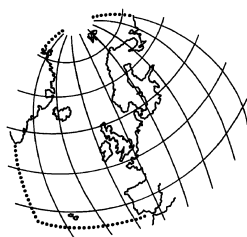


Comprehensive Atmospheric Monitoring Programme:

**Pollutant deposits and air quality around
the North Sea and the North-East Atlantic
in 2005**



**OSPAR Commission
2007**

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. It has been ratified by Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland and the United Kingdom and approved by the European Community and Spain.

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. La Convention a été ratifiée par l'Allemagne, la Belgique, le Danemark, 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 et la Suisse et approuvée par la Communauté européenne et l'Espagne.

© OSPAR Commission, 2007. Permission may be granted by the publishers for the report to be wholly or partly reproduced in publications provided that the source of the extract is clearly indicated.

© Commission OSPAR, 2007. *La reproduction de tout ou partie de ce rapport dans une publication peut être autorisée par l'Editeur, sous réserve que l'origine de l'extrait soit clairement mentionnée.*

ISBN 978-1-905859-68-9
Publication Number: 329/2007

NILU OR 16/2007
May 2007



Comprehensive
Atmospheric
Monitoring
Programme:

**Pollutant deposits
and air quality around
the North Sea and the
North-East Atlantic in
2005**

**OSPAR Commission
for the Protection of the Marine
Environment
of the North-East Atlantic**

Norwegian Institute for Air Research
P.O. Box 100, N-2027 Kjeller, Norway



NILU: OR 16/2007

NILU: OR 16/2007
REFERENCE: O-97146
DATE: MAY 2007
ISBN: 978-82-425-1865-1 (printed)
978-82-425-1866-8 (electronic)

Pollutant deposits and air quality around the North Sea and the North-East Atlantic in 2005

Kevin Barrett

contents

Executive Summary / Récapitulatif.....	8
1. Introduction.....	9
2. The OSPAR CAMP Monitoring Programme in 2005.....	11
2.1 Geographical coverage	11
2.2 Completion of the observation programmes.....	13
2.3 Timeliness of reporting	14
2.4 Reporting of additional components.....	15
3. Observed pollutant depositions at monitoring stations in 2005.....	16
3.1 Heavy metals (except mercury).....	16
3.2 Mercury	19
3.3 Lindane	20
3.4 Nitrogen.....	21
4. Estimated total North Sea depositions and temporal patterns.....	22
4.1 Total North Sea depositions	22
4.2 Temporal patterns in mercury depositions in 2001 – 2005	23
4.3 Seasonality in nitrogen deposition.....	23
5. Data uncertainty	25
5.1 Limits of detection	25
6. Final observations	27
Appendix A Reported monthly observations of mandatory, voluntary, and additionally reported components	28

Executive Summary / Récapitulatif

This report presents the results of monitoring undertaken by OSPAR Contracting Parties for the Comprehensive Atmospheric Monitoring Programme (CAMP) during 2005. Under the CAMP, OSPAR Contracting Parties are committed to monitoring, on a mandatory basis, the concentrations of a range of heavy metals, organic compounds and nutrients in precipitation and air, and their depositions. The CAMP encourages OSPAR Contracting Parties to monitor, on a voluntary basis, additional compounds (such as certain persistent organic pollutants). The report gives detailed information on atmospheric inputs of selected contaminants to the OSPAR maritime area and its regions.

Le présent rapport comporte les résultats de la surveillance continue effectuée par les Parties contractantes OSPAR, en 2005, dans le cadre du Programme exhaustif de surveillance continue de l'atmosphère (CAMP). Les Parties contractantes OSPAR sont tenues de surveiller obligatoirement les teneurs de toute une gamme de métaux lourds, de composés organiques et de nutriments dans les précipitations et l'atmosphère, ainsi que leurs retombées, ceci dans le cadre du CAMP. Celui-ci encourage les Parties contractantes OSPAR à surveiller de manière facultative des composés supplémentaires (tels que les polluants organiques persistants). Le rapport fournit des informations détaillées sur les apports atmosphériques de contaminants sélectionnés à la zone maritime OSPAR et à ses régions.

Overall, reporting in 2005 has remained at a reasonably high level, with over 80% achievement of the mandatory monitoring of contaminants over the last two years. This said, there is some tendency not to report particular substances subject to mandatory monitoring, such as mercury and lindane. There is also a lesser tendency to follow the programme for airborne pollutants than the programme for components in precipitation. These features may reflect the interests of Contracting Parties, and may be an issue for consideration.

Dans l'ensemble, la notification se maintient à un niveau élevé raisonnable en 2005. La surveillance obligatoire des contaminants durant les deux dernières années a dépassé 80%. Ceci étant, on tend à ne pas notifier certaines substances dont la surveillance est obligatoire, telles que le mercure et le lindane. On tend également, mais dans une moindre mesure, à suivre le programme pour les polluants atmosphériques plutôt que le programme pour les paramètres dans les précipitations. Ceci pourrait refléter les préférences des Parties contractantes et pourrait constituer une question à étudier.

The reported data show that depositions of most pollutants subject to mandatory monitoring have declined since 2000. The slight increase since 2004 may well be due simply to varying meteorological conditions; no assessment of this has been undertaken. The one pollutant which has not shown a decline since 2000 is mercury.

Les données notifiées révèlent que les retombées de la plupart des polluants, qui font l'objet d'une surveillance obligatoire, ont diminué depuis 2000. La légère augmentation que l'on a notée depuis 2004 pourrait être liée simplement à des conditions météorologiques variables. Ceci n'a pas fait l'objet d'une évaluation. Le mercure est le seul polluant qui n'a pas diminué depuis 2000.

The nutrients nitrate and ammonium show expected spring time peaks in their deposition to both North Sea and wider North-East Atlantic waters. As may be expected, ammonium deposition gradients are sharper than those for nitrate, particularly in the North Sea. This reflects both the different transport characteristics for these pollutants and the sharper peak in expected emissions of ammonium in spring.

Les retombées de nutriments, nitrate et ammonium, aussi bien dans la mer du Nord que dans les eaux de l'Atlantique du Nord-est au sens large, révèlent des maximums prévus au printemps. Comme l'on peut s'y attendre, les gradients de retombées d'ammonium sont plus abrupts que ceux du nitrate, en particulier dans la mer du Nord. Ceci reflète à la fois les diverses caractéristiques du transport de ces polluants et le maximum plus abrupt des émissions d'ammonium prévues au printemps.

1. Introduction

This report describes the reports from coastal monitoring stations across the OSPAR region (see Figure 1.1) under the Comprehensive Atmospheric Monitoring Programme (CAMP).

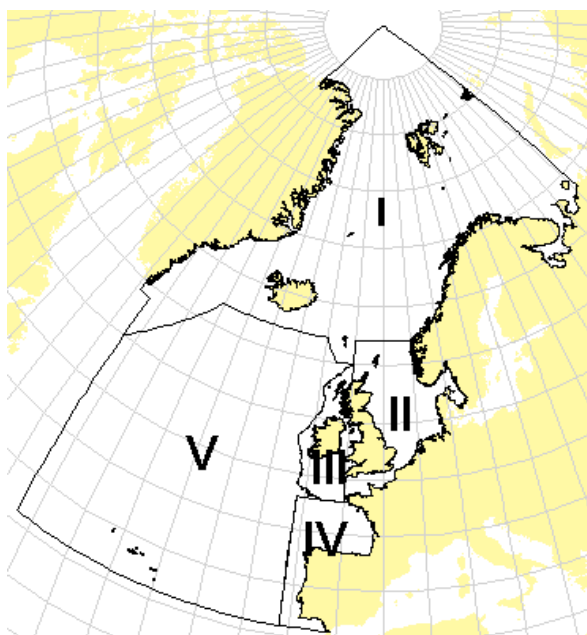


Figure 1.1: OSPAR maritime area and regions I: Arctic waters, II: Greater North Sea, III: Celtic Seas, IV: Bay of Biscay, V: Wider Atlantic

The Comprehensive Atmospheric Monitoring Programme forms one element within the wider Joint Assessment and Monitoring Programme of OSPAR. The CAMP aims to assess, as accurately as appropriate, the atmospheric input of the selected contaminants to the OSPAR maritime area and regions thereof (Figure 1.1) on an annual basis through monitoring the concentrations of selected contaminants in precipitation and air, and determining their deposition. The monitoring regime employed is set out in the CAMP Principles (OSPAR reference number: 2001-7), describing the relevant substances, sampling approach, locations and frequency, and assessment methodologies.

The components of interest to the CAMP are divided into two groups, for measurement on a mandatory basis and for measurement on a voluntary basis. These are listed in Table 1.1.

Table 1.1: Components to be measured under the CAMP

	Mandatory	Voluntary
Precipitation	As, Cd, Cr, Cu, Pb, Hg, Ni, Zn, γ -HCH, NH_4^+ , NO_3^-	PCB 28,52,101,118,138,153,180 PAHs: Phenanthrene, anthracene, flouranthene, pyrene, benzo(a)anthracene, chrysene, benzo(a)pyrene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene
Airborne	NO_2 , HNO_3 , NH_3 , NH_4^{+a} , NO_3^{-a}	As, Cd, Cr, Cu, Pb, Hg, Ni, Zn, γ -HCH, PCB 28,52,101,118,138,153,180, PAHs: Phenanthrene, anthracene, flouranthene, pyrene, benzo(a)anthracene, chrysene, benzo(a)pyrene, benzo(ghi)perylene, indeno(1,2,3-cd)pyrene, NO

^a) total ammonium ($\text{NH}_3 + \text{NH}_4^+$) and total nitrate ($\text{HNO}_3 + \text{NO}_3^-$) is an alternative

The CAMP Principles call for each Contracting Party bordering the OSPAR maritime area (excluding the EU) to operate at least one monitoring station on the coast and/or offshore as part of the CAMP. Where Parties border more than one region (see Figure 1.1) at least one station should be operating in each. These stations should be so-called background stations, i.e. not directly influenced by local emission sources. The stations should be located not more than 10 km from the coastline.

The data assembled by monitoring stations are reported by Contracting Parties to the Norwegian Institute for Air Research (NILU) on a yearly basis, using a reporting format and according to the time schedule set out in the CAMP Principles. Based on the data received, NILU prepares a CAMP data report on an annual basis for OSPAR to examine.

The present CAMP data report "Pollutant depositions and air quality around the North Sea and the North-East Atlantic in 2005" gives in chapter 2 an overview of reported data and the implementation of the CAMP Principles in 2005. The geographical coverage, the contaminants which have been monitored on a mandatory and voluntary basis, and the timeliness of data submission are presented. In chapter 3, an overview is given of the 2005 annual average values of the components subject to mandatory monitoring for the North-East Atlantic. In chapter 4, the deposition of nitrogen to the Atlantic coastline and the North Sea in 2005 has been calculated employing the "Method 3a" as laid down in the CAMP Principles. Chapter 5 addresses data uncertainty and presents the detection limits achieved by Contracting Parties. Chapter 6 summarises the report's observations on the reported CAMP data for 2005. The data submitted by Contracting Parties are appended to this report (Appendix 1).

2. The OSPAR CAMP Monitoring Programme in 2005

2.1 Geographical coverage

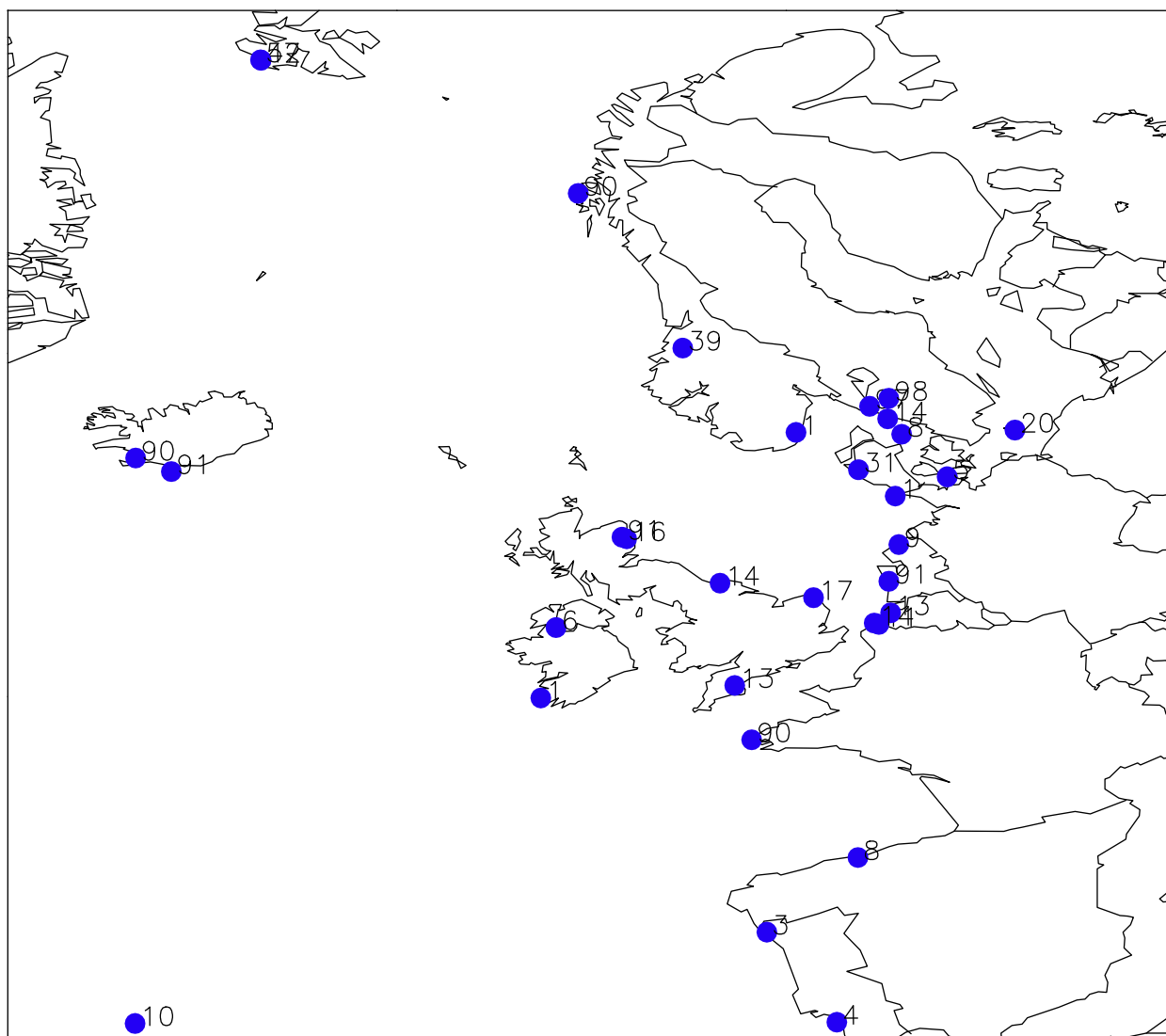


Figure 2.1: Monitoring sites reporting to OSPAR. Station numbers are the station numbers listed in table 2.1 without the country letters.

Known changes to the reporting network during 2005 were small, with observations now being reported from Andøya. This improves surveillance of inputs to Arctic waters, and addresses the observation from the CAMP 2004 Data Report (OSPAR publication 289/2006) which commented that monitoring in northern regions was dispersed. Table 2.1 details monitoring stations, and indicates the monitoring undertaken: observation of the deposition of pollutants in precipitation (p), and/or monitoring of ambient air quality (a). Not all stations reported data for all components.

Table 2.1: Stations reporting precipitation and air quality to OSPAR in 2005

Country	Station number	Station name	OSPAR Region	Lat.	Long.	Elev. (m)	Distance to sea (km)	Precip.(p) airborne(a)
Iceland	IS0090R	Irafoss	I	64°08' N	21°54' W	52	1	p
	IS0091R	Storhofdi	I	63°24' N	20°17' W	118	0.5	pa
Norway	NO0090R	Andøya	1	69°16' N	16°0' E	380		a
	NO0057R	Ny-Ålesund	I	78°55' N	11°55' E	8	0.3	p
	NO0042R	Zepellinfjell	I	78°54' N	11°53' E	474	2	a
	NO0039R	Kårvatn	I	62°47' N	8°53' E	210	70	pa
	NO0001R	Birkenes	II	58°23' N	8°15' E	190	20	pa
Belgium	BE0011R	Moerkerke	II	51°01' N	2°35' E	0	9	a
	BE0013R	Houtem	II	51°15' N	3°21' E	10	12	a
	BE0014R	Koksijde	II	51°7' N	2°30' E	7	1.5	p
Netherlands	NL0009R	Kollumerwaard	II	53°20' N	6°17' E	1	7.5	pa
	NL0091R	De Zilk	II	52°18' N	4°31' E	4	2.5	pa
Germany	DE0001R	Westerland	II	54°56' N	8°19' E	12	0.09	pa
Denmark	DK0005R	Keldsnor	II	54°44' N	10°44' E	10		p
	DK0008R	Anholt	II	56°43' N	11°31' E	40	~0.5	pa
	DK0020R	Pedersker	II	55°01' N	14°57' E	5		p
	DK0031R	Ulborg	II	56°17' N	8°26' E	40	20	pa
Sweden	SE0014R	Råö	II	57°24' N	11°55' E	10	100	pa
	SE0097R	Gårdsjön	II	58°03' N	12°01' E	113	12	p
	SE0098R	Svartedalen	II	57°59' N	12°06' E	120	16	p
United Kingdom	GB0013R	Yarner Wood	II	50°36' N	3°43' W	119	16.9	pa
	GB0014R	High Muffles	II	54°20' N	0°48' W	267	20.8	Pa
	GB0016R	Glen Saugh	II					Pa
	GB0091R	Banchory	II	57°05' N	2°32' W	120	23.6	Pa
	GB0017R	Heigham Holmes	II	52°43' N	1°37' E	0	4.4	Pa
	GB0006R	Lough Navar	III	54°26' N	7°54' W	130	18.8	Pa
Ireland	IE0001R	Valentia Island	III	51°56' N	10°15' W	9	0	P
France	FR0090R	Porspoder	II/IV	48°30' N	4°46' W	30	0.5	P
Spain	ES0008R	Niembro	IV	43°27' N	4°51' W	134		P
Portugal	PT0003R	Viana do Castelo	IV	41°42' N	8°48' W	16	4	P
	PT0004R	Monte Velho	IV	38°05' N	8°48' W	43	1.5	P
	PT0010R	Angra do Heroismo	V	38°40' N	27°13' W	74	1	P

2.2 Completion of the observation programmes

The Comprehensive Atmospheric Monitoring Programme (CAMP) can provide ground truth data on atmospheric pollution of OSPAR waters in a coordinated and geographically appropriate manner. Full observance of the mandatory monitoring of components, for both precipitation and airborne contaminants, was made by Germany, Norway and Sweden. Together with Belgium these three followed the mandatory programme for components in precipitation. The mandatory programme for airborne contaminants was observed by the three together with Denmark, Netherlands, Spain and the UK. The least reported contaminants are mercury (6 reporting, unchanged since 2003) and lindane (6 reporting, unchanged since 2003). Two Contracting Parties, France and Ireland, chose not to report any mandatory air components. From combined numbers of Contracting Parties and pollutants, the percentage observance of the mandatory contaminant monitoring has risen from 78% in 2003, to 83% in both 2004 and 2005.

Table 2.2: Mandatory monitoring of contaminants in precipitation for 2005*:

	As	Cd	Cr	Cu	Pb	Hg	Ni	Zn	γ -HCH	NH ₄	NO ₃
Belgium	•	•	•	•	•	•	•	•	•	•	•
Denmark	•	•	•	•	•		•	•		•	•
France	•	•	•	•	•		•	•		•	•
Germany	•	•	•	•	•	•	•	•	•	•	•
Iceland	•	•	•	•	•		•	•	•	•	•
Ireland	•	•	•	•	•	•	•	•		•	•
Netherlands	•	•	•	•	•	•	•	•	•	•	•
Norway	•	•	•	•	•	•	•	•	•	•	•
Portugal		•		•	•		•	•		•	•
Spain	•	•	•	•	•		•	•		•	•
Sweden	•	•	•	•	•	•	•	•	•	•	•
United Kingdom	•	•	•	•	•	•	•	•		•	•

Table 2.3: Mandatory monitoring of contaminants in air for 2005*:

	NO ₂	NO ₃	NH _x
Belgium	•		
Denmark	•	•	•
France			
Germany	•	•	•
Iceland		•	
Ireland			
Netherlands	•	•	•
Norway	•	•	•
Portugal			
Spain	•	•	•
Sweden	•	•	•
United Kingdom	•	•	•

For the first time this year, the degree of successful completion of the CAMP programme expressed as a percentage has been attempted. The results are shown in table 2.4 based on the assumption that full completion of the programme would be represented by delivery of 12 monthly averages for each of the listed components. The mandatory monitoring of components in precipitation under CAMP, for example, comprises 11 substances, so that 11 x 12 month averages would be needed to achieve 100% delivery. For airborne components there is an optional approach to monitoring nitrogen compounds, and the estimates in table 2.4 assume the minimum approach, i.e. that combined NH₃+NH₄ sampling is sufficient, as is combined NO₃+HNO₃. Where a Party monitors separate compounds, the full complement must then be monitored to achieve 100%. A weakness is that no credit is given for monitoring at more than one site. As a final column, the table also gives the number of additional compounds being reported, i.e. compounds additional to the requirements of either the Mandatory or the Voluntary lists.

* Grey boxes in Tables 2.2 and 2.3 indicate contaminants for which no data were reported.

Table 2.4: Percentage completion of the CAMP programme.

	Precipitation		Airborne		no. Extra
	Mandatory	Voluntary	Mandatory	Voluntary	
Belgium	90,9	0	33,3	19,9	9
Denmark	81,8	0	97,2	38,7	4
France	83,3	0	0	0	0
Germany	100	93,8	100	19,2	15
Iceland	90,9	43,8	25	61,5	46
Ireland	90,9	0	0	0	0
Netherlands	98,5	0	80	26,3	0
Norway	100	43,8	100	77,1	74
Portugal	58,3	0	0	0	1
Spain	81,8	0	100	49,4	0
Sweden	99,2	0	100	39,1	3
United Kingdom	97,5	0	100	96,2	0

2.3 Timeliness of reporting

The reporting of data for observations for the year 2005 was close to accordance with the time schedule of the CAMP Principles (see Table 2.5). Ten of twelve Contracting Parties reported according to schedule with an eleventh doing so in time for the data validation round. Only one was unable to deliver until after INPUT. Not all Parties delivered all data at their first delivery. Data received too late for reporting to INPUT could not be reviewed by that body. In one case (UK) the option of delivering data via the European Environment Agency's Data Exchange Module (DEM) was taken in good time, thus reducing the workload upon that Party. Unfortunately, difficulties at the EEA prevented this data being forwarded to NILU in the proper manner before INPUT. The UK subsequently resubmitted directly to NILU. This matter is being pursued at the EEA by the CAMP Data Manager. Table 2.6 gives an overview of the actual receipt of national observation reports.

