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**2023 Pollutant emissions and waste transfers from SEPA regulated industrial sites**

**September 2023**

This is an Official Statistics publication. These statistics have been produced to the high professional standards defined in the Code of Practice for Official Statistics, which sets out fourteen principles under the pillars of Trustworthiness, Quality and Value. More information on the Official Statistics Code of Practice can be found here: [Official Statistics Code of Practice](https://code.statisticsauthority.gov.uk)https://code.statisticsauthority.gov.uk/.

Lead statistician: Rosaria Cartisano

This statistical release shows emissions of pollutants to air and water and offsite waste transfers reported by operators of industrial sites under the Scottish Pollutant Release Inventory (SPRI) for the 2023 calendar year. Some historic data is included for comparison. Information about the SPRI and on the methods used to prepare this release is provided in sections two and three of this document.

Complete SPRI data is available at:[[Scottish Pollution Release Inventory](https://www.environment.gov.scot/data/data-analysis/scottish-pollution-release-inventory/)](https://informatics.sepa.org.uk/SPRI/)

This is a data analysis tool which allows you to view summarised information by industry sector for pollutants and waste transfers. Data can be downloaded in bulk, including at a site level. It is updated annually when the previous year’s data is published.

Media enquiries to: SEPA Communications Department: media@sepa.org.uk

Feedback on this document to: SPRI.Administration@sepa.org.uk

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# 1. The statistics

## 1.1 Key information for 2023



In 2023, 1,283 sites were expected to report to SPRI. Of these 1,259 (98.1%) submitted a return. Among the 24 remaining sites who did not submit a return on time, 5 of these sites were required to report air, water and waste data. The other 19 were required to provide data solely for waste, as their activities did not require them to report on other emissions. Of the 1,259 reporting sites, 312 (24.7%) had no reportable pollutant emissions nor off-site waste transfers.

In many cases, as is normal for these types of industrial sites, changes to production or throughput were noted by many operators.[[1]](#footnote-2)

The overall global warming potential of greenhouse gas emissions from the SEPA-regulated industrial sites which report to SPRI (measured as kilograms of carbon dioxide equivalent (kg CO2e)) decreased by 13.5% between 2022 and 2023. It is important to note that this reduction is largely due to lower production output from two major emitters. The long-term trend since 2007 has been steadily downward, indicating efforts to reduce emissions over time.

Emissions of all six greenhouse gases which are reportable to SPRI are discussed in section 1.3.

## 1.2 Emissions and waste transfers for 2023

#### Emissions

Summary data is provided for all “above reporting threshold” (‘ART’ – see note below) emissions to air and water in the tables below (and on the accompanying data sheet). This is followed by more detailed information on greenhouse gas emissions data captured within SPRI. Tables provided below show:

* Table 1: Total ART emissions to air by pollutant and industry sector for 2023
* Table 2: Number of sites reporting ART emissions to air, and percentage of total ART emissions released, by industry sector and pollutant for 2023.
* Table 3: Total ART emissions to water by pollutant and industry sector for 2023.
* Table 4: Number of sites reporting ART emissions to water, and percentages of total ART emissions released, by sector and pollutant for 2023.

#### Notes on data provided in this publication:

* All values are in kilograms, with the exceptions of carbon dioxide to air which is given in tonnes (1,000kg) in some figures to simplify reporting.
* All pollutants in SPRI have a reporting threshold value. If a site’s emission is below this value, they report only ‘BRT' (Below Reporting Threshold). If emissions are ‘ART’ (Above Reporting Threshold) they must supply us with a value. See [Figure 7](#Bookmark1) for a breakdown of ART and BRT reporting. Figures for total emissions and number of reporting sites provided in this document are for ‘ART’ submissions only.
* Percentage figures given to show proportion of total emissions from each industrial sector are rounded so may not total 100%.
* Precision of figures. Operators are asked to supply figures to three significant figures. Many provide more precise figures, and we have used these here. For some official reporting we are required to round each individual value to three significant figures which may cause slight discrepancies from the totals reported here.
* There are ten SPRI Industry Sectors, but only sectors with emissions of the pollutants listed, are reported in the tables below. For details of the activities which place a site within those sectors, including the minimum capacity a site must have to be required to report to SPRI, see [Table 6](#Bookmark2) and section *3 (*About the Scottish Pollutant Release Inventory).
* In 2023, two substances (Carbon tetrachloride and all isomers of Hexachlorocyclohexane) were reported to SPRI for the first time due to two landfill facilities using laboratory results for reporting these pollutants rather than predictive models.

#### Table 1: Total ART emissions to air by pollutant and industry sector for 2023. All values are kg except for carbon dioxide which is in tonnes.

| **Pollutant name** | **Reporting threshold** | **Total Release****(kg)** | **1 - Energy sector** | **2 - Production and processing of metals** | **3 - Mineral industry** | **4 - Chemical industry** | **5 - Waste and waste-water m/ment** | **6 - Paper and wood production and processing** | **7 - Intensive livestock production and aqua-culture** | **8 - Animal and vegetable products from the food and beverage sector** | **9 - Other activities** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ammonia | 1,000 | 975,955 | 1,352 |  | 56,704 | 7,892 | 19,502 | 1,525 | 888,980 |  |  |
| Antimony | 1 | 50.1 | 2.19 |  | 1.57 |  | 20.2 | 26.2 |  |  |  |
| Arsenic | 1 | 46.0 |  |  | 10.0 |  | 6.76 | 29.2 |  |  |  |
| Benzene | 1,000 | 58,536 | 24,021 |  |  | 34,515 |  |  |  |  |  |
| Butadiene | 100 | 39,349 | 7,251 |  |  | 32,098 |  |  |  |  |  |
| Cadmium | 1 | 21.1 |  | 4.36 | 4.27 |  | 8.81 | 3.62 |  |  |  |
| Carbon dioxide (tonnes) | 10,000 t | 9,058,998 | 3,800,798 | 59,881 | 663,807 | 1,330,144 | 2,238,343 | 639,907 |  | 326,118 |  |
| Carbon monoxide | 100,000 | 9,562,671 | 3,582,602 |  | 3,603,760 | 375,411 | 691,000 | 1,309,899 |  |  |  |
| Carbon tetrachloride | 10 | 13.3 |  |  |  |  | 13.3 |  |  |  |  |
| Chlorine and total inorganic chlorine compounds - as HCl | 10,000 | 39,064 |  |  |  |  | 23,327 | 15,737 |  |  |  |
| Chlorofluorocarbons (CFCs) | 1 | 176 |  |  |  |  | 176 |  |  |  |  |
| Chromium | 10 | 221 |  |  | 31.8 |  | 134 | 54.9 |  |  |  |
| Copper | 10 | 130 |  |  | 28.0 |  | 10.5 | 92.0 |  |  |  |
| Dioxins and furans - as ITEQ | 0.00001 | 0.00045 |  |  | 0.00001 |  | 0.00033 | 0.00011 |  |  |  |
| Dioxins and furans - as WHO TEQ | 0.00001 | 0.00027 |  |  |  |  | 0.00019 | 0.00008 |  |  |  |
| Ethylbenzene | 100 | 557 |  |  |  | 557 |  |  |  |  |  |
| Fluorine and total inorganic fluorine compounds - as HF | 1,000 | 23,042 |  | 18,174 |  | 3,465 |  | 1,403 |  |  |  |
| Formaldehyde | 10 | 107,939 |  |  | 770 | 58.4 |  | 107,111 |  |  |  |
| Hexachloro-cyclohexane (all isomers) | 1 | 17.2 |  |  |  |  | 17.2 |  |  |  |  |
| Hydrochloro-fluorocarbons (HCFCs) | 1 | 134 |  |  |  |  | 134 |  |  |  |  |
| Hydrofluoro- carbons (HFCs) | 100 | 1,026 | 102 |  |  | 691 |  |  |  | 233 |  |
| Hydrogen chloride | 10,000 | 68,686 |  |  |  |  | 68,686 |  |  |  |  |
| Hydrogen cyanide | 100 | 176 |  |  |  | 176 |  |  |  |  |  |
| Lead | 100 | 484 |  |  |  |  |  | 484 |  |  |  |
| Manganese | 10 | 109 |  |  | 37.8 |  | 27.8 | 43.4 |  |  |  |
| Mercury | 1 | 22.2 |  |  | 2.43 |  | 16.94 | 2.87 |  |  |  |
| Methane | 10,000 | 19,710,476 | 2,597,667 |  | 33,907 | 380,706 | 16,078,478 |  | 591,384 | 28,334 |  |
| Methyl chloride | 1,000 | 15,730 |  |  |  | 15,730 |  |  |  |  |  |
| Methyl chloroform | 10 | 48.5 |  |  |  |  | 48.5 |  |  |  |  |
| Methylene chloride | 1,000 | 136,011 |  |  |  | 136,011 |  |  |  |  |  |
| Naphthalene | 100 | 458 |  |  | 458 |  |  |  |  |  |  |
| Nickel | 10 | 125 | 35.7 |  | 39.9 |  | 49.1 |  |  |  |  |
| Nitrogen oxides, NO and NO2 as NO2 | 100,000 | 9,324,438 | 4,402,051 |  | 1,422,779 | 1,517,878 | 1,361,867 | 619,863 |  |  |  |
| Nitrous oxide | 10,000 | 34,415 | 23,902 |  |  |  | 10,513 |  |  |  |  |
| Non-methane volatile organic compounds (NMVOCs) | 10,000 | 21,274,612 | 7,173,072 |  | 84,841 | 3,217,327 | 14,617 | 389,989 |  | 10,054,060 | 340,706 |
| Particulate matter - PM10 and smaller | 10,000 | 616,336 | 52,730 | 15,977 | 286,486 | 90,700 |  |  | 170,443 |  |  |
| Particulate matter - total | 50,000 | 330,407 |  |  |  |  |  |  | 330,407 |  |  |
| Particulates - PM2.5 and smaller only | 1,000 | 8,099 | 1,375 |  | 2,611 |  | 4,114 |  |  |  |  |
| Perfluorocarbons (PFCs) | 10 | 5,132 |  | 400 |  | 4,732 |  |  |  |  |  |
| Phenols - total as C | 10 | 1,068 |  |  | 1,068 |  |  |  |  |  |  |
| Polycyclic aromatic hydrocarbons (PAHs) (four indicator compounds of LRTAP) | 1 | 12.8 |  |  |  |  | 12.8 |  |  |  |  |
| Selenium | 100 | 494 |  |  | 494 |  |  |  |  |  |  |
| Styrene | 100 | 389 |  |  |  | 389 |  |  |  |  |  |
| Sulphur hexafluoride | 10 | 146 |  |  |  | 146 |  |  |  |  |  |
| Sulphur oxides, SO2 and SO3 as SO2 | 100,000 | 5,302,157 | 4,153,670 | 386,597 | 761,890 |  |  |  |  |  |  |
| Tetrachloroethane | 10 | 13.3 |  |  |  |  | 13.3 |  |  |  |  |
| Toluene | 100 | 68,480 | 30,366 |  |  | 27,161 | 140 |  |  |  | 10,813 |
| Vanadium | 10 | 13.8 | 13.8 |  |  |  |  |  |  |  |  |
| Xylene - all isomers | 1,000 | 29,977 | 26,287 |  |  | 3,690 |  |  |  |  |  |

