OSPAR COMMISSION

Protecting and conserving the North-East Atlantic and its resources

Mercury losses from the chlor-alkali industry in 2014

Hazardous Substances Series

2016

OSPAR Convention

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the "OSPAR Convention") was opened for signature at the Ministerial Meeting of the former Oslo and Paris Commissions in Paris on 22 September 1992. The Convention entered into force on 25 March 1998. The Contracting Parties are Belgium, Denmark, the European Union, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Convention OSPAR

La Convention pour la protection du milieu marin de l'Atlantique du Nord-Est, dite Convention OSPAR, a été ouverte à la signature à la réunion ministérielle des anciennes Commissions d'Oslo et de Paris, à Paris le 22 septembre 1992. La Convention est entrée en vigueur le 25 mars 1998. Les Parties contractantes sont l'Allemagne,
la Belgique, le Danemark, l'Espagne, la Finlande, la France, l'Irlande, l'Islande, le Luxembourg, la Norvège, les Pays-Bas, le Portugal, le Royaume-Uni de Grande Bretagne et d'Irlande du Nord, la Suède, la Suisse et l'Union européenne.

Acknowledgement

This report was prepared on the basis of data kindly provided by Euro-Chlor. It was compiled by the OSPAR Secretariat with guidance from the Expert Assessment Panel comprising Richard Moxon (UK) and Anya Novak (Germany)

Contents

1. Introduction

Under the former 1974 Convention for the prevention of marine pollution from land-based sources (the "Paris Convention") the following Decisions and Recommendations were adopted to address mercury discharges, emissions and losses from the chlor-alkali industry:

- PARCOM Decision 80/2 on Limit Values for Mercury Emissions in Water from Existing and New Brine Recirculation Chlor-alkali Plants (exit of the purification plant);
- PARCOM Decision 81/1on Limit Values for Existing Brine Recirculation Chlor-Alkali Plants (exit of the factory site);
- PARCOM Decision 81/2 on Limit Values for Existing Waste Brine Chlor-Alkali Plants;
- PARCOM Decision 82/1 on New Chlor-Alkali Plants Using Mercury Cells;
- PARCOM Recommendation 85/1 on Limit Values for Mercury Emissions in Water from Existing Brine Recirculation Chlor-Alkali Plants (exit of factory site);
- PARCOM Decision 90/3 on Reducing Atmospheric Emissions from Existing Chlor-Alkali Plants.

The Decisions and Recommendations listed above continue to be applicable under the 1992 Convention for the Protection of the Marine Environment of the North-East Atlantic (the "OSPAR Convention"), which replaces the Paris Convention and establishes the OSPAR Commission.

In 1983, Contracting Parties to the former Paris Convention initiated annual reporting of mercury discharges, emissions and losses from their national chlor-alkali industry. Over time, reporting requirements and formats have been regularly reviewed and up-dated in the light of the ongoing work under the Commission as regards the chlor-alkali industry. With a view to harmonising the way in which data and information are being established and reported, the OSPAR Commission adopted in 2003 the current reporting formats and procedures (OSPAR Agreement number 2003-5) which set out the requirements for data and information to be provided via Euro Chlor. Annual data on discharges, emissions and losses of mercury from each plant operating within OSPAR Contracting Parties are reported to the OSPAR Secretariat, which, following a check and validation by Contracting Parties, compiles these technical data in form of this report.

Following examination by the OSPAR Committee with responsibility for hazardous substances, the data are published by the OSPAR Commission in form of Annual Reports on Mercury Losses from the Chlor-alkali Industry. This report series comprises yearly data series from 1982. The data are assessed by an Expert Assessment Panel every two years.

OSPAR acknowledges the assistance of Euro Chlor in assembling the information and appreciates the efforts made by Euro Chlor to provide all requested information on a plant-by-plant basis and recommends continuing this procedure in future.

This report continues the series of annual reports on discharges, emissions and losses of mercury by all routes from mercury-cell chlor-alkali plants. The report presents the 2014 data on production capacities, atmospheric emissions of mercury, and the amount of mercury in safely deposited wastes. The presentation of those figures since 1998 will also assist in the assessment of the effectiveness of the implementation of PARCOM Decision 90/3.

2. Assessment of the 2014 report on mercury losses from the chlor-alkali industry

The 2014 data will be assessed together with the 2015 data and will be published in 2017.

3. Evolution of mercury losses from the chlor-alkali industry (1982 - 2014)

The following figures give a rough indication of the evolution of mercury losses from the chlor-alkali industry in the period 1982-2014 as follows:

Figure 1a: Chlorine Production Capacity with Mercury Cells by Contracting Party;

Figure 1b: Total Chlorine Production Capacity with Mercury Cells;

Figure 2a: Mercury Losses through Product, Waste Water and Air by Contracting Party;

Figure 2b: Total Mercury Losses through Product, Waste Water and Air;

Figure 3a: Atmospheric Emissions of Mercury by Contracting Party;

Figure 3b: Total Atmospheric Emissions of Mercury.

It should be noted that these figures use data from previously published OSPAR Reports and that the way in which these data, in particular the data preceding 1999, were calculated and reported might differ:

- from Contracting Party to Contracting Party;
- within a time series of one Contracting Party.

Therefore, the interpretation of the figures is limited and any comparisons have to be carried out with extreme caution.

It should also be noted that Finland and Switzerland were not Contracting Parties to the former Paris Convention. Prior to the entry into force of the OSPAR Convention, those Contracting Parties supplied data on a voluntary basis as follows:

Finland: from 1996 onwards, atmospheric emissions from the only mercury-based chlor-alkali plant, which discharges into the Baltic Sea (i.e. outside the OSPAR maritime area);

Switzerland: from 1993 onwards, full data sets for the national mercury-based and mercury-free chlor-alkali industry.

For data reported prior to 1999, some information about changes in the reporting over time, as well as explanations of considerable increases or decreases in values, are given in footnotes to the OSPAR Report on Mercury Losses from the Chlor-alkali Industry (1982-1998), which was published in 2000 (available in hard copy only).

Further sources of information to be taken into account are the expert assessments, which were included in the publication of the Annual OSPAR Reports on Mercury Losses from the Chlor-alkali Industry from 1996 onwards.

Until 2003, data has been published in Figures 1 to 3 as total figures for each Contracting Party. Since 1998, data has been made available on a plant-by-plant basis[1]. In order to improve comparability of performance, plant-by-plant data are now published in:

Table 1: Chlorine Production Capacity with Hg-cells (tonnes)

Table 2: Mercury Losses through Product, Waste Water and Air (kg per year)

Table 3: Mercury Losses through Product, Waste Water and Air (g per tonne production capacity)

Table 4: Atmospheric Emissions of Mercury (kg per year)

Table 5: Atmospheric Emissions of Mercury (g per tonne production capacity)

Table 6: Mercury in Safely Deposited Wastes (kg per year)

[1] For plant codes in the tables see section 4.2.

Table 7: Mercury in Safely Deposited Wastes (g per tonne production capacity)

The presentation of these figures since 1998 also assists in:

a. the review of progress to moving towards the OSPAR 2020 target of the cessation of discharges, emissions and losses of mercury;

b. the assessment of the effectiveness of the implementation of PARCOM Decision 90/3.

To this end, all locations of mercury-based chlor-alkali plants in operation in 1998 are described in Section 4.2 including when they have been decommissioned or converted.

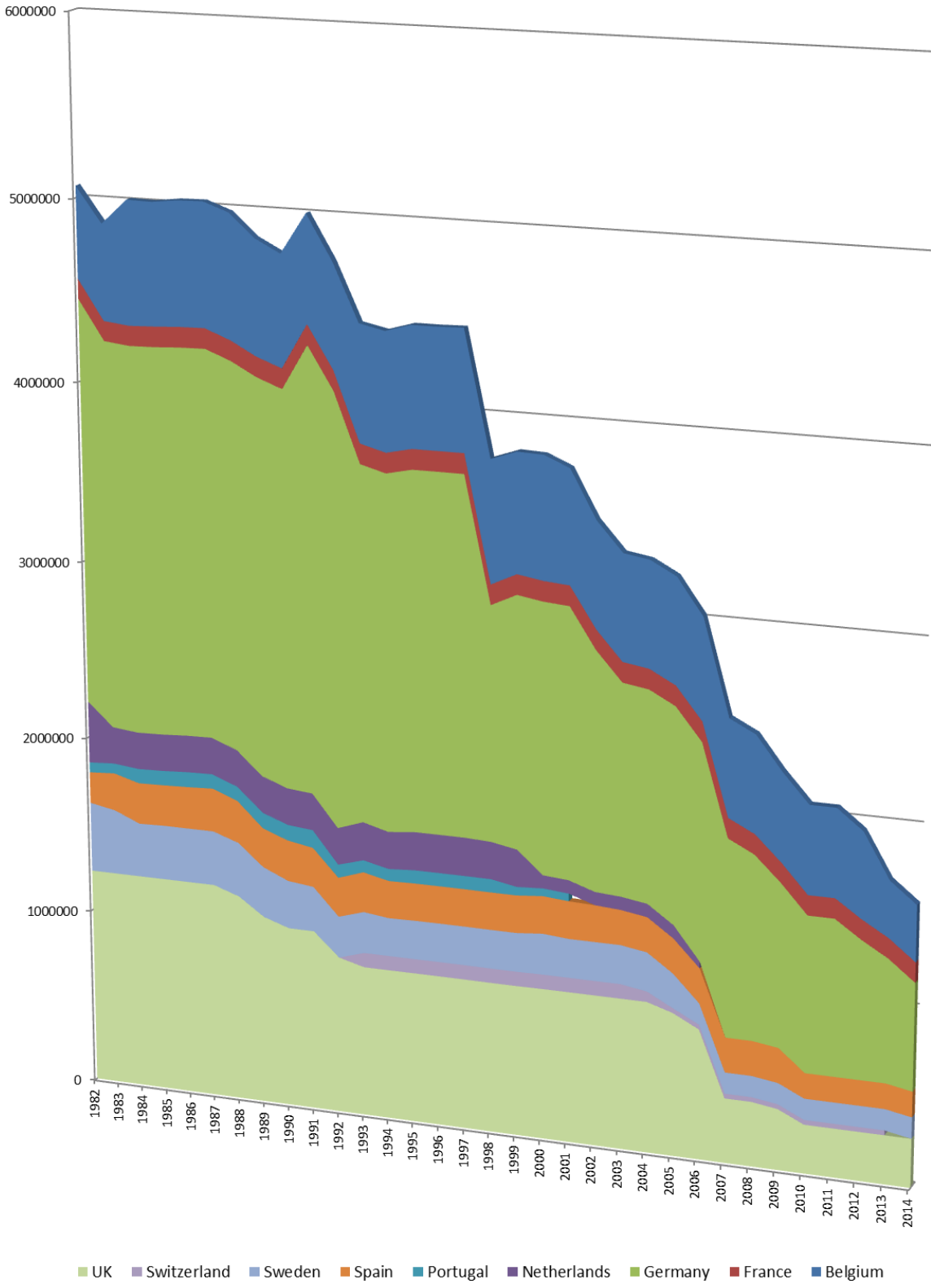

Figure 1a: Cumulative area chart showing chlorine production capacity with mercury cells of plants discharging into the OSPAR catchment area by Contracting Party (in kilotonnes per year)

