



Responsible Care Activities: Supplementary Data

3 Environmental Protection / Climate Change Action

Evaluation of Environmental Protection Costs and Economic Effects through Environmental Accounting

Sumitomo Chemical continuously gathers and evaluates data on environmental protection-related expenses, investments, and economic results in line with the Company's environmental accounting system introduced in fiscal 2000.

◆ Items Pertaining to Environmental Accounting

- ① Period: April 1, 2017 to March 31, 2018
- ② Boundary: Sumitomo Chemical and 23 major consolidated subsidiaries (18 in Japan and 5 overseas)*
- ③ Composition (Classification): Based on Ministry of the Environment (Japan) guidelines
- ④ Outline of the results (investment and expenses): Consolidated investment decreased year on year by 1.7 billion yen, and consolidated expenses decreased by 1.3 billion yen.

* Sumitomo Dainippon Pharma Co., Ltd.; Koei Chemical Co., Ltd.; Taoka Chemical Co., Ltd.; Tanaka Chemical Corporation; Asahi Chemical Co., Ltd.; Sumitomo Joint Electric Power Co., Ltd.; Sumika Color Co., Ltd.; Nihon Medi-Physics Co., Ltd.; Nippon A&L Inc.; SanTerra Co., Ltd.; Sumika-Kakoushi Co., Ltd.; Sumika Agrotech Co., Ltd.; Ceratec Co., Ltd.; SC Environmental Science Co., Ltd.; SN Kasei Co., Ltd.; Sumika Agro Manufacturing Co., Ltd.; Sumika Plastech Co., Ltd.; SCIOCS Co., Ltd.; Dongwoo Fine-Chem Co., Ltd.; Sumitomo Chemical Asia Pte Ltd; The Polyolefin Company (Singapore) Pte. Ltd.; Sumika Technology Co., Ltd.; and Sumika Electronic Materials (Wuxi) Co., Ltd.

■ Environmental Protection Cost

(Billion yen)

Classification	Details of Major Initiatives	FY2016				FY2017			
		Non-consolidated		Consolidated		Non-consolidated		Consolidated	
		Investment	Expenses	Investment	Expenses	Investment	Expenses	Investment	Expenses
Facility area costs		4.0	16.0	5.2	26.6	1.6	16.8	3.5	28.2
Breakdown	Pollution prevention costs	(2.5)	(10.9)	(3.5)	(15.2)	(1.2)	(11.8)	(2.6)	(16.5)
	Global environmental protection costs	(1.3)	(0.3)	(1.5)	(3.4)	(0.1)	(0.2)	(0.4)	(3.4)
	Resource recycling costs	(0.2)	(4.9)	(0.2)	(8.1)	(0.3)	(4.8)	(0.5)	(8.3)
Upstream / Downstream costs	Green purchasing, recycling, recovery, remanufacturing and appropriate treatment of products, recycling costs associated with containers and packaging, environmentally friendly products and services, etc.	0	0	0	0.3	0	0	0	0.3
Administrative costs	Costs associated with environmental education, environmental management systems, the monitoring and measuring of the environmental impact of business activities and products, environmental organization operations, etc.	0	0.8	0	1.3	0	0.7	0	1.3
R&D costs	Development of products with attention to environmental safety, research into energy-saving processes, etc.	0	6.8	0	6.8	0.1	3.9	0.1	4.0
Administrative costs	Protection of the natural environment and enhancement of its scenic beauty and greenery, support for community initiatives aimed at environmental protection, support for environmental preservation groups, environment-related paid contributions and surcharges, etc.	0	0.5	0	0.8	0	0.5	0	0.8
Environmental remediation costs	Environmental rehabilitation of contaminated environments and other environmental damage, reserve funds to cover environmental recovery, etc.	0	0	0	0	0	0	0	0
Total		4.0	24.0	5.3	35.9	1.7	21.9	3.6	34.6



Responsible Care Activities: Supplementary Data

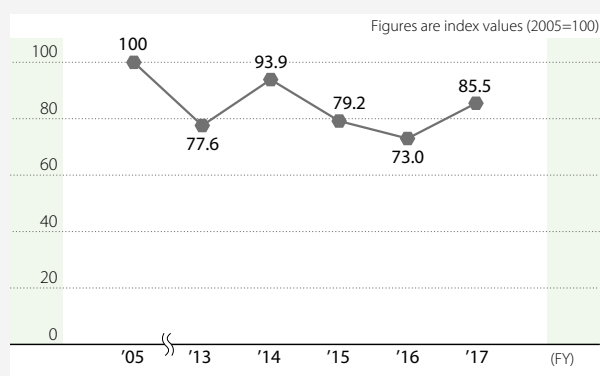
Economic Effects

(Billion yen)

Results	FY2016		FY2017	
	Non-consolidated	Consolidated	Non-consolidated	Consolidated
Reduced costs through energy saving	0.5	1.5	2.2	3.7
Reduced costs through resource saving	0.4	4.0	0.5	6.7
Reduced costs through recycling activities	2.0	3.3	0.6	1.7
Total	2.9	8.8	3.3	12.1

Economic effects are the rationalization value of per-unit improvement in such areas as energy and resource saving. In fiscal 2017, economic effects improved year on year ¥0.4 billion on a non-consolidated basis and ¥3.3 billion on a consolidated basis.

Cost Efficiency of Environmental Protection Measures (Sumitomo Chemical)



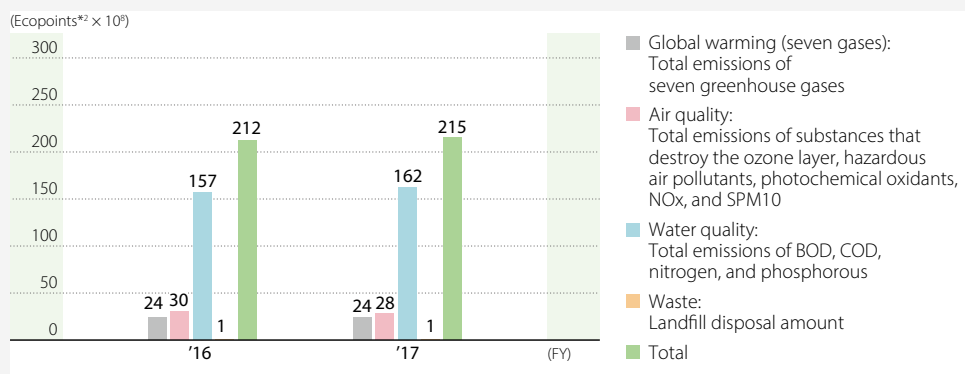
In fiscal 2009, we began implementing measures to improve the cost efficiency of our environmental protection measures by making sure that all activities were as cost effective as possible. We will implement more effective measures by analyzing and studying the breakdown of our environmental protection costs and reviewing each item to determine its importance. We calculate the cost efficiency of our environmental protection as the ratio of annual total production value to total environmental protection costs, in order to better reflect actual production activities in the calculation.



Responsible Care Activities: Supplementary Data

Examining the Practical Use of Environmental Efficiency Indicators and Environmental Management Accounting Methods

■ Breakdown of Aggregate Values for Environmental Impact (Sumitomo Chemical) by JEPIX*¹



Assessing the Environmental Impact of Each Group Company Using JEPIX

In fiscal 2017, as in the previous fiscal year, we undertook environmental impact assessments using JEPIX, in order to evaluate the effectiveness of this index as a strategic management indicator, and continued with relevant analyses.

Assessing the Environmental Impact of Each Product by LIME*³

For more practical use of LCA*⁴ data both internally and externally, we use LCA software (MilCA) from the Japan Environmental Management Association for Industry to undertake environmental impact assessments of our major products using the LIME method.

Trial Evaluation of Material Flow Cost Accounting (MFCA)*⁵

We are continuing to evaluate the effectiveness of this tool and also are performing examinations for the simplification and standardization of the method and procedures in order to foster their use. MFCA, which focuses on the loss of energy and resources, helps minimize loss and cost and reduces environmental impact.

*1 Environmental Policy Priorities Index for Japan (JEPIX):

This method, which employs a uniform single indicator called "Ecopoints" to evaluate environmental impact, is derived from the Swiss LCIA Eco Scarcity methodology. The current method evaluates the discrepancy between targets (e.g., laws and environmental policies) and actual conditions based on material flow data.

