 In Japan: 40% reduction compared to FY2005, continuing achievement at all sites Outside Japan: 3% reduction compared to FY2013 by basic sales unit 	 In Japan: 37% reduction compared to FY2005, continuing achievement at all sites Outside Japan: 2% reduction compared to FY2013 by basic sales unit 	 In Japan: 41% reduction compared to FY2005, continuing achievement at all sites Outside Japan: 14% reduction compared to FY2013 by basic sales unit 	0
	 Emission control of organochlorine chemicals (Soil Contamination Countermeasures Law, Montreal Protocol) 	Continuing complete abolition of dichloromethane Continuing complete abolition of trichloroethylene Continuing complete abolition of tetrachloroethylene Continuing complete abolition of HCFC-141b and HCFC-225	Continuing complete abolition of dichloromethane Continuing complete abolition of trichloroethylene Continuing complete abolition of tetrachloroethylene Continuing complete abolition of HCFC-141b and HCFC-225	Continuing complete abolition of dichloromethane Continuing complete abolition of trichloroethylene Continuing complete abolition of tetrachloroethylene Continuing complete abolition of HCFC-141b and HCFC-225	0
Prevention of Environmental Pollution	 ② Emission control of substances designated as VOC (Air Pollution Control Law) 	In Japan: 34% reduction compared to FY2006 Outside Japan: 3% reduction compared to FY2013 by basic sales unit	In Japan: 34% reduction compared to FY2006 Outside Japan: 2% reduction compared to FY2013 by basic sales unit	In Japan: 48% reduction compared to FY2006 Outside Japan: 7% reduction compared to FY2013 by basic sales unit	0
	③ Total abolition of equipment that uses PCB	 Make appropriate disposal of equipment with high concentration of PCB after receipt of disposal notice For low concentrations, continue removing and storing in accordance with plans 	 Make appropriate disposal of equipment with high concentration of PCB after receipt of disposal notice For low concentrations, continue removing and storing in accordance with plans 	 Start to make appropriate disposal of equipment with high concentration of PCB after receipt of disposal notice For low concentrations, remove and store in accordance with plans 	0
Community Contribution	① Contribute to biodiversity	 Systematic tree planting, greening and other such activities at each factory Continue making quantitative determination of impact from business activities on biodiversity 	 Systematic tree planting, greening and other such activities at each factory Continue making quantitative determination of impact from business activities on biodivority 	Continue systematic tree planting and greening at each factory Continue making quantitative determination of impact from business activities on biodiversity	0

Relations with Society

Global Warming Prevention Activities

In its business activities, including procurement, manufacturing and logistics, Sumitomo Heavy Industries Group has been taking measures to reduce CO₂ emissions by positioning it as the most important issue.

Promoting Environmental Management

Promote measures by participation of all personnel

In the Sumitomo Heavy Industries Group, activities to prevent global warming are positioned as a part of environmental management. The results from each business division are managed on a monthly basis by the Environmental Management Division and feedback is provided. The results are also reported to the Executive Board at its quarterly meetings.

Each division in the Group promotes activities to prevent global warming and is engaged in activities to improve a range of processes in order to further enhance the efficient use of energy and to "visualize" activities and initiatives through "the participation of all employees."

Reducing CO₂ Emissions

$\ensuremath{\text{CO}_2}$ emissions reduction targets achieved in Japan and other countries

Our Group started activities to reduce CO₂ emissions in Japan in fiscal year 2005, taking 2004 as a baseline fiscal year. Fiscal year 2015 was the second year of the 4th Medium-Term Environmental Plan, with the target of reducing CO₂ emissions relative to fiscal year 2004 by 32% by fiscal year 2016. This target value is equivalent to a target of 39% reduction relative to fiscal year 1990, which is the baseline year in the Kyoto Protocol.

In fiscal year 2015, we achieved a reduction of 29% (41% by basic unit) from the Company's baseline of fiscal year 2004. This is a reduction of 36% by comparison with fiscal year 1990, and though this did not achieve the target for the total amount, it did achieve it for the basic unit.



For Japan, the FY2000 figure of 3.78 (t-CO2/10,000 kWh) from the Federation of Electric Power Companies of Japan was used as a fixed emissions coefficient. For other countries, the FY2005 figures from the GHG Protocol were used as fixed coefficients. In other countries, we have set targets for improvement of 1% per year relative to the fiscal year 2013 figure in basic units, which takes production increases into account.

In fiscal year 2015, the figure for the basic unit deteriorated by 3% relative to fiscal year 2013.

The combined target value for Japan and other countries was 141,000 tons, while the actual figure achieved was 138,000 tons, which achieved the target.

Improvement of energy productivity

Energy productivity targets achieved both in Japan and other countries

Starting in fiscal year 2009, Sumitomo Heavy Industries Group has been taking the characteristics of Group businesses into account and using the new unified index of energy productivity (net sales/CO₂ emissions: the reciprocal of the basic unit) in Japan. We are pursuing management and operation on a monthly basis at each business unit (BU).

For fiscal year 2015, we declared a 9% increase over fiscal year 2008 as the target for our program. We achieved this target with an 13% increase at our principal production bases in Japan.

In other countries, we are engaged in measures targeting a 2% improvement over fiscal year 2013.

We achieved this target in fiscal year 2015 with an increase of 7%.

Going forward, we will continue to promote the following measures.

- Concentrate working hours (eliminate waste by mass holidays)
- Minimize standby power (reduce the amount of power used by machine tools on standby)
- Minimize working hours (strengthen production technology capabilities)
- 4 Make effective use of equipment and facilities



Global Warming Prevention Activities

Promoting Green Logistics

Improved load ratio, modal shift, and promotion of effective use of consolidated shipments

Our Group started activities to reduce CO₂ emissions in Japan. In transportation, we have been making efforts to reduce CO₂ emissions by eliminating waste and by improving efficiency. With FY2006 as the benchmark year, we aimed to achieve a 9% reduction in the basic unit of transportation (t-CO₂/weight) in FY2015. Improved load ratio, modal shift, promotion of the effective use of consolidated shipments and other such measures in fiscal year 2015 achieved a 12% reduction. Also, in terms of total CO₂ volume, the reduction was 29%.

In fiscal year 2016, we will again continue promoting measures such as improved load ratios and the effective use of modal shift and consolidated shipments.





Activities to Reduce Paper Usage

Reduction of 47% over fiscal year 2005 realized

Reducing paper use is part of activities to save resources and, at the same time, it is linked to activities to prevent global warming such as reducing CO_2 emissions in the papermaking process. The Sumitomo Heavy Industries Group is aiming to continue with the reduction of 45% compared to fiscal year 2005 levels.

The amount was reduced by 47% in fiscal year 2015, achieving the target.



Environmentally Friendly "First-Class Products" 19 products certified as "first-class products"

The Sumitomo Heavy Industries Group has created systematic and voluntary standards across the Group such as carrying out Lifecycle Assessments*, improving recycling rates at the time of disposal, reducing the volume of packaging, curtailing harmful substances contained in products, and developing products that consume less energy, weigh less, are more compact and last longer. We have launched initiatives for continuous improvements and evaluation based on these standards.

As a result, we added the following 19 products to "environmentally friendly first-class products" by fiscal year 2015.