#### Table 2: Number of sites reporting ART emissions to air, and percentage of total ART emissions released, by industry sector and pollutant for 2023.

| Pollutant  | ART Sites | Energy Sites | Energy %  | Metals Sites | Metals %  | Mineral Sites | Mineral %  | Chemical Sites | Chemical %  | Waste Sites | Waste %  | Paper/Wood Sites | Paper/Wood %  | Live-stock/ Aqua Sites | Live-stock/ Aqua%  | Food/ Beverage Sites | Food/ Beverage %  | Other Sites | Other %  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Ammonia | 121 | 1 | 0.14% |   |   | 2 | 5.81% | 2 | 0.81% | 10 | 2.00% | 1 | 0.16% | 105 | 91.1% |   |   |   |   |
| Antimony | 9 | 1 | 4.36% |   |   | 1 | 3.13% |   |   | 5 | 40.3% | 2 | 52.2% |   |   |   |   |   |   |
| Arsenic | 9 |   |   |   |   | 2 | 21.8% |   |   | 4 | 14.7% | 3 | 63.5% |   |   |   |   |   |   |
| Benzene | 3 | 1 | 41.0% |   |   |   |   | 2 | 59.0% |   |   |   |   |   |   |   |   |   |   |
| Butadiene | 4 | 1 | 18.4% |   |   |   |   | 3 | 81.6% |   |   |   |   |   |   |   |   |   |   |
| Cadmium | 8 |   |   | 1 | 20.7% | 2 | 20.3% |   |   | 3 | 41.8% | 2 | 17.2% |   |   |   |   |   |   |
| Carbon dioxide | 71 | 23 | 42.0% | 2 | 0.66% | 4 | 7.33% | 6 | 14.7% | 27 | 24.7% | 5 | 7.06% |   |   | 4 | 3.60% |   |   |
| Carbon monoxide | 21 | 11 | 37.5% |   |   | 1 | 37.7% | 2 | 3.93% | 4 | 7.23% | 3 | 13.7% |   |   |   |   |   |   |
| Carbon tetrachloride | 1 |   |   |   |   |   |   |   |   | 1 | 100 % |   |   |   |   |   |   |   |   |
| Chlorine and total inorganic chlorine compounds - as HCl | 2 |   |   |   |   |   |   |   |   | 1 | 59.7% | 1 | 40.3% |   |   |   |   |   |   |
| Chlorofluoro-carbons (CFCs) | 21 |   |   |   |   |   |   |   |   | 21 | 100 % |   |   |   |   |   |   |   |   |
| Chromium | 10 |   |   |   |   | 1 | 14.4% |   |   | 6 | 60.8% | 3 | 24.9% |   |   |   |   |   |   |
| Copper | 4 |   |   |   |   | 1 | 21.5% |   |   | 1 | 8.05% | 2 | 70.5% |   |   |   |   |   |   |
| Dioxins and furans - as ITEQ | 6 |   |   |   |   | 1 | 2.72% |   |   | 3 | 73.0% | 2 | 24.3% |   |   |   |   |   |   |
| Dioxins and furans - as WHO TEQ | 3 |   |   |   |   |   |   |   |   | 2 | 69.1% | 1 | 30.9% |   |   |   |   |   |   |
| Ethylbenzene | 1 |   |   |   |   |   |   | 1 | 100 % |   |   |   |   |   |   |   |   |   |   |
| Fluorine and total inorganic fluorine compounds - as HF | 3 |   |   | 1 | 78.9% |   |   | 1 | 15.0% |   |   | 1 | 6.09% |   |   |   |   |   |   |
| Formaldehyde | 5 |   |   |   |   | 1 | 0.71% | 1 | 0.05% |   |   | 3 | 99.2% |   |   |   |   |   |   |
| Hexachloro-cyclohexane (all isomers) | 2 |   |   |   |   |   |   |   |   | 2 | 100 % |   |   |   |   |   |   |   |   |
| Hydrochloro-fluorocarbons (HCFCs) | 17 |   |   |   |   |   |   |   |   | 17 | 100 % |   |   |   |   |   |   |   |   |
| Hydrofluoro-carbons (HFCs) | 5 | 1 | 9.94% |   |   |   |   | 2 | 67.4% |   |   |   |   |   |   | 2 | 22.7% |   |   |
| Hydrogen chloride | 3 |   |   |   |   |   |   |   |   | 3 | 100 % |   |   |   |   |   |   |   |   |
| Hydrogen cyanide | 1 |   |   |   |   |   |   | 1 | 100 % |   |   |   |   |   |   |   |   |   |   |
| Lead | 1 |   |   |   |   |   |   |   |   |   |   | 1 | 100% |   |   |   |   |   |   |
| Manganese | 5 |   |   |   |   | 1 | 34.7% |   |   | 2 | 25.5% | 2 | 39.8% |   |   |   |   |   |   |
| Mercury | 8 |   |   |   |   | 1 | 10.9% |   |   | 6 | 76.2% | 1 | 12.9% |   |   |   |   |   |   |
| Methane | 106 | 16 | 13.2% |   |   | 1 | 0.17% | 3 | 1.93% | 61 | 81.6% |   |   | 24 | 3.00% | 1 | 0.14% |   |   |
| Methyl chloride | 1 |   |   |   |   |   |   | 1 | 100 % |   |   |   |   |   |   |   |   |   |   |
| Methyl chloroform | 2 |   |   |   |   |   |   |   |   | 2 | 100 % |   |   |   |   |   |   |   |   |
| Methylene chloride | 2 |   |   |   |   |   |   | 2 | 100 % |   |   |   |   |   |   |   |   |   |   |
| Naphthalene | 1 |   |   |   |   | 1 | 100 % |   |   |   |   |   |   |   |   |   |   |   |   |
| Nickel | 5 | 1 | 28.6% |   |   | 2 | 32.0% |   |   | 2 | 39.4% |   |   |   |   |   |   |   |   |
| Nitrogen oxides, NO and NO2 as NO2 | 23 | 9 | 47.2% |   |   | 3 | 15.3% | 3 | 16.3% | 5 | 14.6% | 3 | 6.65% |   |   |   |   |   |   |
| Nitrous oxide | 2 | 1 | 69.5% |   |   |   |   |   |   | 1 | 30.6% |   |   |   |   |   |   |   |   |
| Non-methane volatile organic compounds (NMVOCs) | 41 | 18 | 33.7% |   |   | 2 | 0.40% | 9 | 15.1% | 1 | 0.07% | 2 | 1.83% |   |   | 4 | 47.3% | 5 | 1.60% |
| Particulate matter - PM10 and smaller | 20 | 2 | 8.56% | 1 | 2.59% | 8 | 46.5% | 1 | 14.7% |   |   |   |   | 9 | 27.7% |   |   |   |   |
| Particulate matter - total | 4 |   |   |   |   |   |   |   |   |   |   |   |   | 4 | 100 % |   |   |   |   |
| Particulates - PM2.5 and smaller only | 6 | 1 | 17.0% |   |   | 2 | 32.2% |   |   | 3 | 50.8% |   |   |   |   |   |   |   |   |
| Perfluoro-carbons (PFCs) | 3 |   |   | 1 | 7.79% |   |   | 2 | 92.2% |   |   |   |   |   |   |   |   |   |   |
| Phenols - total as C | 1 |   |   |   |   | 1 | 100 % |   |   |   |   |   |   |   |   |   |   |   |   |
| Polycyclic aromatic hydrocarbons (PAHs) (four indicator compounds of LRTAP) | 2 |   |   |   |   |   |   |   |   | 2 | 100 % |   |   |   |   |   |   |   |   |
| Selenium | 2 |   |   |   |   | 2 | 100 % |   |   |   |   |   |   |   |   |   |   |   |   |
| Styrene | 1 |   |   |   |   |   |   | 1 | 100 % |   |   |   |   |   |   |   |   |   |   |
| Sulphur hexafluoride | 2 |   |   |   |   |   |   | 2 | 100 % |   |   |   |   |   |   |   |   |   |   |
| Sulphur oxides, SO2 and SO3 as SO2 | 7 | 3 | 78.3% | 1 | 7.29% | 3 | 14.4% |   |   |   |   |   |   |   |   |   |   |   |   |
| Tetrachloro-ethane | 1 |   |   |   |   |   |   |   |   | 1 | 100 % |   |   |   |   |   |   |   |   |
| Toluene | 9 | 1 | 44.3% |   |   |   |   | 4 | 39.7% | 1 | 0.20% |   |   |   |   |   |   | 3 | 15.8% |
| Vanadium | 1 | 1 | 100 % |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |   |
| Xylene - all isomers | 2 | 1 | 87.7% |   |   |   |   | 1 | 12.3% |   |   |   |   |   |   |   |   |   |   |