*2 Ecopoints:

An indicator for total environmental impact—the smaller the value, the lower the environmental impact.

*3 Life-cycle Impact assessment Method based on Endpoint modeling (LIME)

A life-cycle impact assessment method developed in Japan as a cornerstone for measuring Japan's environmental conditions.

*4 Life Cycle Assessment (LCA):

A method for evaluating the environmental impact of products and services throughout their life cycles.

*5 Material Flow Cost Accounting (MFCA):

An environmental cost accounting method that identifies input costs of materials, processing, electricity, fuel, and others, and compares them with the energy and resources lost in manufacturing processes.



Responsible Care Activities: Supplementary Data

Reducing Greenhouse Gas Emissions

Greenhouse Gas Emissions (All Seven Gases) (Sumitomo Chemical (Target: All Facilities))

(Thousands of tonnes of CO₂e)

		FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
CO ₂	Energy sources	3,134	3,190	3,357	3,347	2,559	2,405	2,454
	From other than energy use	98	62	63	65	55	50	93
Methane (CH ₄)		—	—	—	—	—	—	—
Nitrous oxide (N ₂ O)		58	67	63	76	65	45	35
Hydrofluorocarbon (HFC)		—	—	—	—	—	—	—
Perfluorocarbon (PFC)		—	—	—	—	—	—	—
Sulfur hexafluoride (SF ₆)		—	—	—	—	—	—	—
Nitrogen trifluoride (NF ₃)		—	—	—	—	—	—	—

Note: • CH₄, HFC, PFC, SF₆, and NF₃ are outside the scope of reporting.

• Calculated based on the Act on the Rational Use of Energy and the Act on Promotion of Global Warming Countermeasures.

Energy Saving

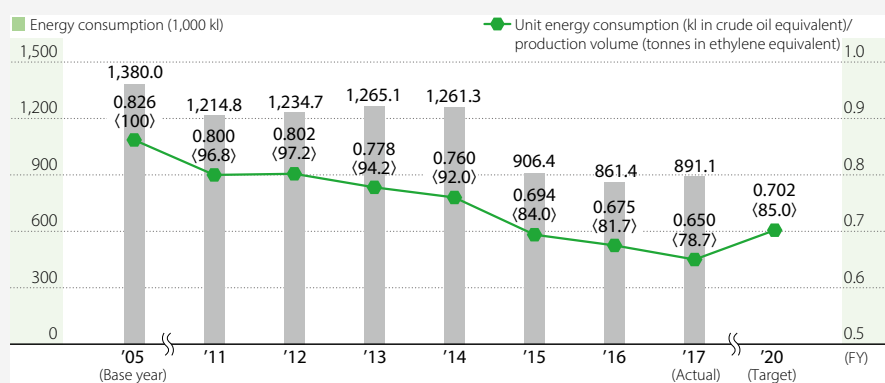
Breakdown of Unit Energy Consumption (Sumitomo Chemical (Target: All Works))

	(a) Energy Consumption (1,000 kl in Crude Oil Equivalent)	(b) Production (1,000 tonnes in Ethylene Equivalent)	(a/b) Unit Energy Consumption
Ehime Works	409.7	680.8	0.602
Chiba Works	355.0	458.6	0.774
Osaka Works	23.7	18.9	1.254
Oita Works*	57.2	52.9	1.081
Misawa Works	10.4	7.5	1.387
Ohe Works	35.1	152.9	0.230
Total	891.1	1,371.6	0.650

Note: Calculated based on the Act on the Rational Use of Energy and the Act on Promotion of Global Warming Countermeasures.

* Data for the Oita Works includes data for the Gifu and Okayama plants.

Energy Consumption and Unit Energy Consumption (Sumitomo Chemical (Target: All Works))



Note: Calculated based on the Act on the Rational Use of Energy and the Act on Promotion of Global Warming Countermeasures.

Target

Improve unit energy consumption for fiscal 2020 by 15% compared with fiscal 2005.

Results

Energy consumption totaled 891 thousand kl in crude oil equivalent in fiscal 2017.
In fiscal 2017, unit energy consumption improved 3.7% compared with fiscal 2016 and 21.3% compared with fiscal 2005.



Responsible Care Activities: Supplementary Data

■ Energy Consumption and CO₂ Emissions

(Sumitomo Chemical and Group Companies in Japan (Target: All Facilities))

	Energy Consumption (1,000 kl in Crude Oil Equivalent)	CO ₂ Emissions from Energy Use (1,000 tonnes)
Sumitomo Chemical	903	2,454
Works	891	2,430
Non-manufacturing sites, including the Head Offices and Research Laboratories	12	25
Sumitomo Chemical and Group companies in Japan	1,815	5,452
Works*	1,788	5,396
Non-manufacturing sites, including the Head Offices and Research Laboratories	27	56

Note: • Calculated based on the Act on the Rational Use of Energy and the Act on Promotion of Global Warming Countermeasures.

• The boundary of calculation covers the same participating companies listed on page 3.

* Includes sales outside the Group by Sumitomo Joint Electric Power Co., Ltd.

■ Initiatives for Energy Saving and CO₂ Emissions Reduction in the Logistics Division

Energy Consumption and CO₂ Emissions for Group Companies in Japan ("Specified Consigners")

	FY2011	FY2012	FY2013	FY2014	FY2015	FY2016	FY2017
Energy consumption (1,000 kl in crude oil)	4.1	3.9	3.9	3.9	1.6	1.6	1.8
CO ₂ emissions (1,000 tonnes)	10.9	10.3	10.3	10.3	3.9	4.0	4.6

Note: • Figures between fiscal 2011 and 2014 are totals for Nippon A&L Inc. and Nihon Oxirane Co., Ltd.

• Since fiscal 2015, the figures are only for Nippon A&L Inc.



Responsible Care Activities: Supplementary Data

Industrial Waste Reduction

■ PCB Waste (Sumitomo Chemical and Group Companies in Japan (Target: All Works))

Storage and Control of High Concentrations of PCB Waste (As of the End of Fiscal 2017)

	Number of Units of PCB Waste			Volume of PCBs (kl)
	Total	Storage	Usage	
Sumitomo Chemical	18	18	0	0.06
Sumitomo Chemical and Group companies in Japan	58	58	0	1.0

Note: The volume of PCBs does not include minute amounts of PCB waste in the PCB net conversion amount. High concentrations of PCBs in such classes of materials as fluorescent lamps, mercury lamp ballast, and contaminated substances (wastepaper, etc.) fall outside the scope of collation.

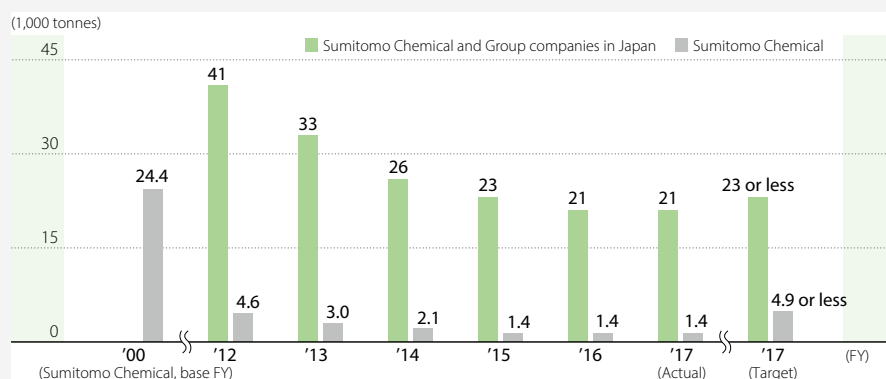
Target

Properly collect and store high-concentration PCB-containing waste and complete treatment of this waste at an early date.

In accordance with the Act on Special Measures against PCB Waste, Sumitomo Chemical properly collects high-concentration polychlorinated biphenyl (PCB)-containing waste.* The Company then stores this industrial waste, which is subject to special controls, in specified areas within the Company's waste storage facilities, subsequently ensuring strict control of this waste. Sumitomo Chemical plans to treat all PCB waste ahead of the deadline specified under the Act.

* Transformers, capacitors, and other electronic devices that contain PCB insulating oil.

