

Environmental Initiatives in 2016

HORIBA

Overview of the Environmental Impacts



We provide a range of analytical measurement instruments and peripheral equipment required for environmental measurement. In order to fulfill social responsibilities, we also develop eco-design products with its life cycles in mind, which comply with environmental laws and regulations. At the same time, together with our suppliers, we make consistent efforts to conserve resources and energy during production. Our employees also have a strong interest in environmental issues. We participate in environmental volunteer work like cleaning and collecting trash in areas alongside river and around company offices, conducting environmental delivering classes in elementary and junior high schools, and working at environmental events organized by government organizations.

Environmental Initiatives

In 2016, the HORIBA group companies in Japan adopted the following goals for environmental conservation under the Integrated (Quality, Environment and Occupational Health and Safety) Management System. We promote efforts to build safe and efficient clean factories and contribute to the protection of the global environment.

Goals:

- ① Develop energy and resource conservation activities in order to reduce CO₂ emissions per unit of sales
- ② Maintain and expand zero-emission

Overview of the Environmental Impacts: Balance in Materials

We work hard to obtain an overview of the environmental impact caused by the domestic HORIBA Group as a whole during each stage of our business activities. In 2016, electricity consumption decreased 3%. However, the amount of waste increased 35%, and gas consumption increased 170%.

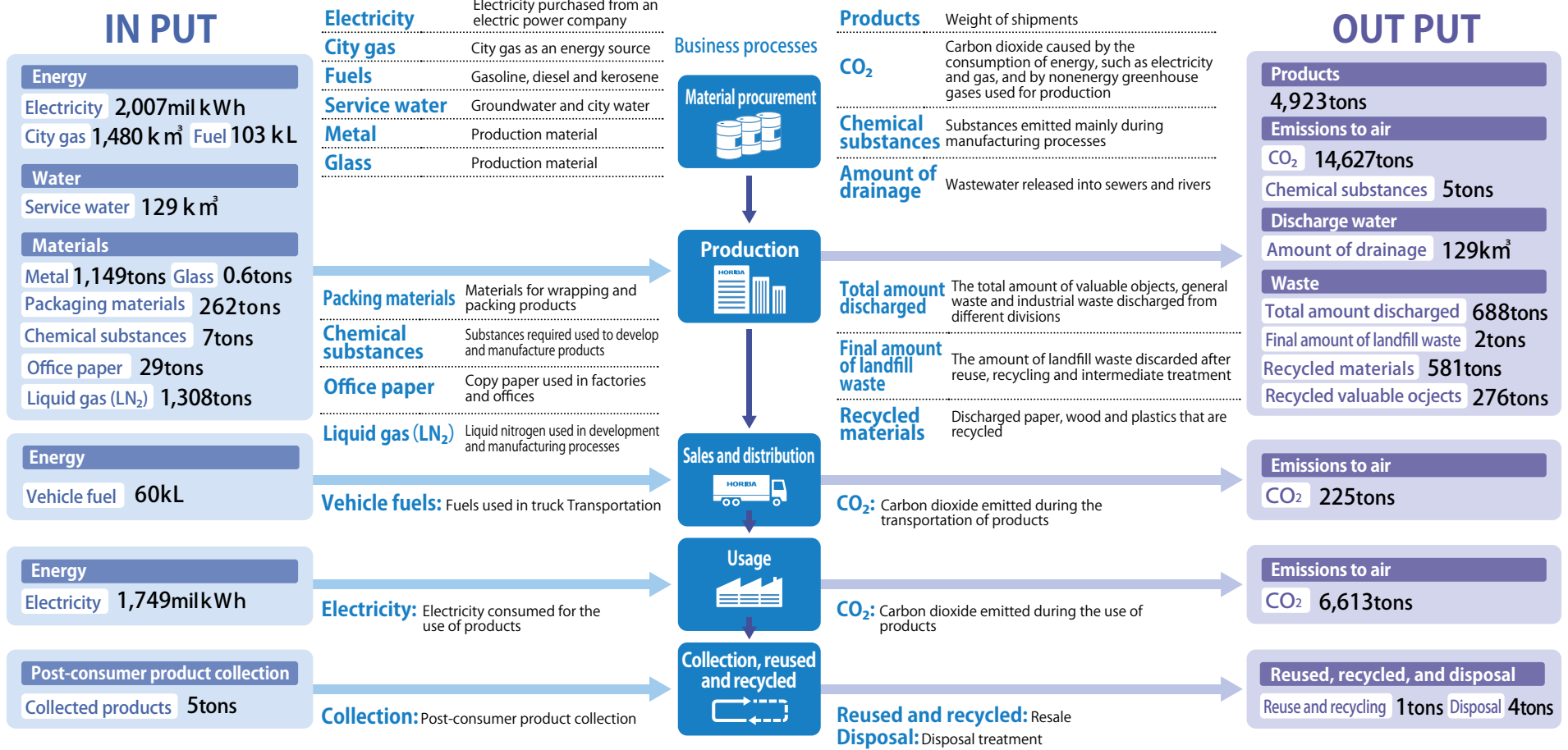
The increase in waste material and gas consumption is primarily attributed to the beginning of full-scale operation of HORIBA BIWAKO E-HARBOR of the Biwako Factory and redevelopment of the Kyoto factory. In 2017, in which we plan to complete the redevelopment project, we will make every effort to overview of the environmental impacts.

