

Environmental Databook 2023

Shionogi & Co., Ltd.

Environmental Databook 2023

目次

Environmental data

| | |
|---|----|
| INPUT・OUTPUT | 2 |
| Environmental efficiency | 5 |
| Climate Change | |
| Greenhouse gas (GHG) emissions | 6 |
| Energy consumption | 8 |
| Resource conservation and circulation | |
| Japan | 11 |
| Global | 11 |
| Reuse and recycling of product containers and packaging materials | 12 |
| Water | 13 |
| Chemical substances / Air and water quality | 15 |
| Management / Compliance | 16 |
| Environmental accounting | 17 |

Site data

| | |
|---|----|
| Shionogi Pharmaceutical Research Center | 19 |
| Shionogi CMC Research Innovation Center | 21 |
| Aburahi Research Center | 23 |
| Settsu Plant | 25 |
| Kanegasaki Plant | 27 |
| Tokushima Plant | 29 |
| UMN Pharma Inc. Akita Plant | 31 |
| UMN Pharma Inc. Yokohama Research Center | 33 |
| Itami Plant | 34 |
| C&O Pharmaceutical Technology (Holdings) Ltd. Nanjing Plant | 36 |

Environmental data

i : INPUT • OUTPUT

ii : Environmental efficiency

iii : Climate Change

iv : Resources conservation and circulation

v : Water

vi : Chemical Substances/Prevention of air and water pollution

vii : Management / Compliance

viii : Environmental Accounting

i

ii

iii

iv

v

vi

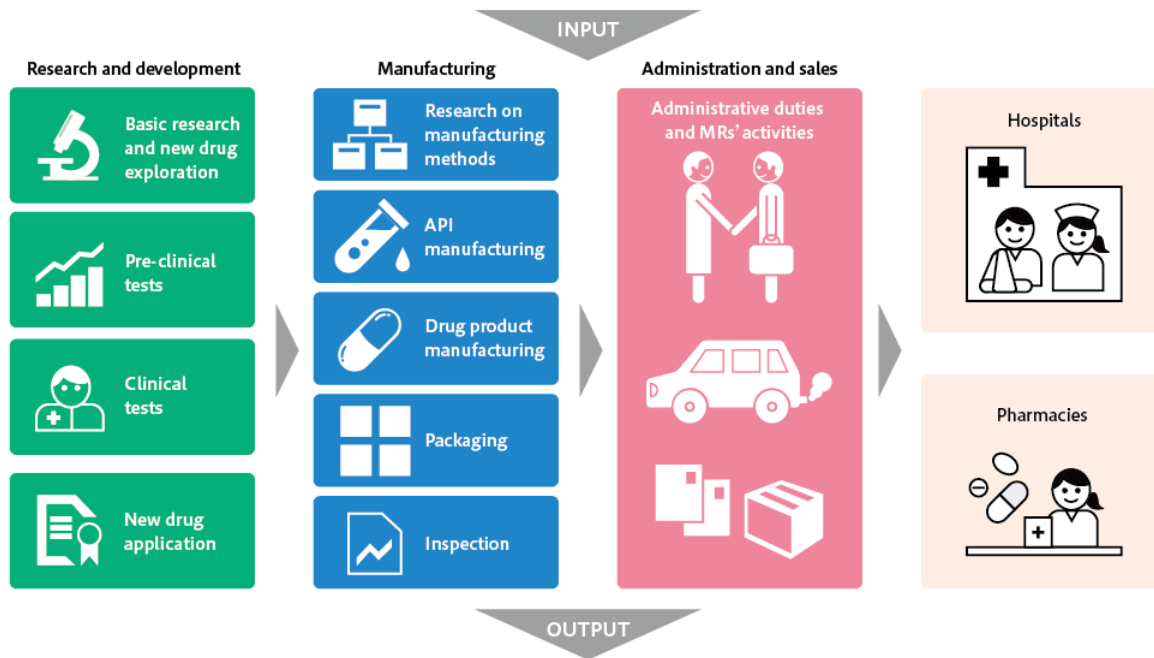
vii

viii

i : INPUT • OUTPUT

FY2022 Results

| Energy | | | | Water | | |
|-------------------------------|--------------------------|---------|--|--|-------------------------|-------|
| Total energy | MWh | 337,921 | | Tap water | thousand m ³ | 267 |
| Steam | MWh | 5,103 | | Industrial water | thousand m ³ | 1,128 |
| Electricity | MWh | 106,154 | | | | |
| Town gas | thousand Nm ³ | 7,231 | | Chemical Substances | | |
| Liquefied petroleum gas (LPG) | tons | 277 | | PRTR-designated chemicals (quantity handled) | tons | 570 |
| Liquefied natural gas (LNG) | tons | 8,238 | | | | |
| Heavy oil | kl | 27 | | Containers and packaging materials | | |
| Kerosene | kl | 2 | | Quantity used | tons | 1,006 |
| Light oil | kl | 2 | | | | |
| Gasoline | kl | 716 | | | | |
| Gasoline (for sales vehicles) | kl | 703 | | | | |



| Atmosphere | | | | Waste materials | | |
|---|-------------------------|--------|--|--|------|-------|
| CO ₂ (Scope 1 used as fuel) | tons-CO ₂ | 39,746 | | Waste generated (including valuable resources) | tons | 6,829 |
| CO ₂ (Scope 1 used for sales vehicles) | tons-CO ₂ | 1,630 | | Waste generated (excluding valuable resources) | tons | 5,766 |
| CO ₂ (Scope 2) | tons-CO ₂ | 40,589 | | Waste reused/recycled | tons | 6,099 |
| NO _x | tons | 17 | | Waste disposed of as landfill | tons | 69 |
| SO _x | tons | 0 | | PRTR-designated substances | tons | 421 |
| Particulate matter | tons | 2 | | | | |
| PRTR-designated substances | tons | 112 | | Containers and packaging materials | | |
| VOC | tons | 45 | | Consigned for reuse/recycling | tons | 202 |
| Fluorocarbons | tons-CO ₂ | 630 | | | | |
| | | | | | | |
| Water | | | | | | |
| Sewers | thousand m ³ | 347 | | | | |
| Drainage (public waters) | thousand m ³ | 1,076 | | | | |
| BOD | tons | 5 | | | | |
| COD | tons | 2 | | | | |
| PRTR-designated substances | tons | 1 | | | | |
| Nitrogen | tons | 5 | | | | |
| Phosphorus | tons | 1 | | | | |