■ Landfill Disposal Amount



■ Digitization of Manifests to Be Prepared Pursuant to the Waste Management and Public Cleansing Act

(Sumitomo Chemical (Target: All Works))

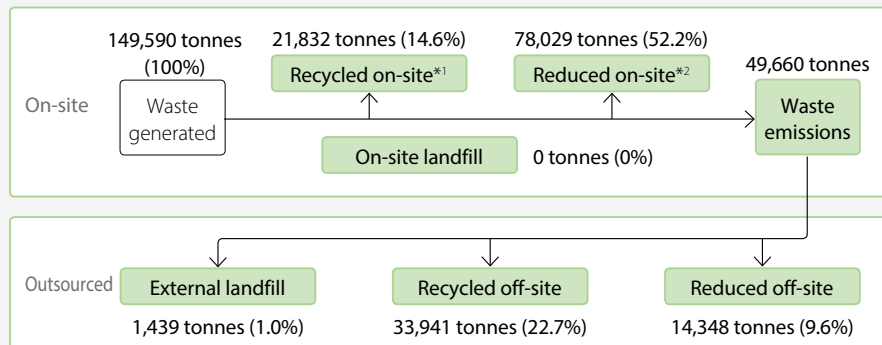
	Number of Manifests Issued	Number of Manifests Digitized	Digitization Rate (%)
FY2012	17,502	13,259	76
FY2013	19,389	15,329	79
FY2014	18,662	14,930	80
FY2015	18,973	16,337	86
FY2016	19,868	19,594	99
FY2017	19,858	19,585	99

Sumitomo Chemical has been fostering the digitization of manifests to improve operational efficiency and ensure compliance with the law and transparency of data.

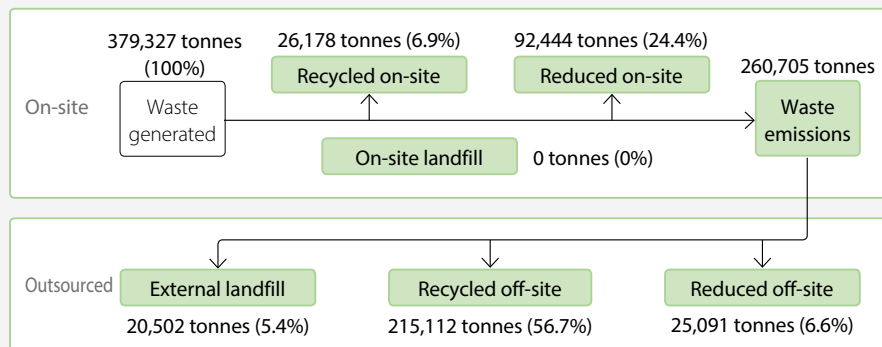


Responsible Care Activities: Supplementary Data

Waste Disposal Flow Chart and Results (Sumitomo Chemical (Target: All Works))



(Sumitomo Chemical and Group Companies in Japan (Target: All Works))



Note: Although the amount of waste emissions from Sumitomo Chemical and Group companies in Japan includes the amount of waste reduced at Sumitomo Chemical's facilities, the reduced amount is insignificant.

*1 Recycled waste: Total amount of waste that was reused, recycled, or thermally recycled

*2 Reduced waste: Total amount of waste reduced through incineration, etc.

List of Results by Item in Connection with the Disposal of Waste (Sumitomo Chemical (Target: All Works))

Type	Waste	Recycled On-site		Reduced On-site		Waste Emissions	On-site Landfill	Reduced Off-site	Recycled Off-site		External Landfill
	Generated	Reused, Recycled	Thermally	Incineration	Other				Reused, Recycled	Thermally Recycled	
Burnt residue	3,701.7					3,701.7			3,532.7		169.0
Sludge	47,519.2		7,474.3	21,466.9	2,893.1	15,616.7		2,083.4	13,327.3	3.3	292.2
Oil waste	34,690.4	4,509.6	9,566.4	10,750.6		9,863.7		3,502.1	5,280.2	1,049.4	31.9
Waste acid	8,456.2		14.6	6,142.4	815.8	1,483.4		1,036.0	425.7	8.8	4.9
Waste alkali	45,288.4	10.1	9.6	33,727.7	81.4	11,459.6		6,301.1	4,007.3	1,082.3	53.4
Waste plastic	5,810.0		157.4	1,211.9		4,440.8		438.8	3,273.7	140.5	588.8
Waste paper	1,141.7		66.5	822.7		252.5		28.0	224.3		0.2
Wood waste	915.7			81.5		834.3		54.4	639.2	131.7	9.0
Textile waste	46.1			35.0		11.1		9.5	1.7		0.0
Animal and plant residues	11.1					11.1		11.1			
Metal waste	858.5			0.4		858.0		457.5	385.0		15.5
Glass and pottery waste	335.9					335.9		18.9	270.9		46.2
Slag	31.0					31.0			31.0		
Debris	729.0	18.0				711.0		406.8	122.0		182.3
Soot and dust	55.1		5.7			49.4			3.8		45.6
Total	149,590	4,538	17,294	74,239	3,790	49,660	0	14,348	31,525	2,416	1,439

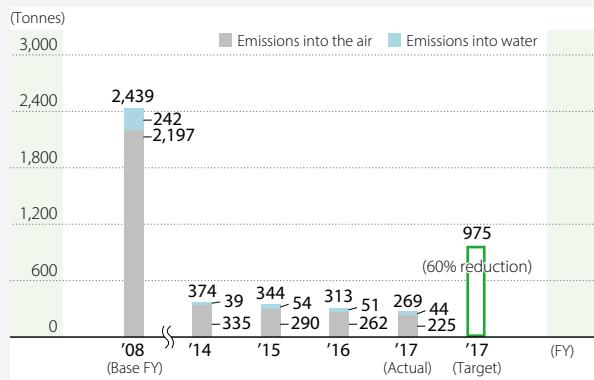


Responsible Care Activities: Supplementary Data

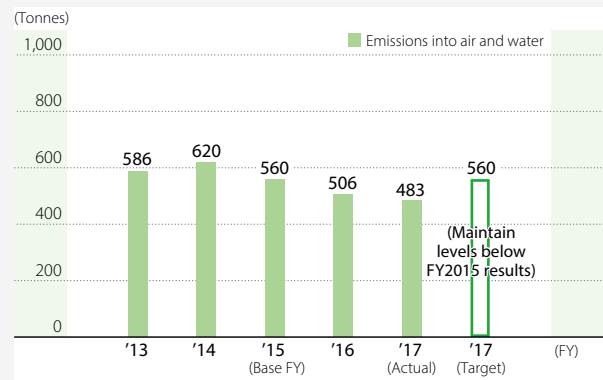
Addressing PRTR and VOCs

Trends in Emissions of Substances Subject to the PRTR Act

Sumitomo Chemical



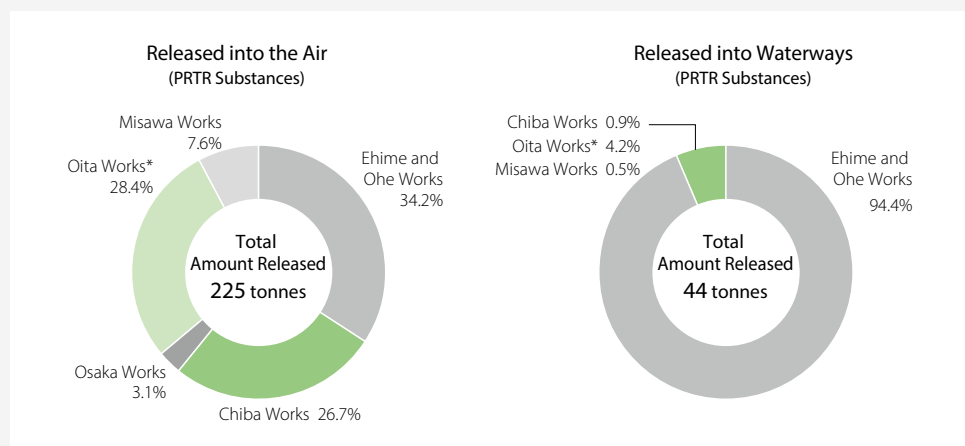
Sumitomo Chemical and Group Companies in Japan



Release and Transfer of PRTR Substances (Sumitomo Chemical and Group Companies in Japan)

	Released			Transferred		
	Air	Water	Subtotal	Sewage	Waste	Subtotal
PRTR substances						
Sumitomo Chemical (96 substances)	225	44	269	5	4,201	4,207
Sumitomo Chemical and Group companies in Japan	438	45	483	11	7,478	7,490

PRTR Substances Released by Works (Sumitomo Chemical)



* Data for the Oita Works includes data for the Gifu and Okayama plants.