Table 2.5 Timetable for data reporting according to the CAMP Principles

30 th June	Call for metadata and data issued from NILU (regarding new data and metadata), with instructions and reference to supporting software (e.g. where to find tools on the NILU website).
30 th September	Participants submit data and metadata via email or on diskette, in specified formats.
31 st October	NILU returns data and metadata via email or on diskette in the form of a 'validation report' to data originators for verification and signing off by the data originators within two weeks of reception.

Table 2.6: History of reporting of 2005 observations

Contracting Party	Data delivered
June 30 -Deadline for data request issue by NILU	
Belgium	✓
Denmark	✓
France	✓
Germany	✓
Iceland	✓
Ireland	✓
France	✓
Netherlands	✓
Norway	✓
Portugal	✓
Spain	✓
Sweden	✓
United Kingdom	✓
September 30 - Deadline for receipt of data	
Netherlands	✓
October 31 - Deadline for Validation Report issued by NILU	
December 22 - Reporting to INPUT by NILU	
January 2007 – INPUT, Oslo	
Portugal	✓
March 2007 – Draft Report delivery to OSPAR for ASMO	

2.4 Reporting of additional components

Parties report a wider range of components than is covered by CAMP. This data is managed and stored by the Data Manager in the same way as for the regular data. Table 2.7 lists all components reported by Contracting Parties during 2005 (excluding major ions submitted for quality control, and components of no clear relevance to CAMP). These are colour-coded to indicate their status as mandatory components (green), voluntary components (blue) or additional components (red), and are listed with the country code of Parties concerned.

In the main body of this report describes the observations of the mandatory components alone. These are both tabulated and shown as maps. In the Appendices all observations from each country are listed, covering the mandatory components, the voluntary components, and any additional components. Excluded are only the major ions which are reported solely to provide the potential for quality control, and compounds which are a part of other international programmes but which may be expected to lie outside the core interest of OSPAR, e.g. sulphates, ozone, PM measurements.

Table 2.7: All components reported by Contracting Parties in 2005

acenaphthene	NO	fluoranthene	DE,NO,SE,UK	PCB_114	NO
acenaphthylene	NO	fluorene	NO	PCB_118	DE,IS,NO,SE
aldrin	BE,DE,DK,ES,FR,IE,IS,NL,NO,SE	gamma_HCH	BE,DE,IS,NO,SE,UK	PCB_122	NO
alpha_HCH	BE,DE,IS,NO,SE	HCB	IS,DE,NO	PCB_123	NO
aluminium	DK,IE,IS	heptachlor	BE,DE	PCB_128	NO
ammonia	DK,ES,NL,NO,UK	inden_123cd_pyrene	DE,NO,SE,UK	PCB_138	DE,IS,NO,SE
ammonium	BE,DE,DK,ES,FR,IE,IS,NL,NO,SE,UK	iron	DE,DK,IS,SE	PCB_141	NO
sum ammonia & ammonium	DE,ES,NO,SE	lead	BE,DE,DK,ES,FR,IE,IS,NL,NO,SE,UK	PCB_149	NO
anthranthrene	NO	manganese	DE,DK,IE,IS,SE	PCB_153	DE,IS,NO,SE
anthracene	DE,NO,SE,UK	mercury	BE,DE,ES,IE,IS,NO,SE,UK	PCB_156	IS,NO
arsenic	BE,DE,DK,ES,FR,IE,IS,NL,NO,SE,UK	N1methylnaphtalene	NO	PCB_157	NO
benz_a_anthracene	DE,NO,SE,UK	N1methylphenanthrene	NO	PCB_167	NO
benzo_a_fluoranthene	NO	N2methylanthracene	NO	PCB_170	NO
benzo_a_fluorene	NO	N2methylnaphtalene	NO	PCB_180	DE,IS,NO,SE
benzo_a_pyrene	DE,NO,SE,UK	N2methylphenanthrene	NO	PCB_183	NO
benzo_b_fluorene	NO,SE	N3methylphenanthrene	NO	PCB_187	NO
benzo_bjk_fluoranthenes	NO,SE	N9methylphenanthrene	NO	PCB_189	NO
benzo_e_pyrene	NO	naphtalene	NO	PCB_194	NO
benzo_ghi_fluoranthene	NO	nickel	BE,DE,DK,ES,FR,IE,IS,NL,NO,SE,UK	PCB_206	NO
benzo_ghi_perylene	DE,NO,SE,UK	nitrate	BE,DE,DK,ES,FR,IE,IS,NL,NO,SE,UK	PCB_209	NO
beta_HCH	IS	nitric_acid	NO,UK	sum_PCB	NO
biphenyl	NO	sum nitric acid & nitrate	DE,DK,ES,NO,SE	perylene	NO
cadmium	BE,DE,DK,ES,FR,IE,IS,NL,NO,SE,UK	nitrogen_dioxide	BE,DK,ES,NL,NO,SE,UK	phenanthrene	DE,NO,SE,UK
chromium	BE,DE,DK,ES,FR,IE,IS,NL,NO,SE,UK	nitrogen_monoxide	BE,ES,NL,UK	pp_DDD	BE,DE,IS,NO
chrysene_triphenylene	DE,NO,SE,UK	op_DDD	DE,NO	pp_DDE	BE,DE,IS,NO
cis_CD	IS,NO	op_DDE	DE,NO	pp_DDT	BE,DE,IS,NO
cis_NO	NO	op_DDT	DE,IS,NO	sum_DDT	NO
cobalt	NO,SE	PCB_18	NO	pyrene	DE,NO,SE,UK
copper	BE,DE,DK,ES,FR,IE,IS,NL,NO,SE,UK	PCB_28	DE,IS,NO,SE,UK	retene	NO
coronene	NO	PCB_31	IS,NO	selenium	DK
cyclopenta_cd_pyrene	NO	PCB_33	NO	trans_CD	IS,NO
dibenzo_ac_ah_anthracenes	DE,NO	PCB_37	NO	trans_NO	IS,NO
dibenzo_ae_pyrene	NO	PCB_47	NO	txph_26	IS
dibenzo_ah_pyrene	NO	PCB_52	DE,IS,NO,SE,UK	txph_50	IS
dibenzo_ai_pyrene	NO	PCB_66	NO	txph_62	IS
dibenzofuran	NO	PCB_74	NO	vanadium	IE,IS,NO,SE
dibenzothiophene	NO	PCB_99	NO	zinc	BE,DE,DK,ES
dieldrin	BE,DE,IS	PCB_101	DE,IS,NO,SE,UK		
endrin	BE,DE	PCB_105	IS,NO		

Mandatory

Voluntary

Additional

3. Observed pollutant depositions at monitoring stations in 2005

This section describes air pollutant status at coastal stations around the North-East Atlantic in 2005. The annual average concentrations of contaminants subject to mandatory monitoring are listed and mapped, and deposition rates are tabulated. Full sea deposition estimates from observations are supplied in section 4. Heavy metal concentrations and depositions in precipitation are presented in Tables 3.1-2 and illustrated in Figures 3.1-3.7. Data for mercury is in Table 3.3 and Figure 3.8, and lindane in Table 3.4 and Figure 3.9. Nitrogen concentrations and depositions in precipitation are in Table 3.5, and are mapped in Figures 3.10-11. Colour coding highlights the two highest concentration/deposition, and the lowest concentration/deposition per pollutant.

3.1 Heavy metals (except mercury)

Some patterns are observable. Low pollutant levels at GB0006 are not unexpected on the western coast of Northern Ireland. High arsenic at GB0013 despite remote location reflects south-west England as an 18th century centre of metal mining, arsenic contamination being widespread. Extremes on Iceland reflect geothermal activity in a remote location. High values on the Iberian peninsula are less easily explained. Consistent high cadmium concentrations at Portuguese sites suggests an artifact. High observations at the Spanish site ES0008 are unexplained.

Table 3.1: Reported mean annual concentrations of heavy metals in precipitation (mg/l).

		arsenic µg/l	cadmium µg/l	chromium µg/l	copper µg/l	lead µg/l	nickel µg/l	zinc µg/l	precipitation mm
Belgium	BE0014R	0,27	0,06	0,33	2,97	1,90	0,48	8,77	1088,01
Denmark	DK0008R	0,19	0,03	0,18	1,38	1,01	0,32	12,52	522,21
	DK0020R	0,15	0,05	0,17	1,45	1,62	0,38	16,09	408,54
	DK0031R	0,09	0,03	0,11	0,95	0,85	0,29	8,78	681,82
France	FR0090R	0,16	0,03	0,15	0,74	0,85	0,39	2,02	899,04
Germany	DE0001R	0,12	0,03	0,16	1,07	0,94	0,35	7,59	584,61
Iceland	IS0090R	0,20	0,01	0,40	3,87	0,37	0,97	7,62	731,73
	IS0091R	0,07	0,05	1,28	1,84	1,99	2,84	12,42	1485,90
Ireland	IE0001R	0,50	0,07	0,50	8,95	0,75	0,66	13,38	1496,15
Netherlands	NL0009R	0,37	0,07	0,39	1,89	2,13	0,46	9,24	612,49
	NL0091R	0,09	0,05	0,28	1,10	2,19	0,36	4,95	962,48
Norway	NO0001R	0,26	0,04	0,30	0,76	1,17	0,47	5,35	1407,39
Portugal	PT0003R		0,43		1,17	0,75	0,78	13,09	914,35
	PT0004R		0,43		0,45	0,65	0,78	5,24	426,60
	PT0010R		0,43		27,74	0,65	38,30	59,00	1429,13
Spain	ES0008R	0,38	0,15	59,91	27,79	9,28	48,48	84,29	606,60
Sweden	SE0097R	0,21	0,05	0,20	0,99	1,23	0,39	6,61	727,86
United Kingdom	GB0006R	0,15	0,02	0,04		0,12	0,08	1,01	1521,58
	GB0013R	0,54	0,05			0,78	0,43	5,15	1030,13
	GB0017R	0,15	0,03	0,10	1,00	1,42	0,34	6,45	460,019
	GB0091R	0,09	0,04	0,06		0,52	0,29	4,59	803,07
		highest concentrations		second highest concentrations		lowest concentrations			

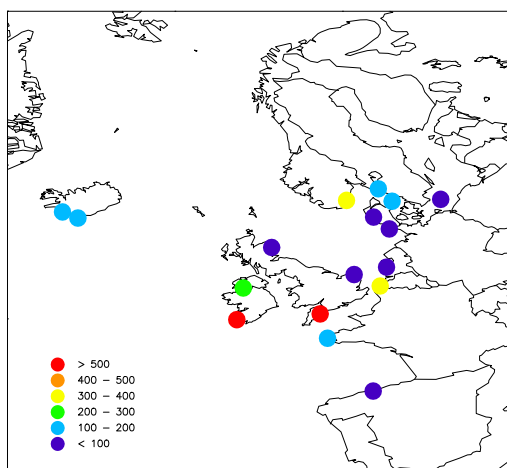


Figure 3.1: As depositions 2005, $\mu\text{g}/\text{m}^2$ p.a.

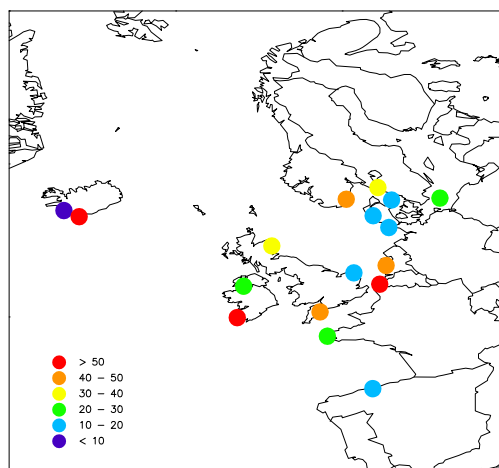


Figure 3.2: Cd depositions 2005, $\mu\text{g}/\text{m}^2$ p.a.

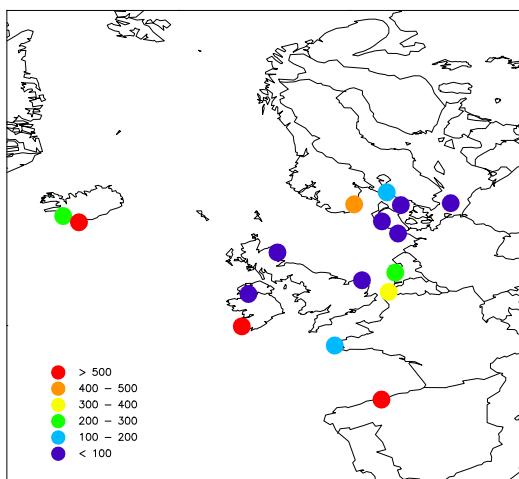


Figure 3.3: Cr depositions 2005, $\mu\text{g}/\text{m}^2$ p.a.

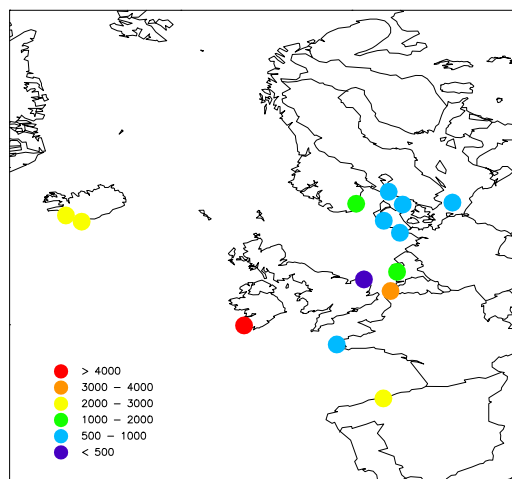


Figure 3.4: Cu depositions 2005, $\mu\text{g}/\text{m}^2$ p.a.

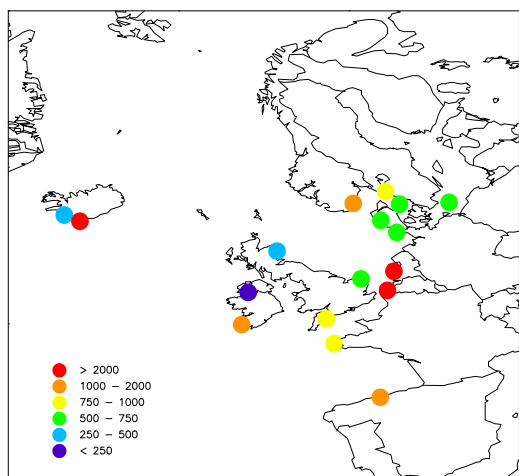


Figure 3.5: Pb depositions 2005, $\mu\text{g}/\text{m}^2$ p.a.

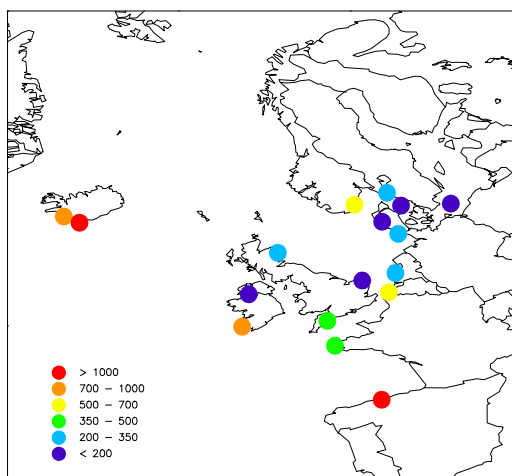


Figure 3.6: Ni depositions 2005, $\mu\text{g}/\text{m}^2$ p.a.

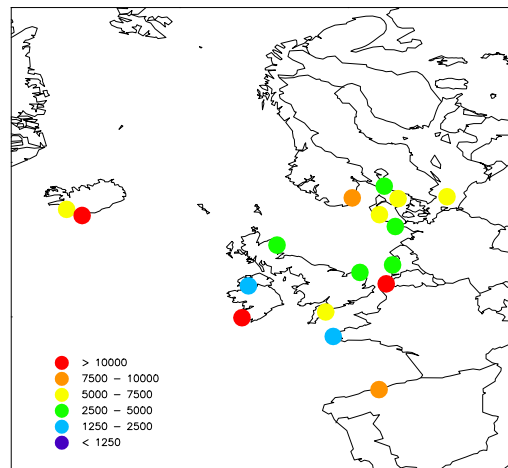


Figure 3.7: Zn depositions 2005, $\mu\text{g}/\text{m}^2$ p.a.

Table 3.2: Reported mean annual depositions of heavy metals in precipitation ($\text{mg}/\text{m}^2/\text{a}$). precipitation amounts are given in mm

		arsenic $\mu\text{g}/\text{m}^2$	cadmium $\mu\text{g}/\text{m}^2$	chromium $\mu\text{g}/\text{m}^2$	copper $\mu\text{g}/\text{m}^2$	lead $\mu\text{g}/\text{m}^2$	nickel $\mu\text{g}/\text{m}^2$	zinc $\mu\text{g}/\text{m}^2$	precipitation mm
Belgium	BE0014R	306	73	378	3429	2195	551	10137	1088,01
Denmark	DK0008R	100	18	96	721	528	169	6540	522,21
	DK0020R	63	22	69	591	660	153	6571	408,54
	DK0031R	61	18	78	647	577	194	5986	681,82
France	FR0090R	141	23	138	663	764	354	1813	899,04
Germany	DE0001R	72	16	92	626	550	206	4434	584,61
Iceland	IS0090R	143	8	291	2833	270	707	5576	731,73
	IS0091R	106	68	1895	2730	2953	4222	18455	1485,90
Ireland	IE0001R	748	106	748	13390	1114	982	20020	1496,15
Netherlands	NL0009R	224	43	236	1159	1304	284	5661	612,49
	NL0091R	85	46	265	1056	2105	349	4760	962,48
Norway	NO0001R	359	50	421	1074	1643	656	7525	1407,39
Portugal	PT0003R		389		1074	681	709	11964	914,35
	PT0004R		181		193	275	331	2235	426,60
	PT0010R		607		39644	922	54735	84318	1429,13
Spain	ES0008R	234	92	36339	16859	5627	29405	51130	606,60
Sweden	SE0097R	152	34	142	723	896	280	4810	727,86
United Kingdom	GB0006R	221	27	67		177	125	1538	1521,58
	GB0013R	551	46			799	445	5302	1030,13
	GB0017R	69	16	44	460	655	158	2965	460,019
	GB0091R	75	35	44		418	230	3687	803,07
		highest depositions		second highest depositions		lowest depositions			

3.2 Mercury

The broad comparison in observed concentrations and depositions around the southern North Sea, from Norway around the coast to the United Kingdom, provides some reassurance as to the quality of these measurements. The basis, if there is any, for the slight division into two groups – Netherlands, Norway and Belgium, and Sweden, Germany and the UK – is not immediately apparent. Much higher reported concentrations for western Ireland would appear to reflect analytical limitations. This difficulty, together with the absence of any observations by Parties outside the North Sea basin, precludes identification of levels elsewhere across the OSPAR area.

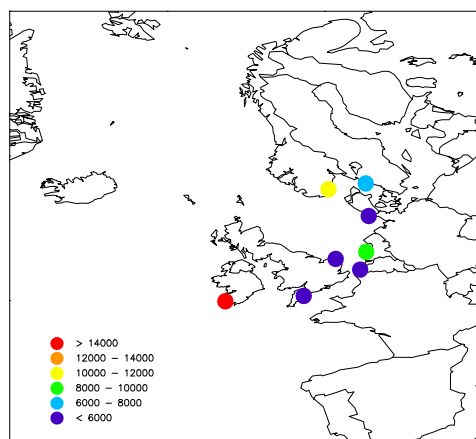


Figure 3.8: Mercury depositions 2005, ng/m² p.a.

Table 3.3: Reported depositions of mercury in precipitation (ng/m²), 2005, together with associated concentrations (ng/l). Ranked by deposition quantity.

		conc ng/l	prec mm	dep ng/m ²
Ireland	IE0001R	50,00	1496,15	74807
Netherlands	NL0091R	13,04	947,70	12360
Norway	NO0001R	8,85	1242,50	11001
Belgium	BE0014R	11,76	992,30	10798
Sweden	SE0014R	18,47	379,50	7008
Germany	DE0001R	9,05	555,44	5027
United Kingdom	GB0013R	4,84	977,74	4734
	GB0017R	7,23	381,42	2759
Denmark		●		
France		●		
Iceland		●		
Portugal		●		
Spain		●		



no data reported

3.3 Lindane

Icelandic observations are very low in accordance with no local use and restricted distant transport. Values from Norway, Sweden and Germany are broadly comparable, although the factor of 3 difference between Sweden and the others should be evaluated. The observed depositions on the Dutch and Belgian coasts should also be evaluated. These are an order of magnitude greater than Swedish observations, which would be unexpected at such distance. Reported change since 2004 is unlikely, given the negative pattern in neighbouring countries. Depositions in Iceland, Sweden and Germany fell by ~15%, and in Norway slightly. Dutch consistency seems to indicate the detection limits achieved. The increase in depositions of nearly 50% on the Belgian coast is unexplained.

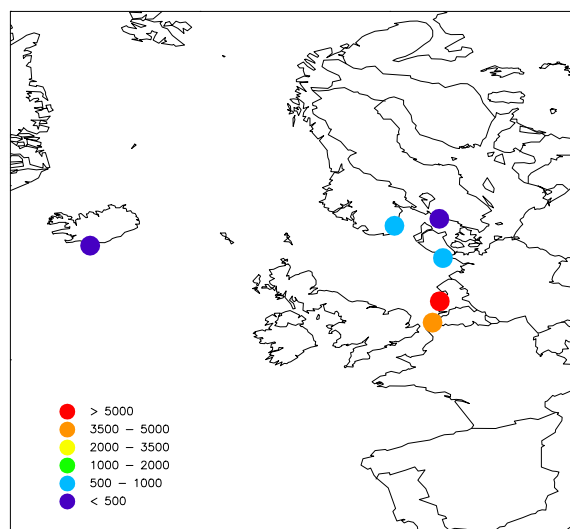


Figure 3.9: Lindane depositions 2005 ng/m²

Table 3.4: Reported annual concentrations of γ -HCH in precipitation (precipitation-weighted: ng/l) and deposition (ng/m²) in decreasing order of deposition quantity, together with percentage change in reported deposition quantity since 2004.

	concentration ng/l	precipitation mm	2005 deposition ng/m ²	2004 deposition ng/m ²	% change 2004-5
Netherlands NL0091R	5,8877	850,7	5008	4861	+3,0
Belgium BE0014R	3,98	1097,25	4369	3083	+47,7
Norway NO0001R	0,72	1157,77	833	845	-1,4
Germany DE0001R	1,37	584,20	798	943	-15,4
Sweden SE0014R wet+dry			197	299	-34,1
Iceland IS0091R	0,05	643,00	33	39	-15,9
Denmark	●				
France	●				
Ireland	●				
Portugal	●				
Spain	●				
United Kingdom	●				

● no data reported

3.4 Nitrogen

Table 3.5: Mean annual nitrogen concentrations (mg/l) and depositions (mg/m²) nitrogen, 2005

		nitrate ammonium concentrations		precip m m	nitrate ammonium depositions	
		mg/l	mg/l		mg/m ²	mg/m ²
Belgium	BE0014R	0,43	0,61	752,10	323,38	460,85
Germany	DE0001R	0,53	0,64	584,61	307,01	375,26
Denmark	DK0005R	0,61	0,68	432,85	263,79	295,22
	DK0008R	0,46	0,42	591,90	273,19	248,16
France	FR0090R	0,35	0,10	899,04	313,38	90,14
Iceland	IS0090R	0,11	0,34	684,01	76,98	233,64
	IS0091R	0,06	0,94	1493,13	82,37	1407,80
Ireland	IE0001R	0,08	0,17	1496,15	123,54	251,77
Netherlands	NL0009R	0,42	0,63	648,89	270,03	409,36
	NL0091R	0,44	0,55	866,67	382,02	474,27
Norway	NO0001R	0,47	0,42	1240,63	585,63	521,83
	NO0039R	0,05	0,08	1733,30	93,40	138,74
	NO0057R	0,09	0,09	212,17	19,48	18,47
Portugal	PT0003R	0,20	0,14	914,35	185,09	126,05
	PT0004R	0,13	0,06	426,60	53,27	25,01
	PT0010R	1,50	12,17	1429,13	2143,69	17392,45
Spain	ES0008R	1,60	0,45	25,09	40,19	11,32
Sweden	SE0098R	0,47	0,49	493,70	231,02	243,38
United Kingdom	GB0006R	0,13	0,14	1485,16	191,59	212,38
	GB0013R	0,39	0,37	1024,44	400,55	373,92
	GB0014R	0,45	0,48	703,55	316,60	339,11
	GB0016R	0,34	0,28	683,10	233,62	194,00

highest second highest lowest

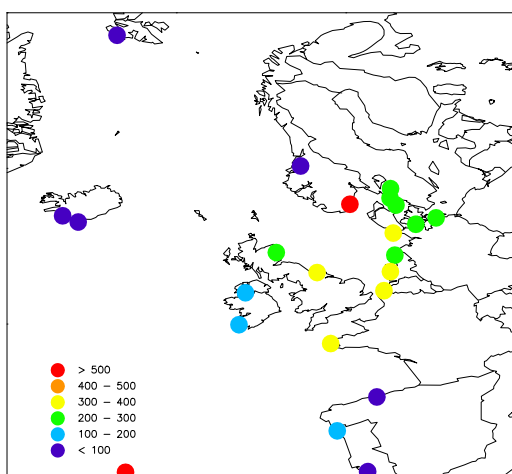


Figure 3.10: NO₃ depositions, mg N /m² p.a.