Overview of the Environmental Impacts: Balancing Environmental Impacts

Material Flow Chart for 2016 to Determine Environmental Impacts

Scope: Domestic production sites

HORIBA, Ltd. head office/factory and Biwako Plant, HORIBA STEC, Co., Ltd. head office/factory and Aso Factory, and HORIBA Advanced Techno Co., Ltd. head office/factory



Overview of the Environmental Impacts: Environmental Impacts in Production Sites

Global

Group Companies(Production Sites)

Company Name	Abbreviation	Location
HORIBA Instruments Incorporated Irvine Facility	HII(Irvine)	U.S.A. (California)
HORIBA Instruments Incorporated Ann Arbor Facility	HII(AnnArbor)	U.S.A. (Michigan)
HORIBA Instruments Incorporated Troy Facility	HII(Troy)	U.S.A. (Michigan)
HORIBA Instruments Incorporated Edison Office	HII(Edison)	U.S.A. (New Jersey)
HORIBA Instruments Incorporated Austin Office HORIBA Instruments Incorporated Santa Clara Office	HII (Austin/ Santa Clara)	U.S.A. (Texas) U.S.A. (California)
HORIBA Europe GmbH	HE	Germany (Oberursel, Darmstadt)

Company Name	Abbreviation	Location
HORIBA UK Limited	HUK	U.K.
HORIBA ABX SAS	HMFR	France (Montpellier)
HORIBA Jobin Yvon SAS	JYFR	France (Longjumeau)
HORIBA (Austria) GmbH	HA	Austria (Tulln)
HORIBA, Ltd	HOR	Japan (Kyoto)
HORIBA STEC, Co., Ltd.	STEC	Japan (Kyoto)
HORIBA Advanced Techno Co., Ltd.	HAT	Japan (Kyoto)
HORIBA KOREA LTD.	HKL	South Korea (Kyunggido)
HORIBA INSTRUMENTS (SHANGHAI) CO., LTD.	HSC	China (Shanghai)

Environmental Impact of Group Production Sites in 2016

	Item/Region	U.S.A					Europe					Asia				
		HII (Irvine)	HII (AnnArbor)	HII (Troy)	HII (Edison)	HII (Austin/ Santa Clara)	HE	HUK (Northampton)	HMFR	JYFR	HA	HOR	STEC	HAT	HKL	HSC
I N P U T	Electricity consumption MW·h	777	972	2,288	1,320	1,084	1,825	436	3,042	5,598	38	10,166	9,631	273	76	854
	City gas consumption km ³	-	55	84	89	2	721	10	-	274	6	1,425	55	0.02	0	-
	Water consumption km ³	6	5	4	7	-	3.0	1.0	20	30	0.1	87	37	3	0.1	2
	Consumption of fuel oil & fuel for vehicles kL	-	86	92	-	28	269	-	-	47	16	63	27	12	1	11
	Quantity of chemicals consumed t	-	-	-	-	-	3	-	23	-	0.001	6.8	2.0	1.00	-	-
	Office paper t	3	10	11	4	2	8	1.1	14	1	2	22	4	2	0.3	0.2
	Packing materials t	-	-	-	-	-	7	-	707	-	-	223	39	-	5	-
O U T P U T	CO ₂ emissions t-CO ₂	459	888	1,738	967	731	1,682	218	152	964	58	8,586	5,873	168	31	313
	Wastewater discharge km ³	-	1	4	-	-	-	-	-	-	0.1	87	37	3	-	1
	Waste emissions t	33	39	40	441	-	52	-	175	99	10	510	154	23	9.1	2
	Number of employees Person	152	125	80	195	43	500	183	559	310	27	1,819	445	170	28	134

Overview of the Environmental Impacts: Environmental Impacts in Non-production Sites



Environmental Impacts in Non-production Sites

(HORIBA, Ltd. sales offices and training and recreation facilities/HORIBA Techno Service Co., Ltd. service stations)

	Number of locations and category		HORIBA, Ltd. sales offices (14 locations)			HORIBA Techno Service Co., Ltd. service stations (26 locations)			HORIBA, Ltd. training and recreation facilities (2 locations)		
			2014	2015	2016	2014	2015	2016	2014	2015	2016
INPUT	Electricity consumption	MWh	562	543	576	379	360	376	239	237	255
	City gas consumption	km ³	1.2	1.4	1.1	2.7	2.9	2.7	0.3	0.3	0.3
	LP gas consumption	km ³	0	0	0	0	0	0	12	11	12
	Fuel consumption	kL	83.3	101.6	120.5	189	175	178	-	-	-
	Office paper	t	7.2	7.1	6.3	3.4	3.1	3.4	-	-	-
	Packing materials	t	1.0	1.4	1.4	3.9	4.6	4.4	-	-	-
OUTPUT	CO ₂ emissions	t-CO ₂	521	557	620	663	624	639	198	186	202
	Amount of waste generated	t	30.4	33.8	34.3	22.9	34.9	26.0	-	-	-

Sales Offices (14 locations) : Sapporo, Sendai, Fukushima, Utsunomiya, Tsukuba, Tokyo, Yokohama, Nagoya, Toyota, Hamamatsu, Osaka, Takamatsu, Hiroshima, Fukuoka

Service stations (26 locations) : Sapporo, Sendai, Fukushima, Utsunomiya, Ichihara, Kashima, Tsukuba, Kawaguchi, Tokyo, Kokubunji, Yokohama, Fuji, Hamamatsu, Toyota, Nagoya, Toyama, Yokkaichi, Osaka, Himeji, Kurashiki, Hiroshima, Yamaguchi, Takamatsu, Fukuoka, Oita, Kumamoto

Training and recreation facilities (2 locations) : Takashima (Shiga Prefecture) and Kyoto

Energy Conservation and Initiatives to Reduce CO₂ Emission

Total CO₂ emissions generated by HORIBA Group companies in Japan in 2016 increased by 14% compared to the previous year to 14,627 tons. Total CO₂ emissions per unit of sales increased by 11% from 2015.

Also, CO₂ emissions for HORIBA, Ltd. alone

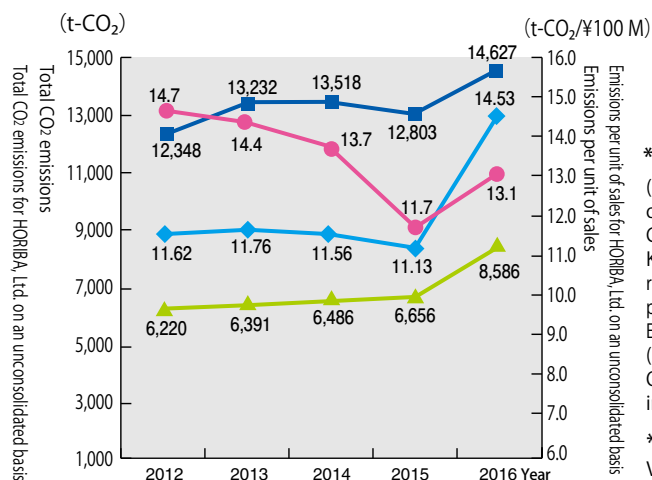
increased by 29% compared to 2015 to 8,586 tons. Emissions per unit of sales increased by 30.5% from 2015.

