

# Environmental Impact and Resource Reduction, and Climate Change Countermeasures Responsible Care Activities by Group Companies

FY : Fiscal Year means the year ending March 31.  
For example, FY2016 means April 1, 2015 - March 31, 2016

- 1. Responsible Care Activities by Group Companies
- 2. Environmental and Safety-related Data on Domestic Group Companies
- 3. Environmental and Safety-related Data on Overseas Group Companies

## 1. Responsible Care Activities by Group Companies

JSR strives in concert with all group companies to promote environmental and safety activities. We regularly conduct environment and safety audits on all group companies in Japan and overseas that are involved in production, transportation and construction.

Further, most of our Japanese and overseas Group companies have already acquired ISO 14001 certification, and companies pending accreditation implement proprietary environmental management systems. Group companies are systematically working to establish environmental targets and reduce environmental impact.

### Data Aggregation Scope

Group Companies	
<div>Japan14 companies (18 sites)</div> <div>ELASTOMIX CO., LTD. Japan Butyl Co., Ltd. KRATON JSR ELASTOMERS K. K Emulsion Technology, Co., Ltd. D-MEC LTD. JSR Micro Kyushu Co., Ltd. JSR Optech Tsukuba Co., Ltd. JM Energy Corporation JAPAN COLORING CO., LTD. Techno Polymer Co., Ltd. JSR Trading Co., Ltd. JSR LOGISTICS &amp; Customer Center CO., LTD.. JSR ENGINEERING CO., LTD. JSR Life Sciences Corporation</div>	<div>Overseas10 companies (10 sites)</div> <div>JSR Micro N.V. (Belgium) JSR Micro, Inc. (USA) JSR Micro Korea Co., Ltd. (South Korea) JSR Micro Taiwan Co., Ltd. (Taiwan) Kumho Polychem Co., Ltd. (South Korea) JSR BST Elastomer Co., Ltd. (Thailand) ELASTOMIX (THAILAND) CO.,LTD.(Thailand) PT. ELASTOMIX INDONESIA (Indonesia) Tianjin Kuo Cheng Rubber Industry Co., Ltd. (China) ELASTOMIX (FOSHAN) CO.,LTD. (China)</div>

Implementation Status of Environmental and Safety Audit	ISO 14001 Certification Status
<div>Japan5 companies ( 5 sites)</div> <div>OverseasNo data</div>	<div>Japan11 companies (14 sites)</div> <div>Overseas8 companies (8 sites) (Sites without certification employ individual environmental management systems)</div>

## 2. Environmental and Safety-related Data on Domestic Group Companies

### (1) Recycling and Environmental Impact

Input
20122013201420152016

### CSR Report 2016

Editorial Policy

Top Message

JSR Group CSR

Dialogue with Stakeholders

Priority issues identified by the JSR Group

Management

JSR Group CSR Priority Issues

Safety and Disaster Prevention

JSR Group CSR Priority Issues

Environmental Impact and Resource Reduction, and Climate Change Countermeasures

Environmental Impact Reduction

Resource Recycling

Climate Change Countermeasures

Biodiversity Conservation

Environment and Safety (Related Data)

Responsible Care Activities by Group Companies

JSR Group CSR Priority Issues

Sustainable Society where People Can Enjoy Health and Longevity

JSR Group CSR Priority Issues

Communication with Stakeholders

About the JSR Group

Evaluation by Outside Organization, Third-Party Opinion, and Independent Review

● Production volume (1,000t/y)	414	422	417	376	403
● Energy consumption (crude oil conversion: 1,000kL/y)	118	118	123	112	126
● Water resource use (1,000m <sup>3</sup> /y)	2,922	3,133	3,038	2,985	3,009
● PRTR applicable substance use (1,000 t/y)	159	177	177	140	163

Output

	2012	2013	2014	2015	2016
● CO <sub>2</sub> emission (1,000t/y) (Total for Scope1 and Scope2)	323	337	295	271	274
● Atmosphere					
SOx emission (t/y)	7	6	1	1	1
NOx emission (t/y)	59	58	55	50	64
● Water quality Total discharge (1,000m <sup>3</sup> /y)	2,932	3,547	3,509	3,295	3,494
COD discharge (t/y)	17	23	25	70	72
Total nitrogen discharge (t/y)	6	7	7	4	7
Total phosphorus discharge (t/y)	0	0	0	1	1
● Industrial waste generation (t/y)	4,891	21,582	15,180	9,101	13,327
● Recycled waste (on-site and off-site: t/y)	2,473	20,667	14,531	8,615	12,835
● Amount of final off-site landfills (t/y)	1,840	413	184	184	198
● PRTR-regulated substances					
Atmospheric emissions (t/y)	370	348	222	220	218
Water supply discharge (t/y)	3	3	6	5	6
Transported waste (t/y)	83	152	282	55	52
● PCB Management (power equipment)					
Equipment in storage (units)	24	17	15	11	7
: Oil Volume (L)	23,517	21,828	19,728	15,318	12,550