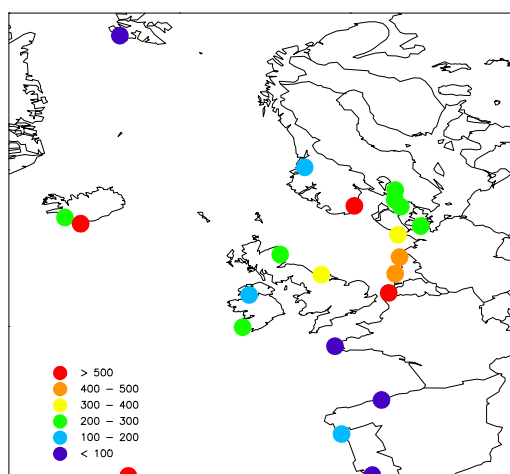


Figure 3.11: NH₄ depositions, mg N /m² p.a.

4. Estimated total North Sea depositions and temporal patterns

4.1 Total North Sea depositions

OSPAR has previously estimated pollutant loadings to the North Sea on the basis of known relationships with observed pollutant concentrations at CAMP monitoring stations. This approach, known as 'Method 3a', applies transfer coefficients to observed pollutant concentrations to estimate total wet plus dry basin deposition*. The physical and chemical factors behind atmospheric transfer are inherent in the estimated transfer functions calculated from reported data rather than being explicitly described. Combining estimates derived from several stations around the sea provides balance against overweighting from any single unusual measurement. The approach is described in *Calculation of atmospheric inputs of contaminants to the North Sea 1987-92*, Oslo and Paris Commission (1994), Assessment and Monitoring Series, OSPAR publication 1994/25.

The approach is suited to estimating change. In this section both the absolute estimates of deposition in 2005 of nitrogen and metal components subject mandatory monitoring for precipitation in 2004 and 2005 are given (Table 4.1), and the proportional change since 2000 is presented (Figure 4.1).

Table 4.1: Estimated total annual depositions to the North Sea basin in 2004 and 2005, derived from measurements ('Method 3a'). Metals as tonnes per year, nitrogen as ktonnes per year.

	Arsenic	Cadmium	Chromium	Copper	Lead	Nickel	Zinc	Nitrate	Ammonium
2004	39	16	44	236	289	92	1552	117	142
2005	45	11	49	271	333	96	1575	119	141

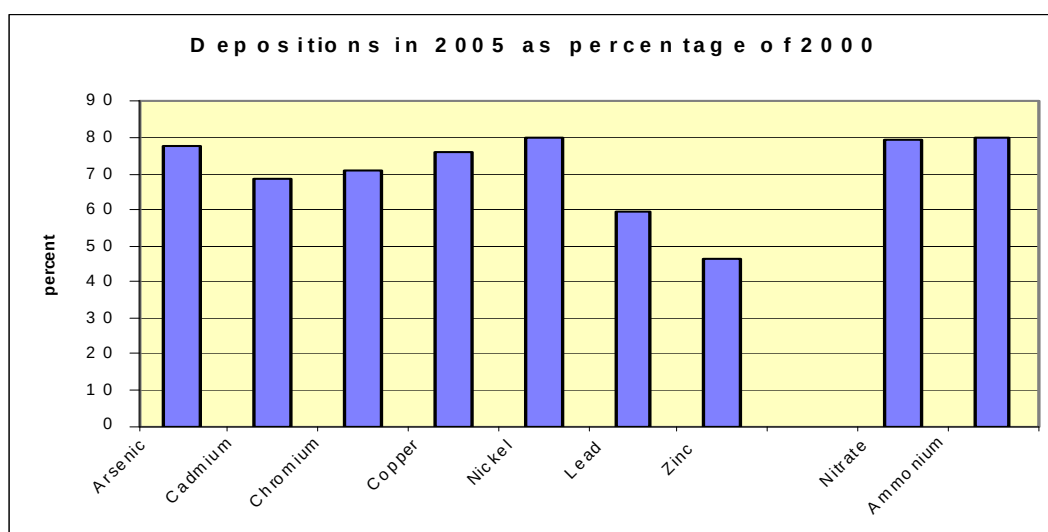


Figure 4.1: Estimated deposition change in 2000-2004, derived from measurements ('Method 3a')

* 'Method 3a' combines dry and wet deposition for metals. For nitrogen, wet deposition alone is used.

4.2 Temporal patterns in mercury depositions in 2001 – 2005

In order to begin to raise discussion for the construction of the upcoming 2009 CAMP data assessment, INPUT 2007 requested that the temporal patterns in mercury deposition be displayed in this report, and comment passed on the suitability of available data for such evaluation of temporal patterns. In Figure 4.2 the overall observed depositions of mercury are shown. This represents the average picture across stations with reports each year during the period 2001 – 2005.

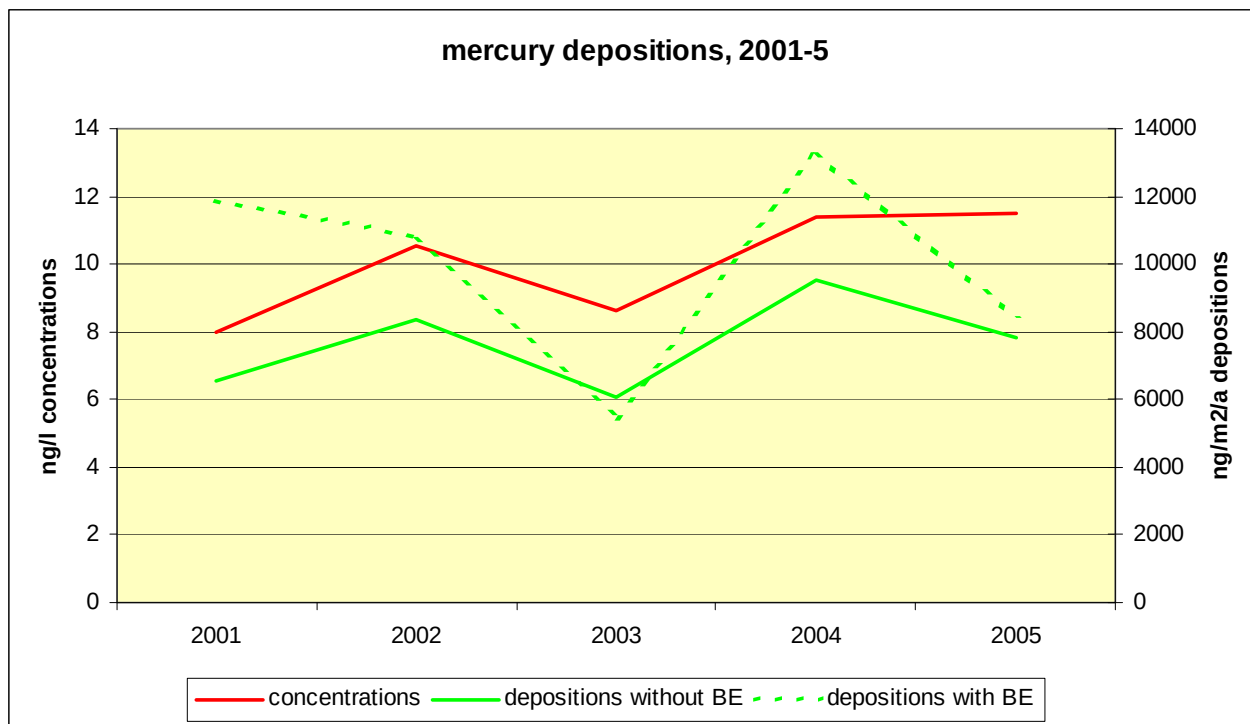


Figure 4.2: Average depositions of mercury on the North Sea coast, 2001 – 2005

The figure is constructed from observations in Germany, the Netherlands, Norway and Sweden. Continuous observations are also available from Belgium. However, in the Belgian data submitted to OSPAR there are notable variations, despite that Belgian performance in separate open intercomparison exercises has been similar to other countries. Inclusion of this data leads to large changes in average deposition across all sites from year to year. Part of this may be explained by less sensitive analysis of mercury in Belgium to 2005. Section 5.1 details detection limits. Average depositions with and without use of Belgian data is shown.

Even with the remaining data there are notable inter-annual changes. In Figure 4.2 there is suggestion of an increase in mercury depositions to the North Sea; for each of the individual stations this pattern appears still stronger. Construction of averaged summary pictures are very attractive from a communication point of view, but incur the cost of losing local detail. The use of CAMP data for construction of such overviews needs careful consideration during development of the CAMP Assessment Report.

4.3 Seasonality in nitrogen deposition

Nitrogen has been selected here for displaying temporal trends. To provide information at the regional scale observations have been averaged across all stations found in the North Sea (OSPAR Region II), and across all stations in all remaining regions, described broadly as the Atlantic.

Both nitrate and ammonium showed a spring peak in depositions in the North Sea, the peak being weaker for nitrate. For the Atlantic regions, the temporal pattern for ammonium concentrations was similar, albeit at lower absolute levels than seen in the North Sea. Nitrate showed a much less marked seasonal pattern. The lower peak/weaker seasonal pattern for nitrate nitrogen likely reflects a typically greater distance of transport between points of emission and deposition at the coast than is the case for ammonium. Sources are frequently from industry and transport, and are widely spread. The shorter typical distance of transport for

ammonium with consequent lesser dispersion will produce a clearer gradient in depositions away from emission sources. Ammonium sources are mostly agricultural and are often in proximity to the coast.

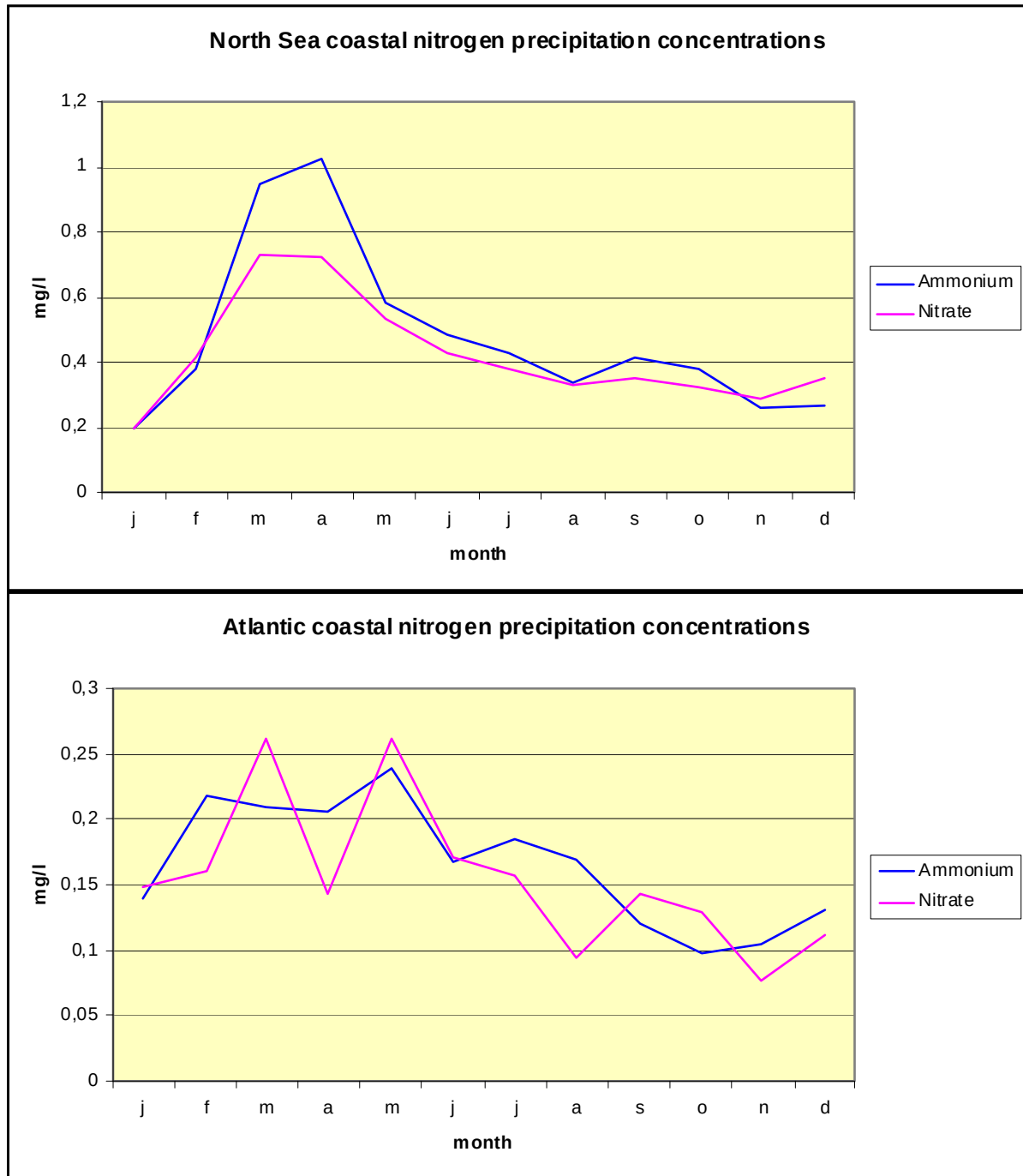


Figure 4.3: Seasonal pattern in precipitation nitrogen to the North Sea and NE Atlantic coasts in 2005

5. Data uncertainty

5.1 Limits of detection

INPUT 2006 has requested NILU to include the reported limits of detection or limits of quantification in the CAMP 2005 data report to INPUT 2007, and to provide an overview table of ranges of reported LoDs/LoQs per component and Contracting Party. At present, such information is not uniformly received under the CAMP. To encourage the process and discussion within Contracting Parties prior to the data call for the CAMP 2006 data report, a first overview of the current state of play is provided here.

Table 5.1: Reported detection limits; components in precipitation, and as sum precipitation + dry deposition.

Detection Limits 2005		Country	BE	DE	ES	FR	IS	IE	NO	SE	UK
Matrix	Component										
precipitation	NH ₄ -N		mg/l	mg/l	mg/l	mg/l			mg/l	mg/l	mg/l
	NO ₃ -N		0,02	0,01	0,08	0,1			0,01	0,02	0,01
			0,06	0,002	0,04	0,05			0,01	0,006	0,01
			µg/L	µg/L	µg/L	µg/l		µg/L	µg/l		µg/l
	Al							<50			
	As		0,5	0,004	1,029	0,1		<1	0,1	0,1	0,008
	Cd		0,5	0,003	0,033	0,004		<0.10	0,1	0,1	0,002
	Co								0,1	0,1	
	Cr		0,5		0,911	0,01			0,5	0,5	0,04
	Cu		1	0,01	0,209	0,04		<1	0,5	0,5	
	Fe			0,5							0,02
	Mn			0,002				<1		0,5	
	Ni		0,5	0,01	0,096	0,2		<1	0,5	0,5	0,01
	Pb		0,5	0,002	0,049	0,25		<1	0,1	0,1	0,06
	Zn		10	0,5	2,074	0,01		<1	0,5	0,5	1
	V								0,5	0,5	
			ng/l	ng/l			ng/l	ng/l	ng/l		ng/l
	Hg		7,3	0,3				100		0,2	0,8
	g-HCH		2				0,004 - 0,600		0,07		
	a-HCH		1				0,004 - 0,600		0,02		
	b-HCH		4				0,004 - 0,600				
	tr-chlordan		2				0,002 - 0,200				
	cis-chlordan		2				0,002 - 0,200				
	tr-Nonachlor						0,002 - 0,200				
	HCB		1				0,005 - 0,050				
	PCB-28, 31, 52		3				0,002 - 0,600				
	PCB-101,105,118,138,153,156,180		2				0,002 - 0,200				
	pp-DDE		2				0,004 - 0,400				
	pp-DDD		1				0,004 - 0,400				
	op-DDT		2				0,004 - 0,400				
	pp-DDT		1				0,004 - 0,400				
	dieldrin		2				0,017 - 0,022				
	toxaphenes-26,50,62						0,004 - 0,400				
			mm								
	precip amount		0,1								
precipitation+dry deposition			ng/m ² /day								
	anthracene										0,1
	benz(a)anthracene										0,5
	benzo(a)pyrene										0,0003
	benzo(b)fluoranthenes										0,0006
	benzo(ghi)perylene										0,001
	benzo(k)fluoranthenes										0,0001
	chrysene										0,0003
	fluoranthene										0,001
	inden(1,2,3)pyrene										0,002
	phenanthrene										0,0003
	pyrene										0,001
	PCB-28										0,01
	PCB-52										0,01
	PCB-101										0,01
	PCB-118										0,01
	PCB-138										0,01
	PCB-153										0,01
	PCB-180										0,01
	a-HCH										0,01
	g-HCH										0,01

The reported detection limits for components in precipitation are given in Table 5.1, whilst the equivalent for airborne compounds is found in Table 5.2. The methodology by which these are derived is largely unknown. The UK has submitted its approach. For components in precipitation a multiple of the standard deviation of averaged blanks is used. For metals, nitrogen and PCB in air the same approach is taken, whilst for remaining organics a multiple of the integral of baseline noise calibrated against standards is used. For other countries the approach is unknown. On occasions limits of quantification rather than limits of detection are used. Limits of quantification have no fixed means of estimation, and hence it is likely that dissimilar criteria will be applied between countries. Examination of the values nevertheless indicates some very large differences, sometimes of up to a factor of 1000 between most and least sensitive. Such differences reflect on the method and performance of sampling and analysis.

Table 5.2: Reported detection limits for components in air

Matrix	Country	BE	DE	ES	FR	IS	IE	NO	SE	UK
Component										
airborne		$\mu\text{g N/m}^3$	$\mu\text{g N/m}^3$					$\mu\text{g N/m}^3$	$\mu\text{g N/m}^3$	$\mu\text{g N/m}^3$
	NO	1								2
	NO ₂	2	0,03					0,03	0,2	2
	? NH ₃ + NH ₄ ⁺		0,4					0,1	0,05	
	NH ₃									0,01
	NH ₄									0,04
	? HNO ₃ + NO ₃ ⁻		0,2					0,01	0,006	
	HNO ₃								0,004	
	NO ₃ ⁻									0,004
		ng/m^3	ng/m^3					ng/m^3	ng/m^3	ng/m^3
	Pb	1,9	0,19					0,12		0,203
	Cd			0,02				0,003		0,01
	As	0,01		0,1				0,04		0,028
	Ni	1		0,83				0,09		0,055
	Cu	1,1		0,18				0,2		0,087
	Cr			1,55				1,18		0,246
	Zn	2,8		5,28				0,24		3,55
	V							0,06		
	Hg(particulate)								0,002	0,03
	Hg(gaseous)								0,1	
						pg/m^3		pg/m^3	pg/m^3	pg/m^3
	a-HCH					0.26 - 0.54		0,1	0,01	
	b-HCH					0.26 - 0.54				
	g-HCH					0.26 - 0.54		0,3	0,01	
	tr-chlordan					0.13 - 0.19		0,06		
	cis-chlordan					0.13 - 0.19		0,08		
	tr-Nonachlor					0.13 - 0.19		0,04		
	cis-Nonachlor							0,02		
	HCB					0.13 - 0.19		0,8		
	PCB-28					0.29 - 1.17		0,7		0,08
	PCB-31					0.29 - 1.17		0,5		
	PCB-52					0.29 - 1.17		0,2		0,2
	PCB-101					0.13 - 0.39		0,06		0,09
	PCB-105					0.13 - 0.39		0,01		
	PCB-118					0.13 - 0.39		0,05		0,03
	PCB-138					0.13 - 0.39		0,05		0,01
	PCB-153					0.13 - 0.39		0,05		0,03
	PCB-156					0.13 - 0.39		0,01		
	PCB-180					0.13 - 0.39		0,02		0,07
	pp-DDE					0.13 - 0.39				
	pp-DDD					0.13 - 0.39				
	op-DDT					0.13 - 0.39				
	pp-DDT					0.13 - 0.39				
	anthracene									0,004
	benzo(a)anthracene									0,0004
	benzo(a)pyrene									0,0004
	benzo(ghi)perylene									0,0008
	chrysene									0,0004
	dieldrin					0.13 - 0.19				
	flouranthene									0,0008
	indeno(1,2,3-cd)pyrene									0,0009
	pyrene									0,0005
	toxaphenes-26,50,62					0.13 - 0.19				

6. Final observations

Reporting of CAMP data for 2005 was reasonably good. Only one Party was unable to deliver data within the timetable. Difficulties in data handling at the European Environment Agency caused delays to delivery by one Party which were beyond the control of that Party.

Quality control of the data delivery process could still be improved. Amongst the problems with real time implications this year were: data reported for overlapping time periods, uncorrected station codes, data delivered as Excel sheets, data delivered in separate batches, varying units of measurement per component.