#### Table 3: Total ART emissions to water by pollutant and industry sector for 2023. All values are kg.

| Pollutant name | Reporting threshold (kg) | Total Release (kg) | 1 - Energy sector | 4 - Chemical industry | 5 - Waste and wastewater m/ment | 6 - Paper and wood production and processing | 7 - Intensive livestock production and aquaculture | 8 - Animal and vegetable products from the food and beverage sector |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Aldrin | 0.001 | 0.0035 |  |  | 0.0035 |  |  |  |
| Ammonia | 20 | 10,787,704 | 1,300 | 86.0 | 8,723,476 |  |  | 2,062,842 |
| Anthracene | 0.1 | 38.8 |  | 3.17 | 35.7 |  |  |  |
| Arsenic | 5 | 490 | 20.0 | 17.8 | 452 |  |  |  |
| Asbestos | 0.1 | 76.6 |  |  | 76.6 |  |  |  |
| Azamethiphos | 0.001 | 179 |  |  |  |  | 179 |  |
| Benzene | 10 | 429 | 429 |  |  |  |  |  |
| Benzo (g,h,i) perylene | 0.1 | 10.14 |  | 0.16 | 9.98 |  |  |  |
| Brominated diphenylethers - total as Br | 0.1 | 0.50 |  |  | 0.50 |  |  |  |
| Cadmium | 1.0 | 70.3 | 3.00 | 3.37 | 29.6 |  |  | 34.3 |
| Chlorides - total as Cl | 2,000,000 | 53,340,675 | 5,630,67 | 2,630,000 | 45,080,000 |  |  |  |
| Chloroform | 5 | 67.5 |  |  | 67.5 |  |  |  |
| Chromium | 20 | 470 |  | 37.7 | 398 |  |  | 34.0 |
| Copper | 20 | 27,107 | 67.2 | 97.9 | 5,997 |  | 17,659 | 3,286 |
| Cyanides - total as CN | 50 | 733 |  |  | 733 |  |  |  |
| Cypermethrin | 0.005 | 1.30 |  |  | 1.30 |  |  |  |
| Deltamethrin | 0.002 | 3.98 |  |  |  |  | 3.98 |  |
| Di(2-ethylhexyl) phthalate | 0.100 | 1,766 |  |  | 1,766 |  |  |  |
| Diazinon | 0.01 | 0.72 |  |  | 0.72 |  |  |  |
| Dichlorvos | 0.001 | 0.01 |  |  | 0.01 |  |  |  |
| Dieldrin | 0.001 | 0.004 |  |  | 0.004 |  |  |  |
| Diuron | 0.05 | 5.86 |  |  | 5.86 |  |  |  |
| Emamectin benzoate | 0.001 | 39.7 |  |  |  |  | 39.7 |  |
| Endrin | 0.001 | 0.004 |  |  | 0.004 |  |  |  |
| Ethylbenzene | 10 | 108 | 108 |  |  |  |  |  |
| Fluoranthene | 0.1 | 10.2 |  | 4.50 | 5.74 |  |  |  |
| Fluorides - total as F | 2,000 | 178,150 |   |   | 178,150 |   |   |   |
| Halogenated organic compounds - total as AOX | 1,000 | 84,370 |   |   | 84,370 |   |   |   |
| Hexachlorocyclohexane - all isomers | 0.01 | 1.22 |   |   | 1.22 |   |   |   |
| Iron | 1,000 | 403,063 | 1,123 |   | 401,940 |   |   |   |
| Isoproturon | 0.01 | 0.14 |   |   | 0.14 |   |   |   |
| Lead | 20 | 762 | 34.0 |   | 728 |   |   |   |
| Lindane | 0.1 | 0.63 |   |   | 0.63 |   |   |   |
| Manganese | 200 | 2,190 |   |   |   |   |   | 2,190 |
| Mercury | 0.1 | 28.4 | 0.34 | 0.71 | 27.2 | 0.13 |   |   |
| Methylene chloride | 10 | 117 |   | 61.8 | 55.5 |   |   |   |
| Naphthalene | 1.0 | 1025 | 9.00 | 2.07 | 1,014 |   |   |   |
| Nickel | 20 | 5,425 |   | 98.6 | 4,487 |   |   | 840 |
| Nitrogen - total as N | 50,000 | 32,148,490 |   | 158,000 | 17,199,129 |   | 10,348,758 | 4,442,603 |
| Nonylphenol ethoxylates | 1.0 | 3,621 |   |   | 3,621 |   |   |   |
| Nonylphenols | 1.0 | 580 |   |   | 580 |   |   |   |
| Nonyphenol and nonylphenol ethoxylates | 1.0 | 2,436 |   |   | 2,436 |   |   |   |
| Octylphenol and octylphenol ethoxylates | 1.0 | 4.69 |   |   | 4.69 |   |   |   |
| Octylphenols | 1.0 | 4.69 |   |   | 4.69 |   |   |   |
| Organic tin compounds - total as Sn | 5.0 | 11.1 |   |   | 11.1 |   |   |   |
| Permethrin | 0.001 | 6.90 |   |   | 6.90 |   |   |   |
| Phenols - total as C | 20 | 3,096 | 1,463 | 1,535 | 97.1 |   |   |   |
| Phosphorus - total as P | 5,000 | 4,008,875 |   | 35,900 | 1,662,850 |   | 1,526,921 | 783,204 |
| Polychlorinated biphenyls | 0.001 | 0.60 |   |   | 0.60 |   |   |   |
| Polycyclic aromatic hydrocarbons (PAHs) | 1.0 | 72.8 |   | 3.14 | 69.7 |   |   |   |
| Simazine | 0.01 | 0.011 |   |   | 0.011 |   |   |   |
| Toluene | 10 | 411 | 374 | 37.2 |   |   |   |   |
| Total organic carbon or COD/3 | 50,000 | 70,869,274 |   | 1,176,274 | 12,585,491 |   | 38,798,122 | 18,309,387 |
| Tributyltin compounds | 0.005 | 0.63 |   |   | 0.63 |   |   |   |
| Trichloroethylene | 0.01 | 1.73 |   | 1.73 |   |   |   |   |
| Trifluralin | 0.001 | 0.03 |   |   | 0.03 |   |   |   |
| Vinyl chloride | 1.0 | 2.23 |   |   | 2.23 |   |   |   |
| Xylene - all isomers | 10 | 263 | 210 | 26.7 | 26.2 |   |   |   |
| Zinc | 100 | 64,583 |   | 585 | 26,772 |   | 31,522 | 5,704 |

#### Table 4: Number of sites reporting ART emissions to water, and percentage of total ART emissions released, by sector and pollutant for 2023.

| **Pollutant**  | **ART Sites** | **Energy Sites** | **Energy %**  | **Chemical Sites** | **Chemical %**  | **Waste Sites** | **Waste %**  | **Paper/ Wood Sites** | **Paper/ Wood %**  | **Live-stock/ Aqua Sites** | **Live-stock/ Aqua %**  | **Food/ Beverage Sites** | **Food/ Beverage %**  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| Aldrin | 1 |   |   |   |   | 1 | 100% |   |   |   |   |   |   |
| Ammonia | 77 | 1 | 0.01% | 2 | 0.001% | 73 | 80.9% |   |   |   |   | 1 | 19.1% |
| Anthracene | 59 |   |   | 1 | 8.18% | 58 | 91.8% |   |   |   |   |   |   |
| Arsenic | 26 | 2 | 4.08% | 1 | 3.63% | 23 | 92.3% |   |   |   |   |   |   |
| Asbestos | 73 |   |   |   |   | 73 | 100% |   |   |   |   |   |   |
| Azamethiphos | 44 |   |   |   |   |   |   |   |   | 44 | 100% |   |   |
| Benzene | 3 | 3 | 100% |   |   |   |   |   |   |   |   |   |   |
| Benzo (g,h,i) perylene | 28 |   |   | 1 | 1.61% | 27 | 98.4% |   |   |   |   |   |   |
| Brominated diphenylethers - total as Br | 3 |   |   |   |   | 3 | 100% |   |   |   |   |   |   |
| Cadmium | 18 | 2 | 4.27% | 1 | 4.79% | 13 | 42.1% |   |   |   |   | 2 | 48.8% |
| Chlorides - total as Cl | 12 | 1 | 10.6% | 1 | 4.93% | 10 | 84.5% |   |   |   |   |   |   |
| Chloroform | 4 |   |   |   |   | 4 | 100% |   |   |   |   |   |   |
| Chromium | 8 |   |   | 1 | 8.03% | 6 | 84.7% |   |   |   |   | 1 | 7.24% |
| Copper | 80 | 1 | 0.25% | 2 | 0.36% | 58 | 22.1% |   |   | 17 | 65.2% | 2 | 12.1% |
| Cyanides - total as CN | 8 |   |   |   |   | 8 | 100% |   |   |   |   |   |   |
| Cypermethrin | 14 |   |   |   |   | 14 | 100% |   |   |   |   |   |   |
| Deltamethrin | 34 |   |   |   |   |   |   |   |   | 34 | 100% |   |   |
| Di(2-ethylhexyl) phthalate | 73 |   |   |   |   | 73 | 100% |   |   |   |   |   |   |
| Diazinon | 14 |   |   |   |   | 14 | 100% |   |   |   |   |   |   |
| Dichlorvos | 1 |   |   |   |   | 1 | 100% |   |   |   |   |   |   |
| Dieldrin | 1 |   |   |   |   | 1 | 100% |   |   |   |   |   |   |
| Diuron | 29 |   |   |   |   | 29 | 100% |   |   |   |   |   |   |
| Emamectin benzoate | 98 |   |   |   |   |   |   |   |   | 98 | 100% |   |   |
| Endrin | 1 |   |   |   |   | 1 | 100% |   |   |   |   |   |   |
| Ethylbenzene | 2 | 2 | 100% |   |   |   |   |   |   |   |   |   |   |
| Fluoranthene | 21 |   |   | 2 | 43.9% | 19 | 56.1% |   |   |   |   |   |   |
| Fluorides - total as F | 25 |   |   |   |   | 25 | 100% |   |   |   |   |   |   |
| Halogenated organic compounds - total as AOX | 25 |   |   |   |   | 25 | 100% |   |   |   |   |   |   |
| Hexachlorocyclohexane - all isomers | 16 |   |   |   |   | 16 | 100% |   |   |   |   |   |   |
| Iron | 55 | 1 | 0.28% |   |   | 54 | 99.7% |   |   |   |   |   |   |
| Isoproturon | 7 |   |   |   |   | 7 | 100% |   |   |   |   |   |   |
| Lead | 12 | 1 | 4.46% |   |   | 11 | 95.5% |   |   |   |   |   |   |
| Lindane | 3 |   |   |   |   | 3 | 100% |   |   |   |   |   |   |
| Manganese | 1 |   |   |   |   |   |   |   |   |   |   | 1 | 100% |
| Mercury | 47 | 2 | 1.20% | 2 | 2.49% | 42 | 95.8% | 1 | 0.47% |   |   |   |   |
| Methylene chloride | 3 |   |   | 1 | 52.7% | 2 | 47.3% |   |   |   |   |   |   |
| Naphthalene | 75 | 1 | 0.88% | 1 | 0.20% | 73 | 98.9% |   |   |   |   |   |   |
| Nickel | 44 |   |   | 1 | 1.82% | 42 | 82.7% |   |   |   |   | 1 | 15.48% |
| Nitrogen - total as N | 162 |   |   | 1 | 0.49% | 52 | 53.5% |   |   | 107 | 32.2% | 2 | 13.82% |
| Nonylphenol ethoxylates | 73 |   |   |   |   | 73 | 100% |   |   |   |   |   |   |
| Nonylphenols | 70 |   |   |   |   | 70 | 100% |   |   |   |   |   |   |
| Nonyphenol and nonylphenol ethoxylates | 73 |   |   |   |   | 73 | 100% |   |   |   |   |   |   |
| Octylphenol and octylphenol ethoxylates | 3 |   |   |   |   | 3 | 100% |   |   |   |   |   |   |
| Octylphenols | 3 |   |   |   |   | 3 | 100% |   |   |   |   |   |   |
| Organic tin compounds - total as Sn | 2 |   |   |   |   | 2 | 100% |   |   |   |   |   |   |
| Permethrin | 22 |   |   |   |   | 22 | 100% |   |   |   |   |   |   |
| Phenols - total as C | 9 | 4 | 47.3% | 2 | 49.6% | 3 | 3.14% |   |   |   |   |   |   |
| Phosphorus - total as P | 175 |   |   | 2 | 0.90% | 47 | 41.5% |   |   | 124 | 38.1% | 2 | 19.5% |
| Polychlorinated biphenyls | 22 |   |   |   |   | 22 | 100% |   |   |   |   |   |   |
| Polycyclic aromatic hydrocarbons (PAHs) | 23 |   |   | 1 | 4.31% | 22 | 95.7% |   |   |   |   |   |   |
| Simazine | 1 |   |   |   |   | 1 | 100% |   |   |   |   |   |   |
| Toluene | 3 | 2 | 91.0% | 1 | 9.04% |   |   |   |   |   |   |   |   |
| Total organic carbon or COD/3 | 207 |   |   | 2 | 1.66% | 39 | 17.7% |   |   | 163 | 54.8% | 3 | 25.8% |
| Tributyltin compounds | 29 |   |   |   |   | 29 | 100% |   |   |   |   |   |   |
| Trichloro-ethylene | 1 |   |   | 1 | 100% |   |   |   |   |   |   |   |   |
| Trifluralin | 1 |   |   |   |   | 1 | 100% |   |   |   |   |   |   |
| Vinyl chloride | 1 |   |   |   |   | 1 | 100% |   |   |   |   |   |   |
| Xylene - all isomers | 5 | 2 | 79.8% | 2 | 10.2% | 1 | 9.95% |   |   |   |   |   |   |
| Zinc | 187 |   |   | 3 | 0.91% | 55 | 41.5% |   |   | 127 | 48.8% | 2 | 8.83% |