Plastic injection molding machines (Plastics Machinery Division); warm forging servopresses (Industrial Equipment Division); hot forging servo presses (Industrial Equipment Division); biomass boiler (Energy & Environment Group); compact 25-ton biomass boiler (Energy & Environment Group); dry-type desulphurization equipment (Energy & Environment Group); kiln equipment (Energy & Environment Group); hydraulic excavator (Sumitomo (S.H.I.) Construction Machinery Co., Ltd.); asphalt finisher (Sumitomo (S.H.I.); Construction Machinery Co., Ltd.); hybrid hydraulic excavator (Sumitomo (S.H.I.) Construction Machinery Co., Ltd.); hybrid electric power source for transfer cranes (Sumitomo Heavy Industries Material Handling Systems Co., Ltd.); New pulse-type bag filter "Eco Pulser" (Nihon Spindle Mfg. Co., Ltd.); the Cle-Eco III clean room air-conditioning control system (Nihon Spindle Mfg. Co., Ltd.); electric-powered reach forklifts (Sumitomo NACCO Materials Handling Co., Ltd.): turbines with longer blades (Shin Nippon Machinery Co., Ltd.); dividing-wall distillation columns (Sumitomo Heavy Industries Process Equipment Co., Ltd.); SHX-III/S High Current Ion Implantation System (Sumitomo Heavy Industries Ion Technology Co., Ltd.); S-UHE Ultra High Energy Ion Implantation System (Sumitomo Heavy Industries Ion Technology Co., Ltd.); Sumijetter grit jet pump (Sumitomo Heavy Industries Environment Co., Ltd.)

Lifecycle Assessment: A method of objective and quantitative evaluation of environmental impact throughout the lifecycle (all stages from extracting the resources to manufacturing, use, disposal and transportation) of products and services

Reduction of CO2 Emissions During Product Use

Promote technical innovation and sales expansion in energy-saving products

Under the 4th Medium-Term Environmental Plan, we are working on technical innovation and sales expansion of energy-saving products with the aim of reducing CO₂ emissions during product use by 15% from FY2008 levels. The reduction in CO₂ emissions during product use will amount to the equivalent of 270 thousand tons annually.

Activities Directed Toward Creating a Society Based on Recycling

We are working to limit the discharge of waste material from business activities, as well as to recycle and make effective use of that material.

Measures to reduce environmental impact

Working to Build a Recycling-Oriented Society

In order to build a recycling-oriented society, we at the Sumitomo Heavy Industries Group are controlling the discharge of waste from our business activities, recycling waste, and making efficient use of resources as well as working on initiatives to reduce the burden on the environment through our business activities.

Limiting the generation of waste and reducing the amount of waste discarded

Emissions and disposal targets achieved by combination of Japan and other countries

In Japan, our target for the amount of waste discharged in fiscal year 2015 is a 13% reduction relative to fiscal year 2007. In fiscal year 2015, we worked to increase efficiency in production activities, do away with waste, and limit the amount of metal scrap and other such waste generated. As a result, emissions amounted to 31,066 tons, which was an 8% reduction from fiscal year 2007, and the target for fiscal year 2015 was not achieved. On the other hand, the target for the amount of waste discarded was under 0.5% of emissions, and the 11.68 tons of waste discarded in fiscal year 2015 was only 0.038% of emissions, which exceeds the target.







Zero emissions

Zero Emissions in FY2015 Achieved by Entire SHI Group

The SHI Group has defined factories at which the amount of waste disposed of as landfill as a percentage of total waste (the landfill rate) is less than 0.5% as zero emissions factories. We have been promoting this program since FY2005, and as a result in FY2015 we achieved zero emissions at all seven

works and all eight Group companies. We were also able to achieve a zero emissions rate of 0.038% for the SHI Group as a whole, exceeding the target. We have been continuously achieving zero emissions since fiscal year 2011.

We are operating in other countries with the target of making less than 6% of total waste go to landfill. We achieved this target in fiscal year 2015 with an increase of 4.7%. In terms of the combined figure for Japan and other countries, the percentage of waste going to landfill was 2.3% in fiscal year 2015. In order to achieve zero emissions, separation of waste materials by category for recycling is crucial. We intend to continue with thoroughgoing separation of waste so as to maintain zero emissions, and we will keep our aim on making our factories kind to the global environment.



Reducing Water Consumption

Water use reduction target achieved in Japan

There are limits to the volume of usable water resources. Reducing water consumption is linked to the protection of resources and reduction of discharge into public water systems, and at the same time is also connected with the protection of biodiversity. The Sumitomo Heavy Industries Group has set the reduction target for fiscal year 2015 in Japan at 37% relative to fiscal year 2005, and we are pursuing this target. In fiscal year 2015, we have continued to install visible water pipes (aboveground installation) in order to identify water leaks and eliminate waste. As a result, we achieved our target with a 41% reduction relative to fiscal year 2005, and this also contributed to cost cutting. We will aim for further reductions in fiscal year 2016. We have also been engaging in reduction activities in other countries since fiscal year 2010. The combined figure for Japan and other countries also shows a trend toward reduction.



Activities for Managing Chemical Substances

We manage chemical substances with the aim of preventing of environmental pollution.

Complete Abolition of Organochlorine Chemicals

Continuing with complete abolition

Complete abolition of substances subject to the Soil Contamination Countermeasures Law

We are continuing our initiative for complete abolition of dichloromethane, tetrachloroethylene and trichloroethylene, which are organochemical substances covered by the Soil Contamination Countermeasures Law.

▶ Total abolition of ozone-depleting substances

We totally eliminated use of the ozone-depleting substance HCFC-225 in fiscal year 2008, and that of HCFC-141b in fiscal year 2010. We have maintained the total elimination of such use.

Emission Control of VOC (Volatile Organic Compounds)

Emissions in Japan reduced 48% in comparison with fiscal year 2006, a 44% reduction in terms of basic sales unit

Toluene, xylene and ethylbenzene in paint solvents account for over 90% of the VOC we use. Our goal is to reduce emissions of these chemicals by at least 34% by FY2016 compared with the level in FY2006.

In fiscal year 2015, the reduction reached 48% in comparison with fiscal year 2006 due to a variety of factors. These include the introduction of solvent regenerators, the use of low-solvent coatings, the adoption of detergents that contain no VOC substances and reduction in the amount of coating used. This was also a 44% reduction in terms of the basic sales unit. Continuing from fiscal year 2015, measures to control emissions in fiscal year 2016 will include expanding the range within which low-solvent coatings and detergents with no VOC content are adopted as well as the use of powder coatings. We will also make every effort to reduce waste and reduce the amount of coatings and other such substances used, among other measures, in order to reduce emissions.

We also started activities outside Japan in fiscal year 2012, and in fiscal year 2015 these yielded a 7% reduction by basic sales unit compared to fiscal year 2013.



Emissions and Transfer of PRTR Substances

Emissions reduced 51% in comparison with fiscal year 2006, a 48% reduction in terms of basic sales unit

More than 90% of PRTR substances are paint solvents (toluene, xylene, ethylbenzene). In FY2015, we reduced these substances by 51% of the level in FY2006. This also represents a 48% reduction in terms of the basic sales unit. We will continue to expand the use of low-solvent paint while ensuring that we maintain the quality of our products. We will also install and expand solvent collection and removal equipment to reduce the emission and transfer of PRTR substances.