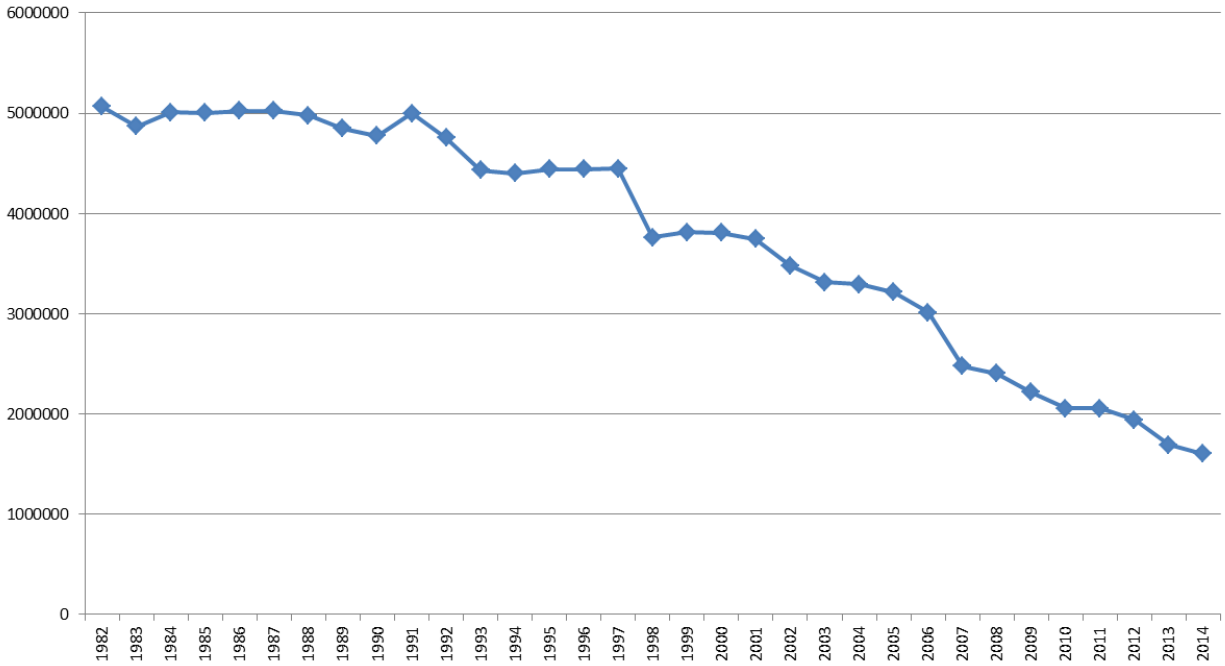

Figure 1b: Total chlorine production capacity with mercury cells of plants discharging into the OSPAR catchment area for all Contracting Parties (in kilotonnes per year)

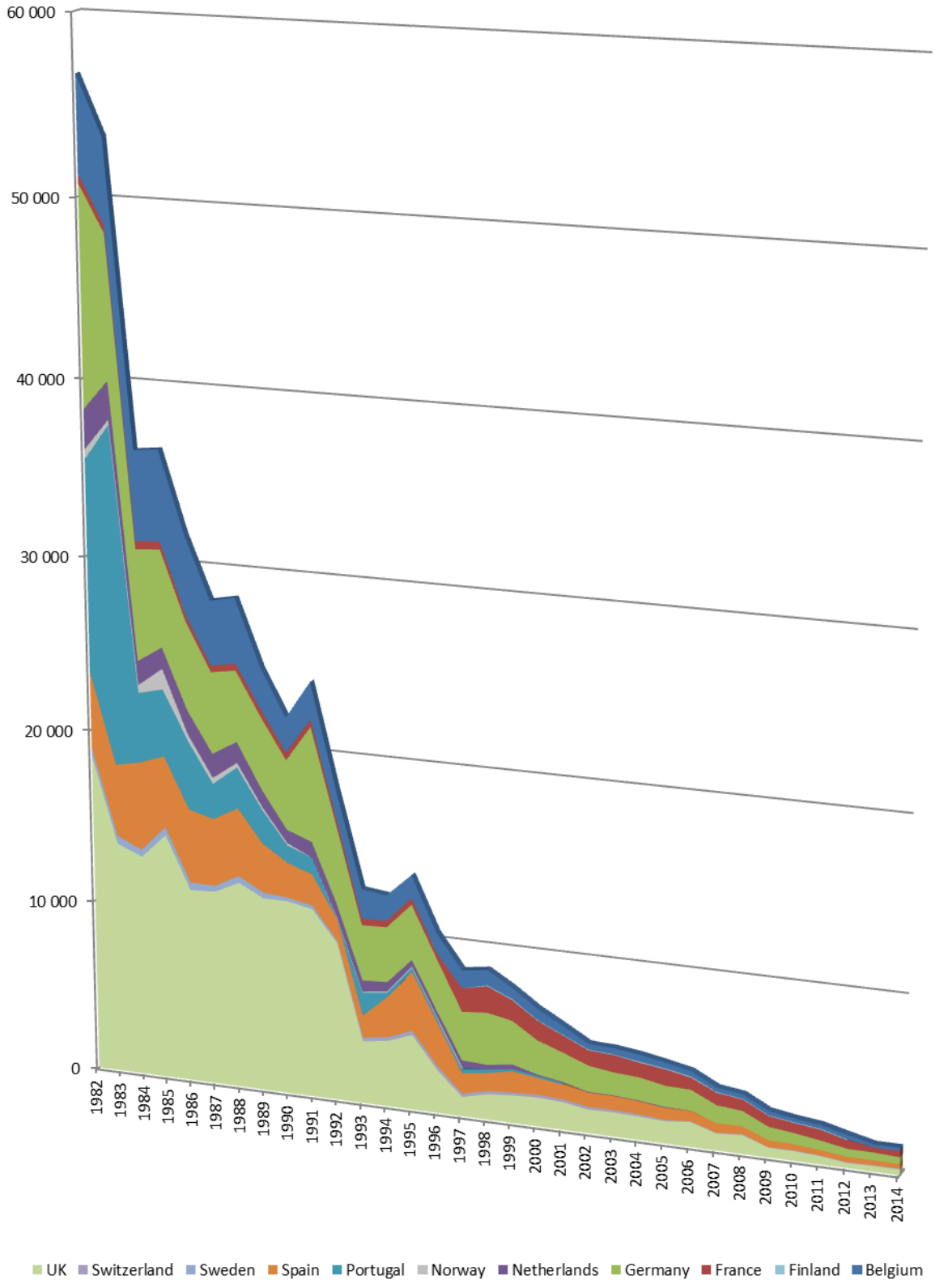

Figure 2a: Cumulative area chart showing mercury losses through product, wastewater and air (in kilograms per year, sum of mercury losses to product and wastewater from national plants discharging into the OSPAR catchment area plus atmospheric emissions from all national plants)

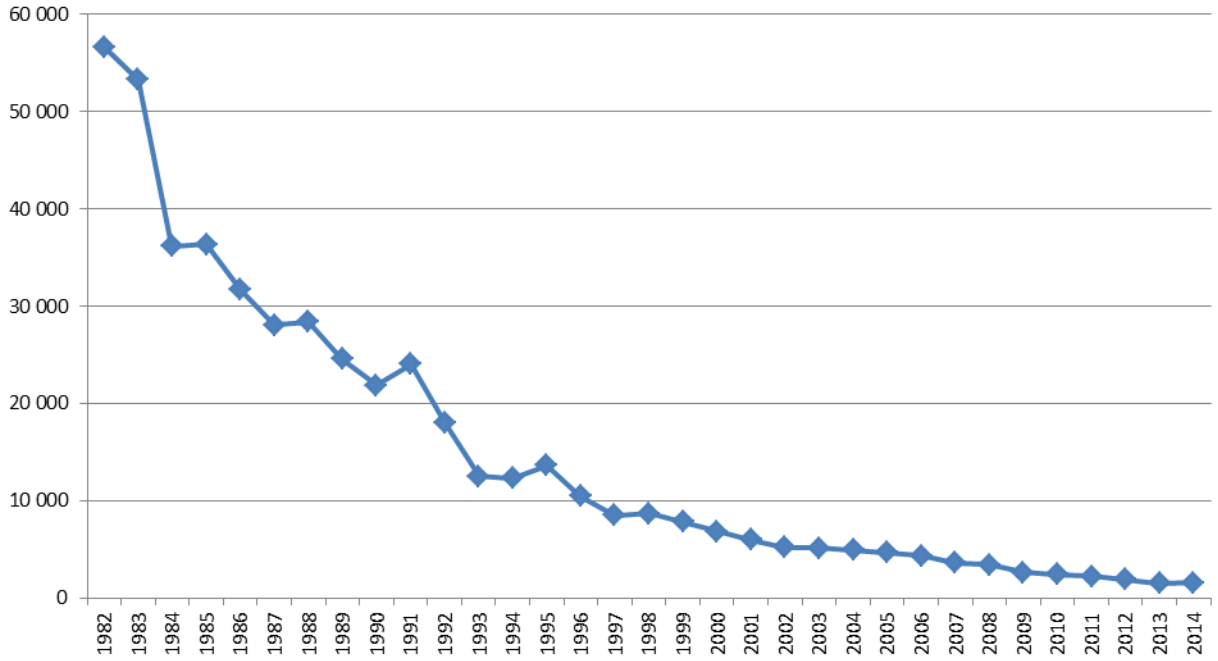

Figure 2b: Total mercury losses through product, wastewater and air for all Contracting Parties
(in kilograms per year, sum of mercury losses to product and wastewater from national plants discharging into the OSPAR catchment area plus atmospheric emissions from all national plants)

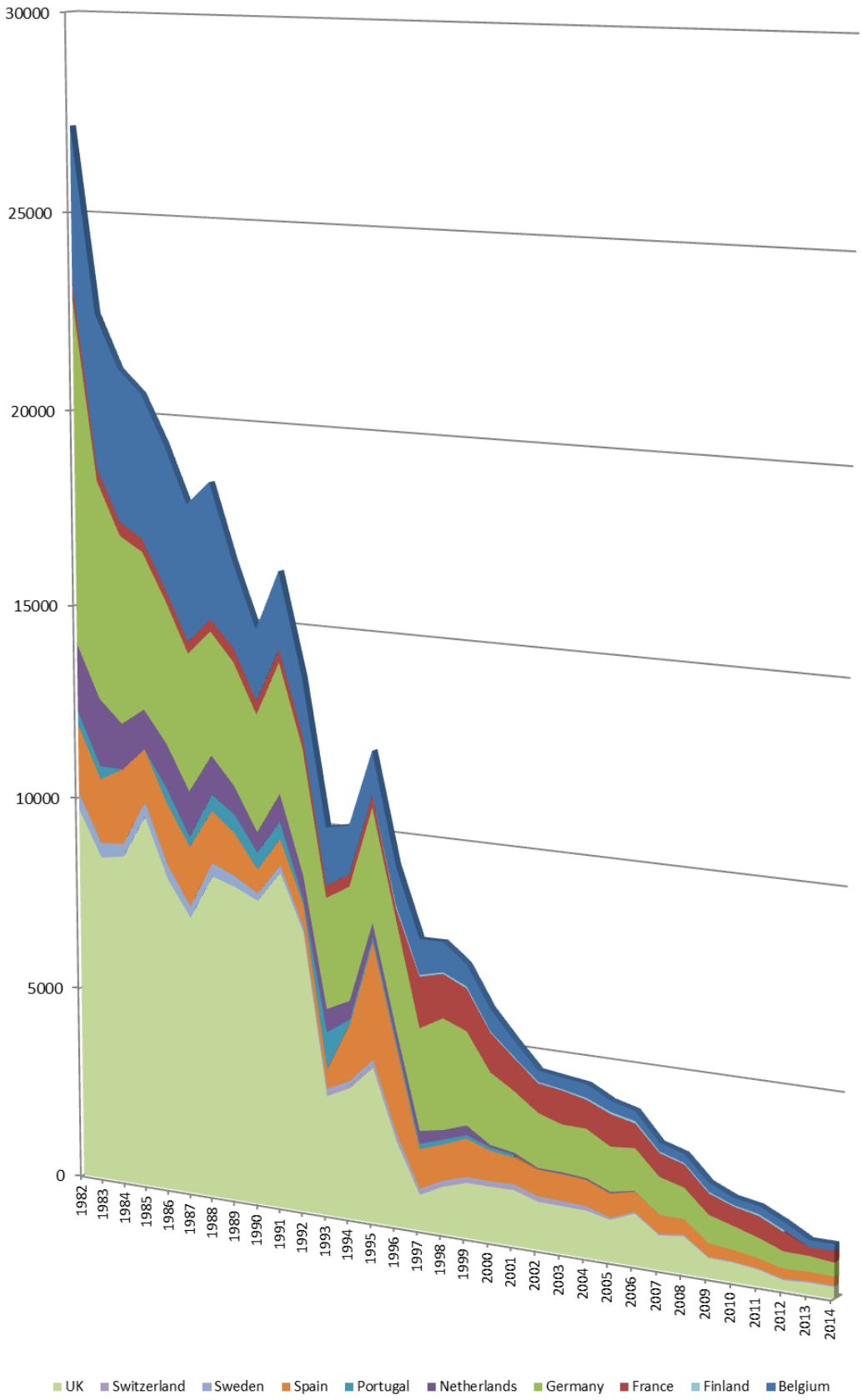

Figure 3a: Cumulative area chart showing atmospheric emissions of mercury from all plants from Contracting Parties (in kilograms per year, all plants)