As in previous years, some countries provided extensive reporting of components not required by CAMP as mandatory or voluntary component. Some countries reported more non-CAMP than CAMP components. This data is stored and handled as for CAMP components, and thus represents a data handling workload beyond the CAMP. Whilst OSPAR can be imagined to have a broad interest in many of these extra contaminants, for some this is harder to imagine and it would appear that Parties will label all data from all programmes as suitable for CAMP, whether or not there is an imaginable interest. This would be a short-cut by countries but which significantly increases data handling.

A translation of the observations made by Contracting Parties into estimated depositions has been made for this report using the Method 3a. These estimates show marginal change since 2004, but notable decreases in depositions of most mandatory contaminants since 2000. Evaluation of temporal changes in mercury depositions, however, suggest no decrease. Indeed, the limited data available actually revealed rising depositions, although the reasons for this were not investigated. As was done for mercury and nitrogen in this report, the aggregation of observation data across several stations into a single figure for a sub-region is an approach which is common when providing summary information. OSPAR may wish to consider its suitability or its limitations with respect to the upcoming 2009 CAMP Assessment report.

Data quality is an issue which INPUT has previously begun to evaluate through the request for Parties to supply annual detection limit information as of 2005. Eight of the Contracting Parties have delivered at least partial data. There is variation in the approach to this question. Some countries utilise the concept of a limit of quantification, others use a limit of detection. Normal practice amongst chemists varies between components – for some pollutants the limit of quantification will be taken as a multiple of the limit of detection (i.e. is a stricter standard); for other components normal practice is to take limits of quantification and of detection as equivalent. The means of calculating each of these is unknown, but is quite possibly dissimilar. OSPAR may wish to consider more precisely what information it wishes countries to supply, and to consider this in light of how it wishes to see the information used. It is to be noted that, through data flagging, countries have always submitted information as to whether observed pollutant levels are below limits of detection.

Appendix A

Reported monthly observations of mandatory, voluntary, and additionally reported components

(Major ions used solely for quality assurance are not listed)

**Belgium
Denmark
France
Germany
Iceland
Ireland
Netherlands
Norway
Portugal
Spain
Sweden
United Kingdom**

BELGIUM

BELGIUM

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	BE0014R	mg/l	0,54	0,50	3,01	1,35	0,61	0,90	0,61			0,81	0,66	0,25
nitrate	BE0014R	mg/l	0,43	0,44	1,76	0,87	0,36	0,72	0,44			0,29	0,56	0,34
precipitation <i>nitrogen</i>	BE0014R	mm	41,50	64,30	16,90	85,40	54,10	34,50	133,60	62,60	64,30	61,30	27,10	106,50
arsenic	BE0014R	µg/l	0,26	0,27	0,27	0,27	0,26	0,27	0,00		0,27	0,27	0,26	0,27
cadmium	BE0014R	µg/l	0,06	0,12	0,17	0,12	0,03	0,05	-0,22		0,03	0,05	0,06	0,05
chromium	BE0014R	µg/l	0,26	0,27	0,27	0,31	0,93	0,59	-0,26		0,27	0,27	0,26	0,27
copper	BE0014R	µg/l	1,72	1,88	2,96	1,69	2,25	5,67	1,61		3,18	2,14	2,68	4,43
lead	BE0014R	µg/l	2,11	3,32	2,79	2,32	2,59	2,72	0,44		1,13	2,31	1,86	1,42
mercury	BE0014R	ng/l		17,00	16,00	10,00	9,00	11,00	10,00	14,00	11,00	8,00	13,00	10,00
nickel	BE0014R	µg/l	0,73	0,90	0,38	0,31	0,44	0,55	-0,04		0,50	0,30	0,53	0,29
zinc	BE0014R	µg/l	11,99	13,35	27,89	11,55	7,70	15,02	7,24		5,26	6,12	5,27	5,75
precipitation <i>metals ex. Hg</i>	BE0014R	mm	64,39	99,33	27,32	132,50	71,93	54,13	189,19	64,84	110,04	102,94	46,66	189,58
precipitation <i>mercury</i>	BE0014R	mm		38,87	40,95	133,73	82,29	64,91	215,12	73,72	51,4	61,8	50,57	178,94
g-HCH	BE0014R	ng/l	6,00	6,00	9,00	8,00	7,12	1,00	6,00	1,00	1,00	6,00	1,00	1,00
precipitation <i>g-HCH</i>	BE0014R	mm	40,96	99,84	19,20	83,26	158,14	145,92	77,12	47,68	94,40	95,68	149,76	85,28
Percentage completion of mandatory programme														90,9

Voluntary

PCB_28		not reported												
PCB_52		not reported												
PCB_101		not reported												
PCB_118		not reported												
PCB_138		not reported												
PCB_153		not reported												
PCB_180		not reported												
anthracene		not reported												
benzo(a)anthracene		not reported												
benzo(a)pyrene		not reported												
benzo(ghi)perylene		not reported												
chrysene+triphenylene		not reported												
flouranthene		not reported												
indeno(123cd)pyrene		not reported												
phenanthrene		not reported												
pyrene		not reported												
Percentage completion of voluntary programme														0,0

additional non-CAMP components

aldrin	BE0014R	ng/l	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
alpha_HCH	BE0014R	ng/l	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
dieldrin	BE0014R	ng/l	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
endrin	BE0014R	ng/l	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50	1,50
gamma_HCH	BE0014R	ng/l	6,00	6,00	9,00	8,00	7,12	1,00	6,00	1,00	1,00	6,00	1,00	1,00
heptachlor	BE0014R	ng/l	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
pp_DDD	BE0014R	ng/l	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
pp_DDE	BE0014R	ng/l	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00	1,00
pp_DDT	BE0014R	ng/l	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
precipitation	BE0014R	mm	40,96	99,84	19,20	83,26	158,14	145,92	77,12	47,68	94,40	95,68	149,76	85,28
number of additional components reported														9

BELGIUM

Airborne components

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
NO ₂	BE0011R	µg/m ³	5,48	7,00	7,30	5,78	4,26	4,57	3,65	4,57	5,48	7,30	6,70	6,70
HNO ₃	BE0013R	µg/m ³	4,26	6,09	6,39	5,17	3,65	3,96	3,35	4,26	4,87	6,09	5,78	6,09
NO ₃			not reported											
HNO ₃ +NO ₃			not reported											
NH ₃			not reported											
NH ₄			not reported											
NH ₃ +NH ₄			not reported											

Percentage completion of mandatory programme 33,3

Voluntary

NO	BE0011R	µg/m ³	1,40	2,80	2,33	1,40	0,93	0,93	0,47	0,93	1,40	2,33	2,80	4,67
	BE0013R	µg/m ³	0,93	1,87	1,87	0,93	0,93	0,93	0,47	0,93	0,93	1,40	2,33	3,27
arsenic			not reported											
cadmium	BE0014R	ng/m ³			0,40	0,50	0,20	0,30	0,40	0,20	0,20	0,40	0,30	0,40
chromium			not reported											
copper	BE0014R	ng/m ³			5,00	5,00	3,00	4,00	5,00	4,00	5,00	7,00	5,00	5,00
lead	BE0014R	ng/m ³			14,00	11,00	8,00	10,00	11,00	8,00	9,00	17,00	11,00	15,00
mercury			not reported											
nickel	BE0014R	ng/m ³			6,00	6,00	5,00	7,00	6,00	4,00	3,00	3,00	2,00	4,00
zinc	BE0014R	ng/m ³			43,00	43,00	35,00	48,00	35,00	25,00	39,00	49,00	34,00	47,40
PCB_28			not reported											
PCB_52			not reported											
PCB_101			not reported											
PCB_118			not reported											
PCB_138			not reported											
PCB_153			not reported											
PCB_180			not reported											
anthracene			not reported											
benzo(a)anthracene			not reported											
benzo(a)pyrene			not reported											
benzo(ghi)perylene			not reported											
chrysene			not reported											
flouranthene			not reported											
g-HCH			not reported											
indeno(123cd)pyrene			not reported											
phenanthrene			not reported											
pyrene			not reported											

Percentage completion of voluntary programme 19,9

DENMARK

DENMARK

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	DK0005R	mg/l	0,37	0,65	1,43	1,97	0,96	1,05	0,39	0,43	1,04	0,22	0,67	0,36
	DK0008R		0,27	0,28	0,45	1,33	0,95	0,33	0,31	0,35	0,66	0,26	0,57	0,40
nitrate	DK0005R	mg/l	0,36	0,58	1,08	1,28	0,89	0,82	0,37	0,46	0,87	0,33	0,76	0,46
	DK0008R		0,36	0,40	0,70	1,01	0,81	0,39	0,28	0,32	0,60	0,37	0,72	0,73
precipitation nitrogen	DK0005R	mm	30,24	18,09	35,02	16,65	31,88	48,70	99,06	19,82	18,20	53,84	23,92	37,44
	DK0008R		42,85	34,43	23,27	13,89	86,96	71,74	99,83	59,61	32,76	59,10	47,62	19,85
arsenic	DK0008R	µg/l	0,42	0,29	0,21	0,34	0,29	0,15	0,13	0,10	0,14	0,13	0,18	0,24
	DK0020R		0,07	0,24	0,13	0,68	0,21	0,17	0,15	0,09	0,12	0,11	0,12	
cadmium	DK0031R	µg/l	0,05	0,08	0,14	0,25	0,13	0,12	0,14	0,06	0,15	0,04	0,05	0,07
	DK0008R		0,05	0,04	0,04	0,06	0,03	0,02	0,03	0,02	0,07	0,02	0,05	0,06
chromium	DK0020R	µg/l	0,07	0,06	0,05	0,20	0,05	0,09	0,06	0,02	0,05	0,05	0,06	
	DK0031R		0,03	0,03	0,04	0,05	0,03	0,02	0,03	0,02	0,04	0,02	0,02	0,03
copper	DK0008R	µg/l	0,34	0,24	0,25	0,56	0,27	0,11	0,09	0,18	0,26	0,11	0,12	0,22
	DK0020R		0,11	0,10	0,12	1,08	0,21	0,21	0,24	0,09	0,25	0,25	0,11	
lead	DK0031R	µg/l	0,04	0,07	0,09	0,24	0,18	0,14	0,16	0,08	0,22	0,06	0,11	0,16
	DK0008R		0,93	1,61	0,77	2,98	2,96	0,75	1,07	2,90	1,31	0,54	0,73	0,91
mercury	DK0020R	µg/l	0,70	0,86	0,94	3,28	1,44	2,85	1,92	2,20	1,01	1,11	1,09	
	DK0031R		0,43	0,63	1,24	1,69	1,04	1,00	1,01	0,97	1,04	0,28	0,78	3,18
nickel	DK0008R	µg/l	0,48	1,30	0,84	2,43	1,69	0,69	0,77	0,54	1,84	0,77	1,26	1,74
	DK0020R		1,20	2,19	2,41	4,47	2,11	2,65	1,45	0,60	1,31	1,80	1,13	
zinc	DK0031R	µg/l	0,39	0,46	1,20	1,69	1,36	1,16	1,12	0,60	1,38	0,45	0,62	1,04
	DK0008R		0,24	0,33	0,32	0,55	0,37	0,29	0,29	0,28	0,64	0,19	0,34	0,44
precipitation metals ex. Hg	DK0020R	mm	0,28	0,40	0,35	0,98	0,29	0,64	0,53	0,22	0,39	0,47	0,46	
	DK0031R		0,20	0,13	0,29	0,38	0,30	0,32	0,37	0,24	0,41	0,18	0,34	0,53
g-HCH	DK0008R	µg/l	18,38	14,17	29,84	26,70	14,92	6,68	8,79	5,88		6,00	14,35	39,88
	DK0020R		18,51	20,59	19,94	29,24	12,45	28,20	18,65	8,81	11,54	20,96	14,62	
g-HCH	DK0031R	mm	9,93	19,51	13,08	13,65	7,21	6,48	7,08	3,29	8,73	3,27	8,45	17,17
	DK0005R		30,24	18,09	35,02	16,65	31,88	48,70	99,06	19,82	18,20	53,84	23,92	37,44
g-HCH	DK0008R	mm	40,01	25,49	19,47	13,05	48,86	66,75	97,26	57,34	32,46	56,20	47,03	18,28
	DK0005R		not reported											

Percentage completion of mandatory programme 81,8

Voluntary

PCB_28	not reported
PCB_52	not reported
PCB_101	not reported
PCB_118	not reported
PCB_138	not reported
PCB_153	not reported
PCB_180	not reported
anthracene	not reported
benzo(a)anthracene	not reported
benzo(a)pyrene	not reported
benzo(ghi)perylene	not reported
chrysene+triphenylene	not reported
fluoranthene	not reported
indeno(123cd)pyrene	not reported
phenanthrene	not reported
pyrene	not reported

Percentage completion of voluntary programme 0,0

OSPAR Commission, 2007:
Comprehensive Atmospheric Monitoring Programme in 2005

DENMARK

Airborne components

Mandatory	station	units	month												
			january	february	march	april	may	june	july	august	september	october	november	december	
NO2	DK0008R	µg/m ³	1,518	1,651	1,446	1,481			1,187	1,031	0,875	1,277	1,766	1,799	1,401
HNO3			not reported												
NO3			not reported												
HNO3+NO3	DK0005R	µg/m ³							0,84	0,67	0,64	1,26	1,30	0,96	0,86
	DK0008R	µg/m ³	0,61	0,91	0,64	1,42	1,01	0,68	0,50	0,52	0,93	0,97	0,80	0,49	
	DK0031R	µg/m ³	0,51	0,87	0,69	1,13	0,99	0,69	0,44	0,47	0,79	1,01	0,61	0,70	
NH3	DK0005R	µg/m ³							0,58	0,50	0,48	0,59	0,46	0,25	0,08
	DK0008R	µg/m ³	0,05	0,02	0,06	0,35	0,21	0,12	0,21	0,21	0,19	0,10	0,09	0,04	
	DK0031R	µg/m ³	0,17	0,20	0,42	1,58	0,41	0,30	0,74	0,32	0,66	0,46	0,23	0,26	
NH4	DK0005R	µg/m ³							1,09	0,99	0,79	1,60	1,92	1,31	1,22
	DK0008R	µg/m ³	0,68	1,38	0,87	2,02	1,31	0,89	0,61	0,56	1,13	1,24	1,00	0,72	
	DK0031R	µg/m ³	0,60	1,59	1,05	1,59	1,29	0,97	0,78	0,76	1,12	1,54	0,81	1,13	
NH3+NH4			not reported												
Percentage completion of mandatory programme															97,22

Voluntary

NO			not reported											
arsenic	DK0008R	ng/m ³	0,24	0,79	0,50	0,45	0,38	0,52	0,26	0,16	0,44	1,03	0,57	0,36
	DK0031R	ng/m ³	0,25	0,95	0,49	0,63	0,25	0,22	0,24	0,21	0,48	0,87	0,47	0,48
cadmium			not reported											
chromium	DK0008R	ng/m ³	0,50	0,54	0,48	0,60	0,33	0,41	0,16	0,23	0,12	0,83	0,50	0,10
	DK0031R	ng/m ³	0,32	0,80	0,50	1,41	1,09	0,40	0,39	0,11	0,21	0,68	0,25	0,23
copper	DK0008R	ng/m ³	0,93	1,47	0,94	1,66	0,95	0,85	0,84	0,67	1,55	2,49	1,28	0,97
	DK0031R	ng/m ³	0,53	1,57	1,12	1,89	1,41	0,77	0,71	0,63	1,32	2,49	1,19	1,37
lead	DK0008R	ng/m ³	2,59	9,70	3,76	5,47	2,72	2,18	1,76	1,41	3,95	11,13	4,25	4,10
	DK0031R	ng/m ³	2,82	11,22	5,22	5,58	2,59	2,23	1,72	1,81	4,80	10,03	4,13	5,05
mercury			not reported											
nickel	DK0008R	ng/m ³	0,99	1,92	2,68	3,40	2,56	1,95	2,19	1,73	2,35	2,30	1,41	1,17
	DK0031R	ng/m ³	0,82	1,41	1,70	2,01	3,56	1,70	1,17	1,16	1,38	1,40	0,89	0,85
zinc	DK0008R	ng/m ³	11,74	19,81	11,18	15,53	6,91	6,73	6,29	4,58	9,57	21,16	11,74	9,96
	DK0031R	ng/m ³	7,61	23,33	14,36	15,94	7,34	6,86	6,13	5,70	10,73	20,79	11,01	14,35
PCB_28			not reported											
PCB_52			not reported											
PCB_101			not reported											
PCB_118			not reported											
PCB_138			not reported											
PCB_153			not reported											
PCB_180			not reported											
anthracene			not reported											
benzo(a)anthracene			not reported											
benzo(a)pyrene			not reported											
benzo(ghi)perylene			not reported											
chrysene			not reported											
flouranthene			not reported											
g-HCH			not reported											
indeno(123cd)pyrene			not reported											
phenanthrene			not reported											
pyrene			not reported											
Percentage completion of voluntary programme														38,71

additional non-CAMP components

aluminium	DK0005R	ng/m ³	30,21	25,59	68,05			103,77	56,82	38,49	61,90	88,61	49,87	35,60
aluminium	DK0008R	ng/m ³	55,06	31,05	25,76	86,95	45,79	64,51	47,59	27,55	31,13	48,67	33,14	29,31
iron	DK0008R	ng/m ³	24,12	58,25	40,78	104,29	56,34	60,92	55,37	50,71	76,80	101,67	38,03	23,63
iron	DK0031R	ng/m ³	24,75	72,37	54,27	167,69	62,41	86,25	53,71	48,80	86,76	116,13	29,55	30,46
manganese	DK0008R	ng/m ³	1,39	2,18	1,99	3,52	2,05	2,03	2,13	2,02	2,73	3,75	1,40	1,17

FRANCE

FRANCE

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	FR0090R	mg/l	0,07	0,16	0,11	0,05	0,18	0,19	0,08	0,13	0,19	0,05	0,10	0,05
nitrate	FR0090R	mg/l	0,29	0,62	0,44	0,22	0,84	0,84	0,34	0,53	0,75	0,10	0,09	0,20
precipitation <i>nitrogen</i>	FR0090R	mm	55,00	68,00	48,00	82,00	68,00	34,00	103,00	34,00	48,00	137,00	152,00	71,00
arsenic	FR0090R	µg/l	0,21	0,22	0,16	0,18	0,19	0,26	0,17	0,20	0,21	0,09	0,10	0,12
cadmium	FR0090R	µg/l	0,13	0,03	0,05	0,02	0,04	0,03	0,01	0,01	0,01	0,01	0,01	0,02
chromium	FR0090R	µg/l	0,65	0,27	0,17	0,12	0,19	0,22	0,11	0,16	0,17	0,07	0,05	0,05
copper	FR0090R	µg/l	1,55	2,20	1,50	0,45	1,12	0,95	0,62	0,95	0,75	0,25	0,18	0,25
lead	FR0090R	µg/l	3,05	1,65	1,53	1,42	0,95	0,65	0,43	0,85	0,62	0,42	0,18	0,28
mercury			not reported											
nickel	FR0090R	µg/l	0,53	0,55	0,41	0,47	0,48	0,64	0,42	0,49	0,51	0,22	0,25	0,32
zinc	FR0090R	µg/l	2,45	2,35	2,95	0,85	2,25	2,65	1,35	1,65	1,85	2,15	2,25	2,05
precipitation <i>all metals</i>	FR0090R	mm	55,00	68,00	48,00	82,00	68,00	34,00	103,00	34,00	48,00	137,00	152,00	71,00
g-HCH			not reported											
Percentage completion of mandatory programme														83,3

Voluntary

PCB_28		not reported												
PCB_52		not reported												
PCB_101		not reported												
PCB_118		not reported												
PCB_138		not reported												
PCB_153		not reported												
PCB_180		not reported												
anthracene		not reported												
benzo(a)anthracene		not reported												
benzo(a)pyrene		not reported												
benzo(ghi)perylene		not reported												
chrysene+triphenylene		not reported												
flouranthene		not reported												
indeno(123cd)pyrene		not reported												
phenanthrene		not reported												
pyrene		not reported												
Percentage completion of voluntary programme														0,0

OSPAR Commission, 2007:
Comprehensive Atmospheric Monitoring Programme in 2005

FRANCE

Airborne components

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
NO ₂			not reported											
HNO ₃			not reported											
NO ₃			not reported											
HNO ₃ +NO ₃			not reported											
NH ₃			not reported											
NH ₄			not reported											
NH ₃ +NH ₄			not reported											
Percentage completion of mandatory programme													0,00	

Voluntary

NO			not reported											
arsenic			not reported											
cadmium			not reported											
chromium			not reported											
copper			not reported											
lead			not reported											
mercury			not reported											
nickel			not reported											
zinc			not reported											
PCB_28			not reported											
PCB_52			not reported											
PCB_101			not reported											
PCB_118			not reported											
PCB_138			not reported											
PCB_153			not reported											
PCB_180			not reported											
anthracene			not reported											
benzo(a)anthracene			not reported											
benzo(a)pyrene			not reported											
benzo(ghi)perylene			not reported											
chrysene			not reported											
flouranthene			not reported											
g-HCH			not reported											
indeno(123cd)pyrene			not reported											
phenanthrene			not reported											
pyrene			not reported											
Percentage completion of voluntary programme													0,00	

GERMANY

GERMANY

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	DE0001R	mg/l	0,85	0,79	0,80	1,65	0,96	0,62	0,45	0,41	0,40	0,43	0,43	0,44
nitrate	DE0001R	mg/l	0,51	0,69	0,75	1,15	0,62	0,63	0,45	0,39	0,35	0,30	0,32	0,42
precipitation nitrogen	DE0001R	mm	37,5	31,2	26,4	54,7	27,6	52,2	90,9	53,9	40,6	46,9	59,3	54,4
arsenic	DE0001R	µg/l	0,27	0,16	0,12	0,23	0,15	0,11	0,12	0,06	0,09	0,06	0,09	0,10
cadmium	DE0001R	µg/l	0,03	0,03	0,03	0,07	0,04	0,03	0,02	0,01	0,02	0,02	0,02	0,02
chromium	DE0001R	µg/l	0,22	0,20	0,18	0,16	0,16	0,13	0,16	0,13	0,19	0,17	0,15	0,13
copper	DE0001R	µg/l	0,97	0,77	0,77	1,43	1,41	1,00	0,72	0,55	1,14	1,35	1,77	1,12
lead	DE0001R	µg/l	0,94	0,95	0,74	2,00	1,19	1,28	0,66	0,55	0,86	0,47	1,13	0,67
mercury	DE0001R	ng/l	5,73	5,46	9,34	14,18	10,68	14,42	12,07	9,35	10,72	7,12	3,53	4,96
nickel	DE0001R	µg/l	0,38	0,50	0,45	0,59	0,43	0,28	0,26	0,23	0,44	0,31	0,24	0,35
zinc	DE0001R	µg/l	6,79	7,43	9,62	11,85	9,32	6,80	9,09	7,05	8,28	8,82	4,46	3,79
precipitation metals ex. Hg	DE0001R	mm												
precipitation Hg	DE0001R	mm	36,70	31,20	26,90	49,50	26,50	47,40	86,30	49,30	37,00	45,30	54,30	56,90
g-HCH	DE0001R	ng/l	1,67	0,33	1,69	3,90	2,03	1,55	1,38	0,38	0,74	1,16	1,47	0,58
precipitation g-HCH	DE0001R	mm	51,6	27,4	24,1	48,3	26,4	46,4	83,4	88,4	6,2	74,2	52,4	55,4
Percentage completion of mandatory programme														100,0

