

Environmental Data Book

Year Ended March 31, 2018

For feedback and suggestions

Corporate Communications Group

E-mail: ir@santen.com

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, 2017 – March 31, 2018

other countries: January 1, 2017 – December 31, 2017

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 (2012 edition, Ministry of the Environment Japan), GHG Intensity calculation database (ver.2.3, 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 ¥106.24 to US\$1.00, the exchange rate prevailing on March 30, 2018.

(Date of issue)

June, 2018

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1. Environmental management

■FY2020 targets/ performances in FY2017 (In Japan)

		FY2020 targets	Performance in FY2017
Measures against Climate Change	CO ₂ emissions	Lower than 27,232t-CO ₂	24,867t-CO ₂
Reducing our Environmental Impact	Final waste disposal rate	0%	0.014%

■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 ※

※ : 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

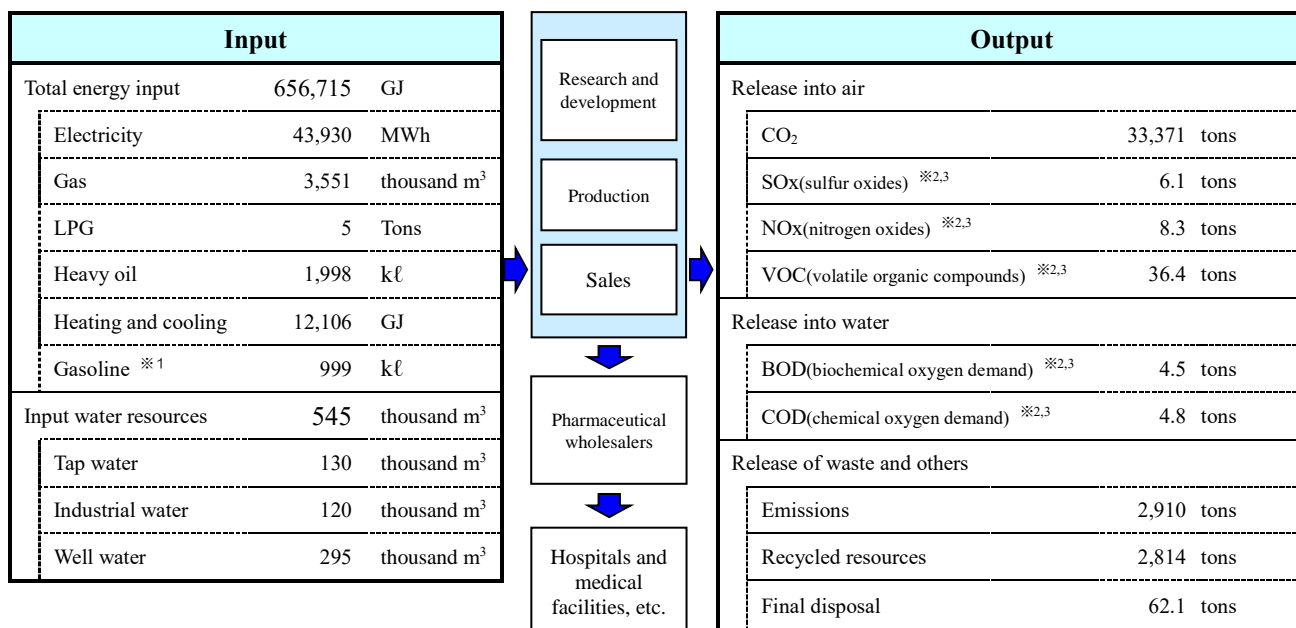
There was no accident that causes environmental pollution, i.e. soil contamination, and no infraction of laws or regulations related environmental issues, at our business sites.