Emissions and transfer volume of Class I Designated Chemicals Substances under the PRTR Law in FY2015 (Substances subject to reporting)

			Unit: kg
Substance	Cubatanca docignation	Emissions + trar	sferred amount*
number	number		2015
53	Ethylbenzene	147,184	117,203
80	Xylene	400,897	308,729
240	Styrene	1,580	853
296	1, 2, 4-trimethylbenzene	9,066	7,269
297	1, 3, 5-trimethylbenzene	4,973	3,938
300	Toluene	143,680	157,680
349	Phenol	516	423
374	Hydrogen fluoride and its water-soluble salts	24,227	19,162
384	1-bromopropane	12,404	15,369
392	Normal hexane	1,259	494
405	Boron and its compounds	2,311	584
412	Manganese and its compounds	8,752	8,571

* Emissions + transferred amount is the total amount for Sumitomo Heavy Industries and all Group companies



Management of PCB (Polychlorinated Biphenyl) and Total Abolition of Equipment Containing PCB

Gradually upgrading and disposing of stabilizers that contain PCBs

We have completed early registration of all equipment containing high concentrations of PCB with the processing company, Japan Environmental Safety Corporation, and we are undertaking systematic detoxification based on the Act on Special Measures Concerning Promotion of Proper Treatment of PCB Wastes. We are gradually upgrading and disposing of transformers that contain PCBs and lighting equipment stabilizers that contain PCBs. The survey of equipment containing low concentrations of PCBs was completed, as well, and we have started gradual disposal.

Environmental Initiatives

Strengthening Environmental Management Activities at Factories Outside Japan

In the Sumitomo Heavy Industries Group, we are acting to strengthen our environmental risk management and our activities to prevent global warming at factories in countries other than Japan.

Stronger Environmental Risk Management

Strengthening environmental management systems at factories outside Japan

In the Sumitomo Heavy Industries Group, we are advancing our efforts to strengthen environmental risk management at factories outside Japan. Environmental regulations and other such requirements are growing more stringent at the locations of our factories outside Japan. With guidance from local authorities, we are working continuously to strengthen our environmental management systems at each factory in order to comply with local law.

Priority Management System Established in the China Area

The China area has a maximum of eight factories in operation, categorized by area. In order to provide centralized environmental management operations for these Chinese factories, we established a department in our Shanghai offices in 2011 to provide overall environmental management supervision of the China area. A full-time manager has been assigned in this department, and the manager is acting to provide guidance on environmental management operations in the factories, engage in supervisory operations, and pursue other such activities.

The matters required by environmental laws and regulations in China have been growing more stringent in recent years. In order to continue in business, it has become essential to strengthen management functions relating to the prevention of environmental pollution. Our Shanghai offices had already been providing each factory with information about revisions occurring in environmental regulation, and was providing guidance on improving the systems to address changes. Since fiscal year 2015, however, we have also been actively consolidating details of the guidance received from the supervisory units of environmental management authorities in the various areas where our factories are located and disseminating that and related information laterally among all the factories. We hold regular video conferences between the Shanghai office and the head office on matters relating to environmental management.

The Sumitomo Heavy Industries Group's factories in the China area are our only overseas factories that hold regular environmental management meetings in the same way as our factories in Japan. These meetings bring together the environmental managers of each of our factories in China to hear explanations of environmental policy from the head office, to present reports on the status of environmental management at each factory, and so on. These activities are contributing to the raised level of environmental management throughout the area.



Environmental management meeting

When we first started holding environmental management meetings, they were organized around reports on the management status at each company as the main focus. We have gradually been raising the level of content for discussion and debate, however, and the meeting in 2015 included questions and answers that extended into actual management operations from the perspective of centralized supervision of activities to achieve environmental objectives at individual factories. These meetings are also going beyond the discussion of arrangements. The environmental managers from the various factories have begun conducting onsite patrols at the factory where the meeting is being held. We are holding these on-site patrols so that, for instance, environmental risks can be spotted from the fresh perspective of environmental managers from the other factories and so that advanced activities to promote energy saving at the venue factory can be disseminated laterally with the other factories. This is contributing greatly to raising the level of on-site management in the area as a whole.

Promoting Environmental Risk Assessment at Factories in China and Southeast Asia

Of the Sumitomo Heavy Industries Group factories outside Japan, those in China and Southeast Asia face relatively higher environmental risks. We are therefore implementing environmental risk assessments, taking the procedures for environmental risk assessment used at factories in Japan as a basis. We initially started the environmental risk assessments from the management items that present the highest risk for the particular factory. Since then, we have gradually been increasing the number of items for assessment. In fiscal year 2015, we provided the results of environmental risk assessments conducted at the mother factories in Japan to the factories of affiliated businesses outside Japan. This furthered the lateral dissemination of knowhow regarding particular measures to address environmental risks that were experienced in the past at factories in Japan.

At some of our factories outside Japan, we are implementing environmental risk assessments in a way that unifies the identification of environmental concerns that require coverage under ISO 14001 with the development of systems for addressing those concerns.

Promoting ISO 14001 External Certification and Expanding Promotion Efforts

All Sumitomo Heavy Industries Group factories in Japan have already acquired ISO 14001 external certification. We are therefore advancing our efforts to expand the acquisition of ISO 14001 external certification by our factories outside Japan.

	Group companies	outside Japan t	hat have received	l the IS014001	certification
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Company name	Date of Certification
Sumitomo (SHI) Demag Plastics Machinery GmbH (Wiehe factory)	April 1998
Sumitomo (SHI) Cyclo Drive Germany GmbH	March 2006
Sumitomo (SHI) Cryogenics of Europe, Ltd.	June 2008
Ningbo Sumiju Machinery, Ltd.	September 2008
Dalian Spindle Cooling Towers Co., Ltd.	December 2008
SHI Manufacturing & Services (Philippines) Inc.	January 2011
Sumitomo (SHI) Cyclo Drive China Ltd.	May 2011
Sumitomo (SHI) Demag Plastics Machinery GmbH (Schwaig factory)	July 2011
Link-Belt Construction Equipment Company, L.P., LLLP	August 2011
Suminac Philippines Inc.	September 2011
Sumitomo Heavy Industries (Tangshan), Ltd.	March 2012
Demag Plastics Machinery (Ningbo) Co., Ltd.	December 2012
Sumitomo Heavy Industries (Vietnam) Co., Ltd.	May 2013
Sumitomo NACCO Materials Handling (Vietnam) Co., Ltd.	June 2013
Sumiju Magnet (Kunshan) Co., Ltd.	November 2013
Sumitomo (S.H.I.) Construction Machinery (Tangshan) Co., Ltd.	November 2014

Strengthening Environmental Management Activities at Factories Outside Japan

We establish environmental management systems at Sumitomo Heavy Industries Group factories outside Japan in accordance with the environmental regulations in place at the particular factory locations, where requirements vary from one to the other. The factories that have established environmental management systems under ISO 14001 have organized the basic elements relating to environmental management in systematic form. This means that significant benefits can be obtained when the management methods used at factories in Japan and other such information is disseminated laterally.

In fiscal year 2015, one of our factories in China newly acquired ISO 14001 external certification. As a result, all of our manufacturing plants in the China area have now acquired ISO external certification.