Scope : Japan

The scope of energy-related data is global.

i

ii

iii

iv

v

vi

vii

viii

ii : Environmental efficiency

| Indicator | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|---------|---------|---------|---------|---------|
| CO ₂ emissions (tons-CO ₂) * | 82,711 | 82,209 | 79,201 | 84,164 | 81,966 |
| Water withdrawal (thousand m ³) | 1,315 | 1,263 | 1,217 | 1,366 | 1,425 |
| Waste generated (excluding valuable resources) (tons) | 3,824 | 3,062 | 4,180 | 5,170 | 5,766 |
| CO ₂ emissions (tons-CO ₂) / sales revenue (ten million yen) | 2.27 | 2.47 | 2.67 | 2.51 | 1.92 |
| Water withdrawal (thousand m ³) / sales revenue (million yen) | 0.0036 | 0.0038 | 0.0041 | 0.0041 | 0.0033 |
| Waste generated (tons) / sales revenue (million yen) | 0.011 | 0.009 | 0.014 | 0.015 | 0.014 |
| Sales revenue (million yen) | 363,721 | 333,371 | 297,177 | 335,138 | 426,684 |
| ROE (%) | 20.9 | 15.5 | 13.9 | 12.5 | 17.8 |

Scope :

Japan

CO₂ Emissions are from Japan and China

* SBT standard boundary from FY2019

i

ii

iii

iv

v

vi

vii

viii

iii : Climate Change

Greenhouse gas (GHG) emissions

| Indicator | | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|----------------|-------------------|--------|---------|---------|---------|---------|---------|
| Total of Scope 1, 2 and 3 | Location-based | t-CO ₂ | Global | 223,063 | 240,624 | 209,439 | 230,473 | 230,700 |
| | Market-based | t-CO ₂ | Global | 217,924 | 232,355 | 203,048 | 226,362 | 223,077 |
| Total of Scope 1 and 2 | Location-based | t-CO ₂ | Global | 87,850 | 85,208 | 81,730 | 88,275 | 89,589 |
| | Market-based | t-CO ₂ | Global | 82,711 | 76,939 | 75,339 | 84,164 | 81,966 |
| | | | | | | | | |
| Scope1 | | t-CO ₂ | Global | 41,349 | 37,519 | 37,537 | 41,264 | 41,376 |
| | | | Japan | 39,832 | 36,836 | 37,529 | 41,256 | 41,368 |
| | | | China | 1,517 | 682 | 8 | 8 | 8 |
| Scope2 | Location-based | t-CO ₂ | Global | 46,501 | 47,690 | 44,193 | 47,011 | 48,212 |
| | | | Japan | 41,713 | 41,004 | 37,249 | 40,776 | 42,586 |
| | | | China | 4,788 | 6,685 | 6,944 | 6,235 | 5,626 |
| Scope2 | Market-based | t-CO ₂ | Global | 41,362 | 39,421 | 37,802 | 42,900 | 40,589 |
| | | | Japan | 36,574 | 32,735 | 30,858 | 36,664 | 34,963 |
| | | | China | 4,788 | 6,685 | 6,944 | 6,235 | 5,626 |
| Total of Scope 3 | | t-CO ₂ | Japan | 135,213 | 155,416 | 127,709 | 142,198 | 141,111 |

| Indicator | | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|--------------------------|--|-------------------|-------|---------|---------|--------|--------|--------|
| Breakdown | | | | | | | | |
| Category 1* ¹ | Purchased goods and service | t-CO ₂ | Japan | 105,692 | 103,838 | 90,753 | 71,462 | 80,608 |
| Category 2* ¹ | Capital goods | t-CO ₂ | Japan | 19,486 | 38,139 | 22,047 | 53,847 | 41,742 |
| Category 3 | Fuel- and energy-related activities (not included in scope 1 or scope 2) | t-CO ₂ | Japan | 2,798 | 5,732 | 5,710 | 6,424 | 6,468 |
| Category 4 | Upstream transportation and distribution | t-CO ₂ | Japan | 1,012 | 1,049 | 955 | 947 | 1,523 |
| Category 5 | Waste generated in operations | t-CO ₂ | Japan | 4,092 | 3,905 | 5,468 | 6,962 | 8,020 |
| Category 6 | Business travel | t-CO ₂ | Japan | 684 | 814 | 820 | 823 | 862 |
| Category 7 | Employee commuting | t-CO ₂ | Japan | 780 | 1,398 | 1,449 | 1,177 | 1,442 |
| Category 8 | Upstream leased assets | t-CO ₂ | Japan | —*2 | —*2 | —*2 | —*2 | —*2 |
| Category 9 | Downstream transportation and distribution | t-CO ₂ | Japan | —*3 | —*3 | —*3 | —*3 | —*3 |
| Category 10 | Processing of sold products | t-CO ₂ | Japan | —*2 | —*2 | —*2 | —*2 | —*2 |
| Category 11 | Use of sold products | t-CO ₂ | Japan | —*2 | —*2 | —*2 | —*2 | —*2 |

| Indicator | | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------|--|-------------------|-------|------|------|------|------|------|
| Category 12 | End-of-life treatment of sold products | t-CO ₂ | Japan | 669 | 540 | 507 | 556 | 446 |
| Category 13 | Downstream leased assets | t-CO ₂ | Japan | —*2 | —*2 | —*2 | —*2 | —*2 |
| Category 14 | Franchises | t-CO ₂ | Japan | —*2 | —*2 | —*2 | —*2 | —*2 |
| Category 15 | Investments | t-CO ₂ | Japan | —*2 | —*2 | —*2 | —*2 | —*2 |

*1 Since FY2022, GHG emissions have been calculated using the emission intensity based on prices including consumption tax. In line with this, GHG emissions in or before FY2021 have been recalculated using the emission intensity based on prices including consumption tax.