Voluntary

PCB_28	DE0001R	ng/l	0,03	0,06	0,2	0,08	0,06	0,03	0,02	0,02	0,26	0,02	0,03	0,03
PCB_52	DE0001R	ng/l	0,02	0,03	0,1	0,04	0,03	0,02	0,01	0,01	0,13	0,02	0,01	0,01
PCB_101	DE0001R	ng/l	0,03	0,05	0,2	0,03	0,06	0,03	0,02	0,02	0,24	0,04	0,03	0,03
PCB_118	DE0001R	ng/l	0,03	0,02	0,13	0,03	0,17	0,01	0,02	0,01	0,2	0,02	0,01	0,01
PCB_138	DE0001R	ng/l	0,03	0,05	0,34	0,07	0,4	0,03	0,05	0,02	0,22	0,04	0,03	0,02
PCB_153	DE0001R	ng/l	0,03	0,05	0,24	0,03	0,14	0,03	0,02	0,02	0,23	0,02	0,03	0,03
PCB_180	DE0001R	ng/l	0,01	0,02	0,13	0,03	0,06	0,01	0,02	0,01	0,26	0,01	0,01	0,01
anthracene	DE0001R	ng/l	0,25	0,47	0,54	0,7	0,49	0,28	0,16	0,15	2,1	0,42	0,25	0,23
benzo(a)anthracene	DE0001R	ng/l	0,19	0,36	1,38	3,69	1,52	0,75	0,55	0,34	1,61	0,99	1,21	1,53
benzo(a)pyrene	DE0001R	ng/l	0,25	0,47	3,19	7,19	1,94	1,04	0,73	0,49	2,1	0,71	1,23	1,51
benzo(ghi)perylene	DE0001R	ng/l	0,39	0,55	2,02	4,75	1,51	0,93	0,65	0,43	2,42	0,81	1,1	2,26
chrysene+triphenylene	DE0001R	not reported												
flouranthene	DE0001R	ng/l	6,9	11	13,1	25,6	10,8	7	6,3	2,9	23,8	7,7	7,2	11,7
indeno(123cd)pyrene	DE0001R	ng/l	0,58	1,09	2,64	5	1,14	0,65	0,36	0,34	4,84	0,4	1,26	2,53
phenanthrene	DE0001R	ng/l	12	11,7	34,3	27,6	12,1	6	5,6	2,4	11,3	9,1	7,4	9,7
pyrene	DE0001R	ng/l	0,8	1,5	9	16,4	7,2	4,1	3,8	1,9	14,9	4,7	4,6	6,7
precipitation organics	DE0001R	mm	51,6	27,4	24,1	48,3	26,4	46,4	83,4	88,4	6,2	74,2	52,4	55,4
Percentage completion of mandatory programme														93,8

additional non-CAMP components

iron	DE0001R	µg/l	20,91	16,70	23,46	54,09	42,02	36,37	20,32	13,38	29,30	9,11	8,75	9,30
manganese	DE0001R	µg/l	1,65	0,87	1,26	3,21	3,49	2,32	1,74	1,07	2,12	0,84	0,67	0,56
precipitation metals	DE0001R	mm												
aldrin	DE0001R	ng/l	0,021	0,041	0,039	0,02	0,03	0,017	0,011	0,011	0,186	0,011	0,015	0,014
alpha_HCH	DE0001R	ng/l	0,18	0,21	0,24	0,52	0,26	0,12	0,86	0,16	0,39	0,33	0,23	0,15
dibenzo_ah_anthracene	DE0001R	ng/l	0,25	0,47	0,54	1,03	0,49	0,28	1,21	0,15	2,1	0,18	0,25	0,23
dieldrin	DE0001R	ng/l	0,159	0,123	0,177	0,123	0,043	0,062	0,07	0,052	0,267	0,108	0,118	0,098
endrin	DE0001R	ng/l	0,048	0,094	0,089	0,045	0,069	0,039	0,024	0,025	0,425	0,024	0,035	0,033
HCB	DE0001R	ng/l	0,01	0,02	0,31	0,3	0,02	0,01	0,02	0,01	0,25	0,09	0,01	0,01
heptachlor	DE0001R	ng/l	0,019	0,036	0,029	0,018	0,027	0,015	0,009	0,01	0,164	0,009	0,013	0,013
op_DDD	DE0001R	ng/l	0,011	0,033	0,03	0,015	0,022	0,014	0,008	0,008	0,125	0,008	0,011	0,011
pp_DDD	DE0001R	ng/l	0,023	0,048	0,024	0,046	0,022	0,013	0,02	0,007	0,095	0,008	0,011	0,011
op_DDE	DE0001R	ng/l	0,019	0,04	0,035	0,018	0,026	0,016	0,01	0,01	0,147	0,009	0,013	0,013
pp_DDE	DE0001R	ng/l	0,024	0,049	0,097	0,073	0,035	0,02	0,011	0,012	0,181	0,012	0,017	0,017
op_DDT	DE0001R	ng/l	0,025	0,068	0,057	0,055	0,048	0,027	0,015	0,015	0,206	0,017	0,024	0,023
pp_DDT	DE0001R	ng/l	0,027	0,051	0,058	0,152	0,053	0,03	0,017	0,016	0,227	0,019	0,027	0,025
precipitation organics	DE0001R	mm	51,6	27,4	24,1	48,3	26,4	46,4	83,4	88,4	6,2	74,2	52,4	55,4
number of additional components reported														15

GERMANY

Airborne components

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
NO ₂	DE0001R	µg/m ³	2,03	2,84	2,68	2,45	1,61	1,35	1,00	1,08	1,99	3,88	3,75	3,29
HNO ₃			not reported											
NO ₃			not reported											
HNO ₃ +NO ₃	DE0001R	µg/m ³	0,59	1,26	0,92	1,44	1,22	0,81	0,76	0,72	1,29	1,24	0,81	0,72
NH ₃			not reported											
NH ₄			not reported											
NH ₃ +NH ₄	DE0001R	µg/m ³	0,59	1,40	2,32	3,60	2,11	1,39	1,78	2,13	2,31	2,90	1,38	1,28
Percentage completion of mandatory programme														100,0

Voluntary

NO			not reported											
arsenic	DE0001R	ng/m ³	0,28	1,76	0,59	0,48	0,35	0,30	0,22	0,29	0,47	0,81	0,31	0,43
cadmium	DE0001R	ng/m ³	0,08	0,32	0,16	0,14	0,07	0,05	0,04	0,05	0,10	0,27	0,13	0,12
chromium			not reported											
copper	DE0001R	ng/m ³	0,93	2,51	1,46	1,56	1,32	1,47	2,47	1,51	1,98	3,10	1,96	2,85
lead	DE0001R	ng/m ³	4,68	11,28	6,13	5,01	2,86	2,23	1,56	1,97	4,51	8,15	4,55	5,15
mercury			not reported											
nickel			not reported											
zinc	DE0001R	ng/m ³	10,10	25,30	16,73	12,78	8,45	15,83	7,07	7,81	6,79	18,24	15,50	14,45
PCB_28			not reported											
PCB_52			not reported											
PCB_101			not reported											
PCB_118			not reported											
PCB_138			not reported											
PCB_153			not reported											
PCB_180			not reported											
anthracene			not reported											
benzo(a)anthracene			not reported											
benzo(a)pyrene			not reported											
benzo(ghi)perylene			not reported											
chrysene			not reported											
flouranthene			not reported											
g-HCH			not reported											
indeno(123cd)pyrene			not reported											
phenanthrene			not reported											
pyrene			not reported											
Percentage completion of voluntary programme														19,2

additional non-CAMP components

iron	DE0001R	ng/m ³	50	104,925	73,506	102,507	84,003	107,32	100,435	56,919	111,437	140,894	56,65	43,846
manganese	DE0001R	ng/m ³	1,455	3,265	2,314	3,18	2,371	3,001	2,81	1,699	3,231	4,012	1,91	1,805
number of additional components reported														2

ICELAND

ICELAND

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	IS0090R	mg/l	0,32	0,52	1,03	0,33	0,83	0,24	0,23	0,27	0,24	0,19	0,29	0,37
	IS0091R	mg/l	0,01	0,40	0,10	0,07	0,47	0,11	0,34	1,84	0,23	0,92	1,06	2,94
nitrate	IS0090R	mg/l	0,19	0,08	0,34	0,12	0,79	0,13	0,11	0,05	0,08	0,05	0,12	0,06
	IS0091R	mg/l	0,01	0,03	0,20	0,10	0,19	0,09	0,06	0,04	0,01	0,05	0,01	0,12
precipitation <i>nitrogen</i>	IS0090R	mm	42,80	77,30	17,80	47,80	13,30	72,90	64,30	93,30	46,70	45,90	50,60	116,00
	IS0091R	mm	139,80	70,00	47,20	131,70	6,40	131,80	76,60	173,00	129,60	140,70	230,50	229,30
arsenic	IS0090R	µg/l	0,26	0,35	0,22	0,26	0,55	0,10	0,14	0,07	0,09	0,10	0,27	0,17
	IS0091R	µg/l	0,10	0,07	0,16	0,10	0,27	0,07	0,05	0,04	0,06	0,08	0,04	0,05
cadmium	IS0090R	µg/l	0,01	0,02	0,02	0,02	0,04	0,01	0,01	0,01	0,01	0,02	0,01	0,01
	IS0091R	µg/l	0,01	0,01	0,03	0,03	0,05	0,32	0,01	0,01	0,01	0,02	0,01	0,01
chromium	IS0090R	µg/l	0,20	0,24	0,72	0,46	0,60	0,58	0,39	0,29	0,55	0,27	0,79	0,22
	IS0091R	µg/l	0,28	0,56	0,68	0,34	2,28	9,26	0,19	0,12	0,60	0,31	0,18	0,39
copper	IS0090R	µg/l	1,14	1,88	5,54	2,06	5,95	4,69	2,40	2,12	3,47	2,90	5,88	8,49
	IS0091R	µg/l	1,06	2,02	2,93	3,64	6,04	3,95	1,12	0,98	0,79	1,43	0,72	0,54
lead	IS0090R	µg/l	0,38	0,31	0,66	0,48	0,88	0,49	0,38	0,20	0,32	0,29	0,55	0,22
	IS0091R	µg/l	0,12	0,27	0,31	0,45	1,34	17,26	0,30	0,09	0,10	0,39	0,15	0,15
mercury			not reported											
nickel	IS0090R	µg/l	0,71	0,49	1,28	0,83	1,68	1,54	0,99	0,46	0,64	2,18	2,88	0,34
	IS0091R	µg/l	3,24	0,92	6,13	2,19	4,89	12,16	0,35	0,43	1,52	1,52	0,91	1,36
zinc	IS0090R	µg/l	14,95	2,29	11,92	7,54	19,60	8,15	8,23	6,05	8,14	16,66	10,60	1,85
	IS0091R	µg/l	6,29	12,39	12,84	24,14	49,96	18,37	6,30	8,19	4,30	7,82	8,33	11,88
precipitation <i>metals</i>	IS0090R	mm	54,40	75,64	38,12	91,66	11,37	41,53	62,85	78,18	53,18	35,55	59,04	135,77
	IS0091R	mm	130,54	63,47	76,27	223,56	18,45	152,58	74,36	167,16	126,43	105,41	163,73	192,58
g-HCH	IS0091R	ng/l	0,04	0,07	0,07	0,09	0,15	0,03	0,05	0,04	0,04	0,08	0,04	0,04
precipitation <i>g-HCH</i>	IS0091R	mm	46,00	35,00	27,50	50,00	4,50	75,00	48,00	62,00	82,00	71,00	62,00	80,00

Percentage completion of mandatory programme 90,9

Voluntary

PCB_28	IS0091R	ng/l	0,01	0,01	0,01	0,01	0,07	0,01	0,01	0,01	0,01	0,07	0,01	0,01
PCB_52	IS0091R	ng/l	0,01	0,01	0,01	0,01	0,05	0,01	0,00	0,00	0,00	0,02	0,00	0,00
PCB_101	IS0091R	ng/l	0,01	0,01	0,00	0,03	0,02	0,01	0,00	0,00	0,00	0,03	0,00	0,00
PCB_118	IS0091R	ng/l	0,01	0,01	0,01	0,01	0,10	0,01	0,00	0,00	0,00	0,02	0,01	0,00
PCB_138	IS0091R	ng/l	0,02	0,00	0,01	0,05	0,10	0,00	0,00	0,01	0,00	0,08	0,02	0,01
PCB_153	IS0091R	ng/l	0,02	0,01	0,01	0,07	0,28	0,01	0,01	0,01	0,01	0,09	0,02	0,00
PCB_180	IS0091R	ng/l	0,02	0,00	0,01	0,05	0,10	0,00	0,00	0,00	0,00	0,09	0,02	0,00
anthracene			not reported											
benzo(a)anthracene			not reported											
benzo(a)pyrene			not reported											
benzo(ghi)perylene			not reported											
chrysene+triphenylene			not reported											
flouranthene			not reported											
indeno(123cd)pyrene			not reported											
phenanthrene			not reported											
pyrene			not reported											
precipitation <i>voluntary organics</i>	IS0091R	mm	46,00	35,00	27,50	50,00	4,50	75,00	48,00	62,00	82,00	71,00	62,00	80,00

Percentage completion of voluntary programme 43,8

additional non-CAMP components

aluminium	IS0090R	µg/l	71,88	117,56	1635,70	286,10	262,74	549,02	181,48	112,93	320,31	180,93	783,53	185,01
	IS0091R	µg/l	199,60	129,34	907,65	156,30	767,44	325,34	60,85	43,12	256,57	164,44	131,76	115,51
iron	IS0090R	µg/l	48,48	96,74	921,79	217,54	327,26	316,79	105,02	90,42	204,30	143,74	419,35	118,24
	IS0091R	µg/l	231,09	169,86	911,97	199,40	907,42	461,80	72,29	50,49	251,69	192,50	153,58	138,62
manganese	IS0090R	µg/l	1,02	1,77	15,99	4,41	7,42	6,03	2,61	2,14	4,04	2,56	6,95	2,03
	IS0091R	µg/l	4,59	3,01	18,66	4,67	22,70	11,00	1,44	1,79	4,38	3,58	2,53	2,33
vanadium	IS0090R	µg/l	2,11	2,66	2,99	2,14	4,22	1,05	0,76	0,49	0,88	0,63	1,87	0,87
	IS0091R	µg/l	0,89	0,57	4,56	1,02	3,61	1,54	0,30	0,22	0,94	0,91	0,58	0,55
precipitation <i>metals</i>	IS0090R	mm	54,40	75,64	38,12	91,66	11,37	41,53	62,85	78,18	53,18	35,55	59,04	135,77
	IS0091R	mm	130,54	63,47	76,27	223,56	18,45	152,58	74,36	167,16	126,43	105,41	163,73	192,58
PCB_31	IS0091R	ng/l	0,01	0,01	0,01	0,01	0,07	0,01	0,01	0,01	0,04	0,01	0,01	0,01
PCB_105	IS0091R	ng/l	0,00	0,01	0,00	0,03	0,02	0,00	0,00	0,00	0,01	0,00	0,00	0,00
PCB_156	IS0091R	ng/l	0,00	0,00	0,00	0,01	0,02	0,00	0,00	0,00	0,01	0,00	0,00	0,00
HCB	IS0091R	ng/l	0,01	0,01	0,18	0,02	0,13	0,01	0,01	0,00	0,01	0,02	0,01	0,01
alpha_HCH	IS0091R	ng/l	0,14	0,15	0,09	0,11	0,40	0,08	0,11	0,13	0,15	0,12	0,13	0,09
beta_HCH	IS0091R	ng/l	0,01	0,01	0,01	0,02	0,07	0,00	0,00	0,00	0,00	0,00	0,00	0,00
cis_CD	IS0091R	ng/l	0,01	0,01	0,01	0,00	0,02	0,00	0,00	0,00	0,01	0,01	0,00	0,00
dieldrin	IS0091R	ng/l	0,05	0,04	0,02	0,05	0,08	0,01	0,02	0,01	0,03	0,04	0,03	0,03
op_DDT	IS0091R	ng/l	0,00	0,01	0,01	0,00	0,04	0,00	0,00	0,00	0,00	0,00	0,00	0,02
pp_DDD	IS0091R	ng/l	0,00	0,01	0,01	0,01	0,04	0,00	0,00	0,00	0,00	0,00	0,00	0,01
pp_DDE	IS0091R	ng/l	0,00	0,01	0,01	0,00	0,04	0,00	0,00	0,00	0,00	0,00	0,00	0,00
pp_DDT	IS0091R	ng/l	0,02	0,01	0,07	0,03	0,04	0,03	0,00	0,00	0,00	0,00	0,00	0,01
trans_CD	IS0091R	ng/l	0,01	0,00	0,01	0,00	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00
trans_NO	IS0091R	ng/l	0,01	0,01	0,01	0,00	0,02	0,01	0,00	0,00	0,01	0,00	0,00	0,00
txph-26	IS0091R	ng/l	0,01	0,01	0,01	0,00	0,04	0,00	0,00	0,01	0,01	0,01	0,01	0,01
txph-50	IS0091R	ng/l	0,03	0,02	0,01	0,02	0,04	0,01	0,00	0,00	0,01	0,01	0,00	0,00
txph-62	IS0091R	ng/l	0,00	0,01	0,01	0,00	0,04	0,00	0,00	0,00	0,00	0,00	0,00	0,00
precipitation <i>voluntary organics</i>	IS0091R	mm	46,00	35,00	27,50	50,00	4,50	75,00	48,00	62,00	82,00	71,00	62,00	80,00
precipitation_amount	IS0090R	mm	42,80	77,30	17,80	47,80	13,30	72,90	64,30	93,30	46,70	45,90	50,60	116,00
precipitation_amount	IS0090R	mm	54,40	75,64	38,12	91,66	11,37	41,53	62,85	78,18	53,18	35,55	59,04	135,77
precipitation_amount_off	IS0090R	mm	59,50	107,30	40,60	76,00	12,50	42,30	44,50	71,70	41,20	49,40	60,60	144,20
precipitation_amount	IS0091R	mm	139,80	70,00	47,20	131,70	6,40	131,80	76,60	173,00	129,60	140,70	230,50	229,30
precipitation_amount	IS0091R	mm	130,54	63,47	76,27	223,56	18,45	152,58	74,36	167,16	126,43	105,41	163,73	192,58
precipitation_amount	IS0091R	mm	46,00	35,00	27,50	50,00	4,50	75,00	48,00	62,00	82,00	71,00	62,00	80,00
precipitation_amount_off	IS0091R	mm	165,30	90,00	87,90	145,50	8,10	137,80	91,40	193,40	145,50	124,70	177,90	206,70
precipitation_amount_off	IS0091R	mm	172,00	82,00	88,00	143,00	8,00	136,00	90,00	192,00	144,00	125,00	175,00	206,00

number of additional components reported 25

OSPAR Commission, 2007:
Comprehensive Atmospheric Monitoring Programme in 2005

ICELAND

Airborne components

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
NO2	IS0091R	µg/m³	not reported											
HNO3			not reported											
NO3			0,03	0,04	0,06	0,15	0,05	0,07	0,04	0,03	0,02	0,04	0,02	0,04
HNO3+NO3			not reported											
NH3			not reported											
NH4			not reported											
NH3+NH4			not reported											
Percentage completion of mandatory programme														
													25,00	

Voluntary

NO			not reported											
arsenic	IS0091R	ng/m ³	0,22	0,17	0,24	0,26	0,18	0,13	0,14	0,14	0,12	0,17	0,16	0,19
cadmium	IS0091R	ng/m ³	0,12	0,08	0,04	0,05	0,03	0,03	0,07	0,01	0,02	0,05	0,04	0,07
chromium	IS0091R	ng/m ³	13,47	3,14	5,70	27,40	8,14	14,65	9,05	6,36	2,75	5,85	5,75	13,91
copper	IS0091R	ng/m ³	1,08	0,63	1,83	3,00	2,31	1,33	1,12	1,19	1,18	2,17	1,08	1,62
lead	IS0091R	ng/m ³	1,32	0,49	0,66	0,91	0,62	0,30	0,31	0,17	0,21	0,79	0,22	1,25
mercury	IS0091R	ng/m ³	2,96	3,24	3,33	5,39	3,43	1,94	1,15	1,39	1,41	2,74	0,71	3,53
nickel	IS0091R	ng/m ³	6,59	1,98	4,09	18,84	5,70	10,51	6,78	4,71	2,27	4,40	3,96	8,89
zinc	IS0091R	ng/m ³	14,66	7,69	6,26	8,52	9,83	4,54	6,43	4,02	3,97	6,73	4,51	12,14
PCB_28	IS0091R	pg/m ³	4,23	4,47	4,47	2,55	2,82	2,34	3,26	1,65	0,93	2,57	1,64	3,45
PCB_52	IS0091R	pg/m ³	2,75	2,54	2,55	1,72	1,74	1,33	1,23	0,80	0,34	0,84	0,99	1,50
PCB_101	IS0091R	pg/m ³	0,77	0,79	0,86	0,50	0,49	0,40	0,39	0,26	0,11	0,35	0,33	0,75
PCB_118	IS0091R	pg/m ³	0,08	0,12	0,19	0,07	0,07	0,07	0,14	0,14	0,14	0,14	0,14	0,18
PCB_138	IS0091R	pg/m ³	0,08	0,08	0,14	0,07	0,07	0,07	0,07	0,07	0,07	0,12	0,07	0,09
PCB_153	IS0091R	pg/m ³	0,08	0,08	0,16	0,07	0,07	0,07	0,07	0,07	0,07	0,27	0,13	0,29
PCB_180	IS0091R	pg/m ³	0,08	0,08	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,12	0,15	0,47
anthracene			not reported											
benzo(a)anthracene			not reported											
benzo(a)pyrene			not reported											
benzo(ghi)perylene			not reported											
chrysene			not reported											
flouranthene			not reported											
g-HCH	IS0091R	pg/m ³	5,80	4,90	4,54	3,74	4,37	3,12	3,96	3,02	1,69	2,05	2,81	5,82
indeno(123cd)pyrene			not reported											
phenanthrene			not reported											
pyrene			not reported											
Percentage completion of voluntary programme														61,54

