

Environmental Data Book

Year Ended March 31, 2019

For feedback and suggestions

Corporate Communications Group

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Position of the Environmental Data Book

The Environmental Data Book provides information and data on the Santen Group's environmental efforts. Related information is also available on our Annual Report and website.

(Reporting coverage)

Japan: all facilities including sales offices

Other countries: Principal production facilities, Tampere Plant (Finland) and Suzhou Plant (China)

(Reporting period)

Japan: April 1, 2018 – March 31, 2019

other countries: January 1, 2018 – December 31, 2018

Certain information is updated after the above period

With regard to the major indicators, figures for previous fiscal years are also given.

(Important change in organization during the reporting period)

Transfer of functions of Osaka Plant to other plants completed and Osaka Plant was closed by March, 2015.

(Guidelines referenced)

This data book has been prepared with reference to the Environmental Reporting Guidelines (2018 edition, Ministry of the Environment Japan), GHG Intensity calculation database (ver.2.6, Ministry of the Environment Japan), Environmental Accounting Guideline (2005 edition, the Ministry of the Environment Japan), and GRI Standards

(Notational system of numerical results)

Total and tallies of shares may not always match, due to the effect of rounding and so on.

(Currency exchange rate - U.S. dollar amounts)

In this data book, U.S.dollar amounts have been translated from yen, solely for the convenience of the reader, at the rate of ¥110.99 to U.S.\$1.00, the exchange rate prevailing on March 29, 2019. (This date was selected because March 30 and 31, 2019 was a non-business day for financial institutions.).

(Date of issue)

June, 2019

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1. Environmental management

■FY2020 targets/ performances in FY2018

【Santen Group】

		FY2020 targets	Performance in FY2018
Measures against Climate Change	CO ₂ emissions	Lower than 34,357t-CO ₂	34,160t-CO ₂
Reducing our Environmental Impact	Final waste disposal rate	Lower than 2.1%	8.0%
	Input water resources	Less than 2.4thousand m ³ /billion yen	2.39 thousand m ³ /billion yen

【In Japan】

		FY2020 targets	Performance in FY2018
Measures against Climate Change	CO ₂ emissions	Lower than 24,756t-CO ₂	24,804t-CO ₂
Reducing our Environmental Impact	Final waste disposal rate	Lower than 0.01%	5.76%

■ISO14001certification

Organization	scope of activity	acquisition date
As integrated organization Shiga Product Supply Center Noto Plant Claire Co., Ltd	Production of pharmaceuticals Cleaning of antidust and sterilized clothing	December 2014 ※
Suzhou Plant (China)	Production of pharmaceuticals	February 2019

※ Shiga Plant was registered in 1999, Noto Plant was in 2003, and were migrated to integrated organization certification in 2014

■Environmental management audit

Our ISO 14001-certified plants are constantly subject to regular assessment by an ISO 14001 certification assessment body. We also make an internal audit of our plants that have not yet obtained ISO 14001 certification by following the ISO 14001 standard.