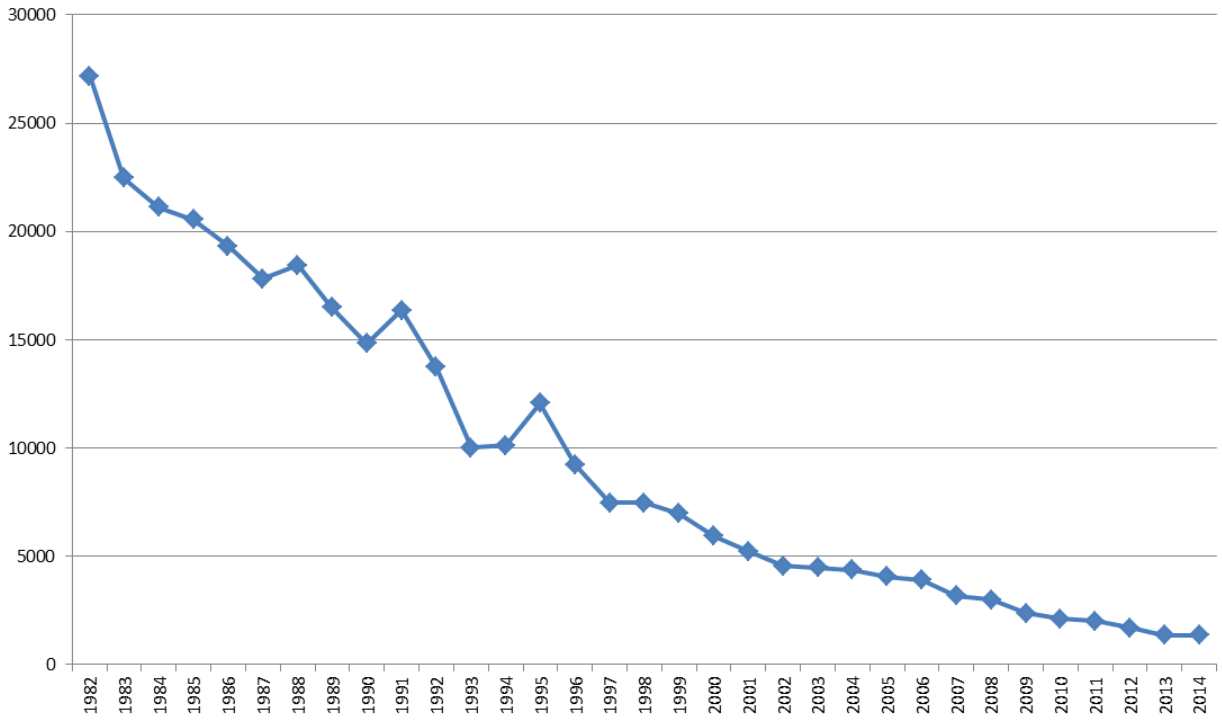

Figure 3b: Total atmospheric emissions of mercury from all plants for all Contracting Parties (in kilograms per year, all plants)

Table 1: Chlorine Production Capacity with Hg-cells (tonnes) from all plants
(* indicates plants discharging into OSPAR maritime area only)

Site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belgium																
BE/01*[2]	230 000	219 000	219 000	219 000	219 000	219 000	219 000	219 000	219 000	219 000	180 000	180 000	180 000	167 006	SD	SD
BE/02*	250 000	250 000	250 000	250 000	250 000	250 000	250 000	227 500	205 000	205 000	205 000	205 000	205 000	205 000	205 000	205 000
BE/03*	100 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	110 000	110 000	110 000	110 000	110 000	110 000
BE/04*	82 000	90 900	41 663	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**662 000**	**679 900**	**630 663**	**589 000**	**589 000**	**589 000**	**589 000**	**566 500**	**544 000**	**544 000**	**495 000**	**495 000**	**495 000**	**482 006**	**315 000**	**315 000**
Finland																
SFR/01	40 000	40 000	40 000	42 485	42 485	42 485	42 485	42 485	42 485	42 485	42 485	40 000	40 000	40 000	40 000	
Total	**40 000**	**40 000**	**40 000**	**42 485**	**42 485**	**42 485**	**42 485**	**42 485**	**42 485**	**42 485**	**42 485**	**40 000**	**40 000**	**40 000**	**40 000**	**0**
France																
FR/01*	18 040	18 040	18 040	18 040	18 040	18 040	18 040	18 040	18 040	18 040	18 040	18 040	18 040	18 040	18 040	18 040
FR/02*	72 000	72 000	72 000	72 000	72 000	72 000	72 000	72 000	72 000	72 000	72 000	72 000	72 000	72 000	72 000	72 000
FR/03[2]	240 900	240 900	240 900	240 900	240 900	240 900	240 900	240 900	240 900	240 900	240 900	240 900	240 000	240 000	222 128	SD	SD
FR/04[3]	170 070	170 070	170 070	170 070	170 070	170 070	170 070	170 070	170 070	170 070	170 070	170 070	170 070	170 070	127 550	100 642	MT
FR/05*	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500	22 500
FR/06	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000	166 000
FR/07	184 300	184 300	184 300	184 300	184 300	184 300	184 300	184 300	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**873 810**	**873 810**	**873 810**	**873 810**	**873 810**	**873 810**	**873 810**	**873 810**	**689 510**	**689 510**	**689 510**	**689 510**	**688 610**	**688 610**	**628 218**	**379 182**	**278 540**
Germany																
DE/01	130 000	65 000	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/02*[2]	130 000	130 000	140 000	140 000	110 000	110 000	110 000	130 000	130 000	130 000	130 000	130 000	130 000	130 000	29 957	SD	SD
DE/03*	120 000	120 000	125 000	125 000	125 000	125 000	125 000	125 000	125 276	125 276	125 276	125 276	125 276	125 276	125 276	125 276	125 276
DE/04*	150 000	300 000	300 000	300 000	153 000	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/05*	180 000	150 000	160 000	160 000	160 000	160 000	160 000	165 500	170 000	170 000	170 000	170 000	170 000	170 000	170 000	170 000	174 711
DE/06*	65 000	130 000	148 828	148 828	148 828	148 828	148 828	148 828	148 828	148 828	148 828	148 828	148 828	148 828	148 828	80 808	SD
DE/07*	160 000	180 000	182 000	176 000	176 000	176 000	176 000	176 000	176 000	72 811	NI	NI	NI	NI	NI	NI	NI
DE/08*	200 000	98 000	135 951	135 951	135 951	135 951	135 951	135 951	135 951	135 951	135 951	137 400	137 400	137 400	137 400	150 000	137 400
DE/09*	150 000	150 000	160 000	167 000	167 000	167 000	167 000	167 000	167 000	167 376	167 000	167 000	167 000	167 000	167 000	167 000	167 000
DE/10	300 000	248 000	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DE/11	50 000	60 000	9 804	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/12	72 000	157 000	157 000	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/13*	157 000	150 000	160 000	160 000	160 000	160 000	160 000	160 000	160 000	160 000	160 000	39 216	MT	MT	MT	MT	MT
DE/14[4]	300 000	72 000	82 355	82 355	82 355	82 355	82 355	82 355	82 355	82 355	82 355	41 178	MT	MT	MT	MT	MT
DE/15[5]	120 000	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**2 284 000**	**2 010 000**	**1 760 938**	**1 595 134**	**1 418 134**	**1 265 134**	**1 265 134**	**1 290 634**	**1 295 410**	**1 192 597**	**1 119 410**	**958 898**	**878 504**	**878 504**	**778 461**	**693 084**	**604 387**
Netherlands																
NL/01*	70 000	74 294	74 294	74 294	74 294	74 294	74 294	37 452	SD	SD	SD	SD	SD	SD	SD	SD	SD
NL/02*	140 000	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**210 000**	**74 294**	**74 294**	**74 294**	**74 294**	**74 294**	**74 294**	**37 452**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Portugal																
P/01*	48 000	43 302	43 302	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P/02*	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**48 000**	**43 302**	**43 302**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**

2 The indicated production capacities of Lillo (Belgium), Tavaux (France) and Uerdingen (Germany) are lower than the previous year as these plants shut down during 2012.

3 The production capacity of Jarrie (France) is reduced during 2012 due to a progressive conversion.

4 The plant has converted to membrane technology; the reported "mercury" capacity is pro rata the time the plants were in production

5 The plant has converted to membrane technology; the reported "mercury" capacity is pro rata the time the plants were in production

Spain																	
ES/01	31 920	30 000	31 373	31 373	31 373	31 373	31 373	31 373	31 373	31 373	31 373	31 373	31 373	31 373	31 373	31 373	31 373
ES/02*	14 815	15 000	14 815	14 815	9 877	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
ES/03*	33 552	33 500	33 552	33 552	33 552	33 552	33 552	33 552	33 552	33 552	33 552	33 552	33 552	33 552	33 552	33 552	33 552
ES/04	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	150 000	115 200	115 200	115 200	87 626	78 434
ES/05*	62 745	63 000	62 747	62 747	62 747	62 747	62 747	62 747	62 747	62 747	62 747	62 747	62 747	62 747	62 747	62 747	62 747
ES/06	209 200	209 000	217 871	217 871	217 871	217 871	217 871	217 871	217 871	217 871	217 871	217 871	217 871	217 871	217 871	217 871	217 653
ES/07	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000	25 000	10 417	MT	MT	MT	MT	MT
ES/08	135 000	135 000	135 004	135 004	135 004	135 004	135 004	135 004	135 004	135 004	135 004	135 004	135 000	135 000	135 000	135 000	135 000
ES/09*	101 000	101 000	100 929	100 929	100 929	100 929	100 929	100 929	100 929	100 929	100 929	100 929	47 496	47 496	47 496	47 496	47 496
Total	**763 232**	**761 500**	**771 291**	**771 291**	**766 353**	**756 476**	**756 476**	**756 476**	**756 476**	**756 476**	**756 476**	**741 893**	**643 239**	**643 239**	**643 239**	**615 665**	**606 255**

Sweden																
SE/01*	100 000	100 000	100 000	100 000	100 000	100 000	74 355	SD	SD	SD	SD	SD	SD	SD	SD	SD
SE/02*	120 000	132 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000	120 000
Total	**220 000**	**232 000**	**220 000**	**220 000**	**220 000**	**220 000**	**194 355**	**120 000**	**120 000**	**120 000**	**120 000**	**120 000**	**120 000**	**120 000**	**120 000**	**120 000**

Switzerland																
CH/01*[8]	55 000	55 000	55 000	55 000	55 000	32 083	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/02	22 000	26 500	26 500	26 500	26 500	26 500	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/03*	26 500	27 000	27 000	27 000	27 000	27 000	27 000	27 000	27 000	27 000	27 000	27 000	27 000	27 000	27 000	26 500
Total	**103 500**	**108 500**	**108 500**	**108 500**	**108 500**	**85 583**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**27 000**	**26 500**

UK																
UK/01*	29 000	29 413	29 413	29 413	29 413	29 413	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/02*	89 000	89 872	89 872	89 872	89 872	89 872	74 855	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/03*[9]	738 000	738 000	738 000	738 000	738 000	738 000	738 000	738 000	367 000	367 000	346 000	277 000	277 000	277 000	277 000	277 000
Total	**856 000**	**857 285**	**857 285**	**857 285**	**857 285**	**857 285**	**812 855**	**738 000**	**367 000**	**367 000**	**346 000**	**277 000**	**277 000**	**277 000**	**277 000**	**277 000**

NI: No information; N/A: Not applicable; PC: Partly converted to membrane technology; MT: Converted to membrane technology; SD: Shutdown

Production capacity of all installations in the Convention area

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Tonnes	6 110 814	5 784 810	5 441 320	5 214 279	4 949 861	4 786 984	4 764 067	4 660 909	4 272 833	3 739 068	3 665 881	3 420 786	3 169 353	3 169 353	2 995 924	2 466 931	2 227 682
%	100	95	89	85	81	78	78	76	70	61	60	56	52	52	49	40	36

Production capacity of installations in the OSPAR catchment area

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Tonnes	3 759 424	3 810 540	3 805 143	3 744 906	3 478 003	3 315 126	3 292 209	3 215 551	3 011 775	2 478 010	2 404 823	2 215 488	2 053 839	2 053 839	1 940 802	1 688 419	1 599 222
%	100	101	101	100	93	88	88	86	80	66	64	59	55	55	52	45	43

6 The plant has converted to membrane technology; the reported "mercury" capacity is pro rata the time the plants were in production

7 A restructuration of the plant was carried out at the end of 2009, resulting in a reduction in the chlorine production capacity: from 100 929 t/y in 2009 to 47 496 t/y in 2010. Consequently, the number of electrolysis cells working decreased from 34 to 16. [4] The plant has converted to membrane technology; the reported "mercury" capacity is pro rata the time the plants were in production

8 The Solvay chlorine production unit located in Zurzach (CH/1) was shut down at the beginning of August 2004 and, in agreement with the Euro Chlor rules, a yearly production capacity "pro rata temporis" was considered (i.e. 55 000 t/y * 7 /12 = 32 083 t/y).