Target

Reduce the total release of PRTR substances by 60% compared with fiscal 2008 by fiscal 2017.

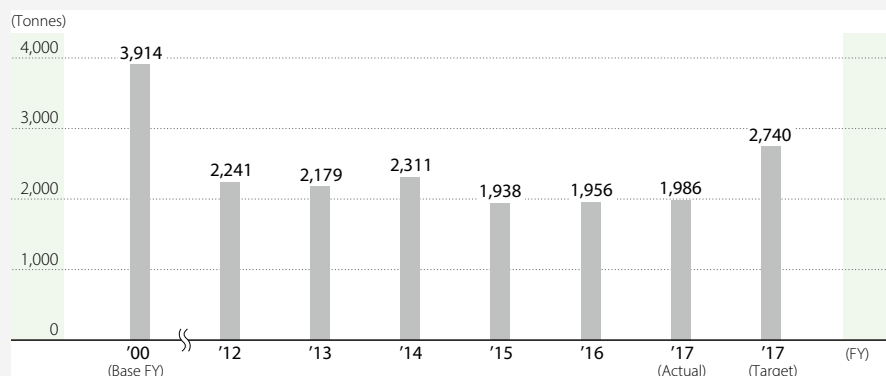
Results

Reduced the total release of PRTR substances by 269 tonnes, or 89.0%, compared with fiscal 2008 by fiscal 2017, achieving the target.



Responsible Care Activities: Supplementary Data

■ Initiatives to Reduce Emissions of Volatile Organic Compounds (VOCs) (Sumitomo Chemical)



Target

Maintain a 30% reduction in VOC emissions compared with fiscal 2000.

Results

Reduced emissions by 1,986 tonnes, or 49.3%, compared with fiscal 2000 by fiscal 2017, achieving the target.

Prevention of Ozone Layer Depletion

■ Number of Refrigeration Units That Use Specified CFCs and HCFCs as Coolants (As of the End of Fiscal 2017)

(Number of units)

	Sumitomo Chemical	Sumitomo Chemical and Group Companies in Japan
CFC11	11	11
CFC12	1	35
CFC113	0	0
CFC114	0	0
CFC115	0	2
HCFC22	76	227
HCFC123	26	31
HCFC142b	0	3

Target

- Eliminate the use of refrigeration units that use specified CFCs as coolants by fiscal 2025.
- Eliminate the use of refrigeration units that use HCFCs as coolants by fiscal 2045.



Responsible Care Activities: Supplementary Data

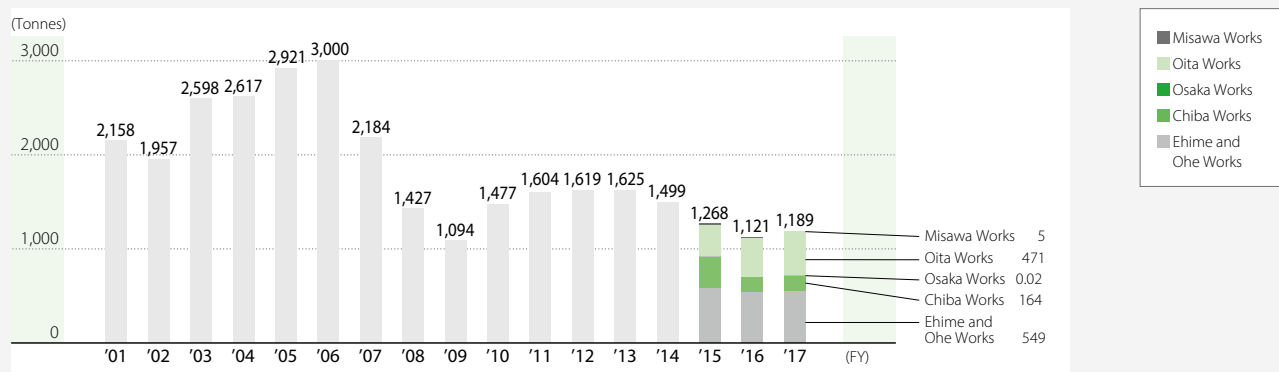
Preventing Pollution: Atmospheric Emissions of SOx, NOx, Soot, and Dust

In 1970, Sumitomo Chemical achieved a marked reduction in the release of SOx, NOx, soot, and dust into the atmosphere, and continued to maintain low levels of emissions from 1980 to the present. Furthermore, the Company has concluded cooperative agreements with local municipal governments at each of its Works, establishing voluntary control levels that are stricter than the standards given under applicable laws and regulations.

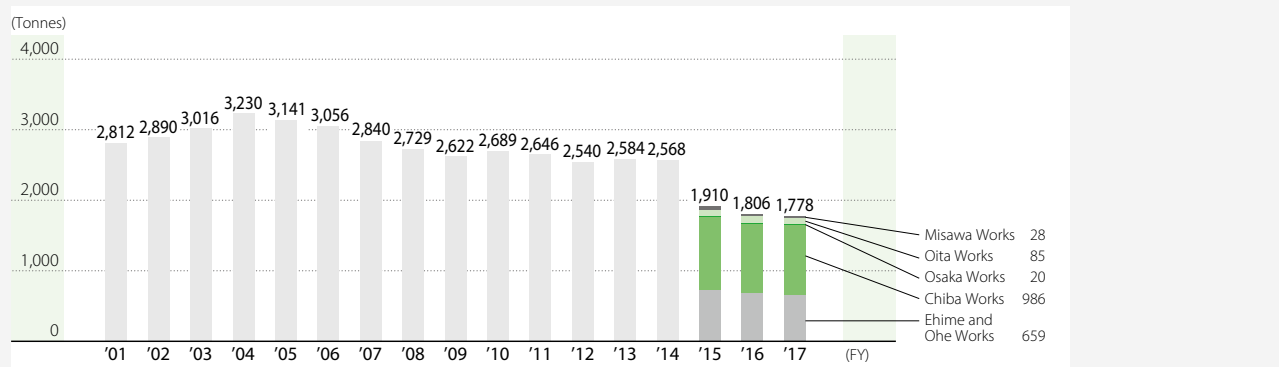
Note: Data for the Gifu Plant and Okayama Plant from fiscal 2004 to fiscal 2012 is included in Osaka Works.

Data for the Gifu Plant and Okayama Plant from fiscal 2013 is included in Oita Works.

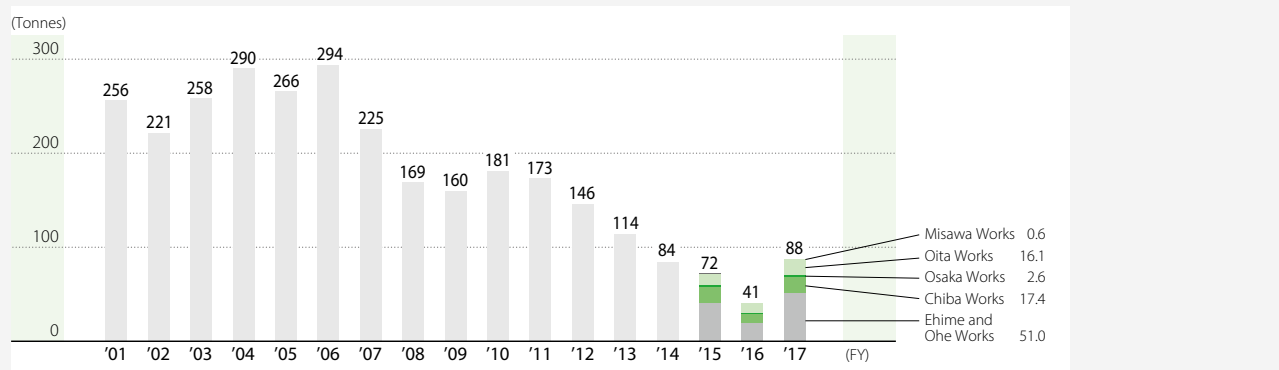
SOx Emissions (Sumitomo Chemical)



NOx Emissions (Sumitomo Chemical)



Soot and Dust Emissions (Sumitomo Chemical)



Target

Continue to sustain levels below voluntary control standard values.