additional non-CAMP components

aluminium	IS0091R	ng/m ³	50,57	152,23	930,16	1132,45	635,27	279,55	230,01	291,92	484,20	667,13	320,35	105,27
iron	IS0091R	ng/m ³	132,49	259,10	1519,03	1707,71	796,51	395,90	355,06	388,96	600,45	888,82	435,95	261,52
manganese	IS0091R	ng/m ³	2,30	4,12	21,36	28,42	13,16	6,41	5,34	6,39	9,37	15,77	7,09	3,55
vanadium	IS0091R	ng/m ³	1,96	2,10	6,19	7,11	3,14	2,36	1,73	2,00	2,34	4,23	2,68	2,01
PCB_31	IS0091R	pg/m ³	3,93	4,06	4,18	2,55	2,47	2,20	2,18	1,07	0,62	1,69	1,19	2,30
PCB_105	IS0091R	pg/m ³	0,08	0,08	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,09
PCB_156	IS0091R	pg/m ³	0,08	0,08	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,09
HCB	IS0091R	pg/m ³	1,41	1,80	1,74	1,86	1,94	2,12	1,31	1,38	2,16	2,22	2,09	3,97
alpha_HCH	IS0091R	pg/m ³	3,00	3,11	2,87	2,90	2,78	2,76	2,73	2,19	1,36	1,45	1,73	5,45
beta_HCH	IS0091R	pg/m ³	0,22	0,25	0,20	0,20	0,22	0,21	0,14	0,14	0,14	0,14	0,14	0,18
cis_CD	IS0091R	pg/m ³	0,17	0,09	0,10	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,46
dieldrin	IS0091R	pg/m ³	0,17	0,09	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,30
op_DDT	IS0091R	pg/m ³	0,08	0,08	0,07	0,07	0,07	0,07	0,14	0,14	0,14	0,14	0,14	0,18
pp_DDD	IS0091R	pg/m ³	0,15	0,16	0,14	0,14	0,15	0,14	0,14	0,14	0,14	0,14	0,14	0,18
pp_DDE	IS0091R	pg/m ³	0,16	0,16	0,22	0,26	0,08	0,15	0,14	0,14	0,14	0,14	0,14	0,18
pp_DDT	IS0091R	pg/m ³	0,15	0,16	0,14	0,14	0,15	0,14	0,14	0,14	0,14	0,14	0,14	0,18
trans_CD	IS0091R	pg/m ³	0,08	0,08	0,11	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,16
trans_NO	IS0091R	pg/m ³	0,08	0,08	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,17
txph_26	IS0091R	pg/m ³	0,24	0,09	0,10	0,07	0,07	0,07	0,18	0,16	0,14	0,15	0,17	0,30
txph_50	IS0091R	pg/m ³	0,08	0,08	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,09
txph_62	IS0091R	pg/m ³	0,08	0,08	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,07	0,09

number of additional components reported

21

IRELAND

IRELAND

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	IE0001R	mg/l	0,07	0,17	0,30	0,28	0,37	0,12	0,23	0,19	0,09	0,10	0,10	0,09
nitrate	IE0001R	mg/l	0,07	0,04	0,22	0,10	0,08	0,10	0,07	0,07	0,06	0,08	0,04	0,10
precipitation nitrogen	IE0001R	mm	184,00	90,00	82,00	153,00	154,00	88,00	71,00	87,00	145,00	152,00	139,00	153,00
arsenic	IE0001R	µg/l	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
cadmium	IE0001R	µg/l	0,05	0,40	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05	0,05
chromium	IE0001R	µg/l	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
copper	IE0001R	µg/l	3,50	30,30	0,50	2,60	6,90	3,50	47,40	29,90	3,30	7,40	2,10	2,30
lead	IE0001R	µg/l	0,50	0,50	0,50	0,50	0,50	0,50	3,70	2,10	0,50	0,50	0,50	0,50
mercury	IE0001R	ng/l	50,00	50,00	50,00	50,00	50,00	50,00	50,00	50,00	50,00	50,00	50,00	50,00
nickel	IE0001R	µg/l	0,50	3,10	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50	0,50
zinc	IE0001R	µg/l	3,60	38,70	4,60	4,80	9,00	6,90	21,70	41,70	3,50	11,60	22,80	14,30
precipitation all metals	IE0001R	mm	184,00	90,00	82,00	153,00	154,00	88,00	71,00	87,00	145,00	152,00	139,00	153,00
g-HCH			not reported											
Percentage completion of mandatory programme														90,9

Voluntary

PCB_28		not reported												
PCB_52		not reported												
PCB_101		not reported												
PCB_118		not reported												
PCB_138		not reported												
PCB_153		not reported												
PCB_180		not reported												
anthracene		not reported												
benzo(a)anthracene		not reported												
benzo(a)pyrene		not reported												
benzo(ghi)perylene		not reported												
chrysene+triphenylene		not reported												
flouranthene		not reported												
indeno(123cd)pyrene		not reported												
phenanthrene		not reported												
pyrene		not reported												
Percentage completion of voluntary programme														0,0

additional non-CAMP components

aluminium	IE0001R	µg/l	5	26	14	5	18	31	78	20	12	38	13	5
manganese	IE0001R	µg/l	0,5	3,4	2	0,5	3,8	7,8	7,8	3	2,8	8,7	3,8	1,9
vanadium	IE0001R	µg/l	0,5	0,5	0,5	0,5	0,5	0,5	2,5	2	0,5	0,5	0,5	0,5
number of additional components reported														3

IRELAND

Airborne components

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
NO ₂			not reported											
HNO ₃			not reported											
NO ₃			not reported											
HNO ₃ +NO ₃			not reported											
NH ₃			not reported											
NH ₄			not reported											
NH ₃ +NH ₄			not reported											

Percentage completion of mandatory programme 0,00

Voluntary

NO		not reported
arsenic		not reported
cadmium		not reported
chromium		not reported
copper		not reported
lead		not reported
mercury		not reported
nickel		not reported
zinc		not reported
PCB_28		not reported
PCB_52		not reported
PCB_101		not reported
PCB_118		not reported
PCB_138		not reported
PCB_153		not reported
PCB_180		not reported
anthracene		not reported
benzo(a)anthracene		not reported
benzo(a)pyrene		not reported
benzo(ghi)perylene		not reported
chrysene		not reported
flouranthene		not reported
g-HCH		not reported
indeno(123cd)pyrene		not reported
phenanthrene		not reported
pyrene		not reported

Percentage completion of voluntary programme 0,00

THE NETHERLANDS

NETHERLANDS

Components in Precipitation

Mandatory	station	units	january	february	march	april	may	june	month	july	august	september	october	november	december
ammonium	NL0009R	mg/l	0,39							1,13	0,70	0,63	0,49	0,51	0,48
	NL0091R		0,25	0,24 ^a	1,75	1,51	0,64	0,85 ^a		0,59	0,32	0,59	0,39	0,29	0,42
nitrate	NL0009R	mg/l	0,32							0,62	0,43	0,50	0,34	0,33	0,49
	NL0091R		0,27	0,37 ^a	0,69	0,75	0,51	0,94 ^a		0,46	0,38	0,43	0,39	0,37	0,61
precipitation nitrogen	NL0009R	mm	36,80		20,90	65,80	49,60	53,60		60,00	94,70	47,80	42,80	154,60	34,75
	NL0091R		42,10		24,80	72,70	37,40			125,60	79,40	125,30	46,90	256,70	39,80
^a calculated using precipitation amount from metal sampling															
arsenic	NL0009R	µg/l	0,075		0,34	0,28	0,94	0,44		0,38	0,43		0,2	0,85	0,075
	NL0091R		0,15	0,08	0,08	0,16	0,08	0,17		0,08	0,08	0,08	0,08	0,08	0,08
cadmium	NL0009R	µg/l	0,048		0,076	0,097	0,103	0,128		0,093	0,052	0,058	0,062	0,033	0,102
	NL0091R		0,03	0,07	0,07	0,09	0,05	0,09		0,04	0,02	0,05	0,02	0,05	0,06
chromium	NL0009R	µg/l	0,26		0,26	0,26	1,33	0,26		0,26	0,26	0,26	0,87	0,26	0,26
	NL0091R		0,26	0,26	0,26	0,26	0,26	0,26		0,26	0,26	0,26	0,61	0,26	0,26
copper	NL0009R	µg/l	2,36		1,13	2,05	2,3	3,75		3,36	1,52	1,39	2,13	0,794	1,042
	NL0091R		1,23	0,93	3,00	1,57	1,56	3,46		1,27	0,71	0,88	0,90	0,67	0,86
lead	NL0009R	µg/l	1,24		2,03	2,07	5,09	3,15		1,88	2,09	1,65	3,78	0,928	1,401
	NL0091R		5,03	3,73	4,11	2,67	1,89	4,31		1,67	1,09	1,09	1,76	1,81	4,77
mercury	NL0009R	ng/l	16,508	9,609	23,288	19,231	30,68	29,613		15,654	9,404	15	17,771	5,464	6,24
nickel	NL0009R	µg/l	0,205		0,61	0,62	0,87	0,54		0,83	0,5	0,205	0,56	0,205	0,205
	NL0091R		0,21	0,21	0,79	0,54	0,45	0,67		0,21	0,21	0,21	0,64	0,47	0,50
zinc	NL0009R	µg/l	4,6		7	10,4	12,8	16,2		20,7	8,1	5	9,6	3,565	8,828
	NL0091R		5,00	3,90	9,00	8,50	5,60	14,70		5,90	1,95	1,95	4,20	4,77	6,47
precipitation metals exc. Hg	NL0009R	mm	34,8	0	9,1	63,1	49	52,2		59,8	92,3	46,9	40	143,4	34,125
Hg	NL0091R	mm	31,40	79,60	22,30	80,20	33,30	38,40		102,00	129,60	120,90	41,10	233,03	35,88
g-HCH	NL0091R	ng/l	5		12	13	5			5	5	5	5	5	5
precipitation g-HCH		mm	42,1	0	24,8	72,7	37,4			125,6	79,4	125,3	46,9	256,7	39,8
Percentage completion of mandatory programme															98,5

Voluntary

PCB_28	not reported
PCB_52	not reported
PCB_101	not reported
PCB_118	not reported
PCB_138	not reported
PCB_153	not reported
PCB_180	not reported
anthracene	not reported
benzo(a)anthracene	not reported
benzo(a)pyrene	not reported
benzo(ghi)perylene	not reported
chrysene+triphenylene	not reported
fluoranthene	not reported
indeno(123cd)pyrene	not reported
phenanthrene	not reported
pyrene	not reported

Percentage completion of voluntary programme 0,0

NETHERLANDS

Airborne components

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
NO ₂	NL0009R	µg/m ³	3,72	4,12	4,00	5,04	2,28	1,94	1,55	1,63	3,05	4,67	5,10	4,06
	NL0091R	µg/m ³	5,23	6,76	7,80	7,02	4,66	4,85	3,76	3,46	6,29	8,49	6,79	6,61
HNO ₃			not reported											
NO ₃	NL0009R		0,47	0,86	1,03	1,03	0,77	0,55	0,57	0,52	1,05	0,92	0,62	0,66
	NL0091R		0,47	1,12	1,58	1,07	0,28	0,32	0,25	0,26	0,56	0,61	0,22	0,40
HNO ₃ +NO ₃			not reported											
NH ₃	NL0091R		0,79	0,94	3,34	2,06	1,31	1,59	0,72	1,45	1,58	2,67	0,75	0,17
NH ₄	NL0009R		0,79	1,54	1,56	1,61	1,27	0,92	1,21	1,01	1,70	1,46	0,91	0,98
	NL0091R		0,76	1,79	2,36	1,70	0,64	0,82	0,73	0,64	1,06	1,08	0,48	0,67
NH ₃ +NH ₄			not reported											
Percentage completion of mandatory programme														80,00
Voluntary														
NO	NL0009R	µg/m ³	0,58	1,07	0,52	0,58	0,26	0,28	0,28	0,31	0,49	1,09	1,19	1,09
	NL0091R	µg/m ³	2,06	3,51	1,77	1,44	1,08	0,94	0,74	1,11	1,92	2,83	3,24	3,95
arsenic	NL0009R		0,24	0,63	0,54	0,52	0,35	0,26	0,26	0,30	0,72	0,85	0,39	0,46
cadmium	NL0009R	ng/m ³	0,09	0,20	0,24	0,19	0,09	0,06	0,07	0,06	0,17	0,24	0,14	0,15
chromium			not reported											
copper			not reported											
lead	NL0009R	ng/m ³	4,32	7,61	8,04	7,51	4,58	2,73	2,75	2,88	6,90	9,64	5,85	5,88
mercury			not reported											
nickel	NL0009R	ng/m ³	0,98	1,31	2,13	2,19	1,77	1,48	2,04	1,92	1,76	1,19	1,60	1,75
zinc	NL0009R	ng/m ³	11,40	24,39	27,48	28,49	20,70	12,54	11,80	10,73	26,21	31,22	21,69	26,60
PCB_28			not reported											
PCB_52			not reported											
PCB_101			not reported											
PCB_118			not reported											
PCB_138			not reported											
PCB_153			not reported											
PCB_180			not reported											
anthracene			not reported											
benzo(a)anthracene			not reported											
benzo(a)pyrene			not reported											
benzo(ghi)perylene			not reported											
chrysene			not reported											
flouranthene			not reported											
g-HCH			not reported											
indeno(123cd)pyrene			not reported											
phenanthrene			not reported											
pyrene			not reported											
Percentage completion of voluntary programme														26,28

NORWAY

NORWAY

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	NO0001R	mg/l	0,09	0,95	0,31	1,31	0,71	0,23	0,36	0,16	0,47	0,43	0,25	0,43
	NO0039R		0,03	0,06	0,15	0,14	0,13	0,20	0,14	0,08	0,08	0,10	0,06	0,06
	NO0057R		0,02	0,06	0,09	0,15			0,12	0,18	0,07	0,08	0,09	0,06
nitrate	NO0001R	mg/l	0,19	0,89	0,41	1,11	0,68	0,31	0,37	0,26	0,49	0,49	0,38	0,55
	NO0039R		0,03	0,04	0,11	0,10	0,07	0,12	0,16	0,06	0,03	0,09	0,03	0,05
	NO0057R		0,12	0,12	0,07	0,16			0,09	0,08	0,02	0,03	0,09	0,13
precipitation nitrogen	NO0001R	mm	134,40	63,90	54,60	50,30	151,40	72,20	81,00	83,50	104,40	149,90	221,70	75,20
	NO0039R		318,00	146,60	20,40	62,90	111,50	125,50	62,10	186,50	171,80	53,30	257,10	217,60
	NO0057R		6,74	38,50	11,50	3,20	0,00	0,00	39,40	21,06	25,04	10,20	4,30	52,53
arsenic	NO0001R	µg/l	0,30	0,36	0,22	0,28	0,15	0,12	0,13	0,12	0,78	0,20	0,17	0,20
cadmium	NO0001R	µg/l	0,01	0,10	0,03	0,03	0,03	0,02	0,04	0,03	0,03	0,04	0,04	0,07
chromium	NO0001R	µg/l	0,15	0,19	1,74	2,01	0,12	0,13	0,21	0,12	0,19	0,20	0,13	0,10
copper	NO0001R	µg/l	0,58	1,48	1,08	1,85	0,76	0,48	0,94	0,36	0,83	0,89	0,51	0,47
lead	NO0001R	µg/l	0,59	3,67	0,88	1,86	1,06	0,42	0,89	0,70	1,01	1,36	1,25	1,60
mercury	NO0001R	ng/l	5,17	13,50	11,10	12,60	11,66	9,90	3,50	7,20	16,90	10,80	4,36	6,50
nickel	NO0001R	µg/l	0,59	0,72	2,19	2,78	0,22	0,18	0,37	0,21	0,22	0,20	0,12	0,28
zinc	NO0001R	µg/l	3,11	10,24	8,14	15,41	5,98	3,17	10,60	2,55	3,90	4,80	3,41	4,48
precipitation all metals	NO0001R	mm	163,38	63,57	50,35	67,23	176,34	90,22	80,41	91,81	140,64	149,52	259,97	74,43
g-HCH	NO0001R	ng/l	0,30	0,38	0,12	1,37	1,56	0,61	0,54	0,66	0,61	0,81	0,73	0,29
precipitation organics	NO0001R	mm	109,37	56,91	54,59	53,23	127,76	73,38	62,70	88,10	67,33	160,37	243,87	60,16
Percentage completion of mandatory programme														100,0

Voluntary

PCB_28	NO0001R	ng/l	0,01	0,02	0,02	0,02	0,01	0,01	0,02	0,01	0,01	0,01	0,02	0,02
PCB_52	NO0001R	ng/l	0,02	0,02	0,02	0,03	0,03	0,02	0,01	0,02	0,03	0,02	0,02	0,02
PCB_101	NO0001R	ng/l	0,05	0,04	0,05	0,05	0,05	0,02	0,01	0,02	0,05	0,03	0,03	0,03
PCB_118	NO0001R	ng/l	0,04	0,03	0,03	0,03	0,04	0,02	0,01	0,02	0,04	0,03	0,02	0,04
PCB_138	NO0001R	ng/l	0,05	0,05	0,05	0,03	0,05	0,03	0,02	0,03	0,03	0,04	0,03	0,04
PCB_153	NO0001R	ng/l	0,08	0,07	0,08	0,06	0,08	0,03	0,03	0,04	0,06	0,06	0,04	0,05
PCB_180	NO0001R	ng/l	0,02	0,03	0,02	0,02	0,02	0,02	0,03	0,01	0,02	0,02	0,02	0,02
anthracene			not reported											
benzo(a)anthracene			not reported											
benzo(a)pyrene			not reported											
benzo(ghi)perylene			not reported											
chrysene+triphenylene			not reported											
flouranthene			not reported											
indeno(123cd)pyrene			not reported											
phenanthrene			not reported											
pyrene			not reported											
precipitation organics	NO0001R	mm	109,37	56,91	54,59	53,23	127,76	73,38	62,70	88,10	67,33	160,37	243,87	60,16
Percentage completion of voluntary programme														43,8

additional non-CAMP components

cobalt	NO0001R	µg/l	0,01	0,02	0,04	0,05	0,02	0,01	0,01	0,01	0,02	0,01	0,01	0,01
vanadium	NO0001R	µg/l	2,08	1,80	1,07	1,71	0,70	0,65	0,62	0,73	0,99	0,75	1,16	1,09
precipitation metals	NO0001R	mm	163,38	63,57	50,35	67,23	176,34	90,22	80,41	91,81	140,64	149,52	259,97	74,43
HCB	NO0001R	ng/l	0,05	0,06	0,05	0,06	0,16	0,10	0,16	0,08	0,07	0,05	0,18	0,31
a-HCH	NO0001R	ng/l	0,18	0,15	0,08	0,23	0,30	0,37	0,28	0,38	0,38	0,26	0,27	0,26
precipitation organics	NO0001R	mm	109,37	56,91	54,59	53,23	127,76	73,38	62,70	88,10	67,33	160,37	243,87	60,16
number of additional components reported														4

OSPAR Commission, 2007:
Comprehensive Atmospheric Monitoring Programme in 2005

NORWAY

Airborne components

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
NO ₂	NO0001R	µg/m ³	0,40	0,65	0,44	0,46	0,41	0,26	0,32	0,40	0,46	0,77	0,57	0,40
	NO0039R	µg/m ³	0,24	0,32	0,21	0,12	0,21	0,15	0,22	0,23	0,28	0,18	0,32	0,23
HNO ₃	NO0001R	µg/m ³	0,05	0,15	0,07	0,18	0,13	0,11	0,10	0,07	0,08	0,08	0,02	0,03
	NO0042R	µg/m ³	0,10	0,21	0,04	0,20	0,02	0,03	0,05	0,02	0,02	0,07	0,02	0,02
NO ₃	NO0001R	µg/m ³	0,15	0,37	0,52	0,50	0,21	0,18	0,13	0,05	0,23	0,44	0,18	0,09
	NO0039R	µg/m ³		0,61	0,05	0,10	0,17	0,12	0,05	0,04	0,03	0,03	0,02	0,06
	NO0042R	µg/m ³	0,19	0,31	0,04	0,33	0,02	0,02	0,03	0,02	0,02	0,05	0,08	0,04
HNO ₃ +NO ₃	NO0001R	µg/m ³	0,20	0,52	0,60	0,68	0,34	0,28	0,22	0,12	0,30	0,52	0,21	0,12
	NO0039R	µg/m ³		0,74	0,11	0,16	0,33	0,22	0,08	0,06	0,06	0,06	0,04	0,08
	NO0042R	µg/m ³	0,29	0,56	0,08	0,52	0,04	0,05	0,08	0,04	0,04	0,12	0,09	0,06
NH ₃	NO0001R	µg/m ³	0,17	0,29	0,26	0,45	0,31	0,39	0,55	0,53	0,57	0,30	0,10	0,20
	NO0039R	µg/m ³	0,40	0,44	0,49	0,46	0,45	0,54	0,67	0,50	0,50	0,75	0,41	0,29
	NO0042R	µg/m ³	0,31	0,47	0,19	0,43	0,23	0,34	0,34	0,39	0,24	0,48	0,23	0,18
NH ₄	NO0039R	µg/m ³		0,62	0,10	0,29	0,14	0,21	0,13	0,10	0,09	0,10	0,03	0,07
	NO0042R	µg/m ³	0,22	0,31	0,08	0,37	0,06	0,05	0,02	0,03	0,01	0,03	0,03	0,05
NH ₃ +NH ₄	NO0001R	µg/m ³	0,26	0,96	0,96	1,20	0,68	0,77	0,91	0,84	0,88	0,97	0,28	0,38
	NO0039R	µg/m ³		1,17	0,59	0,75	0,60	0,75	0,80	0,61	0,59	0,85	0,43	0,35
	NO0042R	µg/m ³	0,53	0,77	0,27	0,80	0,29	0,39	0,37	0,41	0,25	0,52	0,27	0,23
Percentage completion of mandatory programme														100,00
Voluntary														
NO			not reported											
arsenic	NO0042R	ng/m ³	0,19	0,07	0,16	0,54	0,05	0,02	0,01	0,01	0,01	0,01	0,07	0,16
cadmium			not reported											
chromium			not reported											
copper			not reported											
lead			not reported											
mercury	NO0001R ¹	ng/m ³	2,21	2,12	2,20	2,02	1,45	1,33	2,03	1,60				
	NO0042R	ng/m ³	1,55	1,54	1,63	1,48	1,46	1,72	1,90	1,64	1,54	1,46	1,47	1,48
	NO0090R	ng/m ³	1,66	1,58	1,57	1,60	1,75							
nickel			not reported											
zinc			not reported											
PCB_28	NO0001R	pg/m ³	0,84	1,14	1,03	1,35	1,57	1,49	1,80	1,51	2,04	2,66	1,86	1,34
	NO0042R	pg/m ³	1,75	2,49	1,29	1,63	3,75	4,18	3,29	4,00	2,63	2,90	2,94	2,98
PCB_52	NO0001R	pg/m ³	0,84	1,29	1,11	1,22	1,67	1,53	1,63	1,36	1,92	2,16	1,85	1,13
	NO0042R	pg/m ³	1,07	1,17	0,77	0,97	1,12	1,23	0,98	1,14	0,92	1,04	1,16	1,26
PCB_101	NO0001R	pg/m ³	0,42	1,71	1,32	0,75	1,05	1,06	1,11	0,84	1,24	1,49	1,19	0,58
	NO0042R	pg/m ³	0,52	0,49	0,33	0,45	0,34	0,35	0,29	0,33	0,34	0,37	0,43	0,51
PCB_118	NO0001R	pg/m ³	0,13	1,80	1,69	0,27	0,53	0,34	0,34	0,25	0,36	0,61	0,33	0,21
	NO0042R	pg/m ³	0,19	0,16	0,11	0,14	0,08	0,08	0,07	0,09	0,11	0,12	0,17	0,17
PCB_138	NO0001R	pg/m ³	0,17	2,02	2,60	0,30	0,67	0,49	0,44	0,29	0,44	0,75	0,40	0,20
	NO0042R	pg/m ³	0,14	0,16	0,10	0,12	0,08	0,07	0,06	0,08	0,10	0,12	0,17	0,14
PCB_153	NO0001R	pg/m ³	0,28	3,35	4,85	0,51	1,01	0,81	0,75	0,46	0,75	1,29	0,70	0,33
	NO0042R	pg/m ³	0,22	0,26	0,17	0,18	0,13	0,12	0,10	0,13	0,17	0,19	0,25	0,21
PCB_180	NO0001R	pg/m ³	0,06	0,56	1,03	0,22	0,25	0,16	0,15	0,10	0,15	0,31	0,13	0,07
	NO0042R	pg/m ³	0,05	0,07	0,04	0,04	0,03	0,03	0,02	0,02	0,03	0,04	0,05	0,04
anthracene	NO0042R	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
benzo(a)anthracene	NO0042R	pg/m ³	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
benzo(a)pyrene	NO0042R	pg/m ³	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
benzo(ghi)perylene	NO0042R	pg/m ³	0,02	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01
chrysene			not reported											
chrysene+triphenalen	NO0042R	pg/m ³	0,04	0,03	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,02
flouranthene	NO0042R	pg/m ³	0,11	0,08	0,03	0,02	0,01	0,01	0,01	0,01	0,01	0,01	0,03	0,07
g-HCH	NO0001R	pg/m ³	2,49	3,12	3,55	5,44	14,27	14,17	12,22	9,58	9,62	20,24	9,68	3,36
	NO0042R	pg/m ³	3,11	2,09	2,21	3,18	3,45	2,39	1,69	1,92	1,77	2,31	2,49	2,24
indeno(123cd)pyrene	NO0042R	pg/m ³	0,02	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01
phenanthrene	NO0042R	pg/m ³	0,19	0,14	0,06	0,04	0,02	0,03	0,03	0,03	0,03	0,02	0,05	0,06
pyrene	NO0042R	pg/m ³	0,05	0,04	0,02	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,03
Percentage completion of voluntary programme														77,14

