

2019 Pollutant emissions and waste transfers from SEPA regulated industrial sites

This statistical release shows emissions of pollutants to air and water and off site waste transfers reported by operators of industrial sites under the Scottish Pollutant Release Inventory (SPRI) for the 2019 calendar year. Some historic data is included for comparison. Information about the SPRI and on the methodology used to prepare this release is provided in sections two and three of this document.

Complete SPRI data is available in two places:

Within the SEPA website's SPRI pages at: <https://www2.sepa.org.uk/spripa/Search/Options.aspx>

This tool allows you to search for individual site data in various ways. The full public content of each site's return can be downloaded as a pdf. Some summary data can be downloaded as csv files. All data provided here is as live on the SPRI database, and it will update through the year where data corrections are made.

On Scotland's Environment Web at: <https://www.environment.gov.scot/data/data-analysis/scottish-pollution-release-inventory/>

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.

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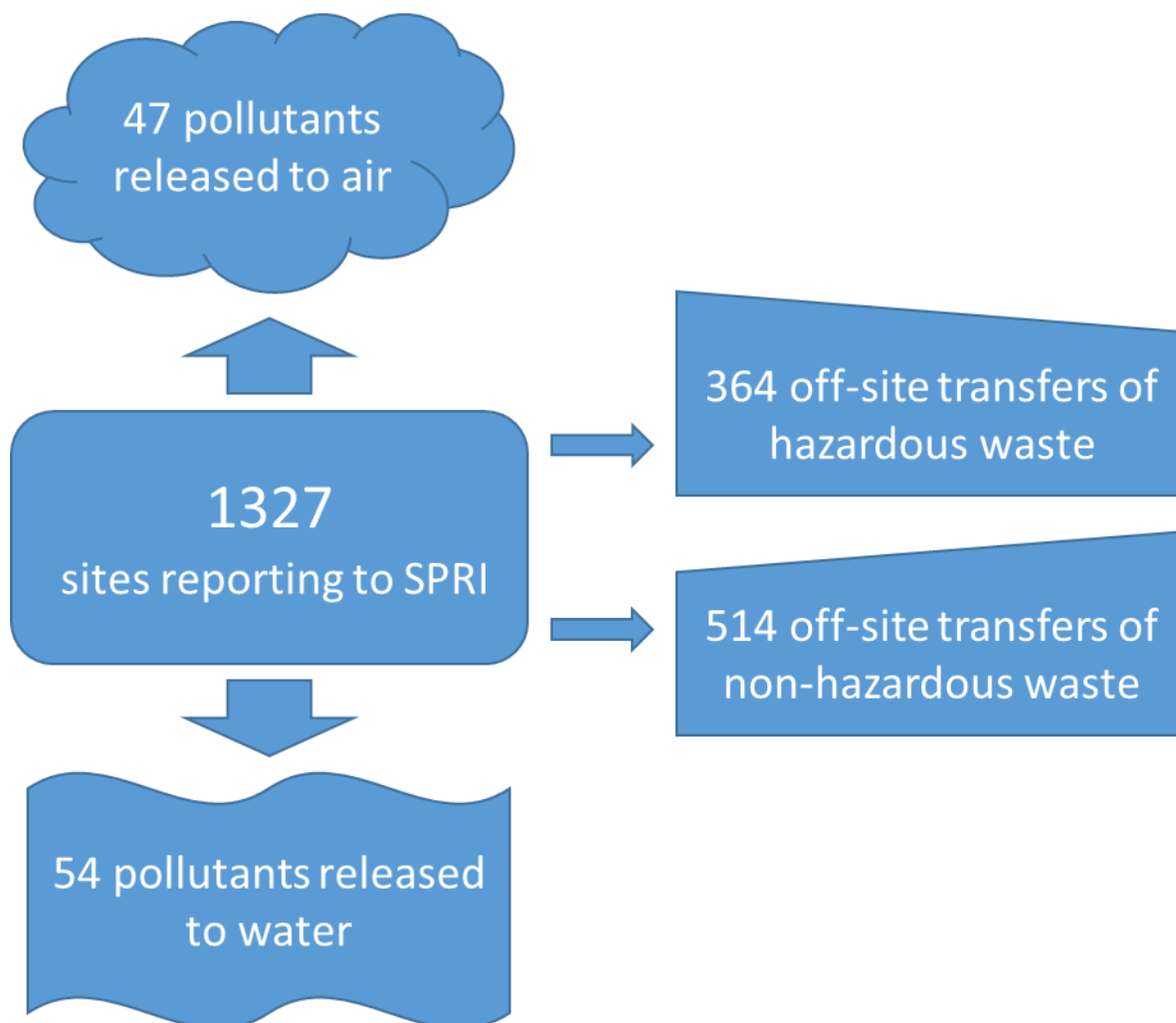
Media enquiries to: SEPA Communications Department: media@sepa.org.uk .

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

This is an Experimental 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: <http://www.statisticsauthority.gov.uk/assessment/code-of-practice/index.html>. Lead statistician: Rebecca Chaffer.

1. The statistics

1.1 Key information for 2019



Emissions of carbon dioxide and methane from the SEPA-regulated industrial sites which report to SPRI continue the decrease seen over the past decade. Carbon dioxide emissions fell by 57% between 2010 and 2019; methane fell by 44%.

Emissions to air from sites in the Waste and waste-water management sector show the opposite trend, with carbon dioxide releases up by 76% since 2010. This is partly due to the increase in incineration of waste. However, their emissions of greenhouses gases remain small relative to the Energy sector. For example, in 2019 carbon dioxide from the Energy sector accounted for 58% of the total release, compared to 18% from the Waste and waste-water management sector.

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

1.2 Emissions and Waste transfers for 2019

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 2019.

Table 2: Number of sites reporting ART emissions to air, and percentage of total ART emissions released, by industry sector and pollutant for 2019

Table 3: Total ART emissions to water by pollutant and industry sector for 2019.

Table 4: Number of sites reporting ART emissions to water, and percentage of total ART emissions released, by sector and pollutant for 2019

Notes on data provided:

- All values are in kilograms, with the exceptions of carbon dioxide and methane to air which are given in tonnes (1,000kg) or kilotonnes (1,000,000kg) in some figures to simplify reporting.
- Most pollutants in SPRI have a 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. 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 nine SPRI Industry Sectors, as listed in the tables below. For details of the activities which place a site within those sectors, including the minimum size the minimum capacity a site must have to be required to report to SPRI, see table 6 and section 3. *About the Scottish Pollutant Release Inventory.*

Table 1: Total ART emissions to air by pollutant and industry sector for 2019. All values are kg except for carbon dioxide which is in tonnes

Pollutant name	Threshold (Kg)	Total Release (Kg)	1 - Energy sector	2 - Production and processing of metals	3 - Mineral industry	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	9 - Other activities
Ammonia	1,000	894,705			31,105	6,050	18,128	1,752	837,670		
Antimony	1	67.0	2.4		2.35		37.9	24.4			
Arsenic	1	56.24	2.0		30.2		2.67	21.42			
Benzene	1,000	160,547	145,065			15,482					
Butadiene	100	61,515	35,343			26,172					
Cadmium	1	14.98			1.51		8.31	5.16			
Carbon dioxide (tonnes)	10,000 t	11,293,146	6,594,075	78,402	827,412	720,056	2,094,457	673,432		293,868	11,443
Carbon monoxide	100,000	12,722,390	4,781,764		4,005,740	1,631,912	1,388,055	914,919			
Chlorine and total inorganic chlorine compounds - as HCl	10,000	50,152			15,812		14,461	19,879			
Chlorofluorocarbons (CFCs)	1	417					417.25				
Chromium	10	369.8			36.0		164.7	169.1			
Copper	10	171.7			72.45		26.04	73.16			
Dioxins and furans - as ITEQ	0.00001	0.000278					0.000126	0.000151			
Dioxins and furans - as WHO TEQ	0.00001	0.000199					0.000070	0.000129			
Ethylbenzene	100	763				763					
Fluorine and total inorganic fluorine compounds - as HF	1,000	45,888		43,879	2,009						
Formaldehyde	10	140,847			410	38		140,399			
Hydrochlorofluorocarbons (HCFCs)	1	235.71					230.71			5	
Hydrofluorocarbons (HFCs)	100	1,263								1,263	
Hydrogen chloride	10,000	47,161					47,161				
Hydrogen cyanide	100	107				107					
Lead	100	705			163			542			
Manganese	10	171.4			44.4		99.0	28.0			
Mercury	1	15.78			1.39		8.47	5.92			

