# Comprehensive Atmospheric Monitoring Programme:

# Pollutant deposits and air quality around the North Sea and the North-East Atlantic in 2004

OSPAR Commission
2006

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.*



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## 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

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# Pollutant deposits and air quality around the North Sea and the North-East Atlantic in 2004

**Kevin Barrett**
**Centre for Ecological Economics**

# contents

# Executive Summary/*Récapitulatif*

This report presents the results of monitoring undertaken by OSPAR Contracting Parties for the Comprehensive Atmospheric Monitoring Programme (CAMP) during 2004. 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 persistant 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 2004, 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, there has been an improvement in reporting components subject to mandatory monitoring by Contracting Parties in 2004, despite a decline in the numbers of Contracting Parties completing the programme. Some Contracting Parties extensively report components not requested for mandatory or voluntary monitoring under the CAMP, despite in some cases reporting a minority of components covered by the programme.

*Dans l'ensemble, on note une amélioration de la notification des paramètres qui font l'objet d'une surveillance obligatoire de la part des Parties contractantes en 2004, bien qu'elles aient été moins nombreuses à terminer le programme. Certaines Parties contractantes ont présenté un rapport considérable sur des paramètres dont la surveillance n'est ni obligatoire ni facultative dans le cadre du CAMP alors que dans certains cas elles n'ont notifié qu'une minorité de paramètres couverts par le programme.*

Preliminary estimates of deposition to the North Sea, derived from the observations in 2004, suggest a decline in deposition of metals and nitrogen since 2000. The seasonal pattern of nitrogen deposition, with a clear spring maximum for ammonium but much weaker seasonal patterns for nitrate, reflects the relative proximity of the emission sources for these pollutants, and the expected distance of transport through the atmosphere.

*Une évaluation préliminaire des retombées dans la mer du Nord, qui découle des observations effectuées en 2004, suggère que les retombées de métaux et d'azote on diminué depuis 2000. Les retombées saisonnières d'azote, qui comportent un maximum évident d'ammonium au printemps mais des tendances saisonnières beaucoup plus faibles pour le nitrate, reflètent la proximité relative des sources d'émissions de ces polluants ainsi que la distance prévue de leur transport dans l'atmosphère.*

The CAMP databases reveal declining and low inputs of pesticides to OSPAR waters. Data quality is imperfect, however, such that external factors such as changing methodologies may obscure the full picture. Nevertheless, the value of the programme is demonstrated in evidencing continued supply of prohibited substances, such as lindane, and in indicating its declining input. There is evidence to suggest that continued deposition of lindane to OSPAR waters may arise from emission sources beyond the region.

*Les bases de données du CAMP révèlent des apports en baisse et faibles de pesticides dans les eaux OSPAR. On risque cependant de ne pas avoir un tableau complet du fait de l'irrégularité de la qualité des données et de facteurs externes tels que l'utilisation de méthodologies différentes. La mise en évidence de l'utilisation continue de substances interdites, telles que le lindane, et la baisse des apports démontrent cependant la valeur du programme. Il semble que l'on ait la preuve que les retombées continues de lindane dans les eaux OSPAR proviendraient de sources d'émissions situées au delà de la région.*

# 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).

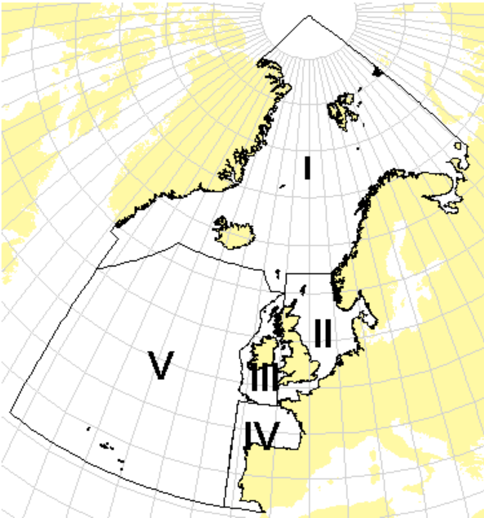


**Figure 1.1:** OSPAR maritime area and regions
I: Arctic waters, II: Greater North Sea, III: Celtic Seas, IV: Bay of Biscay, V: Wider Atlantic

The Comprehensive Atmospheric Monitoring Programme forms one element within the wider Joint Assessment and Monitoring Programme of OSPAR. One objective of the CAMP is to monitor the concentrations of selected contaminants in precipitation and air, and their depositions, in order to assess, as accurately as appropriate, the atmospheric input of the selected contaminants to the maritime area and regions thereof (Figure 1.1) on an annual basis. This is to be achieved through a monitoring regime with relevant substances, sampling methods, locations and frequency, and analysis and assessment methodologies. This regime is set out in the CAMP Principles (OSPAR reference number: 2001-7).

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,<br>γ-HCH,<br>$NH_4^+$, $NO_3^-$ | PCB 28,52,101,118,138,153,180<br>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,<br>γ-HCH,<br>PCB 28,52,101,118,138,153,180,<br>PAHs: Phenanthrene, anthracene, flouranthene, pyrene, benzo(*a*)anthracene, chrysene, benzo(*a*)pyrene, benzo(*ghi*)perylene, indeno(*1,2,3-cd*)pyrene,<br>NO |

[a]) total ammonium ($NH_3$ + $NH_4^+$) and total nitrate ($HNO_3$ +$NO_3^-$) 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 2004" gives in chapter 2 an overview of reported data and the implementation of the CAMP Principles in 2004. To this end, the geographical coverage, the contaminants covered which are subject to mandatory monitoring, and the timeliness of data submission are presented. In chapter 3, an overview is given of the 2004 annual average values of the components subject to mandatory monitoring for the North-East Atlantic. In chapter 4, temporal trends for the deposition of nitrogen to the Atlantic coastline and the North Sea in 2004 are shown. Chapter 5 discusses questions of detection limits, with lindane as an instance, and issues relating to data quality assurance. Chapter 6 summarises the report's observations on the reported CAMP data for 2004. The detailed data submitted by Contracting Parties are appended to this report (Appendix 1).

# 2. The OSPAR CAMP Monitoring Programme in 2004

## 2.1 Geographical coverage

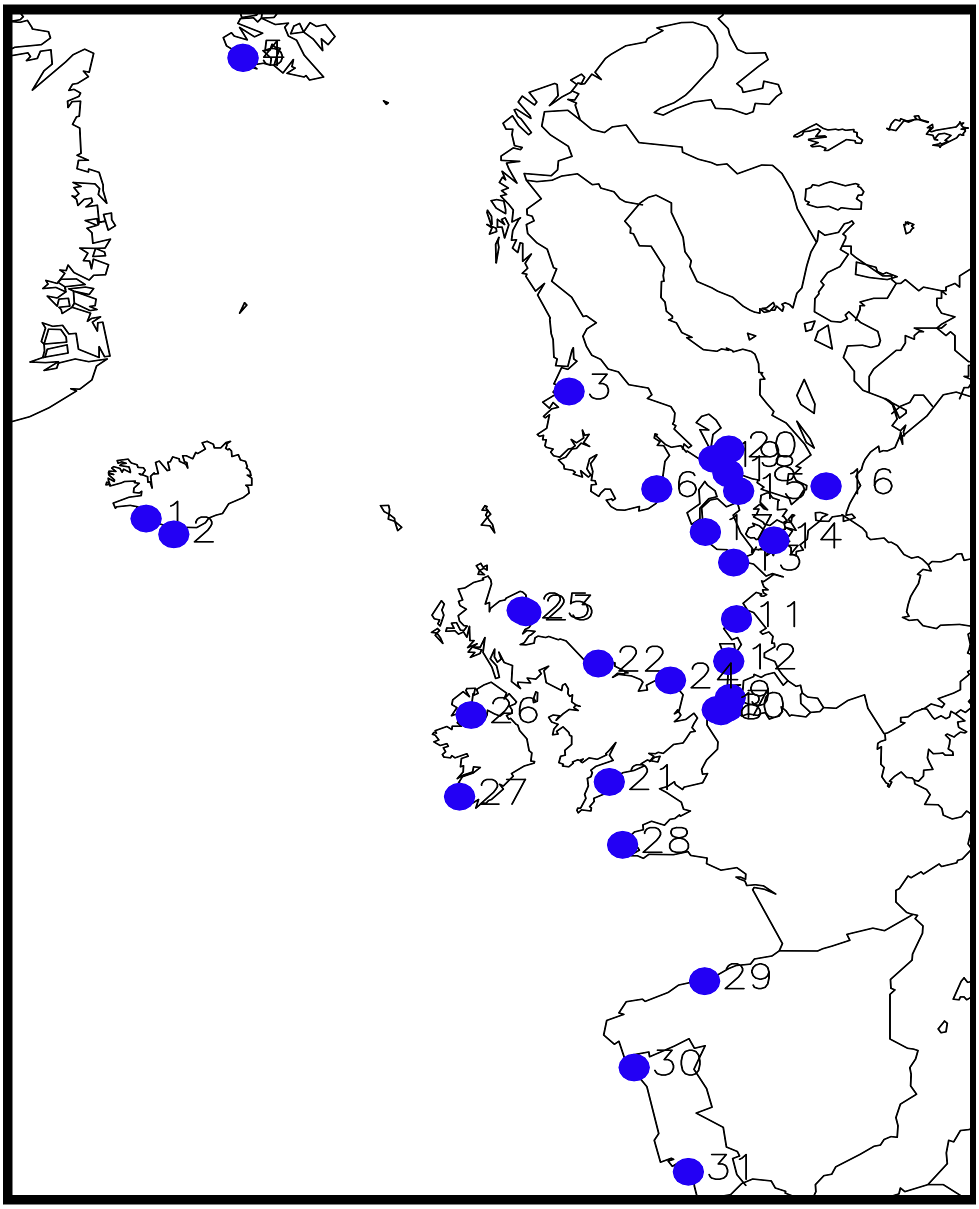


**Figure 2.1:** Monitoring sites reporting to OSPAR. Station numbers in table 2.1

Changes to the reporting network during 2004 were small but noteworthy. The end to reports from Turlough Hill in Ireland means no further observations around the Irish Sea. Resumption of reporting from Porspoder in France and Yarner Wood in the UK gives coverage of the western approaches. The Atlantic seaboard is better represented through observations from Lough Navar and Glen Dye. Halting reports from Lista is of no consequence given the proximity of Birkenes. In general, the geographical coverage of the reporting monitoring stations was improved in 2004 (Figure 2.1). Monitoring in the northern regions remains more 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 2004

| | Country | Station number | Station name | OSPAR Region | Lat. | Long. | Elev. (m) | Distance to sea (km) | Precip.(p) airborne(a) |
|---|---|---|---|---|---|---|---|---|---|
| 1 | **Iceland** | IS0090R | Irafoss | I | 64°08' N | 21°54' W | 52 | 1 | p |
| 2 | | IS0091R | Storhofdi | I | 63°24' N | 20°17' W | 118 | 0.5 | pa |
| 3 | **Norway** | NO0039R | Kaarvatn | I | 62°47' N | 8°53' E | 210 | 70 | pa |
| 4 | | NO0042R | Zepellinfjell | I | 78°54' N | 11°53' E | 474 | 2 | a |
| 5 | | NO0057R | Ny Aalesund | I | 78°55' N | 11°55' E | 8 | 0.3 | p |
| 6 | | NO0001R | Birkenes | II | 58°23' N | 8°15' E | 190 | 20 | pa |
| 7 | **Belgium** | BE0004R | Knokke | II | 51°21' N | 3°20' E | 0 | 1 | p |
| 8 | | BE0011R | Moerkerke | II | 51°01' N | 2°35' E | 0 | 9 | a |
| 9 | | BE0013R | Houtem | II | 51°15' N | 3°21' E | 10 | 12 | a |
| 10 | | BE0014R | Koksijde | II | 51°7' N | 2°30' E | 7 | 1.5 | p |
| 11 | **Netherlands** | NL0009R | Kollumerwaard | II | 53°20' N | 6°17' E | 1 | 7.5 | pa |
| 12 | | NL0091R | De Zilk | II | 52°18' N | 4°31' E | 4 | 2.5 | pa |
| 13 | **Germany** | DE0001R | Westerland | II | 54°56' N | 8°19' E | 12 | 0.09 | pa |
| 14 | **Denmark** | DK0005R | Keldsnor | II | 54°44' N | 10°44' E | 10 | | p |
| 15 | | DK0008R | Anholt | II | 56°43' N | 11°31' E | 40 | ~0.5 | pa |
| 16 | | DK0020R | Pedersker | II | 50°01' N | 14°57' E | 5 | | p |
| 17 | | DK0031R | Ulborg | II | 56°17' N | 8°26' E | 40 | 20 | pa |
| 18 | **Sweden** | SE0014R | Rao | II | 57°24' N | 11°55' E | 10 | 100 | pa |
| 19 | | SE0097R | Gaardsjoen | II | 58°03' N | 12°01' E | 113 | 12 | p |
| 20 | | SE0098R | Svartedalen | II | 57°59' N | 12°06' E | 120 | 16 | p |
| 21 | **United** | GB0013R | Yarner Wood | II | 50°36' N | 3°43 W | 119 | 16.9 | pa |
| 22 | **Kingdom** | GB0014R | High Muffles | II | 54°20' N | 0°48' W | 267 | 20.8 | pa |
| 23 | | GB0016R | Glen Dye | II | 56°58' N | 2°35' W | 185 | 23.4 | pa |
| 24 | | GB0091R | Banchory | II | 57°05' N | 2°32' W | 120 | 23.6 | pa |
| 25 | | GB0017R | Heigham Holmes | II | 52°43' N | 1°37' E | 0 | 4.4 | pa |
| 26 | | GB0006R | Lough Navar | III | 54°26' N | 7°54 W | 130 | 18.8 | pa |
| 27 | **Ireland** | IE0001R | Valentia Island | III | 51°56' N | 10°15' W | 9 | 0 | p |
| 28 | **France** | FR0090R | Porspoder | II/IV | 48°30' N | 4°46' W | 30 | 0.5 | p |
| 29 | **Spain** | ES0008R | Niembro | IV | 43°27'N | 4°51' W | 134 | | p |
| 30 | **Portugal** | PT0003R | Viana do Castelo | IV | 41°42' N | 8°48' W | 16 | 4 | p |
| 31 | | PT0004R | Monte Velho | IV | 38°05' N | 8°48' W | 43 | 1.5 | p |
| 32 | | 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) seeks to provide coordinated geographical ground truth data on atmospheric pollution of OSPAR waters. Full compliance with all mandatory requirements under OSPAR the Contracting Parties. These four were the only Contracting Parties completing the mandatory programme for components in precipitation (down from 6 in 2003). One Contracting Party, Belgium, reported less than half of the mandatory components for precipitation (Table 2.2) due to station closure after technical problems. The least reported contaminants are mercury (6 reporting, unchanged from 2003) and lindane (6 reporting, unchanged from 2003). For air concentrations (Table 2.3), the mandatory programme was completed by seven Parties – Denmark, Spain and the United Kingdom in addition to the four completing the full programme. One quarter (3 Contracting Parties) chose not to report any mandatory air components, namely France, Ireland and Portugal (as in 2003). From combined numbers of Contracting Parties and pollutants, monitoring rose from 78% in 2003 to >83% in 2004.

**Table 2.2:** Mandatory monitoring of contaminants in precipitation for 2004*

| | **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 2004*

| | NO2 | NO3 | NHx |
|---|---|---|---|
| Belgium | • | | |
| Denmark | • | • | • |
| France | | | |
| Germany | • | • | • |
| Iceland | | • | |
| Ireland | | | |
| Netherlands | • | • | • |
| Norway | • | • | • |
| Portugal | | | |
| Spain | • | • | • |
| Sweden | • | • | • |
| United Kingdom | • | • | • |

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

## 2.3 Timeliness of reporting

The reporting of data for observations for the year 2004 was almost entirely in accordance with the time schedule of the CAMP Principles (see Table 2.4). Ten of twelve Contracting Parties reported according to schedule with two doing so in time for the data validation round. As such, data reporting functioned notably better than it had the previous year. Table 2.5 gives an overview of the actual receipt of national observation reports.

**Table 2.4:** Timetable for data reporting according to the CAMP Principles

| | |
|---|---|
| 30th 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). |
| 30th September | Participants submit data and metadata via email or on diskette, in specified formats. |
| 31st 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 2.5:** History of reporting of 2004 observations

| Contracting Party | Data delivered* |
|---|---|
| | |
| **June 30 -Deadline for data request issue by NILU** | |
| Denmark | √ |
| France | √ |
| Iceland | √ |
| Ireland | √ |
| France | √ |
| Netherlands | √ |
| Norway | √ |
| Portugal | √ |
| Spain | √ |
| Sweden | √ |
| United Kingdom | √ |
| **September 30 - Deadline for receipt of data** | |
| Belgium<br>Germany | √<br>√ |
| **October 31 - Deadline for Validation Report issued by NILU** | |
| **December 3 - Reporting to INPUT by NILU** | |
| **January 2006 – INPUT, London** | |
| **April 2006 – Final Report delivery** | |

Not all data was provided at the time of the first delivery shown above. Some Contracting Parties delivered all their intended observation data at the time indicated, whilst others supplemented their first delivery at later dates. Observation data or corrections were delivered by the Netherlands, Spain, Sweden, the United Kingdom and Belgium after INPUT, the latest data from this group being supplied on 16 March 2006.

## 2.4 Reporting of additional components

Contracting Parties report a wider range of components of interest to themselves than is covered by CAMP as mandatory or voluntary components. This data is managed and stored by the Data Manager in the same way as for the regular data. In order to give an overview of what this body of information includes, Table 2.6 lists all components reported by Contracting Parties during 2004 (excluding major ions submitted for quality control only). These are colour-coded to indicate their status as mandatory components (green), voluntary components (blue) or additional components (red). Information as to which Contracting Party submits which components, and as to whether it is monitored in precipitation or as an airborne component is contained in the country-wise listing of data in the Appendix.

**Table 2.6:** All components reported by Contracting Parties in 2004

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| acenaphthene | Additional | cyclopenta_cd_pyrene | Additional | nitrogen_monoxide | Mandatory | PCB_183 | Additional |
| acenaphthylene | Additional | dibenzo_ac_ah_anthracenes | Additional | op_DDD | Additional | PCB_187 | Additional |
| aldrin | Additional | dibenzo_ae_pyrene | Additional | op_DDE | Additional | PCB_189 | Additional |
| alpha_HCH | Additional | dibenzo_ah_anthracene | Additional | op_DDT | Additional | PCB_194 | Additional |
| aluminium | Additional | dibenzo_ah_pyrene | Additional | organic_carbon | Additional | PCB_206 | Additional |
| ammonia | Mandatory | dibenzo_ai_pyrene | Additional | ozone | Additional | PCB_209 | Additional |
| ammonium | Mandatory | dibenzofuran | Additional | PCB_18 | Additional | perylene | Additional |
| anthanthrene | Additional | dibenzothiophene | Additional | PCB_28 | Voluntary | phenanthrene | Additional |
| anthracene | Voluntary | dieldrin | Additional | PCB_31 | Additional | pm10_mass | Additional |
| arsenic | Mandatory | elementary_carbon | Additional | PCB_33 | Additional | pm25_mass | Additional |
| benz_a_anthracene | Voluntary | endrin | Additional | PCB_37 | Additional | pp_DDD | Additional |
| benzo_a_fluoranthene | Additional | fluoranthene | Voluntary | PCB_47 | Additional | pp_DDE | Additional |
| benzo_a_fluorene | Additional | fluorene | Additional | PCB_52 | Voluntary | pp_DDT | Additional |
| benzo_a_pyrene | Voluntary | gamma_HCH | Mandatory | PCB_66 | Additional | pyrene | Voluntary |
| benzo_b_flouranthene | Additional | HCB | Additional | PCB_74 | Additional | retene | Additional |
| benzo_b_fluorene | Additional | heptachlor | Additional | PCB_99 | Additional | sulphur_dioxide | Additional |
| benzo_bjk_fluoranthenes | Additional | inden_123cd_pyrene | Voluntary | PCB_101 | Voluntary | sum_ammonia_and_ammonium | Mandatory |
| benzo_e_pyrene | Additional | iron | Additional | PCB_105 | Additional | sum_DDT | Additional |
| benzo_ghi_fluoranthene | Additional | lead | Mandatory | PCB_114 | Additional | sum_nitric_acid_and_nitrate | Mandatory |
| benzo_ghi_perylene | Voluntary | manganese | Additional | PCB_118 | Voluntary | sum_PCB | Additional |
| benzo_k_fluoranthene | Additional | mercury | Mandatory | PCB_122 | Additional | susp_part_matter | Additional |
| beta_HCH | Additional | N1methylnaphtalene | Additional | PCB_123 | Additional | total_carbon | Additional |
| biphenyl | Additional | N1methylphenanthrene | Additional | PCB_128 | Additional | trans_CD | Additional |
| cadmium | Mandatory | N2methylanthracene | Additional | PCB_138 | Voluntary | trans_NO | Additional |
| chromium | Mandatory | N2methylphenanthrene | Additional | PCB_141 | Additional | txph_26 | Additional |
| chrysene | Voluntary | N3methylphenanthrene | Additional | PCB_149 | Additional | txph_50 | Additional |
| chrysene_thriphenylene | Additional | N9methylphenanthrene | Additional | PCB_153 | Voluntary | txph_62 | Additional |
| cis_CD | Additional | naphtalene | Additional | PCB_156 | Additional | txph-26 | Additional |
| cis_NO | Additional | nickel | Mandatory | PCB_157 | Additional | txph-50 | Additional |
| cobalt | Additional | nitrate | Mandatory | PCB_167 | Additional | txph-62 | Additional |
| copper | Mandatory | nitric_acid | Mandatory | PCB_170 | Additional | vanadium | Additional |
| coronene | Additional | nitrogen_dioxide | Mandatory | PCB_180 | Voluntary | zinc | Mandatory |

CAMP status: (green) Mandatory; (blue) Voluntary; (red) Additional

# 3. Observed pollutant depositions at monitoring stations in 2004

This section gives an overview of atmospheric conditions at coastal stations around the North-East Atlantic in 2004. It lists and displays the annual average values of the concentrations of contaminants subject to mandatory monitoring, and their deposition at those stations. Estimates of sea surface deposition, itself derived from these station observations, are supplied in section 4.

For heavy metals, the concentrations in precipitation measured in 2004 are presented in Table 3.1; the corresponding estimated depositions and their distribution are listed in Table 3.2 and illustrated in Figures 3.1-3.7. Reported concentrations of mercury in precipitation and their estimated depositions are given separately in Table 3.3, the distribution of deposition illustrated in Figure 3.8. Concentrations and deposition distribution patterns for lindane are given in Table 3.4 and Figure 3.9 respectively. Similarly, for nitrogen the concentrations in precipitation and the estimated depositions are set out in Table 3.5, with the distribution of the depositions presented in Figures 3.10 and 3.11. The deposition rates were calculated in accordance with the CAMP Principles and their interpretation of detection limits. This means that for data flagged as '780' (observation below detection limit, value is best estimate) the reported value was employed; for data flagged as '781' (observation below detection limit, value is detection limit), a value of half the detection limit was used.

## 3.1 Heavy metals (except mercury)

**Table 3.1:** Reported mean annual concentrations of heavy metals in precipitation (mg/l). Precipitation-weighted values; precipitation amounts in mm.

| Concentrations | | As µg/l | Cd µg/l | Cr µg/l | Cu µg/l | Pb µg/l | Ni µg/l | Zn µg/l | *prec mm* |
|---|---|---|---|---|---|---|---|---|---|
| **Belgium** | *BE0004R* | ● | ● | ● | ● | ● | ● | ● | |
| **Germany** | *DE0001R* | 0,10 | 0,02 | 0,12 | 0,52 | 0,78 | 0,30 | 5,29 | *722,5* |
| **Denmark** | *DK0008R* | 0,32 | 0,18 | 0,28 | 1,54 | 1,24 | 0,55 | 12,60 | *597,2* |
| | *DK0020R* | 0,20 | 0,26 | 0,23 | 2,59 | 1,29 | 0,52 | 15,07 | *422,2* |
| | *DK0031R* | 0,17 | 0,12 | 0,18 | 3,75 | 0,75 | 0,50 | 7,13 | *1016,1* |
| **France** | *FR0005R* | 0,28 | 0,02 | 0,17 | 0,79 | 0,57 | 0,55 | 7,20 | *1059,0* |
| **Ireland** | *IE0001R* | 0,50 | 0,06 | 0,55 | 8,74 | 1,27 | 2,45 | 31,77 | *1367,0* |
| **Iceland** | *IS0090R* | 0,18 | 0,01 | 0,24 | 1,61 | 0,38 | 0,55 | 7,13 | *970,8* |
| | *IS0091R* | | 0,01 | 0,34 | 1,37 | 0,38 | 0,33 | 11,86 | *1607,1* |
| **Netherlands** | *NL0009R* | 0,11 | 0,05 | 0,26 | 1,04 | 1,24 | 0,24 | 4,99 | *662,3* |
| | *NL0091R* | 0,08 | 0,03 | 0,26 | 1,76 | 2,33 | 0,31 | 5,54 | *747,7* |
| **Norway** | *NO0001R* | 0,12 | 0,04 | 0,11 | 0,35 | 1,30 | 0,21 | 4,12 | *1712,0* |
| **Portugal** | *PT0003R* | ● | 0,43 | ● | 7,49 | 1,85 | 1,28 | 9,79 | *2228,9* |
| | *PT0004R* | | 0,43 | | 0,58 | 3,44 | 1,32 | 8,73 | *317,3* |
| | *PT0010R* | | 0,43 | | 0,33 | 0,68 | 6,97 | 24,51 | *379,2* |
| **Spain** | *ES0008R* | 0,74 | 0,16 | 30,05 | 21,81 | 3,54 | 50,71 | 136,03 | *1105,10* |
| **Sweden** | *SE0097R* | 0,08 | 0,03 | 0,14 | 0,57 | 0,91 | 0,32 | 4,33 | *1091,0* |
| **UK** | *GB0006R* | 0,24 | 0,01 | 0,11 | 0,43 | 0,29 | 0,06 | 2,43 | *1641,3* |
| | *GB0013R* | 0,09 | 0,08 | 0,07 | 0,50 | 0,66 | 0,24 | 5,11 | *1268,2* |
| | *GB0017R* | 0,14 | 0,04 | 0,08 | 1,12 | 1,59 | 0,27 | 5,99 | *751,7* |
| | *GB0091R* | | 0,03 | 0,10 | 1,20 | 1,11 | 0,38 | 5,68 | *780,8* |