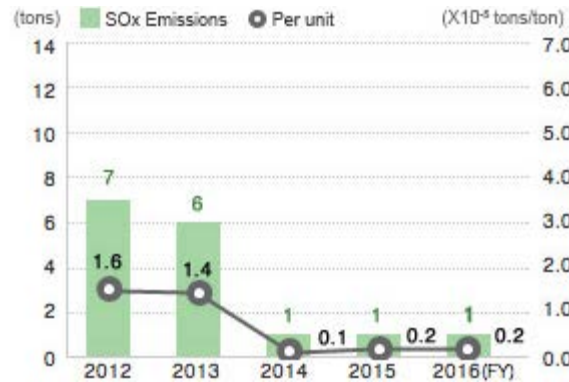
(2) Other

Other

	2012	2013	2014	2015	2016
● Environmental and Safety Capital Investment (100 million yen/y)	5.6	5.1	4.7	11.0	9.9
● Environmental complaints (cases)					
Odor	0	0	0	0	0
Noise	0	0	0	0	0
Vibration	0	0	0	0	0
Other	0	0	0	0	0
● Facility accidents (cases)	0	0	0	0	1
● Workplace accidents resulting in lost worktime	3	0	1	1	3
* Number of Group companies and business site covered	11companies 16sites	11companies 16sites	12companies 16sites	14companies 18sites	14companies 18sites