Pollutant name	Threshold (Kg)	Total Release (Kg)	1 - Energy sector	2 - Production and processing of metals	3 - Mineral industry	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	9 - Other activities
Methane	10,000	26,777,357	4,028,678		109,352	276,791	21,766,764		582,686	13,086	
Methyl chloride	1,000	18,994				18,994					
Methyl chloroform	10	76					76				
Methylene chloride	1,000	103,430				103,430					
Naphthalene	100	387			387						
Nickel	10	295.1	158.5		80.7		26.1	29.8			
Nitrogen oxides, NO and NO2 as NO2	100,000	12,271,194	7,315,591		1,935,750	865,788	1,200,092	953,973			
Nitrous oxide	10,000	96,543	84,743				11,800				
Non-methane volatile organic compounds (NMVOCs)	10,000	26,127,958	14,241,445		106,909	2,727,479		609,362		8,145,114	297,649
Particulate matter - PM10 and smaller	10,000	762,132	103,256	120,254	339,145	55,382			144,095		
Particulate matter - total	50,000	785,006	221,432	172,608	51,946			56,204	282,816		
Particulates - PM2.5 and smaller only	1,000	12,116	2,113		3,645		6,358				
Perfluorocarbons (PFCs)	10	3,945		790		3,155					
Phenols - total as C	10	429			429						
Polycyclic aromatic hydrocarbons (PAHs)	1	8.0					7.998				
Selenium	100	519			519						
Styrene	100	629				629					
Sulphur hexafluoride	10	220.5				220.5					
Sulphur oxides, SO2 and SO3 as SO2	100,000	5,679,072	3,772,732	626,855	1,279,485						
Tetrachloroethane	10	11.1					11.1				
Toluene	100	183,133	156,607			23,365	109				3,052
Vanadium	10	88.5	88.5								
Xylene - all isomers	1,000	130,062	124,862			5,200					

Table 2: Number of sites reporting ART emissions to air, and percentage of total ART emissions released, by industry sector and pollutant for 2019

Pollutant	Total no of ART sites	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 aquaculture		8 - Animal and vegetable products from the food and beverage sector		9 - Other activities	
		Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019
Ammonia	119					1	3%	2	1%	9	2%	1	<1%	106	94%				
Antimony	9	1	4%			1	4%			5	57%	2	36%						
Arsenic	6	1	4%			2	54%			1	5%	2	38%						
Benzene	3	2	90%					1	10%										
Butadiene	4	2	57%					2	43%										
Cadmium	7					1	10%			4	55%	2	34%						
Carbon dioxide	84	27	58%	2	1%	6	7%	5	6%	32	19%	6	6%			5	3%	1	<1%
Carbon monoxide	26	13	38%			1	31%	1	13%	8	11%	3	7%						
Chlorine and total inorganic chlorine compounds - as HCl	3					1	32%			1	29%	1	40%						
Chlorofluorocarbons (CFCs)	22									22	100%								
Chromium	8					1	10%			4	45%	3	46%						
Copper	6					2	42%			2	15%	2	43%						
Dioxins and furans - as ITEQ	4									2	45%	2	55%						
Dioxins and furans - as WHO TEQ	4									2	35%	2	65%						
Ethylbenzene	1							1	100%										
Fluorine and total inorganic fluorine compounds - as HF	2			1	96%	1	4%												
Formaldehyde	5					1	<1%	1	<1%			3	100%						
Hydrogen chloride	2									2	100%								
Hydrogen cyanide	1							1	100%										
Lead	2					1	23%					1	77%						
Manganese	4					1	26%			2	58%	1	16%						
Mercury	8					1	9%			4	54%	3	38%						
Methane	106	17	15%			2	<1	2	1%	62	81%			22	2%	1	<1%		

Pollutant	Total no of ART sites	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 aquaculture		8 - Animal and vegetable products from the food and beverage sector		9 - Other activities	
		Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019
Methyl chloride	1							1	100%										
Methyl chloroform	3									3	100%								
Methylene chloride	2							2	100%										
Naphthalene	1					1	100%												
Nickel	7	2	54%			2	27%			1	9%	2	10%						
Nitrogen oxides, NO and NO2 as NO2	28	12	60%			3	16%	3	7%	6	10%	4	8%						
Nitrous oxide	6	5	88%							1	12%								
Non-methane volatile organic compounds (NMVOCs)	41	20	55%			2	<1%	7	10%			2	2%			4	31%	6	1%
Particulate matter - PM10 and smaller	21	2	14%	1	16%	10	44%	1	7%					7	19%				
Particulate matter - total	8	2	28%	1	22%	1	7%					1	7%	3	36%				
Particulates - PM2.5 and smaller only	4	1	17%			2	30%			1	52%								
Hydrochlorofluorocarbons (HCFCs)	23									22	98%					1	2%		
Hydrofluorocarbons (HFCs)	2															2	100%		
Perfluorocarbons (PFCs)	3			1	20%			2	80%										
Phenols - total as C	1					1	100%												
Polycyclic aromatic hydrocarbons (PAHs)	2									2	100%								
Selenium	1					1	100%												
Styrene	1							1	100%										
Sulphur hexafluoride	2							2	100%										
Sulphur oxides, SO2 and SO3 as SO2	9	5	66%	1	11%	3	23%												
Tetrachloroethane	1									1	100%								
Toluene	9	2	86%					4	13%	1	<1%							2	2%
Vanadium	2	2	100%																
Xylene - all isomers	2	1	96%					1	4%										

Table 3: Total ART emissions to water by pollutant and industry sector for 2019. All values are kg.

Pollutant name	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
Ammonia	20	7,730,352	2,750	82	5,609,013			2,118,507
Anthracene	0.1	45.31	11.50		33.81			
Arsenic	5	502.13	26.70	18.10	457.33			
Asbestos	0.1	73.81			73.81			
Azamethiphos	0.001	285.83					285.83	
Benzene	10	2,047.0	1,469.0	578.0				
Benzo (g,h,i) perylene	0.1	9.56			9.56			
Benzo(a) pyrene	1	1.03			1.03			
Brominated diphenylethers - total as Br	0.1	0.51			0.51			
Cadmium	1	136.07	2.2	7.99	114.28			11.6
Chlorides - total as Cl	2,000,000	48,350,000		3,540,000	44,810,000			
Chloroform	5	134.2		103.0	31.2			
Chromium	20	589.6	44.5	122	358.1			65
Copper	20	66,001	157	770	10,607		52,278	2,189
Cyanides - total as CN	50	873		148	725			
Deltamethrin	0.002	3.82					3.82	
Di(2-ethylhexyl) phthalate	0.1	1,702			1,702			
Dioxins and furans - as ITEQ	0.0001	0.000706			0.000706			
Dioxins and furans - as WHO TEQ	0.0001	0.000706			0.000706			
Diuron	0.05	5.92			5.92			
Emamectin benzoate	0.001	45.52					45.52	
Ethylbenzene	10	103.5	103.5					
Fluoranthene	0.1	7.53	1.81	0.28	5.44			
Fluorides - total as F	2,000	174,355		2,145	172,210			
Halogenated organic compounds - total as AOX	1,000	80,350			80,350			
Hexachlorocyclohexane - all isomers	0.01	0.51			0.51			
Iron	1,000	435,850			435,850			
Isoproturon	0.01	0.24			0.24			
Lead	20	912	29.8	76	807			
Lindane	0.1	0.44			0.44			
Manganese	200	766						766
Mercury	0.1	22.51	1.8	0.44	20.01			0.26
Methylene chloride	10	265.9		238.0	27.9			
Naphthalene	1	997.31	17.3		980			
Nickel	20	6,363	103	258	4,509			1,493
Nitrogen - total as N	50,000	34,154,934		127,000	18,880,700		10,964,163	4,183,071
Nonylphenol ethoxylates	1	3,489.28			3,489.28			

Pollutant name	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	
Nonylphenols	1	557.4					557.4							
Nonylphenol and nonylphenol ethoxylates	1	2,348.66					2,348.66							
Octylphenol and octylphenol ethoxylates	1	4.78					4.78							
Octylphenols	1	4.78					4.78							
Organic tin compounds - total as Sn	5	11.3					11.3							
Pentachlorophenol	0.05	1.91					1.91							
Permethrin	0.001	0.55					0.55							
Phenols - total as C	20	4,572	1,822		2,301		449							
Phosphorus - total as P	5,000	4,267,338			41,232		2,122,010				1,651,763		452,333	
Polycyclic aromatic hydrocarbons (PAHs)	1	65.01					65.01							
Tetrachloroethylene	1	3.76			3.76									
Toluene	10	1,179.4	784.3		395.1									
Total organic carbon or COD/3	50,000	65,832,210			1,593,000		11,218,400	375,577		41,516,473			11,128,760	
Tributyltin compounds	0.005	0.52					0.52							
Trichloroethylene	1	1.15			1.15									
Xylene - all isomers	10	520.8	436.0		84.8									
Zinc	100	76,038	529		1,475		35,527				33,971		4,536	

Table 4: Number of sites reporting ART emissions to water, and percentage of total ART emissions released, by sector and pollutant for 2019

Pollutant	Total no of ART sites	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	
		Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019
Ammonia	78	1	<1%	2	<1%	73	73%					2	27%
Anthracene	53	2	25%			51	75%						
Arsenic	25	2	5%	1	4%	22	91%						
Asbestos	72					72	100%						
Azamethiphos	76									76	100%		
Benzene	5	4	72%	1	28%								
Benzo (g,h,i) perylene	25					25	100%						
Benzo(a) pyrene	1					1	100%						