#### Waste transfers

#### Table 5: Offsite waste transfers by industry sector and type for 2023. All values are tonnes.

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Industry sector** | **Hazardous Disposal** | **Hazardous Recovery** | **Non- Hazardous Disposal** | **Non-Hazardous Recovery** |
| 1 - Energy sector | 4,750 | 2,895 | 3,209 | 673 |
| 2 - Production and processing of metals | 3,000 | 1,408 | 221 | 82,384 |
| 3 - Mineral industry | 542 | 299 | 3,643 | 5,676 |
| 4 - Chemical industry | 187,532 | 43,352 | 31,973 | 185,096 |
| 5 - Waste and waste-water management | 142,550 | 150,080 | 2,710,184 | 4,141,175 |
| 6 - Paper and wood production and processing | 674 | 6,524 | 6,955 | 6,556 |
| 7 - Intensive livestock production and aquaculture | 24.5 | -  | 4,260 | 56,405 |
| 8 - Animal and vegetable products from the food and beverage sector | 30,443 | 545 | 56,029 | 133,591 |
| 9 - Other activities | 368 | 1,716 | 6,897 | 9,606 |
| **Total** | **369,884** | **206,819** | **2,823,371** | **4,621,162** |

#### Notes:

1. More detailed data on waste transfers are available on the [SEPA website](https://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/waste-data-for-scotland/), which provides extensive reporting on waste data for Scotland.

2.The thresholds for reporting offsite waste transfers are 2 tonnes for hazardous and 2,000 tonnes for non-hazardous. No ‘BRT’ report is necessary as it is assumed all sites will produce some waste.

3. ‘Disposal” and “Recovery’ mean any of the operations provided for in Annex IIA and Annex IIB of [EU Waste Directive 2006/12/EC](https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX:32006L0012)

## 1.3 Greenhouse gas emissions

Emissions of four individual greenhouse gases, and two groups of greenhouse gases are reportable to SPRI.

Three of these are ‘Fluorinated greenhouse gases’ or ‘F-gases’; a family of chemicals that contain fluorine which are also powerful greenhouse gases that contribute to climate change. The UK has a regulation[[2]](#footnote-3) on the use of F-gases like hydrofluorocarbons (HFCs), perfluorocarbons (PFCs) and sulphur hexafluoride (SF6). Note that the Kyoto ‘basket’ of greenhouse gases includes nitrogen trifluoride (an F-gas) which is not reportable to SPRI.



#### Global warming potential: a note on the use of ‘carbon dioxide equivalent’ (CO2e) mass

The Intergovernmental Panel on Climate Change (IPCC) explains Global Warming Potentials as: “Global Warming Potentials (GWP) are calculated as the ratio of the radiative forcing of one kilogramme greenhouse gas emitted to the atmosphere to that from one kilogramme CO2 over a period of time.”[[3]](#footnote-4)

The GWP values used in this publication are taken from the Intergovernmental Panel on Climate Change (IPCC) Fifth Assessment Report (AR5)[[4]](#footnote-5) over a 100-year period (in line with the approach taken for the Scottish Greenhouse Gas Statistics 2022.[[5]](#footnote-6))

The GWPs used for the individual greenhouse gases are:

|  |  |  |
| --- | --- | --- |
| **Greenhouse gas** | **Lifetime (years)** | **100 years GWP (AR5)** |
| Carbon dioxide | 50-200 | 1 |
| Methane | 12 | 28 |
| Nitrous oxide | 114 | 265 |
| Sulphur hexafluoride | 3200 | 23,500 |

For grouped gases:

It is currently not possible for us to reliably convert these to carbon dioxide equivalent (CO2e) values as we do not formally collect information identifying individual species of hydrofluorocarbons (HFC) and perfluorocarbons.

* For hydrofluorocarbons, we have used the value for HFC-23 (100 years GWP (AR5) = 12,400).

In reality, most HFC releases are known to be of refrigerants and the gases most commonly specifically identified to SPRI have GWPs of between 1,000 and 4,000, suggesting that this assumption is therefore likely to be an overestimate.

* For perfluorocarbons, we have used the value for PFC-116 (100 years GWP (AR5) = 11,100). We have very limited information on the species of PFC released from SPRI sites.

SPRI provides information on greenhouse gas emissions from industrial sites only. The Scottish Greenhouse Gas Statistics is the key tool for understanding the origins and magnitudes of greenhouse gas emissions in Scotland.

#### Long term view of global warming potential of SPRI releases

Figures 1 and 2 show the global warming potential of total emissions from SPRI since 2007 (when the current regulations which our core reporting is based on came into force).

The long-term trend continues to decrease since 2007, with year-to-year variations reflecting production outputs.

#### Figure 1: Global warming potential of greenhouse gases reported to SPRI since 2007 (MtCO2e).

#### Figure 2: Global warming potential of greenhouse gases reported to SPRI since 2007 (MtCO2e), excluding carbon dioxide and methane, to show relative scale of minor gases

#### Long term trends in greenhouse gas emissions

Carbon dioxide, methane and nitrous oxide emissions continue to follow a downward trend over the last five years (Figure 3).

Hydrofluorocarbons, perfluorocarbons and sulphur hexafluoride do not follow this clear downward trend (Figure 4). For hydrofluorocarbons, this is partly because emissions are generally unplanned losses of refrigerant from chiller systems, from a relatively small number of sites. Perfluorocarbons and sulphur hexafluoride are now only reported from four sites in Scotland, and the biggest emissions for both come from one site which tends to be highly consistent between years. Those emissions are significantly lower compared to carbon dioxide, methane and nitrous oxide.

#### Figure 3: Annual SPRI greenhouse gas emissions normalised against 2007 values.

#### Figure 4: Annual SPRI F-gas emissions normalised against 2007 values.

#### Short term variations in greenhouse gas emissions

The overall global warming potential of greenhouse gas emissions from the SEPA-regulated industrial sites which report to SPRI (measured as kilograms of carbon dioxide equivalent (kg CO2e)) decreased by 13.5% between 2022 and 2023.

The top 10 sites decreased their greenhouse gas emissions by almost 19%. Two major emitters represent 68% of the overall decrease in Scotland.

Figure 5 shows the global warming potential of emissions by industry sector for 2022 and 2023. For reference, figures for the three F-gases are provided in Figure 6.

#### Figure 5: Global warming potential of greenhouse gases reported to SPRI by industry sector for 2022 and 2023 (kgCO2e)

#### Figure 6: Emissions of F-gases reported to SPRI by industry sector for 2022 and 2023 (kgCO2e).

#### Notes on year-to-year variation in greenhouse gas emissions

In 2023, the overall global warming potential of greenhouse gas emissions from the SEPA-regulated industrial sites which report to SPRI was estimated to be 9.69 million tonnes carbon dioxide equivalent (MtCO2e). This is 13.5% lower than the 2022 figure of 11.20 MtCO2e (-1.51 MtCO2e). Carbon dioxide accounted for the 93.5% of the total GHG emissions (9.05 MtCO2e). Other greenhouse gases constituted smaller proportions with methane accounting for 5.69%, nitrous oxide for 0.09%, hydrofluorocarbons for 0.13%, perfluorocarbons for 0.59% and sulphur hexafluoride for 0.04%.

##### Carbon dioxide

Overall, there is a 13.5% decrease in 2023 from 2022. The 2023 value is the lowest recorded to date and it is 10% lower than the 2021 value and 15% lower than the 2020 value.

The composition of the top ten emitters has remained largely consistent, with several facilities maintaining their positions across both years, though there have also been notable shifts in rankings. Among the top three emitters, significant changes in emission values were observed, reflecting dynamic shifts within this group. The carbon dioxide emissions from the top ten sites decreased by almost 19%. This figure hides a large amount of variability due to the shifts and changes affecting the top emitters, resulting in significant fluctuations within this group.

All the sectors have reduced their emissions except the Metals and Waste and waste-water management sector, which saw increases of 18% and 0.4%, respectively, compared to last year. Energy from Waste incineration sites increased by 9% compared to 2022.

The Energy sector reported a 23% decrease in emissions. Among the ten largest sites, each releasing over 300,000,000 kg, four sites achieved significant reductions compared to their 2022 levels, while the remaining six sites recorded only minor increases.

The Food and Drink sector had a decrease of 3%, with only one site reporting an increase.

The Chemical (-11%), Mineral (-1%) and Paper and wood (-12%) sectors have decreased their emissions compared to the previous year. Intensive livestock production and aquaculture and Other activities sector did not have any reported emissions in 2023.

##### Methane

Overall emissions decreased by 15.2%. As for carbon dioxide, this is the lowest value ever reported. 2023 emissions are 23% lower than the average of the past five years.

Landfill emissions make up 79% of 2023’s total methane emission. It is important to note that landfill data is often modelled.

##### Nitrous oxide

There was a decrease of 31% compared to 2022. Only two sites have reported this pollutant.

##### Hydrofluorocarbons (HFCs)

There was an 30% reduction in emissions compared to the previous year. All the reported emissions of HFCs are accidental. In 2023, no large accidental releases were reported.