● *no data reported*

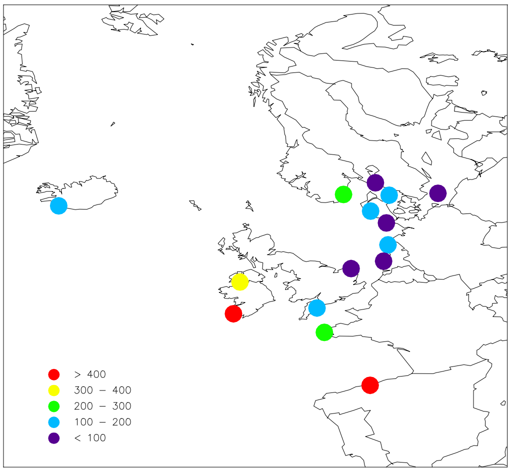


**Figure 3.1:** Arsenic depositions 2004, µg/m$^2$

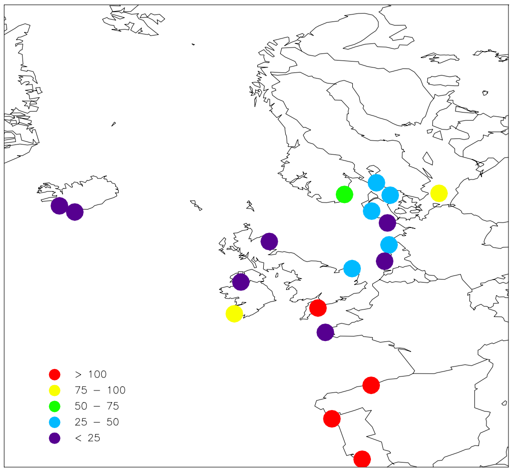


**Figure 3.2:** Cadmium depositions 2004, µg/m$^2$

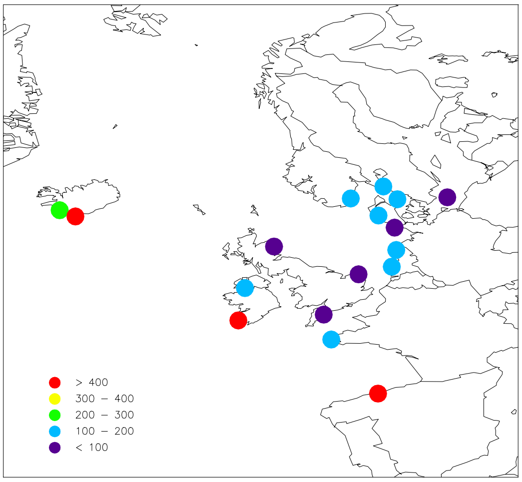


**Figure 3.3:** Chromium depositions 2004, µg/m$^2$

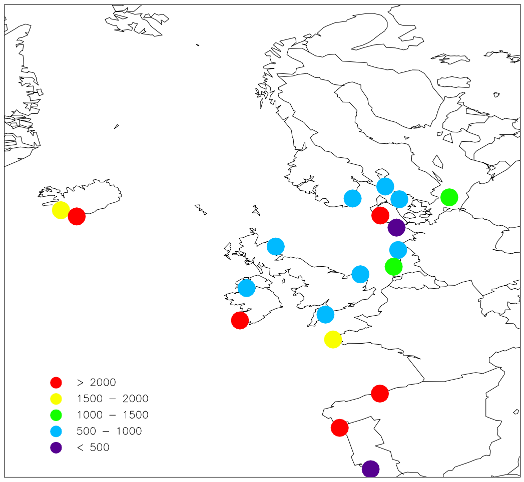


**Figure 3.4:** Copper depositions 2004, µg/m$^2$

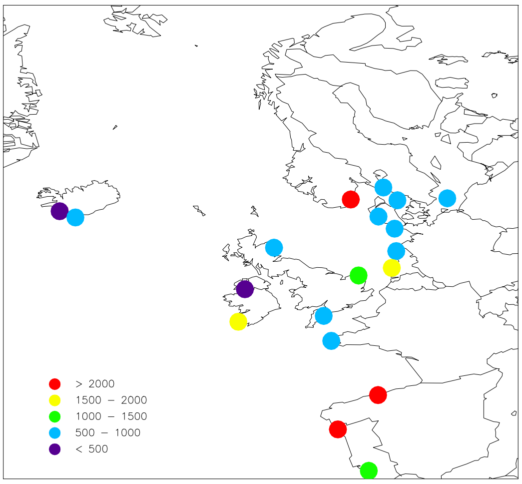


**Figure 3.5** : Lead depositions 2004, µg/m$^2$

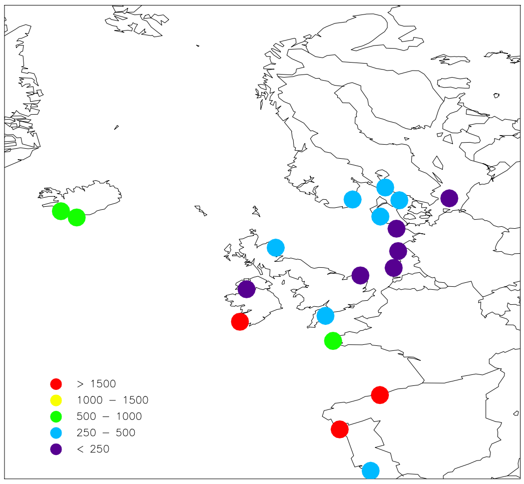


**Figure 3.6:** Nickel depositions 2004, µg/m$^2$

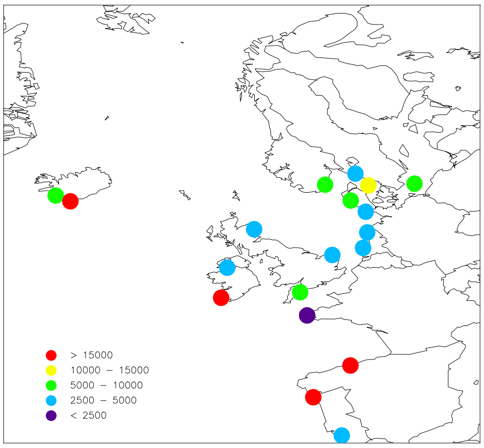


**Figure 3.7:** Zinc depositions 2004, µg/m$^2$

**Table 3.2:** Reported mean annual depositions of heavy metals in precipitation (mg/m$^2$/a). These are precipitation-weighted values; precipitation amounts are given in mm

| **Depositions** | | **As** µg/m$^2$ p.a. | **Cd** µg/m$^2$ p.a. | **Cr** µg/m$^2$ p.a. | **Cu** µg/m$^2$ p.a. | **Pb** µg/m$^2$ p.a. | **Ni** µg/m$^2$ p.a. | **Zn** µg/m$^2$ p.a. | ***prec*** *mm* |
|---|---|---|---|---|---|---|---|---|---|
| **Belgium** | *BE0004R* | ● | ● | ● | ● | ● | ● | ● | |
| **Germany** | *DE0001R* | 73 | 17 | 89 | 379 | 565 | 218 | 3820 | *722,5* |
| **Denmark** | *DK0008R* | 190 | 105 | 166 | 917 | 741 | 331 | 7524 | *597,2* |
| | *DK0020R* | 86 | 108 | 95 | 1092 | 545 | 220 | 6364 | *422,2* |
| | *DK0031R* | 176 | 120 | 181 | 3810 | 757 | 508 | 7249 | *1016,1* |
| **France** | *FR0005R* | 294 | 23 | 182 | 838 | 603 | 580 | 7623 | *1059,0* |
| **Ireland** | *IE0001R* | 684 | 86 | 758 | 11949 | 1732 | 3352 | 43434 | *1367,0* |
| **Iceland** | *IS0090R* | 176 | 9 | 236 | 1564 | 372 | 532 | 6922 | *970,8* |
| | *IS0091R* | | 17 | 540 | 2208 | 603 | 537 | 19053 | *1607,1* |
| **Netherlands** | *NL0009R* | 74 | 32 | 172 | 687 | 824 | 160 | 3303 | *662,3* |
| | *NL0091R* | 61 | 22 | 194 | 1319 | 1740 | 228 | 4145 | *747,7* |
| **Norway** | *NO0001R* | 212 | 68 | 188 | 596 | 2231 | 358 | 7050 | *1712,0* |
| **Portugal** | *PT0003R* | ● | 950 | ● | 16694 | 4123 | 2853 | 21821 | *1861,9* |
| | *PT0004R* | | 135 | | 184 | 1092 | 419 | 2770 | *179,0* |
| | *PT0010R* | | 161 | | 125 | 258 | 2643 | 9294 | *179,0* |
| **Spain** | *ES0008R* | 817 | 175 | 33214 | 24105 | 3910 | 56040 | 150324 | *1132,4* |
| **Sweden** | *SE0097R* | 84 | 35 | 151 | 627 | 988 | 344 | 4727 | *1091,0* |
| **UK** | *GB0006R* | 396 | 20 | 185 | 702 | 483 | 97 | 3991 | *1641,3* |
| | *GB0013R* | 117 | 103 | 94 | 634 | 832 | 302 | 6478 | *1268,2* |
| | *GB0017R* | 102 | 31 | 62 | 843 | 1197 | 203 | 4504 | *751,7* |
| | *GB0091R* | | 21 | 75 | 936 | 869 | 295 | 4434 | *780,8* |

● *no data reported*

## 3.2 Mercury

**Table 3.3:** Ranked reported depositions of mercury in precipitation (ng/m$^2$) together with associated concentrations (ng/l), 2004

| | | concentration | precipitation | deposition |
|---|---|---|---|---|
| | | ng/l | mm | ng/m$^2$ p.a. |
| **Ireland** | *IE0001R* | 50,00 | *1367,0* | 68350 |
| **Norway** | *NO0001R* | 9,85 | *1432,1* | 14103 |
| **Netherlands** | *NL0009R* | 15,17 | *683,1* | 10362 |
| **Sweden** | *SE0014R* | 14,65 | *553,9* | 8114 |
| **Germany** | *DE0001R* | 8,07 | *699,3* | 5644 |
| **Belgium** | *BE0014R* | 0,04 | *767,0* | 28 |
| **Denmark** | | ● | | |
| **France** | | ● | | |
| **Iceland** | | ● | | |
| **Portugal** | | ● | | |
| **Spain** | | ● | | |
| **UK** | | ● | | |

● no data reported

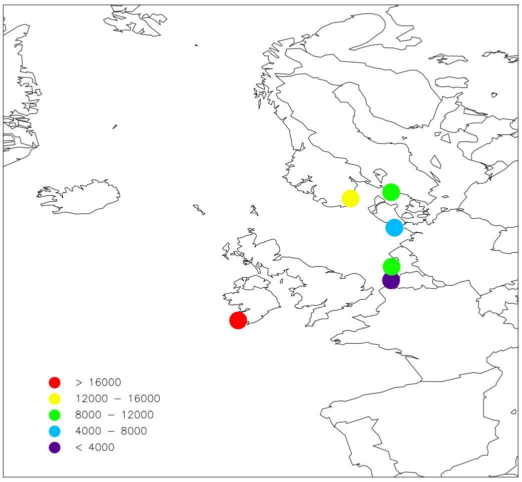


**Figure 3.8:** Mercury depositions 2004, ng/m$^2$

With so few observations, conclusions must be limited. The broad comparison in observed concentrations and depositions between Norway, the Netherlands, Sweden and Germany provides some reassurance as to the quality of these measurements. Reported concentrations for western Ireland would appear to reflect analytical limitations, whilst the very low reports from Belgium would benefit from further clarification.

## 3.3 Lindane

**Table 3.4:** Reported annual concentrations of γ-HCH in precipitation (precipitation-weighted) and its deposition (ng/m$^2$) – in decreasing order of deposition quantity

| | | concentration | precipitation | deposition |
|---|---|---|---|---|
| | | ng/l | mm | ng/m$^2$ p.a. |
| **Netherlands** | *NL0009R* | 5,37 | *905,6* | 4861 |
| **Belgium** | *BE0014R* | 4,02 | *767,0* | 3083 |
| **Germany** | *DE0001R* | 1,70 | *554,4* | 943 |
| **Norway** | *NO0001R* | 0,87 | *971,8* | 845 |
| **Sweden*** | *SE0014R* | | | 299 |
| **Iceland** | *IS0091R* | 0,06 | *705,0* | 39 |
| **Denmark** | | ● | | |
| **France** | | ● | | |
| **Ireland** | | ● | | |
| **Portugal** | | ● | | |
| **Spain** | | ● | | |
| **UK** | | ● | | |

● *no data reported*
* *Sweden measures combined wet + dry deposition total*

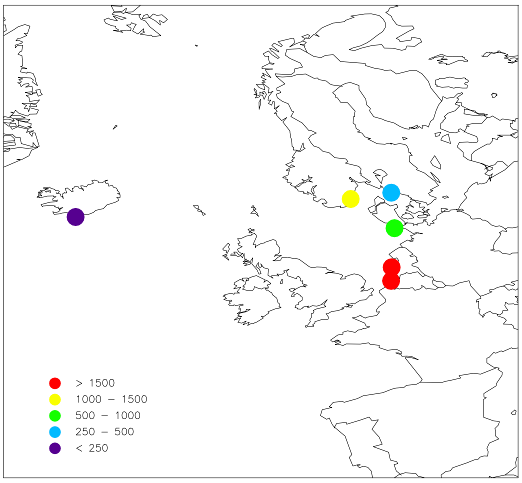


**Figure 3.9:** Lindane depositions 2004 ng/m$^2$

There is a broad coherence in values from Iceland, Norway, Sweden and Germany. An evaluation of lindane observations, including the apparent high values reported by the Netherlands and Belgium is given in section 5.2.

## 3.4 Nitrogen

**Table 3.5:** Reported mean annual concentrations (mg/l) and precipitation-weighted depositions (mg/m$^2$) of nitrogen in precipitation, 2004

| | | ammonium | nitrate | precipitation | ammonium | nitrate |
|---|---|---|---|---|---|---|
| | | mg/l | mg/l | mm | mg/m$^2$ p.a. | mg/m$^2$ p.a. |
| **Belgium** | *BE0014R* | 0,62 | 0,45 | *627,8* | 387 | 283 |
| **Germany** | *DE0001R* | 0,41 | 0,45 | *698,6* | 289 | 313 |
| **Denmark** | *DK0005R* | 0,56 | 0,48 | *615,6* | 344 | 293 |
| | *DK0008R* | 0,42 | 0,47 | *598,6* | 248 | 280 |
| | *DK0020R* | 0,95 | 0,61 | *422,2* | 426 | 244 |
| **Iceland** | *IS0090R* | 0,30 | 0,13 | *970,8* | 287 | 127 |
| | *IS0091R* | 0,08 | 0,27 | *1607,1* | 136 | 429 |
| **Ireland** | *IE0001R* | 0,17 | 0,11 | *1367,0* | 234 | 145 |
| **Netherlands** | *NL0009R* | 0,60 | 0,38 | *734,3* | 476 | 280 |
| | *NL0091R* | 0,50 | 0,43 | *747,7* | 362 | 322 |
| **Norway** | *NO0001R* | 0,33 | 0,36 | *1700,5* | 567 | 617 |
| | *NO0039R* | 0,07 | 0,04 | *2001,1* | 130 | 75 |
| | *NO0057R* | 0,10 | 0,12 | *254,8* | 25 | 30 |
| **Portugal** | *PT0003R* | 0,05 | 0,09 | *2233,0* | 120 | 193 |
| | *PT0004R* | 0,21 | 0,18 | *357,0* | 77 | 66 |
| | *PT0010R* | 0,03 | 0,16 | *643,7* | 17 | 105 |
| **Spain** | *ES0008R* | 0,54 | 1,54 | *662,4* | 352 | 1019 |
| **Sweden** | *SE0014R* | 0,46 | 0,44 | *726,6* | 331 | 319 |
| | *SE0098R* | 0,36 | 0,42 | *1094,0* | 394 | 463 |
| **UK** | *GB0006R* | 0,17 | 0,10 | *1300,6* | 234 | 124 |
| | *GB0013R* | 1,75 | 0,26 | *954,0* | 278 | 252 |
| | *GB0014R* | 0,51 | 0,44 | *719,5* | 410 | 318 |
| | *GB0016R* | 0,45 | 0,59 | *816,4* | 312 | 480 |

● *no data reported*

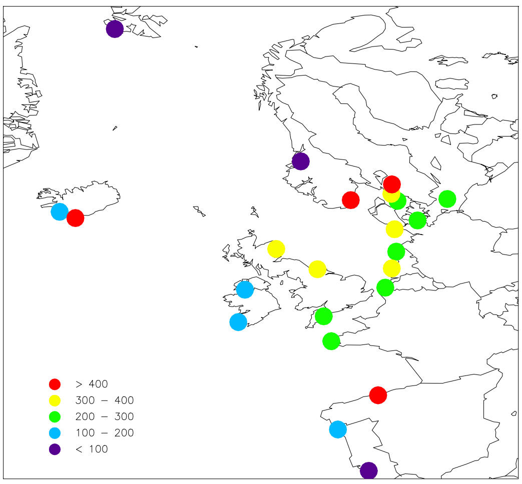


**Figure 3.10:** Nitrate depositions, mg N /m$^2$

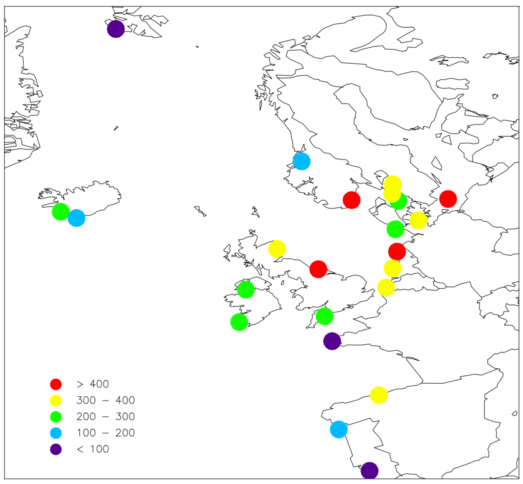


**Figure 3.11:** Ammonium depositions, mg N /m$^2$

# 4. Estimated total North Sea depositions and temporal patterns

## 4.1 Total North Sea depositions

OSPAR has previously accepted to estimate pollutant loadings to the North Sea on the basis of its known relationships with observed pollutant concentrations at the monitoring stations of the CAMP. This approach, known as 'Method 3a', developed by the Netherlands, applies transfer coefficients to the pollutant measurements themselves made by Contracting Parties as the central basis to estimating total wet plus dry basin deposition*, rather than utilising measurements as a point of comparison with calculations. 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 well suited to estimating change. In this section both the absolute estimates of deposition in 2004 of nitrogen and metal components on the mandatory list for precipitation, and the proportional change since 2000 are presented. Observations suggest a clear decrease in depositions over the period. Caution should be exercised, however, with these first estimates. Any two years may show distinct variations which can mislead. Application of the approach over an extended time series would provide a clearer picture.

**Table 4.1:** Estimated annual depositions in 2004, derived from measurements ('Method 3a')

| | Arsenic | Cadmium | Chromium | Copper | Nickel | Lead | Zinc | $NO_3$ | $NH_4$ | total N |
|---|---|---|---|---|---|---|---|---|---|---|
| 2004 | 28 | 9 | 34 | 312 | 85 | 357 | 1373 | 121 | 119 | 240 |
| *as % of 2000* | *49* | *56* | *49* | *87* | *70* | *64* | *41* | *81* | *67* | *74* |

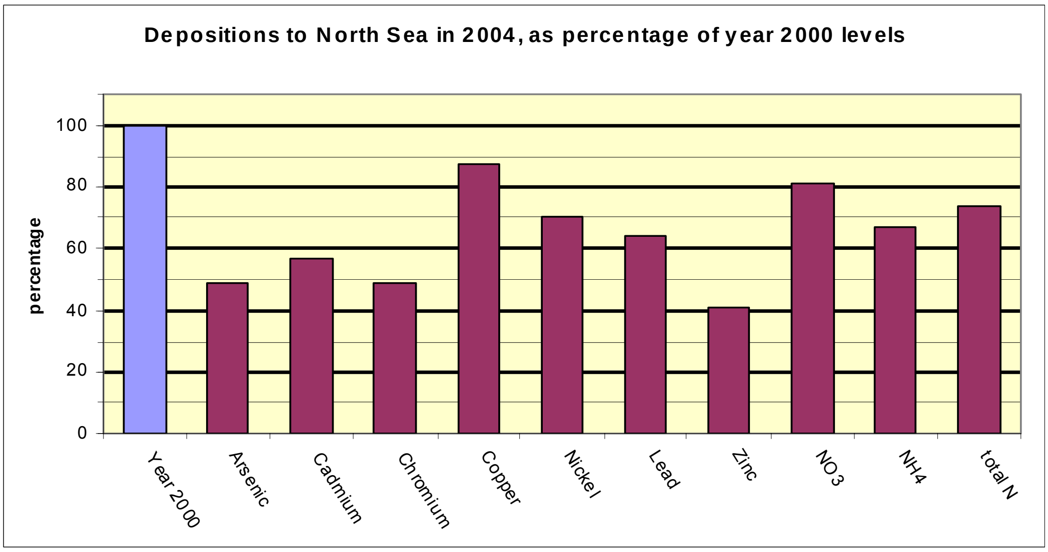


**Figure 4.1:** Estimated deposition change in 2000-2004, derived from measurements ('Method 3a')

* 'Method 3a' combines dry and wet deposition for metals. Wet deposition alone is expressed for nitrogen.

## 4.2 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.

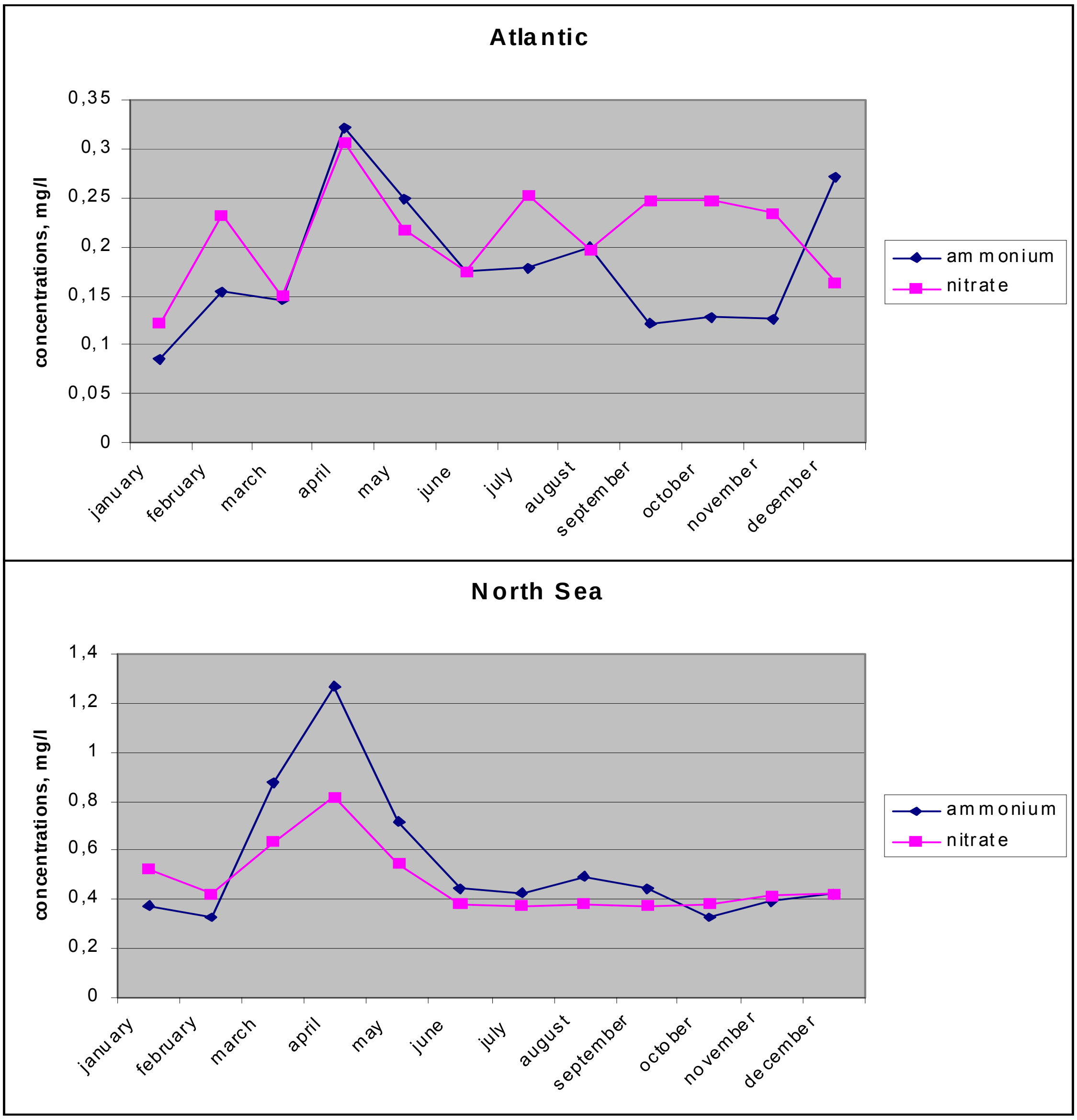


**Figure 4.2:** Seasonal pattern in precipitation nitrogen to the North Sea coast in 2004

## 4.3 Temporal patterns in pesticides and persistent organic pollutants

INPUT 2006 requested the presentation of temporal tendencies in lindane and additionally reported organic components such as PCBs and pesticides.

Lindane (γ-HCH) is the most widely monitored organochlorine pesticide under the CAMP, although not reported by all Contracting Parties despite its mandatory status. Since 1999, no European country has formally permitted its use. Observations, however, suggest that use has continued but has declined consistent with gradual exhaustion of stockpiles. Figure 4.3 shows the decline between 2000 and 2004. The suggestion of greater deposition in the southern North Sea (closer to mainland Europe), is revisited in section 5.2.

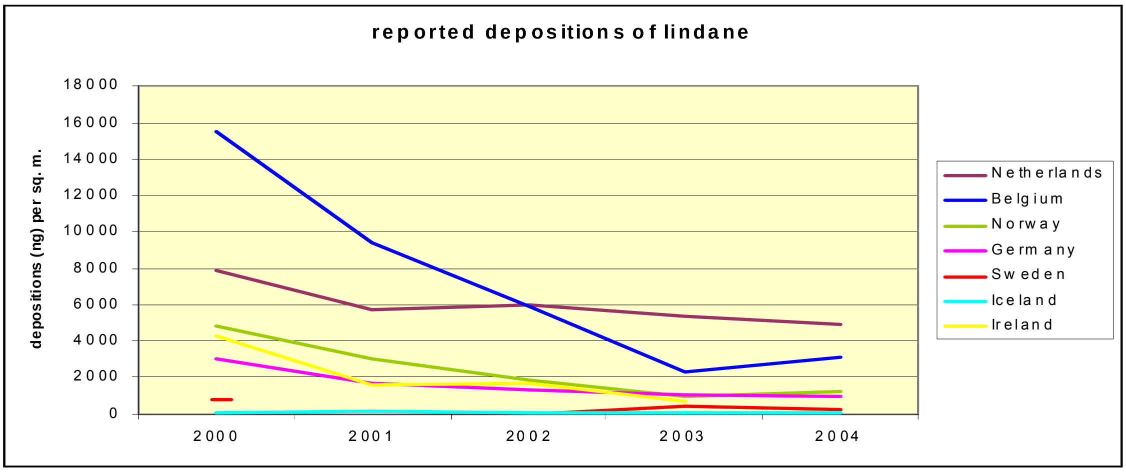


**Figure 4.3:** Depositions of organochlorine pesticide lindane (ng/m2/month) in 2000-2004. Deposition in precipitation, except Sweden, which is combined wet and dry deposition.

Dieldrin is a pesticide which has been the focus of past attention, although it has not been included under the CAMP as either a mandatory or voluntary component. Germany, Iceland, Ireland, and Belgium have nevertheless reported observations across the OSPAR maritime area over a period of time. Figure 4.4 displays these results. The decline in concentrations reported by Ireland suggests now uniformly low levels across the region. Such a rapid change may have been related to methodological changes. The Belgian concentrations are all reported as being lower than the detectable limit. However, it is to be noted that Icelandic observations are an order of magnitude smaller, with 95% of those observations above detectable limits.