■Environment-related awards

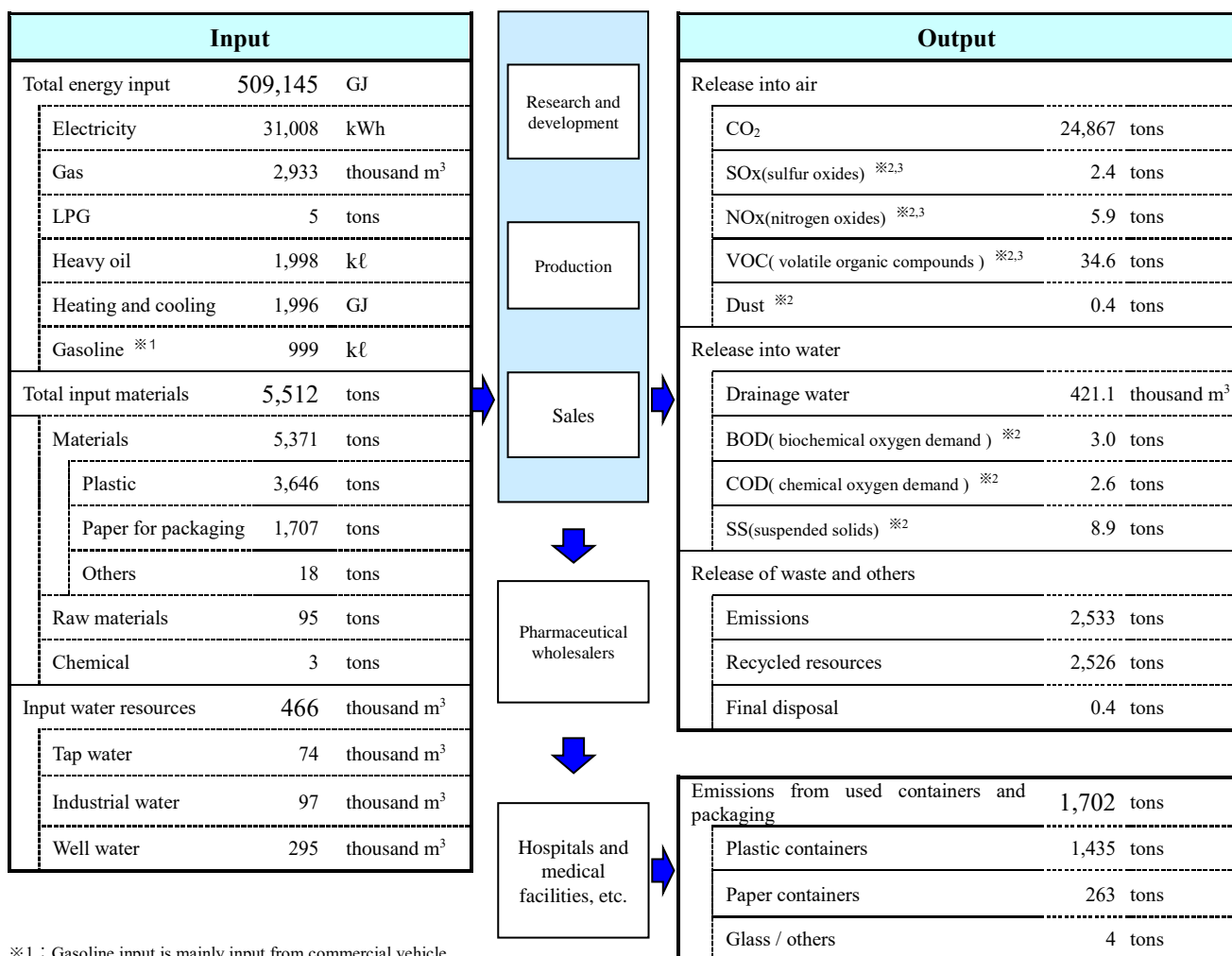
- February, 2016: President Award of Hokuriku branch (Hokuriku branch of The Japan Electric Association)
- January, 2015: the power saving award at the Osaka "Stop Global Warming" (Osaka pref.)
- October, 2014: Environmental Rating (Development Bank of Japan Inc.)
- February, 2014: Excellent Factory award (Hokuriku branch of The Japan Electric Association)
- June, 2013: Environmental Action Award (Ikoma city, Nara pref.)