■Environmental risk assessment

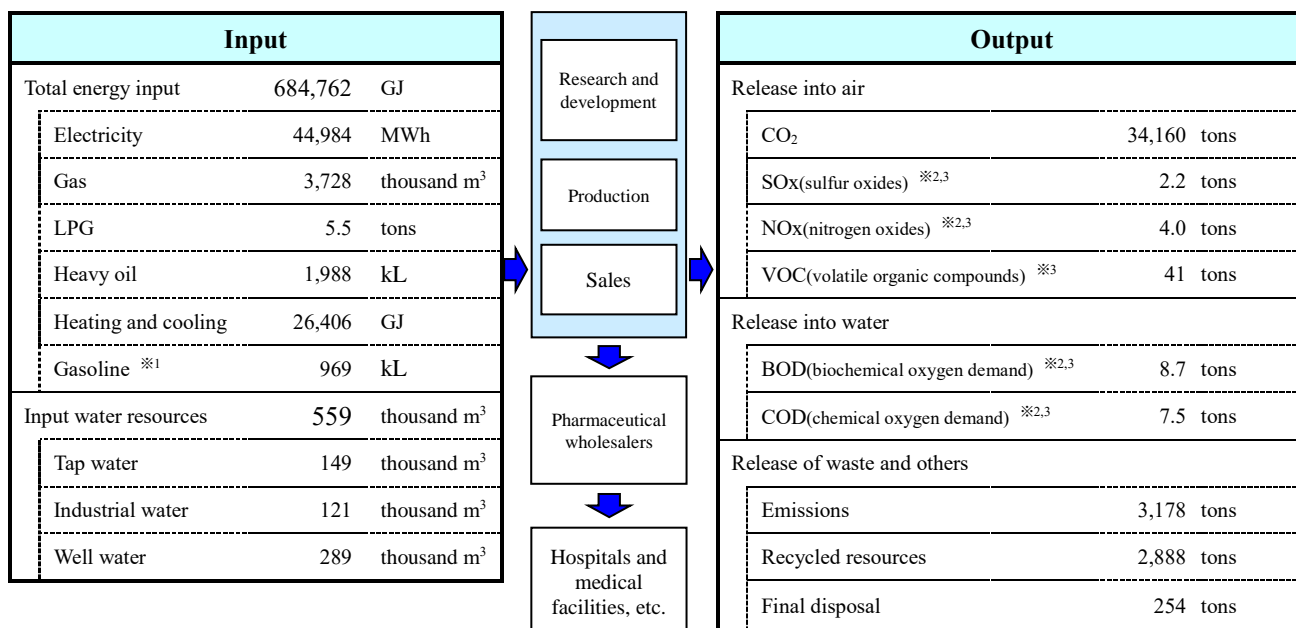
Santen conducts environment-related risk assessment and confirm that there is no significant risk, for our major production and research facilities, with utilizing WWF-DEG Water Risk Filter, and so on.

■Environment-related accidents and complaints

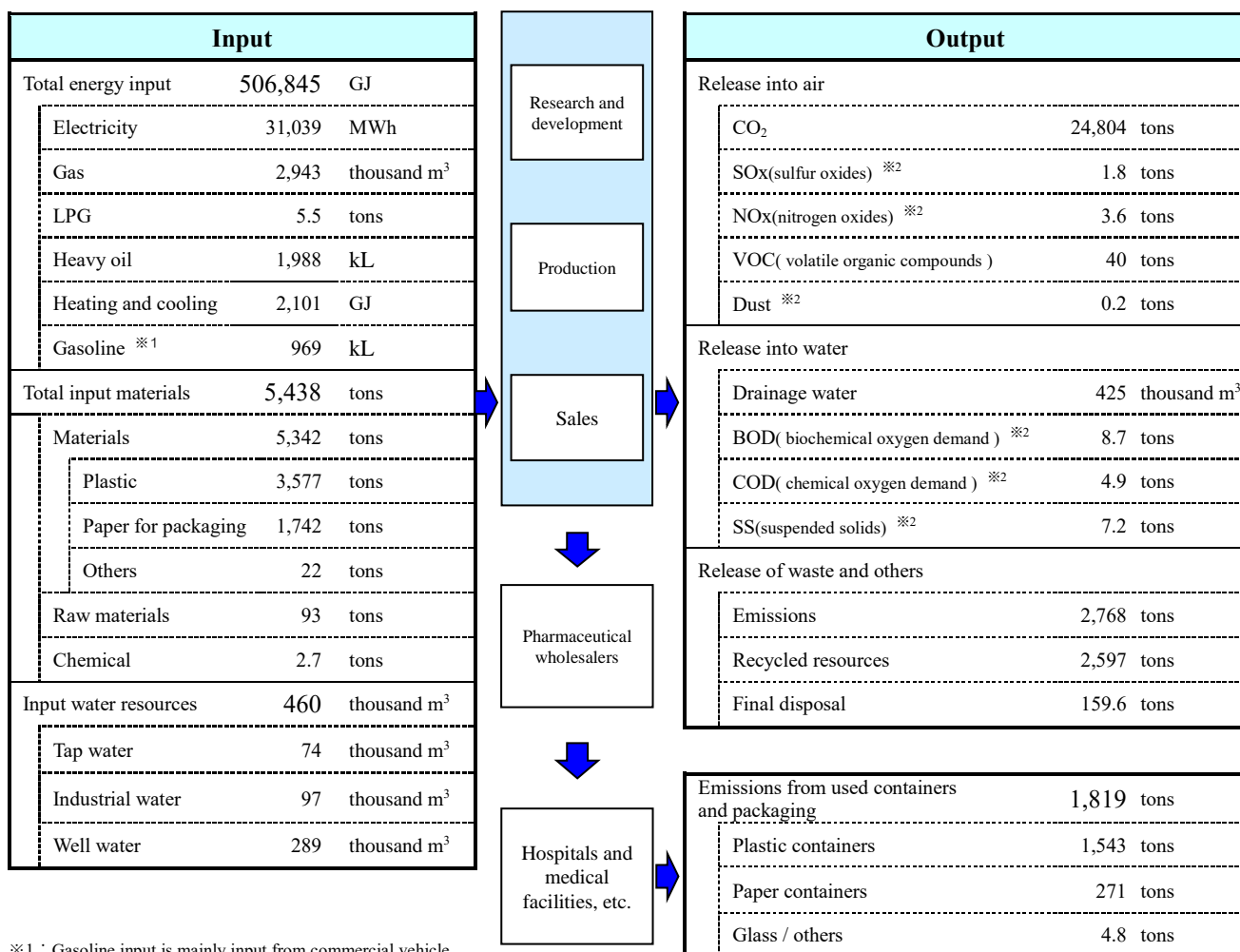
There was no accident that causes environmental pollution, i.e. soil contamination, and no infraction of laws or regulations related environmental issues, at our business sites.