9 This plant is undergoing conversion to membrane technology and if the mercury losses are calculated only on the effective mercury capacity, then the value would be 1.58g/te. In agreement with the Euro Chlor rules, a yearly production capacity "pro rata temporis" was considered before the definitive shut down.

Table 2: Mercury Losses through Product, Waste Water and Air (kg per year)

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belgium																	
BE/01*	304	173	157	122	82	92	142	88	98	56	60	60	60	49	94		
BE/02*	200	178	180	175	169	186	178	179	142	131	128	129	108	127	109	131	130
BE/03*	168	113	111	88	78	85	82	60	64	67	64	59	52	53	50	50	48
BE/04*	222	173	201	120	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**894**	**637**	**649**	**505**	**329**	**363**	**402**	**327**	**304**	**254**	**252**	**248**	**220**	**229**	**253**	**181**	**178**
Finland																	
SFR/01	49	63	43	41	44	37	56	59	63	42	42	41	40	50	51		
Total	**49**	**63**	**43**	**41**	**44**	**37**	**56**	**59**	**63**	**42**	**42**	**41**	**40**	**50**	**51**	**0**	**0**
France																	
FR/01*	30	28	29	24	15	12	25	21	13	26	14	21	30	25	12	16	18
FR/02*	117	129	119	121	92	118	116	125	119	122	104	85	99	72	50	63	89
FR/03	569	345	338	226	216	245	189	202	224	244	271	226	202	242	238	SD	SD
FR/04	221	192	220	203	152	127	96	106	119	111	100	105	123	109	99	75	MT
FR/05*	30	32	32	33	34	33	32	29	29	24	24	23	22	22	20	20	24
FR/06	217	190	152	139	175	185	147	168	195	188	145	159	95	148	128	106	224
FR/07	356	281	243	237	202	282	242	290	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**1 540**	**1 197**	**1 133**	**983**	**886**	**1 002**	**847**	**941**	**699**	**715**	**658**	**619**	**571**	**618**	**547**	**280**	**355**
Germany																	
DE/01	118	111	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/02*	203	147	247	159	127	128	103	94	97	85	77	72	61	82	15		
DE/03*	277	49	73	75	78	80	92	86	91	104	120	53	49	51	51	58	76
DE/04*	369	367	367	358	285	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/05*	278	261	166	162	157	169	173	169	160	151	153	153	153	146	122	109	101
DE/06*	98	70	62	52	49	77	116	64	97	74	95	111	104	67	77	33	SD
DE/07*	273	313	257	199	218	289	260	194	179	84	SD	SD	SD	SD	SD	SD	SD
DE/08*	74	193	209	228	174	159	151	170	162	150	126	124	126	77	78	94	65
DE/09*	184	161	165	197	199	213	244	243	207	170	146	192	162	124	125	149	148
DE/10	243	391	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DE/11	69	104	18	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/12	113	132	137	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/13*	142	137	171	201	163	146	141	153	158	159	117	35	MT	MT	MT	MT	MT
DE/14	285	100	112	80	67	64	62	56	55	52	45	20	MT	MT	MT	MT	MT
DE/15	304	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**3 030**	**2 536**	**1 984**	**1 711**	**1 517**	**1 325**	**1 342**	**1 229**	**1 206**	**1 029**	**879**	**760**	**655**	**547**	**468**	**443**	**390**
Netherlands																	
NL/01*	92	71	68	57	41	45	42	46	22	SD	SD	SD	SD	SD	SD	SD	SD
NL/02*	190	196	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**282**	**267**	**68**	**57**	**41**	**45**	**42**	**46**	**22**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Portugal																	
P/01*	142	130	121	100	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P/02*	60	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**202**	**130**	**121**	**100**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**
Spain																	
ES/01	122	61	63	58	48	45	46	38	35	30	24	24	22	21	24	22	0
ES/02*	79	30	29	25	16	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
ES/03*	34	66	57	52	38	42	32	30	27	23	21	18	17	17	16	16	16
ES/04	140	287	164	114	123	137	121	121	110	102	103	78	53	48	44	29	31
ES/05*	216	142	102	101	86	74	92	47	29	34	40	42	31	36	41	36	38
ES/06	62	182	182	193	185	199	205	203	154	156	89	96	111	94	76	93	92
ES/07	223	53	49	32	36	30	26	25	25	24	20	8	MT	MT	MT	MT	MT
ES/08	45	251	244	176	174	174	154	139	137	120	97	88	80	73	74	68	68
ES/09*	136	175	95	103	132	99	94	109	68	70	68	50	29	20	21	20	19
Total	**1 057**	**1 247**	**985**	**854**	**838**	**800**	**770**	**712**	**585**	**559**	**462**	**404**	**343**	**309**	**296**	**284**	**264**
Sweden																	
SE/01*	24	27	28	29	26	22	25	14	SD	SD	SD	SD	SD	SD	SD	SD	SD
SE/02*	41	18	19	18	17	19	22	20	20	20	22	17	17	16	18	18	18
Total	**65**	**45**	**47**	**47**	**43**	**41**	**47**	**34**	**20**	**20**	**22**	**17**	**17**	**16**	**18**	**18**	**18**
Switzerland																	
CH/01*	62	82	70	64	73	67	39	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/02	23	19	20	28	19	19	11	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/03*	26	15	19	25	17	12	22	30	32	20	21	18	26	16	26	21	26
Total	**111**	**116**	**109**	**117**	**109**	**98**	**72**	**30**	**32**	**20**	**21**	**18**	**26**	**16**	**26**	**21**	**26**
UK																	
UK/01*	14	15	16	17	18	35	54	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/02*	106	125	144	157	175	144	154	112	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/03*	1 373	1 476	1 535	1 439	1 188	1 237	1 155	1 183	1 444	983	1 097	567	565	485	302	332	330
Total	**1 493**	**1 616**	**1 695**	**1 613**	**1 381**	**1 416**	**1 363**	**1 295**	**1 444**	**983**	**1 097**	**567**	**565**	**485**	**302**	**332**	**330**

NI: No information; N/A: Not applicable; PC: Partly converted to membrane technology; MT: Converted to membrane technology; SD: Shutdown

Total mercury losses through product, waste water and air from all installations in the Convention area (waste water discharges from installations in the OSPAR catchment area only)

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
kg/yr	8723	7854	6834	6028	5188	5127	4941	4673	4375	3622	3433	2674	2373	2201	1902	1552	1039
%	100	90	78	69	59	59	57	54	50	42	39	31	27	25	22	18	12

Total mercury losses through product, waste water and air from all installations in the Convention area

	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
kg/yr	8723	7854	6834	6028	5188	5127	4941	4673	4375	3622	3433	2674	2437	2270	1961	1559	1561
%	100	90	78	69	59	59	57	54	50	42	39	31	28	26	22	18	18

Table 3: Mercury Losses through Product, Waste Water and Air (g per tonne production capacity)

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belgium																	
BE/01*	1,390	0,750	0,715	0,556	0,374	0,419	0,649	0,400	0,446	0,258	0,280	0,330	0,340	0,271	0,560	SD	SD
BE/02*	0,800	0,710	0,720	0,699	0,676	0,744	0,712	0,718	0,624	0,639	0,620	0,630	0,530	0,620	0,530	0,640	0,635
BE/03*	1,400	1,125	0,921	0,736	0,647	0,712	0,684	0,503	0,539	0,558	0,530	0,540	0,470	0,480	0,450	0,455	0,436
BE/04*	2,440	2,110	2,212	2,890	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Finland																	
SFR/01	1,230	1,574	1,078	1,026	1,046	0,878	1,324	1,380	1,478	0,994	1,000	0,950	0,990	1,240	1,280	1,220	
France																	
FR/01*	1,660	1,580	1,631	1,317	0,819	0,646	1,400	1,149	0,720	1,416	0,790	1,140	1,690	1,390	0,660	0,878	1,017
FR/02*	1,630	1,792	1,646	1,680	1,277	1,644	1,615	1,732	1,658	1,689	1,440	1,190	1,370	1,000	0,700	0,881	1,240
FR/03	2,360	1,431	1,403	0,940	0,896	1,019	0,785	0,838	0,932	1,011	1,130	0,940	0,840	1,010	1,070	SD	SD
FR/04	1,300	1,131	1,292	1,197	0,896	0,746	0,567	0,621	0,699	0,650	0,590	0,620	0,720	0,640	0,780	0,745	MT
FR/05*	1,340	1,444	1,436	1,457	1,509	1,469	1,402	1,308	1,277	1,086	1,050	1,020	0,980	0,990	0,880	0,906	1,050
FR/06	1,310	1,144	0,917	0,836	1,054	1,117	0,883	1,015	1,173	1,135	0,870	0,960	0,570	0,890	0,770	0,638	1,349
FR/07	1,930	1,522	1,320	1,286	1,094	1,530	1,312	1,574	SD	SD	SD	SD	SD	SD	SD	SD	SD
Germany																	
DE/01	1,720	1,707	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/02*	1,450	1,128	1,766	1,132	1,153	1,163	0,934	0,724	0,743	0,651	0,590	0,550	0,470	0,630	0,490	SD	SD
DE/03*	2,220	0,406	0,583	0,601	0,622	0,640	0,733	0,689	0,730	0,830	0,960	0,420	0,390	0,410	0,410	0,463	0,604
DE/04*	1,230	1,223	1,223	1,193	1,862	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/05*	1,740	1,740	1,040	1,010	0,980	1,060	1,083	1,020	0,940	0,890	0,900	0,900	0,900	0,860	0,720	0,640	0,580
DE/06*	0,750	0,540	0,416	0,348	0,326	0,515	0,777	0,428	0,655	0,496	0,640	0,750	0,700	0,450	0,520	0,407	SD
DE/07*	1,500	1,740	1,410	1,130	1,240	1,640	1,479	1,101	1,018	1,156	SD	SD	SD	SD	SD	SD	SD
DE/08*	0,750	1,970	1,540	1,680	1,281	1,167	1,111	1,254	1,193	1,102	0,930			0,560	0,570	0,629	0,472
DE/09*	1,080	1,070	1,032	1,182	1,189	1,279	1,464	1,455	1,238	1,014	0,870	1,150	0,970	0,740	0,750	0,891	0,884
DE/10	0,980	1,576	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/11	2,170	1,740	1,864	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/12	0,720	0,843	0,871	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/13*	0,890	0,910	1,069	1,259	1,019	0,911	0,884	0,956	0,985	0,994	0,740	0,900	MT	MT	MT	MT	MT
DE/14	1,480	1,390	1,364	0,966	0,815	0,776	0,757	0,680	0,669	0,630	0,550	0,490	MT	MT	MT	MT	MT
DE/15	1,520	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Netherlands																	
NL/01*	1,008	0,909	0,765	0,551	0,610	0,571	0,615	0,587	SD	SD	SD	SD	SD	SD	SD	SD	SD
NL/02*	1,400	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Portugal																	
P/01*	2,700	2,800	2,300	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
P/02*	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Spain																	
ES/01	2,040	2,020	1,861	1,545	1,430	1,461	1,204	1,122	0,971	0,780	0,770	0,710	0,660	0,760	0,716		
ES/02*	2,020	1,948	1,667	1,626	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
ES/03*	1,970	1,699	1,563	1,123	1,264	0,945	0,884	0,810	0,682	0,620	0,530	0,510	0,510	0,490	0,468	0,464	
ES/04	1,910	1,094	0,762	0,821	0,911	0,811	0,806	0,730	0,683	0,690	0,520	0,460	0,420	0,380	0,333	0,389	
ES/05*	2,259	1,632	1,608	1,368	1,172	1,461	0,756	0,458	0,548	0,630	0,680	0,500	0,580	0,650	0,577	0,605	
ES/06	0,870	0,834	0,885	0,848	0,914	0,944	0,933	0,708	0,715	0,410	0,440	0,510	0,430	0,350	0,426	0,422	
ES/07	2,100	1,940	1,265	1,428	1,220	1,030	1,017	1,020	0,969	0,800	0,780	MT	MT	MT	MT	MT	
ES/08	1,860	1,810	1,300	1,290	1,290	1,140	1,030	1,014	0,890	0,720	0,650	0,590	0,540	0,550	0,500	0,503	
ES/09*	1,730	0,938	1,021	1,309	0,976	0,933	1,081	0,676	0,693	0,680	0,490	0,610	0,420	0,440	0,422	0,391	
Sweden																	
SE/01*	0,268	0,278	0,288	0,258	0,221	0,248	0,186	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
SE/02*	0,154	0,144	0,154	0,143	0,161	0,188	0,167	0,165	0,166	0,180	0,140	0,140	0,130	0,150	0,152	0,148	
Switzerland																	
CH/01*	1,490	1,271	1,162	1,336	1,227	1,227	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/02	0,877	0,743	1,054	0,699	0,712	0,429	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/03*	0,560	0,692	0,917	0,638	0,434	0,802	1,110	1,170	0,727	0,760	0,670	0,980	0,600	0,970	0,790	0,983	
UK																	
UK/01*	0,525	0,538	0,574	0,606	1,180	1,852	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/02*	1,410	1,600	1,744	1,950	1,600	1,710	1,494	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/03*[2]	2,000	2,080	1,950	1,610	1,677	1,565	1,603	1,957	2,679	2,990	1,640	2,040	1,750	1,090	1,200	1,190	