■ Overview of environmental impact

【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 2018/2017
		2017	2018	
Scope 1	Santen Group	16,623	16,811	1.1
	In Japan	14,113	14,464	2.5
	Outside Japan	2,510	2,347	-6.5
Scope 2	Santen Group	16,485	16,560	0.5
	In Japan	10,432	10,403	-0.3
	Outside Japan	6,053	6,157	1.7

【Scope 3 (In Japan)】

(unit : t-CO₂)

Category	Year ended March 31		% Change 2018/2017	Calculation methodology
	2017	2018		
1 : Purchased goods and services	129,157	137,102	6.2	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	18,256	19,058	4.4	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 Scope 1 and Scope 2	1,101	1,098	-0.3	Estimated figures based on multiplying the usage of electricity by the emission factors of the calculation database.
4 : Transportation and distribution (Upstream)	573	708	23.6	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	357	410	15.0	Estimated figures based on multiplying the weight of each waste discharged by the emission factors of the calculation database.
6 : Business travel	3,430	2,894	-15.6	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	1,479	1,444	-2.4	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.
1 2 : End-of-life treatment of sold products	219	225	2.7	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	154,571	162,939	5.4	
CO₂ emissions per unit of revenue [t-CO ₂ /billion yen]	985	948	-3.7	

Calculate CO₂ emissions reference with "GHG Intensity calculation database" (ver.2.3, 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 2018/2017	
	2014	2015	2016	2017	2018		
Greenhouse gas (CO ₂) emissions	33,210	34,650	31,840	33,108	33,371	0.8	
CO ₂ emissions per unit of revenue	[t-CO ₂ /billion yen]	223	214	163	166	148	-10.8
	[t-CO ₂ /million \$]	23.7	22.7	17.3	17.7	15.8	

【In Japan】

(unit : t-CO₂)

Operational site	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
Osaka Office (and Osaka Plant)	3,265	4,345	336	246	244	-0.7
Noto Plant	9,340	9,761	10,097	10,817	10,985	1.6
Shiga Product Supply Center	5,416	5,431	6,544	6,543	6,802	4.0
Nara Research and Development Center	4,666	4,331	4,034	4,223	4,151	-1.7
Branch and Sales offices and others	2,803	3,369	2,740	2,716	2,685	-1.1
Total	25,491	27,237	23,751	24,545	24,867	1.3

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]	198	197	152	156	145	-7.5
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【Outside Japan】

(unit : t-CO₂)

Operational site	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
Tampere Plant (Finland)	2,252	2,120	2,015	1,831	1,674	-8.6
Suzhou Plant (China)	5,467	5,293	6,074	6,732	6,830	1.5
Total	7,719	7,413	8,089	8,563	8,504	0.7

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 2018/2017	
	2014	2015	2016	2017	2018		
Energy usage	698,207	731,381	617,922	648,643	656,715	1.2	
Energy usage per unit of revenue	[GJ/billion yen]	4,697	4,519	3,164	3,258	2,919	-10.4
	[GJ/million \$]	499	480	336	346	310	

【In Japan】

(unit : GJ)

Operational site	Year ended March 31					% Change 2018/2017	
	2014	2015	2016	2017	2018		
Osaka Office (and Osaka Plant)	79,094	100,595	9,625	7,173	7,122	-0.7	
Noto Plant	204,470	212,605	219,213	236,784	238,837	0.9	
Shiga Product Supply Center	127,411	129,066	153,088	152,713	158,305	3.7	
Nara Research and Development Center	109,050	101,513	93,807	98,259	96,359	-1.9	
Branch and Sales offices and others	44,768	55,237	8,001	8,880	8,522	-4.0	
Total	564,792	599,016	483,733	503,808	509,145	1.1	
Energy usage per unit of revenue	[GJ/billion yen]	4,388	4,327	3,099	3,210	2,962	-7.7

【Outside Japan】

(unit : GJ)