■ Overview of environmental impact (FY2018)

【Santen Group】



【In Japan】



※1 : Gasoline input is mainly input from commercial vehicle.

※2 : Emission is based on results from regular examinations.

※3 : Suzhou Plant in China is excluded.

2. Measures against Climate Change

■Greenhouse gas (CO₂) emissions trend by scope

【Scope 1 and 2】

(unit : t-CO₂)

		Year ended March 31		% Change 2019/2018
		2018	2019	
Scope 1	Santen Group	16,811	17,018	1.2
	In Japan	14,464	14,390	-0.5
	Outside Japan	2,347	2,628	12.0
Scope 2	Santen Group	16,560	17,142	3.5
	In Japan	10,403	10,414	0.1
	Outside Japan	6,157	6,728	9.3

【Scope 3 (In Japan)】

(unit : t-CO₂)

Category	Year ended March 31		% Change 2019/2018	Calculation methodology
	2018	2019		
1 : Purchased goods and services	137,102	142,215	3.7	Estimated figures based on multiplying the weight of raw materials, ingredients, or purchase amount of stock goods by the emission factors of the calculation database.
2 : Capital goods	19,058	25,270	32.6	Estimated figures based on multiplying the amount of money for acquisition of the fixed assets by the emission factors of the calculation database.
3 : Fuel and energy related activities not included in Scope1 and Scope2	1,098	1,099	0.1	Estimated figures based on multiplying the usage of electricity by the emission factors of the calculation database.
4 : Transportation and distribution (Upstream)	708	630	-11.0	Estimated figures based on the transportation distance between the plants/logistics centers and the destinations (pharmaceutical wholesalers, etc.) with using the fuel consumption method or the ton method.
5 : Waste generated in operation	410	440	7.3	Estimated figures based on multiplying the weight of each waste discharged by the emission factors of the calculation database.
6 : Business travel	2,894	2,763	-4.5	Estimated figures based on multiplying the travel expenses of each transportation type and accommodation expenses by the emission factors of the calculation database.
7 : Employee commuting	1,444	1,633	13.1	Estimated figures based on multiplying the commutation expenses of public transportation systems and the amount of gasoline used of the commuter cars by the calculation database.
12 : End-of-life treatment of sold products	225	223	-0.9	Estimated figures based on multiplying the weight of each material for the sold products and packaging by the emission factors of the calculation database.
Total	162,939	174,273	7.0	
CO₂ emissions per unit of revenue [t-CO ₂ /billion yen]	948	989	4.3	

● Calculate CO₂ emissions reference with "GHG Intensity calculation database" (ver.2.6, Ministry of the Environment Japan)

● Category 8,10,11,13-15 are not indicated, because of our business characteristics. Category 9 is not calculated and indicated, at present.