The increase in CO₂ emissions is attributed by the installed gas cogeneration systems, as a result of the beginning of full-scale

operation of HORIBA BIWAKO E-HARBOR. Starting in 2017, HORIBA, Ltd. plans to use energy with no waste through the use of energy monitoring systems.

Total CO₂ Emissions

- Total CO₂ emissions (t-CO₂/year)
- ▲ Total CO₂ emissions for HORIBA, Ltd. on an unconsolidated basis (t-CO₂/year)
- Emissions per unit of sales (t-CO₂/¥100 M)
- ◆ Emissions per unit of sales for HORIBA, Ltd. on an unconsolidated basis (t-CO₂/¥100 M)

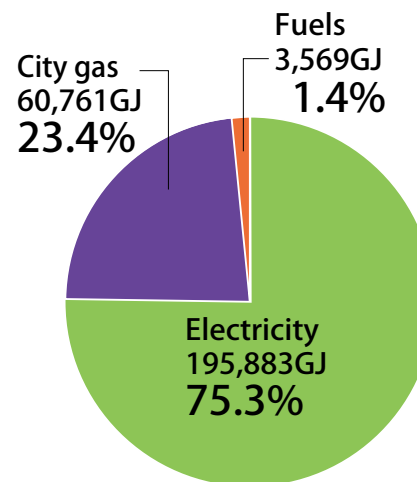


***1 CO₂ emission factor:**
 (1) Electricity: The official values of the Kansai Electric Power Company were adopted for the Kyoto-Shiga region. For other regions, substitute values officially published by the Ministry of the Environment were adopted.
 (2) City gas: The official values of Osaka Gas Co., Ltd. were used in calculations.

***2 City gas consumption:**
 Values are converted to those in standard conditions (0°C, 1 atmospheric pressure).

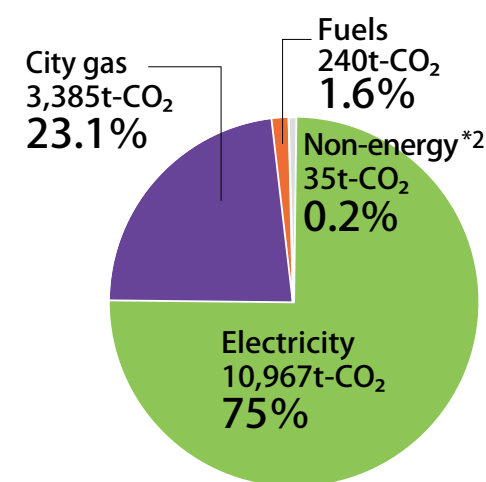
Types of Energy Consumption in 2016

(Scope: Domestic production sites*1)



Energy Types of Greenhouse Gas Emissions (CO₂ Equivalent) in 2016

(Scope: Domestic production sites*1)



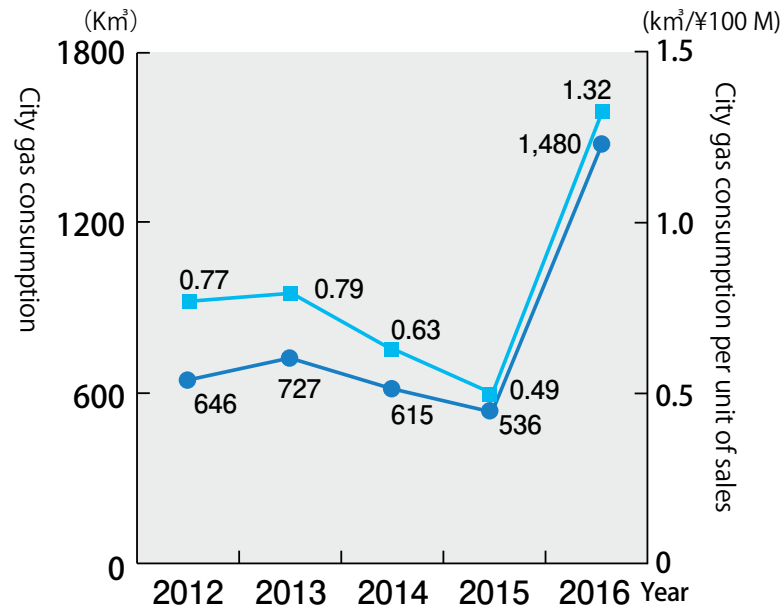
*1 Domestic production sites include the HORIBA, Ltd. head office/factory and Biwako Plant, HORIBA STEC Co., Ltd. head office/factory and Aso Factory, and HORIBA Advanced Techno Co., Ltd. head office/factory.
 *2 Non-energy: Sulfur hexafluoride, perfluoromethane, etc.

Energy Consumption

City Gas Consumption

(Scope: Domestic production sites*)

- City gas consumption (km³)
- City gas consumption per unit of sales (km³/¥100 M)



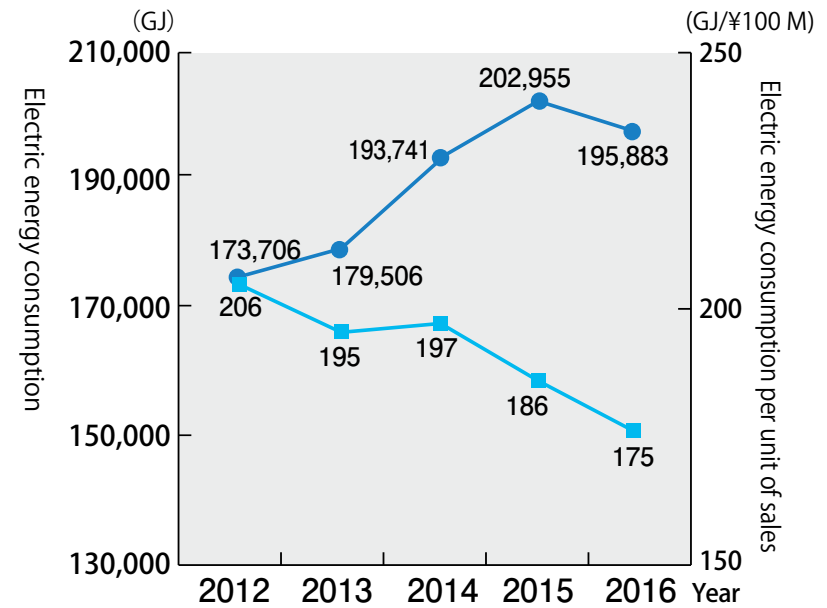
【Factor in the increase in city gas consumption】