Operational site	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
Tampere Plant (Finland)	57,067	54,805	51,413	48,791	50,314	3.1
Suzhou Plant (China)	76,348	77,560	83,871	96,044	97,256	1.3
Total	133,415	132,365	135,284	144,835	147,570	1.9

■Renewable energy

(unit : MWh)

type	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
Solar energy generation ^{※1}	15	13	13	13	13	3.3
Purchased renewable energy ^{※2}	652	633	602	554	554	±0.0
Total	667	646	615	567	567	±0.0

※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 : t)

		Year ended March 31					% Change 2018/2017
		2014	2015	2016	2017	2018	
Total	Emissions	3,213	3,219	3,274	2,702	2,910	7.7
	Recycled resources	2,142	2,338	2,501	2,630	2,814	7.0
	Final disposal	64.2	45.8	39.9	37.3	62.1	66.2
	Final disposal ratio	2.0%	1.4%	1.2%	1.4%	2.1%	54.3
Final disposal per unit of revenue [t/billion yen] [t/million \$]	Final disposal	0.43	0.28	0.20	0.19	0.28	47.1
		0.05	0.03	0.02	0.02	0.03	

【In Japan】

(unit : t)

Operational site		Year ended March 31					% Change 2018/2017
		2014	2015	2016	2017	2018	
Osaka Office (and Osaka Plant)	Emissions	296	331	136	109	83	-23.7
	Recycled resources	241	321	132	105	78	-25.6
	Final disposal	11.4	2.0	0.2	0.2	0.2	-0.3
Noto Plant	Emissions	1,320	1,532	1,580	1,715	1,686	-1.7
	Recycled resources	1,320	1,532	1,580	1,715	1,686	-1.7
	Final disposal	0.1	0.1	0.0	0.0	0.1	75.0
Shiga Product Supply Center	Emissions	262	146	405	524	711	35.6
	Recycled resources	262	146	405	524	711	35.6
	Final disposal	0.0	0.0	0.0	0.0	0.0	0.0
Nara Research and Development Center	Emissions	130	111	103	49	53	8.4
	Recycled resources	71	71	97	47	51	9.2
	Final disposal	11.9	8.7	0.2	0.1	0.1	-11.0
Total	Emissions	2,008	2,121	2,224	2,398	2,533	5.6
	Recycled resources	1,894	2,071	2,213	2,391	2,526	5.6
	Final disposal	23.3	10.7	0.4	0.3	0.4	5.2
	Final disposal ratio	1.2%	0.5%	0.0%	0.0%	0.0%	-0.4
Final disposal per unit of revenue [t/billion yen]	Final disposal	0.2	0.1	0.0	0.0	0.0	-3.9

【Outside Japan】

(unit : t)

Operational site		Year ended March 31					% Change 2018/2017
		2014	2015	2016	2017	2018	
Tampere Plant (Finland)	Emissions	1,171	1,055	992	266	260	-2.2
	Recycled resources	237	252	263	234	231	-1.3
	Final disposal	17.9	7.6	6.5	4.0	1.7	-57.0
Suzhou Plant (China)	Emissions	34	43	58	38	117	207.9
	Recycled resources	11	15	25	5	57	1,040.0
	Final disposal	23.0	27.5	33.0	33.0	60.0	81.8

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

■Air pollutants emissions trend

【Santen Group】

(unit : t)

Substance	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
SOx(sulfur oxides) ※1,2	8.4	8.0	10.1	8.3	6.1	-26.3
NOx(nitrogen oxides) ※1,2	7.1	10.8	7.9	7.5	8.3	10.6
VOC(volatile organic compounds)	85.8	64.8	64.8	35.5	36.0	2.6

【In Japan】

(unit : t)

Substance	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
SOx(sulfur oxides) ※1	2.1	2.2	4.5	2.7	2.4	-10.3
NOx(nitrogen oxides) ※1	4.3	8.3	5.5	5.1	5.9	15.5
VOC(volatile organic compounds)	27.0	31.0	26.5	34.3	34.6	1.0
Dust	0.7	1.2	0.6	0.4	0.4	11.8

【Outside Japan】

(unit : t)

Substance	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
SOx(sulfur oxides) ※1,2	6.3	5.8	5.6	5.6	3.7	-33.9
NOx(nitrogen oxides) ※1,2	2.8	2.5	2.4	2.4	2.4	±0.0
VOC(volatile organic compounds)	58.8	33.8	38.3	1.2	1.4	16.7

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

※2 : Suzhou Plant in China is excluded.