*2 GHG emissions in this category are not relevant because the activities related in this category are not conducted in our businesses.

*3 GHG emissions in this category are not calculated because the distribution channels are complicated, but this impact is extremely small.

Energy consumption

| Indicator | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|--------------------------|------|--------|---------|---------|---------|---------|---------|
| Total energy consumption | MWh | Global | 314,174 | 299,760 | 305,339 | 333,548 | 337,921 |
| | MWh | China | 13,898 | 16,732 | 16,600 | 13,617 | 13,169 |
| | MWh | Japan | 300,276 | 283,029 | 288,738 | 319,930 | 324,752 |
| Steam | MWh | Global | 0 | 4,406 | 8,159 | 5,314 | 5,103 |
| | MWh | China | 0 | 4,406 | 8,159 | 5,314 | 5,103 |
| | MWh | Japan | 0 | 0 | 0 | 0 | 0 |
| Electricity | MWh | Global | 89,107 | 93,245 | 92,111 | 102,436 | 106,154 |
| | MWh | China | 7,636 | 9,221 | 8,405 | 8,266 | 8,029 |
| | MWh | Japan | 81,471 | 84,025 | 83,706 | 94,170 | 98,125 |

| Indicator | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|--------------------------|--------|-------|-------|-------|-------|-------|
| Town gas | thousand Nm ³ | Global | 6,138 | 5,771 | 5,786 | 6,961 | 7,231 |
| | thousand Nm ³ | China | 0 | 0 | 0 | 0 | 0 |
| | thousand Nm ³ | Japan | 6,138 | 5,771 | 5,783 | 6,961 | 7,231 |
| Liquefied petroleum gas (LPG) | t | Global | 830 | 580 | 347 | 301 | 277 |
| | t | China | 489 | 220 | 3 | 3 | 3 |
| | t | Japan | 341 | 360 | 345 | 298 | 274 |
| Liquefied natural gas (LNG) | t | Global | 7,932 | 7,113 | 7,876 | 8,330 | 8,238 |
| | t | China | 0 | 0 | 0 | 0 | 0 |
| | t | Japan | 7,932 | 7,113 | 7,876 | 8,330 | 8,238 |
| Heavy oil A | kl | Global | 82 | 39 | 57 | 22 | 27 |
| | kl | China | 0 | 0 | 0 | 0 | 0 |
| | kl | Japan | 82 | 39 | 57 | 22 | 27 |
| Gasoline | kl | Global | 1,598 | 1,382 | 779 | 798 | 716 |
| | kl | China | 0 | 0 | 0 | 0 | 0 |
| | kl | Japan | 1,598 | 1,382 | 779 | 798 | 716 |
| Light oil | kl | Global | 3 | 8 | 6 | 4 | 2 |
| | kl | China | 0 | 0 | 0 | 0 | 0 |
| | kl | Japan | 3 | 8 | 6 | 4 | 2 |

| Indicator | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|-----------|------|--------|------|------|------|------|------|
| Kerosene | kl | Global | 1 | 2 | 1 | 3 | 2 |
| | kl | China | 0 | 0 | 0 | 0 | 0 |
| | kl | Japan | 1 | 2 | 1 | 3 | 2 |

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iv

v

vi

vii

viii

iv : Resource conservation and circulation

Japan

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|------|-------|-------|-------|-------|-------|
| Waste generated (including valuable resources) | t | 4,804 | 3,646 | 4,846 | 6,081 | 6,829 |
| Waste generated (exluding valuable resources) | t | 3,824 | 3,062 | 4,180 | 5,170 | 5,766 |
| Waste reused/recycled (including valuable resources/with energy recovery) | t | 3,900 | 3,090 | 4,240 | 5,393 | 6,099 |
| Reuse/recycling rate (including valuable resources/with energy recovery) | % | 81.2 | 84.8 | 87.5 | 88.7 | 89.3 |
| Waste disposed of as landfill | t | 38 | 38 | 28 | 57 | 69 |
| Landfill rate | % | 0.8 | 1.0 | 0.6 | 0.9 | 1.0 |

Global

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|------|-------|-------|-------|-------|-------|
| Waste reused/recycled (including valuable resources/without energy recovery)* | t | 487 | 603 | 567 | 595 | 604 |
| Waste disposed of* | t | 2,387 | 1,854 | 2,594 | 3,360 | 4,422 |
| Waste landfilled* | t | 40 | 40 | 34 | 64 | 70 |
| Waste incinerated (with energy recovery)* | t | 1,725 | 1,344 | 2,204 | 2,876 | 3,989 |
| Waste incinerated (without energy recovery)* | t | 570 | 413 | 296 | 358 | 286 |
| Waste disposed in other ways * | t | 52 | 58 | 60 | 63 | 77 |
| Hazardous waste reused/recycled (including valuable resources/without energy recovery) | t | 869 | 413 | 501 | 777 | 1,051 |
| Hazardous waste disposed of | t | 974 | 847 | 1,254 | 1,434 | 810 |
| Hazardous waste landfilled | t | 1 | 1 | 1 | 1 | 1 |
| Hazardous waste incinerated (with energy recovery) | t | 703 | 705 | 961 | 1,057 | 433 |
| Hazardous waste incinerated (without energy recovery) | t | 261 | 133 | 290 | 375 | 373 |
| Hazardous waste disposed of in other ways | t | 8 | 8 | 2 | 2 | 4 |