##### Perfluorocarbons (PFCs)

PFCs have increased by 12.4% compared to 2022. The dominant site, which accounts for 85% of the total emissions, reported a 9% increase from 2022.

##### Sulphur hexafluoride

Only two SPRI sites reported ART emission values for sulphur hexafluoride in 2023, and the total has decreased by 36% from 2022.

## 1.4 SPRI reporting data

#### SPRI sites by Activity code

The SPRI activity code reflects the activity or activities permitted to take place on a site as specified in the site authorisation. The codes allow Scottish sites to be compared to European sites by providing a common system of categorising industrial activities. The codes are largely the same as those listed in the European Pollutant Release and Transfer Register (E-PRTR) Regulation.[[6]](#footnote-7)

Note that when we refer to ‘Industry sectors’ we mean the top-level Activity code (e.g., Industry sector 1 is Energy).

#### Table 6: Number of sites required to report to SPRI in 2023 under each main Activity code, in bold (including numbers per sub-code, not in bold).

An asterisk indicates that there is no capacity threshold.

| **Code** | **Activity** | **Capacity Threshold** | **Operator submits return** | **Waste system transfer** |
| --- | --- | --- | --- | --- |
| **1** | **Energy sector** | **45** |
| 1(a) | Mineral oil and gas refineries | \* | 15 |  |
| 1(b) | Installations for gasification and liquefaction | \* | 2 |  |
| 1(c) | Thermal power stations and other combustion installations | With a heat input of 50 megawatts (MW) | 28 |  |
| **2** | **Production and processing of metals** | **15** |
| 2(c).i | Hot-rolling mills | With a capacity of 20 tonnes of crude steel per hour | 1 |  |
| 2(c).ii | Smitheries with hammers | With an energy of 50 kilojoules per hammer, where the calorific power used exceeds 20 MW | 1 |  |
| 2(d) | Ferrous metal foundries | With a production capacity of 20 tonnes per day | 1 |  |
| 2(e).i | For the production of non-ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes | \* | 2 |  |
| 2(e).ii | For the smelting, including the alloying, of non-ferrous metals, including recovered products (refining, foundry casting, etc.) | With a melting capacity of 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals | 2 |  |
| 2(f) | Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process | Where the volume of the treatment vats equals 30m3 | 8 |  |
| **3** | **Mineral industry** | **23** |
| 3(a) | Underground mining and related operations | \* | 1 |  |
| 3(b) | Opencast mining | Where the surface of the area being mined equals 25 hectares | 17 |  |
| 3(c).i | Cement clinker in rotary kilns | With a production capacity of 500 tonnes per day | 1 |  |
| 3(e) | Installations for the manufacture of glass, including glass fibre | With a melting capacity of 20 tonnes per day | 3 |  |
| 3(g) | Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain | With a production capacity of 75 tonnes per day, or with a kiln capacity of 4m3 and with a setting density per kiln of 300 kg/m3 | 1 |  |
| **4** | **Chemical industry** | **36** |
| 4(a) | Chemical installations for the production on an industrial scale of basic organic chemicals, such as: | \* | 1 |  |
| 4(a).i | Simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic) | \* | 5 |  |
| 4(a).ii | Oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters, acetates, ethers, peroxides, epoxy resins | \* | 4 |  |
| 4(a).viii | Basic plastic materials (polymers, synthetic fibres and cellulose-based fibres) | \* | 1 |  |
| 4(a).ix | Synthetic rubbers | \* | 1 |  |
| 4(a).x | Dyes and pigments | \* | 1 |  |
| 4(b).i | Gases, such as ammonia, chlorine or hydrogen chloride, fluorine or hydrogen fluoride, carbon oxides, sulphur compounds, nitrogen oxides, hydrogen, sulphur dioxide, carbonyl chloride | \* | 6 |  |
| 4(b).ii | Acids, such as chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid, oleum, sulphurous acids | \* | 2 |  |
| 4(b).iv | Salts, such as ammonium chloride, potassium chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate | \* | 2 |  |
| 4(b).v | Non-metals, metal oxides or other inorganic compounds such as calcium carbide, silicon, silicon carbide | \* | 4 |  |
| 4(d) | Chemical installations for the production on an industrial scale of basic plant health products and of biocides | \* | 2 |  |
| 4(e) | Installations using a chemical or biological process for the production on an industrial scale of basic pharmaceutical products | \* | 6 |  |
| 4(f) | Installations for the production on an industrial scale of explosives and pyrotechnic products | \* | 1 |  |
| **5** | **Waste and wastewater management** | **507** |
| 5(a) | Installations for the recovery or disposal of hazardous waste. | Receiving 10 tonnes per day | 44 | 17 |
| 5(b) | Installations for the incineration of municipal waste | With a capacity of 3 tonnes per hour | 17 |  |
| 5(c) | Installations for the disposal of non-hazardous waste | With a capacity of 50 tonnes per day | 12 | 255 |
| 5(d) | Landfills (excluding landfills of inert waste) | Receiving 10 tonnes per day or with a total capacity of 25,000 tonnes | 72 | 2 |
| 5(e) | Installations for the disposal or recycling of animal carcasses and animal waste | With a treatment capacity of 10 tonnes per day | 8 | 1 |
| 5(f).i | Municipal wastewater treatment plants | With a capacity below 100,000 population equivalent | 59 |  |
| 5(f).ii | Municipal wastewater treatment plants | With a capacity of 100,000 population equivalent | 14 |  |
| 5(g) | Independently operated industrial wastewater treatment plants which serve one or more activities of this list | With a capacity of 10,000m3 per day | 2 |  |
| 5(h).v | Recovery, or a mix of recovery and disposal, of non-hazardous waste with a capacity exceeding 75 tonnes per day | When the only waste treatment activity carried out is anaerobic digestion, the capacity threshold for this activity shall be 100 tonnes per day. | 4 |  |
| **6** | **Paper and wood production and processing** | **37** |
| 6(a) | Industrial plants for the production of pulp from timber or similar fibrous materials | \* | 1 |  |
| 6(b) | Industrial plants for the production of paper and board and other primary wood products (such as chipboard, fibreboard and plywood) | With a production capacity of 20 tonnes per day | 8 |  |
| 6(c) | Industrial plants for the preservation of wood and wood products with chemicals | With a production capacity of 50m3 per day | 28 |  |
| **7** | **Intensive livestock production and aquaculture** | **483** |
| 7(a).i | Installations for the intensive rearing of poultry | With 40,000 places for poultry | 95 |  |
| 7(a).ii | Installations for the intensive rearing of pigs | With 2,000 places for production pigs (over 30 kg) | 13 |  |
| 7(a).iii | Installations for the intensive rearing of pigs | With 750 places for sows | 2 |  |
| 7(b).i | Intensive aquaculture | Not exceeding 1,000 tonnes of fish and shellfish per year | 149 |  |
| 7(b).ii | Intensive aquaculture | With 1,000 tonnes of fish and shellfish per year | 224 |  |
| **8** | **Animal and vegetable products from the food and beverage sector** | **56** |
| 8(a) | Slaughterhouses | With a carcass production capacity of 50 tonnes per day | 18 |  |
| 8(b).i | (i) Animal raw materials (other than milk) | With a finished product production capacity of 75 tonnes per day | 14 |  |
| 8(b).ii | (ii) Vegetable raw materials | With a finished product production capacity of 300 tonnes per day (average value on a quarterly basis) | 19 |  |
| 8(c) | Treatment and processing of milk | With a capacity to receive 200 tonnes of milk or more per day (average value on an annual basis) | 5 |  |
| **9** | **Other activities** | **19** |
| 9(a) | Plants for the pre-treatment (operations such as washing, bleaching, mercerization) or dyeing of fibres or textiles | With a treatment capacity of 10 tonnes per day | 2 |  |
| 9(b) | Plants for the tanning of hides and skins | With a treatment capacity of 12 tonnes of finished product per day | 3 |  |
| 9(c) | Installations for the surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating | With a consumption capacity of 150 kg per hour or 200 tonnes per year | 12 |  |
| 9(e) | Installations for the building of, and painting or removal of paint from ships | With a capacity for ships 100m long | 2 |  |
| **10** | **Radioactive Substances sites** | **62** |
| 10(a) | All nuclear installations (including plants undergoing decommissioning) and all non-nuclear installations holding authorisation for air, water and waste water releases: Radioactive substances activity – nuclear |  | 5 |  |
| 10(b) | All nuclear installations (including plants undergoing decommissioning) and all non-nuclear installations holding authorisation for air, water and waste water releases: Radioactive substances activity – non- nuclear |  | 57 |  |
| **Total sites required to report to SPRI in 2023** | **1,283** |

275 sites which have an activity of waste handling (under industry *sector 5 - Waste and wastewater management*) have SPRI data taken from their Waste Licensed Site Return data submission. The data submitted is only for waste and is provided as a condition of their licence.

#### Pollutants reported by Activity code

As noted above, the quantitative figures provided in this statistical release include only those reports of pollutants at levels above reporting thresholds (ART). SPRI also requires all sites to report where they do emit a pollutant but at a level below reporting thresholds (BRT), and there may be substantial numbers of these unquantified minor releases.

The graph shows the total number of individual pollutant releases reported by each industry sector, identified as either ART or BRT. For example, Energy sector sites reported 346 individual emissions to air, of which 249 were ART. (Tables 2 and 4 show more detail on the numbers of sites reporting each pollutant at ART).

A full breakdown by pollutant is included in the accompanying datasheet.

#### Figure 7: Number of individually reported emissions to air and water at above and below reporting thresholds in each industry area for 2023.

# 2. Scope of this statistical release

We have focussed on the emissions of pollutants to the environment and on offsite waste transfers from non-waste sites, as these are the areas where SEPA receives the most enquiries, and where SPRI provides data which is both significant and unavailable elsewhere. It's important to note that we have not included discussions on the following topics in this context; however, all relevant data can be accessed on Scotland's Environment Web:

* Radioactive substances[[7]](#footnote-8)
* Releases to wastewater
* Offsite waste transfers from waste sector sites

## 2.1 User statement

SPRI provides the Scottish part of the UK Pollutant Release and Transfer Register (UK-PRTR). The UK is a Party to the UN Kyiv Protocol on Pollutant Release and Transfer Registers[[8]](#footnote-9) which aims “to enhance public access to information through the establishment of coherent, nationwide PRTRs”. The Protocol requires Parties to provide information on pollution sources to members of the public. See [Section 3](#_3._About_the) for more details.