■Water pollutants emissions trend

【Santen Group】

(unit : t)

Substance	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
BOD(biochemical oxygen demand) ※1,2	7.2	9.0	7.4	4.5	4.5	-1.2
COD(chemical oxygen demand) ※1,2	13.0	13.3	11.1	5.4	4.8	-10.5

【In Japan】

(unit : t)

Substance	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
BOD(biochemical oxygen demand) ※1	2.5	2.8	2.1	2.9	3.0	4.7
COD(chemical oxygen demand) ※1	1.7	2.0	1.9	2.5	2.6	5.3
SS(suspended solids)	3.6	3.5	4.7	6.5	8.9	36.9

【Outside Japan】

(unit : t)

Substance	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
BOD(biochemical oxygen demand) ※1,2	4.7	6.2	5.3	1.6	1.5	-11.6
COD(chemical oxygen demand) ※1,2	11.3	11.3	9.2	2.9	2.2	-23.8

※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 : t)

Substance	Year ended March 31					% Change 2018/2017
	2014	2015	2016	2017	2018	
Acetonitrile	1.6	1.4	1.8	1.8	1.8	-4.2
Boron and its compounds	0.6	0.6	0.7	0.9	1.0	14.4
Xylene	0.2	0.2	0.2	0.1	0.6	442.9
Others	0.4	0.2	0.2	0.1	0.2	83.1
Total	2.9	2.4	2.8	2.9	3.5	20.9

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

The number of substances over 1kg used per year	24	19	18	14	30	114.3
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■PCB storage

We have no PCB-containing equipment in our business sites at June 2018. 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 2018/2017
	2014	2015	2016	2017	2018	
Water usage Total	489	516	519	552	545	-1.3
Water usage per unit of revenue [thousand m ³ /billion yen]	3.3	3.2	2.7	2.8	2.4	-12.7
[thousand m ³ /million \$]	0.35	0.34	0.28	0.29	0.26	

【In Japan】

(unit : thousand m³)

Operational site		Year ended March 31					% Change 2018/2017
		2014	2015	2016	2017	2018	
Osaka Office (and Osaka Plant)	Usage	44	60	5	4	4	-4.0
	Discharge	44	60	5	4	4	-3.7
Noto Plant	Usage	239	247	271	301	300	-0.2
	Discharge	214	225	215	261	291	11.4
Shiga Product Supply Center	Usage	75	71	94	110	115	4.2
	Discharge	48	52	69	91	91	-0.4
Nara Research and Development Center	Usage	46	41	41	44	46	4.5
	Discharge	46	41	41	44	35	-20.4
Total	Usage	405	419	411	460	466	1.2
	Discharge	352	377	330	401	421	5.0
Water usage per unit of revenue [thousand m ³ /billion yen]	Usage	3.1	3.0	2.6	2.9	2.7	-7.5
	Discharge	2.7	2.7	2.1	2.6	2.4	-4.1

【Outside Japan】

(unit : thousand m³)

		Year ended March 31					% Change 2018/2017
		2014	2015	2016	2017	2018	
Tampere Plant (Finland)	Usage	50	53	51	39	39	0.0
Suzhou Plant (China)	Usage	34	44	57	53	40	-24.5

■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 (FY2017)