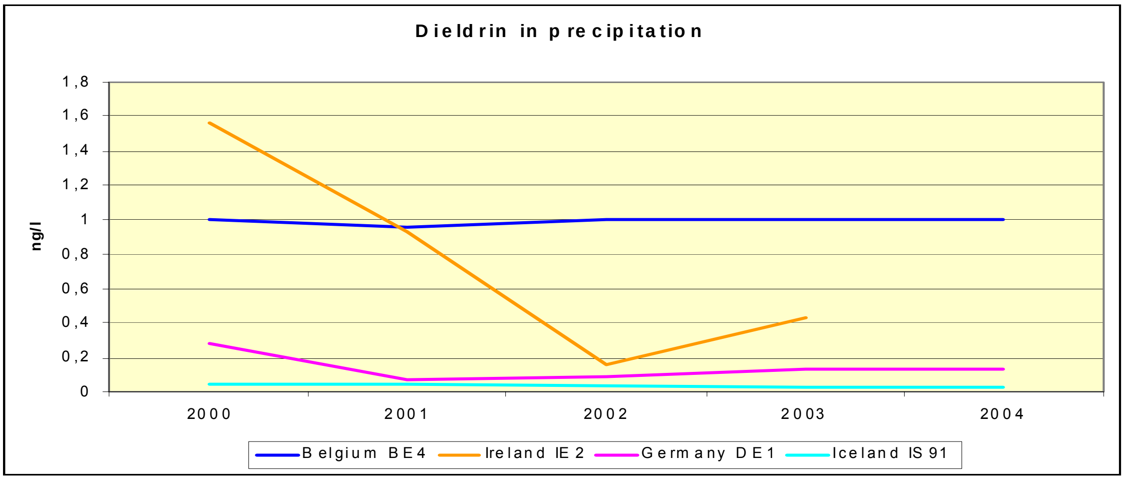


**Figure 4.4:** Concentrations of dieldrin in precipitation (ng/l) reported under the CAMP

Another pesticide which has received considerable attention in the past, and which a number of Contracting Parties have chosen to monitor and report over several years, is DDT. This substance has been prohibited in Europe for an extended period, such that it would be expected that observations now indicate the background level to which the North Sea is subject. Indeed, as seen in Figure 4.5, the background level does appear to be fairly constant. However, the data also indicates the difficulties which the CAMP is contending with in terms of data quality. The scale for deposition rates is logarithmic, such that the highest values reported are approximately 1000x greater than the lowest. Such a gradient would only be expected where the high reporting site is in the vicinity of current use. Without use, the long life time of DDT in the atmosphere would create low to non-existent gradients. Suspicion over the higher reported values is heightened when it is understood that all higher values are reported as being below detection limits, whilst the lower values reported are not.

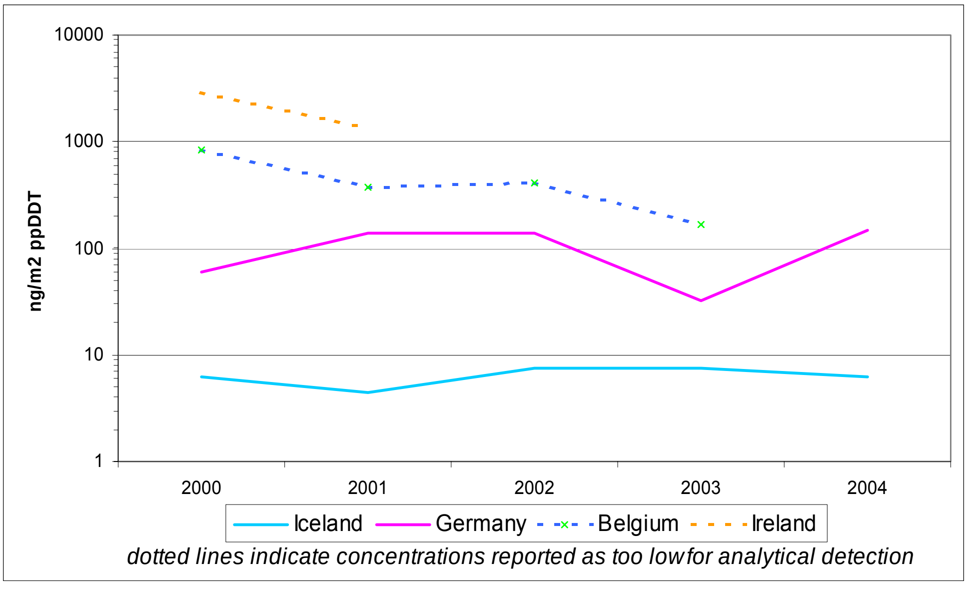


**Figure 4.5:** Deposition of DDT in precipitation (ng/ $m^2$/a) reported under the CAMP

Of the persistent organic pollutants, i.e. those not rapidly degrading, PCBs are amongst the most well known. Their observation is a voluntary activity under the CAMP, and is undertaken by Germany, Sweden, the United Kingdom, Iceland and Norway. In the following figures the observed concentrations in precipitation and in air are presented for three example congeners.

A degree of variability in the observations makes it difficult to draw conclusions as to the state of the environment with regard to PCBs. The time series suggest a degree of uncertainty in data from the beginning of the period. Stations reported sharp changes in concentrations in consecutive years, either from low to high concentrations (e.g. Germany) or from high to low (e.g. Ireland). The reasons for this may include such factors as method changes, especially when step-changes are seen in measured concentrations across congeners, as occurs with Germany. Such matters are not something which can readily be evaluated without specific investigation in collaboration with respective Contracting Parties. The natural hope is that improvement with time heightens the reliability of data. The degree of coincidence in observed concentrations across countries for 2004 would indeed point in this direction.

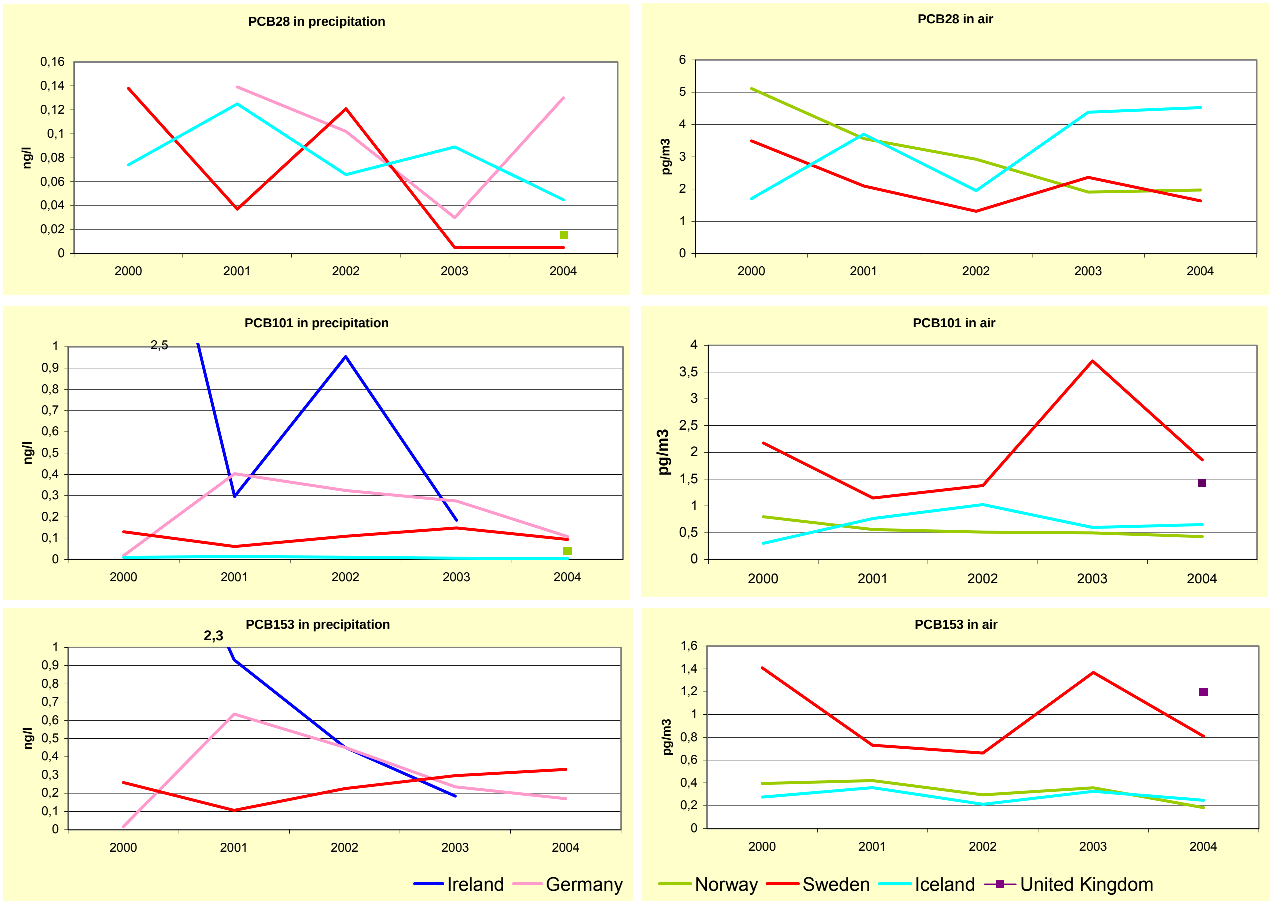


**Figure 4.6:** Observed concentrations of PCB28, PCB101 and PCB153

The CAMP also lists a number of polycyclic aromatic hydrocarbons (PAHs) for voluntary monitoring. These are sparsely monitored, such that the opportunity for intercomparison is restricted. One which offers some scope is airborne anthracene, a persistent pollutant, i.e. one which does not readily degrade. Airborne concentrations, appear to be relatively unchanging during the five years to 2004. There is good comparison between observations from the north and south of the OSPAR maritime area, suggesting the broad scale regional nature to this pollutant. Values for the Baltic are given for the sake of comparison.

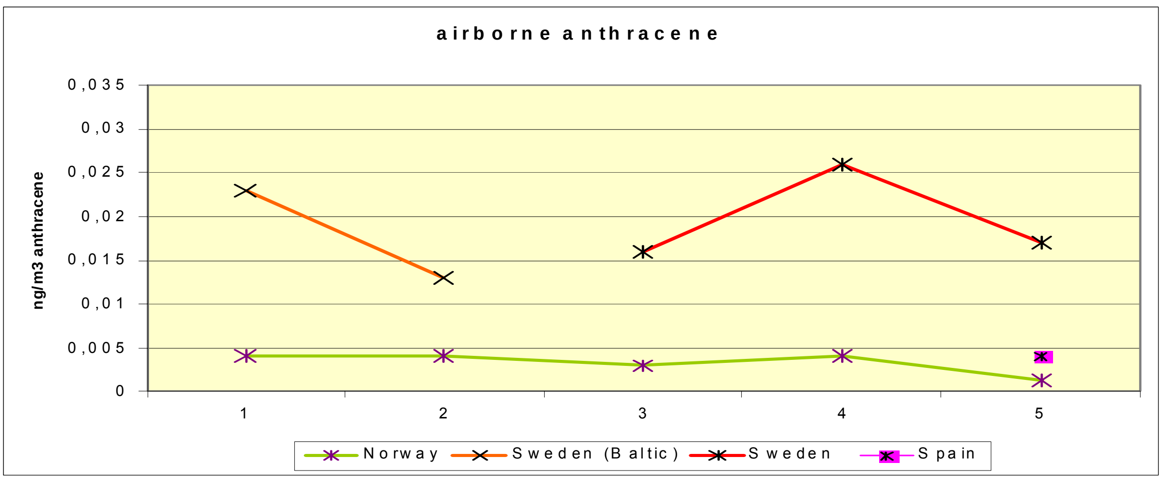


**Figure 4.7:** Airborne concentrations (ng/m3) of the PAH anthracene

# 5. Data uncertainty

## 5.1 Limits of detection for mandatory precipitation components

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 2005 data report, a first overview of the current state of play is provided here.

At present, Contracting Parties do not formally report limits of detection or limits of quantification under the CAMP. The information available is indirect: all submitted observations should be flagged, so that samples are highlighted for which analysed concentrations proved to be below the limit of detection. The comparison of this information may give some indication of the actual performance of countries when conducting the CAMP. However, as pollutant levels vary across the OSPAR maritime area, the playing field is not level, and interpretation of such information is not straightforward.

Table 5.1 provides a summary of this data for the mandatory components in precipitation in 2004. The table indicates the proportion of submitted data which was flagged as 'below detection limit' by the submitting Party, i.e. the sampling and analysis methods were unable to reliably detect the presence of the pollutant, and states the lowest concentration of that pollutant which was reported as reliably observed by each Party. This is no more than a first-view at the comparative performance of each Party in sampling and analysis.

**Table 5.1:** The percentage of observations reported as falling below the limits of detection (%bdl) for each mandatory component in 2004, and the minimum concentrations successfully resolved above detection limits (min adl) by each Contracting Party for each of these.

| | | Arsenic | | Cadmium | | Chromium | | Copper | | Lead | | Mercury | | Nickel | | Zinc | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | min adl | *%bdl* | min adl | *%bdl* | min adl | *%bdl* | min adl | *%bdl* | min adl | *%bdl* | min adl | *%bdl* | min adl | *%bdl* | min adl | *%bdl* |
| **Belgium** | *BE0004R* | ● | | ● | | ● | | ● | | ● | | 0,03 | *33* | ● | | ● | |
| **Germany** | *DE0001R* | 0,03 | *0* | 0,00 | *0* | 0,05 | *0* | 0,03 | *0* | 0,12 | *0* | 3,20 | *0* | 0,09 | *0* | 1,50 | *0* |
| **Denmark** | *DK0008R* | 0,16 | *0* | 0,02 | *0* | 0,09 | *0* | 0,53 | *0* | 0,81 | *0* | ● | | 0,17 | *0* | 6,81 | *0* |
| | *DK0020R* | 0,06 | *0* | 0,03 | *0* | 0,06 | *0* | 0,61 | *0* | 0,52 | *0* | | | 0,22 | *0* | 7,55 | *0* |
| | *DK0031R* | 0,03 | *0* | 0,02 | *0* | 0,03 | *0* | 0,24 | *0* | 0,22 | *0* | | | 0,13 | *0* | 3,41 | *0* |
| **France** | *FR0090R* | 0,15 | *0* | 0,01 | *0* | 0,08 | *0* | 0,75 | *0* | 0,02 | *0* | ● | | 0,34 | *0* | 1,00 | *0* |
| **Ireland** | *IE0001R* | - | *100* | 0,27 | *91* | 2,40 | *92* | 2,00 | *0* | 2,10 | *58* | - | *100* | 2,40 | *83* | 3,70 | *0* |
| **Iceland** | *IS0090R* | 0,05 | *16* | 0,01 | *65* | 0,10 | *31* | 0,52 | *0* | 0,12 | *0* | ● | | 0,12 | *2* | 0,32 | *0* |
| | *IS0091R* | | | 0,01 | *52* | 0,14 | *24* | 0,28 | *0* | 0,11 | *0* | | | 0,14 | *17* | 1,81 | *0* |
| **Netherlands** | *NL0009R* | 0,25 | *55* | 0,04 | *20* | - | *100* | 0,41 | *0* | 0,46 | *0* | | | 0,45 | *70* | 4,30 | *20* |
| | *NL0091R* | 0,30 | *91* | 0,03 | *50* | - | *100* | 0,84 | *0* | 1,47 | *0* | 4,00 | *0* | 0,41 | *50* | 4,00 | *0* |
| **Norway** | *NO0001R* | 0,11 | *50* | 0,11 | *90* | 0,70 | *98* | 0,51 | *60* | 0,11 | *0* | 1,90 | *0* | 0,54 | *91* | 0,39 | *0* |
| **Portugal** | *PT0003R* | ● | | 0,85 | *98* | ● | | 0,65 | *32* | 2,97 | *68* | ● | | 1,59 | *94* | 1,00 | *0* |
| | *PT0004R* | | | - | *100* | | | 0,97 | *71* | 1,60 | *67* | | | 2,10 | *90* | 1,00 | *0* |
| | *PT0010R* | | | - | *100* | | | - | *100* | 2,04 | *90* | | | 1,55 | *40* | 4,00 | *0* |
| **Spain** | *ES0008R* | 0,19 | *98* | 0,07 | *59* | 2,50 | *0* | 2,51 | *0* | 0,61 | *25* | ● | | 5,73 | *0* | 18,00 | *0* |
| **Sweden** | *SE0097R* | 0,13 | *50* | 0,01 | *0* | 0,14 | *33* | 0,32 | *0* | 0,34 | *0* | 5,40* | *0* | 0,20 | *0* | 3,09 | *0* |
| **UK** | *GB0006R* | | | 0,00 | *8* | 0,06 | *16* | 0,15 | *0* | 0,08 | *8* | ● | | 0,02 | *0* | 1,04 | *8* |
| | *GB0013R* | | | 0,00 | *8* | 0,00 | *13* | 0,00 | *0* | 0,00 | *2* | | | 0,00 | *0* | 0,00 | *4* |
| | *GB0017R* | 0,12 | *0* | 0,02 | *0* | 0,06 | *20* | 0,90 | *0* | 1,30 | *0* | | | 0,22 | *0* | 5,62 | *0* |
| | *GB0091R* | | | 0,00 | *8* | 0,00 | *9* | 0,00 | *0* | 0,00 | *2* | | | 0,00 | *0* | 0,00 | *2* |

● *no national data reported*
_ *highest value per component*
* SE0014

High minimum concentrations successfully observed, or high proportions of samples below the limits of detection may attract attention in themselves, and should be investigated. However, it is the combination of both together which raises questions as to the quality of the data. The comparative performance of Contracting Parties is an aid to indicating the levels of performance which can be achieved, and the actual level of performance.

It is known that some countries are not using the analytical limits of detection when flagging data as 'below limits of detection', but rather are using a 'limit of quantification'. A full overview of which Parties are doing this does not exist. However, with current potential sampling and laboratory capabilities, it would seem unlikely that 100 % of observations should be reported as being below limits of detection.

## 5.2 The quality of lindane data

In section 4, time series observations of lindane in precipitation was presented which appeared to indicate regular patterns in time and space – a decline over the years, and a decline from the southern North Sea northwards. Closer examination of the data, however, indicates a degree of uncertainty. This section provides a case study of lindane, which may well be applicable to other components reported under the CAMP.

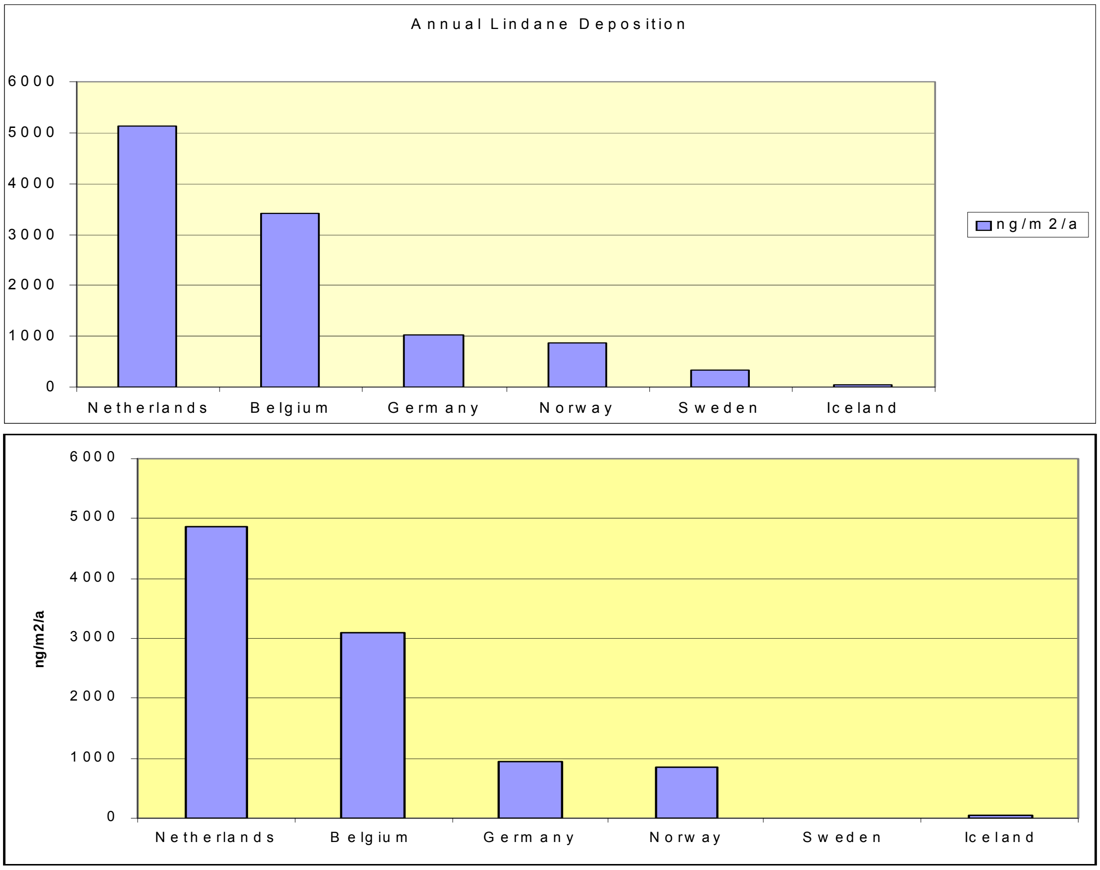


**Figure 5.1:** Summary annual data on the deposition of lindane, ng/m2/a, during 2003 and 2004. Calculated in accordance with the CAMP Principles.

The first point of note is the limited change over time. With the formal cessation of the use of lindane in 1999 in Europe, an annual decline would be expected in depositions, particularly at the most severely affected locations. After five years, stockpile use would be expected to be very low. However, comparison of the 2003 and 2004 observations (Figure 5.1) reveal that this is not being observed. The marginal changes at Belgian and Dutch sites seem very unlikely unless use in Europe is unchanged. Interannual meteorological variability would not be expected to maintain very high observations. The physical proximity of German and Dutch monitoring with such a large difference in reported values would tend to shed doubt on the higher observations. German observations are in accord with Norwegian reports for the same area. At locations distant from any residual European source an observable trace contribution from intercontinental transport may be expected. This would be a reasonable explanation for the Icelandic and Norwegian observations.

**Table 5.2:** Reported monthly concentrations in precipitation of lindane, ng/l.

| | | | *january* | *february* | *march* | *april* | *may* | *june* | *july* | *august* | *september* | *october* | *november* | *december* |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Belgium | BE0004R | ng/l | 2,00 | 2,00 | 2,00 | 15,00 | 9,00 | 6,00 | 6,00 | 2,00 | 2,00 | 6,00 | 6,00 | |
| Netherlands | NL0091R | ng/l | 10,00 | 10,00 | 10,00 | 10,00 | 10,00 | 11,00 | 10,00 | 10,00 | 10,00 | 10,00 | 10,00 | 10,00 |
| Germany | DE0001R | ng/l | 1,41 | 1,25 | 5,49 | 4,29 | 4,57 | 5,29 | 1,67 | 1,38 | 0,94 | 1,46 | 0,83 | 1,03 |
| Norway | NO0001R | ng/l | 0,34 | 0,30 | 1,15 | 1,94 | 2,19 | 1,32 | 0,76 | 0,41 | 0,64 | 0,41 | 0,78 | 0,24 |
| Iceland | IS0091R | ng/l | 0,03 | 0,04 | 0,11 | 0,08 | 0,07 | 0,05 | 0,05 | 0,09 | 0,03 | 0,05 | 0,04 | 0,05 |

*Observation below detection limit. Number given is the reported detection limit*

*Note: The very regular values for Belgium and the Netherlands are mostly reported as being lower than limits of detection, but are orders of magnitude greater than over-detection limit observations in Germany, Iceland and Norway.*

Upon closer examination it becomes apparent that the quality of data being submitted under the CAMP is in this instance hindering true assessment. The monthly reported concentrations at the various sites give rise to uncertainty. It is evident that the values reported for Dutch and Belgian sites are regular, are orders of magnitude different from other sites, and are also most often reported as below limits of detection.

This situation appears to have existed over a number of years, suggesting that the current system of quality control has proved less effective than desired to date. In Figures 5.2 and 5.3, the minimum reported concentrations above limits of detection, and the proportions of samples below limits of detection are displayed by country over a period of five years. The arguments for expected decline over time given above once again apply here, such that the regular high concentrations successfully observed in the Southern North Sea seems unlikely to reflect such high actual concentrations in the environment.

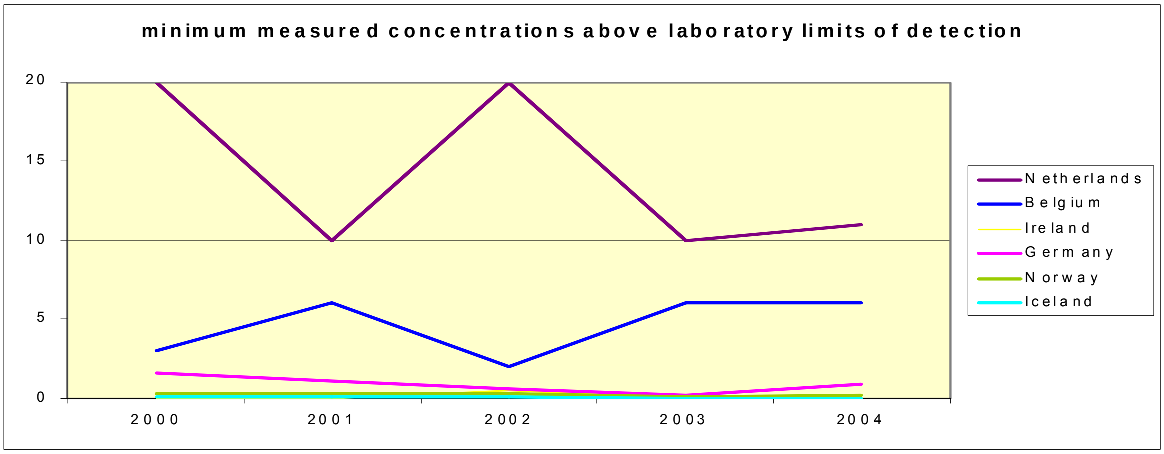


**Figure 5.2:** Minimum concentrations reported above limits of detection, in 2000-2004

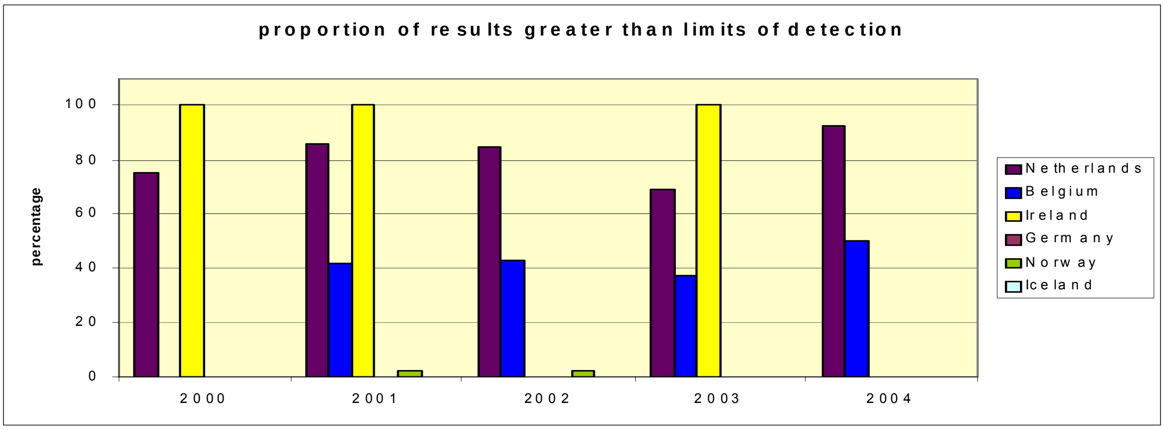


**Figure 5.1:** Proportion of observations reported with concentrations greater than limits of detection, 2000-2004

The data available would suggest that concentrations (and depositions) of lindane in the OSPAR maritime area have declined since its use ceased. The data is clearly valuable in indicating that release to the environment continued, and still continues, several years after use was made illegal. However, the exact levels now found, and hence whether or not these concentrations continue to represent a hazard, cannot be clearly established. Whilst the indications are that the reports from Germany, Iceland and Norway may point in the right direction, the elevated reports from those countries which were closest to the last official use of lindane in Europe (France) leaves some uncertainty.