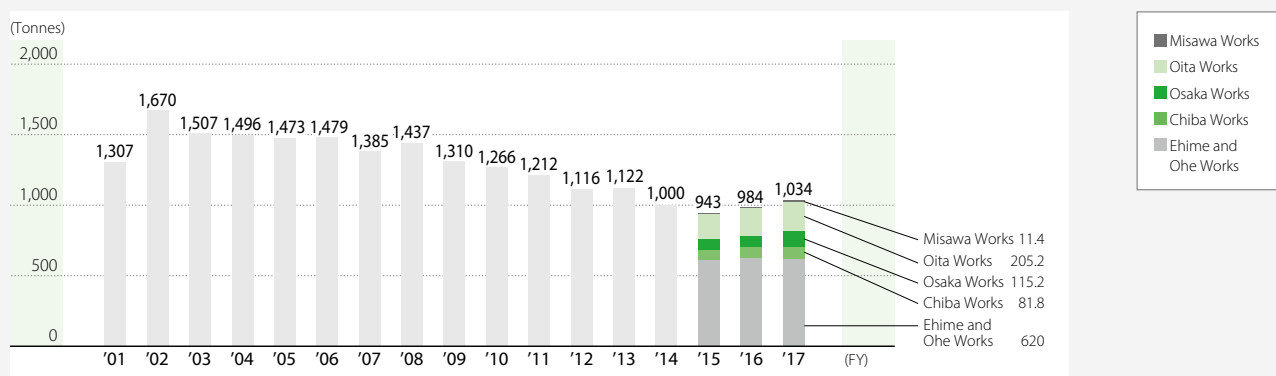
Responsible Care Activities: Supplementary Data

Preventing Pollution: Water Emissions of COD, Nitrogen, and Phosphorus

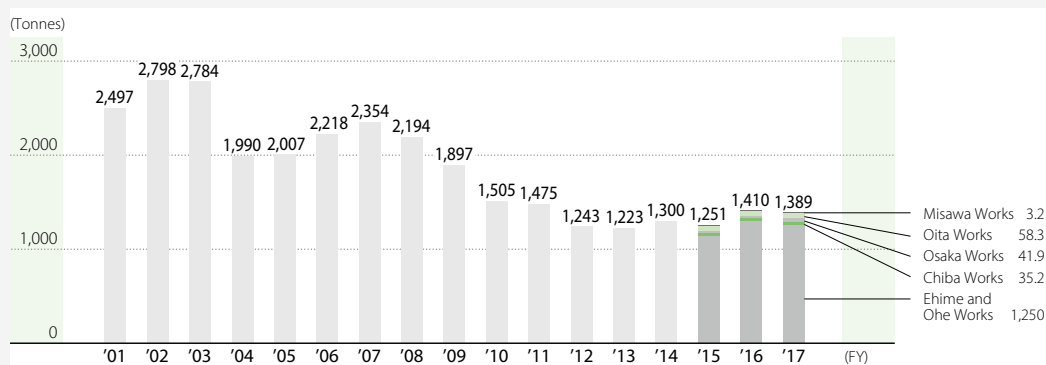
A number of measures have been implemented to cut emissions, in line with fifth-generation Water Quality Standards, and emissions of COD, nitrogen, and phosphorus into waterways have been significantly reduced since fiscal 2004. Sumitomo Chemical has also concluded cooperative agreements with local municipal governments to establish voluntary control levels for COD, nitrogen, and phosphorus released into waterways at each Works. These standards are also stricter than those established under applicable laws and regulations.

Note: Data for the Gifu Plant and Okayama Plant from fiscal 2004 to fiscal 2012 is included in Osaka Works.
Data for the Gifu Plant and Okayama Plant from fiscal 2013 is included in Oita Works.

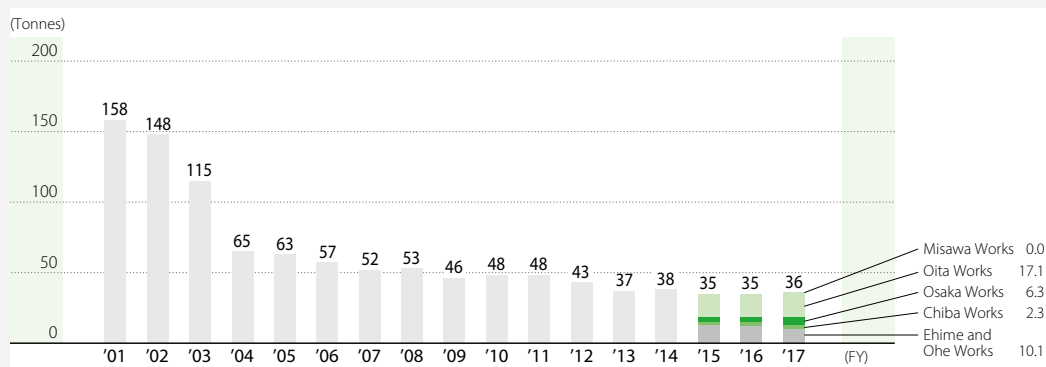
COD Emissions (Water Emissions include Water Discharge to Sewage Systems) (Sumitomo Chemical)



Nitrogen Emissions (Sumitomo Chemical)



Phosphorus Emissions (Sumitomo Chemical)



Target

Continue to sustain levels below voluntary control standard values.



Responsible Care Activities: Supplementary Data

Response to the Pollutant Release and Transfer Register Ordinance (Issued on November 21, 2008)

■ Release and Transfer of PRTR Substances in Fiscal 2017 (Sumitomo Chemical (Target: All Works))

(Tonnes, except where noted)