			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	0.1	0.0009
	NOx	[ppm]	150	56	180	37	1,500	37
	SOx	[Nm ³ /h]	0.98	0.03	—	—	—	—
Water contamination	pH		5.8~8.6	7.2~7.9	5.0~9.0	7.0~8.0	5.0~9.0	6.7~7.2
	BOD	[mg/l]	160	5.5	600	33	1,500	24
	COD	[mg/l]	80	6.1	600	25	—	—
	SS	[mg/l]	120	34	600	86	1,500	28
Noise	Morning	[dB]	60	54	50	54	60	45
	Noon	[dB]	65	52	55	49	65	48
	Evening	[dB]	60	53	50	50	60	41
	Night	[dB]	50	47	45	45	50	40
Vibration levels	Noon	[dB]	65	47	70	< 25	65	27
	Night	[dB]	60	43	65	< 25	60	< 25

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

4. Biodiversity

■Engaging in 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. Santen participates in tree-planting and other activities as a member of an association aimed at conserving water resources and forests at Mt. Hodatsu.

• 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.

• Supporting the construction of forest seawalls

Santen supports the Chinju no Mori Project, a public interest incorporated foundation, which was established to construct "forest seawalls that protect lives" in coastal areas devastated by tsunamis caused by the Great East Japan Earthquake by building five-meter-tall embankments with a mixture of tsunami debris and earth and planting broadleaved trees on the embankments. We made donations every year from FY2013, contributing to the planting of a total of 600 saplings planted as of FY2017.

■Conducting 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 FY2017, a total of 475 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, 2017 to March 31st 2018
 Reference: Environmental Accounting Guideline (2005 edition, the Ministry of the Environment Japan)

【Environmental conservation costs】

(unit : million yen)

category	Year ended March 31, 2017		Year ended March 31, 2018	
	Investments	Expenses	Investments	Expenses
Business area costs	7.4	209.8	1.0	256.8
Pollution prevention	1.9	62.6	0.0	65.3
Global environmental conservation	4.2	76.7	1.0	135.2
Resource circulation	1.4	70.5	0.0	56.3
Upstream/downstream costs	—	9.6	—	10.3
Administration costs	—	67.1	—	77.8
R&D costs	—	—	—	—
Social activity costs	—	0.1	—	0.6
Environmental damage costs	—	16.3	—	0.0
Total	7.4	302.8	1.0	345.6

- 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, 2017	Year ended March 31, 2018
Profits from sales of waste etc	74.6	72.0
Cost reductions	14.3	12.8

- 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		Environmental burden reduction	% Change 2018/2017	
		2017	2018			
Energy	Total energy usage	GJ	503,808	509,145	-5,337	1.1
	Electricity	kWh	31,093	31,008	81	-0.3
	Gas	thousand m ³	2,854	2,933	-8	2.8
	LPG	tons	5.3	5.4	-0.1	2.6
	Heavy Oil	kℓ	1,928	1,998	-70	3.6
	Gasoline	kℓ	1,009	999	9	0.9
Water resources	Total water usage	thousand m ³	460	466	-6	1.2
	Tap water	thousand m ³	70	74	-4	5.2
	Industrial water	thousand m ³	95	97	-2	3.1
	Well water	thousand m ³	295	295	0	-0.3
Materials	Raw and other materials	tons	5,025	5,466	-441	8.8
Global warming	CO ₂	tons	24,545	24,867	322	1.3
Atmospheric pollutants	SOx (sulfur oxides)	tons	2.7	2.4	0.3	-10.3
	NOx (nitrogen oxides)	tons	5.1	5.9	-0.8	15.5
	VOC (volatile organic compounds)	tons	34.3	34.6	-0.3	1.0
	Dust	tons	0.4	0.4	0.0	11.8
Water pollutants	Discharged water	thousand m ³	401	421	-20	5.0
	BOD(biochemical oxygen demand)	tons	2.7	3.0	-0.1	4.7
	COD(chemical oxygen demand)	tons	5.1	2.6	-0.1	5.3
	SS(suspended solids)	tons	0.4	8.9	-2.4	36.9
Waste materials	Emissions	tons	2,398	2,533	-135	5.6
	Recycled resources	tons	2,391	2,526	-135	5.6
	Final disposal	tons	0.3	0.4	-0.1	5.2



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