* Excluding hazardous waste

Reuse and recycling of product containers and packaging materials

| Item | Indicator | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|---------------------|--------------|-------|-------|-------|-------|-------|--------|
| Containers and packaging materials used | Plastic | t | Japan | 735 | 641 | 591 | 589 | 503 |
| | Paper | t | Japan | 483 | 418 | 437 | 461 | 449 |
| | Glass (transparent) | t | Japan | 38 | 37 | 40 | 295 | 36 |
| | Glass (brown) | t | Japan | 8 | 8 | 8 | 22 | 19 |
| Consigned for reuse/recycling | Plastic | t | Japan | 155 | 147 | 134 | 152 | 173 |
| | Paper | t | Japan | 12 | 11 | 12 | 13 | 9 |
| | Glass (transparent) | t | Japan | 8 | 7 | 9 | 81 | 12 |
| | Glass (brown) | t | Japan | 2 | 2 | 3 | 8 | 8 |
| Reuse/recycling consignment fee | | thousand yen | Japan | 8,755 | 6,909 | 6,767 | 8,384 | 10,370 |

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v : Water

Water **withdrawal**

| Indicator | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------|-------------------------|--------|-------|-------|-------|-------|-------|
| Public water supply system | thousand m ³ | Global | 1,466 | 1,400 | 1,354 | 1,508 | 1,520 |
| | thousand m ³ | Japan | 1,315 | 1,263 | 1,217 | 1,357 | 1,396 |
| Tap water | thousand m ³ | Global | 405 | 383 | 373 | 417 | 392 |
| | thousand m ³ | Japan | 254 | 246 | 237 | 266 | 267 |
| Industrial water | thousand m ³ | Global | 1,061 | 1,017 | 980 | 1,091 | 1,128 |
| | thousand m ³ | Japan | 1,061 | 1,017 | 980 | 1,091 | 1,128 |
| Rivers and lakes | thousand m ³ | Global | 0 | 0 | 0 | 0 | 0 |
| | thousand m ³ | Japan | 0 | 0 | 0 | 0 | 0 |
| Sea | thousand m ³ | Global | 0 | 0 | 0 | 0 | 0 |
| | thousand m ³ | Japan | 0 | 0 | 0 | 0 | 0 |
| Groundwater ^{*1} | thousand m ³ | Global | 0 | 0 | 3 | 27 | 30 |
| | thousand m ³ | Japan | 0 | 0 | 3 | 27 | 30 |
| Others | thousand m ³ | Global | 0 | 0 | 0 | 0 | 0 |
| | thousand m ³ | Japan | 0 | 0 | 0 | 0 | 0 |

*1 Figures for FY2020 and FY2021 have been revised to include the amount of water pumped at the Kanegasaki Plant

Drainage

| Indicator | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------|-----------------------------|--------|-------|-------|-------|-------|-------|
| Total drainage | thousa nd m ³ | Global | 1,217 | 1,178 | 1,146 | 1,287 | 1,369 |
| | thousa nd m ³ | Japan | 1,175 | 1,132 | 1,099 | 1,244 | 1,293 |
| Sewers | thousa nd m ³ | Global | 352 | 357 | 344 | 398 | 423 |
| | thousa nd m ³ | Japan | 310 | 311 | 296 | 355 | 347 |
| River* ² | thousa nd m ³ | Global | 864 | 821 | 802 | 889 | 946 |
| | thousa nd m ³ | Japan | 864 | 821 | 802 | 889 | 946 |
| Sea | thousa nd m ³ | Global | 0 | 0 | 0 | 0 | 0 |
| | thousa nd m ³ | Japan | 0 | 0 | 0 | 0 | 0 |
| Groundwater | thousa nd m ³ | Global | 0 | 0 | 0 | 0 | 0 |
| | thousa nd m ³ | Japan | 0 | 0 | 0 | 0 | 0 |
| Others | thousa nd m ³ | Global | 0 | 0 | 0 | 0 | 0 |
| | thousa nd m ³ | Japan | 0 | 0 | 0 | 0 | 0 |

*2 Figures for FY2020 and FY2021 have been revised to exclude the amount of rainwater.

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v

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vii

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vi : Chemical substances / Air and water quality

Chemical substances

| Item | Indicator | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|----------------------------|---------------------------------|------|-------|------|------|------|------|------|
| PRTR-designated substances | Amount used | tons | Japan | 274 | 203 | 360 | 560 | 570 |
| | Amount released (Air) | tons | Japan | 43 | 34 | 73 | 36 | 112 |
| | Amount released (Public waters) | tons | Japan | 0 | 2 | 0 | 1 | 1 |
| | Amount released (Soil) | tons | Japan | 0 | 0 | 22 | 0 | 0 |
| | Amount transferred (Waste) | tons | Japan | 156 | 131 | 216 | 498 | 421 |
| | Amount transferred (Sewers) | tons | Japan | 0 | 0 | 0 | 0 | 0 |
| VOC | Amount used | tons | Japan | 491 | 511 | 667 | 564 | 856 |
| | Amount released (Air) | tons | Japan | 46 | 52 | 52 | 48 | 45 |

Air and water pollution

| Item | Indicator | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|------------------------|--------------------|----------------------|-------|------|------|------|------|------|
| Emissions into the air | SO _x | tons | Japan | 0 | 0 | 0 | 1 | 1 |
| | NO _x | tons | Japan | 17 | 17 | 17 | 16 | 17 |
| | Particulate matter | tons | Japan | 2 | 2 | 2 | 2 | 2 |
| | Fluorocarbons | tons-CO ₂ | Japan | 599 | 456 | 444 | 355 | 630 |
| Emissions into water | BOD | tons | Japan | 5 | 5 | 4 | 5 | 5 |
| | COD | tons | Japan | 2 | 3 | 3 | 3 | 2 |
| | Nitrogen | tons | Japan | 6 | 7 | 6 | 6 | 5 |
| | Phosphorus | tons | Japan | 1 | 1 | 3 | 1 | 1 |

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vii : Management / Compliance

Management

| Item | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|------|-------|------|------|------|------|------|
| Acquisition status of ISO 14001 certification | Site | Japan | * | 1 | 2 | 3 | 4 |
| | | China | 0 | 0 | 0 | 0 | 0 |
| Green purchasing (Purchase of office supplies) | % | Japan | 73.1 | 74.5 | 73.0 | 67.8 | 64.8 |

* We obtained collective certification for the manufacturing and research bases of Shionogi & Co., Ltd.