■Greenhouse gas (CO₂) emissions trend by operational site

【Santen Group】

(unit : t-CO₂)

	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
Greenhouse gas (CO ₂) emissions	34,650	31,840	33,108	33,371	34,160	2.4
CO ₂ emissions per unit of revenue	[t-CO ₂ /billion yen] 214	163	166	148	146	-1.6
	[t-CO ₂ /million \$] 23.8	18.1	18.5	16.5	16.2	

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【In Japan】

(unit : t-CO₂)

Operational site	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
Osaka Office (and Osaka Plant)	4,345	336	246	244	208	-14.6
Noto Plant	9,761	10,097	10,817	10,985	11,072	0.8
Shiga Product Supply Center	5,431	6,544	6,543	6,802	6,860	0.8
Nara Research and Development Center	4,331	4,034	4,223	4,151	4,112	-0.9
Branch and Sales offices and others	3,369	2,740	2,716	2,685	2,552	-5.0
Total	27,237	23,751	24,545	24,867	24,804	-0.3

● For the CO₂ conversion factor for electric power, the emission factor of the Federation of Pharmaceutical Manufacturers' Associations of Japan is used.

CO ₂ emissions per unit of revenue	[t-CO ₂ /billion yen]	197	152	156	145	141	-2.7
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【Outside Japan】

(unit : t-CO₂)

Operational site	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
Tampere Plant (Finland)	2,120	2,015	1,831	1,674	1,609	-3.8
Suzhou Plant (China)	5,293	6,074	6,732	6,830	7,747	13.4
Total	7,413	8,089	8,563	8,504	9,356	10.0

● For the CO₂ conversion factor for electric power, the emission factor of the International Energy Agency (IEA) is used.

■Energy usage trend

【Santen Group】

(unit : GJ)

	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
Energy usage	731,381	617,922	648,643	656,715	684,762	4.3
Energy usage per unit of revenue	[GJ/billion yen] 4,519	3,164	3,258	2,919	2,926	0.2
	[GJ/million \$] 502	351	362	324	325	

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【In Japan】

(unit : GJ)

Operational site	Year ended March 31					% Change 2019/2018	
	2015	2016	2017	2018	2019		
Osaka Office (and Osaka Plant)	100,595	9,625	7,173	7,122	6,085	-14.6	
Noto Plant	212,605	219,213	236,784	238,837	241,750	1.2	
Shiga Product Supply Center	129,066	153,088	152,713	158,305	159,485	0.7	
Nara Research and Development Center	101,513	93,807	98,259	96,359	95,572	-0.8	
Branch and Sales offices and others	55,237	8,001	8,880	8,522	3,954	-53.6	
Total	599,016	483,733	503,808	509,145	506,845	-0.5	
Energy usage per unit of revenue	[GJ/billion yen]	4,327	3,099	3,210	2,962	2,876	-2.9

【Outside Japan】

(unit : GJ)

Operational site	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
Tampere Plant (Finland)	54,805	51,413	48,791	50,314	66,284	31.7
Suzhou Plant (China)	77,560	83,871	96,044	97,256	111,632	14.8
Total	132,365	135,284	144,835	147,570	177,917	20.6

■Renewable energy trend

(unit : MWh)

type	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
Solar energy generation ^{※1}	13	13	13	13	11	-16.5
Purchased renewable energy ^{※2}	633	602	554	554	581	4.8
Total	646	615	567	567	592	4.3

※1 : Generated by solar energy equipment installed in Nara Research and Development Center. Not included in energy consumption.

※2 : Purchased and consumed in Tampere Plant. Not subtracted from the amount of energy consumption.

3. Reducing our Environmental Impact

■ Waste reduction and recycling trend

【Santen Group】

(unit : tons)

		Year ended March 31					% Change 2019/2018
		2015	2016	2017	2018	2019	
Total	Emissions	3,219	3,274	2,702	2,910	3,178	9.2
	Recycled resources	2,338	2,501	2,630	2,814	2,888	2.6
	Final disposal	46	40	37	62	254	308.9
	Final disposal ratio	1.4%	1.2%	1.4%	2.1%	8.0%	5.9ppt
Final disposal per unit of revenue	[t/billion yen]	0.28	0.20	0.19	0.28	1.08	293.0
	[t/million \$]	0.03	0.02	0.02	0.03	0.12	

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【In Japan】

(unit : tons)