Pollutant	Total no of ART sites	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	
		Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019
Brominated diphenylethers - total as Br	3					3	100%						
Cadmium	29	1	2%	2	6%	24	84%					2	9%
Chlorides - total as Cl	11			1	7%	10	93%						
Chloroform	4			1	77%	3	23%						
Chromium	11	1	8%	1	21%	8	61%					1	11%
Copper	134	3	<1%	2	1%	70	16%			57	79%	2	3%
Cyanides - total as CN	10			2	17%	8	83%						
Deltamethrin	33									33	100%		
Di(2-ethylhexyl) phthalate	73					73	100%						
Dioxins and furans - as ITEQ	4					4	100%						
Dioxins and furans - as WHO TEQ	4					4	100%						
Diuron	27					27	100%						
Emamectin benzoate	109									109	100%		
Ethylbenzene	2	2	100%										
Fluoranthene	19	1	24%	1	4%	17	72%						
Fluorides - total as F	25			1	1%	24	99%						
Halogenated organic compounds - total as AOX	23					23	100%						
Hexachlorocyclohexane - all isomers	5					5	100%						
Iron	48					48	100%						
Isoproturon	9					9	100%						
Lead	16	1	3%	1	8%	14	88%						
Lindane	3					3	100%						
Manganese	1											1	100%
Mercury	47	4	8%	2	2%	40	89%					1	1%
Methylene chloride	3			1	90%	2	10%						
Naphthalene	75	2	2%			73	98%						
Nickel	47	3	2%	1	4%	42	71%					1	23%
Nitrogen - total as N	177			1	<1%	57	55%			117	32%	2	12%
Nonylphenol ethoxylates	73					73	100%						
Nonylphenols	68					68	100%						
Nonylphenol 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%						
Pentachlorophenol	1					1	100%						
Permethrin	2					2	100%						
Phenols - total as C	10	4	40%	2	50%	4	10%						

Pollutant	Total no of ART sites	1 - Energy sector		4 - Chemical industry		5 - Waste and waste-water 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	
		Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019	Sites	% of 2019
Phosphorus - total as P	196			2	1%	52	50%			140	39%	2	11%
Polycyclic aromatic hydrocarbons (PAHs)	21					21	100%						
Tetrachloroethylene	1			1	100%								
Toluene	6	4	66%	2	34%								
Total organic carbon or COD/3	217			2	2%	33	17%	1	1%	178	63%	3	17%
Tributyltin compounds	25					25	100%						
Trichloroethylene	1			1	100%								
Xylene - all isomers	5	3	84%	2	16%								
Zinc	208	2	1%	2	2%	60	47%			142	45%	2	6%

Waste transfers

Table 5: Off site waste transfers by industry sector and type for 2019. All values are tonnes.

Industry sector	Hazardous Waste		Non-hazardous Waste	
	Disposal	Recovery	Disposal	Recovery
1 - Energy sector	6,229	4,966	4,158	9,150
2 - Production and processing of metals	1,919	2,266		5,747
3 - Mineral industry	479	59	190	4,333
4 - Chemical industry	243,072	74,511	6,990	9,747
6 - Paper and wood production and processing	7,590	2,340	2,986	14,487
7 - Intensive livestock production and aquaculture	6		4,051	49,501
8 - Animal and vegetable products from the food and beverage sector	4,070	30	78,246	76,456
9 - Other activities	22,508	3,355	15,488	13,962
Total	285,873	87,527	112,109	183,383

Note:

1. Excludes waste transferred by industry sector 5 - *Waste and waste-water management*, as this is reported elsewhere.

<https://www.sepa.org.uk/environment/waste/waste-data/waste-data-reporting/waste-data-for-scotland/>

2. The thresholds for reporting off-site 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](#)

1.3 Greenhouse gas emissions

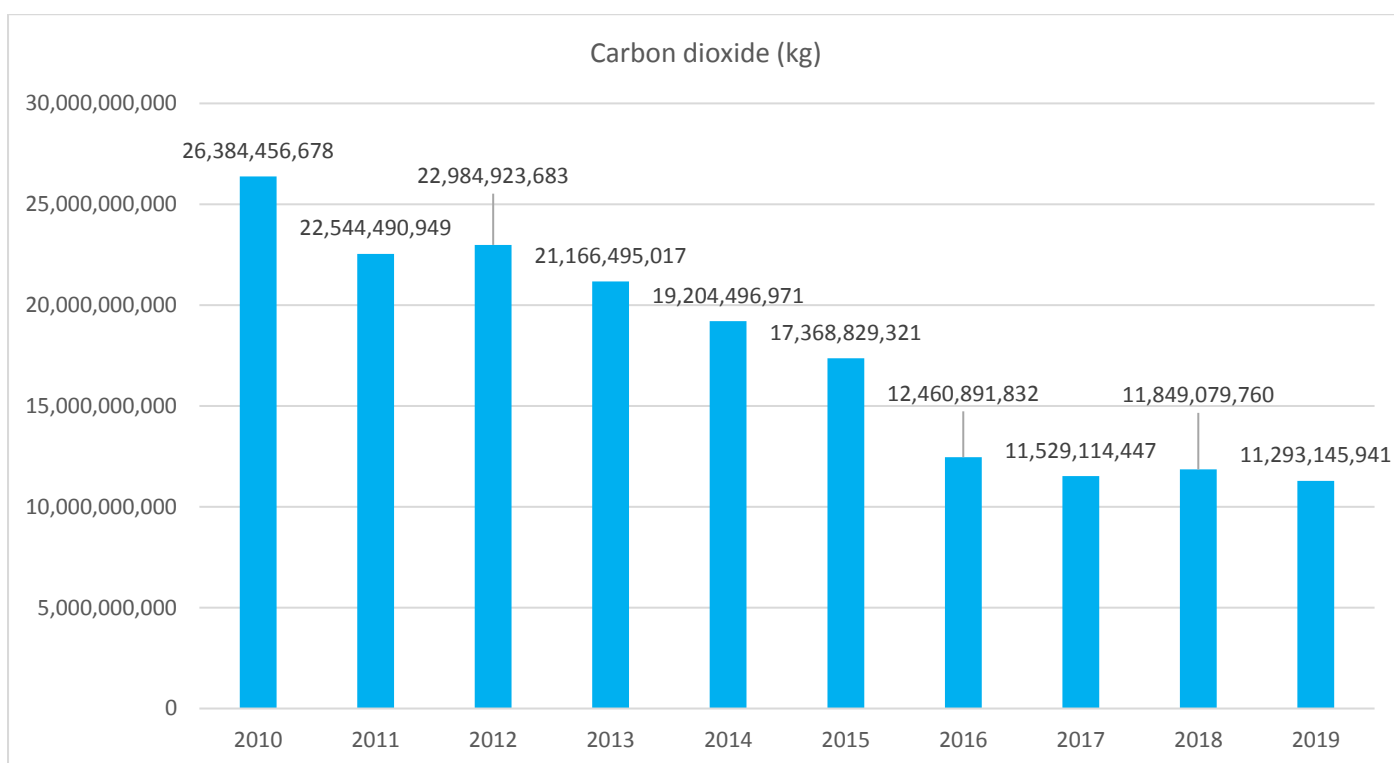
Emissions of four individual greenhouse gases, and two groups of greenhouse gases are reportable to SPRI.

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 EU has regulation 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.

Individual gases	Carbon dioxide	F-gas
	Methane	
Groups of gases	Nitrous oxide	F-gas
	<i>Sulphur hexafluoride</i>	
	<i>Hydrofluorocarbons (HFCs)</i>	
	<i>Perfluorocarbons (PFCs)</i>	F-gas