## 6. Final observations

Reporting of CAMP data for the year 2004 proceeded essentially according to schedule. Reporting of mandatory components improved overall compared to 2003, although the number of Contracting Parties completing the agreed mandatory programme declined.

One Contracting Party reported less than half of the mandatory components, and three did not report any of the mandatory airborne components.

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.

A preliminary translation of the observations made by Contracting Parties into estimated depositions suggests that depositions have declined since 2000 for all metal components (decline by 13 – 59%) and for nitrogen (decline by 26%).

Spring maximums in the deposition of components to coastal waters are a general observation. This is particularly true for reduced nitrogen (ammonium) in the North Sea itself. Spatial patterns are also largely as expected, for example with a decline in deposition away from the southern North Sea and proximity to the European continent.

There would appear to be declines in the atmospheric input of pesticides. Levels of dieldrin have been declining but were also generally low since 2000 or before. Levels of lindane have dropped more clearly since use ceased in 1999. The monitoring results have proved valuable in demonstrating the continued environmental input of lindane years after its prohibition. Observations suggest that lindane demonstrates a very long range transport quality, possibly from sources outside Europe, although difficulties with data quality tends to obscure the full picture, thus limiting the interpretations that can be made.

Data for persistent (slow degrading) organic pollutants, such as PCBs and PAHs suggest some decline, although levels are low and variable.

Data quality remains an issue. Contracting Parties, not the CAMP data manager, retain responsibility for quality assurance under the CAMP. There is evidence of quite some variability in the quality of results being delivered over several years, suggesting that the existing data quality control round is not being implemented entirely thoroughly. Review of data quality by each separate Contracting Party before both INPUT 2007 and the delivery of data under the year 2005 reporting round would be very beneficial.

# 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 precipitation**

**Components in precipitation**

| **mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | BE0014R | mg/l | 0,31 | 0,33 | 1,70 | 1,82 | 0,59 | 0,76 | 0,69 | 0,51 | 0,79 | 0,67 | 0,44 | 0,17 |
| nitrate | BE0014R | mg/l | 0,33 | 0,59 | 1,01 | 0,93 | 0,67 | 0,47 | 0,42 | 0,33 | 0,40 | 0,45 | 0,41 | 0,26 |
| precipitation_amount | BE0014R | mm | 117,8 | 26,4 | 27,5 | 36,8 | 27,7 | 49,3 | 78,9 | 87,6 | 15,2 | 43,3 | 51,8 | 65,5 |
| mercury | BE0004R | ng/l | 0,01 | 0,01 | 0,03 | 0,01 | 0,03 | 0,17 | 0,03 | 0,03 | 0,03 | 0,03 | 0,01 | |
| precipitation_amount | BE0004R | mm | 132,2 | 41,0 | 36,3 | 31,8 | 51,7 | 89,4 | 60,6 | 136,2 | 47,0 | 60,9 | 80,0 | |
| gamma_HCH | BE0004R | ng/l | 1,00 | 1,00 | 1,00 | 15,00 | 9,00 | 6,00 | 6,00 | 1,00 | 1,00 | 6,00 | 6,00 | |
| precipitation_amount | BE0004R | mm | 132,2 | 41,0 | 36,3 | 31,8 | 51,7 | 89,4 | 60,6 | 136,2 | 47,0 | 60,9 | 80,0 | |
| arsenic | | µg/l | | *not reported* | | | | | | | | | | |
| cadmium | | µg/l | | *not reported* | | | | | | | | | | |
| chromium | | µg/l | | *not reported* | | | | | | | | | | |
| copper | | µg/l | | *not reported* | | | | | | | | | | |
| lead | | µg/l | | *not reported* | | | | | | | | | | |
| nickel | | µg/l | | *not reported* | | | | | | | | | | |
| zinc | | µg/l | | *not reported* | | | | | | | | | | |
| **voluntary** | | | | | | | | | | | | | | |
| PCB_101 | | ng/l | | *not reported* | | | | | | | | | | |
| PCB_118 | | ng/l | | *not reported* | | | | | | | | | | |
| PCB_138 | | ng/l | | *not reported* | | | | | | | | | | |
| PCB_153 | | ng/l | | *not reported* | | | | | | | | | | |
| PCB_180 | | ng/l | | *not reported* | | | | | | | | | | |
| PCB_28 | | ng/l | | *not reported* | | | | | | | | | | |
| PCB_52 | | ng/l | | *not reported* | | | | | | | | | | |
| anthracene | | ng/l | | *not reported* | | | | | | | | | | |
| benzo(a)anthracene | | ng/l | | *not reported* | | | | | | | | | | |
| benzo(a)pyrene | | ng/l | | *not reported* | | | | | | | | | | |
| benzo(ghi)perylene | | ng/l | | *not reported* | | | | | | | | | | |
| chrysene | | ng/l | | *not reported* | | | | | | | | | | |
| flouranthene | | ng/l | | *not reported* | | | | | | | | | | |
| indeno(1,2,3-cd)pyrene | | ng/l | | *not reported* | | | | | | | | | | |
| phenanthrene | | ng/l | | *not reported* | | | | | | | | | | |
| pyrene | | ng/l | | *not reported* | | | | | | | | | | |
| *Extra reported non-CAMP components* | | | | | | | | | | | | | | |
| aldrin | | ng/l | 0,50 | 0,50 | 0,50 | 0,50 | | 0,50 | 0,50 | 0,50 | 0,50 | 0,50 | 0,50 | |
| alpha_HCH | | ng/l | 0,50 | 0,50 | 0,50 | 0,50 | | 0,50 | 0,50 | 0,50 | 0,50 | 0,50 | 0,50 | |
| dieldrin | | ng/l | 1,00 | 1,00 | 1,00 | 1,00 | | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | |
| endrin | | ng/l | 1,50 | 1,50 | 1,50 | 1,50 | | 1,50 | 1,50 | 1,50 | 1,50 | 1,50 | 1,50 | |
| heptachlor | | ng/l | 3,25 | 1,00 | 1,00 | 15,00 | | 6,00 | 6,00 | 1,00 | 1,00 | 6,00 | 6,00 | |
| pp_DDD | | ng/l | 0,50 | 0,50 | 0,50 | 0,50 | | 0,50 | 0,50 | 0,50 | 0,50 | 0,50 | 0,50 | |
| pp_DDE | | ng/l | 1,00 | 1,00 | 1,00 | 1,00 | | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | |
| precipitation_amount | | mm | 183,81 | 40,96 | 36,26 | 31,84 | | 89,38 | 60,61 | 136,22 | 47,04 | 60,86 | 80 | |

**Belgium airborne**

## Airborne components

| **mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | BE0011R | $\mu g/m^3$ | 6,7 | 6,09 | 7,00 | 6,70 | 5,48 | 4,26 | 4,26 | 4,57 | 5,17 | 5,78 | 7,91 | 9,43 | 6,11 |
| | BE0013R | $\mu g/m^3$ | 5,78 | 4,87 | 6,39 | 6,39 | 4,57 | 3,04 | 3,96 | 3,96 | 4,87 | 4,26 | 6,70 | 7,61 | 5,20 |
| $HNO_3$ | | $\mu g/m^3$ | | *not reported* | | | | | | | | | | | |
| $NO_3$ | | $\mu g/m^3$ | | *not reported* | | | | | | | | | | | |
| $HNO_3 + NO_3$ | | $\mu g/m^3$ | | *not reported* | | | | | | | | | | | |
| $NH_3$ | | $\mu g/m^3$ | | *not reported* | | | | | | | | | | | |
| $NH_4$ | | $\mu g/m^3$ | | *not reported* | | | | | | | | | | | |
| $NH_3$ + NH4 | | $\mu g/m^3$ | | *not reported* | | | | | | | | | | | |
| **voluntary** | | | | | | | | | | | | | | | |
| NO | BE0011R | $\mu g/m^3$ | 1,4 | 1,87 | 1,40 | 1,40 | 0,93 | 0,93 | 0,93 | 0,47 | 0,93 | 1,87 | 5,60 | 10,27 | 2,33 |
| | BE0013R | $\mu g/m^3$ | 0,93 | 1,40 | 0,93 | 2,33 | 0,93 | 0,93 | 0,47 | 0,47 | 0,93 | 1,40 | 3,73 | 5,13 | 1,63 |
| arsenic | | ng/m3 | | *not reported* | | | | | | | | | | | |
| cadmium | | ng/m3 | | *not reported* | | | | | | | | | | | |
| chromium | | ng/m3 | | *not reported* | | | | | | | | | | | |
| copper | | ng/m3 | | *not reported* | | | | | | | | | | | |
| lead | | ng/m3 | | *not reported* | | | | | | | | | | | |
| mercury | | ng/m3 | | *not reported* | | | | | | | | | | | |
| nickel | | ng/m3 | | *not reported* | | | | | | | | | | | |
| zinc | | ng/m3 | | *not reported* | | | | | | | | | | | |
| PCB_118 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_138 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_153 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_180 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_28 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_52 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| anthracene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)anthracene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)pyrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(ghi)perylene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| chrysene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| flouranthene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| $\gamma$-HCH | | ng/m3 | | *not reported* | | | | | | | | | | | |
| indeno(1,2,3-cd)pyrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| phenanthrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| pyrene | | ng/m3 | | *not reported* | | | | | | | | | | | |

# DENMARK

**DENMARK precipitation**

## Components in precipitation

| mandatory | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | DK0005R | mg/l | 0,31 | 0,29 | 1,15 | 1,38 | 0,82 | 0,36 | 0,36 | 0,77 | 0,40 | 0,44 | 0,39 | 0,49 | 0,56 |
| | DK0020R | mg/l | 0,417 | 0,657 | 1,049 | 3,934 | 6,852 | 0,793 | 1,175 | 0,639 | 0,746 | 0,39 | 0,521 | | 0,95 |
| nitrate | DK0005R | mg/l | 0,55 | 0,30 | 0,67 | 0,77 | 0,54 | 0,37 | 0,40 | 0,51 | 0,31 | 0,56 | 0,39 | 0,51 | 0,57 |
| | DK0020R | mg/l | 0,727 | 0,93 | 0,861 | 0,839 | 0,987 | 0,567 | 0,721 | 0,441 | 0,409 | 0,353 | 0,62 | | 0,61 |
| precipitation | DK0005R | mm | 46,2 | 59,7 | 34,0 | 34,3 | 39,1 | 64,1 | 68,1 | 99,1 | 45,3 | 62,3 | 31,2 | 32,3 | 615,6 |
| | DK0020R | mm | 47,22 | 13,162 | 28,774 | 35,069 | 6,342 | 32,153 | 27,143 | 53,291 | 49,082 | 95,087 | 34,849 | 0,049 | 422,2 |
| | | | | | | | | | | | | | | | |
| arsenic | DK0008R | µg/l | 0,353 | | 0,271 | 0,277 | 0,422 | 0,271 | 0,175 | 0,164 | 0,17 | 0,159 | 0,214 | 0,285 | 0,32 |
| | DK0020R | µg/l | 0,17 | 0,073 | 0,218 | | 0,298 | 0,14 | 0,177 | 0,082 | | 0,066 | 0,124 | | 0,20 |
| | DK0031R | µg/l | 0,051 | | 0,116 | 0,154 | 0,298 | 0,14 | 0,175 | 0,109 | 0,079 | 0,09 | 0,09 | 0,106 | 0,17 |
| cadmium | DK0008R | µg/l | 0,06 | | 0,051 | 0,067 | 0,106 | 0,028 | 0,043 | 0,025 | 0,022 | 0,048 | 0,034 | 0,15 | 0,18 |
| | DK0020R | µg/l | 0,418 | 0,049 | 0,054 | | 0,284 | 0,195 | 0,371 | 0,075 | | 0,042 | 0,091 | | 0,26 |
| | DK0031R | µg/l | 0,017 | | 0,045 | 0,031 | 0,054 | 0,019 | 0,073 | 0,034 | 0,016 | 0,064 | 0,023 | 0,032 | 0,12 |
| chromium | DK0008R | µg/l | 0,211 | | 0,386 | 0,317 | 0,39 | 0,202 | 0,15 | 0,144 | 0,166 | 0,089 | 0,115 | 0,159 | 0,28 |
| | DK0020R | µg/l | 0,138 | 0,388 | 0,318 | | 0,355 | 0,109 | 0,187 | 0,114 | | 0,062 | 0,101 | | 0,23 |
| | DK0031R | µg/l | 0,044 | | 0,098 | 0,118 | 0,352 | 0,065 | 0,303 | 0,143 | 0,059 | 0,094 | 0,09 | 0,133 | 0,18 |
| copper | DK0008R | µg/l | 0,918 | | 1,88 | 9,347 | 3,544 | 0,964 | 2,204 | 1,088 | 1,604 | 0,526 | 0,736 | 1,192 | 1,54 |
| | DK0020R | µg/l | 5,924 | 2,886 | 1,602 | | 5,165 | 4,27 | 4,813 | 0,99 | | 0,611 | 1,19 | | 2,59 |
| | DK0031R | µg/l | 0,276 | | 0,499 | 0,625 | 1,585 | 0,409 | 0,807 | 1,222 | 0,39 | 17,503 | 7,69 | 1,57 | 3,75 |
| lead | DK0008R | µg/l | 1,998 | | 1,885 | 1,015 | 3,525 | 0,809 | 0,975 | 1,018 | 0,816 | 1,307 | 1,113 | 1,599 | 1,24 |
| | DK0020R | µg/l | 1,051 | 2,194 | 2,072 | | 2,128 | 1,268 | 1,282 | 0,87 | | 1,125 | 1,898 | | 1,29 |
| | DK0031R | µg/l | 0,519 | | 0,99 | 0,215 | 1,612 | 0,361 | 0,643 | 0,641 | 0,39 | 1,397 | 0,671 | 0,869 | 0,75 |
| nickel | DK0008R | µg/l | 0,314 | | 1,88 | 1,015 | 0,692 | 0,345 | 0,27 | 0,281 | 1,236 | 0,169 | 0,256 | 0,385 | 0,55 |
| | DK0020R | µg/l | 0,373 | 1,879 | 0,512 | | 1,234 | 0,626 | 0,611 | 0,326 | | 0,215 | 0,442 | | 0,52 |
| | DK0031R | µg/l | 0,153 | | 0,257 | 0,215 | 0,596 | 0,183 | 0,244 | 0,199 | 0,207 | 1,634 | 0,379 | 0,347 | 0,50 |
| zinc | DK0008R | µg/l | 10,035 | | 19,423 | 28,618 | 28,89 | 50,39 | 9,296 | 10,885 | 9,977 | 6,805 | 32,444 | 21,288 | 12,60 |
| | DK0020R | µg/l | 19,323 | 22,837 | 10,382 | | 27,667 | 17,805 | 30,605 | 14,001 | | 7,815 | 19,018 | | 15,07 |
| | DK0031R | µg/l | 3,838 | | 6,709 | 6,254 | 20,991 | 7,109 | 8,468 | 5,798 | 3,865 | 13,252 | 11,834 | 11,814 | 7,13 |
| precipitation | DK0008R | mm | 55,8 | | 33,4 | 27,6 | 25,3 | 53,5 | 63,7 | 110,8 | 39,4 | 94,9 | 49,7 | 43,0 | 597,2 |
| | DK0020R | mm | 104,024 | 28,294 | 33,571 | | 11,217 | 30,748 | 47,685 | 58,539 | | 110,784 | 42,512 | | 467,4 |
| | DK0031R | mm | 201,5 | | 61,9 | 57,8 | 11,8 | 76,3 | 48,3 | 106,5 | 124,8 | 143,2 | 95,6 | 88,5 | 1016,1 |

| | | |
|---|---|---|
| mercury | ng/l | *not reported* |
| γ-HCH | ng/l | *not reported* |

**voluntary**

| | | |
|---|---|---|
| PCB_101 | ng/l | *not reported* |
| PCB_118 | ng/l | *not reported* |
| PCB_138 | ng/l | *not reported* |
| PCB_153 | ng/l | *not reported* |
| PCB_180 | ng/l | *not reported* |
| PCB_28 | ng/l | *not reported* |
| PCB_52 | ng/l | *not reported* |
| anthracene | ng/l | *not reported* |
| benzo(a)anthracene | ng/l | *not reported* |
| benzo(a)pyrene | ng/l | *not reported* |
| benzo(ghi)perylene | ng/l | *not reported* |
| chrysene | ng/l | *not reported* |
| flouranthene | ng/l | *not reported* |
| indeno(1,2,3-cd)pyrene | ng/l | *not reported* |
| phenanthrene | ng/l | *not reported* |
| pyrene | ng/l | *not reported* |

**Denmark airborne** — **Airborne components**

| mandatory | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | DK0008R | µg/m³ | 2,36 | 1,42 | 1,49 | 2,04 | 1,14 | 0,88 | 0,91 | 1,17 | 1,10 | 1,49 | 1,58 | 2,72 | 1,52 |
| $NH_3$ + NH4 | DK0008R | µg/m³ | 0,96 | 0,87 | 1,32 | 2,09 | 1,34 | 0,89 | 0,84 | 0,92 | 0,97 | 0,70 | 0,75 | 1,03 | 1,06 |
| $HNO_3$ + $NO_3$ | DK0008R | µg/m³ | 0,75 | 0,69 | 0,80 | 1,32 | 0,76 | 0,59 | 0,47 | 0,56 | 0,71 | 0,46 | 0,55 | 0,73 | 0,70 |
| $NO_3$ | | µg/m³ | *not reported* | | | | | | | | | | | | |
| $NH_3$ | | µg/m³ | *not reported* | | | | | | | | | | | | |

| voluntary | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| arsenic | DK0008R | ng/m3 | 0,53 | 0,27 | 0,32 | 0,46 | 0,30 | 0,34 | 0,25 | 0,32 | 0,31 | 0,26 | 0,28 | 0,29 | 0,33 |
| | DK0031R | ng/m3 | 0,49 | 0,23 | 0,33 | 0,27 | 0,18 | 0,09 | 0,20 | 0,24 | 0,18 | 0,37 | 0,24 | 0,24 | 0,26 |
| cadmium | DK0008R | ng/m3 | 0,21 | 0,05 | 0,07 | 0,31 | 0,06 | 0,06 | 0,10 | 0,10 | 0,00 | 0,24 | 0,09 | 0,16 | 0,12 |
| | DK0031R | ng/m3 | 0,17 | 0,00 | 0,13 | 0,13 | 0,01 | 0,14 | 0,17 | 0,04 | 0,04 | 0,22 | -0,02 | 0,07 | 0,09 |
| chromium | DK0008R | ng/m3 | 0,30 | 0,19 | 0,35 | 0,83 | 0,39 | 0,16 | 0,18 | 0,27 | 0,21 | | | 0,16 | 0,30 |
| | DK0031R | ng/m3 | 0,30 | 0,21 | 0,37 | 0,33 | 0,24 | -0,02 | 0,02 | 0,24 | 0,12 | -0,11 | 0,36 | 0,24 | 0,19 |
| copper | DK0008R | ng/m3 | 1,12 | 0,56 | 0,92 | 2,04 | 0,25 | 0,70 | 0,68 | 1,03 | 1,19 | 1,06 | 1,33 | 1,65 | 1,04 |
| | DK0031R | ng/m3 | 2,13 | 0,50 | 0,76 | 0,84 | 0,10 | 0,21 | 0,48 | 0,72 | 1,13 | 1,04 | 0,92 | 0,80 | 0,80 |
| lead | DK0008R | ng/m3 | 7,22 | 2,48 | 4,06 | 7,26 | 3,52 | 1,97 | 2,00 | 3,38 | 2,86 | 5,11 | 3,10 | 3,93 | 3,91 |
| | DK0031R | ng/m3 | 6,01 | 2,09 | 3,70 | 3,19 | 2,05 | 0,99 | 1,48 | 2,19 | 2,97 | 4,81 | 2,88 | 3,53 | 2,99 |
| nickel | DK0008R | ng/m3 | 1,57 | 1,55 | 2,08 | 3,43 | 1,89 | 2,23 | 2,03 | 2,71 | 1,63 | 1,22 | 0,97 | 1,18 | 1,87 |
| | DK0031R | ng/m3 | 0,82 | 2,05 | 1,12 | 1,02 | 0,77 | 0,59 | 0,86 | 0,99 | 1,05 | 0,69 | 0,95 | 0,91 | 0,98 |
| zinc | DK0008R | ng/m3 | 15,17 | 7,48 | 9,91 | 15,60 | 8,02 | 5,29 | 5,80 | 9,50 | 8,15 | 10,90 | 8,10 | 9,39 | 9,44 |
| | DK0031R | ng/m3 | 13,62 | 4,79 | 9,94 | 8,46 | 6,39 | 2,77 | 5,90 | 7,06 | 8,96 | 12,89 | 11,13 | 7,09 | 8,25 |
| NO | | µg/m³ | *not reported* | | | | | | | | | | | | |
| mercury | | ng/m3 | *not reported* | | | | | | | | | | | | |
| PCB_118 | | pg/m3 | *not reported* | | | | | | | | | | | | |
| PCB_138 | | pg/m3 | *not reported* | | | | | | | | | | | | |
| PCB_153 | | pg/m3 | *not reported* | | | | | | | | | | | | |
| PCB_180 | | pg/m3 | *not reported* | | | | | | | | | | | | |
| PCB_28 | | pg/m3 | *not reported* | | | | | | | | | | | | |
| PCB_52 | | pg/m3 | *not reported* | | | | | | | | | | | | |
| anthracene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| benzo(a)anthracene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| benzo(a)pyrene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| benzo(ghi)perylene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| chrysene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| flouranthene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| $\gamma$-HCH | | ng/m3 | *not reported* | | | | | | | | | | | | |
| indeno(1,2,3-cd)pyrene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| phenanthrene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| pyrene | | pg/m3 | *not reported* | | | | | | | | | | | | |

| *Extra reported non-CAMP components* | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| iron | DK0008R | ng/m3 | 30,24 | 33,57 | 50,48 | 102,18 | 110,50 | 43,41 | 34,85 | 75,56 | 61,30 | 36,46 | 22,86 | 30,86 | 52,69 |
| | DK0031R | ng/m3 | 30,56 | 61,76 | 42,43 | 74,56 | 70,27 | 23,05 | 34,14 | 81,93 | 58,90 | 49,39 | 32,05 | 26,28 | 48,77 |
| manganese | DK0008R | ng/m3 | 1,22 | 1,50 | 1,86 | 3,30 | 3,90 | 1,44 | 1,31 | 2,72 | 2,13 | 1,47 | 1,12 | 1,07 | 1,92 |
| | DK0031R | ng/m3 | 1,19 | 1,55 | 1,81 | 2,62 | 2,16 | 0,85 | 1,14 | 3,21 | 2,23 | 1,82 | 1,54 | 0,96 | 1,76 |

# FRANCE

**FRANCE precipitation**

## Components in precipitation

| mandatory | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | FR0005R | mg/l | 0,02 | 0,1 | 0,08 | 0,1 | 0,05 | 0,04 | 0,08 | 0,03 | 0,03 | 0,04 | 0,1 | 0,08 | 0,06 |
| nitrate | FR0005R | mg/l | 0,1 | 0,49 | 0,45 | 0,7 | 0,18 | 0,07 | 0,39 | 0,1 | 0,37 | 0,16 | 0,58 | 0,12 | 0,27 |
| precipitation | FR0005R | mm | 99 | 62 | 67 | 80 | 39 | 80 | 127 | 141 | 53 | 173 | 39 | 99 | 1059 |
| | | | | | | | | | | | | | | | |
| arsenic | FR0005R | µg/l | 0,15 | 0,28 | 0,2 | 0,42 | 0,47 | 0,28 | 0,3 | 0,31 | 0,33 | 0,17 | 0,34 | 0,32 | 0,28 |
| cadmium | FR0005R | µg/l | 0,03 | 0,02 | 0,02 | 0,02 | 0,04 | 0,03 | 0,02 | 0,02 | 0,03 | 0,01 | 0,01 | 0,03 | 0,02 |
| chromium | FR0005R | µg/l | 0,18 | 0,36 | 0,1 | 0,31 | 0,41 | 0,18 | 0,1 | 0,08 | 0,16 | 0,17 | 0,14 | 0,13 | 0,17 |
| copper | FR0005R | µg/l | 1,17 | 1,95 | 0,91 | 2,6 | 3,1 | 1,5 | 0,94 | 1,08 | 1,62 | 0,75 | 3,79 | 1,47 | 0,79 |
| lead | FR0005R | µg/l | 0,11 | 0,94 | 0,02 | 1,38 | 1,5 | 0,63 | 0,92 | 0,15 | 0,56 | 0,61 | 0,77 | 0,1 | 0,57 |
| nickel | FR0005R | µg/l | 0,99 | 0,58 | 0,4 | 0,49 | 0,66 | 0,42 | 0,4 | 0,34 | 0,42 | 0,37 | 0,9 | 1,02 | 0,55 |
| zinc | FR0005R | µg/l | 1,51 | 4,02 | 4,58 | 3,02 | 3,37 | 2,43 | 1 | 1,26 | 3,19 | 1,07 | 2,89 | 1,27 | 7,20 |
| precipitation | FR0005R | mm | 99 | 62 | 67 | 80 | 39 | 80 | 127 | 141 | 53 | 173 | 39 | 99 | 1059 |
| | | | | | | | | | | | | | | | |
| mercury | | ng/l | *not reported* | | | | | | | | | | | | |
| γ-HCH | | ng/l | *not reported* | | | | | | | | | | | | |

| voluntary | | |
|---|---|---|
| PCB_101 | ng/l | *not reported* |
| PCB_118 | ng/l | *not reported* |
| PCB_138 | ng/l | *not reported* |
| PCB_153 | ng/l | *not reported* |
| PCB_180 | ng/l | *not reported* |
| PCB_28 | ng/l | *not reported* |
| PCB_52 | ng/l | *not reported* |
| anthracene | ng/l | *not reported* |
| benzo(a)anthracene | ng/l | *not reported* |
| benzo(a)pyrene | ng/l | *not reported* |
| benzo(ghi)perylene | ng/l | *not reported* |
| chrysene | ng/l | *not reported* |
| flouranthene | ng/l | *not reported* |
| indeno(1,2,3-cd)pyrene | ng/l | *not reported* |
| phenanthrene | ng/l | *not reported* |
| pyrene | ng/l | *not reported* |

**France airborne**

## Airborne components

| **mandatory** | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | µg/m³ | | *not reported* | | | | | | | | | | | |
| | µg/m³ | | *not reported* | | | | | | | | | | | |
| $HNO_3 + NO_3$ | µg/m³ | | *not reported* | | | | | | | | | | | |
| $NH_3$ | µg/m³ | | *not reported* | | | | | | | | | | | |
| $NH_4$ | µg/m³ | | *not reported* | | | | | | | | | | | |
| $NH_3$ + NH4 | µg/m³ | | *not reported* | | | | | | | | | | | |
| **voluntary** | | | | | | | | | | | | | | |
| NO | µg/m³ | | *not reported* | | | | | | | | | | | |
| arsenic | ng/m3 | | *not reported* | | | | | | | | | | | |
| cadmium | ng/m3 | | *not reported* | | | | | | | | | | | |
| chromium | ng/m3 | | *not reported* | | | | | | | | | | | |
| copper | ng/m3 | | *not reported* | | | | | | | | | | | |
| lead | ng/m3 | | *not reported* | | | | | | | | | | | |
| mercury | ng/m3 | | *not reported* | | | | | | | | | | | |
| nickel | ng/m3 | | *not reported* | | | | | | | | | | | |
| zinc | ng/m3 | | *not reported* | | | | | | | | | | | |
| PCB_118 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_138 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_153 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_180 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_28 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_52 | pg/m3 | | *not reported* | | | | | | | | | | | |
| anthracene | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)anthracene | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)pyrene | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(ghi)perylene | ng/m3 | | *not reported* | | | | | | | | | | | |
| chrysene | ng/m3 | | *not reported* | | | | | | | | | | | |
| flouranthene | ng/m3 | | *not reported* | | | | | | | | | | | |
| γ-HCH | ng/m3 | | *not reported* | | | | | | | | | | | |
| indeno(1,2,3-cd)pyrene | ng/m3 | | *not reported* | | | | | | | | | | | |
| phenanthrene | ng/m3 | | *not reported* | | | | | | | | | | | |
| pyrene | ng/m3 | | *not reported* | | | | | | | | | | | |