On the occasion of the establishment of a manufacturing subsidiary, the collective certification was deregistered on March 25, 2019, and the three plants of the manufacturing subsidiary have obtained or are expected to obtain a new certification individually thereafter.

Compliance

| Item | Unit | Scope | 2018 | 2019 | 2020 | 2021 | 2022 |
|---|------|-------|------|------|------|------|------|
| Violation of environment-related laws and regulations | case | Japan | 1 | 0 | 1 | 1 | 0 |
| Amount of fines/violations | yen | Japan | 0 | 0 | 0 | 0 | 0 |
| Environment-related complaints | case | Japan | 1 | 0 | 0 | 3 | 1 |

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viii : Environmental accounting

Environmental protection costs

| | | | FY2020 | | FY2021 | | FY2022 | |
|------------------------------|--------------------------------------|---|----------------|----------------|----------------|----------------|----------------|----------------|
| Category | | Key activities | Investment | Cost | Investment | Cost | Investment | Cost |
| | | | (thousand yen) | (thousand yen) | (thousand yen) | (thousand yen) | (thousand yen) | (thousand yen) |
| (1) Business area cost | | | 0 | 569,854 | 0 | 623,654 | 0 | 686,595 |
| Breakdown | ① Pollution prevention cost | Maintenance and management of the following • exhaust gas treatment equipment • wastewater treatment facilities • dichloromethane absorption and recovery equipment Measurement and analysis of wastewater, exhaust gas, etc. | 0 | 286,966 | 0 | 284,475 | 0 | 350,201 |
| | ② Global environment protection cost | Renewal of air-conditioning systems, refrigerators, boilers, etc. Operational improvement of manufacturing and air-conditioning facilities | 0 | 119,040 | 0 | 129,171 | 0 | 123,706 |
| | ③ Resource circulation cost | Recycling and treatment of the following • waste solvents • general waste materials • industrial waste | 0 | 163,847 | 0 | 210,008 | 0 | 212,688 |
| (2) Upstream/downstream cost | | Consignment of reuse of containers and packaging materials | 0 | 6,768 | 0 | 6,743 | 0 | 10,370 |

| | | FY2020 | | FY2021 | | FY2022 | |
|-----------------------------------|---|--------|---------|--------|---------|--------|-----------|
| (3)Administration cost | Maintenance and operation of environmental management systems Development and maintenance of green zones | 0 | 290,156 | 0 | 315,703 | 0 | 378,079 |
| (4)R&D cost | | 0 | 0 | 0 | 0 | 0 | 0 |
| (5)Social activity cost | Contribution to environmental organizations Communication with local communities | 0 | 472 | 0 | 449 | 0 | 874 |
| (6)Environmental remediation cost | Penalty imposed for pollutants | 0 | 170 | 0 | 159 | 0 | 150 |
| Total | | 0 | 867,419 | 0 | 946,709 | 0 | 1,076,069 |

Economic benefits from environmental protection (actual positive effects)

| | | FY2020 | FY2021 | FY2022 |
|----------------|---|-----------------------------------|-----------------------------------|-----------------------------------|
| Description | | Amount of money (thousand yen) | Amount of money (thousand yen) | Amount of money (thousand yen) |
| Benefit | Business income from recycling of waste | 9,940 | 7,327 | 8,865 |
| Cost reduction | Reduction in energy and water expenses | 31 | 4,969 | 4,222 |
| Total | | 9,972 | 12,296 | 13,087 |

Scope : Japan

Site data

i : Shionogi Pharmaceutical Research Center
 ii : Shionogi CMC Research Innovation Center
 iii : Aburahi Research Center
 iv : Settsu Plant
 v : Kanegasaki Plant

vi : Tokushima Plant
 vii : UMN Pharma Inc. Akita Plant
 viii : UMN Pharma Inc. Yokohama Research Center
 ix : Itami Plant
 x : Nanjing Plant

| i | ii | iii | iv | v | vi | vii | viii | ix | x |
|---|----|-----|----|---|----|-----|------|----|---|
|---|----|-----|----|---|----|-----|------|----|---|

i : Shionogi Pharmaceutical Research Center

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|--------------------------|--------|--------|--------|--------|--------|
| Electricity | MWh | 28,450 | 28,599 | 27,529 | 28,053 | 29,503 |
| Gasoline | KL | 0 | 0 | 0 | 0 | 0 |
| Kerosene | KL | 0 | 0 | 0 | 0 | 0 |
| Light oil | KL | 0 | 0 | 0 | 0 | 0 |
| Heavy oil A | KL | 2 | 1 | 2 | 1 | 2 |
| Liquefied petroleum gas (LPG) | tons | 0 | 0 | 0 | 0 | 0 |
| Liquefied natural gas (LNG) | tons | 0 | 0 | 0 | 0 | 0 |
| Town gas | thousand Nm ³ | 2,402 | 2,366 | 2,167 | 2,313 | 2,719 |
| Water withdrawal | thousand m ³ | 135 | 131 | 121 | 119 | 126 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|----------------------------|--------|--------|--------|--------|--------|
| CO ₂ emissions | t-CO ₂ | 17,162 | 14,975 | 13,720 | 15,146 | 15,407 |
| Waste generated (excluding valuable resources) | tons | 427 | 390 | 374 | 405 | 389 |
| Waste put to landfill | tons | 13 | 12 | 6 | 7 | 6 |
| Drainage (sewers) | thousand m ³ | 135 | 131 | 121 | 119 | 126 |
| Drainage (public waters) | thousand m ³ | 0 | 0 | 0 | 0 | 0 |
| NO _x | tons | 2 | 2 | 2 | 2 | 2 |
| SO _x | tons | — | — | — | — | — |
| BOD | tons | 2 | 2 | 1 | 2 | 2 |
| COD | tons | — | — | — | — | 0 |