Carbon dioxide – ten years of emissions

Figure 1: Ten year ART carbon dioxide emissions in kg



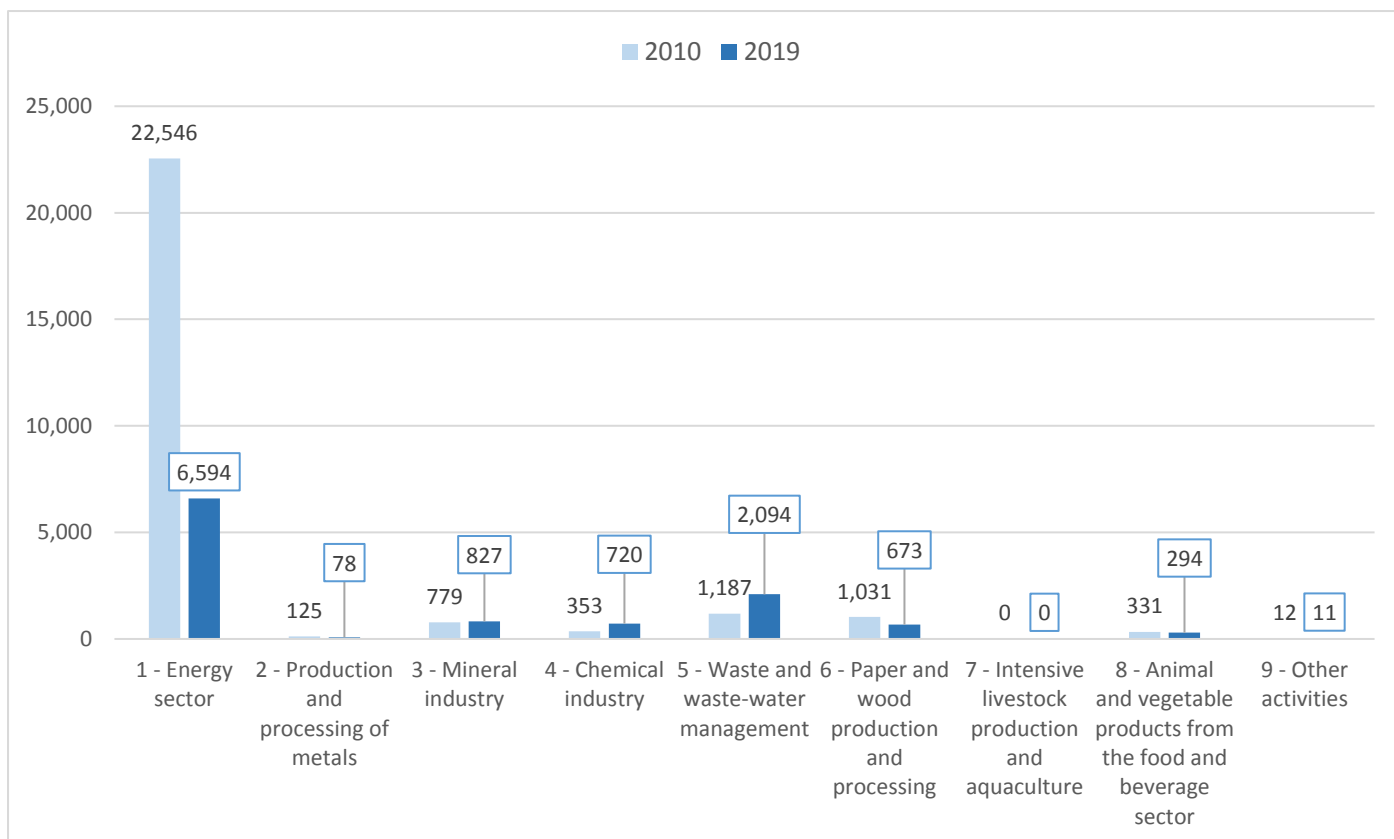
The reporting threshold for carbon dioxide is 10,000,000kg.

The downward trend in carbon dioxide emissions from SPRI sites continues but appears to be levelling off since 2016. A number of variables influence these emissions; in the long term, the shift away from use of coal as a fuel is a significant factor. Wider economic drivers and the weather are other factors identified as affecting carbon dioxide and other greenhouse gas emissions from SPRI sites.

As figures 2 and 3 show, carbon dioxide emissions from the energy sector have fallen by around 70% since 2010, largely due to the closure of coal fired power stations; notably Cockenzie and Longannet. As the energy sector emissions have fallen, releases from other sectors now form a greater proportion of the greenhouse gas emissions reported to SPRI.

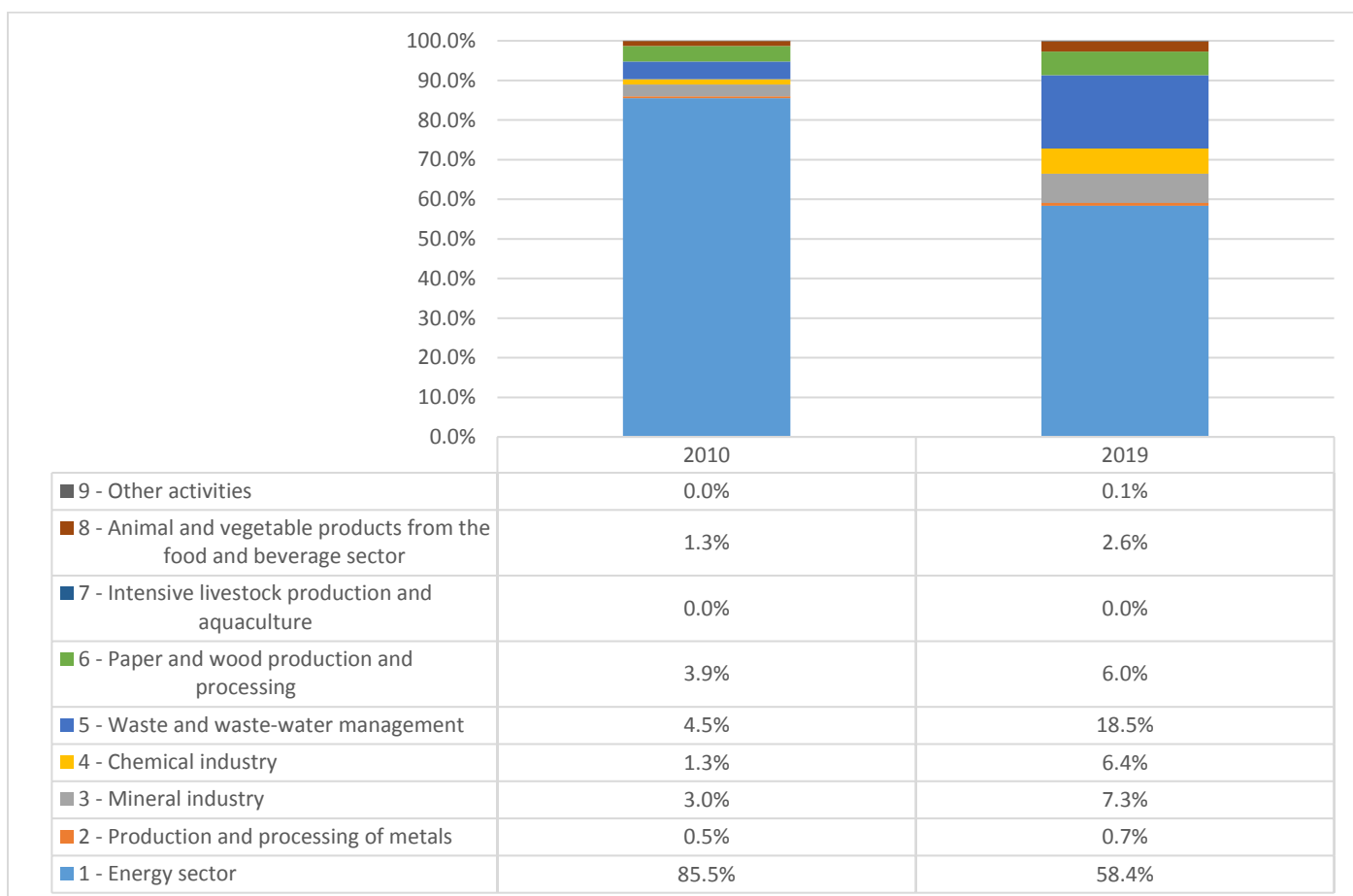
Notably, carbon dioxide emissions from the waste sector continue to rise. 2019 saw three large energy from waste facilities complete their commissioning and come into normal use.

Figure 2: Total of ART carbon dioxide emissions reported to SPRI in 2010 and 2019 by industry sector in kilotonnes



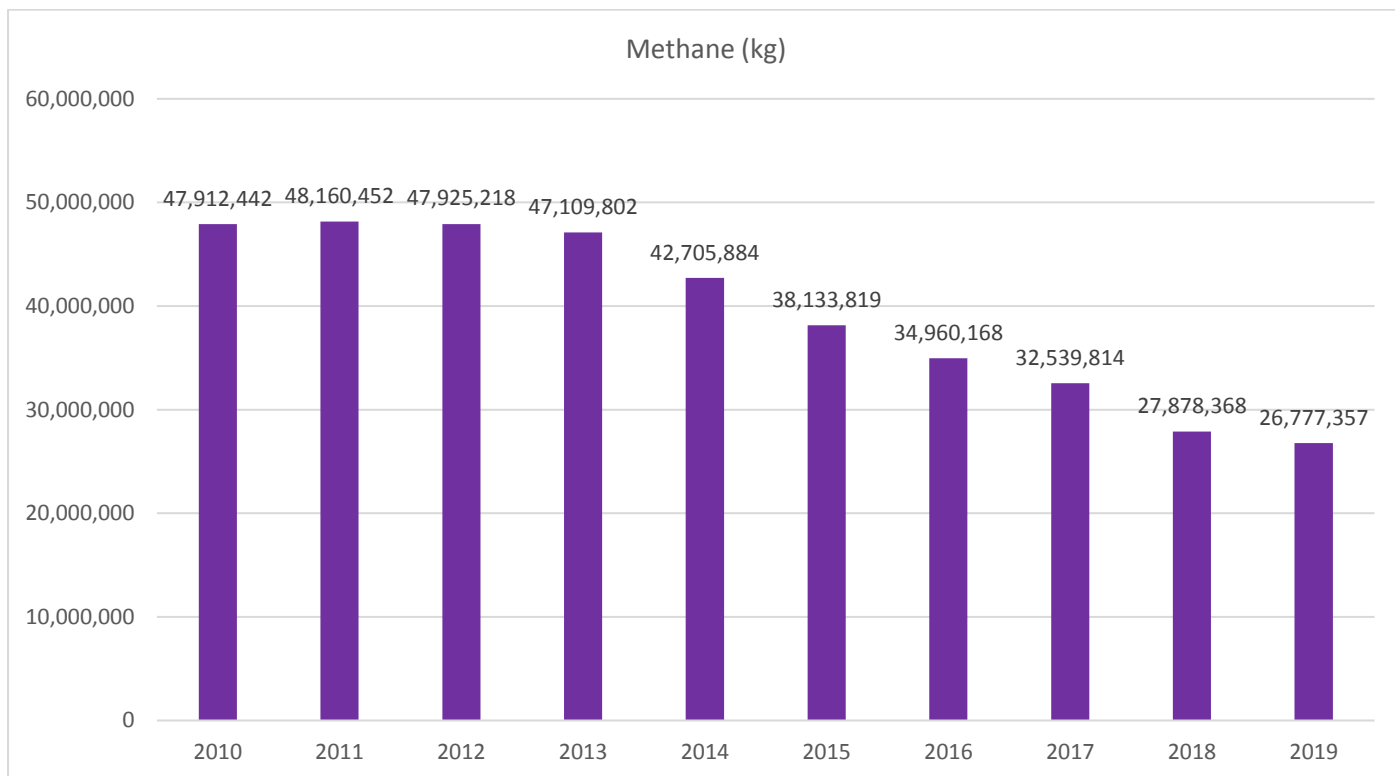
Note: 1 kilotonne (kt) = 1,000,000kg

Figure 3: Percentage of ART carbon dioxide emissions reported to SPRI in 2010 and 2019 by industry sector