# GERMANY

**GERMANY precipitation**

**Components in precipitation**

| **Mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | DE0001R | mg/l | 0,23 | 0,23 | 1,26 | 1,13 | 0,89 | 0,3 | 0,41 | 0,35 | 0,26 | 0,33 | 0,55 | 0,49 | 0,41 |
| nitrate | DE0001R | mg/l | 0,43 | 0,38 | 0,78 | 0,99 | 0,78 | 0,45 | 0,49 | 0,41 | 0,31 | 0,41 | 0,37 | 0,46 | 0,45 |
| precipitation *N* | DE0001R | mm | 90,7 | 32,9 | 25,1 | 22,7 | 10,5 | 72,5 | 51,3 | 83,6 | 88,6 | 80,9 | 61,3 | 78,5 | 698,6 |
| arsenic | DE0001R | µg/l | 0,06 | 0,08 | 0,23 | 0,23 | 0,19 | 0,08 | 0,07 | 0,05 | 0,11 | 0,08 | 0,12 | 0,13 | 0,10 |
| cadmium | DE0001R | µg/l | 0,03 | 0,01 | 0,07 | 0,06 | 0,05 | 0,02 | 0,02 | 0,02 | 0,01 | 0,02 | 0,02 | 0,03 | 0,02 |
| chromium | DE0001R | µg/l | 0,16 | 0,14 | 0,31 | 0,15 | 0,21 | 0,12 | 0,10 | 0,09 | 0,10 | 0,08 | 0,10 | 0,13 | 0,12 |
| copper | DE0001R | µg/l | 0,36 | 0,38 | 0,74 | 1,87 | 1,15 | 0,80 | 0,91 | 0,48 | 0,45 | 0,24 | 0,23 | 0,37 | 0,52 |
| lead | DE0001R | µg/l | 1,08 | 0,56 | 1,46 | 1,65 | 1,71 | 0,64 | 0,63 | 0,61 | 0,51 | 0,52 | 0,56 | 1,01 | 0,78 |
| mercury | DE0001R | ng/l | 4,30 | 4,30 | 10,00 | 11,30 | 10,10 | 13,90 | 12,80 | 13,00 | 6,10 | 6,40 | 4,80 | 5,50 | 8,07 |
| nickel | DE0001R | µg/l | 0,25 | 0,33 | 0,56 | 0,51 | 0,97 | 0,23 | 0,29 | 0,30 | 0,23 | 0,24 | 0,27 | 0,34 | 0,30 |
| zinc | DE0001R | µg/l | 5,10 | 5,70 | 7,00 | 13,80 | 9,40 | 5,70 | 6,60 | 4,00 | 3,20 | 4,10 | 4,80 | 5,50 | 5,29 |
| precipitation *metals ex. Hg* | DE0001R | mm | 99,3 | 37,1 | 29,1 | 26,9 | 11,4 | 67,8 | 48,8 | 85 | 92,1 | 82,8 | 63,6 | 78,6 | 722,5 |
| precipitation *Hg* | DE0001R | mm | 88 | 35,7 | 28,1 | 28,1 | 13 | 67,8 | 49,7 | 77,2 | 95,7 | 78,6 | 61,5 | 76 | 699,4 |
| γ-HCH | DE0001R | ng/l | 1,41 | 1,25 | 5,49 | 4,29 | 4,57 | 5,29 | 1,67 | 1,38 | 0,94 | 1,46 | 0,83 | 1,03 | 1,70 |
| precipitation *γ-HCH* | DE0001R | mm | 69,2 | 53,8 | 16,3 | 12,2 | 8,2 | 32,3 | 23,1 | 76,8 | 85,7 | 74 | 55,4 | 47,4 | 554,4 |
| **voluntary** | | | | | | | | | | | | | | | |
| PCB_101 | DE0001R | ng/l | 0,15 | 0,03 | 0,12 | 0,16 | 0,26 | | 0,15 | 0,08 | 0,06 | 0,04 | 0,18 | 0,21 | 0,10 |
| PCB_118 | DE0001R | ng/l | 0,07 | 0,04 | 0,20 | 0,27 | 0,21 | 0,53 | 0,07 | 0,02 | 0,03 | 0,02 | 0,19 | 0,23 | 0,11 |
| PCB_138 | DE0001R | ng/l | 0,17 | 0,05 | 0,15 | 0,21 | 0,36 | 2,74 | 1,18 | 0,08 | 0,07 | 0,04 | 0,20 | 0,24 | 0,32 |
| PCB_153 | DE0001R | ng/l | 0,10 | 0,04 | 0,16 | 0,22 | 0,18 | 1,27 | 0,33 | 0,03 | 0,02 | 0,02 | 0,22 | 0,26 | 0,17 |
| PCB_180 | DE0001R | ng/l | 0,05 | 0,03 | 0,09 | 0,13 | 0,22 | 0,81 | 0,56 | 0,02 | 0,04 | 0,02 | 0,16 | 0,19 | 0,13 |
| PCB_28 | DE0001R | ng/l | 0,31 | 0,05 | 0,18 | 0,24 | 0,15 | | 0,16 | 0,05 | 0,09 | 0,02 | 0,18 | 0,21 | 0,12 |
| PCB_52 | DE0001R | ng/l | 0,15 | 0,01 | 0,11 | 0,14 | 0,11 | | 0,08 | 0,02 | 0,04 | 0,02 | 0,11 | 0,13 | 0,06 |
| anthracene | DE0001R | ng/l | 0,43 | 0,56 | 1,84 | 2,46 | 3,66 | 1,95 | 1,30 | 0,39 | 1,08 | 0,41 | 0,54 | 1,45 | 0,89 |
| benzo(a)anthracene | DE0001R | ng/l | 2,63 | 0,19 | 1,92 | 0,82 | 5,83 | 1,23 | 0,43 | 0,81 | 0,92 | 1,51 | 1,09 | 3,65 | 1,47 |
| benzo(a)pyrene | DE0001R | ng/l | 2,04 | 0,24 | 0,80 | 1,07 | 6,12 | 0,86 | 0,56 | 1,04 | 0,98 | 1,75 | 1,30 | 3,57 | 1,45 |
| benzo(ghi)perylene | DE0001R | ng/l | 4,59 | 0,97 | 3,41 | 1,23 | 7,98 | 0,93 | 0,65 | 0,96 | 1,02 | 2,17 | 2,15 | 5,32 | 2,24 |
| chrysene+triphenalyne | DE0001R | ng/l | 8,60 | 3,60 | 5,00 | 0,80 | 13,70 | 3,00 | 2,40 | 2,90 | 2,50 | 5,30 | 4,10 | 13,00 | 5,08 |
| flouranthene | DE0001R | ng/l | 16,90 | 7,70 | 11,20 | 5,10 | 23,80 | 11,40 | 4,90 | 5,80 | 6,30 | 9,90 | 9,40 | 19,30 | 10,21 |
| indeno(123cd)pyrene | DE0001R | ng/l | 3,58 | 0,56 | 1,84 | 2,46 | 3,66 | 0,93 | 1,30 | 0,90 | 0,96 | 2,01 | 2,04 | 4,73 | 1,92 |
| phenanthrene | DE0001R | ng/l | 52,10 | 10,60 | 70,00 | 8,70 | 17,20 | 144,00 | 12,00 | 4,30 | 11,20 | 7,10 | 8,40 | 16,10 | 24,42 |
| pyrene | DE0001R | ng/l | 10,70 | 1,70 | 6,90 | 2,70 | 17,50 | 9,90 | 3,50 | 4,00 | 4,40 | 6,90 | 4,80 | 13,20 | 6,51 |
| precipitation *vol. organics* | DE0001R | mm | 69,2 | 53,8 | 16,3 | 12,2 | 8,2 | 32,3 | 23,1 | 76,8 | 85,7 | 74 | 55,4 | 47,4 | 554,4 |
| *Extra reported non-CAMP components* | | | | | | | | | | | | | | | |
| benzo(b+j+k)fluoranthenes | | ng/L | 13,40 | 3,60 | 9,50 | 2,20 | 24,70 | 4,90 | 4,70 | 3,80 | 3,30 | 7,80 | 6,90 | 19,50 | 7,63 |
| dibenzo(ah)anthracene | | ng/L | 0,77 | 0,24 | 0,80 | 1,07 | 1,59 | 0,40 | 0,56 | 0,17 | 0,15 | 0,18 | 0,23 | 1,09 | 0,42 |
| α−HCH | | ng/L | 0,35 | 0,30 | 0,19 | 0,25 | 0,34 | 0,46 | 0,11 | 0,26 | 0,34 | 0,45 | 0,46 | 0,44 | 0,35 |
| HCB | | ng/L | 0,45 | 0,01 | 1,65 | 0,06 | 0,11 | 1,34 | 0,14 | 0,01 | 0,13 | 0,02 | 0,11 | 0,13 | 0,24 |
| aldrin | | ng/L | 0,03 | 0,01 | 0,06 | 0,09 | 0,13 | 0,03 | 0,03 | 0,01 | 0,01 | 0,01 | 0,02 | 0,03 | 0,02 |
| dieldrin | | ng/L | 0,19 | 0,17 | 0,13 | 0,19 | 0,26 | 0,20 | 0,07 | 0,07 | 0,12 | 0,14 | 0,08 | 0,10 | 0,13 |
| endrin | | ng/L | 0,06 | 0,05 | 0,25 | 0,35 | 0,48 | 0,12 | 0,13 | 0,04 | 0,04 | 0,04 | 0,05 | 0,05 | 0,07 |
| heptachlor | | ng/L | 0,02 | 0,02 | 0,09 | 0,13 | 0,18 | 0,04 | 0,05 | 0,02 | 0,01 | 0,02 | 0,02 | 0,02 | 0,03 |
| o,p'-DDT | | ng/L | 0,03 | 0,03 | 0,26 | 0,31 | 0,45 | 0,22 | 0,17 | 0,05 | | 0,15 | 0,11 | 0,13 | 0,11 |
| p,p'-DDT | | ng/L | 0,08 | 0,04 | 0,34 | 0,41 | 0,60 | 0,60 | 0,23 | 0,07 | 0,17 | 0,19 | 0,14 | 0,17 | 0,18 |
| o,p'-DDE | | ng/L | 0,01 | 0,01 | 0,06 | 0,08 | 0,11 | 0,03 | 0,03 | 0,01 | 0,01 | 0,01 | 0,14 | 0,16 | 0,04 |
| p,p'-DDE | | ng/L | 0,12 | 0,02 | 0,08 | 0,11 | 0,15 | 0,67 | 0,12 | 0,01 | 0,04 | 0,02 | 0,16 | 0,19 | 0,11 |
| o,p'-DDD | | ng/L | 0,01 | 0,01 | 0,05 | 0,06 | 0,09 | 0,06 | 0,03 | 0,01 | 0,01 | 0,01 | 0,06 | 0,07 | 0,03 |
| p,p'-DDD | | ng/L | 0,03 | 0,01 | 0,05 | 0,06 | 0,09 | 0,25 | 0,13 | 0,02 | 0,05 | 0,01 | 0,02 | 0,02 | 0,04 |
| preciptation *non-CAMP org.* | | mm | 69,2 | 53,8 | 16,3 | 12,2 | 8,2 | 32,3 | 23,1 | 76,8 | 85,7 | 74 | 55,4 | 47,4 | 554,4 |
| iron | | µg/l | 5,6 | 17,1 | 79,3 | 58,1 | 72,7 | 27,5 | 14,9 | 9,5 | 13,3 | 12,1 | 10,5 | 11,3 | 18,09 |
| manganese | | µg/l | 0,47 | 0,85 | 4 | 5,29 | 5,61 | 1,84 | 1,56 | 1,11 | 1,16 | 1,01 | 0,9 | 0,79 | 1,39 |
| vanadium | | µg/l | 0,36 | 0,54 | 0,94 | 1,01 | 0,85 | 0,46 | 0,4 | 0,44 | 0,59 | 0,44 | 0,59 | 0,73 | 0,55 |
| precipitation *non-CAMP met.* | | mm | 99,3 | 37,1 | 29,1 | 26,9 | 11,4 | 67,8 | 48,8 | 85 | 92,1 | 82,8 | 63,6 | 78,6 | 722,5 |

**Germany airborne**

## Airborne components

| **mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | DE0001R | µg/m³ | 4,60 | 2,05 | 2,41 | 2,27 | | 1,20 | | 1,39 | 1,46 | 2,79 | 2,95 | 3,82 | 2,49 |
| $NH_3$ + NH4 | DE0001R | µg/m³ | 1,64 | | | | | | | | | | 1,28 | 1,04 | 1,32 |
| $HNO_3$ + $NO_3$ | DE0001R | µg/m³ | 0,99 | 0,89 | 1,13 | 1,40 | 0,84 | 0,83 | 0,60 | 0,66 | 0,79 | 0,78 | 0,69 | 0,81 | 0,87 |
| $NO_3$ | | µg/m³ | | *not reported* | | | | | | | | | | | |
| $NH_3$ | | µg/m³ | | *not reported* | | | | | | | | | | | |
| **voluntary** | | | | | | | | | | | | | | | |
| arsenic | DE0001R | ng/m3 | | | | | | | 0,74 | 0,8 | 0,59 | 0,49 | 1,22 | 1,53 | 0,90 |
| cadmium | DE0001R | ng/m3 | 0,11 | 0,11 | 0,09 | 0,07 | 0,02 | 0,06 | 0,05 | 0,07 | 0,07 | 0,10 | 0,08 | 0,11 | 0,08 |
| copper | DE0001R | ng/m3 | 2,10 | 1,36 | 0,85 | 0,96 | 1,54 | 2,01 | 1,21 | 2,46 | 2,32 | 1,96 | 1,73 | 1,46 | 1,66 |
| lead | DE0001R | ng/m3 | 6,14 | 5,92 | 5,68 | 3,63 | 2,00 | 2,46 | 1,78 | 2,75 | 3,77 | 3,75 | 2,90 | 4,87 | 3,80 |
| nickel | DE0001R | ng/m3 | 1,21 | 1,03 | 1,07 | 1,08 | 0,88 | 1,35 | 1,89 | 2,02 | 1,59 | 1,14 | 1,28 | 1,80 | 1,36 |
| NO | | µg/m³ | | *not reported* | | | | | | | | | | | |
| chromium | | ng/m3 | | *not reported* | | | | | | | | | | | |
| mercury | | ng/m3 | | *not reported* | | | | | | | | | | | |
| zinc | | ng/m3 | | *not reported* | | | | | | | | | | | |
| PCB_118 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_138 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_153 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_180 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_28 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_52 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| anthracene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)anthracene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)pyrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(ghi)perylene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| chrysene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| flouranthene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| γ-HCH | | ng/m3 | | *not reported* | | | | | | | | | | | |
| indeno(1,2,3-cd)pyrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| phenanthrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| pyrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| *Extra reported non-CAMP components* | | | | | | | | | | | | | | | |
| iron | DE0001R | ng/m3 | 37,7 | 61,4 | 42,7 | 39,5 | 57,9 | 39,7 | 50,1 | 135,4 | 92,5 | 64,7 | 56,5 | 52,4 | 60,88 |
| manganese | DE0001R | ng/m3 | 1,4 | 1,62 | 1,49 | 1,35 | 1,58 | 1,31 | 1,55 | 3,63 | 2,7 | 1,81 | 1,28 | 1,62 | 1,78 |

# ICELAND

**ICELAND precipitation**

## Components in precipitation

| Mandatory | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | IS0090R | mg/l | 0,37 | 0,49 | 0,35 | 0,88 | 0,30 | 0,17 | 0,29 | 0,35 | 0,08 | 0,25 | 0,19 | 0,23 | 0,30 |
| | IS0091R | mg/l | 0,01 | 0,02 | 0,06 | 0,29 | 0,16 | 0,03 | 0,29 | 0,26 | 0,03 | 0,08 | 0,01 | 0,02 | 0,08 |
| nitrate | IS0090R | mg/l | 0,11 | 0,15 | 0,16 | 0,48 | 0,13 | 0,11 | 0,14 | 0,20 | 0,05 | 0,10 | 0,04 | 0,04 | 0,13 |
| | IS0091R | mg/l | 2,42 | 0,10 | 0,24 | 0,28 | 0,15 | 0,05 | 0,07 | 0,11 | 0,05 | 0,05 | 0,02 | 0,02 | 0,27 |
| precipitation | IS0090R | mm | 36,5 | 42,6 | 98,9 | 77,8 | 79,7 | 49,5 | 65,8 | 65,9 | 174,5 | 80,4 | 105,7 | 93,5 | 970,8 |
| | IS0091R | mm | 118,0 | 74,4 | 195,4 | 110,5 | 65,8 | 103,0 | 103,4 | 114,7 | 265,8 | 75,8 | 225,3 | 155,0 | 1607,1 |
| arsenic | IS0090R | µg/l | 0,26 | 0,63 | 0,31 | 0,16 | 0,04 | 0,05 | 0,10 | 0,07 | 0,22 | 0,24 | 0,07 | 0,16 | 0,18 |
| cadmium | IS0090R | µg/l | 0,01 | 0,01 | 0,02 | 0,02 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 |
| | IS0091R | µg/l | 0,01 | 0,02 | 0,02 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 |
| chromium | IS0090R | µg/l | 0,14 | 0,41 | 0,39 | 0,30 | 0,12 | 0,31 | 0,27 | 0,14 | 0,10 | 0,40 | 0,34 | 0,15 | 0,24 |
| | IS0091R | µg/l | 0,35 | 0,12 | 0,33 | 0,30 | 0,37 | 0,41 | 0,09 | 0,30 | 0,64 | 0,21 | 0,29 | 0,20 | 0,34 |
| copper | IS0090R | µg/l | 1,40 | 2,49 | 1,75 | 1,71 | 1,57 | 2,42 | 1,93 | 1,53 | 1,47 | 1,74 | 1,05 | 1,27 | 1,61 |
| | IS0091R | µg/l | 1,34 | 1,46 | 2,76 | 0,70 | 0,94 | 3,68 | 1,18 | 1,13 | 0,98 | 1,05 | 0,68 | 0,90 | 1,37 |
| lead | IS0090R | µg/l | 0,34 | 0,40 | 0,41 | 0,81 | 0,55 | 0,53 | 0,42 | 0,51 | 0,24 | 0,37 | 0,16 | 0,21 | 0,38 |
| | IS0091R | µg/l | 0,33 | 0,49 | 0,73 | 0,56 | 0,46 | 0,32 | 0,37 | 0,41 | 0,17 | 0,35 | 0,29 | 0,24 | 0,38 |
| nickel | IS0090R | µg/l | 0,46 | 1,04 | 0,60 | 0,54 | 0,40 | 0,52 | 0,51 | 0,47 | 0,23 | 1,19 | 0,76 | 0,35 | 0,55 |
| | IS0091R | µg/l | 0,44 | 0,30 | 0,33 | 0,32 | 0,35 | 0,34 | 0,17 | 0,33 | 0,37 | 0,35 | 0,41 | 0,21 | 0,33 |
| zinc | IS0090R | µg/l | 3,51 | 6,09 | 7,66 | 30,86 | 4,00 | 6,63 | 8,47 | 4,64 | 4,14 | 7,35 | 2,47 | 3,13 | 7,13 |
| | IS0091R | µg/l | 10,05 | 15,82 | 17,33 | 29,80 | 8,41 | 4,85 | 8,86 | 12,24 | 6,92 | 7,68 | 10,51 | 11,93 | 11,86 |
| precipitation | IS0090R | mm | 36,5 | 42,6 | 98,9 | 77,8 | 79,7 | 49,5 | 65,8 | 65,9 | 174,5 | 80,4 | 105,7 | 93,5 | 970,8 |
| | IS0091R | mm | 118,0 | 74,4 | 195,4 | 110,5 | 65,8 | 103,0 | 103,4 | 114,7 | 265,8 | 75,8 | 225,3 | 155,0 | 1607,1 |
| γ_HCH | IS0091R | ng/l | 0,03 | 0,04 | 0,11 | 0,08 | 0,07 | 0,05 | 0,05 | 0,09 | 0,03 | 0,05 | 0,04 | 0,05 | 0,06 |
| precipitation | IS0091R | mm | 49,0 | 27,0 | 81,0 | 53,0 | 36,0 | 45,0 | 56,0 | 44,0 | 110,0 | 48,0 | 88,0 | 68,0 | 705,0 |
| mercury | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| **Voluntary** | | | | | | | | | | | | | | | |
| PCB_101 | IS0091R | ng/l | 0,009 | 0,007 | 0,004 | 0,004 | 0,006 | 0,013 | 0,002 | 0,002 | 0,002 | 0,006 | 0,001 | 0,002 | 0,004 |
| PCB_118 | IS0091R | ng/l | 0,008 | 0,007 | 0,003 | 0,004 | 0,006 | 0,007 | 0,003 | 0,005 | 0,002 | 0,009 | 0,002 | 0,003 | 0,004 |
| PCB_138 | IS0091R | ng/l | 0,007 | 0,007 | 0,003 | 0,004 | 0,006 | 0,023 | 0,003 | 0,005 | 0,006 | 0,008 | 0,002 | 0,005 | 0,006 |
| PCB_153 | IS0091R | ng/l | 0,014 | 0,007 | 0,005 | 0,008 | 0,008 | 0,034 | 0,007 | 0,005 | 0,009 | 0,012 | 0,005 | 0,009 | 0,010 |
| PCB_180 | IS0091R | ng/l | 0,004 | 0,007 | 0,003 | 0,004 | 0,006 | 0,017 | 0,006 | 0,005 | 0,004 | 0,007 | 0,002 | 0,005 | 0,005 |
| PCB_28 | IS0091R | ng/l | 0,094 | 0,171 | 0,057 | 0,087 | 0,128 | 0,102 | 0,011 | 0,028 | 0,005 | 0,013 | 0,007 | 0,009 | 0,045 |
| PCB_52 | IS0091R | ng/l | 0,026 | 0,048 | 0,016 | 0,024 | 0,036 | 0,029 | 0,002 | 0,004 | 0,001 | 0,006 | 0,003 | 0,002 | 0,013 |
| precipitation | IS0091R | mm | 49,0 | 27,0 | 81,0 | 53,0 | 36,0 | 45,0 | 56,0 | 44,0 | 110,0 | 48,0 | 88,0 | 68,0 | 705,0 |
| anthracene | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| benzo(a)anthracene | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| benzo(a)pyrene | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| benzo(ghi)perylene | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| chrysene | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| flouranthene | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| indeno(1,2,3-cd)pyrene | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| phenanthrene | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| pyrene | IS0091R | ng/l | | *not reported* | | | | | | | | | | | |
| *Extra reported non-CAMP components* | | | | | | | | | | | | | | | |
| aluminium | IS0090R | µg/l | 59,89 | 269,90 | 238,12 | 148,00 | 168,06 | 329,18 | 318,01 | 111,37 | 69,55 | 145,09 | 49,21 | 128,62 | 152,17 |
| | IS0091R | µg/l | 245,60 | 232,07 | 123,18 | 213,49 | 397,00 | 442,21 | 87,27 | 123,44 | 81,85 | 248,20 | 129,83 | 52,03 | 165,91 |
| iron | IS0090R | µg/l | 19,57 | 206,18 | 190,89 | 141,99 | 104,19 | 290,38 | 268,27 | 63,38 | 57,48 | 111,78 | 38,81 | 79,71 | 117,95 |
| | IS0091R | µg/l | 487,07 | 291,83 | 193,89 | 238,48 | 531,70 | 640,69 | 100,45 | 167,47 | 271,03 | 288,85 | 162,74 | 79,50 | 259,42 |
| manganese | IS0090R | µg/l | 0,93 | 4,36 | 4,03 | 3,77 | 2,32 | 5,42 | 6,23 | 2,12 | 1,65 | 2,52 | 1,00 | 1,50 | 2,73 |
| | IS0091R | µg/l | 6,60 | 5,75 | 2,73 | 4,66 | 9,23 | 10,55 | 2,59 | 2,62 | 2,13 | 5,35 | 2,57 | 1,13 | 3,88 |
| vanadium | IS0090R | µg/l | 1,33 | 3,41 | 1,91 | 1,15 | 0,52 | 0,99 | 1,11 | 0,56 | 1,43 | 1,66 | 0,65 | 1,47 | 1,30 |
| precipitation | IS0090R | mm | 36,5 | 42,6 | 98,9 | 77,8 | 79,7 | 49,5 | 65,8 | 65,9 | 174,5 | 80,4 | 105,7 | 93,5 | 970,8 |
| | IS0091R | mm | 118,0 | 74,4 | 195,4 | 110,5 | 65,8 | 103,0 | 103,4 | 114,7 | 265,8 | 75,8 | 225,3 | 155,0 | 1607,1 |
| α_HCH | IS0091R | ng/l | 0,118 | 0,122 | 0,078 | 0,106 | 0,122 | 0,124 | 0,104 | 0,105 | 0,067 | 0,069 | 0,084 | 0,101 | 0,094 |
| β_HCH | IS0091R | ng/l | 0,008 | 0,015 | 0,005 | 0,007 | 0,011 | 0,009 | 0,005 | 0,007 | 0,003 | 0,007 | 0,004 | 0,004 | 0,006 |
| cis_CD | IS0091R | ng/l | 0,005 | 0,004 | 0,005 | 0,002 | 0,003 | 0,004 | 0,005 | 0,006 | 0,005 | 0,005 | 0,005 | 0,008 | 0,005 |
| dieldrin | IS0091R | ng/l | 0,040 | 0,022 | 0,031 | 0,030 | 0,029 | 0,021 | 0,016 | 0,016 | 0,027 | 0,031 | 0,031 | 0,044 | 0,029 |
| HCB | IS0091R | ng/l | 0,037 | 0,078 | 0,017 | 0,029 | 0,031 | 0,023 | 0,006 | 0,008 | 0,006 | 0,014 | 0,007 | 0,008 | 0,017 |
| op_DDT | IS0091R | ng/l | 0,013 | 0,010 | 0,008 | 0,014 | 0,006 | 0,008 | 0,007 | 0,008 | 0,003 | 0,008 | 0,004 | 0,006 | 0,007 |