Substances subject to the PRTR Act (kg)

| Substance name | Amount used | Amount released | | | Amount transferred | |
|-------------------------------|----------------|-----------------|------------------|------|--------------------------------|--------|
| | | Atmosph ere | Public waters | Soil | Outside operatin g sites | Sewers |
| <i>N,N</i> -Dimethylformamide | 1,016 | 0 | 0 | 0 | 1,016 | 0 |
| Acetonitrile | 6,178 | 139 | 0 | 0 | 6,039 | 0 |
| Chloroform | 6,687 | 134 | 0 | 0 | 6,552 | 0 |
| <i>n</i> -Hexane | 6,122 | 323 | 0 | 0 | 5,798 | 0 |

Shionogi Pharmaceutical Research Center



i

ii

iii

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v

vi

vii

viii

ix

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ii : Shionogi CMC Research Innovation Center

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|--------------------------|--------|-------|--------|--------|--------|
| Electricity | MWh | 10,161 | 9,694 | 10,141 | 10,201 | 10,260 |
| Gasoline | KL | 0 | 0 | 0 | 0 | 0 |
| Kerosene | KL | 0 | 0 | 0 | 0 | 0 |
| Light oil | KL | 0 | 0 | 0 | 0 | 0 |
| Heavy oil A | KL | 0 | 0 | 0 | 0 | 0 |
| Liquefied petroleum gas (LPG) | tons | 0 | 0 | 0 | 0 | 0 |
| Liquefied natural gas (LNG) | tons | 0 | 0 | 0 | 0 | 0 |
| Town gas | thousand Nm ³ | 980 | 925 | 979 | 1,008 | 969 |
| Water withdrawal | thousand m ³ | 82 | 77 | 82 | 88 | 88 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|-------------------------|-------|-------|-------|-------|-------|
| CO ₂ emissions | t-CO ₂ | 6,396 | 5,357 | 5,466 | 5,890 | 5,410 |
| Waste generated (excluding valuable resources) | tons | 205 | 159 | 195 | 238 | 179 |
| Waste put to landfill | tons | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Drainage (sewers) | thousand m ³ | 60 | 57 | 60 | 65 | 66 |
| Drainage (public waters) | thousand m ³ | 0 | 0 | 0 | 0 | 0 |
| NO _x | tons | 1 | 1 | 0 | 1 | 1 |
| SO _x | tons | — | — | — | — | 0 |
| BOD | tons | 0 | 0 | 0 | 0 | 0 |
| COD | tons | — | — | — | — | 0 |

Substances subject to the PRTR Act (kg)

| Substance name | Amount used | Amount released | | | Amount transferred | |
|----------------|-------------|-----------------|---------------|------|-------------------------|--------|
| | | Atmosphere | Public waters | Soil | Outside operating sites | Sewers |
| Acetonitrile | 3,968 | 31 | 0 | 0 | 3,937 | 0 |

Shionogi CMC Research Innovation Center



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iii : Aburahi Research Center

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|--------------------------|-------|-------|-------|-------|-------|
| Electricity | MWh | 2,518 | 2,449 | 2,459 | 2,590 | 2,704 |
| Gasoline | kL | 5 | 7 | 5 | 7 | 7 |
| Kerosene | kL | 1 | 2 | 1 | 2 | 2 |
| Light oil | kL | 0 | 0 | 0 | 0 | 0 |
| Heavy oil A | kL | 0 | 1 | 0 | 0 | 0 |
| Liquefied petroleum gas (LPG) | tons | 329 | 349 | 333 | 287 | 266 |
| Liquefied natural gas (LNG) | tons | 0 | 0 | 0 | 0 | 0 |
| Town gas | thousand Nm ³ | 0 | 0 | 0 | 0 | 0 |
| Water | thousand m ³ | 15 | 15 | 14 | 14 | 14 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|----------------------------|-------|-------|-------|-------|------|
| CO ₂ emissions | tons-CO ₂ | 2,055 | 1,886 | 1,797 | 1,792 | 817 |
| Waste generated (excluding valuable resources) | tons | 44 | 48 | 44 | 48 | 34 |
| Waste put to landfill | tons | 1 | 2 | 1 | 1 | 1 |
| Drainage (sewers) | thousand m ³ | 0 | 0 | 0 | 0 | 0 |
| Drainage (public waters) | thousand m ³ | 12 | 11 | 11 | 10 | 9 |
| NO _x | tons | — | — | — | — | — |
| SO _x | tons | — | — | — | — | — |
| BOD | tons | 0 | 0 | 0 | 0 | 0 |
| COD | tons | 0 | 0 | 0 | 0 | 0 |

Substances to be registered under the PRTR Act: None



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iv : Settsu Plant

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|--------------------------|--------|--------|--------|--------|--------|
| Electricity | MWh | 14,884 | 15,496 | 15,767 | 16,570 | 17,264 |
| Gasoline | kL | 1 | 2 | 2 | 2 | 1 |
| Kerosene | kL | 0 | 0 | 0 | 0 | 0 |
| Light oil | kL | 2 | 8 | 6 | 3 | 1 |
| Heavy oil A | kL | 0 | 0 | 0 | 0 | 0 |
| Liquefied petroleum gas (LPG) | tons | 0 | 0 | 0 | 0 | 0 |
| Liquefied natural gas (LNG) | tons | 0 | 0 | 0 | 0 | 0 |
| Town gas | thousand Nm ³ | 2,278 | 2,039 | 1,816 | 1,940 | 1,927 |
| Water | thousand m ³ | 140 | 127 | 116 | 98 | 94 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|-------------------------|--------|-------|-------|--------|-------|
| CO ₂ emissions | tons-CO ₂ | 11,222 | 9,869 | 9,191 | 10,270 | 9,787 |
| Waste generated (excluding valuable resources) | tons | 266 | 300 | 282 | 316 | 458 |
| Waste put to landfill | tons | 0.8 | 0.8 | 0.6 | 1 | 2 |
| Drainage (sewers) | thousand m ³ | 102 | 110 | 101 | 83 | 77 |
| Drainage (public waters) | thousand m ³ | 0 | 0 | 0 | 0 | 0 |
| NO _x | tons | 2 | 2 | 2 | 2 | 3 |
| SO _x | tons | — | — | — | — | 0 |
| BOD | tons | 1 | 1 | 1 | 1 | 1 |
| COD | tons | 2 | 2 | 2 | 2 | 2 |