Promoting Environmental Audits in Factories Outside Japan

The head office Environmental Management Division implements periodic environmental audits of Sumitomo Heavy Industries Group factories outside Japan.

Environmental audits at factories outside Japan have applied the same standards as factories in Japan since fiscal year 2012. We are checking the environmental management activities at each factory with the aim of reducing its environmental risk to the same level as at our factories in Japan.

The frequency of audits is determined according to the environmental risk at the factory in question, taking local environmental requirements into consideration. During the audits, we check the status of on-site management and related matters. This includes determining whether activities are underway to comply with local conditions, including environmental regulations regarding the atmosphere, wastewater, and so on, and regulations regarding waste disposal, that differ from regulations in Japan. In fiscal year 2015, we conducted environmental audits at four factories in China and the Southeast Asia area.



Environmental audit underway on-site

Sumitomo Heavy Industries Group's factories outside Japan individually determine their own environmental policies and environmental objectives, and each pursues its own environmental management activities.

Each factory establishes its own individual environmental policies. In doing so, each factory takes the Sumitomo Heavy Industries Group environmental policies into account and incorporates its particular circumstances into its policies. These environmental policies, together with the environmental objectives for the fiscal year, are explained to all factory employees at the start of the fiscal year. This education provides an important framework in which the employees can position the environmental management activities at their factory. Every factory sets up bulletin boards in the workplace break areas where notices relating to environmental management are posted for employees. Notices of environmental policies and environmental objectives are posted together with results of environmental measurements, energy consumption, and other environmental management data of all kinds.

As the level of environmental management at the factories rises, these notices are increasing the amount of information available.



Environmental bulletin board

Upgrading Educational Systems for Environmental Managers at Factories Outside Japan

We initially set up and administered the environmental management system at Sumitomo Heavy Industries Group factories outside Japan so that the focus of environmental management activities was on activities to prevent environmental pollution. As the requirements of local environmental management laws and regulations have grown more sophisticated, however, and a growing number of factories have acquired ISO 14001 external certification, we have gradually expanded the scope of management. This means that the environmental managers at the various factories are being required to demonstrate higher levels of knowledge, management expertise, and other such capabilities, and we are therefore developing a system for their continuing education.

As part of this initiative, we invited the environmental manager at our Shanghai offices to come to Japan for a sophisticated educational program. This involved sitting in on environmental audits at our factories in Japan, hearing lectures on the practical business of environmental measurement at the business divisions engaged in construction of environmental facilities, and so on.

In fiscal year 2015, we also initiated a first effort in providing assistance to factories outside Japan that were working to acquire ISO 14001 external certification. We therefore provided the environmental managers at our Indonesia factories with training in environmental management that included the state of environmental management system operations in accordance with ISO 14001 at factories in Japan.



Shanghai office environmental manager education

Relations with society

▶ Global Warming Prevention Initiatives at Factories Outside Japan The Sumitomo Heavy Industries Group's factories outside Japan have been strengthening their activities to reduce CO₂ emissions since 2011.

Activities to reduce energy consumption started with active steps to cut the consumption of electric power for factory illumination, factory air conditioning, air compressors, and so on. We began by turning off worksite lighting and air conditioning during break periods and other such times, and by adjusting the air conditioning to appropriate temperatures. We have been taking steps for the lateral dissemination of energy conservation measures adopted at factories in Japan and related activities.

At our factories in China, factory-wide measures are being taken to cut back on power consumption for lighting in factory work areas. We started by taking on-site measurements of illumination intensity, using the illumination intensity standards adopted for workplaces at factories in Japan as a reference. We are also eliminating the conventional mercury vapor lamps used for factory ceiling lights and switching to energy-saving forms of lighting. In addition to the adoption of light-emitting diodes, which have been adopted in many instances at factories in Japan, these lighting changes have also involved the adoption of energy-saving types of discharge lamps and other forms of lighting with widespread local dissemination.

The Shanghai Factory and the Kunshan Factory buildings have large skylights to admit light, so that the illumination required for work can be adequately supplied by the factory skylights on sunny days with the ceiling lights turned off. The ceiling lights are therefore extinguished in the daytime. This depends also on the nature of the work being done on the shop floor. Precision measurement and other such operations, for example, require greater illumination intensity. The point, however, is to keep from increasing the ceiling lighting in these workplaces, instead making active use of localized illumination. At the Kunshan Factory, the workplaces that require localized illumination have light-emitting diodes installed on the pillars and wall surfaces around the shop floor to ensure that illumination is provided to workplaces more efficiently. In addition, movable lighting equipment is set up so that every measure is in place to provide optimal lighting for dayto-day work. These activities to improve lighting equipment for the purpose of energy conservation are being carried out on a factory-by-factory basis, with individual factories using their own resources to investigate and implement improvement measures. This indicates that the standards for energy-saving activities have risen higher even at the shop floor level in our factories.



Shanghai Factory ceiling



Kunshan Factory ceiling



Kunshan Factory lighting equipment



Kunshan Factory lighting equipment

Environmental Impact Data

Environmental impact data for SHI works¹¹, Group companies in Japan²² as well as the main overseas Group companies *1 Including Group companies within the works *2 Group companies other than works

[Environmental impact data for each works]





	Electric power (1,000 kWh)	5,867
5	Gasoline (kL)	0.08
use	Kerosene (kL)	0.91
ergy	Heavy fuel oil A (kL)	-
둡	Light oil (kL)	1.19
	LPG (t)	-
	City gas (1,000 m ³)	1.65
	Water used (m3)	12,213
	Discharge into the atn	nosphere
	SOx (kg)	-
	NOx (kg)	-

PRTR (kg/year)	Emissions volume	Transfer volume
Ethylbenzene	46	-
1,2-epoxybutane	4	-
Ferric chloride	-	45
Xylene	81	-
Chromium and trivalent chromium compounds	-	14
Hexavalent chromium compounds (including lead chromate)	-	8
Ethylene glycol monoethyl ether acetate	11	7
Toluene	383	-
Lead	-	46
Lead compounds	-	1
Nickel	-	1
Nickel compounds	-	1
Hydrogen fluoride and its water-soluble salts	-	19
1-bromopropane	10894	-
Boron and its compounds	-	5
Phthalic anhydride	-	34

Chiba Works





	Electric power (1,000 kWh)	18,803		
5	Gasoline (kL)	113.69		
-nse	Kerosene (kL)	2.40		
ergy	Heavy fuel oil A (kL)	-		
ᇤ	Light oil (kL)	448.37		
	LPG (t)	183.88		
	City gas (1,000 m ³)	959.65		
	Water used (m ³)	62,503		
Discharge into the atmosphere				
SOx (kg) -				
	NOx (kg)	156		

PRTR (kg/year)	Emissions volume	Transfer volume
Water-soluble zinc compounds	225	-
Ethylbenzene	3,244	5,012
Xylene	14,156	21,968
Styrene	146	86
1, 2, 4-trimethylbenzene	1,393	308
1, 3, 5-trimethylbenzene	317	70
Toluene	17,318	7,997
Naphthalene	142	83
Hexamethylene diisocyanate	33	-
Normal hexane	141	83
Manganese and its compounds	5	5
Methyl methacrylate	176	103