Methane – ten years of emissions

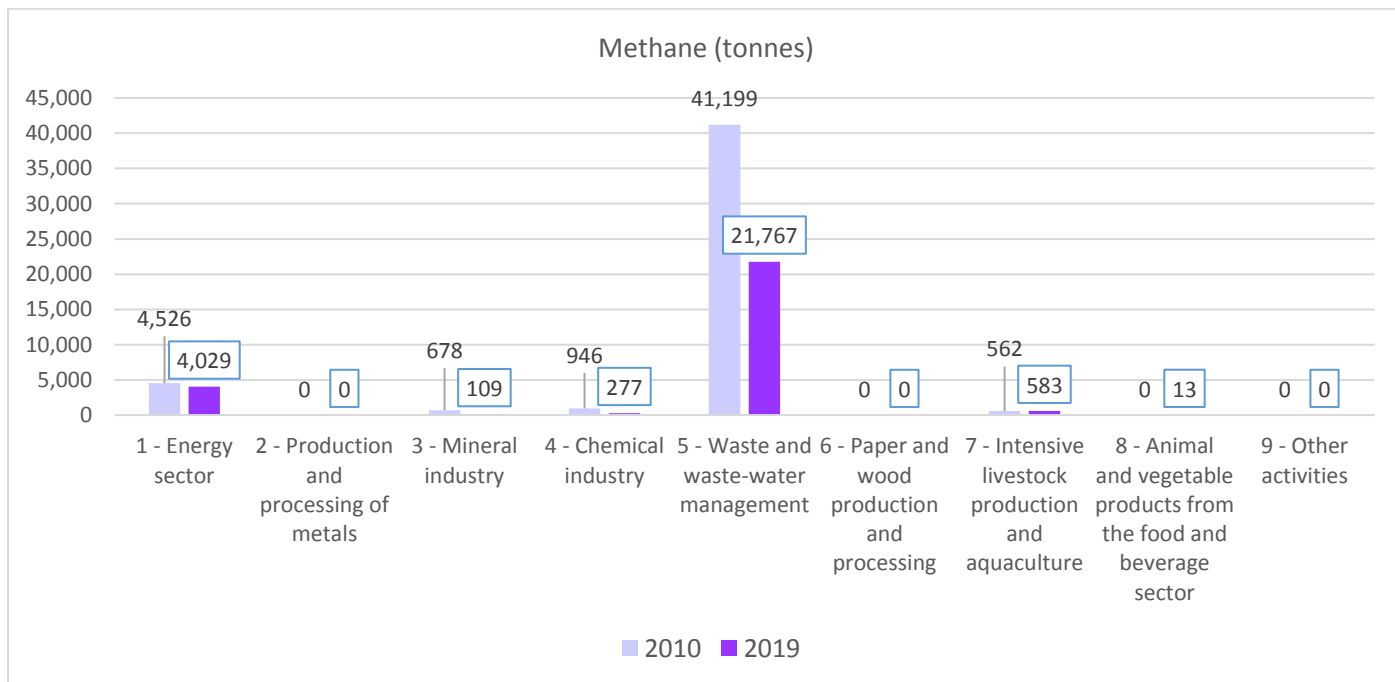
Figure 4: Ten year ART methane emissions in kg



Methane’s reporting threshold is 10,000kg.

Emissions from sites reporting under 5(d) Landfills (excluding landfills of inert waste) make up between 79% and 87% of total methane emissions in the figure above.

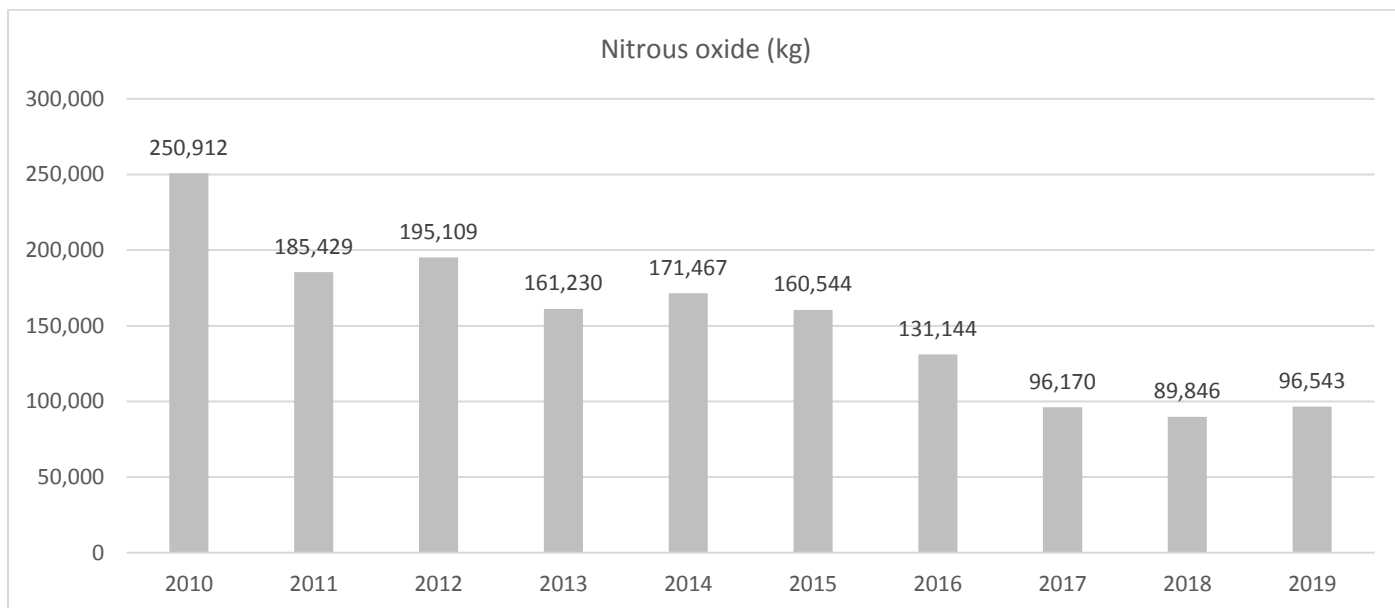
Figure 5: Total of ART methane emissions reported to SPRI in 2010 and 2019 by industry sector in tonnes