Substances subject to the PRTR Act (kg)

| Substance name | Amount used | Amount released | | | Amount transferred | |
|----------------|-------------|-----------------|---------------|------|-------------------------|--------|
| | | Atmosphere | Public waters | Soil | Outside operating sites | Sewers |
| Acetonitrile | 1,641 | 0 | 0 | 0 | 1,641 | 0 |

Settsu Plant



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v : Kanegasaki Plant

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|-------------------------|--------|--------|--------|--------|--------|
| Electricity | MWh | 13,745 | 16,672 | 14,995 | 15,814 | 18,951 |
| Gasoline | kL | 4 | 3 | 4 | 5 | 5 |
| Kerosene | kL | 0 | 0 | 0 | 0 | 0 |
| Light oil | kL | 1 | 0 | 0 | 0 | 1 |
| Heavy oil A | kL | 80 | 37 | 55 | 21 | 25 |
| Liquefied petroleum gas (LPG) | tons | 12 | 11 | 11 | 11 | 8 |
| Liquefied natural gas (LNG) | tons | 7,932 | 7,113 | 7,876 | 8,330 | 8,238 |
| Town gas | thousand Nm | 0 | 0 | 0 | 0 | 0 |
| Water | thousand m ³ | 818 | 795 | 728 | 774 | 798 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|-------------------------|--------|--------|--------|--------|--------|
| CO ₂ emissions | tons-CO ₂ | 28,869 | 28,148 | 29,286 | 29,823 | 31,598 |
| Waste generated (excluding valuable resources) | tons | 2,120 | 1,372 | 1,883 | 2,545 | 3,777 |
| Waste put to landfill | tons | 21 | 16 | 19 | 13 | 17 |
| Drainage (sewers) | thousand m ³ | 0 | 0 | 0 | 0 | 0 |
| Drainage (public waters) | thousand m ³ | 740 | 704 | 651 | 678 | 716 |
| NO _x | tons | 12 | 12 | 12 | 12 | 12 |
| SO _x | tons | 0 | 0 | 0 | 0 | 0 |
| BOD | tons | 1 | 1 | 1 | 1 | 2 |
| COD | tons | — | — | — | — | 0 |

Substances subject to the PRTR Act (kg)

| Substance name | Amount used | Amount released | | | Amount transferred | |
|--------------------------------------|-------------|-----------------|---------------|------|-------------------------|--------|
| | | Atmosphere | Public waters | Soil | Outside operating sites | Sewers |
| <i>N,N</i> -Dimethylformamide | 5,077 | 33 | 0 | 0 | 3 | 0 |
| Acetonitrile | 269,759 | 0 | 0 | 0 | 268,941 | 0 |
| Dichloromethane (methylene chloride) | 167,812 | 110,278 | 2 | 0 | 39,544 | 0 |
| Tributylamine | 4,640 | 0 | 0 | 0 | 0 | 0 |
| Pyridine | 19,570 | 0 | 0 | 0 | 11,362 | 0 |

KaneGasaki Plant



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vi : Tokushima Plant

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|-------------------------|-------|-------|-------|-------|-------|
| Electricity | MWh | 5,065 | 4,646 | 5,444 | 7,306 | 7,128 |
| Gasoline | kL | 0 | 0 | 0 | 0 | 0 |
| Kerosene | kL | 0 | 0 | 0 | 0 | 0 |
| Light oil | kL | 0 | 0 | 0 | 0 | 0 |
| Heavy oil A | kL | 0 | 0 | 0 | 0 | 0 |
| Liquefied petroleum gas (LPG) | tons | 0 | 0 | 0 | 0 | 0 |
| Liquefied natural gas (LNG) | tons | 0 | 0 | 0 | 0 | 0 |
| Town gas | thousand Nm | 388 | 365 | 449 | 524 | 538 |
| Water | thousand m ³ | 112 | 105 | 143 | 200 | 221 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|-------------------------|-------|-------|-------|-------|-------|
| CO ₂ emissions | tons-CO ₂ | 3,560 | 3,289 | 3,266 | 5,393 | 5,025 |
| Waste generated (excluding valuable resources) | tons | 692 | 690 | 1,353 | 1,464 | 801 |
| Waste put to landfill | tons | 1 | 6 | 0.1 | 5 | 1 |
| Drainage (sewers) | thousand m ³ | 0 | 0 | 0 | 0 | 0 |
| Drainage (public waters) | thousand m ³ | 112 | 105 | 140 | 200 | 221 |
| NO _x | tons | — | — | — | — | 0 |
| SO _x | tons | — | — | — | — | 0 |
| BOD | tons | 0 | 0 | 0 | 1 | 0 |
| COD | tons | 0 | 1 | 0 | 1 | 0 |

Substances subject to the PRTR Act (kg)

| Substance name | Amount used | Amount released | | | Amount transferred | |
|--------------------------------------|-------------|-----------------|---------------|------|-------------------------|--------|
| | | Atmosphere | Public waters | Soil | Outside operating sites | Sewers |
| <i>N,N</i> -Dimethylacetamide | 5,646 | 0 | 0 | 0 | 5,646 | 0 |
| <i>N,N</i> -Dimethylformamide | 2,580 | 13 | 0 | 0 | 2,567 | 0 |
| Acetonitrile | 55,249 | 552 | 0 | 0 | 54,697 | 0 |
| Dichloromethane (methylene chloride) | 13,618 | 272 | 0 | 0 | 13,345 | 0 |

Tokushima Plant



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vii : UMN Pharma Inc. Akita Plant