NI: No information; N/A: Not applicable; PC: Partly converted to membrane technology; MT: Converted to membrane technology; SD: Shutdown

[2] This plant is undergoing conversion to membrane technology and if the mercury losses are calculated only on the effective mercury capacity, then the value would be 1,58g/te.

Table 4: Atmospheric Emissions of Mercury (kg per year)

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belgium																	
BE/01*	289	156	137	106	68	74	120	67	79	43	50	54	42	37	55	SD	SD
BE/02*	176	154	157	153	153	164	160	164	129	122	121	121	102	119	102	126	123
BE/03*	146	101	98	74	63	62	64	49	49	52	50	47	42	44	45	47	45
BE/04*	161	146	172	80	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**772**	**557**	**564**	**413**	**284**	**300**	**344**	**280**	**257**	**217**	**221**	**222**	**186**	**200**	**203**	**173**	**168**
Finland																	
SFR/01	40	53	35	34	39	31	46	54	57	37	39	38	37	46	50		
Total	**40**	**53**	**35**	**34**	**39**	**31**	**46**	**54**	**57**	**37**	**39**	**38**	**37**	**46**	**50**	**0**	**0**
France																	
FR/01*	26	25	26	21	12	7	14	11	11	12	12	19	24	21	9	12	16
FR/02*	111	115	103	108	80	103	106	113	109	96	96	76	94	66	45	57	68
FR/03	301	320	313	210	202	235	181	191	212	226	259	219	192	238	233	SD	SD
FR/04	179	182	188	171	109	88	67	64	89	84	74	72	87	78	64	49	MT
FR/05*	24	25	25	26	27	27	26	24	24	19	19	18	18	18	17	17	17
FR/06	160	161	129	109	147	142	118	139	172	159	117	129	68	120	108	84	190
FR/07	330	255	223	186	170	255	217	275	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**1 131**	**1 083**	**1 007**	**831**	**747**	**857**	**729**	**817**	**617**	**596**	**577**	**533**	**483**	**540**	**475**	**219**	**292**
Germany																	
DE/01	105	105	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/02*	173	135	235	146	114	113	98	88	88	78	73	68	56	78	14	SD	SD
DE/03*	238	39	63	68	71	74	86	80	84	82	88	46	43	46	48	52	66
DE/04*	354	353	353	345	274	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/05*	255	255	160	155	150	163	167	162	153	144	146	146	146	139	116	102	94
DE/06*	92	66	58	48	45	72	111	59	48	70	90	106	100	63	73	31	SD
DE/07*	256	301	244	187	206	276	247	181	166	80	SD	SD	SD	SD	SD	SD	SD
DE/08*	84	175	171	179	141	113	114	142	141	139	111	111	110	68	69	75	49
DE/09*	150	149	151	185	188	203	233	232	195	158	136	182	145	117	115	133	137
DE/10	285	382		N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DE/11	105	100	18	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/12	97	119	128	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/13*	280	124	158	177	144	135	131	142	148	148	104	34	MT	MT	MT	MT	MT
DE/14	128	96	110	74	65	62	60	54	53	51	42	20	MT	MT	MT	MT	MT
DE/15	103	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**2 705**	**2 399**	**1 849**	**1 564**	**1 398**	**1 211**	**1 247**	**1 140**	**1 076**	**950**	**790**	**713**	**600**	**511**	**434**	**392**	**346**
Netherlands																	
NL/01*	65	65	65	53	37	42	40	42	20	SD	SD	SD	SD	SD	SD	SD	SD
NL/02*	180	178	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**245**	**243**	**65**	**53**	**37**	**42**	**40**	**42**	**20**								
Portugal																	
P/01*	92	91	82	69	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P/02*	28	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**120**	**91**	**82**	**69**													
Spain																	
ES/01	31	38	45	36	33	38	40	32	30	26	19	21	20	19	20	19	0
ES/02*	21	20	19	17	12	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
ES/03*	66	51	43	32	23	31	23	21	21	17	16	15	14	14	13	13	13
ES/04	210	218	118	69	80	114	105	101	92	92	89	66	42	40	37	26	27
ES/05*	109	91	85	91	77	63	74	38	20	20	26	27	18	22	30	26	25
ES/06	126	157	165	178	171	182	193	188	146	144	83	90	99	85	65	78	80
ES/07	48	35	27	22	28	26	22	22	22	21	18	7	MT	MT	MT	MT	MT
ES/08	203	227	204	155	148	151	128	117	117	101	82	69	63	57	59	55	57
ES/09*	123	152	74	84	112	81	85	93	59	62	61	46	27	19	19	19	17
Total	**937**	**989**	**780**	**684**	**684**	**686**	**670**	**612**	**507**	**483**	**394**	**341**	**283**	**255**	**245**	**236**	**219**
Sweden																	
SE/01*	37	25	25	27	23	20	23	13	SD	SD	SD	SD	SD	SD	SD	SD	SD
SE/02*	21	17	17	17	15	16	20	18	19	18	20	16	16	14	17	17	15
Total	**58**	**42**	**42**	**44**	**38**	**36**	**43**	**31**	**19**	**18**	**20**	**16**	**16**	**14**	**17**	**17**	**15**
Switzerland																	
CH/01*	57	75	63	58	69	65	38	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/02	21	19	19	27	18	18	11	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/03*	18	10	14	17	14	8	17	22	27	15	17	11	14	13	21	17	22
Total	**96**	**104**	**96**	**102**	**101**	**91**	**66**	**22**	**27**	**15**	**17**	**11**	**14**	**13**	**21**	**17**	**22**

NI: No information; N/A: Not applicable; PC: Partly converted to membrane technology; MT: Converted to membrane technology; SD: Shutdown

UK																	
UK/01*	14	14	14	13	13	29	49	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/02*	106	117	137	149	169	137	147	108	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/03*	1 107	1 292	1 269	1 270	1 048	1 053	1 010	958	1 322	876	951	509	493	421	260	305	299
Total	**1 227**	**1 423**	**1 420**	**1 432**	**1 230**	**1 219**	**1 206**	**1 066**	**1 322**	**876**	**951**	**509**	**493**	**421**	**260**	**305**	**299**

Total atmospheric emissions of mercury from all installations in the OSPAR Convention area

	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Tonnes	6 984	5 940	5 226	4 558	4 473	4 391	4 064	3 902	3 192	3 009	2 383	2 112	2 001	1 705	1 359	1 360
%	95	81	71	62	61	60	55	53	44	41	33	29	27	23	19	19

Table 5: Atmospheric Emissions of Mercury (g per tonne production capacity)