The increase is attributed by the installed gas cogeneration systems, as a result of the beginning of full-scale operation of HORIBA BIWAKO E-HARBOR.

Electric Energy Consumption

(Scope: Domestic production sites*)

- Electric energy consumption (GJ)
- Electric energy consumption per unit of sales (GJ/¥100 M)



【Factor in the decrease in electric energy consumption】

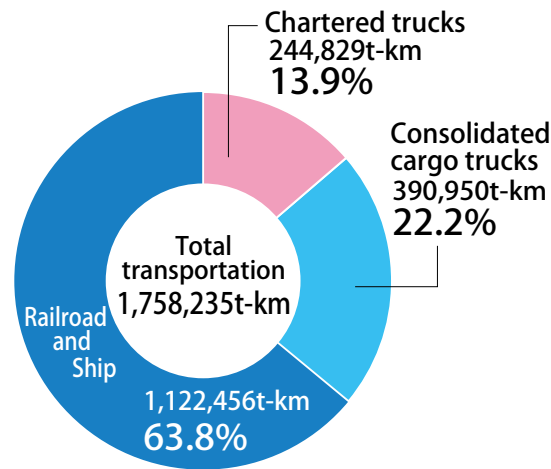
The decrease is attributed to the reduced utilization rate of equipment and facilities that were removed or relocated frequently due to redevelopment in the Kyoto factory.

* Domestic production sites include the HORIBA, Ltd. head office/factory and Biwako Plant, HORIBA STEC Co., Ltd. head office/factory and Aso Factory, and HORIBA Advanced Techno Co., Ltd. head office/factory.

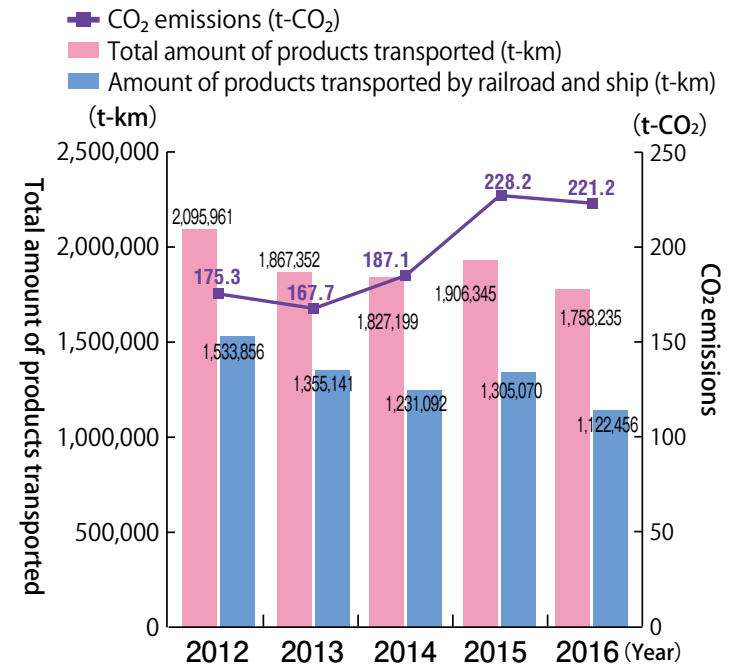
Initiatives for Reduction of CO₂ Emissions in Logistics

We, the HORIBA group in Japan, are committed to reducing CO₂ emissions from product transportation. Our recent initiatives include rail and ship transport. We started to use rail transport in 2004 among the offices between Kyoto and Tokyo followed by the transport of reagents for medical products produced at the Aso Factory (in Kumamoto) in 2006. In September 2013, we started using ship transport between Kumamoto and Tokyo. Through these initiatives, we strive to enhance transport efficiency and reduce CO₂ emissions.

Railroad Utilization Rate for the Transportation of Products in 2016
(Scope: Domestic production sites*)



The Amount of Products Transported and the Amount of CO₂ Emissions
(Scope: Domestic production sites*)