**Iceland - airborne**

### Airborne components

| **Mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_3$ | IS0091R | µg/m$^3$ | 0,02 | 0,04 | 0,09 | 0,20 | 0,10 | 0,06 | 0,06 | 0,14 | 0,04 | 0,08 | 0,02 | 0,02 | 0,07 |
| $NO_2$ | | µg/m$^3$ | *not reported* | | | | | | | | | | | | |
| $HNO_3$ | | µg/m$^3$ | *not reported* | | | | | | | | | | | | |
| $NO_3$ | | µg/m$^3$ | *not reported* | | | | | | | | | | | | |
| $HNO_3 + NO_3$ | | µg/m$^3$ | *not reported* | | | | | | | | | | | | |
| $NH_3$ | | µg/m$^3$ | *not reported* | | | | | | | | | | | | |
| $NH_4$ | | µg/m$^3$ | *not reported* | | | | | | | | | | | | |
| $NH_3$ + NH4 | | µg/m$^3$ | *not reported* | | | | | | | | | | | | |
| **voluntary** | | | | | | | | | | | | | | | |
| arsenic | IS0091R | ng/m3 | 0,23 | 0,22 | 0,29 | 0,21 | 0,21 | 0,14 | 0,10 | 0,21 | 0,25 | 0,49 | 0,12 | 0,14 | 0,22 |
| cadmium | IS0091R | ng/m3 | 0,02 | 0,03 | 0,02 | 1,33 | 0,18 | 0,14 | 0,08 | 0,35 | 0,24 | 1,29 | 0,03 | 0,08 | 0,32 |
| chromium | IS0091R | ng/m3 | 3,62 | 14,17 | 21,29 | 7,75 | 12,57 | 9,25 | 11,58 | 25,75 | 11,62 | 5,84 | 3,11 | 3,05 | 10,80 |
| copper | IS0091R | ng/m3 | 1,44 | 1,10 | 0,86 | 1,45 | 2,00 | 0,84 | 0,40 | 1,17 | 1,48 | 12,13 | 0,76 | 0,43 | 2,00 |
| lead | IS0091R | ng/m3 | 0,48 | 0,36 | 0,50 | 5,17 | 1,53 | 1,37 | 0,45 | 1,88 | 1,29 | 4,91 | 0,62 | 0,54 | 1,59 |
| mercury (*aerosol*) | IS0091R | pg/m3 | 3,81 | 4,05 | 3,16 | 5,05 | 2,48 | 3,55 | 1,45 | 4,52 | 3,00 | 5,35 | 8,04 | 2,10 | 3,88 |
| nickel | IS0091R | ng/m3 | 3,17 | 8,55 | 12,36 | 5,07 | 7,74 | 5,56 | 6,37 | 13,44 | 8,86 | 11,26 | 2,86 | 1,60 | 7,24 |
| zinc | IS0091R | ng/m3 | 7,28 | 3,98 | 2,33 | 38,02 | 29,46 | 18,97 | 6,51 | 22,50 | 55,05 | 296,00 | 10,83 | 5,98 | 41,41 |
| γ-HCH | IS0091R | pg/m3 | 5,94 | 8,05 | 8,15 | 8,79 | 7,91 | 8,17 | 5,90 | 7,58 | 5,68 | 7,39 | 8,92 | 8,72 | 7,60 |
| PCB_28 | IS0091R | pg/m3 | 4,08 | 4,14 | 3,68 | 3,80 | 3,89 | 3,65 | 7,16 | 5,99 | 3,87 | 5,04 | 4,46 | 4,57 | 4,53 |
| PCB_52 | IS0091R | pg/m3 | 3,35 | 1,17 | 1,73 | 1,88 | 1,10 | 2,02 | 2,58 | 2,35 | 2,21 | 2,90 | 2,85 | 2,91 | 2,25 |
| PCB_101 | IS0091R | pg/m3 | 0,81 | 0,57 | 0,54 | 0,66 | 0,41 | 0,41 | 0,80 | 0,70 | 0,66 | 0,60 | 0,82 | 0,86 | 0,65 |
| PCB_118 | IS0091R | pg/m3 | 0,27 | 0,28 | 0,16 | 0,17 | 0,17 | 0,16 | 0,17 | 0,17 | 0,16 | 0,22 | 0,18 | 0,18 | 0,19 |
| PCB_138 | IS0091R | pg/m3 | 0,18 | 0,28 | 0,16 | 0,17 | 0,17 | 0,16 | 0,08 | 0,09 | 0,08 | 0,11 | 0,09 | 0,09 | 0,14 |
| PCB_153 | IS0091R | pg/m3 | 0,18 | 0,32 | 0,16 | 0,17 | 0,17 | 0,16 | 0,33 | 0,44 | 0,25 | 0,28 | 0,28 | 0,25 | 0,25 |
| PCB_180 | IS0091R | pg/m3 | 0,18 | 0,18 | 0,16 | 0,17 | 0,17 | 0,16 | 0,18 | 0,14 | 0,14 | 0,17 | 0,20 | 0,14 | 0,17 |
| NO | | µg/m$^3$ | *not reported* | | | | | | | | | | | | |
| anthracene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| benzo(a)anthracene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| benzo(a)pyrene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| benzo(ghi)perylene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| chrysene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| flouranthene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| indeno(1,2,3-cd)pyrene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| phenanthrene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| pyrene | | ng/m3 | *not reported* | | | | | | | | | | | | |
| *Extra reported non-CAMP components* | | | | | | | | | | | | | | | |
| aluminium | | ng/m3 | 954,09 | 600,99 | 210,65 | 451,72 | 908,95 | 360,53 | 37,64 | 152,87 | 595,95 | 4354,37 | 629,81 | 79,19 | 778,06 |
| iron | | ng/m3 | 1347,92 | 898,19 | 293,26 | 606,67 | 1193,81 | 525,46 | 89,74 | 322,91 | 813,86 | 5894,45 | 114,54 | 102,42 | 1016,94 |
| manganese | | ng/m3 | 19,79 | 15,10 | 5,04 | 10,84 | 21,48 | 9,73 | 1,60 | 6,20 | 14,27 | 101,24 | 6,13 | 1,92 | 17,78 |
| vanadium | | ng/m3 | 4,63 | 3,78 | 2,19 | 2,90 | 4,87 | 2,63 | 0,81 | 1,57 | 3,49 | 19,76 | 1,00 | 0,99 | 4,05 |
| PCB_31 | | pg/m3 | 3,91 | 3,97 | 3,52 | 3,64 | 3,73 | 3,49 | 4,17 | 2,79 | 2,29 | 3,75 | 3,39 | 3,43 | 3,50 |
| PCB_105 | | pg/m3 | 0,09 | 0,09 | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 | 0,09 | 0,08 | 0,11 | 0,09 | 0,09 | 0,09 |
| PCB_156 | | pg/m3 | 0,18 | 0,18 | 0,16 | 0,17 | 0,17 | 0,16 | 0,08 | 0,09 | 0,08 | 0,11 | 0,09 | 0,09 | 0,13 |
| α_HCH | | pg/m3 | 5,68 | 6,29 | 5,76 | 5,21 | 6,32 | 7,07 | 3,83 | 5,66 | 3,79 | 4,18 | 3,39 | 2,72 | 4,99 |
| β_HCH | | pg/m3 | 0,18 | 0,18 | 0,16 | 0,17 | 0,17 | 0,16 | 0,76 | 0,71 | 0,43 | 0,32 | 0,42 | 0,27 | 0,33 |
| cis_CD | | pg/m3 | 0,53 | 0,67 | 0,61 | 0,70 | 0,56 | 0,60 | 0,54 | 0,48 | 0,42 | 0,51 | 0,44 | 0,41 | 0,54 |
| dieldrin | | pg/m3 | 0,69 | 0,71 | 0,79 | 0,83 | 0,67 | 0,54 | 0,50 | 0,52 | 0,36 | 0,49 | 0,39 | 0,35 | 0,57 |
| HCB | | pg/m3 | 4,715 | 3,243 | 3,121 | 2,475 | 2,686 | 3,493 | 2,051 | 2,875 | 2,044 | 2,353 | 1,72 | 1,446 | 2,69 |
| op_DDT | | pg/m3 | 0,09 | 0,09 | 0,08 | 0,08 | 0,08 | 0,08 | 0,17 | 0,17 | 0,16 | 0,22 | 0,18 | 0,18 | 0,13 |
| pp_DDD | | pg/m3 | 0,18 | 0,18 | 0,16 | 0,17 | 0,34 | 0,16 | 0,17 | 0,17 | 0,16 | 0,22 | 0,18 | 0,18 | 0,19 |
| pp_DDE | | pg/m3 | 0,27 | 0,18 | 0,16 | 0,17 | 0,17 | 0,16 | 0,17 | 0,17 | 0,16 | 0,22 | 0,18 | 0,18 | 0,18 |
| pp_DDT | | pg/m3 | 0,18 | 0,18 | 0,16 | 0,17 | 0,94 | 0,16 | 0,17 | 0,17 | 0,16 | 0,22 | 0,18 | 0,18 | 0,24 |
| toxaphene 26 | | pg/m3 | 0,58 | 0,50 | 0,44 | 0,32 | 0,21 | 0,24 | 0,34 | 0,30 | 0,28 | 0,36 | 0,38 | 0,51 | 0,37 |
| toxaphene 50 | | pg/m3 | 0,09 | 0,09 | 0,08 | 0,08 | 0,08 | 0,44 | 0,08 | 0,09 | 0,08 | 0,11 | 0,09 | 0,09 | 0,12 |
| toxaphene 62 | | pg/m3 | 0,09 | 0,09 | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 | 0,09 | 0,08 | 0,11 | 0,09 | 0,09 | 0,09 |
| trans_CD | | pg/m3 | 0,23 | 0,28 | 0,23 | 0,26 | 0,16 | 0,14 | 0,18 | 0,09 | 0,18 | 0,17 | 0,20 | 0,20 | 0,19 |

# IRELAND

**IRELAND precipitation**

## Components in precipitation

| **Mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | IE0001R | mg/l | 0,13 | 0,15 | 0,21 | 0,17 | 0,48 | 0,26 | 0,09 | 0,21 | 0,15 | 0,07 | 0,18 | 0,25 | 0,17 |
| nitrate | IE0001R | mg/l | 0,03 | 0,11 | 0,2 | 0,05 | 0,1 | 0,07 | 0,12 | 0,14 | 0,09 | 0,05 | 0,11 | 0,25 | 0,11 |
| precipitation | IE0001R | mm | 174 | 79 | 161 | 86 | 39 | 99 | 80 | 101 | 153 | 213 | 68 | 114 | 1367,00 |
| | | | | | | | | | | | | | | | |
| arsenic | IE0001R | µg/l | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,50 |
| cadmium | IE0001R | µg/l | 0,05 | 0,27 | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 | 0,05 | 0,06 |
| chromium | IE0001R | µg/l | 0,5 | 0,5 | 0,5 | 0,5 | 2,4 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,55 |
| copper | IE0001R | µg/l | 2 | 76,6 | 4,8 | 8 | 21,6 | 2,3 | 2,8 | 3,1 | 4,6 | 4,3 | 5,8 | 4,1 | 8,74 |
| lead | IE0001R | µg/l | 0,5 | 3,6 | 0,5 | 3,2 | 3,1 | 2,1 | 4,4 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 1,27 |
| 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 | 50,00 |
| nickel | IE0001R | µg/l | 0,5 | 30,4 | 2,4 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 0,5 | 2,45 |
| zinc | IE0001R | µg/l | 115 | 157,5 | 17,2 | 12,1 | 22,6 | 5,8 | 3,7 | 7,8 | 16,6 | 5,7 | 5,2 | 4,6 | 31,77 |
| precipitation | IE0001R | mm | 174 | 79 | 161 | 86 | 39 | 99 | 80 | 101 | 153 | 213 | 68 | 114 | 1367,00 |
| precipitation Hg | IE0001R | mm | 174 | 79 | 161 | 86 | 39 | 99 | 80 | 101 | 153 | 213 | 68 | 114 | 1367,00 |
| | | | | | | | | | | | | | | | |
| γ-HCH | | ng/l | | *not reported* | | | | | | | | | | | |

| **voluntary** | | | | | |
|---|---|---|---|---|---|
| PCB_52 | | ng/l | | *not reported* | |
| PCB_101 | | ng/l | | *not reported* | |
| PCB_118 | | ng/l | | *not reported* | |
| PCB_138 | | ng/l | | *not reported* | |
| PCB_153 | | ng/l | | *not reported* | |
| PCB_180 | | ng/l | | *not reported* | |
| PCB_28 | | ng/l | | *not reported* | |
| anthracene | | ng/l | | *not reported* | |
| benzo(a)anthracene | | ng/l | | *not reported* | |
| benzo(a)pyrene | | ng/l | | *not reported* | |
| benzo(ghi)perylene | | ng/l | | *not reported* | |
| chrysene | | ng/l | | *not reported* | |
| flouranthene | | ng/l | | *not reported* | |
| indeno(1,2,3-cd)pyrene | | ng/l | | *not reported* | |
| phenanthrene | | ng/l | | *not reported* | |
| pyrene | | ng/l | | *not reported* | |

| *Extra reported non-CAMP components* | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| aluminium | | µg/l | 5,00 | 24,70 | 24,20 | 14,60 | 59,10 | 11,60 | 15,70 | 5,00 | 5,00 | 5,00 | 5,00 | 13,90 | 12,39 |
| manganese | | µg/l | 16,60 | 36,50 | 2,40 | 0,50 | 8,70 | 2,40 | 6,50 | 7,90 | 16,60 | 2,30 | 7,30 | 2,10 | 8,68 |
| vanadium | | 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 | 0,50 |
| precipitation | | mm | 174,0 | 79,0 | 161,0 | 86,0 | 39,0 | 99,0 | 80,0 | 101,0 | 153,0 | 213,0 | 68,0 | 114,0 | 1367,0 |

**Ireland airborne**

**Airborne components**

| **mandatory** | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | µg/m³ | *not reported* | | | | | | | | | | | | |
| $NO_3$ | µg/m³ | *not reported* | | | | | | | | | | | | |
| $HNO_3 + NO_3$ | µg/m³ | *not reported* | | | | | | | | | | | | |
| $NH_3$ | µg/m³ | *not reported* | | | | | | | | | | | | |
| $NH_4$ | µg/m³ | *not reported* | | | | | | | | | | | | |
| $NH_3$ + NH4 | µg/m³ | *not reported* | | | | | | | | | | | | |

| **voluntary** | | |
|---|---|---|
| NO | µg/m³ | *not reported* |
| arsenic | ng/m3 | *not reported* |
| cadmium | ng/m3 | *not reported* |
| chromium | ng/m3 | *not reported* |
| copper | ng/m3 | *not reported* |
| lead | ng/m3 | *not reported* |
| mercury | ng/m3 | *not reported* |
| nickel | ng/m3 | *not reported* |
| zinc | ng/m3 | *not reported* |
| PCB_118 | pg/m3 | *not reported* |
| PCB_138 | pg/m3 | *not reported* |
| PCB_153 | pg/m3 | *not reported* |
| PCB_180 | pg/m3 | *not reported* |
| PCB_28 | pg/m3 | *not reported* |
| PCB_52 | pg/m3 | *not reported* |
| anthracene | ng/m3 | *not reported* |
| benzo(a)anthracene | ng/m3 | *not reported* |
| benzo(a)pyrene | ng/m3 | *not reported* |
| benzo(ghi)perylene | ng/m3 | *not reported* |
| chrysene | ng/m3 | *not reported* |
| flouranthene | ng/m3 | *not reported* |
| γ-HCH | ng/m3 | *not reported* |
| indeno(1,2,3-cd)pyrene | ng/m3 | *not reported* |
| phenanthrene | ng/m3 | *not reported* |
| pyrene | ng/m3 | *not reported* |

# NETHERLANDS

**NETHERLANDS precipitation**

## Components in precipitation

| **Mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | NL0009R | mg/l | | 1,06 | | 1,51 | 1,72 | 0,67 | 0,62 | 0,57 | 0,69 | 0,5 | 0,57 | 0,45 | 0,60 |
| | NL0091R | mg/l | 0,28 | 0,55 | 1,12 | 1,76 | 0,53 | 0,62 | 0,42 | | 0,43 | 0,42 | 0,52 | 0,306 | 0,50 |
| nitrate | NL0009R | mg/l | | 0,59 | 0,43 | 0,96 | 0,80 | 0,37 | 0,43 | 0,27 | 0,35 | 0,33 | 0,39 | 0,36 | 0,38 |
| | NL0091R | mg/l | 0,37 | 0,42 | 0,49 | 0,92 | 0,67 | 0,49 | 0,38 | 0,33 | 0,38 | 0,42 | 0,36 | 0,36 | 0,47 |
| precipitation | NL0009R | mm | | 9,6 | 59,7 | 12,9 | 17,6 | 85,0 | 120,9 | 140,3 | 95,5 | 73,7 | 75,3 | 43,8 | 734,3 |
| | NL0091R | mm | 85,2 | 67,8 | 48,5 | 31,2 | 24,9 | 55,8 | 109,7 | 14,3 | 72,6 | 87,6 | 56,7 | 65,7 | 720,0 |
| arsenic | NL0009R | µg/l | 0,08 | 0,08 | | 0,36 | 0,42 | 0,08 | | 0,08 | | | 0,28 | 0,17 | 0,11 |
| | NL0091R | µg/l | 0,08 | 0,08 | 0,08 | 0,30 | 0,08 | 0,08 | 0,08 | | 0,08 | 0,08 | 0,08 | 0,08 | 0,08 |
| cadmium | NL0009R | µg/l | 0,02 | 0,04 | | 0,14 | 0,12 | 0,05 | 0,02 | 0,04 | | | 0,07 | 0,09 | 0,05 |
| | NL0091R | µg/l | 0,02 | 0,06 | 0,06 | 0,09 | 0,08 | 0,05 | 0,02 | | 0,03 | 0,02 | 0,02 | 0,02 | 0,03 |
| chromium | NL0009R | µg/l | 0,26 | 0,26 | | 0,26 | 0,26 | 0,26 | 0,26 | 0,26 | | | 0,26 | 0,26 | 0,26 |
| | NL0091R | µg/l | 0,26 | 0,26 | 0,26 | 0,26 | 0,26 | 0,26 | 0,26 | | 0,26 | 0,26 | 0,26 | 0,26 | 0,26 |
| copper | NL0009R | µg/l | 0,41 | | | 6,66 | 2,02 | 0,98 | 0,92 | 0,70 | | | 1,07 | 1,09 | 1,04 |
| | NL0091R | µg/l | 0,84 | 4,42 | 2,69 | 5,54 | 4,36 | 3,02 | 1,58 | | 1,65 | 1,07 | 1,32 | 0,92 | 1,76 |
| lead | NL0009R | µg/l | 0,86 | 1,19 | | 2,15 | 1,79 | 0,93 | 1,91 | 0,46 | | | 1,69 | 1,69 | 1,24 |
| | NL0091R | µg/l | 2,34 | 2,99 | 2,17 | 3,61 | 2,31 | 2,20 | 1,47 | | 2,45 | 2,05 | 2,64 | 2,84 | 2,33 |
| mercury | NL0091R | ng/l | 6,92 | 9,17 | 10,73 | 33,41 | 15,76 | | 19,40 | 14,73 | 14,83 | 19,48 | 158,17 | 132,23 | 39,53 |
| nickel | NL0009R | µg/l | 0,21 | 0,55 | | 0,49 | 0,21 | 0,21 | 0,21 | 0,21 | | | 0,45 | 0,21 | 0,24 |
| | NL0091R | µg/l | 0,21 | 0,21 | 0,53 | 0,67 | 0,51 | 0,41 | 0,21 | | 0,54 | 0,21 | 0,21 | 0,30 | 0,31 |
| zinc | NL0009R | µg/l | 1,95 | 6,50 | | 12,70 | 9,60 | 4,30 | 5,60 | 1,95 | | | 6,80 | 9,51 | 4,99 |
| | NL0091R | µg/l | 4,70 | 5,70 | 6,20 | 17,70 | 6,70 | 7,90 | 4,70 | | 4,40 | 4,00 | 5,50 | 5,06 | 5,54 |
| precipitation | NL0009R | mm | 125,1 | 9,5 | | 12,6 | 18,3 | 78,5 | 120,3 | 131,6 | | | 69,9 | 96,5 | 662,3 |
| | NL0091R | mm | 132,5 | 30,2 | 49,4 | 24 | 22,3 | 50,9 | 113,8 | | 57,3 | 92,2 | 58,4 | 116,7 | 747,7 |
| precipitation Hg | NL0091R | mm | 110,2 | 45,7 | 33,6 | 19,9 | 29,7 | | 97 | 109,5 | 54,6 | 84,7 | 52,5 | 45,7 | 683,1 |
| γ-HCH | NL0091R | ng/l | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 11,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,00 | 5,37 |
| precipitation | NL0091R | mm | 150,3 | 37 | 58,6 | 25,9 | 26,9 | 55,5 | 86,5 | 102,3 | 65,4 | 97,2 | 66 | 134 | 905,6 |

**voluntary**

| | | |
|---|---|---|
| PCB_101 | ng/l | *not reported* |
| PCB_118 | ng/l | *not reported* |
| PCB_138 | ng/l | *not reported* |
| PCB_153 | ng/l | *not reported* |
| PCB_180 | ng/l | *not reported* |
| PCB_28 | ng/l | *not reported* |
| PCB_52 | ng/l | *not reported* |
| anthracene | ng/l | *not reported* |
| benzo(a)anthracene | ng/l | *not reported* |
| benzo(a)pyrene | ng/l | *not reported* |
| benzo(ghi)perylene | ng/l | *not reported* |
| chrysene | ng/l | *not reported* |
| flouranthene | ng/l | *not reported* |
| indeno(1,2,3-cd)pyrene | ng/l | *not reported* |
| phenanthrene | ng/l | *not reported* |
| pyrene | ng/l | *not reported* |

**Netherlands airborne**

## Airborne components

| **mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | NL0009R | µg/m³ | 5,11 | 3,21 | 3,72 | 3,51 | 1,68 | 1,92 | 1,38 | 1,88 | 2,58 | 4,81 | 5,03 | 8,29 | 3,59 |
| | NL0091R | µg/m³ | 7,26 | 5,56 | 6,94 | 6,85 | 4,04 | 4,32 | 4,00 | 4,26 | 4,75 | 6,90 | 7,44 | 9,89 | 6,02 |
| $NO_3$ | NL0009R | µg/m³ | 0,70 | 0,75 | 1,32 | 1,00 | 0,60 | 0,71 | 0,40 | 0,62 | 0,58 | 0,60 | 0,71 | 0,85 | 0,74 |
| | NL0091R | µg/m³ | 0,46 | 0,48 | 1,04 | 0,62 | 0,41 | 0,41 | 0,54 | 0,61 | 0,65 | 0,46 | 0,71 | 1,02 | 0,62 |
| $NH_4$ | NL0009R | µg/m³ | 0,95 | 1,14 | 1,88 | 1,54 | 1,13 | 1,20 | 0,88 | 1,63 | 0,83 | 0,97 | 1,07 | 1,76 | 1,25 |
| | NL0091R | µg/m³ | 0,75 | 0,85 | 1,47 | 0,97 | 0,86 | 0,83 | 1,12 | 1,33 | 1,07 | 0,83 | 1,28 | 2,12 | 1,12 |
| $NH_3$ | NL0091R | µg/m³ | 0,50 | 0,56 | 1,53 | 1,78 | 0,40 | 0,60 | 0,39 | 0,37 | 1,22 | 1,52 | 0,58 | 0,50 | 0,83 |
| $HNO_3$ | | µg/m³ | | *not reported* | | | | | | | | | | | |
| | | | | | | | | 0,83 | | | | | | | |
| **voluntary** | | | | | | | | | | | | | | | |
| NO | NL0009R | µg/m³ | 0,82 | 0,23 | 0,50 | 0,49 | 0,35 | 0,25 | 0,29 | 0,17 | 0,37 | 1,19 | 2,40 | 5,75 | 1,07 |
| | NL0091R | µg/m³ | 3,25 | 1,33 | 2,09 | 1,41 | 0,73 | 1,05 | 0,96 | 0,49 | 1,37 | 2,48 | 7,19 | 13,82 | 3,01 |
| arsenic | NL0009R | ng/m3 | 0,40 | 0,47 | 0,77 | 0,43 | 0,38 | 0,42 | 0,32 | 0,54 | 0,47 | 0,46 | 0,44 | 0,63 | 0,48 |
| cadmium | NL0009R | ng/m3 | 0,16 | 0,14 | 0,23 | 0,16 | 0,10 | 0,07 | 0,06 | 0,13 | 0,16 | 0,16 | 0,13 | 0,24 | 0,15 |
| lead | NL0009R | ng/m3 | 7,75 | 6,15 | 7,99 | 6,51 | 4,77 | 3,38 | 3,58 | 4,73 | 5,71 | 7,40 | 5,64 | 11,42 | 6,25 |
| nickel | NL0009R | ng/m3 | 1,31 | 1,51 | 2,15 | 2,07 | 2,31 | 2,35 | 1,03 | 1,55 | 1,61 | 1,11 | 1,30 | 1,80 | 1,67 |
| zinc | NL0009R | ng/m3 | 21,30 | 16,64 | 22,67 | 17,71 | 14,02 | 12,97 | 12,08 | 17,33 | 17,81 | 20,20 | 19,20 | 29,94 | 18,49 |
| chromium | | ng/m3 | | *not reported* | | | | | | | | | | | |
| copper | | ng/m3 | | *not reported* | | | | | | | | | | | |
| mercury | | ng/m3 | | *not reported* | | | | | | | | | | | |
| PCB_118 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_138 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_153 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_180 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_28 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_52 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| anthracene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)anthracene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)pyrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(ghi)perylene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| chrysene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| flouranthene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| γ-HCH | | ng/m3 | | *not reported* | | | | | | | | | | | |
| indeno(1,2,3-cd)pyrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| phenanthrene | | ng/m3 | | *not reported* | | | | | | | | | | | |
| pyrene | | ng/m3 | | *not reported* | | | | | | | | | | | |