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belgium																	
BE/01*	1,320	0,680	0,627	0,484	0,310	0,338	0,547	0,307	0,360	0,196	0,230	0,300	0,230	0,208	0,330	SD	SD
BE/02*	0,710	0,617	0,627	0,615	0,611	0,657	0,641	0,654	0,565	0,598	0,590	0,590	0,500	0,580	0,500	0,614	0,599
BE/03*	1,220	1,013	0,813	0,615	0,524	0,516	0,531	0,411	0,412	0,432	0,420	0,430	0,390	0,400	0,410	0,426	0,407
BE/04*	1,770	1,780	1,888	1,930	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Finland																	
SFR/01	1,000	1,322	0,885	0,856	0,916	0,738	1,084	1,270	1,335	0,870	0,920	0,900	0,930	1,160	1,240		
France																	
FR/01*	1,390	1,380	1,442	1,154	0,651	0,416	0,763	0,618	0,600	0,648	0,656	1,030	1,320	1,110	0,480	0,683	0,906
FR/02*	1,540	1,600	1,424	1,498	1,111	1,433	1,469	1,570	1,510	1,333	1,336	1,050	1,300	0,910	0,620	0,798	0,941
FR/03	1,250	1,330	1,300	0,871	0,838	0,976	0,752	0,792	0,880	0,938	1,076	0,910	0,800	0,990	1,050	SD	SD
FR/04	1,050	1,068	1,108	1,004	0,641	0,518	0,396	0,375	0,525	0,493	0,436	0,420	0,510	0,440	0,500	0,482	MT
FR/05*	1,080	1,123	1,132	1,159	1,199	1,186	1,153	1,087	1,075	0,849	0,829	0,810	0,780	0,750	0,740	0,750	0,769
FR/06	0,960	0,971	0,776	0,660	0,886	0,853	0,712	0,840	1,035	0,958	0,702	0,780	0,410	0,720	0,650	0,507	1,147
FR/07	1,790	1,381	1,210	1,011	0,921	1,384	1,176	1,494	SD	SD	SD	SD	SD	SD	SD	SD	SD
Germany																	
DE/01	1,610	1,610	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/02*	1,330	1,040	1,680	1,040	1,040	1,030	0,890	0,680	0,680	0,600	0,560	0,520	0,430	0,600	0,470	SD	SD
DE/03*	1,980	0,322	0,507	0,546	0,571	0,592	0,687	0,639	0,673	0,653	0,700	0,370	0,340	0,370	0,380	0,413	0,523
DE/04*	1,180	1,175	1,175	1,150	1,792	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/05*	1,700	1,700	1,000	0,970	0,940	1,020	1,043	0,980	0,900	0,850	0,860	0,860	0,860	0,820	0,680	0,600	0,540
DE/06*	0,710	0,510	0,390	0,322	0,303	0,481	0,745	0,396	0,324	0,471	0,608	0,710	0,670	0,420	0,490	0,385	SD
DE/07*	1,420	1,670	1,340	1,060	1,170	1,570	1,405	1,030	0,952	1,093	SD	SD	SD	SD	SD	SD	SD
DE/08*	0,700	1,790	1,260	1,320	1,039	0,834	0,842	1,042	1,038	1,020	0,815	0,810	0,800	0,500	0,500	0,497	0,353
DE/09*	1,000	0,995	0,942	1,106	1,125	1,215	1,396	1,387	1,170	0,946	0,812	1,090	0,870	0,700	0,690	0,795	0,822
DE/10	0,950	1,540	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DE/11	2,100	1,660	1,846	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/12	0,620	0,760	0,815	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/13*	0,800	0,829	0,989	1,108	0,898	0,841	0,820	0,890	0,924	0,924	0,648	0,870	MT	MT	MT	MT	MT
DE/14	1,430	1,330	1,330	0,900	0,787	0,756	0,734	0,653	0,645	0,616	0,515	0,480	MT	MT	MT	MT	MT
DE/15	1,400	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Netherlands																	
NL/01*	0,870	0,927	0,873	0,716	0,501	0,560	0,542	0,559	0,546	SD	SD	SD	SD	SD	SD	SD	SD
NL/02*	1,300	1,270	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Portugal																	
P/01*	1,900	1,900	1,900	1,600	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P/02*	NI	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Spain																	
ES/01	0,960	1,260	1,420	1,141	1,041	1,220	1,265	1,030	0,970	0,818	0,618	0,680	0,650	0,590	0,650	0,606	
ES/02*	1,430	1,330	1,272	1,153	1,166	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
ES/03*	1,960	1,510	1,280	0,959	0,685	0,927	0,690	0,627	0,641	0,496	0,487	0,450	0,430	0,410	0,400	0,399	0,396
ES/04	1,400	1,450	0,784	0,462	0,537	0,760	0,699	0,674	0,616	0,614	0,594	0,440	0,370	0,350	0,320	0,295	0,338
ES/05*	1,730	1,442	1,347	1,455	1,226	1,001	1,178	0,603	0,328	0,314	0,409	0,430	0,290	0,350	0,480	0,418	0,396
ES/06	0,600	0,750	0,758	0,818	0,784	0,836	0,885	0,863	0,670	0,661	0,381	0,410	0,460	0,390	0,300	0,356	0,367
ES/07	1,900	1,400	1,060	0,880	1,120	1,040	0,880	0,890	0,880	0,860	0,710	0,700	MT	MT	MT	MT	MT
ES/08	1,500	1,680	1,510	1,140	1,100	1,120	0,950	0,870	0,864	0,750	0,604	0,510	0,460	0,420	0,440	0,410	0,425
ES/09*	1,220	1,500	0,735	0,831	1,110	0,800	0,843	0,925	0,589	0,616	0,609	0,450	0,570	0,390	0,410	0,396	0,361
Sweden																	
SE/01*	0,380	0,250	0,250	0,270	0,234	0,204	0,231	0,173	SD	SD	SD	SD	SD	SD	SD	SD	SD
SE/02*	0,180	0,139	0,131	0,140	0,121	0,135	0,167	0,151	0,155	0,147	0,166	0,130	0,130	0,120	0,140	0,139	0,125
Switzerland																	
CH/01*	1,030	1,370	1,146	1,065	1,258	1,176	1,176	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/02	NI	0,848	0,710	1,019	0,670	0,689	0,408	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/03*	0,780	0,370	0,517	0,625	0,515	0,315	0,647	0,820	0,985	0,548	0,619	0,400	0,510	0,490	0,780	0,643	0,841
UK																	
UK/01*	0,483	0,470	0,461	0,452	0,438	1,004	1,669	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/02*	1,179	1,310	1,520	1,660	1,880	1,520	1,640	1,446	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/03*	1,501	1,750	1,720	1,720	1,420	1,427	1,368	1,298	1,791	2,387	2,590	1,470	1,780	1,520	0,940	1,100	1,080

NI: No information; N/A: Not applicable; PC: Partly converted to membrane technology; MT: Converted to membrane technology; SD: Shutdown

Table 6: Mercury in Safely Deposited Wastes* (kg per year)[2]

Site	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belgium																	
BE/01*	3 784	837	6 823	260	2 889	2 293	4 608	5 405	304	1 928	367	0	1 076	1 311	2 073	SD	SD
BE/02*	4 512	5 733	3 566	4 646	358	NI	250	5 949	1 139	3 802	2 702	6 723	2 003	1 615	2 329	205	5 456
BE/03*	1	3	5	6	67	6	5	3	6	3	0	3	4	109	3	4	5
BE/04*	105	0	2	1 242	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Total	**8 402**	**6 573**	**10 396**	**6 154**	**3 314**	**2 299**	**4 863**	**11 357**	**1 449**	**5 733**	**3 069**	**6 726**	**3 083**	**3 035**	**4 405**	**209**	**5 461**
Finland																	
SFR/01	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1 814		
Total	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**0**	**1 814**		
France																	
FR/01*	42	0	0	0	18	33	75	17	0	0	0	0	0	0	0	4	0
FR/02*	47	68	2 632	9 644	8 896	6 230	7 268	7 309	10 428	4 858	7 156	3 876	7 041	7 291	7 203	13 993	9 213
FR/03	1 298	1 257	1 296	1 078	922	1 323	1 143	1 423	2 106	1 066	1 268	1 090	1 062	1 229	1 770	SD	SD
FR/04	207	54	37	43	41	34	26	34	0	20	34	0	0	0	556	5	MT
FR/05*	250	0	70	6	238	13	3	NI	2	3	3	3	0	80	90	811	2 341
FR/06	25	33	16	64	48	25	15	9	18	18	0	6	9	10	5	5	38
FR/07	33	24	35	8	25	24	44	32	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**1 902**	**1 436**	**4 086**	**10 843**	**10 188**	**7 682**	**8 574**	**8 824**	**12 554**	**5 965**	**8 461**	**4 975**	**8 112**	**8 610**	**9 624**	**14 818**	**11 592**
Germany																	
DE/01	47	31	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/02*	28	4	0	NI	NI	NI	138	182	120	85	65	13	91	65	15	SD	SD
DE/03*	2 519	2	3	2	1	NI	NI	NI	3	207	223	4	3	3	4	17	0
DE/04*	1 806	3 054	3 054	1 259	3 437	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/05*	411	66	576	766	5 799	10 555	10 027	4 958	1 762	2 514	855	0	454	0	415	21 874	0
DE/06*	2 180	1 314	3 764	1 034	472	1 591	1 551	496	1 386	5 602	1 726	2 987	1 607	4 376	2 471	2 373	SD
DE/07*	12 594	37 260	20 602	13 200	13 390	12 260	16 490	15 330	59 991	55 830	SD	SD	SD	SD	SD	SD	SD
DE/08*	1	1 646	2 311	NI	674	2 282	1 536	356	358	553	431	804	961	916	717	3 708	1 235
DE/09*	1 480	2 270	4 570	4 230	6 366	5 340	4 355	3 239	3 241	0	2 324	4 401	4 538	2 492	0	0	28
DE/10	136	304	NI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DE/11	196	19	NI	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/12	229	176	176	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/13*	3 547	2 692	5 659	9 209	4 378	2 745	2 500	2 780	2 309	1 888	120 109	5 058	MT	MT	MT	MT	MT
DE/14	1 064	1 656	754	833	406	85	212	71	96	72	6 289	2 862	MT	MT	MT	MT	MT
DE/15	1 720	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**27 958**	**50 494**	**41 469**	**30 533**	**34 923**	**34 858**	**36 809**	**27 412**	**69 266**	**66 751**	**132 022**	**16 129**	**7 654**	**7 852**	**3 622**	**27 972**	**1 263**
Netherlands																	
NL/01*	38	6	2	28	7	3	2	1	0	SD	SD	SD	SD	SD	SD	SD	SD
NL/02*	0	0	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**38**	**6**	**2**	**28**	**7**	**3**	**2**	**1**	**0**								
Portugal																	
P/01*	615	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P/02*	NI	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Total	**615**	**0**	**0**	**0**													
Spain																	
ES/01	84	1 265	4 276	495	2 027	846	408	1 297	807	1 107	627	1 807	904	1 102	590	1 150	0
ES/02*	48	27	8	9	141	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
ES/03*	411	384	599	359	472	679	402	323	370	376	373	471	885	696	706	361	160
ES/04	2 208	2 694	6 279	4 868	2 343	2 020	2 837	3 549	3 938	2 899	3 147	3 802	1 898	1 894	2 316	1 007	897
ES/05*	1	1 013	412	59	0	440	1 544	1 880	208	161	44	514	232	195	294	210	153
ES/06	496	604	770	1 088	2 339	2 625	622	900	1 043	3 776	906	940	1 109	2 497	758	925	6 242
ES/07	20	20	10	3	13	14	NI	315	9	11	0	219	MT	MT	MT	MT	MT
ES/08	379	498	432	459	552	328	506	633	551	1 035	652	490	424	343	1 188	2 126	1 218
ES/09*	197	500	401	279	169	349	185	217	156	1 105	1 220	500	2 350	664	684	780	568
Total	**3 844**	**7 005**	**13 187**	**7 619**	**8 056**	**7 301**	**6 504**	**9 114**	**7 082**	**10 470**	**6 969**	**8 743**	**7 802**	**7 391**	**6 536**	**6 559**	**9 238**
Sweden																	
SE/01*	0	6	6	850	5	NI	55	NI	SD	SD	SD	SD	SD	SD	SD	SD	SD
SE/02*	2	1	1	1	NI	NI	NI	NI	NI	0	0	0	4 238	4 682	0	0	0
Total	**2**	**7**	**7**	**851**	**5**		**55**		**0**	**0**	**0**	**0**	**4 238**	**4 682**	**0**	**0**	**0**
Switzerland																	
CH/01*	327	165	178	215	207	239	139	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/02	NI	0	3	32	1	2	1	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/03*	1 073	1 084	0	1 933	NI	1 891	NI	1 859	0	1 948	1 787	1 074	1 865	0	1 953	833	973
Total	**1 400**	**1 249**	**181**	**2 180**	**208**	**2 132**	**140**	**1 859**	**0**	**1 948**	**1 787**	**1 074**	**1 865**	**0**	**1 953**	**833**	**973**

* All mercury-contaminated materials, such as cell components, process equipment, solid wastes from sumps, pits, demercurisation units and the brine purification process, which have been sent to authorised and properly controlled toxic waste disposal sites, are to be included in the category "safely deposited waste". For the purpose of the balance, all deposits of mercury in whatever concentrations should be accounted for.

2 In 2012, data for 1998 for indiividual installations were obtained from EuroChlor. As a result there were changes for some of the total.