SPRI data are also used to fulfil various other reporting requirements and obligations including those of the UK National Atmospheric Emissions Inventory (NAEI)[[9]](#footnote-10), and the UK Greenhouse Gas Inventory (UKGHGI), which fulfills the UN Kyoto Framework Convention on Climate Change (UNFCCC).[[10]](#footnote-11) Other obligatory uses are the OSPAR Convention[[11]](#footnote-12) and Scotland’s Marine Atlas.[[12]](#footnote-13)

The data are also used by central government, researchers and the general public.

## 2.2 Feedback

We welcome feedback on this publication and the data from all users including information on how and why the data are used. This helps us to understand the value of the statistics to external users. Please see our contact details at the bottom of the first page of this document.

## 2.3 Revisions

SEPA will provide information about any revisions made to published information in this statistics release and the associated datasets. Revisions could occur for various reasons, including when data from third parties is unavailable or provisional at the time of publishing or if there are subsequent methodological improvements or refinements. Requests for revisions may be made by SEPA or by Operators.

Note that revisions to individual returns may occur throughout the year. The revision process requires similar Quality Assurance (QA) checks to those carried out on annual data submissions and the return may be unavailable during this period.

Data available on Scotland’s Environment Web[[13]](#footnote-14) updates annually and will include all significant revisions to previous years. Where necessary, PRTR data revisions will be resupplied to Defra to allow the UK-PRTR to be updated.

#### Table 7: Revisions to historic SPRI pollutant emission data since last publication (all values are kg)

| **Site name** | **Dataset year** | **Pollutant** | **Medium** | **Original Mass (kg)** | **Updated Mass (kg)** |
| --- | --- | --- | --- | --- | --- |
| Poultry Unit, Overbrae Farm, Fisherie, Turriff | 2022 | Ammonia | Air | Not submitted | 5,578 |
| Poultry Unit, Overbrae Farm, Fisherie, Turriff | 2022 | Methane | Air | Not submitted | 4,533 |
| Poultry Unit, Overbrae Farm, Fisherie, Turriff | 2022 | Particulate matter - PM10 and smaller | Air | Not submitted | 1,937 |
| Poultry Unit, Overbrae Farm, Fisherie, Turriff | 2022 | Particulate matter - total | Air | Not submitted | 5,812 |
| Puldrite MCFF, Wide Firth | 2022 | Emamectin Benzoate | Water | 0 | 0.2856 |
| St Margarets Hope MCFF, Scapa Flow, Orkney | 2022 | Emamectin Benzoate | Water | 0 | 0.1375 |
| Toy Ness, Scapa Flow, Orkney | 2022 | Emamectin Benzoate | Water | 0 | 0.1344 |
| Bloody Bay MCFF, Sound of Mull | 2022 | Copper | Water | 0 | 0.1299 |
| Bloody Bay MCFF, Sound of Mull | 2022 | Zinc | Water | 0 | 2.72 |
| Bloody Bay MCFF, Sound of Mull | 2022 | Nitrogen - total as N | Water | 0 | 963 |
| Bloody Bay MCFF, Sound of Mull | 2022 | Phosphorus - total as P | Water | 0 | 133 |
| Bloody Bay MCFF, Sound of Mull | 2022 | Total organic carbon or COD/3 | Water | 0 | 3,090 |
| Camas Doun MCFF, Loch Kishorn (Site 2) | 2022 | Copper | Water | 0 | 6.54 |
| Camas Doun MCFF, Loch Kishorn (Site 2) | 2022 | Zinc | Water | 122 | 137 |
| Camas Doun MCFF, Loch Kishorn (Site 2) | 2022 | Nitrogen - total as N | Water | 0 | 48,484 |
| Camas Doun MCFF, Loch Kishorn (Site 2) | 2022 | Phosphorus - total as P | Water | 5,960 | 6,695 |
| Camas Doun MCFF, Loch Kishorn (Site 2) | 2022 | Total organic carbon or COD/3 | Water | 138,540 | 155,554 |
| Charlotte Bay MCFF, Firth of Lorn | 2022 | Copper | Water | 0 | 3.41 |
| Charlotte Bay MCFF, Firth of Lorn | 2022 | Zinc | Water | 0 | 71.4 |
| Charlotte Bay MCFF, Firth of Lorn | 2022 | Nitrogen - total as N | Water | 0 | 25,295 |
| Charlotte Bay MCFF, Firth of Lorn | 2022 | Phosphorus - total as P | Water | 0 | 3,493 |
| Charlotte Bay MCFF, Firth of Lorn | 2022 | Total organic carbon or COD/3 | Water | 77,370 | 81,155 |
| Kishorn Island MCFF, Loch Kishorn (Site 3) | 2022 | Copper | Water | 0 | 5.09 |
| Kishorn Island MCFF, Loch Kishorn (Site 3) | 2022 | Zinc | Water | 0 | 107 |
| Kishorn Island MCFF, Loch Kishorn (Site 3) | 2022 | Nitrogen - total as N | Water | 0 | 37,726 |
| Kishorn Island MCFF, Loch Kishorn (Site 3) | 2022 | Phosphorus - total as P | Water | 0 | 5,210 |
| Kishorn Island MCFF, Loch Kishorn (Site 3) | 2022 | Total organic carbon or COD/3 | Water | 86,190 | 121,038 |
| Dunstaffnage MCFF, Firth of Lorn | 2022 | Copper | Water | 0 | 4.57 |
| Dunstaffnage MCFF, Firth of Lorn | 2022 | Zinc | Water | 0 | 95.7 |
| Dunstaffnage MCFF, Firth of Lorn | 2022 | Nitrogen - total as N | Water | 0 | 33,891 |
| Dunstaffnage MCFF, Firth of Lorn | 2022 | Phosphorus - total as P | Water | 0 | 4,680 |
| Dunstaffnage MCFF, Firth of Lorn | 2022 | Total organic carbon or COD/3 | Water | 105,440 | 108,735 |
| Fishnish West MCFF, Sound of Mull (Site A) | 2022 | Copper | Water | 2,187 | 2,187 |
| Fishnish West MCFF, Sound of Mull (Site A) | 2022 | Zinc | Water | 0 | 72.7 |
| Fishnish West MCFF, Sound of Mull (Site A) | 2022 | Nitrogen - total as N | Water | 0 | 25,741 |
| Fishnish West MCFF, Sound of Mull (Site A) | 2022 | Phosphorus - total as P | Water | 0 | 3,555 |
| Fishnish West MCFF, Sound of Mull (Site A) | 2022 | Total organic carbon or COD/3 | Water | 76,770 | 82,584 |
| Port nan Leadaig MCFF, Lismore | 2022 | Copper | Water | 0 | 10.0 |
| Port nan Leadaig MCFF, Lismore | 2022 | Zinc | Water | 189 | 209 |
| Port nan Leadaig MCFF, Lismore | 2022 | Nitrogen - total as N | Water | 66,870 | 74,062 |
| Port nan Leadaig MCFF, Lismore | 2022 | Phosphorus - total as P | Water | 9,230 | 10,228 |
| Port nan Leadaig MCFF, Lismore | 2022 | Total organic carbon or COD/3 | Water | 214,530 | 237,617 |
| Sian Bay MCFF, Loch Eriboll | 2022 | Copper | Water | 0 | 5.07 |
| Sian Bay MCFF, Loch Eriboll | 2022 | Zinc | Water | 0 | 106 |
| Sian Bay MCFF, Loch Eriboll | 2022 | Nitrogen - total as N | Water | 0 | 37,542 |
| Sian Bay MCFF, Loch Eriboll | 2022 | Phosphorus - total as P | Water | 0 | 5,184 |
| Sian Bay MCFF, Loch Eriboll | 2022 | Total organic carbon or COD/3 | Water | 108,860 | 120,448 |
| Kishorn Outer MCFF, Loch Kishorn | 2022 | Copper | Water | 0 | 5.05 |
| Kishorn Outer MCFF, Loch Kishorn | 2022 | Zinc | Water | 0 | 106 |
| Kishorn Outer MCFF, Loch Kishorn | 2022 | Nitrogen - total as N | Water | 0 | 37,422 |
| Kishorn Outer MCFF, Loch Kishorn | 2022 | Phosphorus - total as P | Water | 0 | 5,168 |
| Kishorn Outer MCFF, Loch Kishorn | 2022 | Total organic carbon or COD/3 | Water | 95,030 | 120,062 |
| Shuna Island MCFF | 2022 | Copper | Water | 0 | 5.73 |
| Shuna Island MCFF | 2022 | Zinc | Water | 113 | 120 |
| Shuna Island MCFF | 2022 | Nitrogen - total as N | Water | 0 | 42,470 |
| Shuna Island MCFF | 2022 | Phosphorus - total as P | Water | 5,530 | 5,865 |
| Shuna Island MCFF | 2022 | Total organic carbon or COD/3 | Water | 128,430 | 136,258 |
| Aviemore Poultry Farm, Barry, Carnoustie, Angus | 2022 | Ammonia | Air | Not submitted | 5,780 |
| Aviemore Poultry Farm, Barry, Carnoustie, Angus | 2022 | Methane | Air | Not submitted | 0 |
| Aviemore Poultry Farm, Barry, Carnoustie, Angus | 2022 | Particulate matter - PM10 and smaller | Air | Not submitted | 5,667 |
| Aviemore Poultry Farm, Barry, Carnoustie, Angus | 2022 | Particulate matter - total | Air | Not submitted | 17,000 |
| Finnieston Farm, Letham | 2022 | Ammonia | Air | Not submitted | 2,700 |
| Finnieston Farm, Letham | 2022 | Methane | Air | Not submitted | 0 |
| Finnieston Farm, Letham | 2022 | Particulate matter - PM10 and smaller | Air | Not submitted | 1,500 |
| Finnieston Farm, Letham | 2022 | Particulate matter - total | Air | Not submitted | 4,500 |
| Douglasmuir Quarry, Glasgow | 2022 | Carbon dioxide | Air | Not submitted | 595,251 |
| Douglasmuir Quarry, Glasgow | 2022 | Particulate matter - PM10 and smaller | Air | Not submitted | 7,285 |
| Douglasmuir Quarry, Glasgow | 2022 | Particulates - PM2.5 and smaller only | Air | Not submitted | 728 |
| BioReliance Ltd, Stirling | 2022 | Tritium | Waste Water | 266 | 225 |
| Dupont Teijin Films Ltd, Dumfries | 2022 | Total organic carbon or COD/3 | Waste Water | 50.0 | BRT |
| Newton Toll Landfill Site, Elgin | 2022 | Carbon dioxide | Air | Not submitted | 43.4 |
| Newton Toll Landfill Site, Elgin | 2022 | Methane | Air | Not submitted | 19.0 |
| Ley Farm Composting Facility, Fordyce | 2022 | Carbon dioxide | Air | BRT and no value | 6,000 |
| Norbord Ltd, Morayhill, Inverness | 2022 | Carbon dioxide  | Air | 158,442,892 | 111,194,544 |
| Norbord Ltd, Morayhill, Inverness | 2022 | Non-methane volatile organic compounds (NMVOCs) | Air | 521,685 | 358,283 |
| Silberline Ltd, Banbeath Road, Leven | 2022 | Non-methane volatile organic compounds (NMVOCs) | Air | 6,870 | 107,627 |
| Silberline Ltd, Banbeath Road, Leven | 2021 | Non-methane volatile organic compounds (NMVOCs) | Air | 7,848 | 110,378 |
| Silberline Ltd, Banbeath Road, Leven | 2020 | Non-methane volatile organic compounds (NMVOCs) | Air | 106,200 | 134,924 |
| Millenium Farm, Cowieslinn, Peebles | 2022 | Ammonia | Air | 29,182 | 43,554 |
| Millenium Farm, Cowieslinn, Peebles | 2022 | Particulate matter - PM10 and smaller | Air | 13,642 | 16,223 |
| Millenium Farm, Cowieslinn, Peebles | 2022 | Particulate matter - total | Air | 40,925 | 48,669 |
| Carbon Fibers, Muir of Ord Ind Est, Rosshire | 2022 | Ammonia | Air  | 2,727 | 9,038 |
| Coca Cola, 52 Milton Rd, East Kilbride | 2022 | Carbon dioxide | Air | 9,810,500 | 2,950,342 |
| TWMA - Dales Ind Est, Peterhead | 2022 | Polycyclic aromatic hydrocarbons (PAHs) (four indicator compounds of LRTAP) | Air | 3.00 | 6.30 |
| INEOS Chemicals Grangemouth Ltd, Grangemouth | 2022 | Polycyclic aromatic hydrocarbons (PAHs) (four indicator compounds of LRTAP) | Water | 1.40 | 3.02 |
| INEOS Chemicals Grangemouth Ltd, Grangemouth | 2022 | Cyanides - total as CN | Water | 97.4 | 126 |
| Grangemouth Chemical Plant | 2022 | Copper | Water | BRT | 48.7 |
| West Cockmuir Farm, Fraserburgh | 2022 | Ammonia | Air | 19,106 | 34,715 |
| Sullom Voe Terminal, Refinery | 2022 | Total organic carbon or COD/3 | Water | 11,350 | 34,048 |
| Mallaig Harvest Station, Mallaig Harbour | 2022 | Total organic carbon or COD/3 | Waste Water | Not Emitted | 5,277,565 |
| API Foils, Houstoun Ind Est, Livingston | 2022 | Carbon monoxide | Air | BRT | 727 |
| API Foils, Houstoun Ind Est, Livingston | 2022 | Nitrogen oxides, NO and NO2 as NO2 | Air | BRT | 431 |
| API Foils, Houstoun Ind Est, Livingston | 2022 | Non-methane volatile organic compounds (NMVOCs) | Air | 33,421 | 17,440 |
| API Foils, Houstoun Ind Est, Livingston | 2022 | Particulate matter - total | Air | BRT | 54.2 |
| API Foils, Houstoun Ind Est, Livingston | 2022 | Toluene | Air | BRT | 4,358 |
| Cameronbridge Distillery, Windygates, Leven | 2022 | Ammonia | Water | 17,113 | 4.00 |
| Dundas Chemical Co, Mosspark, Dumfries | 2022 | Carbon dioxide | Air | 13,580,220 | 13,611,634 |
| Caledonian Proteins, Biggar Rd, Newarthill | 2022 | Carbon dioxide | Air | 7,877,700 | 8,574,700 |