¹ air + aerosol. Mercury at NO0042 and NO0090 are in air only.

additional non-CAMP components

PCB_18	NO0042G	pg/m ³	2,89	2,72	2,06	2,11	6,37	6,28	5,02	6,74	4,46	4,86	5,24	5,66
PCB_31	NO0042G	pg/m ³	1,66	2,40	1,24	1,57	3,64	4,00	3,13	3,83	2,47	2,75	2,80	2,84
PCB_33	NO0042G	pg/m ³	1,34	2,15	0,94	1,19	2,75	3,07	2,36	2,92	1,83	2,03	2,04	2,27
PCB_37	NO0042G	pg/m ³	0,18	0,32	0,12	0,16	0,28	0,33	0,26	0,30	0,20	0,22	0,21	0,22
PCB_47	NO0042G	pg/m ³	0,48	0,69	0,36	0,50	0,59	0,58	0,48	0,52	0,38	0,51	0,51	0,60
PCB_66	NO0042G	pg/m ³	0,31	0,35	0,19	0,26	0,25	0,26	0,21	0,23	0,20	0,23	0,25	0,29
PCB_74	NO0042G	pg/m ³	0,22	0,24	0,13	0,20	0,17	0,18	0,14	0,15	0,13	0,16	0,17	0,22
PCB_99	NO0042G	pg/m ³	0,22	0,18	0,13	0,19	0,12	0,12	0,09	0,12	0,13	0,15	0,19	0,21
PCB_105	NO0042G	pg/m ³	0,06	0,05	0,03	0,04	0,02	0,02	0,02	0,03	0,03	0,04	0,05	0,05
PCB_114	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
PCB_122	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
PCB_123	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
PCB_128	NO0042G	pg/m ³	0,03	0,02	0,02	0,02	0,01	0,01	0,01	0,01	0,02	0,02	0,03	0,02
PCB_141	NO0042G	pg/m ³	0,04	0,04	0,03	0,03	0,02	0,02	0,02	0,02	0,02	0,02	0,03	0,03
PCB_149	NO0042G	pg/m ³	0,24	0,26	0,18	0,21	0,18	0,16	0,13	0,15	0,15	0,17	0,19	0,25
PCB_156	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
PCB_157	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
PCB_167	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
PCB_170	NO0042G	pg/m ³	0,02	0,02	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,02	0,02	0,01
PCB_183	NO0042G	pg/m ³	0,01	0,02	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,02	0,02
PCB_187	NO0042G	pg/m ³	0,04	0,05	0,04	0,03	0,03	0,02	0,02	0,03	0,03	0,03	0,04	0,04
PCB_189	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
PCB_194	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
PCB_206	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
PCB_209	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01
sum_PCB	NO0042G	pg/m ³	19,71	23,79	13,85	16,64	32,24	33,91	26,65	33,54	22,81	25,65	27,35	30,25
acenaphthene	NO0042G	pg/m ³	0,02	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,01
acenaphthylene	NO0042G	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
alpha_HCH	NO0042G	pg/m ³	16,24	11,83	14,83	17,65	18,26	17,68	16,16	18,52	13,79	16,77	12,11	8,98
anthanthrene	NO0042G	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
benzo_a_fluoranthene	NO0042G	pg/m ³	0,00	0,01	0,00	0,00	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00
benzo_a_fluorene	NO0042G	pg/m ³	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
benzo_b_fluorene	NO0042G	pg/m ³	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01
benzo_bjk_fluoranthr	NO0042G	pg/m ³	0,07	0,04	0,02	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,01	0,02
benzo_e_pyrene	NO0042G	pg/m ³	0,02	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01
benzo_ghi_fluoranthr	NO0042G	pg/m ³	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01
biphenyl	NO0042G	pg/m ³	1,66	1,06	0,56	0,25	0,02	0,03	0,02	0,03	0,06	0,12	0,47	0,88
cis_CD	NO0042G	pg/m ³	0,57	0,62	0,71	0,60	0,61	0,55	0,56	0,52	0,53	0,71	0,72	0,65
trans_CD	NO0042G	pg/m ³	0,37	0,42	0,44	0,28	0,18	0,12	0,14	0,11	0,10	0,19	0,32	0,36
coronene	NO0042G	pg/m ³	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
cyclopenta_cd_pyrene	NO0042G	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
dibenzo_ac_ah_anthr	NO0042G	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
dibenzo_ae_pyrene	NO0042G	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
dibenzo_ah_pyrene	NO0042G	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
dibenzo_ai_pyrene	NO0042G	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
dibenzofuran	NO0042G	pg/m ³	1,97	1,35	0,75	0,49	0,05	0,06	0,04	0,07	0,10	0,18	0,68	1,23
dibenzothiophene	NO0042G	pg/m ³	0,04	0,02	0,01	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,01
op_DDD	NO0042G	pg/m ³	0,04	0,04	0,02	0,02	0,01	0,01	0,01	0,02	0,01	0,02	0,03	0,03
pp_DDD	NO0042G	pg/m ³	0,04	0,06	0,03	0,02	0,02	0,02	0,02	0,03	0,03	0,02	0,03	0,04
op_DDE	NO0042G	pg/m ³	0,25	0,17	0,13	0,07	0,03	0,02	0,02	0,02	0,02	0,04	0,10	0,19
pp_DDE	NO0042G	pg/m ³	1,88	1,01	0,49	0,26	0,13	0,11	0,14	0,32	0,28	0,25	0,67	1,67
op_DDT	NO0042G	pg/m ³	0,46	0,34	0,27	0,17	0,08	0,07	0,06	0,09	0,07	0,12	0,18	0,34
pp_DDT	NO0042G	pg/m ³	0,25	0,16	0,11	0,06	0,03	0,04	0,03	0,05	0,05	0,06	0,11	0,16
sum_DDT	NO0042G	pg/m ³	2,91	1,78	1,05	0,60	0,30	0,27	0,29	0,53	0,46	0,50	1,11	2,42
fluorene	NO0042G	pg/m ³	0,98	0,50	0,15	0,06	0,02	0,03	0,02	0,03	0,03	0,04	0,24	0,56
HCB	NO0001R	pg/m ³	52,63	60,49	57,05	63,89	62,73	64,75	63,21	75,16	72,77	81,63	58,57	57,17
HCB	NO0042G	pg/m ³	62,24	55,85	60,76	67,81	72,49	70,88	72,56	72,50	71,51	74,48	66,61	58,97
alpha_HCH	NO0001R	pg/m ³	6,02	8,25	7,05	8,51	9,34	16,71	24,94	24,97	14,27	16,68	9,95	7,64
N1methylnaphthalene	NO0042G	pg/m ³	0,50	0,24	0,06	0,03	0,01	0,02	0,02	0,02	0,02	0,02	0,11	0,27
N1methylphenanthren	NO0042G	pg/m ³	0,01	0,01	0,00	0,01	0,00	0,01	0,01	0,01	0,01	0,00	0,00	0,00
N2methylantracene	NO0042G	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
N2methylnaphthalene	NO0042G	pg/m ³	0,59	0,26	0,06	0,05	0,02	0,04	0,03	0,03	0,03	0,03	0,13	0,31
N2methylphenanthren	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,00	0,01	0,01	0,01	0,01	0,01	0,01	0,01
N3methylphenanthren	NO0042G	pg/m ³	0,01	0,01	0,01	0,01	0,00	0,01	0,00	0,01	0,01	0,00	0,00	0,00
N9methylphenanthren	NO0042G	pg/m ³	0,00	0,00	0,00	0,01	0,00	0,01	0,00	0,01	0,01	0,00	0,00	0,00
naphthalene	NO0042G	pg/m ³	1,75	1,32	0,34	0,12	0,06	0,08	0,07	0,08	0,09	0,11	0,39	1,18
cis_NO	NO0042G	pg/m ³	0,04	0,05	0,04	0,04	0,06	0,06	0,09	0,09	0,07	0,07	0,04	0,03
trans_NO	NO0042G	pg/m ³	0,50	0,59	0,66	0,58	0,59	0,47	0,48	0,46	0,43	0,61	0,64	0,58
perylene	NO0042G	pg/m ³	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
retene	NO0042G	pg/m ³	0,01	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01

number of additional components reported

70

PORTUGAL

PORTUGAL

Components in Precipitation

Mandatory	station	units	month												
			january	february	march	april	may	june	july	august	september	october	november	december	
ammonium	PT0003R	mg/l	0,334	0,487		0,176	0,153	0,118	0,23		0,099	0,116	0,05	0,091	
	PT0004R			0,15	0,03		0,033					0,041	0,107	0,028	
	PT0010R									12,17					
nitrate	PT0003R	mg/l	0,66	0,254		0,231	0,211	0,181	0,259		0,164	0,191	0,108	0,098	
	PT0004R			0,01	0,11		0,11					0,15	0,172	0,01	
	PT0010R								1,5						
precipitation nitrogen	PT0003R	mm	42,1	21,4	115,4	72,1	43,3	26,4	37,7	1,3	38,2	310,4	109,6	101,7	
	PT0004R			17,1	26	3	57,3		2,4			161,9	106,6	52,3	
	PT0010R		112,671	114,014	277,243	126,786	207,357	61,6	22,843	24,186	147,071	192,757	50,643	91,9	
arsenic cadmium	PT0003R	µg/l	not reported												
	PT0004R		0,425	0,425		0,425	0,425	0,425	0,425		0,425	0,425	0,425	0,425	
	PT0010R			0,425	0,425		0,425		0,425			0,425	0,425	0,425	
chromium copper	PT0003R	µg/l	not reported												
	PT0004R		2,051	2,262		1,957	3,556	0,325	3,363		1,311	0,521	0,457	2,095	
	PT0010R			0,325	1,85		0,455					0,325	0,325	0,536	
lead	PT0003R	µg/l	0,645	0,645		1,09	0,645	0,645	1,75		0,645	0,645	0,645	0,645	
	PT0004R			0,645	0,645		0,645					0,645	0,645	0,645	
	PT0010R								0,645						
mercury nickel	PT0003R	µg/l	not reported												
	PT0004R		0,775	0,775		0,775	0,775	0,775	0,775		0,775	0,775	0,775	0,775	
	PT0010R			0,775	0,775		0,775					0,775	0,775	0,775	
zinc	PT0003R	µg/l	32,174	25,663		8,911	5,791	18,59	14,132		14,434	4,799	24,525	25,474	
	PT0004R			2	7		5,023					2,913	3,722	15,455	
	PT0010R								59						
precipitation all metals	PT0003R	mm	42,1	21,4	115,4	72,1	43,3	26,4	37,7	1,3	38,2	310,4	109,6	101,7	
	PT0004R			17,1	26	3	57,3		2,4			161,9	106,6	52,3	
	PT0010R		112,671	114,014	277,243	126,786	207,357	61,6	22,843	24,186	147,071	192,757	50,643	91,9	
Percentage completion of mandatory programme															58,3

Voluntary

PCB_28	not reported													
PCB_52	not reported													
PCB_101	not reported													
PCB_118	not reported													
PCB_138	not reported													
PCB_153	not reported													
PCB_180	not reported													
anthracene	not reported													
benzo(a)anthracene	not reported													
benzo(a)pyrene	not reported													
benzo(ghi)perylene	not reported													
chrysene+triphenylene	not reported													
flouranthene	not reported													
indeno(123cd)pyrene	not reported													
phenanthrene	not reported													
pyrene	not reported													
Percentage completion of voluntary programme														0,0

additional non-CAMP components

manganese	PT0003R	µg/l	2,196	1,075		2,336	3,464	1,582	8,638		2,985	1,352	1,318	1,276
	PT0004R			1,075	1,075		1,075					1,922	3,529	1,075
	PT0010R								20,01					

PORTUGAL

Airborne components

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
NO2			not reported											
HNO3			not reported											
NO3			not reported											
HNO3+NO3			not reported											
NH3			not reported											
NH4			not reported											
NH3+NH4			not reported											
													Percentage completion of mandatory programme	
													0,00	

Voluntary

NO			not reported											
arsenic			not reported											
cadmium			not reported											
chromium			not reported											
copper			not reported											
lead			not reported											
mercury			not reported											
nickel			not reported											
zinc			not reported											
PCB_28			not reported											
PCB_52			not reported											
PCB_101			not reported											
PCB_118			not reported											
PCB_138			not reported											
PCB_153			not reported											
PCB_180			not reported											
anthracene			not reported											
benzo(a)anthracene			not reported											
benzo(a)pyrene			not reported											
benzo(ghi)perylene			not reported											
chrysene			not reported											
flouranthene			not reported											
g-HCH			not reported											
indeno(123cd)pyrene			not reported											
phenanthrene			not reported											
pyrene			not reported											
													Percentage completion of voluntary programme	
													0,00	

SPAIN

SPAIN

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	ES0008R	mg/l	0,377	0,527	0,339	0,613	0,988	2,987	0,439	0,543	0,421	0,237	0,184	0,277
nitrate	ES0008R	mg/l	1,666	1,065	2,31	2,025	2,412	7,862	1,108	0,862	0,958	1,656	0,715	3,456
precipitation nitrogen	ES0008R	mm												
CALCULATED CONC														
arsenic	ES0008R	µg/l	0,01	0,01	0,03	0,04	0,01	0,06	0,01	0,01	0,04	0,01	0,01	0,03
cadmium	ES0008R	µg/l	0,00	0,01	0,01	0,01	0,00	0,03	0,00	0,01	0,01	0,00	0,01	0,01
chromium	ES0008R	µg/l	1,14	1,87	8,37	4,28	4,56	24,24	0,46	0,67	0,74	2,18	0,88	2,05
copper	ES0008R	µg/l	0,49	0,42	3,53	2,15	0,64	2,77	0,66	0,99	1,68	0,88	1,07	2,07
lead	ES0008R	µg/l	0,07	0,33	2,83	0,76	0,43	0,70	0,10	0,28	1,04	0,12	0,11	0,32
mercury		ng/l	not reported											
nickel	ES0008R	µg/l	1,26	1,01	4,25	4,89	3,98	22,57	1,44	4,46	1,65	0,44	1,21	1,03
zinc	ES0008R	µg/l	2,86	2,05	7,94	4,57	2,97	16,14	1,82	2,62	3,06	2,25	2,62	6,58
WETDEP														
arsenic	ES0008R	µg/m ²	0,388	0,693	0,753	1,62	0,551	0,452	0,245	0,267	0,992	0,49	1,255	1,813
cadmium	ES0008R	µg/m ²	0,336	0,479	0,401	0,28	0,175	0,207	0,153	0,151	0,172	0,308	0,61	0,431
chromium	ES0008R	µg/m ²	82,535	176,185	224,296	160,911	215,131	184,198	15,996	12,248	16,614	177,207	94,494	112,211
copper	ES0008R	µg/m ²	35,486	39,471	94,613	80,679	30,384	21,037	23,001	18,078	37,67	71,359	114,432	113,524
lead	ES0008R	µg/m ²	5,088	31,012	75,933	28,674	20,442	5,297	3,358	5,033	23,308	10,015	12,175	17,318
mercury		ng/m ²	not reported											
nickel	ES0008R	µg/m ²	90,835	94,997	113,874	183,679	187,913	171,507	49,793	81,143	37,011	35,993	128,717	56,692
zinc	ES0008R	µg/m ²	206,445	192,564	212,799	171,723	140,13	122,657	63,116	47,648	68,611	183,201	279,612	360,802
precipitation all metals	ES0008R	mm	3,008	3,917	1,117	1,567	1,967	0,317	1,442	0,758	0,933	3,392	4,45	2,283
			72,2	94	26,8	37,6	47,2	7,6	34,6	18,2	22,4	81,4	106,8	54,8
g-HCH			not reported											
Percentage completion of mandatory programme														81,8

Voluntary

PCB_28	not reported	
PCB_52	not reported	
PCB_101	not reported	
PCB_118	not reported	
PCB_138	not reported	
PCB_153	not reported	
PCB_180	not reported	
anthracene	not reported	
benzo(a)anthracene	not reported	
benzo(a)pyrene	not reported	
benzo(ghi)perylene	not reported	
chrysene+triphenylene	not reported	
flouranthene	not reported	
indeno(123cd)pyrene	not reported	
phenanthrene	not reported	
pyrene	not reported	
Percentage completion of voluntary programme		0,0

SPAIN

Airborne components

Mandatory	station	units	month												
			january	february	march	april	may	june	july	august	september	october	november	december	
NO ₂	ES0008R	µg/m ³	2,57	1,99	2,53	1,69	1,49	1,72	1,46	1,81	1,85	2,19	2,38	3,41	12
HNO ₃			not reported												
NO ₃			not reported												
HNO ₃ +NO ₃	ES0008R	µg/m ³	0,38	0,35	0,75	0,42	0,38	0,45	0,54	0,62	0,76	0,60	0,43	0,77	12
NH ₃	ES0008R	µg/m ³	0,33	0,38	0,72	0,36	0,44	0,45	0,38	0,41	0,46	0,42	0,30	0,49	
NH ₄			not reported												
NH ₃ +NH ₄	ES0008R	µg/m ³	0,08	0,12	0,18	0,13	0,22	0,27	6,04	4,39	3,94	2,81	1,58	1,40	12
Percentage completion of mandatory programme														100,00	100,0
Voluntary															
NO	ES0008R	µg/m ³	0,31	0,23	0,21	0,26	0,24	0,28	0,37	0,42	0,37	0,38	0,30	0,39	12
arsenic	ES0008R	ng/m ³							insufficient data (a)						0
cadmium	ES0008R	ng/m ³	0,10	0,03	0,20	0,01	0,09	0,10	0,06	0,07	0,08	0,08	0,13	0,22	12
chromium	ES0008R	ng/m ³							insufficient data (a)						0
copper	ES0008R	ng/m ³	21,48	11,10	8,45	4,80	14,43	43,05	27,23	26,00	18,93	24,73	11,75	14,53	12
lead	ES0008R	ng/m ³	3,42	4,53	17,83	0,49	9,37	6,91	5,80	9,19	10,39	5,22	0,32	9,28	12
mercury	ES0008R	ng/m ³							insufficient data (b)						0
nickel	ES0008R	ng/m ³							insufficient data (a)						0
zinc	ES0008R	ng/m ³							insufficient data (a)						0
PCB_28			not reported												0
PCB_52			not reported												0
PCB_101			not reported												0
PCB_118			not reported												0
PCB_138			not reported												0
PCB_153			not reported												0
PCB_180			not reported												0
anthracene	ES0008R	ng/m ³							insufficient data (c)						0
benzo(a)anthracene	ES0008R	ng/m ³							insufficient data (c)						0
benzo(a)pyrene	ES0008R	ng/m ³							insufficient data (c)						0
benzo(ghi)perylene	ES0008R	ng/m ³							insufficient data (c)						0
chrysene	ES0008R	ng/m ³							insufficient data (c)						0
flouranthene	ES0008R	ng/m ³							insufficient data (c)						0
g-HCH			not reported												0
indeno(123cd)pyrene	ES0008R	ng/m ³							insufficient data (c)						0
phenanthrene	ES0008R	ng/m ³							insufficient data (c)						0
pyrene	ES0008R	ng/m ³							insufficient data (c)						0
Percentage completion of voluntary programme														49,43	49,4

Components marked 'insufficient data' indicate insufficient data received for calculation of monthly means.
The requirement in the CAMP Principles is 50% coverage for calculation of monthly mean air concentrations.
(a) 7 days campaign, unknown date. Not submitted as NASA Ames format
(b) 11 days campaign, July. Not submitted as NASA Ames format
(c) 7 days campaign, October; 6 days campaign December. Not submitted as NASA Ames format

SWEDEN

SWEDEN

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	SE0014R	mg/l	0,353	0,824	0,406	1,577	1,022	0,758	0,313	0,323	0,389	0,237	0,361	0,176
	SE0098R			0,56		1,46	0,68	0,43	0,12	0,24				
nitrate	SE0014R	mg/l	0,438	1,018	0,528	1,073	0,488	0,605	0,261	0,359	0,426	0,313	0,449	0,395
	SE0098R			0,61		0,94	0,67	0,41	0,2	0,29				
precipitation <i>nitrogen</i>	SE0014R	mm	71,1	20,7	23,8	21,8	49,2	54,7	105,8	47,1		45,7	67,3	63,3
	SE0098R			88,7		54,1	64,3	79,6	107,6	99,4				24,3
arsenic	SE0097R	µg/l	0,21	0,23	0,025	0,16	0,23	0,14	0,06	0,13	0,17	0,1	0,31	0,28
cadmium	SE0097R	µg/l	0,03	0,08	0,005	0,08	0,08	0,005	0,01	0,02	0,05	0,03	0,04	0,09
chromium	SE0097R	µg/l	0,21	0,33	0,4	0,53	0,13	0,49	0,025	0,025	0,17	0,12	0,18	0,16
copper	SE0097R	µg/l	0,63	1,41	0,02	1,98	2,11	1,75	1,36	0,45	1,32	0,4	0,81	1,12
lead	SE0097R	µg/l	1,12	2,14	0,55	0,82	1,78	1,14	0,85	0,74	1,82	0,94	1	1,68
mercury	SE0014R	ng/l	9,70	14,80	20,70	38,00	56,00	20,50		21,00	8,70	7,90	8,40	7,00
nickel	SE0097R	µg/l	0,37	0,52	0,26	0,48	0,34	0,31	0,25	0,23	0,4	0,26	0,4	0,54
zinc	SE0097R	µg/l	6,51	10,98	2,45	8,55	8,07	7,88	3,07	2,62	12,4	4,65	5,27	9,39
precipitation <i>all metals</i>	SE0097R	mm	117	37	47	15	52	34	46	66	24	13	136	142
precipitation <i>Hg</i>	SE0014R	mm	38,1	11	17,9	15,3	37,5	57		45,9	64,6	40	34,4	17,8
g-HCH ⁺	SE0014R	ng/m ² /day	0,33	0,15	0,20	0,72	1,08	0,66	1,21	0,43	0,25	0,48	0,51	0,17
Percentage completion of mandatory programme														99,2