Note: 1 tonne (t) = 1,000kg

Nitrous oxide – ten years of emissions

Figure 6: Ten year ART nitrous oxide emissions in kg

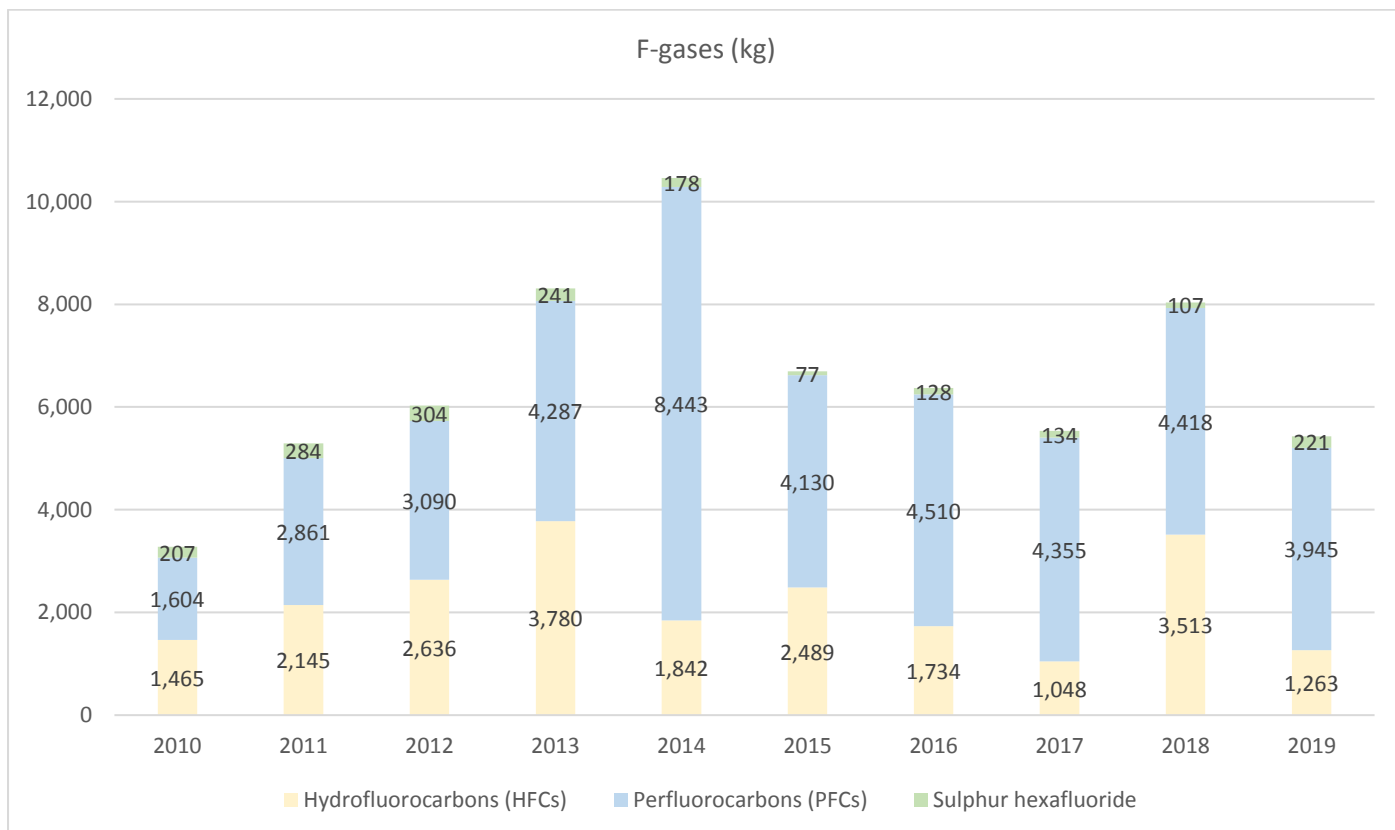


The reporting threshold for nitrous oxide is 10,000kg and only six sites reported ART nitrous oxide emissions in 2019. Only fourteen sites have had ART emissions since 2010: twelve from 1 - Energy sector.

One site reported emissions of 11,800kg in 2019 but was BRT in 2018 so no data for that year is included. Most of the year to year variation in total emissions is due to these minor fluctuations between BRT and ART. Prior to 2016, the coal-fired power stations were very significant sources of nitrous oxide.

F-gases – ten years of emissions

Figure 7: Ten year ART F-gas emissions in kg



The F-gas figures are given in kilogrammes, as they are reported to SPRI. It is currently not possible for us to reliably convert these to carbon dioxide equivalent (CO₂e) values as we do not collect information identifying individual species of hydrofluorocarbons and perfluorocarbons.

All three F-gas emissions are based on small numbers of ART sites.

Hydrofluorocarbons: ART emissions are often associated with loss of refrigerant from chiller systems, and the number and list of reporting sites is quite variable, although the majority are from sector 8 - Animal and vegetable products from the food and beverage sector. There were two ART emissions reported in 2019, compared to six in 2018.

Perfluorocarbons: Between 2010 and 2017, the same three sites reported ART emissions each year; one closed in 2018. A new site has reported emissions in 2019. The sites are from sectors 4 - Chemical industry and 2 - Production and processing of metals.

Sulphur hexafluoride: Since 2010 only four sites in total have reported ART values, all from sector 4 - Chemical industry. In most years there were two sites reporting; in two years there were three.

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 Regulation](#).

Note that when we refer to “Industry sectors” we mean the top-level Activity code (e.g. 1 is Energy)

Table 6: Number of sites required to report to SPRI in 2019 under each Activity code (including sub-codes)

Code	Activity	Capacity Threshold	Operator submits return	Waste system transfer
1	Energy sector			48
1(a)	Mineral oil and gas refineries	*	16	
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)	30	
2	Production and processing of metals			17
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 30m ³	10	
3	Mineral industry			29
3(a)	Underground mining and related operations	*	1	
3(b)	Opencast mining	Where the surface of the area being mined equals 25 hectares	23	
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 4m ³ and with a setting density per kiln of 300 kg/m ³	1	
4	Chemical industry			37
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)	*	4	
4(a).ii	Oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters, acetates, ethers, peroxides, epoxy resins	*	3	

Code	Activity	Capacity Threshold	Operator submits return	Waste system transfer
4(a).ix	Synthetic rubbers	*	1	
4(a).viii	Basic plastic materials (polymers, synthetic fibres and cellulose-based fibres)	*	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	*	7	
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	*	6	
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 waste-water management		494	
5(a)	Installations for the recovery or disposal of hazardous waste.	Receiving 10 tonnes per day	46	4
5(b)	Installations for the incineration of municipal waste	With a capacity of 3 tonnes per hour	14	
5(c)	Installations for the disposal of non-hazardous waste	With a capacity of 50 tonnes per day	13	257
5(d)	Landfills (excluding landfills of inert waste)	Receiving 10 tonnes per day or with a total capacity of 25,000 tonnes	76	
5(e)	Installations for the disposal or recycling of animal carcasses and animal waste	With a treatment capacity of 10 tonnes per day	9	
5(f).i	Municipal waste-water treatment plants	With a capacity below 100,000 population equivalent	60	
5(f).ii	Municipal waste-water treatment plants	With a capacity of 100,000 population equivalent	14	
5(g)	Independently operated industrial waste-water treatment plants which serve one or more activities of this list	With a capacity of 10,000m ³ per day	1	
6	Paper and wood production and processing		36	
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	9	
6(c)	Industrial plants for the preservation of wood and wood products with chemicals	With a production capacity of 50m ³ per day	26	
7	Intensive livestock production and aquaculture		508	
7(a).i	Installations for the intensive rearing of poultry	With 40,000 places for poultry	99	
7(a).ii	Installations for the intensive rearing of pigs	With 2,000 places for production pigs (over 30 kg)	14	
7(a).iii	Installations for the intensive rearing of pigs	With 750 places for sows	2	

Code	Activity	Capacity Threshold	Operator submits return	Waste system transfer
7(b).i	Intensive aquaculture	Not exceeding 1,000 tonnes of fish and shellfish per year	186	
7(b).ii	Intensive aquaculture	With 1,000 tonnes of fish and shellfish per year	207	
8	Animal and vegetable products from the food and beverage sector		59	
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	15	
8(b).ii	(ii) Vegetable raw materials	With a finished product production capacity of 300 tonnes per day (average value on a quarterly basis)	20	
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)	6	
9	Other activities		21	
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	13	
9(e)	Installations for the building of, and painting or removal of paint from ships	With a capacity for ships 100m long	3	
10	Radioactive Substances Act Activities		78	
10(a)	Activities at Band A premises under the Radioactive Substances Act 1993 Fees and Charging (Scotland) Scheme 2004		5	
10(b)	Activities at Band B premises under the Radioactive Substances Act 1993 Fees and Charging (Scotland) Scheme 2004		73	
Total sites required to report to SPRI in 2019			1327	

Excluding sites whose data is taken from the Waste reporting system, 13 sites have not yet submitted SPRI returns for 2019. All are non-operational and the majority are either in administration or abandoned.