Operational site		Year ended March 31					% Change 2019/2018
		2015	2016	2017	2018	2019	
Osaka Office(and Osaka Plant) [※]	Emissions	331	136	109	83	231	177.7
	Recycled resources	321	132	105	78	62	-20.2
	Final disposal	2.0	0.2	0.2	0.2	159.4	78,005.5
Noto Plant	Emissions	1,532	1,580	1,715	1,686	1,793	6.4
	Recycled resources	1,532	1,580	1,715	1,686	1,793	6.4
	Final disposal	0.1	0.0	0.0	0.1	0.1	-14.3
Shiga Product Supply Center	Emissions	146	405	524	711	671	-5.7
	Recycled resources	146	405	524	711	671	-5.7
	Final disposal	0.0	0.0	0.0	0.0	0.0	0.0
Nara Research and Development Center	Emissions	111	103	49	53	73	38.6
	Recycled resources	71	97	47	51	72	40.0
	Final disposal	8.7	0.2	0.1	0.1	0.1	-3.6
Total	Emissions	2,121	2,224	2,398	2,533	2,768	9.3
	Recycled resources	2,071	2,213	2,391	2,526	2,597	2.8
	Final disposal	10.7	0.4	0.3	0.4	159.6	43,440.5
	Final disposal ratio	0.51%	0.02%	0.01%	0.01%	5.76%	5.75ppt
Final disposal per unit of revenue	[t/billion yen]	0.1	0.0	0.0	0.0	0.9	42,369.0

※ Regarding the final disposal of year ended March 31 2019 at Osaka Office (and Osaka Plant), the emissions was temporarily increased due to disposal of residual equipment, etc. associated by selling of the former head office and the Osaka Plant.

【Outside Japan】

(unit : tons)

Operational site		Year ended March 31					% Change 2019/2018
		2015	2016	2017	2018	2019	
Tampere Plant (Finland)	Emissions	1,055	992	266	260	262	0.8
	Recycled resources	252	263	234	231	237	2.4
	Final disposal	7.6	6.5	4.0	1.7	0.0	-100.0
Suzhou Plant (China) [※]	Emissions	43	58	38	117	148	26.8
	Recycled resources	15	25	5	57	54	-5.1
	Final disposal	28	33	33	60	94	57.2

※ Regarding the emissions at Suzhou Plant in China from the year ended March 31 2018, the scope has expanded by reviewing the definition of the emissions.

■Air pollutants emissions trend

【Santen Group】

(unit : tons)

Substance	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
SOx(sulfur oxides) ※1,2	8.0	10.1	8.3	6.1	2.2	-63.9
NOx(nitrogen oxides) ※1,2	10.8	7.9	7.5	8.3	4.0	-52.0
VOC(volatile organic compounds) ※2	65	65	36	36	41	14.5

【In Japan】

(unit : tons)

Substance	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
SOx(sulfur oxides) ※1	2.2	4.5	2.7	2.4	1.8	-23.7
NOx(nitrogen oxides) ※1	8.3	5.5	5.1	5.9	3.6	-40.0
VOC(volatile organic compounds)	31	27	34	35	40	15.7
Dust	1.2	0.6	0.4	0.4	0.2	-42.2

【Outside Japan】

(unit : tons)

Substance	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
SOx(sulfur oxides) ※1,2	5.8	5.6	5.6	3.7	0.4	-90.0
NOx(nitrogen oxides) ※1,2	2.5	2.4	2.4	2.4	0.4	-81.7
VOC(volatile organic compounds) ※2	33.8	38.3	1.2	1.4	1.2	-14.3

※1 : Emission is estimated based on results from regular examinations.

※2 : Suzhou Plant in China is excluded.

■Water pollutants emissions trend

【Santen Group】

(unit : tons)

Substance	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
BOD(biochemical oxygen demand) ※1,2	9.0	7.4	4.5	4.5	8.7	94.9
COD(chemical oxygen demand) ※1,2	13.3	11.1	5.4	4.8	7.5	56.8

【In Japan】

(unit : tons)

Substance	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
BOD(biochemical oxygen demand) ※1	2.8	2.1	2.9	3.0	8.7	188.9
COD(chemical oxygen demand) ※1	2.0	1.9	2.5	2.6	4.9	91.1
SS(suspended solids) ※1	3.5	4.7	6.5	8.9	7.2	-18.9

【Outside Japan】

(unit : tons)

Substance	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
BOD(biochemical oxygen demand) ※1,2	6.2	5.3	1.6	1.5	0.0	-100.0
COD(chemical oxygen demand) ※1,2	11.3	9.2	2.9	2.2	2.6	16.7

※1 : Emission is estimated based on results from regular examinations.

※2 : Suzhou Plant in China is excluded.