Yokosuka Works

Established in 1971 Site Area: 523,000 m²

IS014001 (obtained in February 1999) Building Area: 170,635 m²







	Electric power (1,000 kWh)	36.626
σ	Gasoline (kL)	29.00
use	Kerosene (kL)	-
ergy	Heavy fuel oil A (kL)	-
ш	Light oil (kL)	190.66
	LPG (t)	15.92
	City gas (1,000 m ³)	1206.79
Water used (m ³)		141.213
Discharge into the atm		tmosphere
SOx (kg)		-
NOx (kg)		1,152
Discharge into the water		
COD (kg)		367
Nitrogen (kg)		224
	Phosphorus (kg)	42

PRTR (kg/year)	Emissions	Transfer	
(rg/year)	volume	volume	
Water-soluble zinc compounds	-	17	
Acetonitrile	-	13	
Ethylbenzene	54,339	-	
Ethylenediaminetetraacetic acid	-	2	
Ferric chloride	1	24	
Cadmium and its compounds	-	22	
Xylene	82,663	-	
Silver and water-soluble silver compounds	-	46	
Glutaric aldehyde	-	4	
Chromium and trivalent chromium compounds	-	15	
Hexavalent chromium compounds (including		20	
lead chromate)	-	28	
Chloroform	-	12	
Cobalt and its compounds	0.1 or less	0.1 or less	
N, N-Dicyclohexylamine	5	104	
N, N-dimethylformamide	-	2	
Boron and its compounds	-	1	
Water-soluble copper salts (excluding complex salts)	-	8	
1, 2, 4-trimethylbenzene	6	-	
1, 3, 5-trimethylbenzene	10	-	
Toluene	21,055	85	
Lead compounds	-	1	
Nickel	-	4	
Nickel compounds	42	796	
Carbon disulfide	-	4	
Arsenic and its inorganic compounds	1	0.1 or less	
Hydroquinone	-	5	
Phenol	423	-	
Hydrogen fluoride and its water-soluble salts	19	19,109	
1-bromopropane	2,878	1,597	
Normal hexane	-	159	
Water-soluble salts of peroxodisulfuric acid	-	0.3	
Boron and its compounds	8	70	
Manganese and its compounds	787	7,376	
Tritolyl phosphate	-	1,304	



2,500

0



2

10

2004 2012 2013 2014 2015 (FY)

1,000

0

2001

	Electric power (1,000 kWh)	15,172
5	Gasoline (kL)	14.00
nse	Kerosene (kL)	1.19
ergy	Heavy fuel oil A (kL)	-
ᇤ	Light oil (kL)	0.04
	LPG (t)	-
	City gas (1,000 m ³)	600.57
	Water used (m ³)	103,388
	Discharge into the a	tmosphere
	SOx (kg)	-
	NOx (kg)	-
	Discharge into th	e water
	COD (kg)	601
	Nitrogen (kg)	65
	Phosphorus (kg)	-

100

80

60

40

20 0

(%) 100

80

60

40

20

٥

2012 2013 2014 2015 (FY)

PRTR (kg/year)	Emissions volume	Transfer volume
Acrylic acid and its solutions	1	-
Ethylbenzene	10,629	886
Xylene	88,277	5,205
Hexavalent chromium compounds (including lead chromate)	104	-
Cobalt and its compounds	0.22	
Styrene	530	-
1, 2, 4-trimethylbenzene	4,206	-
1, 3, 5-trimethylbenzene	770	1,830
Toluene	23,163	-
Naphthalene	546	-
Lead	104	-
Nickel	1	2
N-butyl phthalate	0.4	-
Water-soluble salts of peroxodisulfuric acid	0.2	-
Benzene	0.5	-
Boron and its compounds	108	-
Manganese and its compounds	35	70
Butyl methacrylate	7	-
1-methyl-1-phenylethyl hydroperoxide	1	-
Methylenebis (4,1-phenylene) diisocyanate	-	4

Okayama Works





Ehime Works (Saijo Factory)

Established in 1973 IS014001 (obtained in February 1999) Building Area: 91,500 m²

Site Area: 535,000 m²









	Electric power (1,000 kWh)	4,152
ъ	Gasoline (kL)	0.44
use	Kerosene (kL)	-
ergy	Heavy fuel oil A (kL)	-
5	Light oil (kL)	6.69
	LPG (t)	50.05
	City gas (1,000 m ³)	-
Water used (m ³)		14,580
Discharge into the atmosphere		
SOx (kg)		-
NOx (kg)		90
Discharge into the water		
COD (kg)		90
Nitrogen (kg)		600
	Phosphorus (kg)	3

volume	volume
1,051	-
2,039	-
406	-
5,251	-
	volume 1,051 2,039 406 5,251

	Electric power (1,000 kWh)	23,704	
σ	Gasoline (kL)	12.30	
use	Kerosene (kL)	24.70	
ergy	Heavy fuel oil A (kL)	908.00	
윤	Light oil (kL)	99.70	
	LPG (t)	543.20	
	City gas (1,000 m ³)	-	
	Water used (m ³)	653,548	
	Discharge into the at	tmosphere	
	SOx (kg)	981	
N0x (kg) 1,391			
Discharge into the water			
	COD (kg)	168	
Nitrogen (kg)		307	
Phosphorus (kg)		2	

DDTD (kakupar)	Emissions	Transfer
Phin (ky/year)	volume	volume
Ethylbenzene	21,398	1,680
Xylene	34,886	3,155
Chromium and trivalent chromium compounds	-	248
1, 2, 4-trimethylbenzene	6	1
Toluene	27,072	2,993
Lead compounds	28	77
Nickel	-	78
Boron and its compounds	-	162
Manganese and its compounds	-	371
Molybdenum and its compounds	11	33

	Electric power (1,000 kWh)	6,908
σ	Gasoline (kL)	14.78
use	Kerosene (kL)	-
ergy	Heavy fuel oil A (kL)	3.11
믭	Light oil (kL)	62.31
	LPG (t)	478.71
	City gas (1,000 m ³)	-
Water used (m ³)		74.826
	Discharge into the a	tmosphere
	SOx (kg)	37
NOx (kg) 369		
Discharge into the water		
	COD (kg)	367
Nitrogen (kg)		492
	Phosphorus (kg)	44

PRTR (kg/year)	Emissions volume	Transfer volume
Ethylbenzene	3,211	1,184
Xylene	13,979	4,982
Styrene	51	16
Triethylenetetramine	1	-
1, 2, 4-trimethylbenzene	269	125
1, 3, 5-trimethylbenzene	90	37
Toluene	7,819	3,253
Naphthalene	60	16
Butyl methacrylate	4	2

[Environmental impact data for Group companies in Japan (away from the works)]

Shin Nippon Machinery. Co., Ltd. Main Products: Turbines, Pumps





	Electric power (1 000 kWh)	4,431.4
р	Gasoline (kL)	0.1
use	Kerosene (kL)	333.6
ergy	Heavy fuel oil A (kL)	-
Ē	Light oil (kL)	7.1
	LPG (t)	6.3
	City gas (1,000 m ³)	0.1
	Water used (m ³)	21,338
	Discharge into the atn	nosphere
	SOx (kg)	10
	NOx (kg)	734
Discharge into the water		
	COD (kg)	39

PRTR (ka/year)	Emissions	Transfer
(Kg/year)	volume	volume
Antimony and its compounds	1	-
Ethylbenzene	945	105
Xylene	2,784	305
Cumene	3	-
Chromium and trivalent chromium compounds	39	4
Hexavalent chromium compounds (including lead chromate)	1	-
Cobalt and its compounds	88	10
Styrene	1	-
1, 2, 4-trimethylbenzene	81	9
1, 3, 5-trimethylbenzene	194	22
Toluene	775	83
Naphthalene	36	4
Lead compounds	0.1	0.1 or less
Vanadium compounds	1	-
Hexamethylene diisocyanate	1	-
Boron and its compounds	2	-
Manganese and its compounds	23	3
Butyl methacrylate	0.25	0.03
Molybdenum and its compounds	0.29	0.03

Nihon Spindle Mfg. Co., Ltd.