* *measurment is of combined wet plus dry deposition*

Voluntary

PCB_28	<i>not reported</i>
PCB_52	<i>not reported</i>
PCB_101	<i>not reported</i>
PCB_118	<i>not reported</i>
PCB_138	<i>not reported</i>
PCB_153	<i>not reported</i>
PCB_180	<i>not reported</i>
anthracene	<i>not reported</i>
benzo(a)anthracene	<i>not reported</i>
benzo(a)pyrene	<i>not reported</i>
benzo(ghi)perylene	<i>not reported</i>
chrysene+triphenylene	<i>not reported</i>
flouranthene	<i>not reported</i>
indeno(123cd)pyrene	<i>not reported</i>
phenanthrene	<i>not reported</i>
pyrene	<i>not reported</i>

Percentage completion of voluntary programme 0,0

additional non-CAMP components

cobalt	SE0097R	µg/l	0	0	0	0,03	0	0	0	0,02	0,04	0,02	0,02	0,03
manganese	SE0097R	µg/l	1,9	1,4	0,5	1,7	3,9	2,1	2	1,3	4,8	1,2	1,8	0,9
vanadium	SE0097R	µg/l	2,54	1,54	0,88	1,07	1,1	0,52	0,61	0,61	0,96	0,45	2,33	1,86
precipitation <i>metals</i>	SE0097R	mm	117	37	47	15	52	34	46	66	24	13	136	142

number of additional components reported 3

Sweden airborne

Airborne components

mandatory		january	february	march	april	may	june	july	august	september	october	november	december	mean
NO ₂	SE0014R µg/m ³	2,00	2,01	1,58	1,46	1,04	1,08	0,85	0,95	1,20	1,08	1,85	2,30	1,45
HNO ₃ + NO ₃	SE0014R µg/m ³	0,56	0,51	0,64	0,59	0,51	0,55	0,30	0,37	0,58	0,23	0,39		0,48
NH ₃ + NH ₄	SE0014R µg/m ³	0,77	0,56	0,99	1,11	0,91	0,61	0,50	0,63	0,53	0,39	0,43	0,53	0,66
NO ₃	µg/m ³	<i>not reported</i>												
NH ₃	µg/m ³	<i>not reported</i>												
voluntary														
mercury (aerosol)	SE0014R pg/m3	13,90	15,86	19,45	17,46	14,23	13,12	8,71	8,55	9,32	11,20	13,33	9,44	12,88
mercury (air+aerosol)	SE0014R ng/m3	1,73	1,77	1,64	1,53	1,84	1,68	1,64	1,68	1,40	1,44	1,49	1,56	1,62
γ-HCH	SE0014R ng/m3	3,00	3,00	2,00	10,00	5,00	7,00	10,00	9,00	9,00	8,00	3,00	4,00	6,08
NO	µg/m ³	<i>not reported</i>												
arsenic	ng/m3	<i>not reported</i>												
cadmium	ng/m3	<i>not reported</i>												
chromium	ng/m3	<i>not reported</i>												
copper	ng/m3	<i>not reported</i>												
lead	ng/m3	<i>not reported</i>												
nickel	ng/m3	<i>not reported</i>												
zinc	ng/m3	<i>not reported</i>												
PCB_101	pg/m3	1,13	1,04	1,12	1,95	2,56	2,11	3,72	5,27	3,40	1,90	1,33	1,19	2,23
PCB_118	pg/m3	0,37	0,38	0,39	0,61	0,84	0,75	1,25	1,77	1,10	0,66	0,41	0,36	0,74
PCB_138	pg/m3	0,85	0,78	0,74	1,39	1,96	1,48	3,01	4,43	2,08	1,45	0,90	0,73	1,65
PCB_153	pg/m3	0,93	0,90	0,84	1,53	2,15	1,64	3,36	4,75	2,36	1,60	1,00	0,86	1,83
PCB_180	pg/m3	0,41	0,35	0,29	0,57	0,73	0,46	1,07	1,67	0,67	0,53	0,39	0,24	0,62
PCB_28	pg/m3	1,27	1,03	1,18	1,97	1,85	1,33	1,72	1,95	2,16	1,75	1,29	1,34	1,57
PCB_52	pg/m3	1,26	1,11	1,28	1,95	2,23	1,86	2,34	3,49	3,36	1,70	1,00	1,50	1,92
anthracene	ng/m3	0,06	0,02	0,01	0,01	0,01	0,00	0,00	0,00	0,00	0,03	0,04	0,03	0,02
benzo(a)anthracene	ng/m3	0,22	0,10	0,05	0,04	0,07	0,02	0,03	0,01	0,01	0,07	0,07	0,05	0,06
benzo(a)pyrene	ng/m3	0,28	0,13	0,07	0,06	0,05	0,03	0,02	0,01	0,01	0,10	0,07	0,05	0,07
benzo(ghi)perylene	ng/m3	0,27	0,14	0,08	0,06	0,02	0,01	0,01	0,01	0,01	0,14	0,11	0,08	0,08
flouranthene	ng/m3	1,35	0,79	0,45	0,37	0,15	0,09	0,11	0,10	0,10	0,60	0,59	0,61	0,44
indeno(1,2,3-cd)pyrene	ng/m3	0,25	0,14	0,07	0,06	0,03	0,01	0,01	0,01	0,01	0,13	0,08	0,07	0,07
phenanthrene	ng/m3	2,66	1,69	0,99	0,89	0,51	0,34	0,47	0,46	0,36	1,40	1,75	1,81	1,11
pyrene	ng/m3	0,95	0,51	0,30	0,24	0,08	0,05	0,05	0,05	0,05	0,37	0,48	0,47	0,30
chrysene*	ng/m3	<i>not reported</i>												
Extra reported non-CAMP components														
chrysene + triphenylene	ng/m3	0,46	0,24	0,14	0,11	0,11	0,07	0,06	0,02	0,02	0,17	0,18	0,16	0,14
α-HCH	ng/m3	4,30	5,24	5,13	6,87	12,90	9,03	9,07	10,26	9,79	10,00	7,47	6,39	8,04
benzo(b)fluoranthene	ng/m3	0,35	0,20	0,12	0,10	0,03	0,01	0,01	0,01	0,02	0,17	0,14	0,11	0,11
benzo(k)fluoranthene	ng/m3	0,35	0,20	0,12	0,10	0,03	0,01	0,01	0,01	0,02	0,17	0,14	0,11	0,11
pp DDD	ng/m3	0,45	0,34	0,27	0,42	0,23	0,15	0,17	0,11	0,13	0,60	0,17	0,07	0,26
pp DDE	ng/m3	2,16	1,55	1,95	3,03	2,72	1,26	1,48	2,36	2,64	3,85	2,83	1,77	2,30
pp DDT	ng/m3	0,68	0,56	0,59	1,30	1,03	0,75	1,04	1,35	1,20	1,20	0,68	0,35	0,89

* chrysene is not reported separately, but in combination with triphenylene

UNITED KINGDOM

United Kingdom

Components in Precipitation

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
ammonium	GB0006R			-0,01	0,41	0,16	0,15	0,11	0,30	0,06	0,10	0,15	0,08	0,08
	GB0013R		0,23	0,23	1,11	0,57	0,26	0,15	0,24	0,29	0,14	0,38	0,36	0,07
	GB0014R		0,46	0,25	0,77	0,63	0,66	0,56	0,48	0,49	0,42	0,43	0,27	0,50
	GB0016R		0,17	0,23	0,79	0,28	0,47	0,12	0,14	0,17	0,38	0,22	0,06	0,29
nitrate	GB0006R			0,05	0,26	0,11	0,16	0,10	0,07	0,11	0,20	0,11	0,08	0,10
	GB0013R		0,21	0,15	0,80	0,64	0,50	0,25	0,29	0,46	0,28	0,42	0,30	0,09
	GB0014R		0,23	0,34	0,51	0,73	0,50	0,54	0,54	0,53	0,37	0,43	0,23	0,57
	GB0016R		0,18	0,26	0,72	0,31	0,51	0,22	0,39	0,26	0,41	0,12	0,15	0,57
precipitation nitrogen	GB0006R			65,65	86,90	115,16	103,55	63,46	57,41	127,05	104,07	137,38	100,13	37,81
	GB0013R		108,59	25,39	58,88	87,57	52,13	59,43	31,62	36,24	48,83	135,13	12,40	67,38
	GB0014R		45,59	49,86	75,41	64,66	32,46	44,17	34,98	99,26	43,30	95,67	82,86	32,50
	GB0016R		35,03	42,06	59,77	103,43	65,79	27,62	17,51	37,52	7,81	105,77	86,48	99,05
arsenic	GB0006R		0,10	0,07					0,33	0,32		0,09	0,11	
	GB0013R		0,39	0,16	1,99	0,12	1,65	1,58	4,23	0,06	0,12	0,09	0,13	0,06
	GB0017R		0,15	0,19	0,33	0,15		0,08	0,16	0,13	0,11	0,15	0,16	0,13
	GB0091R		0,09	0,18	0,28	0,08	0,11	0,08	0,08	0,05	0,11	0,06	0,05	0,11
cadmium	GB0006R		0,00	0,01								0,01	0,10	
	GB0013R		0,03	0,02	0,04	0,03	0,01	0,02	0,02	0,00	0,05	0,04	0,13	0,09
	GB0017R		0,02	0,02	0,05	0,01				0,03	0,02	0,13	0,11	0,15
	GB0091R		0,01	0,02	0,07	0,02	0,01	0,01			0,02	0,04	0,14	0,13
chromium	GB0006R		0,10	0,02					0,06	0,02		0,05	0,02	
	GB0017R		0,15	0,02	0,14	0,16		0,05	0,11	0,12	0,14	0,08	0,10	0,09
	GB0091R		0,11	0,06	0,12	0,02	0,08	0,06	0,05	0,02	0,10	0,07	0,02	0,03
	GB0017R		0,99	0,89	2,70	1,37		0,78	0,91	0,83	0,79	0,99	0,63	0,38
lead	GB0006R		0,03	0,28					0,11	0,19		0,18	0,10	
	GB0013R		0,31	0,97	1,85	1,19	0,89	0,98	0,41	0,63	0,99	0,92	0,10	0,12
	GB0017R		0,77	1,20	4,10	2,14		1,43	2,77	1,00	0,53	0,74	0,81	0,36
	GB0091R		0,25	0,62	1,30	0,85	0,73	0,39	0,39	0,23	0,22	0,33	0,03	0,76
mercury	GB0013R				5,809	3,758	4,186	13,581	6,492	5,428	4,596	2,784	2,8	5,2
	GB0017R				5,17	5,17	4,8	4,8	4,8	16	10,519	8,294	6,853	6,5
	GB0006R		0,01	0,03					0,08	0,12		0,10	0,23	
	GB0013R		0,67	0,33	0,50	0,35	0,46	0,40	0,43	0,41	0,76	0,39	0,25	0,29
nickel	GB0017R		0,27	0,27	0,73	0,38		0,29	0,66	0,28	0,24	0,39	0,27	0,32
	GB0091R		0,13	0,26	0,32	0,31	0,26	0,45	0,28	0,19	0,24	0,40	0,13	0,28
	GB0006R		0,50	2,02					1,10	1,70		1,80	0,50	
	GB0013R		5,71	8,13	8,11	4,55	3,65	5,75	4,98	5,99	11,58	5,40	1,39	1,53
zinc	GB0017R		5,17	4,80	16,00	9,20		5,20	8,47	6,50	6,50	5,72	4,00	2,80
	GB0091R		10,09	5,15	6,32	4,03	4,14	3,65	6,73	7,17	9,49	3,65	0,76	3,05
	GB0006R		225,26	95,52	91,00	128,60	117,80	96,00	78,40	166,20	135,60	99,20	146,20	141,80
	GB0013R		127,80	37,60	64,80	153,40	64,20	40,60	24,20	22,40	46,45	269,65	92,55	86,48
precipitation metals ex. Hg	GB0017R		56,60	86,40	25,40	69,00		81,80	22,80	28,20	30,20	19,80	14,20	47,80
	GB0091R		46,14	41,74	48,14	86,79	73,41	49,29	36,97	69,40	19,40	147,80	104,80	98,00
	GB0013R		not yet received											
	GB0017R		"											
precipitation metals Hg	GB0091R		"											
	GB0013R		"											
	GB0017R		"											
	GB0091R		"											
g-HCH			not reported											

Percentage completion of mandatory programme 97,5

Voluntary

PCB_28	not reported
PCB_52	not reported
PCB_101	not reported
PCB_118	not reported
PCB_138	not reported
PCB_153	not reported
PCB_180	not reported
anthracene	not reported
benzo(a)anthracene	not reported
benzo(a)pyrene	not reported
benzo(ghi)perylene	not reported
chrysene+triphenylene	not reported
flouranthene	not reported
indeno(123cd)pyrene	not reported
phenanthrene	not reported
pyrene	not reported

Percentage completion of voluntary programme 0,0

UNITED KINGDOM

Airborne components

Mandatory	station	units	month											
			january	february	march	april	may	june	july	august	september	october	november	december
NO2	GB0014R		2,148	2,432	1,895	1,796	1,451	1,4	1,371	2,046	2,435	3,279	3,304	3,365
HNO3	GB0006R		0,02	0,05	0,04	0,08	0,05	0,04	0,02	0,04	0,04	0,11	0,07	0,03
	GB0014R		0,14	0,21	0,22	0,2	0,19	0,17	0,14	0,16	0,22	0,3	0,22	0,21
NO3	GB0016R		0,03	0,1	0,05	0,13	0,13	0,03	0,06	0,02	0,09	0,16	0,07	0,09
	GB0006R		0,04	0,07	0,43	0,51	0,16	0,17	0,1	0,05	0,15	0,64	0,13	0,12
	GB0013R		0,2	0,59	0,86	0,69	0,45	0,23	0,24	0,25	0,43	0,63	0,4	0,36
	GB0014R		0,24	0,48	0,93	0,9	0,35	0,39	0,26	0,37	0,56	0,78	0,32	0,4
	GB0016R		0,08	0,05	0,47	0,46	0,17	0,23	0,11	0,13	0,29	0,42	0,14	0,13
HNO3+NO3			not reported											
NH3	GB0006R		0,12	0,21	0,4	0,34	0,36	0,7	0,46	0,25	0,45	0,5	0,26	0,28
	GB0013R		0,22	0,48	0,57	2,53	0,4	0,83	0,62	0,46	0,39	0,24	0,19	0,2
NH4	GB0014R		0,41	0,33	1,25	0,58	0,6	0,67	0,53	0,56	0,78	0,45	0,28	0,37
	GB0016R		0,18	0,16	0,24	0,28	0,3	0,34	0,36	0,27	0,32	0,12	0,12	0,11
	GB0006R		0,07	0,17	0,86	0,9	0,26	0,37	0,27	0,19	0,29	0,93	0,27	0,25
	GB0013R		0,25	1,13	1,53	1,21	0,63	0,46	0,52	0,46	0,66	0,97	0,51	0,46
	GB0014R		0,34	0,89	1,48	1,6	0,59	0,66	0,58	0,62	0,93	1,25	0,51	0,63
	GB0016R		0,08	0,18	0,68	0,79	0,26	0,39	0,21	0,25	0,24	0,69	0,17	0,21
NH3+NH4			not reported											
Percentage completion of mandatory programme														100,00

Voluntary

NO	GB0014R		0,418	0,699	0,313	0,599	0,441	0,423	0,762	0,725	0,751	0,676	0,949	1,007	
arsenic	GB0013R		0,36	0,53	0,03	0,24	0,34	0,17	0,20	0,35	0,22	0,03	0,09	0,03	0,03
	GB0017R		0,78	0,19		0,66	0,56		0,10	0,03	0,02	0,04	0,05	0,05	0,05
cadmium	GB00091R		0,08	0,27	0,02	0,15	0,20	0,05	0,04	0,18	0,13	0,02	0,03	0,02	0,02
	GB0013R		0,08	0,13	0,01	0,04	0,08	0,04	0,04	0,07	0,04	0,01	0,01	0,01	0,01
chromium	GB0017R		0,22	0,05		0,18	0,16		0,04	0,01	0,01	0,01	0,01	0,01	0,01
	GB00091R		0,04	0,05	0,00	0,05	0,06	0,03	0,02	0,04	0,04	0,01	0,01	0,01	0,01
	GB0013R		0,41	1,10	0,13	0,26	0,27	0,22	0,15	0,09	0,21	0,10	0,13	0,10	0,10
	GB0017R		0,55	0,29	0,00	0,65	0,25	0,00	0,19	0,09	0,12	0,14	0,13	0,14	0,14
copper	GB00091R		3,03	2,87	0,12	1,16	0,09	0,11	0,18	0,57	0,37	0,12	0,13	0,10	0,10
	GB0013R		0,80	1,10	2,79	0,87	1,96	0,83	0,55	1,01	0,56	0,25	0,28	0,38	0,38
lead	GB0017R		8,63	0,67		3,00	2,14		0,36	0,07	0,16	0,55	0,48	0,48	0,48
	GB00091R		0,90	1,50	0,06	0,84	0,73	0,20	0,12	0,67	0,45	0,10	0,10	0,05	0,05
	GB0013R		3,49	5,34	3,22	2,20	2,81	2,21	2,04	3,12	1,91	3,15	2,19	1,68	1,68
	GB0017R		9,93	5,18		7,87	7,80		0,94	0,22	0,44	5,17	3,52	5,59	5,59
mercury	GB00091R		1,44	1,75	0,18	1,74	2,20	0,34	0,26	1,47	1,61	0,55	0,60	0,30	0,30
	GB0013R		1,30	0,94	1,11	1,62	1,09	1,17	1,16	1,20	1,04	1,42	0,98	0,97	0,97
nickel	GB0017R		1,96									2,14	0,65		
	GB0013R		1,15	2,30	0,87	0,91	1,91	0,81	0,31	1,11	0,81	0,17	0,06	0,24	0,24
zinc	GB0017R		1,94	0,84		5,37	2,12		1,01	0,05	0,40	0,51	1,32	0,13	0,13
	GB00091R		2,06	3,54	0,03	1,02	0,42	0,10	0,04	0,84	0,33	0,05	0,03	0,16	0,16
	GB0013R		4,10	7,78	53,94	4,54	10,17	7,78	6,68	3,77	4,08	12,25	6,80	9,86	9,86
	GB0017R		8,34	5,57		12,10	16,32		3,33	3,66	2,97	16,60	6,81	6,41	6,41
pyrene	GB00091R		3,59	4,16	3,04	5,58	2,22	2,85	7,59	2,96	3,09	3,09	3,21	2,53	2,53
PCB_28	GB0014R		6,7	6,7	6,7	9,7	9,7	8,1	8,1	8,1	19	19	19	19	19
PCB_52	GB0014R		3,3	3,3	3,3	5,4	5,4	4,1	4,1	4,1	7,3	7,3	7,3	7,3	7,3
PCB_101	GB0014R		1,6	1,6	1,6	2,7	2,7	2	2	2	3,7	3,7	3,7	3,7	3,7
PCB_118	GB0014R		0,4	0,4	0,4	0,6	0,6	0,52	0,52	0,52	1,1	1,1	1,1	1,1	1,1
PCB_138	GB0014R		0,6	0,6	0,6	1	1	0,72	0,72	0,72	1,3	1,3	1,3	1,3	1,3
PCB_153	GB0014R		0,05	0,05	0,05	0,04	0,04	1,1	1,1	1,1	1,8	1,8	1,8	1,8	1,8
PCB_180	GB0014R		0,06	0,06	0,06	0,1	0,1	0,17	0,17	0,17	0,3	0,3	0,3	0,3	0,3
anthracene	GB0014R		0,01	0,01	0,01	0,01	0,01	0,01	0,05	0,05	0,12	0,12	0,12	0,12	0,12
benzo(a)anthracene	GB0014R		0,01	0,01	0,01	0,01	0,01	0,01	0,02	0,02	0,02	0,11	0,11	0,11	0,11
benzo(a)pyrene	GB0014R		0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,07	0,07	0,07	0,07	0,07
benzo(ghi)perylene	GB0014R		0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,11	0,11	0,11	0,11	0,11
chrysene	GB0014R		0,03	0,03	0,03	0,01	0,01	0,03	0,03	0,03	0,21	0,21	0,21	0,21	0,21
flouranthene	GB0014R		0,61	0,61	0,61	0,36	0,36	0,38	0,38	0,38	1	1	1	1	1
g-HCH			not reported												
indeno(123cd)pyrene	GB0014R		0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,01	0,11	0,11	0,11	0,11	0,11
phenanthrene	GB0014R		2,7	2,7	2,7	1,9	1,9	2,6	2,6	2,6	4,7	4,7	4,7	4,7	4,7
pyrene	GB0014R		0,3	0,3	0,3	0,29	0,29	0,28	0,28	0,59	0,59	0,59	0,59	0,59	0,59
Percentage completion of voluntary programme														96,2	



Norwegian Institute for Air Research (NILU)

P.O. Box 100, N-2027 Kjeller, Norway

An institute in CIENS and in the Environmental Research Alliance of Norway

REPORT SERIES SCIENTIFIC REPORT	REPORT NO. OR 16/2007	ISBN 978-82-425-1865-1 (printed) ISBN 978-82-425-1866-8 (electronic) ISSN 0807-7207	
DATE	SIGN.	NO. OF PAGES 51	PRICE NOK 150,-
TITLE Pollutant deposits and air quality around the North Sea and the North-East Atlantic in 2005		PROJECT LEADER Kevin Barrett	
		NILU PROJECT NO. O-97146	
AUTHOR(S) Kevin Barrett		CLASSIFICATION * B	
		CONTRACT REF. Alan Simcock, Chairman	
REPORT PREPARED FOR OSPAR Commission New Court, 48 Carey Street, London WC2A 2J!, United Kingdom			
ABSTRACT Report of the observations of airborne pollutants around the OSPAR coastlines, 2005. Displays the estimated deposition of nutrient, heavy metal and organic pollutants around the coast, together with estimates of the total load to the North Sea of pollutants from the atmosphere. There is indication of decline in pollutant loads.			
NORWEGIAN TITLE Pollutant deposits and air quality around the North Sea and the North East Atlantic in 2005			
KEYWORDS Marine atmospheric pollution			
ABSTRACT			

* Classification A Unclassified (can be ordered from NILU)
 B Restricted distribution
 C Classified (not to be distributed)