UK																	
UK/01*	140	161	268	263	136	118	246	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/02*	17	37	48	147	113	119	134	43	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/03*	3 032	3 911	3 092	2 842	10 745	21 247	6 208	6 446	15 905	11 703	1 659	2 315	2 485	5 313	1 596	5 019	2 954
Total	**3 189**	**4 109**	**3 408**	**3 252**	**10 994**	**21 484**	**6 588**	**6 489**	**15 905**	**11 703**	**1 659**	**2 315**	**2 485**	**5 313**	**1 596**	**5 019**	**2 954**

NI: No information; N/A: Not applicable; PC: Partly converted to membrane technology; MT: Converted to membrane technology; SD: Shutdown

Table 7: Mercury in Safely Deposited Wastes* (g per tonne production capacity)

Site	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014
Belgium																
BE/01*	3,640	31,155	1,188	13,192	10,472	21,041	24,680	1,389	8,803	1,680	0,000	5,980	7,285	12,410	SD	SD
BE/02*	22,930	14,264	18,585	1,432	NI	1,000	23,794	5,007	18,548	13,180	32,800	9,770	7,880	11,360	0,999	26,617
BE/03*	0,025	0,039	0,046	0,055	0,047	0,038	0,029	0,050	0,023	0,000	0,030	0,040	0,990	0,030	0,033	0,048
BE/04*	0,000	0,026	29,819	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Finland																
SFR/01	0,003	0,004	0,006	0,003	NI	NI	NI	NI	0,006	0,005	0	0	0	45,340		
France																
FR/01*	0	0	0	1,024	1,810	4,130	0,953	0	0	0	0	0	0	0	0,233	0
FR/02*	0,950	36,560	133,941	123,555	86,528	100,950	101,514	144,833	67,472	99,387	53,830	97,790	101,260	100,040	194,347	127,960
FR/03	5,220	5,380	4,474	3,828	5,491	4,746	5,907	8,744	4,424	5,263	4,530	4,420	5,120	7,970	SD	SD
FR/04	0,320	0,215	0,255	0,240	0,200	0,155	0,202	0	0,115	0,197	0	0	0	4,360	0,045	MT
FR/05*	0,000	3,100	0,280	10,580	0,600	0,140	NI	0,110	0,159	0,151	0,140	0,000	3,550	4,000	36,044	103,99
FR/06	0,196	0,094	0,386	0,292	0,148	0,092	0,052	0,110	0,112	0	0,040	0,060	0,060	0,030	0,033	0,230
FR/07	0,131	0,190	0,044	0,134	0,131	0,237	0,172	SD	SD	SD	SD	SD	SD	SD	SD	SD
Germany																
DE/01	0,480	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/02*	0,030	0	0	NI	NI	1,250	1,400	0,920	0,650	0,500	0,100	0,700	0,500	0,500	SD	SD
DE/03*	0,014	0,021	0,014	0,007	NI	NI	NI	0,023	1,653	1,782	0,030	0,030	0,020	0,030	0,138	0
DE/04*	10,180	10,180	4,197	22,464	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/05*	0,440	3,600	4,788	36,242	66,000	62,670	29,960	10,365	14,790	5,029	0	2,670	0,000	2,440	128,670	0
DE/06*	10,104	25,290	6,950	3,171	11,000	10,422	3,330	9,315	37,643	11,600	20,070	10,800	29,400	16,600	29,370	SD
DE/07*	207,000	113,200	75,000	76,080	70,000	93,693	87,102	306,767	766,780	SD	SD	SD	SD	SD	SD	SD
DE/08*	16,800	17,000	0	4,959	17,000	11,295	2,621	2,632	4,064	3,170	5,850	6,990	6,670	5,220	24,721	8,985
DE/09*	15,134	28,560	25,329	38,119	32,000	26,077	19,398	19,408	0	13,917	26,350	27,180	14,920	0,000	0,000	0,166
DE/10	1,225	NI	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
DE/11	0,310	0	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/12	1,120	1,120	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
DE/13*	17,949	35,371	57,555	27,362	17,000	15,628	17,378	14,434	11,800	750,682	128,990	MT	MT	MT	MT	MT
DE/14	23,000	9,150	10,110	4,937	1,000	2,571	0,857	1,160	0,877	76,366	69,500	MT	MT	MT	MT	MT
DE/15	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Netherlands																
NL/01*	0,082	0,027	0,382	0,100	0,043	0,029	0,008	0	SD	SD	SD	SD	SD	SD	SD	SD
NL/02*	0	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Portugal																
P/01*	0	0	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
P/02*	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
Spain																
ES/01	42,150	136,300	15,759	64,604	27,000	12,995	41,354	25,733	35,286	19,986	57,600	28,800	35,120	18,820	36,642	
ES/02*	1,800	0,556	0,607	14,300	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC	PC
ES/03*	11,460	17,850	10,703	14,056	20,000	11,977	9,624	11,034	11,212	11,121	14,040	26,380	20,750	21,040	10,752	4,766
ES/04	17,960	41,860	32,450	15,620	13,000	18,910	23,662	26,255	19,325	20,980	25,340	16,480	16,440	20,100	11,489	11,436
ES/05*	16085,000	6,564	0,943	0,005	7,000	24,606	29,962	3,315	2,566	0,700	8,190	3,700	3,100	4,690	3,346	2,440
ES/06	2,890	3,533	4,994	10,737	12,000	2,857	4,129	4,785	17,331	4,160	4,320	5,090	11,460	3,480	4,246	28,680
ES/07	0,800	0,380	0,120	0,528	1,000	NI	12,600	0,362	0,443	0,000	20,990	MT	MT	MT	MT	MT
ES/08	3,690	3,200	3,400	4,090	2,000	3,750	4,690	4,080	7,670	4,832	3,630	3,140	2,540	8,800	15,748	9,022
ES/09*	4,950	3,970	2,767	1,673	3,000	1,830	2,150	1,546	10,946	12,087	4,950	49,470	13,990	14,400	16,429	11,955
Sweden																
SE/01*	0,064	0,064	8,500	0,052	NI	0,553	NI	SD	SD	SD	SD	SD	SD	SD	SD	SD
SE/02*	0,011	0,010	0,010	NI	NI	NI	NI	0	0	0	8,950	35,320	39,020	0	0	0
Switzerland																
CH/01*	3,000	3,230	3,900	3,774	4,350	4,350	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/02	0	0,104	1,216	0,021	0,061	0,030	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
CH/03*	40,910	0	71,602	NI	70,048	NI	68,835	0	72,163	66,200	0	69,090	0	72,350	30,850	36,700
UK																
UK/01*	5,540	9,115	8,938	4,631	4,001	8,359	SD	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/02*	0,420	0,530	1,640	1,260	1,330	1,490	0,573	SD	SD	SD	SD	SD	SD	SD	SD	SD
UK/03*	5,300	4,190	3,850	14,560	28,790	8,412	8,734	21,552	31,887	4,520	6,690	8,970	19,180	5,760	18,120	10,664

NI: No information; N/A: Not applicable; PC: Partly converted to membrane technology; MT: Converted to membrane technology; SD: Shutdown

4. 2014 National data and information

4.1 Introduction

In this part of the report, data and information about the national chlor-alkali industry of each OSPAR Contracting Party is given as follows:

* All mercury-contaminated materials, such as cell components, process equipment, solid wastes from sumps, pits, demercurisation units and the brine purification process, which have been sent to authorised and properly controlled toxic waste disposal sites, are to be included in the category "safely deposited waste". For the purpose of the balance, all deposits of mercury in whatever concentrations should be accounted for.

a. Contracting Parties with mercury-based chlor-alkali plants:
   (i) two overview maps showing the locations, the names and the operators of the sites;
   (ii) tables with technical data on the annual discharges, emissions and losses, including wastes, from plants of each Contracting Party (provided via Euro Chlor);

b. Contracting Parties with mercury-free plants or without chlor-alkali industry.

The column headings and abbreviations (*e.g.* C, E1, E2 etc) used in the tables correspond to the reporting requirements set out in OSPAR Agreement number 2003-5.

Sea Area - Sea area in which liquid wastes from the plant is discharged, or is likely to be discharged

OSPAR maritime area
A - Atlantic

Areas not covered by the OSPAR Convention
Baltic - Baltic Sea
Bl Sea - Black Sea
M - Mediterranean Sea

Brine
W - waste brine plant
R - brine-recirculation plant

Values are expressed in continental notation.

4.2 Locations of mercury-based chlor-alkali plants

The following tables give an overview of the locations of the mercury-based chlor-alkali plants and their operators:

Country/Code	Company	Location	Status
Belgium			
BE/1	Solvin	Lillo	Shutdown in 2012
BE/2	Tessenderlo	Tessenderlo	Only the period of time in production before the definitive shutdown considered
BE/3	Solvin	Antwerpen	
BE/4	Solvay	Jemeppe	Replaced its mercury technology in 2001
Finland			
SFR/1	Eka Chemicals	Oulu	The permitted discharges and emissions have been increased on the basis of a revised authorisation in 2002
France			
FR/1	PC de Loos	Loos	Conversion to membrane technology planned for mid-2017
FR/2	Albemarle PPC	Thann	Converted to membrane technology in October 2015
FR/3	Solvay	Tavaux	Converted to membrane technology in 2012
FR/4	Arkema	Jarrie	Converted to membrane technology the first quarter of 2014 (mercury cells shutdown in December 2013)
FR/5	SPC Harbonnières	Harbonnières	The operator has not made a decision whether to convert to membrane technology or continue activity
FR/6	Arkema	Lavera	Conversion to membrane technology planned for the end of 2016
FR/7	Arkema	St Auban	Converted to membrane technology in March 2006
Germany			
DE/1	ECI	Bitterfeld	Ceased operation in 1999
DE/2	Bayer	Uerdingen	Shutdown in 2012
DE/3	Akzo Nobel	Ibbenbüren	
DE/4	Bayer	Leverkusen	Shutdown in 2002
DE/5	BASF	Ludwigshafen	
DE/6	Ineos	Wilhelmshafen	Shutdown in 2013
DE/7	Vestolit	Marl	Shutdown of some cells in 2001. Only the period of time in production before the definitive shut down considered. Converted to membrane technology during 2007.
DE/8	Evonik	Lülsdorf	
DE/9	Akzo Nobel	Frankfurt	The permitted discharges and emissions have been increased on the basis of a revised authorisation in 2001
DE/10	Bayer	Dormagen	Ceased operation in 1999
DE/11	Clariant	Gersthofen	Shutdown in 2000
DE/12	Wacker Chemie	Burghausen	Shutdown in 2000
DE/13	Vinnolit	Knapsack	Converted to membrane technology during 2009

Country/Code	Company	Location	Status
DE/14	Vinnolit	Gendorf	Converted to membrane technology during 2009
DE/15	BSL Olefinverbund	Schkopau	Shutdown in 1998
The Netherlands			
NL/1	Akzo Nobel	Hengelo	Shutdown in 2007
NL/2	Solvay	Linne-Herten	Decommissioned in 1999
Portugal			
P/1	Uniteca	Estarreja	Has been replaced by membrane cells in January 2002
P/2	Solvay Portugal	Póvoa de Santa Iria	Shutdown in 1998
Spain			
ES/1	Quimica del Cinca	Monzon	
ES/2	Electroquimica de Hernani	Hernani	Partly converted to membrane technology
ES/3	Elnosa	Lourizan	
ES/4	Ercros	Flix	
ES/5	Solvay	Torrelavega	
ES/6	Solvin	Martorell	
ES/7	Ercros	Sabinanigo	Converted to membrane technology in 2009
ES/8	Ercros	Vilaseca	
ES/9	Ercros	Huelva/Palos	
Sweden			
SE/1	Akzo Nobel	Bohus	Shutdown
SE/2	Ineos	Stenungsund	Verified value
Switzerland			
CH/1	Solvay	Zurzach	This plant was shutdown in 2004
CH/2	Syngenia	Monthey	This plant was shutdown in 2005
CH/3	SF-Chem	Pratteln	
United Kingdom			
UK/1	Rhodia	Staveley	This plant was shutdown in 2005
UK/2	Albion Chemicals	Sandbach	This plant was shutdown
UK/3	Ineos	Runcorn	This plant is undergoing conversion to membrane technology. Only the period of time in production before the definitive shutdown considered

The status of the chlor-alkali industry within other OSPAR Contracting Parties than those listed in the table above is as follows:

Denmark

Denmark has no chlor-alkali plants.

Iceland

Iceland has no chlor-alkali plants.

Ireland

Ireland has only one chlor-alkali plant, which operates mercury-free.

Luxembourg

Luxembourg has no chlor-alkali plants.

Norway

The last Norwegian plant with mercury cells ceased its mercury-based operations in September 1997.