No. Name of Chemical Compound		Amount Released					Amount Transferred		
		Air	Water	Soil	Landfill	Total	Sewage	Waste	Total
1	Zinc compounds (water-soluble)	0.0	3.6	0.0	0.0	3.6	0.0	110.5	110.5
2	Acrylic acid and its water-soluble salts	<0.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0
3	Methyl acrylate	1.1	0.0	0.0	0.0	1.1	0.0	0.0	0.0
4	Acrylonitrile	4.5	<0.1	0.0	0.0	4.5	0.0	0.0	0.0
5	Acrolein	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	<0.1
6	Acetaldehyde	0.3	<0.1	0.0	0.0	0.3	0.0	0.0	0.0
7	Acetonitrile	<0.1	0.0	0.0	0.0	<0.1	0.0	26.7	26.7
8	o-Anisidine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
9	Aniline	0.7	0.0	0.0	0.0	0.7	0.0	31.8	31.8
10	2-Aminoethanol	<0.1	0.2	0.0	0.0	0.2	0.0	22.4	22.4
11	m-Aminophenol	0.0	<0.1	0.0	0.0	<0.1	0.0	4.1	4.1
12	Allyl alcohol	<0.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0
13	Antimony and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
14	Isobutyraldehyde	0.6	0.0	0.0	0.0	0.6	0.0	0.0	0.0
15	O-ethyl O-6-nitro-meta-tolyl-sec- butylphosphoramidothioate (Butamifos)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
16	Ethylbenzene	2.4	<0.1	0.0	0.0	2.5	<0.1	72.3	72.3
17	Epichlorohydrin	0.6	<0.1	0.0	0.0	0.6	0.0	0.0	0.0
18	1,2-Epoxypropane (also known as propylene oxide)	0.0	<0.1	0.0	0.0	<0.1	0.0	0.0	0.0
19	ε-Caprolactam	0.2	0.9	0.0	0.0	1.1	0.0	0.0	0.0
20	Xylene	3.6	<0.1	0.0	0.0	3.6	<0.1	55.0	55.1
21	Quinoline	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
22	Cumene	21.2	<0.1	0.0	0.0	21.2	0.0	0.0	0.0
23	Cresol	0.2	0.0	0.0	0.0	0.2	0.0	0.0	0.0
24	Chloroacetic acid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
25	3-Chloropropene (also known as allyl chloride)	1.6	0.0	0.0	0.0	1.6	0.0	0.0	0.0
26	Chlorobenzene	3.6	<0.1	0.0	0.0	3.6	0.0	108.7	108.7
27	Chloroform	<0.1	0.0	0.0	0.0	<0.1	<0.1	122.4	122.4
28	Cobalt and its compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
29	Vinyl acetate	17.0	<0.1	0.0	0.0	17.0	0.0	8.1	8.1
30	Salicyl aldehyde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
31	Inorganic cyanide compounds (excluding complex salts and cyanates)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
32	1,4-Dioxane	<0.1	0.0	0.0	0.0	<0.1	<0.1	135.7	135.8
33	Cyclohexylamine	0.0	<0.1	0.0	0.0	<0.1	0.0	1.3	1.3
34	2,2-Dichloro-1,1,1- trifluoroethane (HCFC-123)	1.8	0.0	0.0	0.0	1.8	0.0	0.0	0.0
35	1,2-Dichloropropane	<0.1	0.0	0.0	0.0	<0.1	0.0	339.4	339.4
36	1,3-Dichloropropene (also known as D-D)	0.6	0.0	0.0	0.0	0.6	0.0	220.6	220.6
37	Dichlorobenzene	0.0	0.0	0.0	0.0	0.0	0.0	139.2	139.2
38	Dichloromethane (also known as methylene chloride)	3.5	0.0	0.0	0.0	3.5	0.0	8.2	8.2
39	Dicyclopentadiene	<0.1	0.0	0.0	0.0	<0.1	0.0	4.4	4.4
40	2,4-Dinitrophenol	0.0	0.0	0.0	0.0	0.0	0.0	40.4	40.4
41	1,3-Diphenylguanidine	0.0	0.5	0.0	0.0	0.5	0.0	10.3	10.3
42	2,6-Di-tert-butyl-4-cresol	0.0	<0.1	0.0	0.0	<0.1	0.0	0.0	0.0
43	2,4-Di-tert-butylphenol	<0.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0
44	N,N-Dimethylacetamide	0.0	0.0	0.0	0.0	0.0	0.0	5.0	5.0
45	N,N-Dimethylaniline	0.0	0.0	0.0	0.0	0.0	0.0	2.1	2.1
46	Dimethylamine	0.0	5.5	0.0	0.0	5.5	0.0	0.6	0.6
47	N,N-Dimethylformamide	<0.1	<0.1	0.0	0.0	<0.1	0.0	104.3	104.3
48	Styrene	2.3	0.0	0.0	0.0	2.3	0.0	2.0	2.0
49	Dioxins (in mg-TEG)	<0.1	<0.1	0.0	0.0	<0.1	<0.1	<0.1	<0.1
50	Thiourea	0.0	0.0	0.0	0.0	0.0	0.0	0.7	0.7



Responsible Care Activities: Supplementary Data

(Tonnes, except where noted)

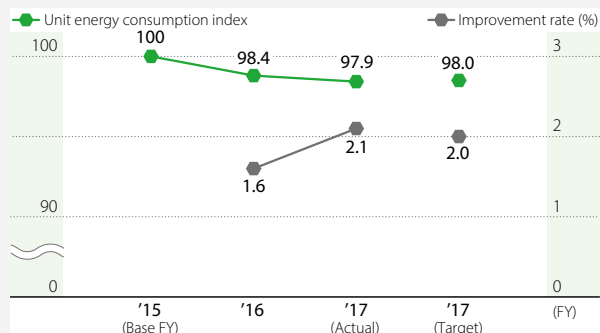
No.	Name of Chemical Compound	Amount Released					Amount Transferred		
		Air	Water	Soil	Landfill	Total	Sewage	Waste	Total
51	O,O-Dimethyl O-(3-methyl-4-nitrophenyl) phosphorothioate (Fenitrothion or MEP)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
52	2,3,5,6-Tetrachloro-para-benzoquinone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
53	Terephthalic acid	0.0	0.0	0.0	0.0	0.0	0.0	423.1	423.1
54	Water-soluble copper salts (excluding complex salts)	0.0	<0.1	0.0	0.0	<0.1	0.0	0.0	0.0
55	Sodium dodecyl sulfate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
56	Triethylamine	1.0	29.6	0.0	0.0	30.6	0.8	53.9	54.7
57	2,4,6-Trichloro-1,3,5-triazine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
58	Trichlorofluoromethane (also known as CFC-11)	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0
59	1,2,3-Trichloropropane	<0.1	0.0	0.0	0.0	<0.1	0.0	16.8	16.8
60	1,2,4-Trimethylbenzene	0.4	0.0	0.0	0.0	0.4	0.0	0.0	0.0
61	Toluidine	0.0	0.0	0.0	0.0	0.0	0.0	3.9	3.9
62	Toluene	108.5	0.2	0.0	0.0	108.7	1.3	1,836.3	1,837.6
63	Naphthalene	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
64	Nickel compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.6	0.6
65	Nitrobenzene	0.6	0.5	0.0	0.0	1.1	0.0	47.2	47.2
66	Vanadium compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
67	Arsenic and its inorganic compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
68	Hydrazine	<0.1	0.3	0.0	0.0	0.3	0.0	53.3	53.3
69	Hydroquinone	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
70	Biphenyl	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
71	Pyridine	0.0	<0.1	0.0	0.0	<0.1	0.0	1.4	1.4
72	Phenylenediamine	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
73	1,3-Butadiene	0.0	0.0	0.0	0.0	0.0	0.0	3.9	3.9
74	tert-Butyl hydroperoxide	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
75	2-tert-Butyl-5-methylphenol	0.1	0.0	0.0	0.0	0.1	0.0	0.0	0.0
76	2-Propyn-1-ol	<0.1	0.0	0.0	0.0	<0.1	0.0	<0.1	<0.1
77	2-Bromopropane	0.0	0.0	0.0	0.0	0.0	0.0	2.7	2.7
78	Hexadecyltrimethylammonium chloride	<0.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0
79	n-Hexane	34.8	<0.1	0.0	0.0	34.9	0.0	141.2	141.2
80	Water-soluble salts of peroxydisulfuric acid	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
81	Benzyl chloride	<0.1	0.0	0.0	0.0	<0.1	0.0	0.0	0.0
82	Benzaldehyde	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
83	Benzene	0.3	0.2	0.0	0.0	0.5	0.0	0.0	0.0
84	Boron compounds	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
85	Polyoxyethylene alkyl ether (alkyl C=12–15) and its mixture	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
86	Formaldehyde	0.2	0.2	0.0	0.0	0.4	2.7	0.0	2.7
87	Phthalic anhydride	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
88	Maleic anhydride	0.0	0.0	0.0	0.0	0.0	0.0	<0.1	<0.1
89	2,3-Epoxypropyl methacrylate	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0
90	Methyl methacrylate	9.0	0.0	0.0	0.0	9.0	0.0	40.9	40.9
91	(Z)-2'-Methylacetophenone=4,6-dimethyl-2-pyrimidinyl hydrazone (Ferimzone)	0.0	1.7	0.0	0.0	1.7	0.0	0.0	0.0
92	Methylamine	0.3	0.0	0.0	0.0	0.3	0.0	0.0	0.0
93	3-Methylsulfanylpropanal	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
94	Methylnaphthalene	3.0	0.0	0.0	0.0	3.0	0.0	0.0	0.0
95	Morpholine	0.0	0.2	0.0	0.0	0.2	0.0	0.0	0.0
96	Triphenyl phosphate	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total		225.0	43.8	0.0	0.0	268.8	5.0	4,201.4	4,206.5



Responsible Care Activities: Supplementary Data

Sharing Environmental Protection and Management Targets (Japan)

Unit Energy Consumption Indices (2015 = 100)



Improvement in Unit Energy Consumption

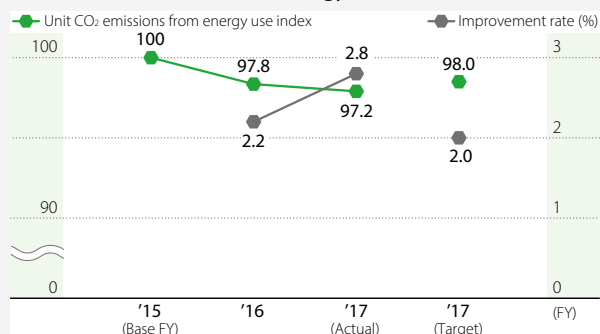
Target

Improve unit energy consumption by at least 1% annually on average.