# NORWAY

**NORWAY precipitation**

## Components in precipitation

| mandatory | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | NO0001R | mg/l | 0,39 | 0,10 | 0,48 | 1,86 | 0,54 | 0,18 | 0,25 | 0,13 | 0,13 | 0,18 | 0,19 | 0,31 | 0,33 |
| | NO0039R | mg/l | 0,05 | 0,08 | 0,12 | 0,18 | 0,10 | 0,06 | 0,19 | 0,04 | 0,03 | 0,03 | 0,03 | 0,04 | 0,07 |
| | NO0057R | mg/l | 0,02 | 0,05 | 0,12 | 0,14 | 0,01 | 0,33 | 0,14 | 0,21 | 0,07 | 0,06 | 0,02 | 0,02 | 0,10 |
| nitrate | NO0001R | mg/l | 0,56 | 0,21 | 0,44 | 1,13 | 0,36 | 0,24 | 0,30 | 0,21 | 0,21 | 0,26 | 0,38 | 0,35 | 0,48 |
| | NO0039R | mg/l | 0,10 | 0,03 | 0,11 | 0,10 | 0,06 | 0,04 | 0,10 | 0,02 | 0,02 | 0,01 | 0,02 | 0,03 | 0,05 |
| | NO0057R | mg/l | 0,06 | 0,05 | 0,10 | 0,20 | 0,07 | 1,06 | 0,25 | 0,16 | 0,11 | 0,07 | 0,03 | 0,07 | 0,12 |
| precipitation | NO0001R | mm | 228,2 | 40,2 | 121,2 | 88,3 | 70,4 | 151,4 | 99,1 | 215,2 | 128,7 | 361,2 | 70,6 | 126,0 | 1,0 |
| | NO0039R | mm | 35,0 | 262,8 | 29,0 | 82,6 | 238,0 | 205,7 | 81,6 | 85,9 | 371,0 | 65,3 | 318,5 | 225,7 | 2,2 |
| | NO0057R | mm | 17,9 | 6,9 | 95,4 | 36,1 | 4,1 | 1,2 | 19,9 | 11,8 | 14,9 | 14,5 | 19,5 | 12,6 | 254,8 |
| arsenic | NO0001R | µg/l | 0,24 | 0,10 | 0,19 | 0,29 | 0,16 | 0,06 | 0,06 | 0,05 | 0,06 | 0,07 | 0,13 | 0,15 | 0,19 |
| cadmium | NO0001R | µg/l | 0,05 | 0,01 | 0,08 | 0,12 | 0,07 | 0,01 | 0,02 | 0,02 | 0,01 | 0,05 | 0,03 | 0,03 | 0,07 |
| chromium | NO0001R | µg/l | 0,10 | 0,10 | 0,10 | 0,19 | 0,12 | 0,10 | 0,10 | 0,11 | 0,10 | 0,10 | 0,16 | 0,10 | 0,14 |
| copper | NO0001R | µg/l | 0,40 | 0,36 | 0,50 | 1,20 | 0,63 | 0,13 | 0,20 | 0,07 | 0,11 | 0,12 | 0,69 | 0,65 | 0,69 |
| lead | NO0001R | µg/l | 1,70 | 0,47 | 2,68 | 3,67 | 2,22 | 0,47 | 0,65 | 0,54 | 0,31 | 1,06 | 1,22 | 1,53 | 2,14 |
| mercury | NO0001R | ng/l | | | 7,19 | 11,70 | 13,30 | 5,13 | 24,32 | 13,01 | 10,30 | 8,34 | 9,90 | 1,90 | 9,85 |
| nickel | NO0001R | µg/l | 0,24 | 0,10 | 0,21 | 0,39 | 0,28 | 0,16 | 0,17 | 0,11 | 0,13 | 0,15 | 0,32 | 0,39 | 0,29 |
| zinc | NO0001R | µg/l | 4,74 | 2,85 | 4,62 | 18,19 | 5,02 | 1,98 | 2,95 | 1,91 | 0,99 | 2,31 | 6,44 | 4,29 | 8,71 |
| precipitation | NO0001R | mm | 223,8 | 37,6 | 115,5 | 104,1 | 71,1 | 146,7 | 101,5 | 213,1 | 123,8 | 334,9 | 83,0 | 156,8 | 56,3 |
| precipitation Hg | NO0001R | mm | | | 121,2 | 88,3 | 70,4 | 151,4 | 99,1 | 215,2 | 128,7 | 361,2 | 70,6 | 126,0 | 1432,1 |
| γ-HCH | NO0001R | ng/l | 0,34 | 0,30 | 1,15 | 1,94 | 2,19 | 1,32 | 0,76 | 0,41 | 0,64 | 0,41 | 0,78 | 0,24 | 0,91 |
| precipitation | NO0001R | mm | 98,5 | 34,8 | 131,1 | 35,4 | 93,0 | 77,7 | 73,9 | 50,8 | 147,2 | 80,7 | 133,1 | 15,7 | 971,8 |

| voluntary | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| PCB_101 | NO0001R | ng/l | | | 0,03 | 0,05 | 0,02 | 0,01 | 0,04 | 0,03 | 0,08 | 0,04 | 0,09 | 0,01 | 0,04 |
| PCB_118 | NO0001R | ng/l | | | 0,03 | 0,04 | 0,02 | 0,01 | 0,02 | 0,02 | 0,04 | 0,02 | 0,05 | 0,01 | 0,02 |
| PCB_138 | NO0001R | ng/l | | | 0,03 | 0,06 | 0,03 | 0,01 | 0,03 | 0,03 | 0,05 | 0,02 | 0,03 | 0,01 | 0,03 |
| PCB_153 | NO0001R | ng/l | | | 0,05 | 0,08 | 0,04 | 0,02 | 0,05 | 0,05 | 0,10 | 0,03 | 0,07 | 0,02 | 0,05 |
| PCB_180 | NO0001R | ng/l | | | 0,02 | 0,05 | 0,02 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 |
| PCB_28 | NO0001R | ng/l | | | 0,01 | 0,02 | 0,02 | 0,01 | 0,02 | 0,01 | 0,02 | 0,01 | 0,05 | 0,01 | 0,02 |
| PCB_52 | NO0001R | ng/l | | | 0,02 | 0,03 | 0,01 | 0,01 | 0,03 | 0,02 | 0,05 | 0,03 | 0,07 | 0,01 | 0,03 |
| precipitation | NO0001R | mm | | | 124,5 | 85,7 | 72,8 | 143,3 | 107,0 | 194,7 | 148,0 | 332,5 | 69,7 | 142,1 | 1420,3 |

| | | | |
|---|---|---|---|
| anthracene | | ng/l | *not reported* |
| benzo(a)anthracene | | ng/l | *not reported* |
| benzo(a)pyrene | | ng/l | *not reported* |
| benzo(ghi)perylene | | ng/l | *not reported* |
| chrysene | | ng/l | *not reported* |
| flouranthene | | ng/l | *not reported* |
| indeno(1,2,3-cd)pyrene | | ng/l | *not reported* |
| phenanthrene | | ng/l | *not reported* |
| pyrene | | ng/l | *not reported* |

*Extra reported non-CAMP components*

| | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| α_HCH | | ng/l | | | 286,55 | 456,76 | 899,96 | 272,93 | 359,65 | 325,25 | 284,18 | 487,89 | 382,25 | 256,87 | 347,63 |
| HCB | | ng/l | | | 76,85 | 82,30 | 213,72 | 46,95 | 408,91 | 117,18 | 66,84 | 57,36 | 293,56 | 64,72 | 130,91 |
| precipitation_amount | | ng/l | | | 124,5 | 85,7 | 72,8 | 143,3 | 107,0 | 194,7 | 148,0 | 332,5 | 69,7 | 142,1 | 971,8 |

**Norway - airborne**

## Airborne components

| **mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | NO0001R | µg/m$^3$ | 1,31 | 0,37 | 0,50 | 0,44 | 0,24 | 0,32 | 0,26 | 0,26 | 0,33 | 0,46 | 0,37 | 0,66 | 0,46 |
| | NO0039R | µg/m$^3$ | 0,34 | 0,23 | 0,07 | 0,15 | 0,09 | 0,15 | 0,26 | 0,17 | 0,27 | 0,32 | 0,21 | 0,28 | 0,21 |
| $NO_3$ | NO0001R | µg/m$^3$ | 0,03 | 0,06 | 0,16 | 0,34 | 0,17 | 0,23 | 0,26 | 0,17 | 0,25 | 0,14 | 0,36 | 0,10 | 0,19 |
| | NO0008R | µg/m$^3$ | 0,09 | 0,07 | 0,11 | 0,35 | 0,19 | 0,35 | 0,14 | 0,08 | 0,42 | 0,16 | 0,18 | 0,18 | 0,19 |
| | NO0039R | µg/m$^3$ | 0,03 | 0,04 | 0,06 | 0,08 | 0,06 | | 0,06 | 0,03 | 0,01 | 0,02 | 0,03 | 0,07 | 0,04 |
| | NO0042G | µg/m$^3$ | 0,12 | 0,04 | 0,02 | 0,03 | 0,04 | 0,04 | 0,05 | 0,02 | 0,04 | 0,08 | 0,07 | 0,06 | 0,05 |
| $HNO_3$ | NO0001R | µg/m$^3$ | 0,09 | 0,02 | 0,04 | 0,09 | 0,07 | 0,10 | 0,10 | 0,10 | 0,16 | 0,03 | 0,12 | 0,04 | 0,08 |
| | NO0042G | µg/m$^3$ | 0,01 | 0,01 | 0,02 | 0,02 | 0,03 | 0,03 | 0,02 | 0,02 | 0,03 | 0,05 | 0,04 | 0,03 | 0,03 |
| $HNO_3 + NO_3$ | NO0001R | µg/m$^3$ | 0,13 | 0,08 | 0,20 | 0,43 | 0,25 | 0,33 | 0,36 | 0,28 | 0,42 | 0,17 | 0,43 | 0,14 | 0,27 |
| | NO0039R | µg/m$^3$ | 0,06 | 0,05 | 0,08 | 0,17 | 0,10 | | 0,09 | 0,06 | 0,03 | 0,03 | 0,04 | 0,12 | 0,07 |
| | NO0042G | µg/m$^3$ | 0,13 | 0,05 | 0,04 | 0,05 | 0,07 | 0,08 | 0,06 | 0,03 | 0,06 | 0,12 | 0,11 | 0,09 | 0,07 |
| $NH_3$ | NO0001R | µg/m$^3$ | 0,09 | 0,08 | 0,12 | 0,23 | 0,20 | 0,36 | 0,37 | 0,40 | 0,46 | 0,18 | 0,28 | 0,16 | 0,24 |
| | NO0039R | µg/m$^3$ | 0,21 | 0,25 | 0,25 | 0,40 | 0,52 | | 0,47 | 0,63 | 0,64 | 0,33 | 0,19 | 0,42 | 0,39 |
| | NO0042G | µg/m$^3$ | 0,13 | 0,12 | 0,17 | 0,13 | 0,18 | 0,27 | 0,60 | 0,34 | 0,22 | 0,21 | 0,28 | 0,17 | 0,23 |
| $NH_3$ + NH4 | NO0001R | µg/m$^3$ | 0,39 | 0,11 | 0,36 | 1,12 | 0,59 | 0,63 | 0,75 | 0,67 | 0,75 | 0,31 | 0,53 | 0,27 | 0,54 |
| | NO0039R | µg/m$^3$ | 0,28 | 0,27 | 0,32 | 0,73 | 0,76 | | 0,55 | 0,72 | 0,57 | 0,37 | 0,19 | 0,45 | 0,47 |
| | NO0042G | µg/m$^3$ | 0,17 | 0,18 | 0,20 | 0,16 | 0,24 | 0,31 | 0,61 | 0,35 | 0,25 | 0,23 | 0,32 | 0,23 | 0,27 |
| $NH_4$ | NO0001R | µg/m$^3$ | 0,29 | 0,04 | 0,24 | 0,88 | 0,38 | 0,27 | 0,38 | 0,27 | 0,29 | 0,14 | 0,32 | 0,12 | 0,30 |
| | NO0039R | µg/m$^3$ | 0,06 | 0,01 | 0,08 | 0,33 | 0,25 | | 0,09 | 0,12 | 0,04 | 0,05 | 0,02 | 0,03 | 0,10 |
| | NO0042G | µg/m$^3$ | 0,05 | 0,06 | 0,04 | 0,03 | 0,07 | 0,04 | 0,01 | 0,01 | 0,03 | 0,02 | 0,05 | 0,05 | 0,04 |

| **voluntary** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| arsenic | NO0001R | ng/m3 | 0,37 | 0,12 | 0,26 | 0,38 | 0,16 | 0,13 | 0,17 | 0,25 | 0,14 | 0,18 | 0,11 | 0,12 | 0,20 |
| | NO0042R | ng/m3 | 0,25 | 0,12 | 0,13 | 0,12 | 0,04 | 0,02 | 0,01 | 0,01 | 0,01 | 0,01 | 0,11 | 0,05 | 0,07 |
| cadmium | NO0001R | ng/m3 | 0,06 | 0,02 | 0,04 | 0,11 | 0,07 | 0,02 | 0,02 | 0,05 | 0,02 | 0,08 | 0,02 | 0,03 | 0,04 |
| chromium | NO0001R | ng/m3 | 0,76 | 0,08 | 0,11 | 0,05 | -0,27 | -0,28 | -0,25 | 0,12 | -0,15 | -0,24 | -0,28 | -0,13 | -0,04 |
| copper | NO0001R | ng/m3 | 2,33 | 1,38 | 0,70 | 0,92 | 0,39 | 0,66 | 0,26 | 0,72 | 0,31 | 0,54 | 1,11 | 0,78 | 0,84 |
| lead | NO0001R | ng/m3 | 4,18 | 0,67 | 1,40 | 3,09 | 2,18 | 0,67 | 0,79 | 1,64 | 1,08 | 1,83 | 0,78 | 1,12 | 1,62 |
| mercury | NO0042R | ng/m3 | 1,67 | 1,61 | 1,69 | 1,51 | 1,31 | 1,55 | 1,54 | 1,46 | 1,43 | 1,39 | 1,42 | 1,47 | 1,50 |
| nickel | NO0001R | ng/m3 | 0,70 | 0,37 | 0,98 | 1,08 | 0,37 | 0,43 | 0,47 | 0,63 | 0,44 | 0,53 | 0,36 | 0,44 | 0,57 |
| zinc | NO0001R | ng/m3 | 6,74 | 2,55 | 4,76 | 6,88 | 4,03 | 2,05 | 2,05 | 3,85 | 2,66 | 5,22 | 2,21 | 3,16 | 3,85 |
| | NO0042R | ng/m3 | 2,11 | 2,06 | 25,10 | 1,76 | 0,79 | 0,34 | 0,39 | 0,45 | 1,69 | 0,48 | 1,93 | 13,75 | 4,24 |
| PCB_101 | NO0001R | pg/m3 | 0,67 | 0,60 | 0,75 | 0,90 | | 0,97 | 0,78 | 1,66 | 0,53 | 0,79 | 0,72 | 0,80 | 0,83 |
| | NO0042R | pg/m3 | 0,43 | 0,47 | 0,47 | 0,45 | 0,34 | 0,34 | 0,75 | 0,32 | 0,25 | 0,34 | 0,39 | 0,55 | 0,43 |
| PCB_118 | NO0001R | pg/m3 | 0,19 | 0,19 | 0,38 | 0,57 | | 0,47 | 0,29 | 0,49 | 0,16 | 0,24 | 0,18 | 0,35 | 0,32 |
| | NO0042R | pg/m3 | 0,17 | 0,20 | 0,15 | 0,14 | 0,11 | 0,10 | 0,20 | 0,09 | 0,06 | 0,10 | 0,12 | 0,26 | 0,14 |
| PCB_138 | NO0001R | pg/m3 | 0,26 | 0,24 | 0,41 | 0,57 | | 0,49 | 0,33 | 0,75 | 0,20 | 0,33 | 0,23 | 0,27 | 0,37 |
| | NO0042R | pg/m3 | 0,16 | 0,19 | 0,15 | 0,13 | 0,10 | 0,09 | 0,17 | 0,08 | 0,05 | 0,09 | 0,10 | 0,14 | 0,12 |
| PCB_153 | NO0001R | pg/m3 | 0,43 | 0,39 | 0,82 | 1,24 | | 1,00 | 0,55 | 1,20 | 0,32 | 0,51 | 0,38 | 0,44 | 0,66 |
| | NO0042R | pg/m3 | 0,25 | 0,31 | 0,25 | 0,20 | 0,14 | 0,13 | 0,24 | 0,12 | 0,08 | 0,14 | 0,15 | 0,22 | 0,18 |
| PCB_180 | NO0001R | pg/m3 | 0,14 | 0,11 | 0,30 | 0,38 | | 0,23 | 0,15 | 0,30 | 0,08 | 0,17 | 0,10 | 0,22 | 0,20 |
| | NO0042R | pg/m3 | 0,04 | 0,05 | 0,05 | 0,04 | 0,03 | 0,03 | 0,06 | 0,02 | 0,01 | 0,02 | 0,03 | 0,09 | 0,04 |
| PCB_28 | NO0001R | pg/m3 | 1,36 | 1,08 | 1,66 | 1,83 | | 2,07 | 1,53 | 2,46 | 0,98 | 2,04 | 1,53 | 1,69 | 1,66 |
| | NO0042R | pg/m3 | 1,47 | 1,38 | 1,44 | 1,54 | 1,49 | 2,52 | 6,36 | 2,10 | 1,51 | 1,45 | 1,34 | 1,39 | 2,00 |
| PCB_52 | NO0001R | pg/m3 | 1,26 | 0,99 | 1,34 | 1,50 | | 1,70 | 1,22 | 2,30 | 0,89 | 1,42 | 1,26 | 1,63 | 1,41 |
| | NO0042R | pg/m3 | 0,97 | 0,98 | 1,07 | 0,98 | 0,81 | 0,99 | 2,19 | 0,83 | 0,64 | 0,79 | 0,85 | 1,03 | 1,01 |
| γ-HCH | NO0001R | pg/m3 | 4,91 | 3,82 | 5,40 | 16,84 | | 17,69 | 11,22 | 21,16 | 6,04 | | 9,51 | 5,49 | 10,21 |
| | NO0042R | pg/m3 | 2,30 | 2,46 | 2,73 | 3,20 | 2,98 | 2,05 | 3,54 | 2,28 | 2,42 | 3,06 | 3,77 | 2,19 | 2,75 |
| anthracene | NO0042R | ng/m3 | 3,50 | 2,50 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,38 | 1,36 |
| benzo(a)anthracene | NO0042R | ng/m3 | 18,25 | 12,75 | 1,50 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 3,00 | 3,63 | 3,84 |
| benzo(a)pyrene | NO0042R | ng/m3 | 14,00 | 12,75 | 1,25 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,20 | 1,00 | 3,10 |
| benzo(ghi)perylene | NO0042R | ng/m3 | 22,00 | 20,25 | 3,25 | 1,40 | 1,00 | 1,25 | 1,00 | 0,67 | 1,00 | 1,00 | 5,80 | 4,63 | 5,27 |
| flouranthene | NO0042R | ng/m3 | 125,25 | 108,25 | 38,25 | 9,20 | 6,00 | 10,75 | 8,00 | 5,00 | 4,00 | 3,00 | 28,60 | 58,00 | 33,69 |
| indeno(1,2,3-cd)pyrene | NO0042R | ng/m3 | 22,50 | 19,00 | 3,00 | 1,40 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 3,20 | 2,50 | 4,80 |
| phenanthrene | NO0042R | ng/m3 | 159,75 | 179,00 | 67,50 | 22,60 | 21,25 | 36,00 | 29,80 | 22,00 | 19,40 | 13,75 | 49,20 | 179,88 | 66,68 |
| pyrene | NO0042R | ng/m3 | 81,50 | 61,50 | 17,50 | 5,00 | 4,00 | 6,75 | 4,80 | 2,78 | 1,60 | 1,25 | 15,20 | 20,13 | 18,50 |

| | | |
|---|---|---|
| NO | µg/m$^3$ | *not reported* |
| chrysene | ng/m3 | *not reported* |

**Norway - airborne *(continued)***

*Extra reported non-CAMP components*

| | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| cobalt | NO0001R | ng/m3 | 0,01 | 0,03 | 0,02 | 0,03 | 0,02 | 0,02 | 0,01 | 0,02 | 0,01 | 0,01 | 0,00 | 0,01 | 0,02 |
| vanadium | NO0001R | ng/m3 | 0,82 | 0,33 | 0,69 | 1,44 | 0,68 | 0,73 | 0,81 | 0,90 | 0,77 | 0,41 | 0,36 | 0,50 | 0,70 |
| | | | | | | | | | | | | | | | |
| PCB_18 | NO0042R | pg/m3 | 2,12 | 2,07 | 2,00 | 2,01 | 1,59 | 1,95 | 4,86 | 1,66 | 1,32 | 1,58 | 1,83 | 1,77 | 2,06 |
| PCB_31 | NO0042R | pg/m3 | 1,40 | 1,29 | 1,36 | 1,44 | 1,43 | 2,39 | 6,06 | 2,03 | 1,42 | 1,37 | 1,24 | 1,31 | 1,89 |
| PCB_33 | NO0042R | pg/m3 | 0,99 | 0,89 | 0,95 | 1,07 | 1,12 | 1,97 | 5,07 | 1,70 | 1,15 | 1,02 | 0,89 | 0,87 | 1,47 |
| PCB_37 | NO0042R | pg/m3 | 0,15 | 0,14 | 0,13 | 0,15 | 0,17 | 0,33 | 0,90 | 0,29 | 0,20 | 0,16 | 0,15 | 0,17 | 0,25 |
| PCB_47 | NO0042R | pg/m3 | 0,40 | 0,40 | 0,46 | 0,40 | 0,36 | 0,57 | 1,38 | 0,51 | 0,32 | 0,38 | 0,45 | 0,51 | 0,51 |
| PCB_66 | NO0042R | pg/m3 | 0,25 | 0,27 | 0,25 | 0,24 | 0,20 | 0,28 | 0,68 | 0,25 | 0,19 | 0,21 | 0,23 | 0,74 | 0,31 |
| PCB_74 | NO0042R | pg/m3 | 0,17 | 0,18 | 0,17 | 0,17 | 0,14 | 0,18 | 0,42 | 0,15 | 0,11 | 0,14 | 0,15 | 0,37 | 0,19 |
| PCB_99 | NO0042R | pg/m3 | 0,18 | 0,21 | 0,19 | 0,19 | 0,14 | 0,12 | 0,24 | 0,10 | 0,08 | 0,13 | 0,16 | 0,25 | 0,16 |
| PCB_105 | NO0042R | pg/m3 | 0,05 | 0,06 | 0,04 | 0,04 | 0,03 | 0,03 | 0,06 | 0,03 | 0,02 | 0,03 | 0,04 | 0,10 | 0,04 |
| PCB_114 | NO0042R | pg/m3 | 0,01 | 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 | NO0042R | pg/m3 | 0,01 | 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 | NO0042R | pg/m3 | 0,01 | 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 | NO0042R | pg/m3 | 0,03 | 0,03 | 0,02 | 0,02 | 0,02 | 0,02 | 0,03 | 0,01 | 0,01 | 0,01 | 0,02 | 0,02 | 0,02 |
| PCB_141 | NO0042R | pg/m3 | 0,04 | 0,04 | 0,04 | 0,03 | 0,02 | 0,02 | 0,04 | 0,02 | 0,01 | 0,02 | 0,03 | 0,03 | 0,03 |
| PCB_149 | NO0042R | pg/m3 | 0,23 | 0,25 | 0,28 | 0,22 | 0,17 | 0,16 | 0,32 | 0,16 | 0,12 | 0,18 | 0,18 | 0,22 | 0,21 |
| PCB_156 | NO0042R | pg/m3 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,02 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 |
| PCB_157 | NO0042R | pg/m3 | 0,01 | 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 | NO0042R | pg/m3 | 0,01 | 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 | NO0042R | pg/m3 | 0,01 | 0,01 | 0,02 | 0,01 | 0,01 | 0,01 | 0,03 | 0,01 | 0,01 | 0,01 | 0,01 | 0,02 | 0,02 |
| PCB_183 | NO0042R | pg/m3 | 0,02 | 0,02 | 0,02 | 0,01 | 0,01 | 0,01 | 0,02 | 0,01 | 0,01 | 0,01 | 0,01 | 0,03 | 0,02 |
| PCB_187 | NO0042R | pg/m3 | 0,05 | 0,06 | 0,05 | 0,04 | 0,03 | 0,02 | 0,04 | 0,03 | 0,02 | 0,03 | 0,03 | 0,08 | 0,04 |
| PCB_189 | NO0042R | pg/m3 | 0,01 | 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 | NO0042R | pg/m3 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,03 | 0,01 |
| PCB_206 | NO0042R | pg/m3 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,01 | 0,02 | 0,01 |
| PCB_209 | NO0042R | pg/m3 | 0,01 | 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 | NO0042R | pg/m3 | 16,27 | 16,49 | 16,06 | 15,86 | 14,00 | 19,87 | 48,38 | 16,76 | 12,13 | 13,33 | 13,71 | 17,07 | 18,33 |
| | | | | | | | | | | | | | | | |
| α_HCH | NO0001R | pg/m3 | 8,18 | 7,13 | 9,40 | 15,46 | -9999,99 | 22,09 | 22,51 | 38,98 | 16,78 | -9999,99 | 15,39 | 11,67 | -1652,70 |
| | NO0042R | pg/m3 | 12,39 | 11,38 | 10,24 | 10,62 | 12,02 | 14,87 | 21,09 | 25,37 | 25,24 | 24,25 | 20,87 | 16,69 | 17,09 |
| acenaphthene | NO0042R | pg/m3 | 11,00 | 19,00 | 4,00 | 2,80 | 2,00 | 2,50 | 2,20 | 1,67 | 1,60 | 2,00 | 6,20 | 16,38 | 5,95 |
| acenaphthylene | NO0042R | pg/m3 | 5,25 | 4,00 | 1,00 | 1,00 | 1,25 | 1,25 | 1,00 | 1,00 | 1,00 | 1,00 | 1,20 | 1,00 | 1,66 |
| anthanthrene | NO0042R | pg/m3 | 1,75 | 1,75 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,25 | 1,15 |
| benzo_a_fluoranthene | NO0042R | pg/m3 | 3,25 | 2,75 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,33 |
| benzo_a_fluorene | NO0042R | pg/m3 | 10,00 | 7,25 | 1,75 | 1,20 | 3,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,75 | 1,80 | 2,13 | 2,74 |
| benzo_b_fluorene | NO0042R | pg/m3 | 6,75 | 4,50 | 1,25 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,20 | 1,38 | 1,84 |
| benzo_bjk_fluoranthenes | NO0042R | pg/m3 | 73,00 | 60,50 | 11,00 | 3,40 | 1,00 | 1,50 | 1,60 | 1,00 | 1,00 | 1,00 | 18,60 | 12,88 | 15,54 |
| benzo_e_pyrene | NO0042R | pg/m3 | 24,25 | 21,25 | 3,75 | 1,40 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 6,20 | 5,00 | 5,65 |
| benzo_ghi_fluoranthene | NO0042R | pg/m3 | 16,75 | 13,00 | 3,25 | 1,00 | 1,00 | 1,25 | 1,00 | 1,00 | 1,00 | 1,00 | 3,80 | 5,38 | 4,12 |
| biphenyl | NO0042R | pg/m3 | 1410,50 | 1639,75 | 463,00 | 123,40 | 29,25 | 18,00 | 16,80 | 17,56 | 132,20 | 100,50 | 652,80 | 471,00 | 422,90 |
| chrysene_triphenylene | NO0042R | pg/m3 | 54,00 | 42,25 | 10,00 | 2,60 | 1,25 | 2,00 | 1,40 | 1,00 | 1,00 | 1,00 | 15,40 | 19,00 | 12,58 |
| cis_CD | NO0042R | pg/m3 | 0,69 | 0,64 | 0,74 | 0,67 | 0,61 | 0,52 | 0,69 | 0,66 | 0,58 | 0,81 | 0,74 | 0,59 | 0,66 |
| cis_NO | NO0042R | pg/m3 | 0,04 | 0,05 | 0,05 | 0,06 | 0,08 | 0,09 | 0,11 | 0,11 | 0,09 | 0,10 | 0,07 | 0,04 | 0,07 |
| coronene | NO0042R | pg/m3 | 21,75 | 20,25 | 3,50 | 1,40 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,20 | 1,38 | 4,62 |
| cyclopenta_cd_pyrene | NO0042R | pg/m3 | 4,50 | 4,25 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,56 |
| dibenzo_ac_ah_anthracenes | NO0042R | pg/m3 | 3,25 | 2,25 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,29 |
| dibenzo_ae_pyrene | NO0042R | pg/m3 | 2,75 | 3,75 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,38 |
| dibenzo_ah_pyrene | NO0042R | pg/m3 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 |
| dibenzo_ai_pyrene | NO0042R | pg/m3 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 |
| dibenzofuran | NO0042R | pg/m3 | 1424,00 | 1781,25 | 694,68 | 388,40 | 78,00 | 38,50 | 59,80 | 39,56 | 202,40 | 151,75 | 681,00 | 824,13 | 530,29 |
| dibenzothiophene | NO0042R | pg/m3 | 22,25 | 30,50 | 11,75 | 4,20 | 2,25 | 2,25 | 3,40 | 2,11 | 2,80 | 2,25 | 12,40 | 21,38 | 9,79 |
| fluorene | NO0042R | pg/m3 | 675,25 | 706,50 | 242,75 | 68,00 | 20,50 | 19,75 | 25,00 | 18,22 | 44,20 | 34,75 | 263,60 | 406,88 | 210,45 |
| HCB | NO0001R | pg/m3 | 76,23 | 53,94 | 66,54 | 67,85 | -9999,99 | 65,89 | 62,77 | 60,91 | 58,48 | 69,25 | 62,88 | 57,53 | -774,81 |
| | NO0042R | | 63,12 | 60,62 | 66,75 | 66,36 | 68,73 | 73,38 | 61,28 | 71,01 | 66,44 | 62,48 | 61,50 | 59,38 | 65,09 |
| N1methylnaphtalene | NO0042R | pg/m3 | 597,75 | 412,25 | 41,25 | 17,20 | 14,25 | 11,75 | 12,20 | 10,56 | 11,20 | 16,25 | 192,00 | 159,13 | 124,65 |
| N1methylphenanthrene | NO0042R | pg/m3 | 11,00 | 9,00 | 3,75 | 2,20 | 2,50 | 4,75 | 4,80 | 3,89 | 2,20 | 1,75 | 4,20 | 6,50 | 4,71 |
| N2methylanthracene | NO0042R | pg/m3 | 1,00 | 1,25 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,02 |
| N2methylnaphtalene | NO0042R | pg/m3 | 522,00 | 449,00 | 46,75 | 25,80 | 25,75 | 19,75 | 18,60 | 18,22 | 15,20 | 21,75 | 192,00 | 202,13 | 129,75 |
| N2methylphenanthrene | NO0042R | pg/m3 | 15,50 | 13,75 | 7,25 | 4,00 | 5,00 | 7,75 | 9,20 | 6,89 | 4,00 | 3,00 | 6,40 | 12,63 | 7,95 |
| N3methylphenanthrene | NO0042R | pg/m3 | 10,00 | 8,50 | 4,50 | 3,00 | 3,50 | 4,75 | 6,00 | 4,44 | 2,40 | 2,00 | 4,00 | 7,25 | 5,03 |
| N9methylphenanthrene | NO0042R | pg/m3 | 7,25 | 5,50 | 3,50 | 2,60 | 3,00 | 4,50 | 5,80 | 4,67 | 2,40 | 1,75 | 3,60 | 4,25 | 4,07 |
| naphtalene | NO0042R | pg/m3 | 2358,78 | 1430,00 | 241,75 | 73,60 | 83,00 | 64,50 | 47,80 | 52,78 | 49,00 | 61,00 | 752,40 | 550,75 | 480,45 |
| op_DDD | NO0042R | pg/m3 | 0,04 | 0,04 | 0,03 | 0,02 | 0,01 | 0,01 | 0,02 | 0,01 | 0,01 | 0,02 | 0,02 | 0,02 | 0,02 |
| op_DDE | NO0042R | pg/m3 | 0,20 | 0,24 | 0,18 | 0,10 | 0,03 | 0,02 | 0,03 | 0,02 | 0,02 | 0,06 | 0,12 | 0,16 | 0,10 |
| op_DDT | NO0042R | pg/m3 | 0,38 | 0,47 | 0,36 | 0,20 | 0,09 | 0,06 | 0,18 | 0,10 | 0,08 | 0,22 | 0,27 | 0,25 | 0,22 |
| perylene | NO0042R | pg/m3 | 2,25 | 1,75 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,00 | 1,17 |
| pp_DDD | NO0042R | pg/m3 | 0,07 | 0,08 | 0,02 | 0,01 | 0,02 | 0,02 | 0,03 | 0,01 | 0,01 | 0,02 | 0,06 | 0,03 | 0,03 |
| pp_DDE | NO0042R | pg/m3 | 1,31 | 1,45 | 0,90 | 0,43 | 0,17 | 0,15 | 0,17 | 0,16 | 0,08 | 0,36 | 0,66 | 0,77 | 0,55 |
| pp_DDT | NO0042R | pg/m3 | 0,20 | 0,21 | 0,12 | 0,08 | 0,04 | 0,03 | 0,09 | 0,05 | 0,03 | 0,10 | 0,13 | 0,12 | 0,10 |