Main Products: Industrial Instruments, Environmental Equipment, Building Materials





used	Electric power (1,000 kWh)	1,830.6
	Gasoline (kL)	2.4
	Kerosene (kL)	-
ergy	Heavy fuel oil A (kL)	-
ᇤ	Light oil (kL)	-
	LPG (t)	6.4
	City gas (1,000 m ³)	20.0
Water used (m3)		8,064
Discharge into the atmosphere		
SOx (kg)		-
NOx (kg)		-

PRTR (kg/year)	Emissions	Transfer
	volume	volume
Antimony and its compounds	0.2	0.1
Ethylbenzene	544	354
Xylene	1,175	709
Cumene	0.1 or less	0.1 or less
Hexavalent chromium compounds (including lead chromate)	5	3.0
Styrene	0.1 or less	0.1 or less
Triethylenetetramine	2	1
1, 2, 4-trimethylbenzene	9	5
1, 3, 5-trimethylbenzene	3	2
Toluene	2,556	1,318
Lead compounds	6	5
Vanadium compounds	2	1
Bis (2-ethylhexyl) phthalate	1	-
Hydrogen fluoride and its water-soluble salts	3	-
Benzene	5	-
Formaldehyde	1	1

Sumitomo Heavy Industries Ion Technology Co., Ltd. (formerly SEN Corporation) Main Products: Ion implantation system





Sumitomo NACCO Forklift Co., Ltd. Main Products: Forklift





Electric power (1,000 kWh) 11,718.7 Gasoline (kL) –				
(1,000 kWh) 11,718.7 Gasoline (kL) -				
Gasoline (kL) -				
¥ [_			
≅ Kerosene (kL) –				
Heavy fuel oil A (kL) -				
Light oil (kL) -				
LPG (t) -				
City gas (1,000 m ³) –				
Water used (m ³) 16,230				
Discharge into the atmosphere				
SOx (kg) -				
NOx (kg) -				
Discharge into the water				
COD (kg) 2				
Nitrogen (kg) 2	1			

	Volumo	Volumo
Indium and its compounds	0.1 or less	0.1 or less
Ethylene glycol monomethyl ether (2-me- thoxyethanol)	11	5
Trichloroethylene	-	18
Toluene	3	7
Arsenic and its inorganic compounds	0.4	1
Hydrogen fluoride and its water-soluble salts	2	2
Boron and its compounds	0.1 or less	1

PRTR (kg/year)

Emissions

Transfer

no To

Energy used	Electric power (1,000 kWh)	3,230.2	
	Gasoline (kL)	13.8	
	Kerosene (kL)	-	
	Heavy fuel oil A (kL)	-	
	Light oil (kL)	23.5	
	LPG (t)	246.4	
	City gas (1,000 m ³)	-	
Water used (m ³)		18,459	
Discharge into the atmosphere			
	SOx (kg)	-	
NOx (kg)		-	

PRTR (kg/year)	volume	volume
Water-soluble zinc compounds	-	62
Ethylbenzene	11,013	1,098
Ethylene glycol monoethyl ether (2-ethoxyethanol)	186	17
Xylene	24,037	2,495
Cumene	80	9
Ethylene glycol monoethyl ether acetate	450	41
N, N-Dicyclohexylamine	-	2
2,6-ditertiary butyl-4 cresol	-	1
Styrene	41	4
1, 2, 4-trimethylbenzene	2,212	217
1, 3, 5-trimethylbenzene	461	45
Toluene	7,611	756
Naphthalene	300	24
Nickel compounds	1	7
N-butyl phthalate	6	1
Hexamethylene diisocyanate	17	2
Normal hexane	366	38
Benzene	64	7
Boron and its compounds	1,174	114
Formaldehyde	921	119
Manganese and its compounds	-	11
Butyl methacrylate	189	16
Methyl methacrylate	78	9
Alnha-methylstyrene	30	3



Sumitomo Heavy Industries Gearbox Co., Ltd. (formerly Seisa Gear, Ltd.) Main Products: Speed reducers





Sumitomo Heavy Industries Modern, Ltd. Main Products: Plastic extrusion molding machines



Volume of waste disposed of Volume of waste generated vaste to landfill (t/year) 300 100 80 200 60 40 100 20 0 0 | 2011 2012 2013 2014 **2015** (FY)

-	Light oil (KL)	1,2	Ľ
	LPG (t)	10,0	
	City gas (1,000 m ³)	104.4	Ľ
	Water used (m ³)	11,001	Ľ
	Discharge into the atn	nosphere	Ľ
SOx (kg)		-	1
	NOx (kg)	-	Ľ
	Electric power	041.0	Γ

5,207.1

2.6

0.4

lectric power

(1.000 kWh)

Gasoline (kL)

Kerosene (kL)

Heavy fuel oil A (kL)

bed

Ised

PRTR (kg/year)	Emissions volume	Transfer volume
Ethylbenzene	237	78
Ethylene glycol monoethyl ether (2-ethoxyethanol)	52	16
Xylene	451	150
Styrene	2	1
1, 3, 5-trimethylbenzene	18	8
Toluene	6,715	1,415
Lead	65	21
Hexamethylene diisocyanate	5	3
Methyl methacrylate	3	1

941.0 . (1,000 kWh) 5.3 Gasoline (kL) Kerosene (kL) Heavy fuel oil A (kL) Light oil (kL) 7.0 LPG (t) 0.9 City gas (1,000 m³) Water used (m3) 3,763 Discharge into the atmosphere SOx (kg) NOx (kg)

PRTR (kg/year)	Emissions volume	Transfer volume
Ethylbenzene	380	-
Xylene	923	
1, 2, 4-trimethylbenzene	3	-
1, 3, 5-trimethylbenzene	11	-
Toluene	4,905	-
N-butyl phthalate	30	

Izumi Food Machinery Co., Ltd. Main Products: Food processing machinery



Volume of waste disposed of Percentage of Volume of waste generated waste to landfill (t/year) (%) 300 100 80 200 60 40 100 20 0 0 2001 2012 2013 2014 2015 (FY)

	Electric power (1,000 kWh)	376.6	
p	Gasoline (kL)	0.2	
nse	Kerosene (kL)	-	
ergy	Heavy fuel oil A (kL)	-	
듭	Light oil (kL)	0.1	
	LPG (t)	-	
	City gas (1,000 m ³)	-	
	Water used (m ³)	2,594	
	Discharge into the atmosphere		
	SOx (kg)	-	
	NOx (kg)	-	

PRTR (kg/year)	Emissions volume	Transfer volume
Hydrogen fluoride and its water-soluble salts	3	0.2