■PRTR substances handled (in Japan)

【In Japan】

(unit : tons)

Substance	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
Acetonitrile	1.4	1.8	1.8	1.8	1.9	7.1
Boron and its compounds	0.6	0.7	0.9	1.0	0.6	-35.6
Xylene	0.2	0.2	0.1	0.6	0.1	-91.2
Others	0.2	0.2	0.1	0.2	0.8	250.0
Total※	2.4	2.8	2.9	3.5	3.3	-5.9

※ The data included chemical materials used more than 1 kg in a year.

The number of substances over 1kg used per year	19	18	14	30	34	13.3
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■PCB storage

We have no PCB-containing equipment in our business sites at June 2019. In March 2017, we completed, through a nationally designated service provider, appropriately disposing of the three PCB-containing fluorescent light ballasts that had been stored at our former Osaka Plant, and making them harmless.

■Water usage trend

【Santen Group】

(unit : thousand m³)

	Year ended March 31					% Change 2019/2018
	2015	2016	2017	2018	2019	
Water usage Total	516	519	552	545	559	2.6
Water usage per unit of revenue [thousand m ³ /billion yen]	3.19	2.66	2.77	2.42	2.39	-1.4
[thousand m ³ /million \$]	0.35	0.29	0.31	0.27	0.26	

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【In Japan】

(unit : thousand m³)

Operational site		Year ended March 31					% Change 2019/2018
		2015	2016	2017	2018	2019	
Osaka Office (and Osaka Plant)	Usage	59.6	5.2	4.3	4.2	3.9	-7.0
	Discharge	59.5	5.1	4.3	4.2	3.9	-6.9
Noto Plant	Usage	247	271	301	300	294	-2.1
	Discharge	225	215	261	291	286	-1.8
Shiga Product Supply Center	Usage	71	94	110	115	107	-6.9
	Discharge	52	69	91	91	93	2.6
Nara Research and Development Center	Usage	41	41	44	46	55	18.0
	Discharge	41	41	44	35	43	20.7
Total	Usage	419	411	460	466	460	-1.3
	Discharge	377	330	401	421	425	1.0
Water usage per unit of revenue [thousand m ³ /billion yen]	Usage	3.0	2.6	2.9	2.7	2.6	-3.7
	Discharge	2.7	2.1	2.6	2.4	2.4	-1.5

【Outside Japan】

(unit : thousand m³)

		Year ended March 31					% Change 2019/2018
		2015	2016	2017	2018	2019	
Tampere Plant (Finland)	Usage	53	51	39	39	41	4.4
Suzhou Plant (China)	Usage	44	57	53	40	58	45.9

■Prevention of environmental pollution

To conserve the living environments of the areas where our plants are located, we have conducted regular environmental monitoring, and have successfully ensured that all plants stay far below the regulation values based on laws, ordinances, treaties, etc.

● Measurements and results of analysis of environmental data (FY2018)

			Noto Plant		Shiga Product Supply Center		Nara Research and Development Center	
			Criteria	Results	Criteria	Results	Criteria	Results
Air pollution	Soot and dust	[g/Nm ³]	0.3	0.01	0.2	< 0.005	0.1	0.0009
	NOx	[ppm]	150	28	180	36	150	43
	SOx	[Nm ³ /h]	0.98	0.02	—	—	—	—
Water contamination	pH		5.8~8.6	7.3~7.8	5.0~9.0	7.1~8.2	5.0~9.0	6.7~7.7
	BOD	[mg/L]	80	77	600	92	1,500	35
	COD	[mg/L]	80	44	600	27	—	—
	SS	[mg/L]	120	31	600	38	1,500	72
Noise	Morning	[dB]	60	50	50	48	60	46
	Noon	[dB]	65	51	55	45	65	44
	Evening	[dB]	60	49	50	48	60	41
	Night	[dB]	50	49	45	46*	50	40
Vibration levels	Noon	[dB]	65	45	70	34	65	31
	Night	[dB]	60	44	65	< 25	60	< 25

● Criteria values are specified according to the agreements with municipalities where the workplaces are located.

※ Regarding the noise of night at Shiga Product Supply Center, the noise data caused only by the site could not be obtained, because the measured data was affected by the noise of insects and the sound around the site.

4. Biodiversity

■Forest conservation activities

Because appropriate forest conservation contributes to not only facilitating the absorption of CO2 but also maintaining the rich natural environment and headwater conservation capacity, leading to the protection of biodiversity, Santen Group engages in forest conservation activities.