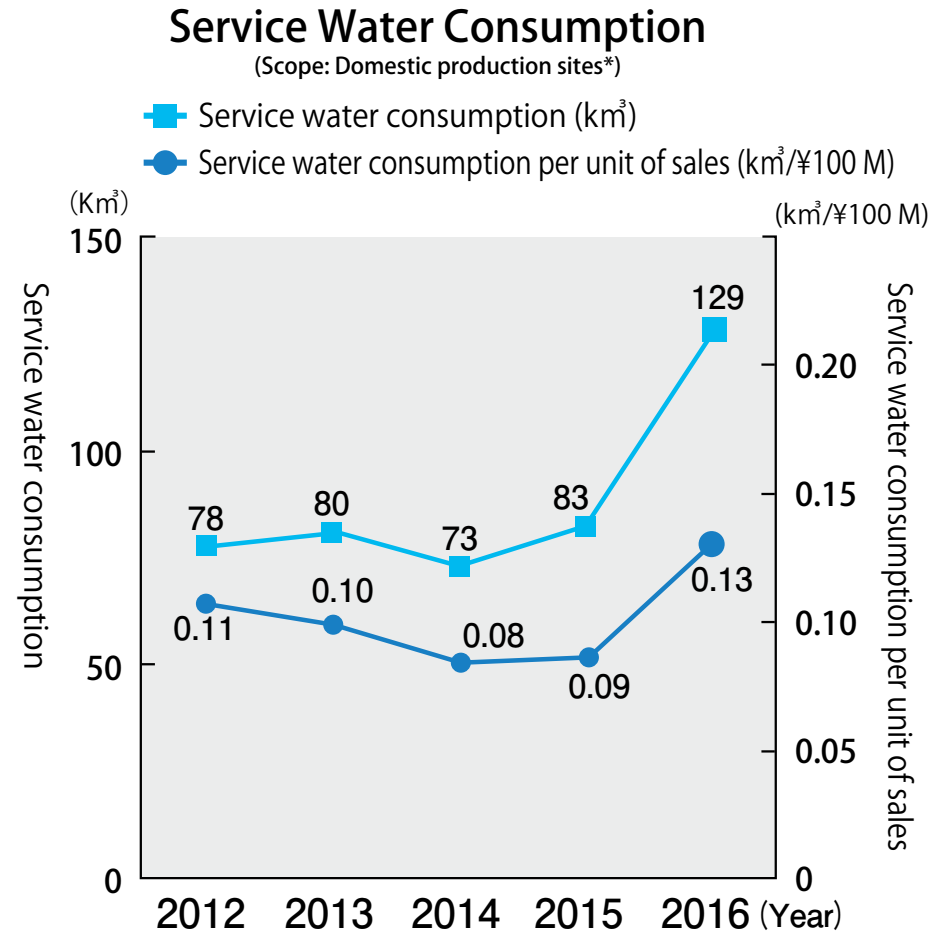


* Domestic production sites include the HORIBA, Ltd. head office/factory and Biwako Plant, HORIBA STEC Co., Ltd. head office/factory and Aso Factory and HORIBA Advanced Techno Co., Ltd. head office/factory.

Use of Service Water and Monitoring of Wastewater

The amount of service water we used in 2016 increased by 55% from 2015, despite our attempt to use it efficiently. This increase is attributed to the beginning of full-scale operation of HORIBA BIWAKO E-HARBOR. In 2017, we will make efforts to use service water more efficiently by monitoring its use, so that we will be able to reduce the service water consumption per unit of sales.

Meanwhile, HORIBA, Ltd. uses a round-the-clock factory wastewater monitoring system. In 2016, wastewater above the wastewater discharge standard specified by Kyoto City was discharged. We immediately responded to the accident and reported the discharge to the Kyoto City Waterworks Bureau and received a comment from the bureau that there was no damage to the sewer facilities resulting from the discharge. We are further stepping up our efforts to prevent such accidents in the future.



* Domestic production sites include the HORIBA, Ltd. head office/factory and Biwako Plant, HORIBA STEC Co.,Ltd. head office/factory and Aso Factory, and HORIBA Advanced Techno Co., Ltd. head office/factory.

Wastewater Measurement Categories and Trends in Measured Values



Scope: HORIBA, Ltd. head office/factory

(Units: mg/L) except pH * Under detection limit so omitted

	Regulation Category	Kyoto City Regulations	HORIBA Standards	Measured Result (maximum)			Detection Limit Value
				2014	2015	2016	
Environmental categories	pH	5~9	-	2.6~8.4	6.0~8.4	6.2~8.3	/
	n-Hexane extract	30	21	4.0	4.7	1.8	0.5
	Phenol	1	0.3	*	*	0.03	0.01
	Copper	3	0.9	0.150	0.350	0.091	0.002
	Zinc	2	1.0	0.250	0.560	1.100	0.002
	Iron (soluble)	10	3.0	0.37	0.14	1.10	0.01
	Manganese (soluble)	10	3.0	0.01	0.01	0.13	0.01
	Nickel	2	0.6	0.01	0.01	0.06	0.01
Toxic substances	Boron and its compounds	10	3.0	0.3	0.6	15.0	0.1
	Fluorine and its compounds	8	4.5	0.6	0.9	10.0	0.1
	Cadmium and its compounds	0.03	0.03	*	*	0.014	0.001
	Cyanogen compounds	1	0.3	*	*	*	0.1
	Lead and its compounds	0.1	0.07	*	*	0.07	0.01
	Hexavalent chromium	0.5	0.15	*	0.02	*	0.02
	Arsenic and its compounds	0.1	0.03	0.006	0.087	0.021	0.005
	Mercury and its compounds	0.005	0.0015	*	*	*	0.0005
	Trichloroethylene	0.1	0.09	*	*	*	0.01
	Dichloromethane	0.2	0.14	*	*	*	0.02
	Carbon tetrachloride	0.02	0.014	*	*	*	0.002
1,1,1-trichloroethane	3	0.9	*	*	*	0.3	

Note: Regulation figures are from Kyoto City sewage and drainage standards.

※ During a certain period from October to November 2016, measurements for "boron and its compounds" and "fluorine and its compounds" above the wastewater discharge standard specified by Kyoto City were detected. We reported the discharge to the Kyoto City Waterworks Bureau and received a comment from the bureau that there was no damage to the sewer facilities resulting from the discharge.