Results

Unit energy consumption in fiscal 2017 improved by 2.1% compared with fiscal 2015, achieving the target.

Unit CO₂ Emissions from Energy Use Indices (2015 = 100)



Improvement in Unit CO₂ Emissions from Energy Use

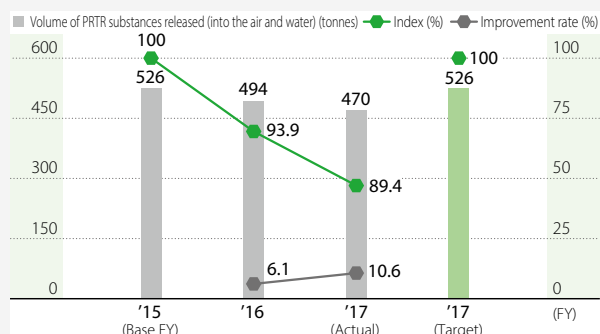
Target

Improve unit CO₂ emissions by at least 1% annually on average.

Results

Unit CO₂ emissions in fiscal 2017 improved by 2.8% compared with fiscal 2015, achieving the target.

Volume of PRTR Substances Released (into the Air and Water) and PRTR Substance Emissions Indices (2015 = 100)



Reduction of Volume of PRTR Substances Released

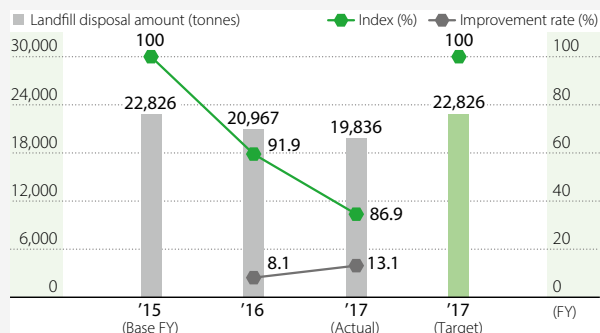
Target

Maintain the total volume of PRTR substances released (into the air and water) at or below fiscal 2015 levels.

Results

The total volume in fiscal 2017 was reduced by 10.6% compared with fiscal 2015, achieving the target.

Landfill Disposal Amount and Landfill Disposal Indices (2015 = 100)



Reduction of Landfill Disposal Amount

Target

Maintain landfill disposal amount at or below fiscal 2015 levels.

Results

The amount in fiscal 2017 was reduced by 13.1% compared with fiscal 2015, achieving the target.

Note: Sumitomo Chemical and the 15 Group companies listed below are included in the boundary of calculation.

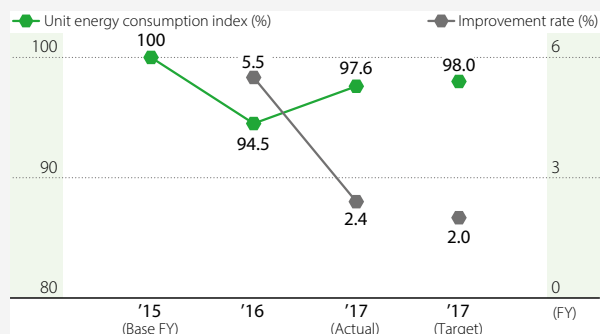
Sumika-Kakoushi Co., Ltd.; Sumika Color Co., Ltd.; Sumika Plastech Co., Ltd.; Nippon A&L Inc.; Nihon Methacryl Monomer Co., Ltd.; Asahi Chemical Co., Ltd.; Ceratec Co., Ltd.; Sumika Assembly Techno Co., Ltd.; SanTerra Co., Ltd.; Sumika Agro Manufacturing Co., Ltd.; SC Environmental Science Co., Ltd.; Sumika Agrotech Co., Ltd.; Sumitomo Chemical Garden Products Inc.; Nihon Medi-Physics Co., Ltd.; Sumitomo Joint Electric Power Co., Ltd.



Responsible Care Activities: Supplementary Data

Sharing Environmental Protection and Management Targets (Overseas)

Unit Energy Consumption Indices (2015 = 100)



Improvement in Unit Energy Consumption

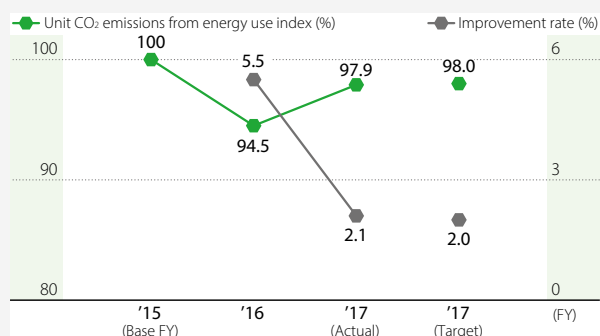
Target

Improve unit energy consumption by at least 1% annually on average.

Results

Consumption in fiscal 2017 improved by 2.4% compared with fiscal 2015, achieving the target.

Unit CO₂ Emissions from Energy Use Indices (2015 = 100)



Improvement in Unit CO₂ Emissions from Energy Use

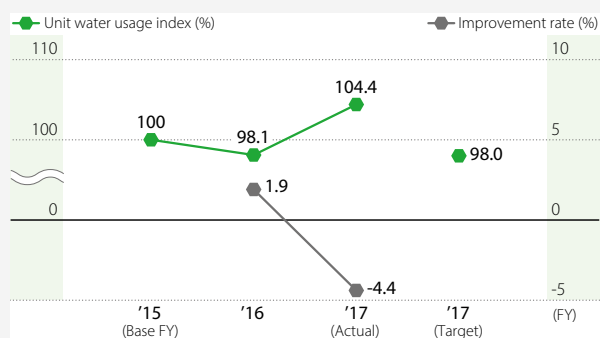
Target

Improve unit CO₂ emissions by at least 1% annually on average.

Results

Emissions in fiscal 2017 improved by 2.1% compared with fiscal 2015, achieving the target.

Unit Water Usage Indices (2015 = 100)



Improvement in Unit Water Usage

Target

Improve unit water usage by at least 1% annually on average.

Results

Usage in fiscal 2017 worsened by 4.4% compared with fiscal 2015, failing to achieve the target.

Note: • Data for previous fiscal years has been retroactively adjusted to enhance accuracy.

• The following 20 Group companies overseas are included in the boundary of calculation:

- | | | |
|---------------|--|--|
| Singapore | • The Polyolefin Company (Singapore) Pte.Ltd. | • Sumitomo Chemical Asia Pte Ltd |
| Thailand | • Sumipex (Thailand) Co., Ltd. | • Bara Chemical Co., Ltd. |
| China | • Dalian Sumika Chemphy Chemical Co., Ltd. | • Sumika Electronic Materials (Wuxi) Co., Ltd. |
| | • Sumika Electronic Materials (Hefei) Co., Ltd. | • Sumika Huabei Electronic Materials (Beijing) Co., Ltd. |
| | • Sumika Electronic Materials (Shanghai) Co., Ltd. | • Sumika Electronic Materials (Xi'an) Co., Ltd. |
| | • Sumika Polymer Compounds Dalian Co., Ltd. | • Zhuhai Sumika Polymer Compounds Co., Ltd. |
| | • Dalian Sumika Jingang Chemicals Co., Ltd. | |
| Taiwan | • Sumika Technology Co., Ltd. | • Sumipex Techsheet Co., Ltd. |
| India | • Sumitomo Chemical India Private Limited | |
| South Korea | • Dongwoo Fine-Chem Co., Ltd. | • SSLM Co., Ltd. |
| United States | • Sumitomo Chemical Advanced Technologies LLC | |



Responsible Care Activities: Supplementary Data

★: Assured by an independent assurance provider

4 Additional Data: Pollution and Resources

Environmental Performance

Sumitomo Chemical collates and totals environmental data for the Company and Group companies in Japan and overseas, including data on energy and resource consumption, production quantities, and environmental impact (e.g., release of pollutants into the air and water).