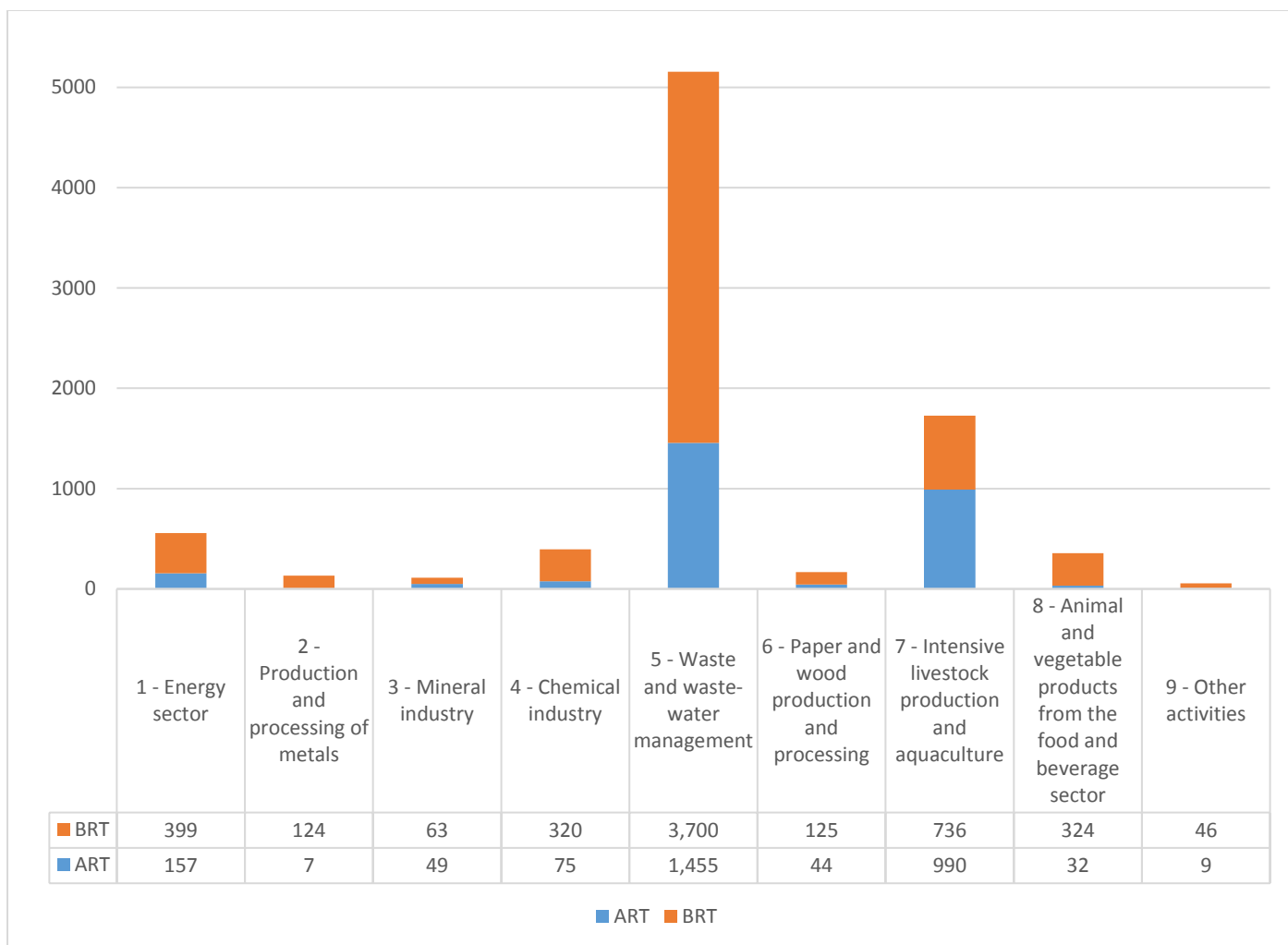
Pollutants reported by Activity code

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 556 individual emissions, of which 157 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 8: Number of individually-reported pollutants emitted to both media at above and below reporting thresholds in each industry area for 2019



2. About this Experimental Statistic

Experimental statistics are a subset of newly developed or innovative official statistics that are undergoing evaluation. They are published in order to involve users and stakeholders at an early stage in assessing their suitability and quality.

2.1 Scope of this statistical release

We have focussed on the emissions of pollutants to the environment and on off-site 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. We have not included data on the areas below but all are available from the SEPA website's SPRI pages and on Scotland's Environment Web:

- radioactive substances
- releases to waste water
- off-site waste transfers from waste sector sites

2.2 User statement

The SPRI helps the United Kingdom fulfil its obligation under the [UNECE \(United Nations Economic Commission for Europe\) PRTR Protocol](#) to the [Aarhus Convention](#) on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters to produce a publicly available national PRTR system. The [United Kingdom PRTR](#) contains the annual E-PRTR data for Scotland, Northern Ireland, England and Wales and is used to fulfil the reporting requirements of the [European Pollutant Release and Transfer Register \(E-PRTR\) Regulation](#), the [EU Industrial Emissions Directive](#) and the [EU INSPIRE Directive](#).

The OECD Council Act on PRTRs (1996), amended in 2003, calls for member countries to establish PRTRs. The UK participates in the [OECD Task Force on PRTRs](#) and the [UNECE \(United Nations Economic Commission for Europe\) PRTR Protocol](#) Working Group which also manages the Global PRTR.

SPRI data contributes to the [Global PRTR dataset](#) (via E-PRTR) which contains data from countries world-wide including Japan, Australia, U.S.A., Canada, Chile, South Korea, and most countries in the Europe Union.

SPRI data are also used to fulfil various other reporting requirements and obligations including those of the UK [National Atmospheric Emissions Inventory](#) (NAEI), which fulfils the [UNECE Convention on Long Range Transboundary Air Pollution](#) (CLRTAP), and the UK Greenhouse Gas Inventory, which fulfils the [UN Kyoto Framework Convention on Climate Change](#) (UNFCCC). Other obligatory uses are the [OSPAR Convention](#) and [Scotland's Marine Atlas](#).

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

2.3 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 notice.

2.4 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, and returns are immediately available to view on the SEPA website's SPRI pages. The revision process requires similar Quality Assurance 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 updates annually and will include all revisions to previous years.

Where necessary, PRTR data revisions will be resupplied to the European Commission (EC) and European Environment Agency (EEA) via Defra.

One site changed reporting code this year: INEOS Chemicals Grangemouth now reports under 4(a)i instead of 1(a).

Table 7: Revisions to historic SPRI pollutant emission data since last publication

Site name	Dataset year	Pollutant	Medium	Mass (kg)	
				original	updated
Allanfearn Sewage Treatment Works, Inverness	2018	Lindane	Water	no entry	BRT
Calachem Ltd, Grangemouth	2018	Copper	Water	77.8	726
Cameronbridge Distillery, Windygates, Leven	2018	Ammonia	Water	378	101.91
Cheviot View Poultry Farm, Greenlaw	2018	Particulate matter - total	Air	no entry	BRT
Congeith, Kirkgunzeon, Dumfries	2018	Particulate matter - total	Air	no entry	BRT
Cumnock Underwood	2018	Ammonia	Water	52700	232
Dalmuir STW, Beardmore Street, Clydebank	2018	Lindane	Water	no entry	0.22
DSM @ Drakemyre Chemical Works, Dalry	2018	Methane	Air	58,100	111,552
Elmbank Poultry Farm, Crossgates, Fife	2018	Particulate matter - total	Air	no entry	BRT
Flotta Terminal, Orkney	2018	Total organic carbon	Water	473	BRT
Flotta Terminal, Orkney	2012	Nitrogen oxides, NO and NO2 as NO2	Air	BRT	516,656
Flotta Terminal, Orkney	2012	Nitrous oxide	Air	13,991	16,653
Flotta Terminal, Orkney	2013	Nitrogen oxides, NO and NO2 as NO2	Air	111,272	565,169
Flotta Terminal, Orkney	2013	Nitrous oxide	Air	13,991	12,925
Flotta Terminal, Orkney	2014	Nitrogen oxides, NO and NO2 as NO2	Air	111,272	481,018
Flotta Terminal, Orkney	2014	Nitrous oxide	Air	13,991	BRT
Flotta Terminal, Orkney	2015	Nitrogen oxides, NO and NO2 as NO2	Air	111,273	706,073
Flotta Terminal, Orkney	2015	Nitrous oxide	Air	13,991	16,706
Flotta Terminal, Orkney	2016	Nitrogen oxides, NO and NO2 as NO2	Air	111,272	665,236
Flotta Terminal, Orkney	2016	Nitrous oxide	Air	13,991	19,304
Flotta Terminal, Orkney	2017	Carbon dioxide	Air	144,205,632	148,108,000
Flotta Terminal, Orkney	2017	Carbon monoxide	Air	BRT	489,063
Flotta Terminal, Orkney	2017	Methane	Air	15,332	69,127
Flotta Terminal, Orkney	2017	Nickel	Air	15.00	17.28
Flotta Terminal, Orkney	2017	Nitrogen oxides, NO and NO2 as NO2	Air	111,272	625,078

Flotta Terminal, Orkney	2017	Nitrous oxide	Air	13,991	20,694
Flotta Terminal, Orkney	2017	Non-methane volatile organic compounds (NMVOCs)	Air	2,832,993	1,189,644
Flotta Terminal, Orkney	2018	Antimony	Air	2.226	2.32
Flotta Terminal, Orkney	2018	Carbon dioxide	Air	144,205,632	115,098,000
Flotta Terminal, Orkney	2018	Carbon monoxide	Air	BRT	342,930
Flotta Terminal, Orkney	2018	Methane	Air	15,332	46,089
Flotta Terminal, Orkney	2018	Nickel	Air	37	38.24
Flotta Terminal, Orkney	2018	Nitrogen oxides, NO and NO2 as NO2	Air	111,272	447,805
Flotta Terminal, Orkney	2018	Nitrous oxide	Air	13,991	15,043
Flotta Terminal, Orkney	2018	Non-methane volatile organic compounds (NMVOCs)	Air	2,832,993	840,823
Flotta Terminal, Orkney	2018	Vanadium	Air	BRT	14.98
Garpit Poultry Farm, Tayport, Fife	2018	Particulate matter - total	Air	no entry	BRT
Glasgow Royal Infirmary, Dennistoun	2018	Carbon dioxide	Air	24,679,537	11,558,079
Glasgow Royal Infirmary, Dennistoun	2018	Particulate matter - PM10 and smaller	Air	no entry	BRT
Glasgow Royal Infirmary, Dennistoun	2018	Particulate matter - total	Air	no entry	BRT
House of Surface Water Mine, New Cumnock	2017	Particulate matter - PM10 and smaller	Air	200,405	BRT
House of Surface Water Mine, New Cumnock	2018	Particulate matter - PM10 and smaller	Air	229,771	14,823
INEOS Chemicals Grangemouth Limited	2016	Benzene	Air	15,997	18,189
INEOS Chemicals Grangemouth Limited	2016	Carbon dioxide	Air	536,660,317	541,086,138
INEOS Chemicals Grangemouth Limited	2016	Carbon monoxide	Air	107,016	1,359,977
INEOS Chemicals Grangemouth Limited	2016	Non-methane volatile organic compounds (NMVOCs)	Air	1,072,108	927,262
INEOS Chemicals Grangemouth Limited	2016	Non-methane volatile organic compounds (NMVOCs) - accidental release	Air	no entry	3,312
INEOS Chemicals Grangemouth Limited	2017	Benzene	Air	15,014	17,054
INEOS Chemicals Grangemouth Limited	2017	Carbon dioxide	Air	611,437,310	611,782,662
INEOS Chemicals Grangemouth Limited	2017	Carbon monoxide	Air	160,783	1,424,666
INEOS Chemicals Grangemouth Limited	2017	Nitrogen oxides, NO and NO2 as NO2	Air	491,575	491,790
INEOS Chemicals Grangemouth Limited	2017	Non-methane volatile organic compounds (NMVOCs)	Air	910,051	915,235
INEOS Chemicals Grangemouth Limited	2017	Non-methane volatile organic compounds (NMVOCs) - accidental release	Air	no entry	16,900
INEOS Chemicals Grangemouth Limited	2018	Benzene	Air	15,014	16,409
INEOS Chemicals Grangemouth Limited	2018	Carbon dioxide	Air	617,280,353	601,481,066
INEOS Chemicals Grangemouth Limited	2018	Carbon monoxide	Air	160,783	1,413,780
INEOS Chemicals Grangemouth Limited	2018	Nitrogen oxides, NO and NO2 as NO3	Air	529,041	529,256
INEOS Chemicals Grangemouth Limited	2018	Non-methane volatile organic compounds (NMVOCs)	Air	910,051	824,950
Madderty Poultry Farm, Welltree Road, Crieff	2018	Particulate matter - total	Air	no entry	BRT
Mains of Duncrub Farm, Dunning	2017	Methane	Air	BRT	Nil
Mains of Duncrub Farm, Dunning	2018	Methane	Air	BRT	Nil
Mains of Woodstone Free Range Egg Farm	2018	Particulate matter - total	Air	no entry	BRT