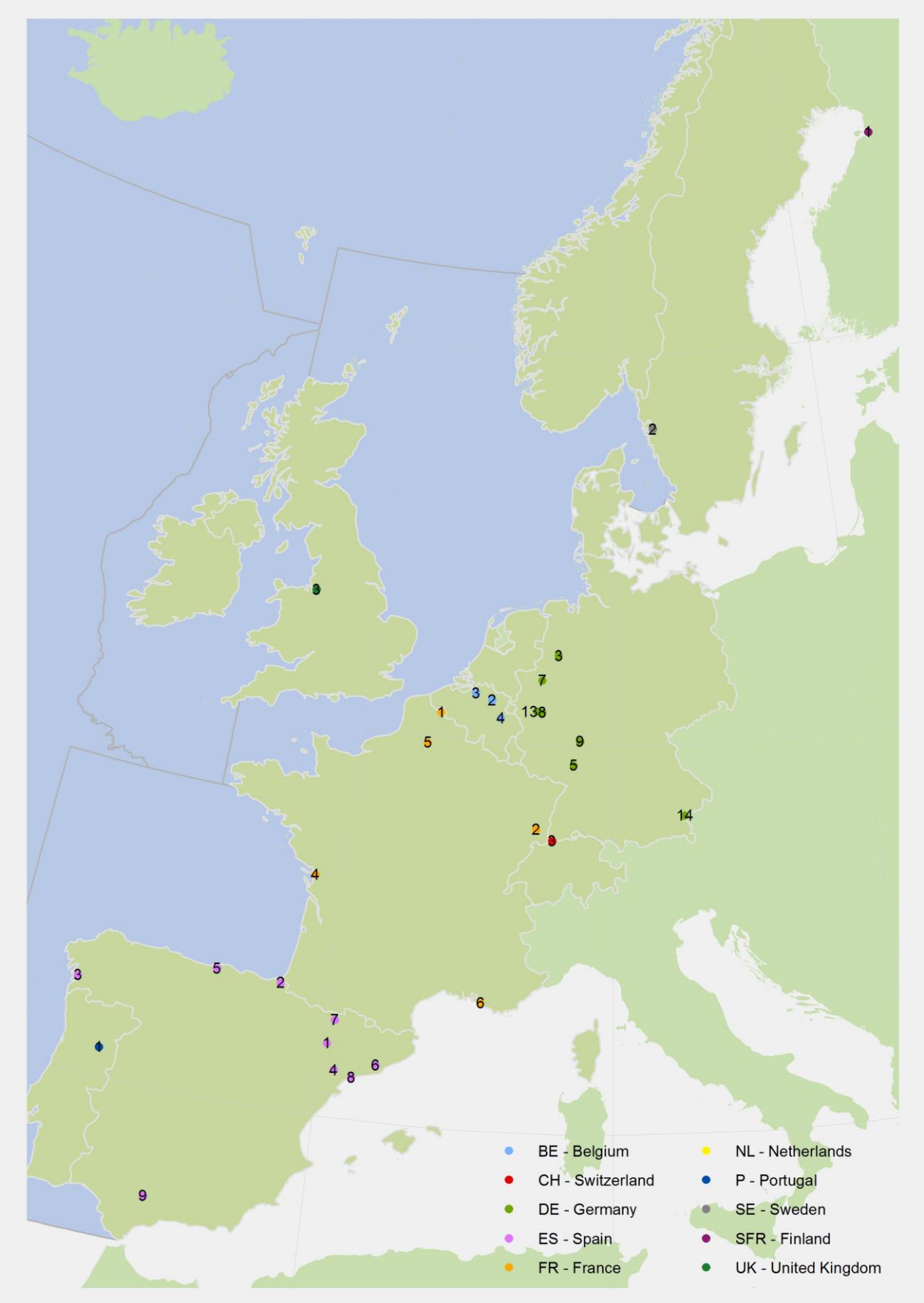

Figure 4: Map showing the location of the mercury-based chlor-alkali plants in the OSPAR Maritime Area

4.3 Mercury losses data per Contracting Party on a plant-by-plant basis

Belgium

Site	Chlorine production capacity with Hg-cells	Sea area	Brine W or R	Mercury consumption	Losses via products	Discharges via waste water	Emissions to the atmosphere			Total emissions Discharges losses	Mercury in Wastes					Difference to balance
							Process exhaust	Cellroom	Total		Disposed off	Awaiting recovery	Awaiting disposal	Awaiting decision	Temporarily stored	
	(tonnes)			C (g/t)	E1 (g/t)	E2 (g/t)	2.3.1 (g/t)	2.3.2 (g/t)	E3 (g/t)	(g/t)	D (g/t)	c (tonnes)	f (tonnes)	I (tonnes)	F (g/t)	DB (g/t)
BE02	205000	A	R	11,46	0,03	0,01	0,002	0,60	0,60	0,64	26,62	-1,62	-1,62	0,00	-15,79	0,00
BE03	110000	A	R	6,36	0,02	0,01	0,040	0,37	0,41	0,44	0,05	0,00	0,00	0,00	0,00	5,87
Total	**315000**															

Finland

Site	Chlorine production capacity with Hg-cells	Sea area	Brine W or R	Mercury consumption	Losses via products	Discharges via waste water	Emissions to the atmosphere			Total emissions Discharges losses	Mercury in Wastes					Difference to balance
							Process exhaust	Cellroom	Total		Disposed off	Awaiting recovery	Awaiting disposal	Awaiting decision	Temporarily stored	
				C	E1	E2	2.3.1	2.3.2	E3		D	c	f	I	F	DB
	(tonnes)			(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(tonnes)	(tonnes)	(tonnes)	(g/t)	(g/t)
SFR/1	40000	Baltic	R				0,015	1,105		1,22						
Total	**40000**															

The permitted discharges and emissions have been increased on the basis of a revised authorisation in 2002.

France

Site	Chlorine production capacity with Hg-cells	Sea area	Brine W or R	Mercury consumption	Losses via products	Discharges via waste water	Emissions to the atmosphere			Total emissions Discharges losses	Mercury in Wastes					Difference to balance
							Process exhaust	Cellroom	Total		Disposed off	Awaiting recovery	Awaiting disposal	Awaiting decision	Temporarily stored	
	(tonnes)			C (g/t)	E1 (g/t)	E2 (g/t)	2.3.1 (g/t)	2.3.2 (g/t)	E3 (g/t)	(g/t)	D (g/t)	c (tonnes)	f (tonnes)	I (tonnes)	F (g/t)	DB (g/t)
FR01	18040	A	R	11,64	0,07	0,04	N/A	N/A	0,90	1,02	0,00	0,00	0,00	0,00	9,81	0,81
FR02	72000	A	R	178,39	0,11	0,19	0,027	0,914	0,941	1,24	128	N/A	N/A	N/A	N/A	49,15
FR05	22500	A	R	107,86	0,28	0,001	N/A	N/A	0,763	1,05	103,985	0,00	0,00	0,00	0,00	2,83
FR06	166000	M	R	10,9	0,043	0,159	N/A	N/A	1,147	1,349	0,23	0,59	0,00	0,00	3,52	5,80
Total	**278540**															

N/A=Not Available

Démantèlement des électrodes à mercure en cours en 2014 (conversion achevée en octobre 2015) / Mercury cells decommissioning during 2014 (conversion complete in October 2015)

Gestion globale des déchets contenant du mercure liée au démantèlement (Ebonite, joints de cellule, bois, graphite…) / Mercury containing waste management linked to decommissioning (ebonite, cell joints, wood, graphite…)

Germany

Site	Chlorine production capacity with Hg-cells	Sea area	Brine W or R	Mercury consumption	Losses via products	Discharges via waste water	Emissions to the atmosphere			Total emissions Discharges losses	Mercury in Wastes					Difference to balance
							Process exhaust	Cellroom	Total		Disposed off	Awaiting recovery	Awaiting disposal	Awaiting decision	Temporarily stored	
	(tonnes)			C (g/t)	E1 (g/t)	E2 (g/t)	2.3.1 (g/t)	2.3.2 (g/t)	E3 (g/t)	(g/t)	D (g/t)	c (tonnes)	f (tonnes)	I (tonnes)	F (g/t)	DB (g/t)
DE03	125276	A	R	0,59	0,08	0,00	0,006	0,52	0,52	0,60	0,00	-0,53	0,00	0,00	-4,23	4,22
DE05	174711	A	R	49,22	0,03	0,01	0,000	0,54	0,54	0,58		0,00	0,00	8,74	50,01	-1,36
DE08	137400	A	R	6,62	0,07	0,05	0,009	0,34	0,35	0,47	8,99	-0,15	0,00	0,00	-1,06	-1,77
DE09	167000	A	R	0,00	0,04	0,02	0,086	0,74	0,82	0,88	0,17	0,00	0,00	0,00	0,00	-1,05
Total	**604388**															

Spain

Site	Chlorine production capacity with Hg-cells	Sea area	Brine W or R	Mercury consumption	Losses via products	Discharges via waste water	Emissions to the atmosphere			Total emissions Discharges losses	Mercury in Wastes					Difference to balance
							Process exhaust	Cellroom	Total		Disposed off	Awaiting recovery	Awaiting disposal	Awaiting decision	Temporarily stored	
	(tonnes)			C (g/t)	E1 (g/t)	E2 (g/t)	2.3.1 (g/t)	2.3.2 (g/t)	E3 (g/t)	(g/t)	D (g/t)	c (tonnes)	f (tonnes)	I (tonnes)	F (g/t)	DB (g/t)
ES01																
ES03	33552	A	R	11,74	0,06	0,01	0,002	0,39	0,40	0,46	4,77	0,00	0,00	0,00	-0,06	6,57
ES04	78434	M	R	15,43	0,03	0,02	0,003	0,34	0,34	0,39	11,44	0,00	-0,01	0,00	-0,10	3,70
ES05	62747	A	W	2,41	0,11	0,10	0,000	0,40	0,40	0,61	2,44	-0,11	0,00	0,00	-1,77	1,13
ES06	217653	M	R	37,97	0,04	0,02	0,061	0,31	0,37	0,42	28,68	-2,29	1,27	0,79	-1,06	9,93
ES08	135000	M	R	-0,42	0,03	0,05	0,002	0,42	0,43	0,50	9,02	-2,29	0,30	0,00	-14,71	4,76
ES09	47496	A	R	19,48	0,02	0,01	0,002	0,36	0,36	0,39	11,96	0,00	0,00	0,00	0,00	7,13
Total	**606255**															

Sweden

Site	Chlorine production capacity with Hg-cells	Sea area	Brine W or R	Mercury consumption	Losses via products	Discharges via waste water	Emissions to the atmosphere			Total emissions Discharges losses	Mercury in Wastes					Difference to balance
							Process exhaust	Cellroom	Total		Disposed off	Awaiting recovery	Awaiting disposal	Awaiting decision	Temporarily stored	
				C	E1	E2	2.3.1	2.3.2	E3		D	c	f	I	F	DB
	(tonnes)			(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(tonnes)	(tonnes)	(tonnes)	(g/t)	(g/t)
SE/2	120000	A	R	28,15	0,02	0,00	0,000	0,13	0,13	0,15	0,00	0,00	1,78	0,00	14,82	13,19
Total	**120000**															

Switzerland

Site	Chlorine production capacity with Hg-cells	Sea area	Brine W or R	Mercury consumption	Losses via products	Discharges via waste water	Emissions to the atmosphere			Total emissions Discharges losses	Mercury in Wastes					Difference to balance
							Process exhaust	Cellroom	Total		Disposed off	Awaiting recovery	Awaiting disposal	Awaiting decision	Temporarily stored	
				C	E1	E2	2.3.1	2.3.2	E3		D	c	f	I	F	DB
	(tonnes)			(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(tonnes)	(tonnes)	(tonnes)	(g/t)	(g/t)
CH03	26500	A	R	37,70	0,08	0,06	0,000	0,84	0,84	0,98	36,70	0,00	0,00	0,00	0,00	0,02
Total	**27000**															

United Kingdom

Site	Chlorine production capacity with Hg-cells	Sea area	Brine W or R	Mercury consumption	Losses via products	Discharges via waste water	Emissions to the atmosphere			Total emissions Discharges losses	Mercury in Wastes					Difference to balance
							Process exhaust	Cellroom	Total		Disposed off	Awaiting recovery	Awaiting disposal	Awaiting decision	Temporarily stored	
				C	E1	E2	2.3.1	2.3.2	E3		D	c	f	I	F	DB
	(tonnes)			(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(g/t)	(tonnes)	(tonnes)	(tonnes)	(g/t)	(g/t)
UK03	277000	A	W	49,56	0,050	0,060	0,210	0,87	1,08	1,19	10,66	10,03	0,00	0,00	36,19	1,52
Total	**277000**															

This plant is undergoing conversion to membrane technology and if the mercury losses are calculated only on the effective mercury capacity, then the value would be 1.58g/te.

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