Use of Chemical Substance

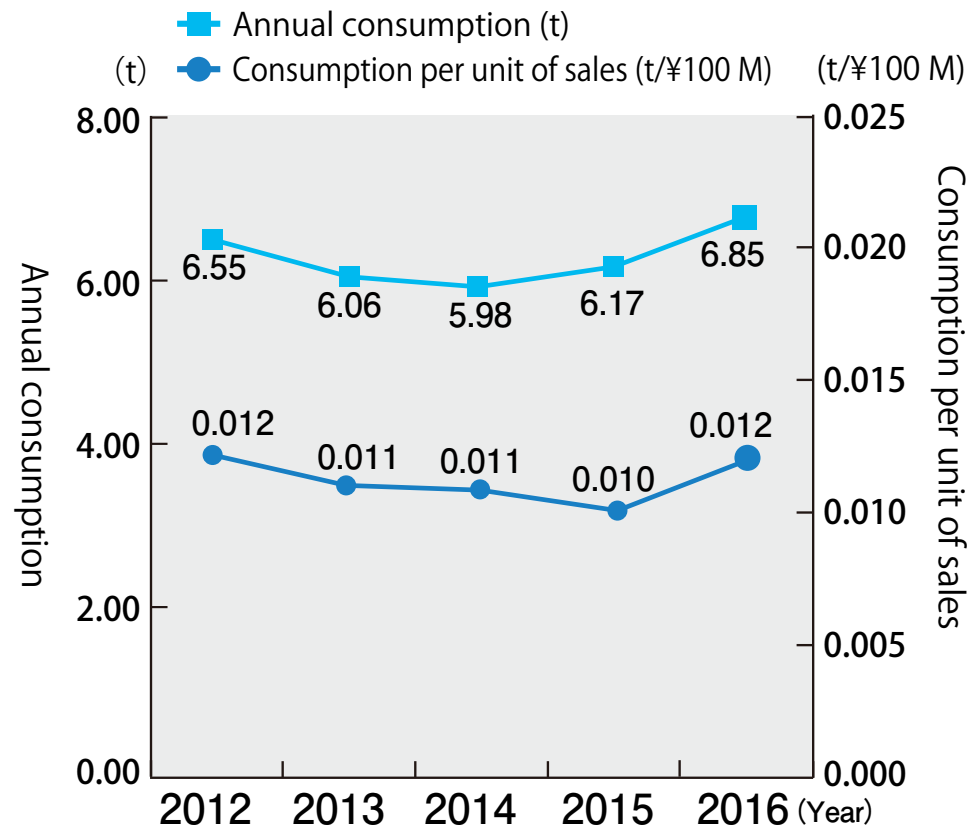
In 2016, HORIBA, Ltd. used 6.85 tons of chemical substances (volume converted to weight in total), marking a 0.68 ton increase from 2015. The company has been keeping track of the use of PRTR controlled substances since 2010 to ensure compliance with the revised PRTR Law. Although this law requires entities to report the use of one ton or more of a specified chemical in a year (0.5 tons or more for a Class 1 substance), the company did not use any of the relevant chemicals at a level warranting a report.

Full-scale operation of a group company responsible for the liquid measurement field, which often handles chemicals, starts in 2017. The company will implement improvement measures as part of its IMS activities in order to reduce risks.

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

Trend in Quantity of Chemical Substances Consumed

(Scope: Domestic production sites*)



Major Chemical Substances Handled



Scope: HORIBA, Ltd. head office/factory

Unit: kg

CAS No.	Substance (IUPAC)	Annual Amount Handled			Amount Transferred			Amount Recycled			Main Application
		2014	2015	2016	2014	2015	2016	2014	2015	2016	
7664-39-3	Hydrofluoric acid	10	38	10	10	38	9	0	0	0	Semiconductors and others
64-17-5	Ethanol: more than 99.5%	205	331	254	76	102	66	0	0	0	Clean components
67-64-1	Acetone (dimethyl ketone)	173	147	128	145	115	95	0	0	0	Cleaning
507-55-1	HCFC – 225; Product: H-997	56	73	48	0	0	26	0	0	0	Solvent/Product inspection
62-56-6	Thiourea	14	2	3	0	1	1	0	0	0	Reagents production
7439-92-1	Lead solder	27	97	35	0	0	0	23	80	28	Printed circuit boards
7664-93-9	Piranha solution	100	162	87	100	162	87	0	0	0	Semiconductors
7722-84-1	Hydrogen peroxide	9	86	119	4	82	56	0	0	0	Liquid measurement and others
1330-20-7	Xylene	82	112	38	82	112	37	0	0	0	Semiconductors/ components

*CAS No.: Numerical identification numbers for chemical substances managed by the Chemical Abstracts Service, a division of the American Chemical Society

PRTR Substances Managed in 2016

Scope: HORIBA, Ltd. head office/factory

Minimum target treatment quantity: 10 kg Unit: kg

Ordinance No. *1	Substance	Annual Amount Handled	Added to Product	Amount Remove	Amount Emitted			Amount Transferred	Amount Recycled	Main Application
			Product Delivery	Compounds Neutralized/Decomposed/Synthesized	Air	Water	Soil	Industrial Waste	Transferred Outside	
300	Toluene	97.0	0.0	0.0	95.4	0.0	0.0	1.6	0.0	Product development
185	Dichloropentafluoropropane (HCFC-225); product name H-997	47.9	0.0	3.1	18.5	0.0	0.0	26.3	0.0	Product development/Product inspection
80	Xylene	37.9	0.0	0.0	0.0	0.0	0.0	37.9	0.0	semiconductors, Clean components
305	Lead compounds	35.0	6.9	0.0	0.0	0.0	0.0	0.0	28.1	Soldering printed circuit board
82	Silver and its water-soluble compounds	32.1	3.6	0.0	0.0	0.0	0.0	1.6	26.9	Soldering printed circuit board
374	Hydrogen fluoride and its water-soluble salts	16.1	0.0	0.3	0.0	0.0	0.0	15.8	0.0	Semiconductors/Product development Product manufacturing/Product inspection
31	Antimony and its compounds	15.0	14.9	0.0	0.0	0.0	0.0	0.1	0.0	Product material
30	n-alkylbenzenesulfonic acid and its salts (alkyl C=10-14)	11.9	0.0	0.0	0.0	0.0	0.0	11.9	0.0	Semiconductors/Product development Product manufacturing/Product inspection
Total		292.9	25.4	3.4	113.9	0.0	0.0	95.2	55.0	

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

*1 Ordinance No.: Numbers given in Table 1 of the Enforcement Ordinance for the Law Concerning Reporting, etc. of Releases to the Environment of Specific Chemical Substances and Promoting Improvements in Their Management

Atmospheric Measurement Categories and Trends in Measured Values (at vents and site perimeters)

Scope : HORIBA, Ltd. head office/factory

* Under detection limit so omitted

Measurement Category		Unit	Kyoto Prefecture Regulations	HORIBA Standards	Measured Result (maximum)		
					2014	2015	2016
At vents	Xylene	Vol ppm	300	28	<2	-	-
	Fluorine compounds	mg/m ³ N	5	3.5	<0.5	-	-
	Hydrogen chloride	Vol ppm	20	6	<1	-	-
	Nitrogen oxide (NOx)	Vol ppm	100	30	<10	-	-
At site perimeters	Xylene	Vol ppm	3	—	<0.3	-	-
	Fluorine compounds	mg/m ³ N	0.05	—	<0.01	<0.01	<0.01
	Hydrogen chloride	Vol ppm	0.2	—	0.06	<0.02	0.04
	Nitrogen oxide (NOx)	Vol ppm	1	—	0.040	0.057	0.011

Note: Regulation figures are based on ordinances to protect Kyoto Prefecture environment.
Measurement at vents was not performed in 2015, 2016 due to the facility removal.