(3) Preservation of Atmospheric Environment Data

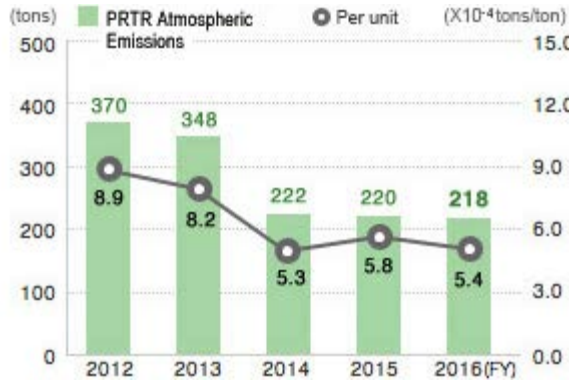
SOx Emissions



NOx Emissions



Atmospheric Emissions of PRTR-Regulated Substances



GRI Guidelines and Global Compact Content Index



Print Version of the CSR Report



Send Opinions on the CSR Report



Evaluation by Outside Organizations





(4) Preservation of Water Quality Data

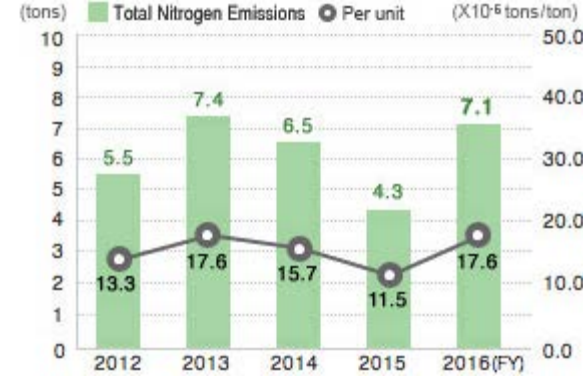
Total amount of waste water



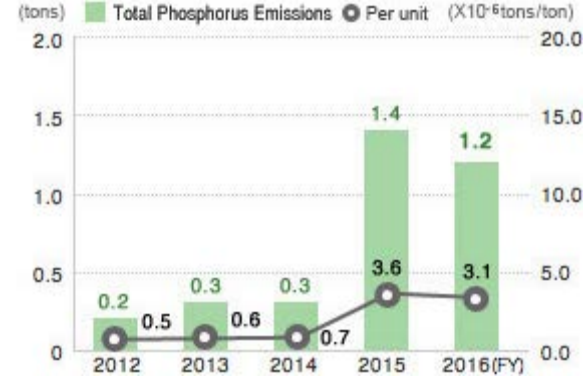
Chemical Oxygen Demand Emissions



Total Nitrogen Emissions



Total Phosphorus Emissions



(5) Recycling Data

Waste Generated



Off-Site Landfills



Recycled Waste

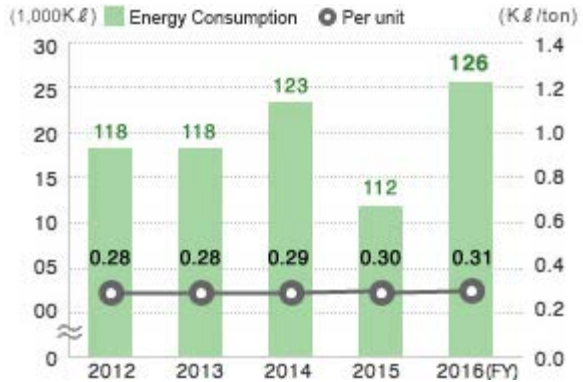


Water Resource Consumption



(6) Climate Change Countermeasures Data

Energy Consumption



CO<sub>2</sub> Emissions



Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Scope 1 to 3)

Category	FY2015 emissions		FY2016 emissions		Emissions subject to calculate
	CO <sub>2</sub> (t)	Percentage (%)	CO <sub>2</sub> (t)	Percentage (%)	
I. Direct emissions	82,836	29.6	84,990	27.1	■ Direct emissions

(Scope 1)						from the use of fuel and industrial processes by the reporting company
II. Energy-derived indirect emissions (Scope2)		188,597	67.4	217,231	69.1	■ Indirect emissions from the use of electricity and heat purchased by the reporting company
III. Other indirect emissions (Scope3)		8,401	3.0	12,065	3.8	
Other indirect emissions (breakdown of Scope3)						
Category 1	Purchased goods and services	-	-	-	-	Emissions from activities up to the manufacture of raw materials, parts, purchased goods, sales-related materials, etc. - Not calculated.
Category 2	Capital goods	-	-	-	-	Emissions from the construction and manufacturing of the reporting company's capital goods - Not calculated.
Category 3	Fuel and energy related activities not included in Scope 1 or 2	-	-	-	-	Emissions from the procurement of fuel used in power generation, etc., for electricity and heat procured from other entities - Not calculated.
Category 4	Transportation and delivery (upstream)	-	-	-	-	(1) Emissions from the distribution of raw materials, parts, purchased goods, sales-related materials, etc., up to delivery to the reporting company (2) Emissions (emissions from distribution paid for by the reporting company) amount of activity from other distribution services than (1) above (transport, handling, and storage) purchased in the fiscal year of the report: Amount of domestic and overseas shipment distribution - Not calculated.
Category 5	Waste from business operations	7,140	85.0	10,914	90.5	Emissions from the transportation and processing of waste generated by the reporting company
Category 6	Business travel	329	3.9	240	2.0	Emissions from employee business travel
Category 7	Employee commuting	865	10.3	848	7.0	Emissions from employee transportation when commuting to and from the place of business
Category 8	Leased assets (upstream)	63	0.8	54	0.4	Emissions from the operation of assets leased to the reporting company (excluding emissions calculated under Scope 1 or 2)
Category 9	Transportation and delivery (downstream)	-	-	-	-	Emissions from the transport, storage, cargo handling, and retail sales of

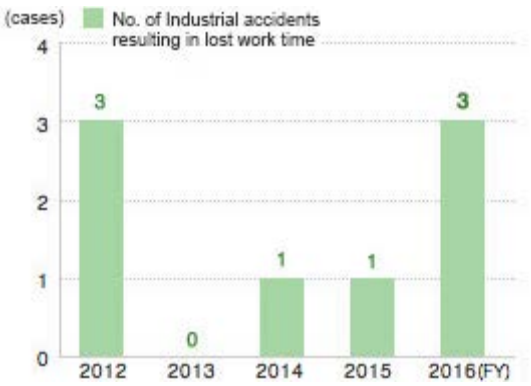
						products (limited to those items not paid for by the reporting company) - Not calculated.
Category 10	Processing of sold products	-	-	-	-	Emissions from the processing of intermediate products by the reporting company - Not calculated.
Category 11	Use of sold products	-	-	-	-	Emissions from the use of products by users (consumers and companies) - Not calculated.
Category 12	Disposal of sold products	-	-	-	-	Emissions from the transportation and processing of products upon disposal by users (consumers and companies) - Not calculated.
Category 13	Leased assets (downstream)	3	0.0	9	0.1	Emissions from the operation of assets leased to other entities
Category 14	Franchises	0	0.0	0	0.0	Emissions from franchises - No emissions; business structures are not franchises.
Category 15	Investments	-	-	-	-	Emissions related to the management of investments - Not calculated.
Scope 3 total (Categories 1 through 15)		8,401	100.0	12,065	100.0	