■ Environmental Performance (Fiscal 2015–2017), Boundary: Sumitomo Chemical and Group Companies in Japan

INPUT Energy and Resources



Water

	(Millions of tonnes)		
	FY2015	FY2016	FY2017★
Industrial water	67.5	66.1	68.8
Drinking water	0.9	0.8	0.9
Seawater	949.8	888.4	926.9
Groundwater	22.0	16.7	17.6
Other water	2.3	2.7	2.5



Energy
Calculated as kl
of crude oil

	(Thousands of kl)		
	FY2015	FY2016	FY2017★
Fuel, heat, and electricity*1	1,880	1,750	1,837



Exhaustible
Resources

	(Thousands of tonnes)		
	FY2015	FY2016	FY2017
Hydrocarbon compounds	1,940	1,779	1,835
Metals (excluding minor metals)*2	123	116	120
Minor metals*3	0.08	0.17	10.17

PCB/CFCs under Secure Storage

	FY2015	FY2016	FY2017
No. of electrical devices containing high concentrations of PCBs*4	51	61	58
PCB volume*4	1.0	1.0	1.0
No. of refrigeration units using specified CFCs as a coolant	47	45	48
No. of refrigeration units using HCFCs as a coolant	340	235	262

Note: The number of companies included in the boundary of calculation for the environmental performance data on page 72 is as follows for each year.

2015: Sumitomo Chemical and Group companies in Japan: 14 companies

2016: Sumitomo Chemical and Group companies in Japan: 19 companies

2017: Sumitomo Chemical and Group companies in Japan: 21 companies

*1 From fiscal 2017, the energy (calculated as kl of crude oil) indices were calculated in accordance with the GHG Protocol.

• Having adopted the GHG Protocol standards for our GHG emission disclosures, we now include the following data previously excluded from calculations: amount of energy used to produce power and steam sold to external parties by Sumitomo Chemical and Group companies in Japan (the portion attributable to energy provider subsidiaries was included in years prior to fiscal 2016). In addition, the amount of energy used by Sumitomo Chemical's non-production sites is included from fiscal 2017.

*2 Calculations include the following 12 metals: iron, gold, silver, copper, zinc, aluminum, lead, platinum, titanium, palladium, gallium, and lithium.

*3 Calculations include the following seven minor metals: nickel, chromium, tungsten, cobalt, molybdenum, manganese, and vanadium. The supply structure for each of these minor metals is extremely fragile. These minor metals are subject to national stockpiling.

*4 Fluorescent lamps and mercury lamp ballast as well as contaminated substances (wastepaper, etc.), including PCB waste, are not included in unit and volume data.



Responsible Care Activities: Supplementary Data

★: Assured by an independent assurance provider

OUTPUT Product Manufacturing and Environmental Impact



Products

		(Thousands of tonnes)		
		FY2015	FY2016	FY2017★
(Calculated on the basis of ethylene production)*1		1,582	1,517	2,602



Water
Pollutant
Emissions

		(Tonnes)		
		FY2015	FY2016	FY2017★
COD	Coastal waters/waterways	945	977	998
	Sewer systems	200	185	234
Phosphorus	Coastal waters/waterways	34	34	32
	Sewer systems	4	5	6
Nitrogen	Coastal waters/waterways	1,318	1,478	1,442
	Sewer systems	28	36	72
Substances subject to the PRTR Act*2		55	52	45



Water
Discharge

		(Millions of tonnes)		
		FY2015	FY2016	FY2017
Total amount of water discharge		270	232	234

Note: The total amount of water discharge does not include used seawater emitted by Sumitomo Joint Electric Power Co., Ltd.



Waste
Materials

		(Thousands of tonnes)		
		FY2015	FY2016	FY2017★
Waste emission*3		261	255	261
Landfill*3		23	21	21
(Breakdown)				
On-site landfill		0	0	0
External landfill		23	21	21

Note: The number of companies included in the boundary of calculation for the environmental performance data on page 73 is as follows for each year.

2015: Sumitomo Chemical and Group companies in Japan: 14 companies

2016: Sumitomo Chemical and Group companies in Japan: 19 companies

2017: Sumitomo Chemical and Group companies in Japan: 21 companies

*1 Certain assumptions were made in calculations due to the difficulty of obtaining weight-based figures for some products.

*2 Calculated based on the amount released into water/the air of each substance subject to the PRTR Act.

*3 The amount of coal ash generated at Sumitomo Joint Electric Power, which is included in "Waste emissions" and "Landfill" (Sumitomo Chemical and Group companies in Japan) is calculated on a dry-weight basis. Moreover, although the amount of waste emissions from Sumitomo Chemical and Group companies in Japan includes the amount of waste reduced at Sumitomo Chemical's facilities, the reduced amount is insignificant.



Responsible Care Activities: Supplementary Data

★: Assured by an independent assurance provider



(Thousands of tonnes of CO₂)

	FY2015	FY2016	FY2017★
Greenhouse gases (seven gases)* ¹	6,062	5,509	6,432
CO ₂ Emissions from energy use (CO ₂)	5,786	5,323	5,611* ²
CO ₂ emissions from other than energy use	66	61	711
N ₂ O	150	125	110
HFC* ³	—	—	—
PFC* ³	—	—	—
CH ₄ * ³	—	—	—
SF ₆ * ³	—	—	—
NF ₃ * ³	—	—	—

(Tonnes)

	FY2015	FY2016	FY2017
Others			
NO _x	4,896	4,736	4,703
SO _x	5,281	4,920	5,023
Soot and dust	209	166	247
Substances subject to the PRTR Act* ⁴	505	454	438

Note: The number of companies included in the boundary of calculation for the environmental performance data on page 74 is as follows for each year.

2015: Sumitomo Chemical and Group companies in Japan: 14 companies

2016: Sumitomo Chemical and Group companies in Japan: 19 companies

2017: Sumitomo Chemical and Group companies in Japan: 21 companies

*¹ From fiscal 2017, the greenhouse gas (all seven gases) indices were calculated using the GHG Protocol for greenhouse gas emissions.

• Having adopted the GHG Protocol standards for our GHG emission disclosures, we now include the following data that was previously excluded from calculations: CO₂ emissions from energy sold to external parties by Sumitomo Chemical and Group companies in Japan (the portion attributable to energy provider subsidiaries was included in years prior to fiscal 2016); CO₂ emissions from energy use attributable to Sumitomo Chemical's non-production sites; and CO₂ emissions from non-energy sources not included in the scope of the Act on Promotion of Global Warming Countermeasures. In addition, from fiscal 2017, we include energy use attributable to Sumitomo Chemical's non-production sites.

*² Calculations include the following 12 metals: iron, gold, silver, copper, zinc, aluminum, lead, platinum, titanium, palladium, gallium, and lithium.

*³ Outside the scope of reporting under the Act on Promotion of Global Warming Countermeasures.

*⁴ Calculated based on the amount released into water/the air of each substance subject to the PRTR Act.

Compliance with Environmental Laws and Regulations

Status of Compliance with Environmental Laws and Regulations

(Yen)

	FY2015	FY2016	FY2017
Total fines	0	0	0

Note: Sumitomo Chemical and Group companies in Japan are included in the boundary of calculation.

The production sites of the 21 Group companies in the boundary are listed below.

Sumika-Kakoushi Co., Ltd.; Sumika Color Co., Ltd.; Sumika Plastech Co., Ltd.; Nippon A&L Inc.; Nihon Methacryl Monomer Co., Ltd.; Asahi Chemical Co., Ltd.; Ceratec Co., Ltd.; Sumika Assembly Techno Co., Ltd.; SanTerra Co., Ltd.; Sumika Agro Manufacturing Co., Ltd.; SC Environmental Science Co., Ltd.; Sumika Agrotech Co., Ltd.; Sumitomo Chemical Garden Products Inc.; Nihon Medi-Physics Co., Ltd.; Sumitomo Joint Electric Power Co., Ltd.; Koei Chemical Co., Ltd.; Taoka Chemical Co., Ltd.; Tanaka Chemical Corporation; SCIOCS Co., Ltd.; Sumitomo Dainippon Pharma Co., Ltd.; and SN Kasei Co., Ltd.