* There have been no cases where the amount of hazardous substances to the air exceeded the amount decided by the law over the past three years.

Initiatives to Reduce Waste



HORIBA, Ltd. achieved zero emissions in the second term of 2006, and it has been achieving zero emission for the past five years. Since 2013, the scope expanded not only the company itself but all domestic production bases. In 2016, due to the beginning of full-scale operation of HORIBA BIWAKO E-HARBOR and a redevelopment project in the Kyoto factory, as well as the impact of the earthquake disaster at the Aso Factory of HORIBA STEC, Co., Ltd., the amount of waste products increased by 35%.

In 2017, we will promote further efforts to maintain zero emission and suppress the amount of waste products.

*** HORIBA's definition of zero emissions:**

"The total amount of landfill waste must not exceed 1 percent of total waste generated."

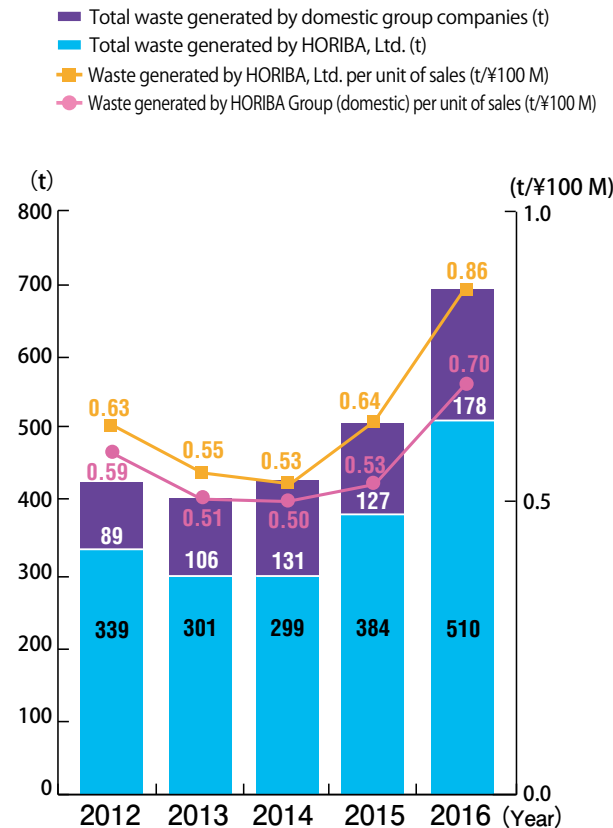
Total waste generated:

A generic term for waste discharged from all divisions because it is no longer required (includes valuable resources, general waste and industrial waste).

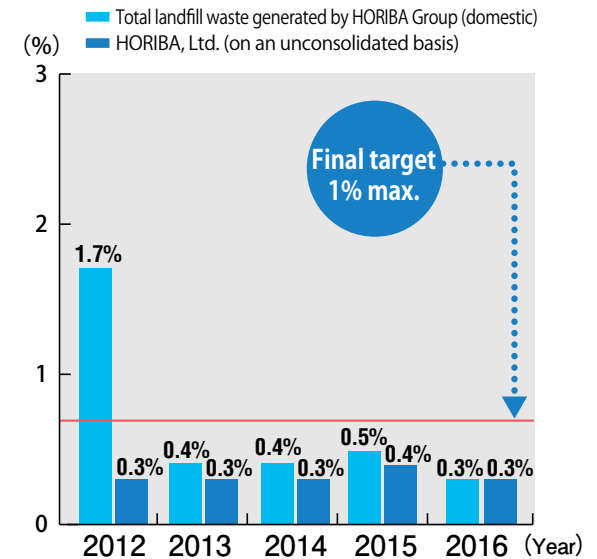
Total amount of landfill waste:

The total amount of waste delivered to landfill after the process of reuse, recycle, or intermediate treatment (including neutralization, change into nonhazardous substance, and incineration).

Total Waste Generation and Waste Generation per Unit of Sales



Trend in Total Amount of Landfilled Waste



Scope:

Domestic production sites:

HORIBA, Ltd. head office/factory and Biwako Plant, HORIBA STEC, Co., Ltd. head office/factory and Aso Factory and HORIBA Advanced Techno Co., Ltd. head office/factory

Domestic group companies:

HORIBA STEC, Co., Ltd. and HORIBA Advanced Techno Co., Ltd.

HORIBA Group (domestic):

HORIBA, Ltd., HORIBA STEC, Co., Ltd. and HORIBA Advanced Techno Co., Ltd.

Environmental Accounting



In 2016, environmental protection costs for HORIBA, Ltd. reduced to approximately 50% compared to 2015. This reduction is due to the completion of installation of equipment in HORIBA BIWAKO E-HARBOR. The economic effect of the environmental protection initiative was sum up to approximately 1,117 million yen which contribute to profit. This figure was largely the result of product research and development activities, including continued eco-friendly product development

In addition, substantial benefits of power generation by cogeneration system installed in the previous year are beginning to be realized.