(7) Other: Number of Workplace Accidents, Number of Facility Accidents, Number of Environmental Complaints

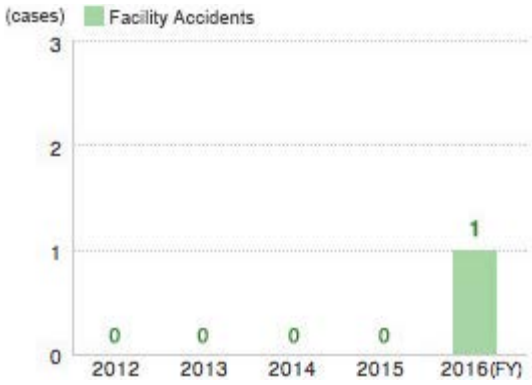
Environmental Complaints



Industrial Accidents



Facility Accidents



3. Environmental and Safety-related Data on Overseas Group Companies

(1) Recycling and Environmental Impact

■ Overseas Group Companies

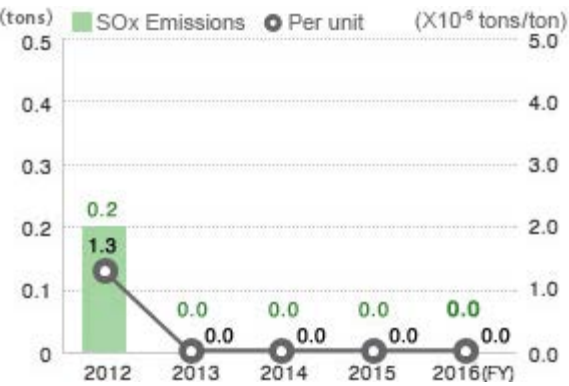
Input	2012	2013	2014	2015	2016
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● Production volume (1,000t/y)	162	174	208	250	272
● Energy consumption (crude oil conversion: 1,000kL/y)	82	86	119	140	169
● Water resource use (1,000m³ /y)	1,406	1,496	2,090	2,859	3,232

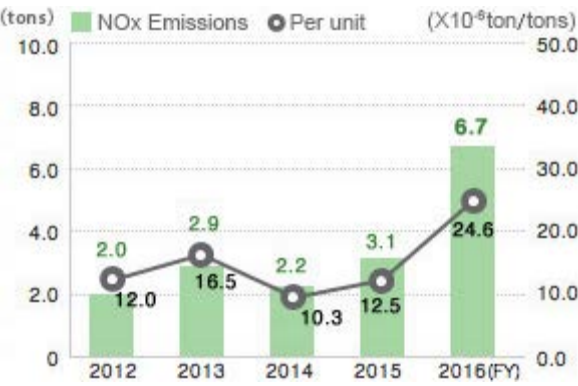
Output						
		2012	2013	2014	2015	2016
● CO2 emission (1,000t/y) (Total for Scope1 and Scope2)		218	227	315	365	449
● Atmosphere	SOx emission (t/y)	0.2	0.0	0.0	0.0	0.0
	NOx emission (t/y)	2.0	2.9	2.2	3.1	6.7
● Water quality Total discharge (1,000m³ /y)		1,203	1,279	1,706	2,279	2,427
● Inderstrial waste generation (t/y)		5,713	6,194	7,327	9,849	10,622
● Recycled waste (on-site and off-site: t/y)		2,725	4,619	5,286	7,362	7,810
● Amount of final off-site landfills (t/y)		285	304	310	814	627
* Number of Group companies and business site covered		9companies 9sites	9companies 9sites	9companies 9sites	11companies 11sites	10companies 10sites