#### Table 8: Revisions to historic SPRI waste data since last publication (all values are tonnes)

| **Site name** | **Dataset year** | **Waste type** | **Recovery or Disposal** | **Original Mass (Tonnes)** | **New Mass (Tonnes)** |
| --- | --- | --- | --- | --- | --- |
| Thornton Feed Mill, Thornton, Fife | 2022 | Non-hazardous | Disposal | 0.00  | 12.1  |
| Thornton Feed Mill, Thornton, Fife | 2022 | Non-hazardous | Recovery | 0.00  | 40.4  |
| 2 Sisters Food Group Limited, Coupar Angus | 2022 | Non-hazardous | Disposal | 48,625  | 0.00  |
| 2 Sisters Food Group Limited, Coupar Angus | 2022 | Non-hazardous | Recovery | 0.00  | 48,625  |
| Millerhill Recycling & Energy Recovery Centre | 2022 | Non-hazardous | Disposal | 39,154  | 2,463  |
| Millerhill Recycling & Energy Recovery Centre | 2022 | Non-hazardous | Recovery | 0.00  | 36,691  |
| The Moredun Foundation, Penicuik | 2022 | Non-hazardous | Disposal | 0.00  | 3.30  |
| Caledon Green Exemplar Plant, Earls Gate Park, Grangemouth, FK3 8TR | 2022 | Non-hazardous | Disposal | 0.00  | 13,053  |
| East Coast Viners Grain | 2022 | Non hazardous | Disposal | 0.00  | 54.7  |
| Cameronbridge Distillery, Windygates, Leven | 2022 | Non-hazardous | Recovery | 122,239  | 24,614  |
| Fraserburgh STW, Phingask, Fraserburgh | 2021 | Non hazardous | Disposal | 88.4  | 24.0  |
| Fraserburgh STW, Phingask, Fraserburgh | 2021 | Non hazardous | Recovery  | 2,078  | 2,142  |
| Nigg WWTW, Aberdeen | 2021 | Non hazardous | Disposal | 2,040  | 641  |
| Nigg WWTW, Aberdeen | 2021 | Non hazardous | Recovery  | 18,093  | 19,493  |
| Persley STW, Persley, Aberdeen | 2021 | Non hazardous | Disposal | 436  | 107  |
| Persley STW, Persley, Aberdeen | 2021 | Non hazardous | Recovery  | 6,744  | 7,073  |
| Peterhead STW, Burnhaven, Peterhead | 2021 | Non hazardous | Disposal | 329  | 99.4  |
| Peterhead STW, Burnhaven, Peterhead | 2021 | Non hazardous | Recovery  | 5,291  | 5,520  |
| Fraserburgh STW, Phingask, Fraserburgh | 2022 | Non hazardous | Disposal | 77.5  | 17.4  |
| Fraserburgh STW, Phingask, Fraserburgh | 2022 | Non hazardous | Recovery  | 2,172  | 2,232  |
| Nigg WWTW, Aberdeen | 2022 | Non hazardous | Disposal | 1,121  | 455  |
| Nigg WWTW, Aberdeen | 2022 | Non hazardous | Recovery  | 20,849  | 21,531  |
| Persley STW, Persley, Aberdeen | 2022 | Non hazardous | Disposal | 269  | 88.6  |
| Persley STW, Persley, Aberdeen | 2022 | Non hazardous | Recovery  | 5,989  | 6,171  |
| Peterhead STW, Burnhaven, Peterhead | 2022 | Non hazardous | Disposal | 211  | 98.8  |
| Peterhead STW, Burnhaven, Peterhead | 2022 | Non hazardous | Recovery  | 5,123  | 5,235  |
| MAHLE Engine Systems Ltd | 2022 | Non hazardous | Recovery  | 78,025  | 1,122  |
| MacFarlan Smith Ltd, Wheatfield Rd, Edinburgh | 2022 | Hazardous | Recovery | 4,276  | 152  |
| Sage Gas Terminal, St Fergus, Peterhead | 2022 | Hazardous | Disposal | Removed country name - waste is not going outside UK |
| INEOS Chemicals Grangemouth Ltd, Grangemouth | 2022 | Hazardous | Disposal | 408  | 0.01  |
| Bathgate Compressor Station (Site 2) | 2021 | Hazardous | Recovery | Omitted | 0.23  |
| Bathgate Compressor Station (Site 2) | 2022 | Hazardous | Recovery | Omitted | 3.80  |
| Nestle, Grangestone Ind Estate, Girvan | 2022 | Hazardous | Recovery | Omitted | 3.48  |
| The Moredun Foundation, Penicuik | 2022 | Hazardous  | Disposal | 0.00  | 49.00  |
| Caledon Green Exemplar Plant, Earls Gate Park, Grangemouth, FK3 8TR | 2022 | Hazardous | Disposal | 13,053  | 0.00  |
| East Coast Viners Grain | 2022 | Hazardous | Disposal | 0.00  | 0.62  |
| Cameronbridge Distillery, Windygates, Leven | 2022 | Hazardous | Recovery  | 3.96  | 18.4  |
| 13 Winchester Avenue, Denny | 2022 | Non-hazardous | Recovery | 4,453  | 4,463  |
| 125 Balmore Road, Torrance | 2022 | Hazardous | Disposal | 3.61  | 540  |
| W H Malcolm Ltd, 865 South Street, Glasgow | 2022 | Hazardous | Disposal | 67.2  | 59.8  |
| W H Malcolm Ltd, 865 South Street, Glasgow | 2022 | Non-hazardous | Disposal | 8,791  | 11,002  |
| W H Malcolm Ltd, 865 South Street, Glasgow  | 2022 | Non-hazardous | Recovery | 17,726  | 31,136  |

## 2.4 Release

The release of this publication is in line with practices specified in the Code of Practice for Official Statistics. The statistics are released at the standard time of 9.30 am on a preannounced weekday date. Pre-release access to the statistics in their final form is provided to Scottish Ministers and those on a list of named officials advising them five working days before the public release. This is to ensure that at the time of release Scottish Ministers are able to comment publicly on the statistics based on a correct understanding of them.

# **3. About the Scottish Pollutant Release Inventory**

## **3.1 What is the Scottish Pollutant Release Inventory?**

The SPRI is a Pollutant Release and Transfer Register (PRTR) and has the primary purpose of making publicly available officially reported annual releases of specified pollutants to air and water from certain SEPA-regulated industrial facilities. It also provides information on offsite transfers of waste and wastewater from these facilities.

The SPRI data is collected, quality assured and made public under the requirements of Freedom of Information and can be compared with PRTR information from other countries. SPRI datasets from 2002 to the present year (except 2003) are available and reported annually.

A full list of the pollutants whose emissions must be reported can be found on the SPRI Schedule,[[14]](#footnote-15) which is updated annually. SPRI pollutants are substances considered to be environmentally significant and of interest to the public.

## **3.2 Who reports?**

Operators of sites carrying out specific activities (67 activities covering 10 major sectors) above defined capacity thresholds are obliged to report to SPRI on an annual basis. The activities and their thresholds are largely determined by previous European Union (EU) reporting requirements, but some activity thresholds have been lowered so more Scottish sites are included.