Meadowhead Sewage Treatment Works, Irvine	2018	Lindane	Water	no entry	0.115
Nigg WWTW, Aberdeen	2018	Lindane	Water	no entry	BRT
Nigg WWTW, Aberdeen	2018	Hexachlorocyclohexane - all isomers	Water	no entry	BRT
Paisley STW, Abercorn St, Paisley	2018	Lindane	Water	no entry	BRT
Queen Elizabeth University Hospital, Glasgow	2018	Carbon dioxide	Air	26,495,181	19,163,030
RWE Markinch Limited, Glenrothes	2018	Carbon dioxide - biomass %	Air	no entry	97.50%
Sapphire Mill	2018	Carbon dioxide	Air	10,522,617	13,991,489
Simec Hydropower Lochaber, Lochaber Smelter	2018	Carbon monoxide	Air	no entry	BRT
Simec Hydropower Lochaber, Lochaber Smelter	2018	Nitrogen oxides, NO and NO2 as NO2	Air	no entry	BRT
Simec Hydropower Lochaber, Lochaber Smelter	2018	Particulate matter - PM10 and smaller	Air	no entry	BRT
Wellhill Farm, Dyke, Forres, Moray	2017	Ammonia	Air	9,100	3,720

Table 8: Revisions to historic SPRI waste data since last publication

Site name	Dataset year	Waste type	Recovery or disposal	Mass (tonnes)	
				original	new
Allers WwTW	2018	Non hazardous	Recovery	22,988	23,983
Alloa WwTW	2018	Non hazardous	Recovery	8,002	16,546
Annan WwTW	2018	Non hazardous	Recovery	4,025	4,623
Ardoch WwTW	2018	Non hazardous	Recovery	21,555	19,904
Armadale WwTW	2018	Non hazardous	Recovery	5,550	8,548
Bathgate WwTW	2018	Non hazardous	Recovery	3,300	9,563
Bo'ness WwTW	2018	Non hazardous	Recovery	4,270	10,522
Bonnybridge WwTW	2018	Non hazardous	Recovery	3,501	5,966
Bothwellbank WwTW	2018	Non hazardous	Recovery	13,005	18,610
Carbarns (Motherwell) WwTW	2018	Non hazardous	Recovery	2,555	23,035
Cumnock Underwood WwTW	2018	Non hazardous	Recovery	2,368	2,097
Cupar WwTW	2018	Non hazardous	Recovery	22,500	2,000
Dalinlongart L/F & Compost, Sandbank, Dunoon	2018	Hazardous	Disposal	179	no entry
Dalinlongart L/F & Compost, Sandbank, Dunoon	2018	Hazardous	Recovery	no entry	179
Dalinlongart L/F & Compost, Sandbank, Dunoon	2018	Non hazardous	Disposal	2,871	no entry
Dalinlongart L/F & Compost, Sandbank, Dunoon	2018	Non hazardous	Recovery	no entry	2,871
Dalmarnock WwTW	2018	Non hazardous	Recovery	no entry	30.05
Dunbar WwTW	2018	Non hazardous	Recovery	4,560	1,972
Dunfermline WwTW	2018	Non hazardous	Recovery	18,675	10,425
Ellon WwTW	2018	Non hazardous	Recovery	12,175	10,863
Erskine WwTW	2018	Non hazardous	Recovery	9,105	26.78
Forfar WwTW	2018	Non hazardous	Recovery	no entry	11,904
Forres WwTW	2018	Non hazardous	Recovery	6,450	5,316
Galashiels WwTW	2018	Non hazardous	Recovery	10,161	4,606
Hamilton WwTW	2018	Non hazardous	Recovery	no entry	33,619
Hawick WwTW	2018	Non hazardous	Recovery	11,307	8,304
Helensburgh WwTW	2018	Non hazardous	Recovery	no entry	5,065
Inverurie WwTW	2018	Non hazardous	Recovery	5,040	14,561

Iron Mill Bay WwTW	2018	Non hazardous	Recovery	3,780	4,549
Kinneil Kerse WwTW	2018	Non hazardous	Recovery	13,717	9,925
Loch Ryan WwTW	2018	Non hazardous	Recovery	4,020	511
Mauldsie (Carluke) WwTW	2018	Non hazardous	Recovery	7,010	10,535
Millerhill Recycling & Energy Recovery Centre	2018	Non hazardous	Disposal	no entry	351,701
Millerhill Recycling & Energy Recovery Centre	2018	Non hazardous	Recovery	351,701	no entry
NRC Environmental, 10 River Drive, Alness	2018	Hazardous	Disposal	1,628	1,372
NRC Environmental, 10 River Drive, Alness	2018	Non hazardous	Disposal	6,046	3,923
Perth WwTW	2018	Non hazardous	Recovery	12,900	14,311
Philipshill WwTW	2018	Non hazardous	Recovery	25,890	30,807
Skellyton WwTW	2018	Non hazardous	Recovery	8,059	11,881
Stirling WwTW	2018	Non hazardous	Recovery	2,063	24,415
Swinstie (Cleland) WwTW	2018	Non hazardous	Recovery	3,624	8,091

2.5 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 Releases 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 SEPA-regulated industrial facilities. It also provides information on off-site transfers of waste and waste-water 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](#), 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 thresholds are largely determined by European reporting requirements but some thresholds have been lowered to be relevant to pollutant releases in the UK and Scotland. 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 Waste Water 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 waste water 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 off-site 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 February 28th 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 credible. In outline:

- We carry out data checks using historic data from the site and similar sites.
- Where data is 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 cross checks 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's E-PRTR submission to the EC. The EC and EEA then carry out further checks and will inform us of any issues they identify.

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 at:

<https://www.sepa.org.uk/regulations/authorisations-and-permits/compliance-assessment-scheme/>

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 EU legislation and Scottish Regulations.

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 (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 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 their SEPA authorisations. In some cases it may be modelled (e.g. many of the pollutants from landfills and waste water treatment works), or we ask the operator to use an emission factor (e.g. poultry farmers' ammonia emissions). 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 in kilograms (kg)
- All radioactive pollutants are reported in megabecquerel (MBq)
- Off-site 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).

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 BRT. SPRI has very clear and specific definitions of accidental releases; please see the SPRI webpage for more detail.

European Pollutant Release and Transfer Register – E-PRTR

SPRI waste transfer data and around 20% of emissions data, covering roughly half of the SPRI sites, is supplied (via the UK PRTR) to the European PRTR, and will be published in the EU's [data explorer tool](#). The datasets have different reporting requirements: the E-PRTR focuses on emissions significant on the European scale, whereas both SPRI and the UK PRTR have been tailored to gather information which is useful from the national perspective.

Various UK- and Scotland-relevant pollutants and industrial sectors are included in the SPRI but not required by the E-PRTR Regulation; for example the radioactive substances. Urban Waste Water Treatment Plants and marine fish farms have a lower sector threshold, so more of our sites fall under reporting requirements. In addition, thresholds for pollutant reporting are generally set to less than the European thresholds so that they are relevant and consistent across the UK.

Full details of the SPRI and E-PRTR reporting requirements are available on the [SPRI website](#) and the European Commission's [European Pollutant Release and Transfer Register \(E-PRTR\) Regulation](#) website.