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|--------------------------|------|------|-------|-------|-------|
| Electricity | MWh | — | — | 1,827 | 1,774 | 1,776 |
| Gasoline | kL | — | — | 0 | 0 | 0 |
| Kerosene | kL | — | — | 0 | 0 | 0 |
| Light oil | kL | — | — | 0 | 0 | 0 |
| Heavy oil A | kL | — | — | 0 | 0 | 0 |
| Liquefied petroleum gas (LPG) | tons | — | — | 0 | 0 | 0 |
| Liquefied natural gas (LNG) | tons | — | — | 0 | 0 | 0 |
| Town gas | thousand Nm ³ | — | — | 287 | 238 | 211 |
| Water | thousand m ³ | — | — | 10 | 8 | 6 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|----------------------------|------|------|-------|-------|-------|
| CO ₂ emissions | tons-CO ₂ | — | — | 1,502 | 1,402 | 1,351 |
| Waste generated (excluding valuable resources) | tons | — | — | 4 | 5 | 4 |
| Waste put to landfill | tons | — | — | 0.4 | 0.0 | 0.5 |
| Drainage (sewers) | thousand m ³ | — | — | 10 | 8 | 6 |
| Drainage (public waters) | thousand m ³ | — | — | 0 | 0 | 0 |
| NO _x | tons | — | — | — | — | 0 |
| SO _x | tons | — | — | — | — | 0 |
| BOD | tons | — | — | — | — | 0 |
| COD | tons | — | — | — | — | 0 |

Substances to be registered under the PRTR Act: None

UMN Pharma Inc. Akita Plant



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viii : UMN Pharma Inc. Yokohama Research Center

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|--------------------------|------|------|------|------|------|
| Electricity | MWh | — | — | 188 | 185 | 181 |
| Gasoline | kL | — | — | 0 | 0 | 0 |
| Kerosene | kL | — | — | 0 | 0 | 0 |
| Light oil | kL | — | — | 0 | 0 | 0 |
| Heavy oil A | kL | — | — | 0 | 0 | 0 |
| Liquefied petroleum gas (LPG) | tons | — | — | 0 | 0 | 0 |
| Liquefied natural gas (LNG) | tons | — | — | 0 | 0 | 0 |
| Town gas | thousand Nm ³ | — | — | 0 | 0 | 0 |
| Water | thousand m ³ | — | — | 1 | 1 | 1 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|-------------------------|------|------|------|------|------|
| CO ₂ emissions | tons-CO ₂ | — | — | 83 | 82 | 83 |
| Waste generated (excluding valuable resources) | tons | — | — | 1 | 1 | 1 |
| Waste put to landfill | tons | — | — | 0.1 | 0.3 | 0.2 |
| Drainage (sewers) | thousand m ³ | — | — | 1 | 1 | 1 |
| Drainage (public waters) | thousand m ³ | — | — | 0 | 0 | 0 |
| NO _x | tons | — | — | — | — | 0 |
| SO _x | tons | — | — | — | — | 0 |
| BOD | tons | — | — | — | — | 0 |
| COD | tons | — | — | — | — | 0 |

Substances to be registered under the PRTR Act: None

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ix : Itami Plant

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|--------------------------|------|------|------|-------|-------|
| Electricity | MWh | — | — | — | 6,797 | 6,726 |
| Gasoline | kL | — | — | — | 0 | 0 |
| Kerosene | kL | — | — | — | 0 | 0 |
| Light oil | kL | — | — | — | 0 | 0 |
| Heavy oil A | kL | — | — | — | 0 | 0 |
| Liquefied petroleum gas (LPG) | tons | — | — | — | 0 | 0 |
| Liquefied natural gas (LNG) | tons | — | — | — | 0 | 0 |
| Town gas | thousand Nm ³ | — | — | — | 875 | 856 |
| Water | thousand m ³ | — | — | — | 77 | 71 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|--|----------------------------|------|------|------|-------|-------|
| CO ₂ emissions | tons-CO ₂ | — | — | — | 4,389 | 4,051 |
| Waste generated (excluding valuable resources) | tons | — | — | — | 116 | 85 |
| Waste put to landfill | tons | — | — | — | 30 | 40 |
| Drainage (sewers) | thousand m ³ | — | — | — | 74 | 66 |
| Drainage (public waters) | thousand m ³ | — | — | — | 0 | 0 |
| NO _x | tons | — | — | — | — | 0 |
| SO _x | tons | — | — | — | — | 0 |
| BOD | tons | — | — | — | 0 | 0 |
| COD | tons | — | — | — | 0 | 0 |

Substances to be registered under the PRTR Act: None

Itami Plant



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ix : C&O Pharmaceutical Technology (Holdings) Ltd. Nanjing Plant

Energy and resource consumption

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|-------------------------------|-------------------------|-------|-------|--------|-------|-------|
| Electricity | MWh | 7,636 | 9,221 | 8,405 | 8,266 | 8,029 |
| Steam | tons | — | 5,930 | 10,980 | 7,152 | 6,868 |
| Coal | tons | 0 | 0 | 0 | 0 | 0 |
| Liquefied petroleum gas (LPG) | tons | 489 | 220 | 3 | 3 | 3 |
| Water | thousand m ³ | 151 | 137 | 137 | 151 | 125 |

Impact released

| Item | Unit | 2018 | 2019 | 2020 | 2021 | 2022 |
|---------------------------|-------------------------|-------|-------|-------|-------|-------|
| CO ₂ emissions | tons-CO ₂ | 6,304 | 7,368 | 6,952 | 6,282 | 6,089 |
| Waste generated | tons | 25 | 70 | 70 | 85 | 57 |
| Waste put to landfill | tons | 3 | 6 | 5 | 7 | 2 |
| Drainage (sewers) | thousand m ³ | 42 | 46 | 48 | 44 | 76 |
| Drainage (public waters) | thousand m ³ | 0 | 0 | 0 | 0 | 0 |

Substances subject to the PRTR Act : Not applicable

C&O Pharmaceutical Technology (Holdings) Ltd. Nanjing Plant





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