SFK Co., Ltd. Main Products: Bolts, nuts, precision screws





Total Elimination of PRTR Substances

5	Gasoline (kL)	3.4	
- nse	Kerosene (kL)	7.1	
ergy	Heavy fuel oil A (kL)	-	
Ē	Light oil (kL)	-	
	LPG (t)	-	
	City gas (1,000 m ³)	0.4	
	Water used (m ³)	877	
	Discharge into the atmosphere		
	SOx (kg)	-	
	NOx (kg) -		
	Discharge into the water		
	COD (kg) 6		

860.0

Electric power (1,000 kWh)

Group companies in Japan that have independently received the ISO14001 certification

Group Company	Date of Certificatio	n	Group Company	Date of Certifi	cation
Sumitomo Nacco Forklift Co.,Ltd.	March 200	00	Nihon Spindle Mfg. Co., Ltd.	March	2006
Shin Nippon Machinery. Co., Ltd.	February 200	02	Japan Electron Beam Irradiation Service Co., Ltd.	January	2007
Izumi Food Machinery Co., Ltd.	June 200	02	Sumitomo Heavy Industries PTC Sales Company	September	2007
Sumitomo Heavy Industries Ion Technology Co., Ltd.	October 200	02	SFK Co., Ltd.	August	2008
Sumiju Environmental Engineering Inc.	October 200	02	Sumitomo Heavy Industries Gearbox Co., Ltd.	August	2009
Sumitomo Heavy Industries Environment Co., Ltd.	November 200	02	Sumitomo Heavy Industries Modern, Ltd.	December	2009
Lightwell Co., Ltd.	February 200	05	Kyokuto Seiki Co., Ltd.	February	2015

[Environmental impact data for main overseas Group companies]

Sumitomo Heavy Industries (Tangshan), Ltd. Country: China Main Products: Power transmission equipment



Energy used	
Paper (1,000 sheets of A4-size paper)	540
Electric power (1,000 kWh)	9,664
Gasoline (kL)	-
Heavy fuel oil (kL)	-
Light oil (kL)	-
LPG (t)	-
Natural gas (1000 m ³)	1,217
Water used (m ³)	24,859

Discharge into the atmosphere		
VOC emissions (t/year)	5.1t	
SOx emissions (t/year)	0.01	
NOx emissions (t/year)	0.46	

Sumitomo (SHI) Cyclo Drive China Ltd. Country: China Main Products: Power transmission equipment



Energy used	
Paper (1,000 sheets of A4-size paper)	1,148
Electric power (1,000 kWh)	4,638
Gasoline (kL)	-
Heavy fuel oil (kL)	-
Light oil (kL)	285
LPG (t)	-
Natural gas (1000 m ³)	-
Water used (m ³)	34,978

Discharge into the at	tmosphere
VOC emissions (t/year)	5.9t
SOx emissions (t/year)	0.24
NOx emissions (t/year)	0.01

Ningbo Sumiju Machinery, Ltd. Country: China Main Products: Plastic molding machines, components for power transmission equipment



Energy used	
656	
5,675	
-	
-	
19	
-	
-	
18,635	

Discharge into the atmosphere		
VOC emissions (t/year)	1.5t	
SOx emissions (t/year)	-	
NOx emissions (t/vear)	-	

Sumitomo (S.H.I.) Construction Machinery (Tangshan) Co., Ltd. Country: China Main Products: Hydraulic excavators



Energy used	
Paper (1,000 sheets of A4-size paper)	699
Electric power (1,000 kWh)	7,061
Gasoline (kL)	-
Heavy fuel oil (kL)	-
Light oil (kL)	9
LPG (t)	12
Natural gas (1000 m ³)	865
Water used (m ³)	50,810

Discharge into the at	tmosphere
VOC emissions (t/year)	Under 1 t
SOx emissions (t/year)	0.25
NOx emissions (t/year)	4.1

Sumitomo Heavy Industries (Vietnam) Co., Ltd. Country: Vietnam Main Products: Power transmission equipment and motors



Energy use	a
Paper (1,000 sheets of A4-size paper)	4,919
Electric power (1,000 kWh)	15,841
Gasoline (kL)	-
Heavy fuel oil (kL)	-
Light oil (kL)	-
LPG (t)	463
Natural gas (1000 m ³)	-
Water used (m ³)	24,564

Discharge into the atmosphere	
VOC emissions (t/year)	1.6t
SOx emissions (t/year)	-
NOx emissions (t/year)	-



Under 1 t





Link-Belt Construction Equipment Company L.P., LLLP Country: United States Main Products: Construction cranes



Energy used	
Paper (1,000 sheets of A4-size paper)	1930
Electric power (1,000 kWh)	21,945
Gasoline (kL)	-
Heavy fuel oil (kL)	-
Light oil (kL)	-
LPG (t)	-
Natural gas (1000 m ³)	2,015
Water used (m ³)	24,715

Energy used

Paper

paper)

Gasoline (kL) Heavy fuel oil (kL)

Light oil (kL)

Natural gas (1000 m³)

Water used (m³)

LPG (t)

(1.000 sheets of A4-size

Electric power (1,000 kWh)

Discharge into the atmosphere	
VOC emissions (t/year)	37t
SOx emissions (t/year)	0.03
NOx emissions (t/year)	3.6

Discharge into the atmosphere

VOC emissions (t/year)

SOx emissions (t/year)

NOx emissions (t/year)

834

2,421

3

1

12,109

Sumitomo Machinery Corporation of America Country: United States Main Products: Power transmission equipment



Energy used	
Paper (1,000 sheets of A4-size paper)	945
Electric power (1,000 kWh)	5,257
Gasoline (kL)	-
Heavy fuel oil (kL)	-
Light oil (kL)	-
LPG (t)	10
Natural gas (1000 m ³)	280
Water used (m ³)	2,463

Discharge into the atmosphere	
VOC emissions (t/year)	1.9t
SOx emissions (t/year)	-
NOx emissions (t/year)	-

Sumitomo (SHI) Demag Plastics Machinery GmbH Country: Germany Main Products: Plastic molding machines



Energy used	
Paper (1,000 sheets of A4-size paper)	5,765
Electric power (1,000 kWh)	5,418
Gasoline (kL)	-
Heavy fuel oil (kL)	-
Light oil (kL)	2
LPG (t)	156
Natural gas (1000 m ³)	309
Water used (m ³)	10,915

Discharge into the atmosphere	
VOC emissions (t/year)	3t
SOx emissions (t/year)	-
NOx emissions (t/year)	-

Hansen Industrial Transmissions NV Country: Belgium Main Products: Power transmission equipment



Energy used	
Paper (1,000 sheets of A4-size paper)	1,546
Electric power (1,000 kWh)	9,851
Gasoline (kL)	-
Heavy fuel oil (kL)	-
Light oil (kL)	-
LPG (t)	-
Natural gas (1000 m ³)	832
Water used (m ³)	5,741

Discharge into the atmosphere	
VOC emissions (t/year)	5t
SOx emissions (t/year)	-
NOx emissions (t/year)	1.3

Social Contribution Activities

With our employees taking the initiative, we are planning and implementing activities that contribute to society in each region and local community.

Initiatives for Biodiversity

The Sumitomo Heavy Industries Group is engaging in initiatives to protect biodiversity.