• Activities of Noto Plant

Noto Plant supports the Environmental Education Project to conserve nature at Mt. Hodatsu, organized by the board of education of Hodatsushimizu Town, the local government of the area where it is located. Santen employees participate in the project as helpers by leading local students in mountain climbing and cleaning.

• Activities of Shiga Product Supply Center

Santen calls for employees' participation in events held by a Shiga Prefecture-based NPO to offer practical training on the management and use of satoyama forests and other matters.

■Local environmental clean-up activities

To contribute to the cleaning up and beautification of local environments, Santen's offices, laboratories and plants, including the Noto Plant, the Shiga Product Supply Center and the Shimoshinjo Office, conduct clean-up activities in collaboration with local governments and regional organizations. In FY2018, a total of 393 employees participated in these activities.

【Reference】 Environmental accounting (in Japan)

Scope: The cost and effect of Environmental preservation of Santen Pharmaceutical Co., Ltd.
 Period covered: April 1st, 2018 to March 31st 2019
 Reference: Environmental Accounting Guideline (2005 edition, the Ministry of the Environment Japan)

【Environmental conservation costs】

(unit : million yen)

category	Year ended March 31, 2018		Year ended March 31, 2019	
	Investments	Expenses	Investments	Expenses
Business area costs	1.0	256.8	23.3	223.4
Pollution prevention	0.0	65.3	0.0	57.7
Global environmental conservation	1.0	135.2	23.2	108.1
Resource circulation	0.0	56.3	0.1	57.6
Upstream/downstream costs	—	10.3	0.1	12.9
Administration costs	—	77.8	—	67.1
R&D costs	—	—	—	—
Social activity costs	—	0.6	—	0.6
Environmental damage costs	—	0.0	—	—
Total	1.0	345.6	23.3	304.0

- Only the cases that can be determined as related to the purpose of environmental conservation are included in the calculation.
- The cost includes the depreciation amount and was accounted for the same way as the accounting.
- Current investment includes both the investment amount and expense.
- Total number was only a rough estimation because the totals were rounded off.
- The employment cost of the environmental management department and operation and maintenance of the environmental management system was accounted for as administration costs.
- “—” means no cost or no activities.

【Economic effects of environmental conservation measures】

(unit : million yen)

category	Year ended March 31, 2018	Year ended March 31, 2019
Profits from sales of waste etc	72.0	80.3
Cost reductions	16.1	13.1

- Only economic effects that can be determined with a high degree of certainty are included in the calculation.

【Environmental conservation effect】

category	unit	Year ended March 31		Environment al burden reduction	% Change 2019/2018	
		2018	2019			
Energy	Total energy usage	GJ	509,145	506,845	-2,300	-0.5
	Electricity	kWh	31,008	31,039	31	0.1
	Gas	thousand m ³	2,933	2,943	10	0.3
	LPG	tons	5.4	5.5	0.0	0.9
	Heavy Oil	kL	1,998	1,988	-10	-0.5
	Gasoline	kL	999	969	-30	-3.0
Water resources	Total water usage	thousand m ³	466	460	-6	-1.3
	Tap water	thousand m ³	74	74	0	0.4
	Industrial water	thousand m ³	97	97	-0	-0.4
	Well water	thousand m ³	295	289	-6	-2.0
Materials	Raw and other materials	tons	5,466	5,435	-31	-0.6
Global warming	CO ₂	tons	24,867	24,804	-64	-0.3
Atmospheric pollutants	SOx (sulfur oxides)	tons	2.4	1.8	-0.6	-23.7
	NOx (nitrogen oxides)	tons	5.9	3.6	-2.4	-40.0
	VOC (volatile organic compounds)	tons	35	40	5	15.7
	Dust	tons	0.4	0.2	-0.2	-42.2
Water pollutants	Discharged water	thousand m ³	421	425	4	1.0
	BOD(biochemical oxygen demand)	tons	3.0	8.7	5.7	188.9
	COD(chemical oxygen demand)	tons	2.6	4.9	2.3	91.1
	SS(suspended solids)	tons	8.9	7.2	-1.7	-18.9
Waste materials	Emissions	tons	2,533	2,768	235	9.3
	Recycled resources	tons	2,526	2,597	72	2.8
	Final disposal	tons	0.4	159.6	159.2	43,440.5



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