(2) Preservation of Atmospheric Environment Data

SOx Emissions



NOx Emissions



(3) Preservation of Water Quality Data

Total amount of waste water



(4) Recycling Data

Waste Generated



Off-Site Landfills



Recycled Waste

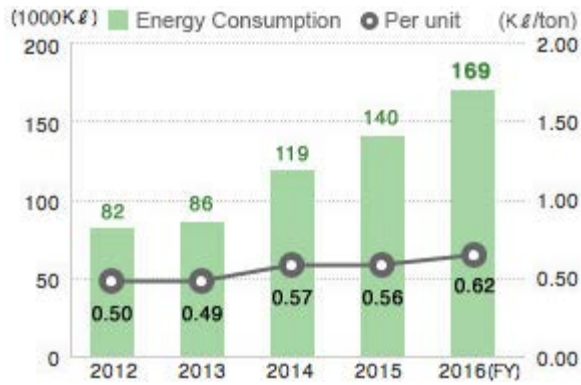
Water Resource Consumption



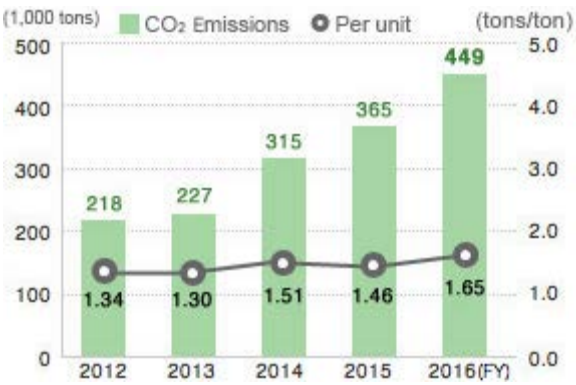


(5) Climate Change Countermeasures Data

Energy Consumption



CO<sub>2</sub> Emissions



Accounting for Greenhouse Gas Emissions Throughout the Supply Chain (Scope1 to 3)

Category		FY2015 emissions		FY2016 emissions		Emissions subject to calculate
		CO <sub>2</sub> (t)	Percentage (%)	CO <sub>2</sub> (t)	Percentage (%)	
I. Direct emissions (Scope 1)		161,522	42.9	217,065	47.1	■ Direct emissions from the use of fuel and industrial processes by the reporting company
II. Energy-derived indirect emissions (Scope2)		203,561	54.0	231,626	50.3	■ Indirect emissions from the use of electricity and heat purchased by the reporting company
III. Other indirect emissions (Scope3)		11,606	3.1	11,878	2.6	
Other indirect emissions (breakdown of Scope3)						
Category 1	Purchased goods and services	-	-	-	-	Emissions from activities up to the manufacture of raw materials, parts, purchased goods, sales-related materials, etc. - Not calculated.
Category 2	Capital goods	-	-	-	-	Emissions from the construction and manufacturing of the reporting company's capital goods - Not calculated.
Category 3	Fuel and energy related activities not included in Scope 1 or 2	-	-	-	-	Emissions from the procurement of fuel used in power generation, etc., for electricity and heat procured from other entities - Not calculated.
Category 4	Transportation and delivery (upstream)	-	-	-	-	(1) Emissions from the distribution of raw materials, parts, purchased goods, sales-related materials, etc., up to delivery to the reporting company (2) Emissions (emissions from distribution paid for by the reporting company)

						amount of activity from other distribution services than (1) above (transport, handling, and storage) purchased in the fiscal year of the report: Amount of domestic and overseas shipment distribution - Not calculated.
Category 5	Waste from business operations	9,465	81.5	10,209	85.9	Emissions from the transportation and processing of waste generated by the reporting company
Category 6	Business travel	208	1.8	225	1.9	Emissions from employee business travel
Category 7	Employee commuting	753	6.5	813	6.8	Emissions from employee transportation when commuting to and from the place of business
Category 8	Leased assets (upstream)	1,090	9.4	625	5.3	Emissions from the operation of assets leased to the reporting company (excluding emissions calculated under Scope 1 or 2)
Category 9	Transportation and delivery (downstream)	-	-	-	-	Emissions from the transport, storage, cargo handling, and retail sales of products (limited to those items not paid for by the reporting company) - Not calculated.
Category 10	Processing of sold products	-	-	-	-	Emissions from the processing of intermediate products by the reporting company - Not calculated.
Category 11	Use of sold products	-	-	-	-	Emissions from the use of products by users (consumers and companies) - Not calculated.
Category 12	Disposal of sold products	-	-	-	-	Emissions from the transportation and processing of products upon disposal by users (consumers and companies) - Not calculated.
Category 13	Leased assets (downstream)	90	0.8	6	0.1	Emissions from the operation of assets leased to other entities
Category 14	Franchises	0	0.0	0	0.0	Emissions from franchises - No emissions; business structures are not franchises.
Category 15	Investments	-	-	-	-	Emissions related to the management of investments - Not calculated.
Scope 3 total (Categories 1 through 15)		11,606	100.0	11,878	100.0	