The Group has to date endorsed the biodiversity declaration of the Nippon Keidanren (Japan Business Federation) and we have joined the "Declaration Promotion Partners." In order to contribute to the protection of biodiversity, we have been engaging in afforestation and greenery planting activities.

Our Tanashi Works is preserving the Musashino Forest, which occupies approximately 30% of the area of the 40,706m² campus. This forest contains over 4,500 trees of 40 or more species, and 170 of the trees have been designated protected trees by Nishi-Tokyo City. We have named a portion of these woods the Forest of Inspiration and opened it to the public.

Past wildlife habitat surveys confirmed the presence of considerable wildlife in the forest, which is a stronghold for the local ecosystem as well as a precious natural asset for scientific research.

In addition to the kind of forest maintenance activity seen here at the Tanashi Works, we are also promoting activities for biodiversity at our factories in every other area, as well. We are actively engaging in a variety of biodiversity initiatives, such as the expansion of green areas when redevelopment work is done on the grounds, green curtain activities (such as at the Okayama Works), the development of flower-beds (Sumitomo Heavy Industries PTC Sales Co., Ltd.), green areas on rooftops (Sumitomo Heavy Industries Modern, Ltd.), and greening activity on factory grounds (Nihon Spindle Mfg. Co., Ltd.).

The Sumitomo Heavy Industries Group has also been contributing to the further protection of biodiversity by means of the LIME2 lifecycle impact assessment method based on endpoint modeling, developed by the National Institute of Advanced Industrial Science and Technology. Using this method, we have performed quantitative assessments of the impact that Group businesses have on biodiversity.

As a result, we found that reducing the amount of wood materials used would be particularly effective for our Group, and we have been pursuing reductions in the amount of product packaging material we use.

Specifically, we have been taking measures to simplify packaging and to adopt returnable shipping cartons to enable repeated reuse.

At Sumitomo Heavy Industries Ion Technology Co., Ltd., which manufactures ion implantation systems for semiconductor manufacturing, we analyzed the utilization of cardboard cartons for shipping maintenance parts. As a result we have furthered the reuse of cartons and cut down on packing materials. At Nihon Spindle Mfg. Co., Ltd., which manufactures cooling towers and dust collectors, we have reduced the use of packing materials by simplifying wooden crates, and shifting to the use of wrapping materials for packing.





Kindergarten children enthusiastically gathering



Lavender at the Hokkaido Office of Sumitomo Heavy Industries PTC Sales Co., Ltd.

Relations with Society



Planting activity at Nihon Spindle Manufacturing Co., Ltd.





Green curtain at the Okayama Works

 Example of packaging material reduction Sumitomo Heavy Industries Gearbox Co., Ltd.





Rooftop greening at Sumitomo Heavy Industries Modern, Ltd.

The evaluation items include afforestation, greenery planting, and green curtain implementation, water-use reduction, VOC reduction, landfill disposal reduction, and utilization of renewable energy (electric power). We are taking steps toward participation of all personnel in these and other such activities to protect biodiversity.



Quantitative assessment of impact on biodiversity

Social Contribution Activities

Participating Actively in Local Community Events

The Sumitomo Heavy Industries Group takes active part in events held in local communities. The Niihama Factory took part in the Saijo City Ofuki Area Friendship Sports Day as part of the Ehime Prefecture Support Group Matching Project for Healthy Village Development, with the aim of regional revitalization. Many people here in the Ofuki area are elderly, and the sports days were suffering from a shortage of participants. Since the community also requested it, we began taking part in the event from fiscal year 2011.

The fiscal year 2015 sports day was held on a fine, sunny day without a cloud in the sky. We were able to enjoy exchanges with local residents, participants from other corporations, and many volunteers, and it was a very pleasant as well as meaningful day.

Articles and photographs of the sports day were also posted on the Ehime Prefecture website.



Tug of war

Cleanup Activities

In the Sumitomo Heavy Industries Group, we carry on regular cleanup activities in the areas around our works. We also participate in cleanup activities organized by local government bodies and volunteer groups.

In addition to cleanup activities in the neighborhood of our works, during fiscal year 2015 the Nagoya Works also participated in the Adopt Program* organized by Obu City in Aichi Prefecture, while the Niihama Factory took part in the Adopt Program of Niihama City. All these activities involve continuing engagement in cleanup of neighboring areas.

The Nagoya Works has been participating in this Adopt Program since fiscal year 2004. In fiscal year 2014, events were held six times with 30 participants each time. Rainy weather and other reasons in fiscal year 2015 reduced this to four times, but there were still about 30 participants each time, so we are keeping the activity ongoing. We will continue similarly pursuing our activities in fiscal year 2016.

The Sumitomo Heavy Industries Group will continue with this commitment to beautification of the local environment.



Ball-toss game



Costume parade



Cleanup activity (Niihama Factory)



* Adopt Program: A volunteer campaign in which people designate a public facility, such as a park or a footpath, and register it with the city. They then pick up trash, water the plants, and weed the designated facility so that people will be able to enjoy using it.

Students from Yokosuka Lower Secondary Schools Tour Our Environmental Activities

Our Yokosuka Works in Kanagawa Prefecture is taking measures to reduce CO_2 emissions and waste materials. We are also actively engaging in communication with local communities as part of our environmental activities.

In fiscal year 2015, we invited local junior high school students to the Yokosuka Works again as in fiscal year 2014, and gave them a tour. The students viewed our waste material separation for recycling, the wastewater treatment facility, the water quality monitoring system, and environmentally friendly products, and they gained a deeper understanding of the Sumitomo Heavy Industries environmental initiatives.

The tour took them first to examples of environmental consideration during manufacturing. This included the monitoring carried on using automated measurement devices at the wastewater treatment plant, and the status of waste separation at waste material stations. The tour showed the students how the finely graded separation of waste into approximately 80 categories raises the recycling rate. They also saw how the implementation of regular patrols for thoroughgoing enforcement of waste separation enabled us to sustain a 100% waste material recycling ratio since fiscal year 2011.

In connection with our environmentally friendly products, the students witnessed the testing of wastewater treatment products and used microscopes to observe the microorganisms that do the work of treating sewage. The tour covered our forging shop and robots capable of working in cooperation with people. They were also introduced to and toured an energy-saving Aframax tanker.

We received various impressions from the participants, including, "I learned how important, and how difficult, it is to be considerate of the environment at the manufacturing works, and gained a deeper understanding of products that contribute to the environment, and other such things," and "When I saw how cloudy water could be made clear in an instant during the wastewater treatment testing, I was able to understand the importance of wastewater treatment."





Tour of on-site environmental activity at our works

Environmental Education for Elementary School Students

Sumitomo Heavy Industries Environment Co., Ltd., exhibits every year at an environmental exhibition in Minamiashigara City, Kanagawa Prefecture since fiscal year 2006. We also conduct an annual environmental education event mainly for local elementary students.

The exhibits in fiscal year 2015 provided close-up views of topics relating to water. These included microscopic observation of the microorganisms that carry out wastewater treatment, observation of waterside organisms, and a comparative analysis of the calcium content of commercially available mineral water. We showed the organisms that live in clean rivers and polluted rivers, explained the differences between the two, and communicated the importance of protecting river environments.

We intend to keep up these activities in the future, and continue communicating to children the importance of environmental protection.



Observing microorganisms through a microscope







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