Environmental Accounting Standards:

- ① Investment/expenditure classification: Based on financial accounting standards
- ② Costs: Includes personnel, management and R&D expenses (excl. depreciation)
- ③ i) Personnel costs: Average labor costs × no. hrs environmental protection activities
ii) R&D economic benefit: Contribution of eco-friendly products to operating income
- ④ Based on Environmental Accounting Guidelines by the Ministry of the Environment (2005 version)

Costs of Environmental Protection (by Business Activity)

Scope: HORIBA, Ltd. head office/factory/Biwako Plant/14 sales offices and it's training center, HORIBA Techno Service Co., Ltd. 26 service stations
Accounting period: January 1, 2016 to December 31, 2016

(Millions of yen)

Environmental Protection Costs (by Business Activity)						Economic Effect (Internal)		
Category	Key Actions	Amount Invested	Total Cost	Total	Year-on-year Comparison (%)	Benefits of Amount	Remarks	
(1) Cost in Business area		42.9	88.5	131.4	33.4	178.0		
Details	1. Cost of pollution prevention	Maintained existing exhaust and drainage facilities; providing regular and preventive maintenance	35.2	18.9	54.1	542.5	8.3	Power-saving in facilities, effective operational benefits
	2. Cost of global environmental protection	Switchover of all air conditioners from electricity to gas, Promoting switchover to energy-efficient facilities, and other initiatives	7.7	14.2	21.9	6.5	105.3	Conversion to energy-efficient facilities, modification of equipment, effect of electricity conservation
	3. Cost of resource circulation	Water conservation and Promoting zero emissions activity	0.0	55.4	55.4	118.7	64.4	Reduction of water consumption, waste materials sold as valuable resources etc.
(2) Upstream and downstream cost	Promoting green purchasing, and collection and reuse of used products	14.6	11.8	26.4	125.4	5.9	Promotion of green purchasing and reuse of collected used products	
(3) Administration cost	Improved operational efficiency of environmental management systems, Promoting ecotraining and other initiatives	0.0	82.7	82.7	103.7	1.3	Benefit of environmental advertisements, etc.	
(4) R&D cost	Promoting eco-friendly design, complying to RoHS (Restriction of Hazardous Substances) Directive, and other initiatives	81.9	473.5	555.4	49.2	1,117.3	Expansion of eco-friendly products, contribution to operating income	
(5) Cost of social activities	Actively Promoting awareness-raising activities related to environmental technology and other initiatives	0.0	20.8	20.8	108.0	0.2	Support of environmental improvement, promotion of enlightenment initiatives	
(6) Cost of environmental remediation	N/A	0.0	0.0	0.0	0.0	0.0	N/A	
Total cost of environmental protection	—	139.4	677.3	816.7	49.7	1,302.7	—	

Environmental Accounting

Effect of Environmental Protection

Scope: HORIBA, Ltd. head office/factory/Biwako Plant/14 sales offices and it's training center, and HORIBA Techno Service Co., Ltd. 26 service stations
Accounting period: January 1, 2016 to December 31, 2016

Effect of Environmental Protection				
Category	Environmental Performance Indicator (unit)	2015 (standard)	2016	Difference from Standard (Environmental protection benefits)
Effect of resources invested related to environmental protection	Total energy input (GJ)	147,763	183,447	35,684 *1
	Power consumption (GJ)	115,361	110,990	△ 4,371 *1
	City gas consumption (GJ)	21,214	59,930	38,716 *1
	Fuels (diesel, kerosene and gasoline)	11,188	12,526	1,338 *1
	Core production elements input (iron, SUS, aluminum, copper and glass) (t)	2,588	1,149	△ 1,439
	Recycled resource input (t) Office paper and packing materials (cardboard, wood and polystyrene)	318	255	△ 63
	Water input (km ³)	50	92	42
	Groundwater input (km ³)	16	14	△ 2
	City water input (km ³)	35	78	43
	Effects to environment and waste generation by environmental protection	Greenhouse gas emissions (t-CO ₂)	8,023	10,047
Greenhouse gas emissions through electric energy consumption (t-CO ₂)		6,087	5,863	△ 224 *2
Greenhouse gas emissions through city gas consumption (t-CO ₂)		1,185	3,343	2,158 *2
Greenhouse gas emissions through fuel consumption (t-CO ₂)		750	840	90 *2
Total waste generated (t)		453	571	118
Final waste at landfill (t)		1.4	1.6	0.2 *3
Total water drained (km ³)		50	92	42
Water quality (BOD/COD) (mg/L)		N/A	N/A	-
NOx and SOx emissions (t)		N/A	N/A	-
Malodor (max. density) (mg/L)		N/A	N/A	-

Environmental Protection Benefits				
Category	Environmental Performance Indicator (unit)	2015 (standard)	2016	Difference from Standard (Environmental protection benefits)
Effects in terms of goods and services generated	Energy consumption during operation (GJ) (Total of eco-friendly energysaving products)	103,260	78,705	△ 24,555 *1
	Greenhouse gas emissions during operation (t-CO ₂) (Total of eco-friendly energy-saving products)	3,999	3,048	△ 951 *2
	Hazardous substances emitted during disposal of used products and recycling of containers and packaging (t)	14	4	△ 10
	Amount of used products, containers and packaging recycled (t)	4	1	△ 3
	Amount of product packing materials used (t)	287	223	△ 64
Other effects of environmental protection	Greenhouse gas emissions from transporting products (t-CO ₂)	207	204	△ 3 *2
	Products transported (t-km)	1,802,815	1,640,285	△ 162,530
	Noise (dB) *at night	54	48	△ 6
	Vibration (dB) *in evening	Less than 30	Less than 30	-

* 1: GJ (gigajoule): Converted and calculated at 0.00976 GJ/kWh (from the April 1, 2006 public notification of the Energy Conservation Center).

* 2: CO₂ emissions factor: ① Electricity: Keijii region—Official values from KEPCO were applied; other regions—Alternate figures published by Japan's Ministry of the Environment were applied
② City gas: Official values from Osaka Gas were applied
③ Time of product usage: 0.378 kgCO₂/kWh (average of values for all Japan's electricity companies in 2000) was applied
④ Product transportation: a combination of the ton-kilometer method, transport area-specific cargo weight method, and other methods are used

* 3: Only for HORIBA, Ltd. head office/factory

Economic Benefits from Environmental Protection Activities

(Millions of yen)

Economic Benefits from Environmental Protection Activities (Substantial Benefits)		
	Effect	Amount
Profit	Sales of solder residue, etc. generated in production processes	5.5
	Gain on sale of recycled products	16.5
Total		22.0