Below is a brief summary of the SPRI activities and thresholds:

* Most Part A processes defined in the Pollution Prevention and Control (Scotland) Regulations 2012 (as amended), together with any directly associated activities. These are the bigger industrial activities covering the energy, mineral, metal, chemical, waste management, food and drink, paper and pulp and intensive agricultural sectors.
* Municipal sewage treatment works with a design population equivalent of >15,000 population equivalent (where population equivalent has the meaning given in the Urban Wastewater Treatment (Scotland) Regulations (UWWTR)).
* All industrial wastewater treatment plants with a capacity to treat at least 10,000 m3/d (cubic metres per day).
* All marine-caged fish farms (no capacity limit).
* All opencast mining and quarrying sites where the surface area of the area effectively under extractive operation equals 25 hectares and above and includes all underground mining.
* All sites having a waste management licence (WML) with a capacity to accept at least 50 tonnes/day for the disposal of non-hazardous waste and sites with a capacity of receiving 10 tonnes/day for the recovery and disposal of hazardous waste.
* All nuclear installations (including plants undergoing decommissioning) and all non-nuclear installations holding authorisation for air, water and wastewater releases.

Most sites which are required to report to SPRI will have been notified by SEPA by either a Pollution Prevention and Control (PPC) Regulation 63(2) Notice or a notification letter. Sites with only Waste Management Licences (WML) report their offsite waste transfers quarterly to SEPA and are notified that SEPA will use this data to fulfil their reporting obligations.

Sites which have not operated and have no emissions must still submit a return while they retain an active authorisation or permit. Reports must be submitted annually for the previous calendar year; for most sites by 28 February of each year.

## 3.3 SEPA’s role

We collect and quality assure (QA) the SPRI data, and then make it publicly available.

SPRI data remains the operator’s and it is their legal responsibility to supply accurate information. Our QA process is there to check that the data is complete, coherent and suitable for publication. In outline:

* We carry out data checks using historic data from the site and similar sites.
* Where data are flagged in our checking process, we may ask the operator to confirm their figures and provide more detail on the reasons for any variations. We also ask Site Officers to cross reference against other available data and to use their knowledge of the site to assess whether information is credible.
* We carry out a set of crosschecks against other SEPA data sources – for example the Emissions Trading System data on carbon dioxide emissions. We check that accidental releases have been notified to SEPA where appropriate.
* The overall data for each industry sector is reviewed by colleagues who have substantial knowledge of the sites and the processes they use, to help us understand each individual return’s place in the sector.
* Once data has been through QA, we will submit the required sub-set to Defra, who will use it in the UK-PRTR. Defra will carry out further checks and inform us of any issues they identify.
* Sub-sets of SPRI data are used to fulfil national and international reporting obligations (e.g. UK National Atmospheric Emissions Inventory), and these will often have their own quality assurance processes which provide us with feedback.

Note that we do not use SPRI data to assess regulatory compliance.

## 3.4 Information to consider when using SPRI data and technical notes

#### Regulatory and environmental impact

SPRI data can be used to broadly compare facilities or sectors and it provides a general overview of the total amounts of pollutants released or waste transferred. However, direct, detailed comparisons between sites are only possible where significant further information is available about all of the processes carried out on site; even where this is possible, few sites have direct equivalents.

SPRI data cannot provide assessments of the regulatory compliance of the facilities or the health or environmental impact of their releases. Compliance information can be found on SEPA’s website.[[15]](#footnote-16)

Annual mass emissions alone are not necessarily directly related to concentrations being emitted at any particular time and cannot be used to directly predict the resulting concentrations in the environment. High annual mass emissions are often due to the large size of the industrial process, where relatively low concentrations are released in very large flows of air or water. The efficiency of the site’s industrial abatement and treatment processes will have a significant impact on emissions. These are guided by relevant UK legislation and Scottish legislation.

Annual mass releases are not directly comparable with air or water quality standards. Reporting thresholds for each pollutant are set based on characteristics of the pollutant (such as its toxicity, transport and persistence in the environment) to indicate what mass emission may give rise to 'significant' environmental concentrations.

#### Technical notes on data:

#### Annual variability

Caution should be used when comparing one year’s data to the previous year’s, particularly on a site-by-site basis. Substantial year to year variability is expected within some sections of the SPRI data, and we allow for this in our QA process.

For example, within the industry sector 7 – Intensive livestock production and agriculture we would expect emissions from poultry farms to be some of the most consistent in SPRI, because operators will tend to stock to similar levels across the whole year, every year. Marine fish farms, on the other hand, have clearly defined production cycles which include fallow periods, so emissions are expected to vary accordingly.

Many sites will base their emission values on spot testing which has happened at different points throughout the year and again, in some industry sectors we can expect these to be quite variable.

#### Methods

There are three broad ways operators can produce their SPRI figures: measuring, calculating or estimating. Guidance on the SPRI webpage[[16]](#footnote-17) explains where and when each should be used in detail, but we expect the operator to use the best available data and method to produce their figure. In many cases this will be to use the methodologies described under the terms of their SEPA authorisations. In some cases, data may be modelled (e.g., many of the pollutants from landfills and wastewater treatment works), or we ask the operator to use an emission factor (e.g., poultry farmers’ ammonia emissions). In 2023, several operators changed or improved their methodologies which means that the data for these sites are not comparable to the previous years. The best available methods therefore have a wide range of both precisions and accuracies, and this should be kept in mind when data is used.

#### Figures reported

Related to the point about methods; we formally ask operators to supply data to three significant figures but, as noted in Section one, they normally provide much more than this. We do not receive information on confidence intervals; be aware that a figure which provides high precision may have lower accuracy.

Note that:

* All non-radioactive pollutants are reported to SEPA in kilograms (kg)
* Offsite waste transfers are reported in metric tonnes (t)

We may display data using different units for ease of use. Commonly, carbon dioxide and overall greenhouse gas emissions are reported in kilotonnes (kt – 1,000,000kg) and megatonnes (Mt – 1,000,000,000kg).

#### Accidental releases

Figures for accidental releases are included within the main total. It is possible to have a quantified accidental release but for the total emission to be below the reporting threshold (BRT). SPRI has very clear and specific definitions of accidental releases.

#### United Kingdom Pollutant Release and Transfer Register – UK-PRTR

Most SPRI waste transfer data and a sub-set of pollutant emissions data, covering roughly half of the SPRI sites, is supplied to the UK PRTR and will be published on the [UK’s PRTR webpage](https://prtr.defra.gov.uk/facility-search). The datasets have different reporting requirements: the UK-PRTR remains focused on emissions significant at the national and European scale, whereas SPRI is tailored to gather information which is useful from the Scottish national perspective. Around 20% of individual reported rows of SPRI pollutant data is included in the UK-PRTR, but as it covers the largest releases, it will generally represent around 90% of SPRI’s total emissions for each pollutant. Around 50% of the SPRI sites report releases and transfers above the PRTR thresholds although this varies from year-to-year.

Various Scotland-relevant pollutants and industrial sectors are included in the SPRI but not required by the legislation covering the UK-PRTR; for example, the radioactive substances. In addition, Urban Wastewater Treatment Plants and marine fish farms have a lower activity threshold in SPRI, so more of our sites come into reporting requirements. Thresholds for some pollutants are set to less than the UK thresholds.

Full details of the SPRI and UK-PRTR reporting requirements are available on the SPRI website[[17]](#footnote-18) and the UK-PRTR website.[[18]](#footnote-19)

For information on accessing this document in an alternative format or language, please contact SEPA by emailing equalities@sepa.org.uk

If you are a user of British Sign Language (BSL), the Contact Scotland BSL service gives you access to an online interpreter, enabling you to communicate with us using sign language. [contactscotland-bsl.org](http://contactscotland-bsl.org/)

1. Note that this information is derived from the qualifications of the operators who are required to provide a valid explanation for a change or variation in pollutants at their site. We do not release this information at a site level. [↑](#footnote-ref-2)
2. [The Fluorinated Greenhouse Gases Regulations 2015](https://www.legislation.gov.uk/uksi/2015/310/contents). [↑](#footnote-ref-3)
3. [2019 Refinement to the 2006 IPCC Guidelines for National Greenhouse Gas Inventories](https://www.ipcc.ch/report/2019-refinement-to-the-2006-ipcc-guidelines-for-national-greenhouse-gas-inventories/). [↑](#footnote-ref-4)
4. [IPCC, 2013: Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change](http://www.ipcc.ch/report/ar5/wg1/). [↑](#footnote-ref-5)
5. [www.gov.scot/publications/scottish-greenhouse-gas-statistics-2022/](http://www.gov.scot/publications/scottish-greenhouse-gas-statistics-2022/) [↑](#footnote-ref-6)
6. [E-PRTR Regulation (EC) No 166/2006](https://eur-lex.europa.eu/legal-content/EN/TXT/HTML/?uri=CELEX:32006R0166&from=EN#d1e32-12-1) [↑](#footnote-ref-7)
7. Data for Scottish sites in 2023 will be published in Radioactivity in Food and the Environment ([RIFE 29](https://www.sepa.org.uk/environment/radioactive-substances/environmental-monitoring-and-assessment/reports/)) later this year. [↑](#footnote-ref-8)
8. <https://unece.org/env/pp/protocol-on-prtrs-introduction> [↑](#footnote-ref-9)
9. <https://naei.beis.gov.uk/> [↑](#footnote-ref-10)
10. <https://unfccc.int/process-and-meetings/the-convention/what-is-the-united-nations-framework-convention-on-climate-change> [↑](#footnote-ref-11)
11. [www.ospar.org/](http://www.ospar.org/) [↑](#footnote-ref-12)
12. <http://marine.gov.scot/data-source-types/scotlands-marine-atlas> [↑](#footnote-ref-13)
13. <https://informatics.sepa.org.uk/SPRI/> [↑](#footnote-ref-14)
14. <https://www.sepa.org.uk/media/3ilmizxu/spri-schedule.pdf> [↑](#footnote-ref-15)
15. [www.sepa.org.uk/regulations/authorisations-and-permits/compliance-assessment-scheme/](http://www.sepa.org.uk/regulations/authorisations-and-permits/compliance-assessment-scheme/) [↑](#footnote-ref-16)
16. [Scottish Pollutant Release Inventory Reporting (sepa.org.uk)](https://www.sepa.org.uk/media/145296/spri_sector_large_scale_activities_guidance.pdf) [↑](#footnote-ref-17)
17. [www.sepa.org.uk/environment/environmental-data/spri/](http://www.sepa.org.uk/environment/environmental-data/spri/) [↑](#footnote-ref-18)
18. [www.gov.uk/guidance/uk-pollutant-release-and-transfer-register-prtr-data-sets#search-the-prtr-database-on-your-chosen-parameters](http://www.gov.uk/guidance/uk-pollutant-release-and-transfer-register-prtr-data-sets#search-the-prtr-database-on-your-chosen-parameters) [↑](#footnote-ref-19)