# PORTUGAL

**Portugal - precipitation**

## Components in precipitation

| Mandatory | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | PT0003R | mg/l | 0,12 | 0,30 | 0,02 | 0,09 | 0,11 | 0,20 | 0,43 | 0,18 | 1,22 | 0,061 | 0,015 | 0,047 | 0,06 |
| ammonium | PT0004R | mg/l | 0,015 | 0,017 | 0,578 | 0,273 | 0,2 | | | | 0,2 | 0,413 | 0,03 | | 0,25 |
| ammonium | PT0010R | mg/l | 0,04 | 0,015 | 0,022 | | | | | | | | | | 0,03 |
| nitrate | PT0003R | mg/l | 0,25 | 0,43 | 0,07 | 0,08 | 0,12 | 0,21 | 0,24 | 0,07 | 0,22 | 0,064 | 0,052 | 0,052 | 0,09 |
| nitrate | PT0004R | mg/l | 0,07 | 0,161 | 0,272 | 0,125 | 0,059 | | | | 0,247 | 0,192 | 0,5 | 0,15 | 0,19 |
| nitrate | PT0010R | mg/l | 0,176 | 0,117 | 0,203 | | | | | | | | | | 0,16 |
| precipitation | PT0003R | mm | 158,2 | 38,7 | 1354,7 | 104,8 | 53,8 | 22 | 16,3 | 113,4 | 16,9 | 222,5 | 24,3 | 103,3 | 2228,90 |
| precipitation | PT0004R | mm | 31,7 | 56,1 | 42,1 | 30,6 | 18,5 | | | | 43,8 | 82,2 | 12,3 | | 317,30 |
| precipitation | PT0010R | mm | 152 | 131,7 | 95,5 | | | | | | | | | | 379,20 |
| | | | | | | | | | | | | | | | |
| cadmium | PT0003R | µg/l | 0,44 | 0,43 | 0,43 | 0,43 | 0,43 | 0,43 | 0,43 | 0,43 | 0,425 | 0,425 | 0,425 | 0,425 | 0,43 |
| cadmium | PT0004R | µg/l | 0,425 | 0,425 | 0,425 | 0,425 | 0,425 | | | | 0,425 | 0,425 | 0,425 | 0,425 | 0,43 |
| cadmium | PT0010R | µg/l | 0,425 | 0,425 | 0,425 | | | | | | | | | | 0,43 |
| copper | PT0003R | µg/l | 1,18 | 2,50 | 11,23 | 0,58 | 0,60 | 4,49 | 5,00 | 2,56 | 6,8 | 1,192 | 2,171 | 2,046 | 7,49 |
| copper | PT0004R | µg/l | 0,325 | 0,498 | 1,015 | 0,764 | 0,325 | | | | 0,325 | 0,689 | 0,325 | 0,325 | 0,58 |
| copper | PT0010R | µg/l | 0,325 | 0,325 | 0,325 | | | | | | | | | | 0,33 |
| lead | PT0003R | µg/l | 0,65 | 0,65 | 0,65 | 0,65 | 0,65 | 9,38 | 6,71 | 9,24 | 7,06 | 6,136 | 4,77 | 0,645 | 1,85 |
| lead | PT0004R | µg/l | 0,645 | 0,645 | 0,645 | 0,645 | 0,645 | | | | 5,227 | 9,01 | 0,645 | 0,645 | 3,44 |
| lead | PT0010R | µg/l | 0,645 | 0,645 | 0,766 | | | | | | | | | | 0,68 |
| nickel | PT0003R | µg/l | 0,88 | 0,78 | 1,59 | 0,78 | 0,78 | 0,78 | 0,78 | 0,78 | 0,775 | 0,775 | 0,775 | 0,775 | 1,28 |
| nickel | PT0004R | µg/l | 0,775 | 0,893 | 4,709 | 0,775 | 0,775 | | | | 0,775 | 0,775 | 0,775 | 0,775 | 1,32 |
| nickel | PT0010R | µg/l | 2,925 | 0,775 | 21,955 | | | | | | | | | | 6,97 |
| zinc | PT0003R | µg/l | 14,21 | 27,75 | 5,22 | 9,05 | 11,39 | 38,98 | 40,00 | 15,64 | 72 | 15,544 | 8,382 | 16,524 | 9,79 |
| zinc | PT0004R | µg/l | 13 | 4,116 | 6,313 | 7,567 | 5,349 | | | | 3,985 | 16,066 | 3 | 1 | 8,73 |
| zinc | PT0010R | µg/l | 11,73 | 5,445 | 71,129 | | | | | | | | | | 24,51 |
| precipitation | PT0003R | mm | 158,2 | 38,7 | 1354,7 | 104,8 | 53,8 | 22 | 16,3 | 113,4 | 16,9 | 222,5 | 24,3 | 103,3 | 2228,90 |
| precipitation | PT0004R | mm | 31,7 | 56,1 | 42,1 | 30,6 | 18,5 | | | | 43,8 | 82,2 | 12,3 | | 317,30 |
| precipitation | PT0010R | mm | 152 | 131,7 | 95,5 | | | | | | | | | | 379,20 |
| | | | | | | | | | | | | | | | |
| chromium | | µg/l | | *not reported* | | | | | | | | | | | |
| mercury | | ng/l | | *not reported* | | | | | | | | | | | |
| γ-HCH | | pg/l | | *not reported* | | | | | | | | | | | |

**Portugal airborne**

## Airborne components

| **mandatory** | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | $\mu g/m^{-}$ | | *not reported* | | | | | | | | | | | |
| $NO_3$ | $\mu g/m^{-}$ | | *not reported* | | | | | | | | | | | |
| $HNO_3 + NO_3$ | $\mu g/m^{-}$ | | *not reported* | | | | | | | | | | | |
| $NH_3$ | $\mu g/m^{-}$ | | *not reported* | | | | | | | | | | | |
| $NH_4$ | $\mu g/m^{-}$ | | *not reported* | | | | | | | | | | | |
| $NH_3$ + NH4 | $\mu g/m^{-}$ | | *not reported* | | | | | | | | | | | |
| **voluntary** | | | | | | | | | | | | | | |
| NO | $\mu g/m^3$ | | *not reported* | | | | | | | | | | | |
| arsenic | ng/m3 | | *not reported* | | | | | | | | | | | |
| cadmium | ng/m3 | | *not reported* | | | | | | | | | | | |
| chromium | ng/m3 | | *not reported* | | | | | | | | | | | |
| copper | ng/m3 | | *not reported* | | | | | | | | | | | |
| lead | ng/m3 | | *not reported* | | | | | | | | | | | |
| mercury | ng/m3 | | *not reported* | | | | | | | | | | | |
| nickel | ng/m3 | | *not reported* | | | | | | | | | | | |
| zinc | ng/m3 | | *not reported* | | | | | | | | | | | |
| PCB_118 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_138 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_153 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_180 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_28 | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_52 | pg/m3 | | *not reported* | | | | | | | | | | | |
| anthracene | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)anthracene | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(a)pyrene | ng/m3 | | *not reported* | | | | | | | | | | | |
| benzo(ghi)perylene | ng/m3 | | *not reported* | | | | | | | | | | | |
| chrysene | ng/m3 | | *not reported* | | | | | | | | | | | |
| flouranthene | ng/m3 | | *not reported* | | | | | | | | | | | |
| $\gamma$-HCH | ng/m3 | | *not reported* | | | | | | | | | | | |
| indeno(1,2,3-cd)pyrene | ng/m3 | | *not reported* | | | | | | | | | | | |
| phenanthrene | ng/m3 | | *not reported* | | | | | | | | | | | |
| pyrene | ng/m3 | | *not reported* | | | | | | | | | | | |

# SPAIN

**Spain - precipitation**

## Components in precipitation

| Mandatory | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ES0008R | ammonium | mg/l | 0,14 | 0,32 | 0,34 | 0,66 | 0,29 | 1,77 | 0,41 | 1,09 | 0,98 | 0,31 | 0,57 | 0,39 | 0,54 |
| ES0008R | nitrate | mg/l | 0,41 | 0,40 | 0,63 | 0,64 | 0,39 | 10,13 | 1,10 | 1,60 | 2,67 | 2,81 | 1,98 | 1,10 | 1,55 |
| ES0008R | precipitation | mm | 83,6 | 73,6 | 58,6 | 77,2 | 66,4 | 34,6 | 41,2 | 35 | 61 | 30,2 | 45,4 | 55,6 | 662,4 |
| ES0008R | arsenic | µg/l | 0,75 | 0,75 | 0,75 | 0,75 | 0,75 | 0,75 | 0,75 | 0,75 | 0,75 | 0,75 | 0,75 | 0,64 | 0,74 |
| ES0008R | cadmium | µg/l | 0,08 | 0,08 | 0,13 | 0,48 | 0,09 | 0,14 | 0,13 | 0,29 | 0,21 | 0,08 | 0,14 | 0,08 | 0,16 |
| ES0008R | chromium | µg/l | 14,62 | 15,16 | 9,02 | 17,25 | 12,83 | 145,65 | 113,15 | 52,97 | 23,32 | 14,02 | 10,83 | 29,61 | 30,05 |
| ES0008R | copper | µg/l | 10,59 | 11,07 | 16,86 | 29,90 | 23,43 | 33,56 | 41,44 | 40,55 | 19,91 | 10,84 | 35,68 | 13,62 | 21,81 |
| ES0008R | lead | µg/l | 3,31 | 2,06 | 1,54 | 4,33 | 7,70 | 6,25 | 5,26 | 8,80 | 4,22 | 1,04 | 1,46 | 1,57 | 3,54 |
| ES0008R | nickel | µg/l | 16,05 | 40,63 | 15,92 | 33,44 | 33,31 | 213,92 | 180,39 | 61,52 | 37,59 | 19,91 | 15,89 | 67,42 | 50,71 |
| ES0008R | zinc | µg/l | 31,03 | 75,44 | 79,33 | 90,54 | 89,67 | 240,48 | 219,55 | 1161,46 | 190,86 | 42,40 | 65,17 | 42,44 | 136,03 |
| ES0008R | precipitation | mm | 121,2 | 114,4 | 127,8 | 125,7 | 92,1 | 51,6 | 72,5 | 42,7 | 88,7 | 79,6 | 82,4 | 106,4 | 1105,1 |
| | mercury | pg/l | | *not reported* | | | | | | | | | | | |
| | γ-HCH | ng/l | | *not reported* | | | | | | | | | | | |

**voluntary**

| | | | |
|---|---|---|---|
| | PCB_101 | ng/l | *not reported* |
| | PCB_118 | ng/l | *not reported* |
| | PCB_138 | ng/l | *not reported* |
| | PCB_153 | ng/l | *not reported* |
| | PCB_180 | ng/l | *not reported* |
| | PCB_28 | ng/l | *not reported* |
| | PCB_52 | ng/l | *not reported* |
| | anthracene | ng/l | *not reported* |
| | benzo(a)anthracene | ng/l | *not reported* |
| | benzo(a)pyrene | ng/l | *not reported* |
| | benzo(ghi)perylene | ng/l | *not reported* |
| | chrysene | ng/l | *not reported* |
| | flouranthene | ng/l | *not reported* |
| | indeno(1,2,3-cd)pyrene | ng/l | *not reported* |
| | phenanthrene | ng/l | *not reported* |
| | pyrene | ng/l | *not reported* |

**Spain airborne** | **Airborne components**

| **mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | ES0008R | $\mu g/m^3$ | 1,68 | 3,51 | 3,44 | 1,90 | 1,82 | 1,63 | 1,16 | 1,54 | 1,50 | 1,61 | 2,17 | 2,42 | 2,03 |
| $HNO_3 + NO_3$ | ES0008R | $\mu g/m^3$ | 0,32 | 0,57 | 0,62 | 0,40 | 0,54 | 0,53 | 0,55 | 0,43 | 0,51 | 0,38 | 0,43 | 0,37 | 0,47 |
| $NH_3$ | ES0008R | $\mu g/m^3$ | | | | | | | 0,20 | 3,60 | 3,05 | 1,26 | 1,11 | 0,72 | 1,66 |
| $NH_3$ + NH4 | ES0008R | $\mu g/m^3$ | 0,206 | 0,345 | 0,221 | 0,231 | 0,835 | 0,504 | 0,367 | 0,254 | 0,361 | 0,286 | 0,175 | 0,134 | 0,33 |
| $NO_3$ | | $\mu g/m^3$ | | *not reported* | | | | | | | | | | | |
| $NH_4$ | | $\mu g/m^3$ | | *not reported* | | | | | | | | | | | |

| **voluntary** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NO | ES0008R | $\mu g/m^3$ | 0,15 | 0,30 | 0,39 | 0,20 | 0,25 | 0,37 | 0,36 | 0,39 | 0,33 | 0,29 | 0,46 | 0,28 | 0,31 |
| arsenic | ES0008R | ng/m3 | | | | | | | 0,09 | | | | | 0,23 | 0,16 |
| cadmium | ES0008R | ng/m3 | | | | | | | 0,03 | | | | | 0,06 | 0,04 |
| *only PM10 fraction* | ES0008R | ng/m3 | 0,04 | 0,14 | 0,33 | 0,08 | 0,26 | 0,10 | 0,07 | 0,03 | 0,04 | 0,05 | 0,11 | 0,04 | 0,11 |
| chromium | ES0008R | ng/m3 | | | | | | | 0,92 | | | | | 0,78 | 0,85 |
| copper | ES0008R | ng/m3 | | | | | | | 26,62 | | | | | 18,01 | 22,32 |
| *only PM10 fraction* | ES0008R | ng/m3 | 13,88 | 7,43 | 39,53 | 3,70 | 21,80 | 26,95 | 38,43 | 21,30 | 13,40 | 18,33 | 26,40 | 18,53 | 20,81 |
| lead | ES0008R | ng/m3 | | | | | | | 2,06 | | | | | 6,04 | 4,05 |
| *only PM10 fraction* | ES0008R | ng/m3 | 1,10 | 6,47 | 11,14 | 4,72 | 18,52 | 9,18 | 3,36 | 2,56 | 3,55 | 1,39 | 26,03 | 3,90 | 7,66 |
| mercury | ES0008R | ng/m3 | | *insufficient reported for calculation of any single monthly average* | | | | | | | | | | | |
| nickel | ES0008R | ng/m3 | | | | | | | 1,05 | | | | | 1,54 | 1,30 |
| zinc | ES0008R | ng/m3 | | | | | | | 47,02 | | | | | 13,36 | 30,19 |
| anthracene | ES0008R | ng/m3 | | | | | | | | | | | | 0,00 | 0,00 |
| benzo(a)anthracene | ES0008R | ng/m3 | | | | | | | | | | | | 0,08 | 0,08 |
| benzo(a)pyrene | ES0008R | ng/m3 | | | | | | | | | | | | 0,05 | 0,05 |
| benzo(ghi)perylene | ES0008R | ng/m3 | | | | | | | | | | | | 0,04 | 0,04 |
| chrysene | ES0008R | ng/m3 | | | | | | | | | | | | 0,06 | 0,06 |
| flouranthene | ES0008R | ng/m3 | | | | | | | | | | | | 0,08 | 0,08 |
| indeno(1,2,3-cd)pyrene | ES0008R | ng/m3 | | | | | | | | | | | | 0,04 | 0,04 |
| phenanthrene | ES0008R | ng/m3 | | | | | | | | | | | | 0,05 | 0,05 |
| pyrene | ES0008R | ng/m3 | | | | | | | | | | | | 0,10 | 0,10 |
| PCB_118 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_138 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_153 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_180 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_28 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| PCB_52 | | pg/m3 | | *not reported* | | | | | | | | | | | |
| $\gamma$-HCH | | ng/m3 | | *not reported* | | | | | | | | | | | |

# SWEDEN

**SWEDEN precipitation**

**Components in precipitation**

| **mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | SE0014R | mg/l | 0,40 | 0,24 | 0,61 | 0,68 | 0,62 | 0,57 | 0,35 | 0,78 | 0,46 | 0,23 | 0,22 | 0,45 | 0,46 |
| | SE0098R | mg/l | 0,40 | 0,32 | 0,63 | | | 0,30 | 0,18 | 0,35 | 0,39 | 0,18 | 0,27 | 0,53 | 0,36 |
| nitrate | SE0014R | mg/l | 0,82 | 0,54 | 0,58 | 0,55 | 0,43 | 0,32 | 0,30 | 0,36 | 0,39 | 0,34 | 0,37 | 0,56 | 0,44 |
| | SE0098R | mg/l | 0,52 | 0,51 | 0,60 | | | 0,38 | 0,25 | 0,31 | 0,42 | 0,23 | 0,44 | 0,61 | 0,42 |
| precipitation | SE0014R | mm | 71,3 | 22,9 | 43 | 20,7 | 68,5 | 52,8 | 90,1 | 82,9 | 67,4 | 77,1 | 80,6 | 49,3 | 726,6 |
| | SE0098R | mm | 128,0 | 46,0 | 106,0 | | | 92,0 | 98,0 | 121,0 | 150,0 | 126,0 | 106,0 | 121,0 | 1094,0 |
| arsenic | SE0097R | µg/l | 0,11 | 0,18 | 0,18 | 0,13 | | 0,03 | 0,03 | 0,03 | 0,03 | | 0,03 | 0,14 | 0,08 |
| cadmium | SE0097R | µg/l | 0,06 | 0,02 | 0,04 | 0,05 | | 0,01 | 0,02 | 0,02 | 0,01 | | 0,03 | 0,04 | 0,03 |
| chromium | SE0097R | µg/l | 0,05 | 0,15 | 0,03 | 0,14 | | 0,14 | 0,48 | 0,15 | 0,03 | | 0,16 | 0,18 | 0,14 |
| copper | SE0097R | µg/l | 0,76 | 0,32 | 0,36 | 0,90 | | 0,85 | 0,48 | 0,35 | 0,42 | | 0,45 | 0,71 | 0,57 |
| lead | SE0097R | µg/l | 1,10 | 0,74 | 1,45 | 1,03 | | 0,53 | 0,54 | 0,34 | 0,89 | | 0,82 | 1,48 | 0,91 |
| mercury | SE0014R | ng/l | 9,10 | 21,40 | 9,10 | 46,00 | 37,00 | 19,30 | 11,30 | | 9,00 | 5,40 | 7,50 | 11,10 | 14,65 |
| nickel | SE0097R | µg/l | 0,32 | 0,49 | 0,21 | 0,27 | | 0,39 | 0,37 | 0,22 | 0,20 | | 0,31 | 0,46 | 0,32 |
| zinc | SE0097R | µg/l | 5,69 | 3,64 | 3,58 | 6,61 | | 4,20 | 3,09 | 3,43 | 3,24 | | 3,24 | 5,75 | 4,33 |
| precipitation | SE0097R | mm | 264,0 | 47,0 | 69,0 | 38,0 | | 79,0 | 111,0 | 127,0 | 144,0 | | 96,0 | 116,0 | 1091,0 |
| precipitation Hg | SE0014R | mm | 48,4 | 3,4 | 28,1 | 13,9 | 58,8 | 100,6 | 71 | | 72,3 | 72,2 | 55,6 | 29,6 | 553,9 |
| γ-HCH | SE0014R | ng/m$^2$/day | | | 0,73 | 0,80 | 1,50 | 0,55 | 0,96 | 0,74 | 0,95 | 1,00 | 0,77 | 0,23 | 0,82 |
| | *wet plus dry deposition* | | | | | | | | | | | | | | |
| **voluntary** | | | | | | | | | | | | | | | |
| PCB_101 | SE0014R | ng/m$^2$/day | | 0,05 | 0,11 | 0,10 | 0,17 | 0,11 | 0,07 | 0,10 | 0,09 | 0,07 | 0,11 | 0,06 | 0,09 |
| PCB_118 | SE0014R | ng/m$^2$/day | | 0,03 | 0,08 | 0,10 | 0,24 | 0,10 | 0,05 | 0,07 | 0,07 | 0,08 | 0,09 | 0,05 | 0,09 |
| PCB_138 | SE0014R | ng/m$^2$/day | | 0,09 | 0,27 | 0,35 | 0,77 | 0,40 | 0,24 | 0,36 | 0,28 | 0,31 | 0,48 | 0,31 | 0,35 |
| PCB_153 | SE0014R | ng/m$^2$/day | | 0,12 | 0,24 | 0,30 | 0,67 | 0,40 | 0,24 | 0,34 | 0,32 | 0,28 | 0,51 | 0,22 | 0,33 |
| PCB_180 | SE0014R | ng/m$^2$/day | | 0,05 | 0,18 | 0,27 | 0,39 | 0,30 | 0,17 | 0,26 | 0,19 | 0,22 | 0,28 | 0,13 | 0,22 |
| PCB_28 | SE0014R | ng/m$^2$/day | | 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_52 | SE0014R | ng/m$^2$/day | | 0,08 | 0,16 | 0,11 | 0,12 | 0,17 | 0,08 | 0,09 | 0,03 | 0,18 | 0,41 | 0,23 | 0,15 |
| anthracene | SE0014R | ng/m$^2$/day | | 0,00 | 1,00 | 1,00 | 1,00 | 0,00 | 0,00 | 0,07 | 1,00 | 1,00 | 1,00 | 1,00 | 0,65 |
| benzo(a)anthracene | SE0014R | ng/m$^2$/day | | 1,00 | 3,00 | 3,33 | 5,00 | 1,20 | 2,61 | 1,07 | 2,00 | | 7,93 | 7,00 | 3,42 |
| benzo(a)pyrene | SE0014R | ng/m$^2$/day | | 2,00 | 5,00 | 5,50 | 8,00 | 2,30 | 4,42 | 2,07 | 3,40 | 6,00 | 8,67 | 7,00 | 4,97 |
| benzo(ghi)perylene | SE0014R | ng/m$^2$/day | | 3,00 | 7,19 | 9,00 | 9,00 | 3,20 | 4,61 | 3,00 | 3,53 | 7,00 | 10,73 | 11,00 | 6,51 |
| flouranthene | SE0014R | ng/m$^2$/day | | 13,00 | 23,52 | 19,50 | 22,00 | 6,60 | 11,23 | 8,13 | 12,27 | 27,00 | 37,93 | 35,00 | 19,72 |
| indeno(1,2,3-cd)pyrene | SE0014R | ng/m$^2$/day | | 2,00 | 5,00 | 5,17 | 6,00 | 2,20 | 3,61 | 2,00 | 2,67 | 7,00 | 12,53 | 12,00 | 5,50 |
| phenanthrene | SE0014R | ng/m$^2$/day | | 15,00 | 20,23 | 13,33 | 15,00 | 5,30 | 8,39 | 10,19 | 14,07 | 21,00 | 29,87 | 24,00 | 16,05 |
| pyrene | SE0014R | ng/m$^2$/day | | 7,00 | 13,90 | 13,50 | 16,00 | 4,50 | 8,23 | 5,07 | 7,73 | 19,00 | 27,07 | 23,00 | 13,24 |
| chrysene* | | ng/l | | *not reported* | | | | | | | | | | | |
| *Extra reported non-CAMP components* | | | | | | | | | | | | | | | |
| cobalt | SE0097R | µg/l | 0,01 | 0,02 | 0,02 | 0,03 | 0,07 | 0,02 | 0,02 | 0,02 | 0,00 | | 0,01 | 0,01 | 0,01 |
| manganese | SE0097R | µg/l | 0,70 | 1,06 | 0,91 | 1,99 | | 1,40 | 1,00 | 1,38 | 1,05 | 1,00 | 2,38 | 1,20 | 1,18 |
| vanadium | SE0097R | µg/l | 0,83 | 1,16 | 0,77 | 0,45 | 0,40 | 0,47 | 0,22 | 0,22 | 0,62 | 0,39 | 0,86 | 1,50 | 0,71 |
| precipitation | SE0097R | mm | 264,00 | 47,00 | 69,00 | 38,00 | | 79,00 | 111,00 | 127,00 | 144,00 | | 96,00 | 116,00 | 1091,00 |
| α-HCH | SE0014R | ng/m$^2$/day | | | 0,23 | 0,29 | 0,53 | 0,28 | 0,42 | 0,27 | 0,46 | 0,34 | 0,42 | 0,17 | 0,34 |
| chrysene + triphenalyene | SE0014R | ng/m$^2$/day | | 5,00 | 9,81 | 8,83 | 13,00 | 3,30 | 5,42 | 3,13 | 7,13 | 21,00 | 21,07 | 22,00 | 10,94 |

** chrysene is not reported seperately, but in combination with triphenalyene*

**Sweden airborne**

**Airborne components**

| **mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | SE0014R | µg/m³ | 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/m³ | 0,56 | 0,51 | 0,64 | 0,59 | 0,51 | 0,55 | 0,30 | 0,37 | 0,58 | 0,23 | 0,39 | | 0,48 |
| $NH_3$ + NH4 | SE0014R | µg/m³ | 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/m³ | | *not reported* | | | | | | | | | | | |
| $NH_3$ | | µg/m³ | | *not reported* | | | | | | | | | | | |
| **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/m³ | | *not reported* | | | | | | | | | | | |
| arsenic | | ng/m3 | | *not reported* | | | | | | | | | | | |
| cadmium | | ng/m3 | | *not reported* | | | | | | | | | | | |
| chromium | | ng/m3 | | *not reported* | | | | | | | | | | | |
| copper | | ng/m3 | | *not reported* | | | | | | | | | | | |
| lead | | ng/m3 | | *not reported* | | | | | | | | | | | |
| nickel | | ng/m3 | | *not reported* | | | | | | | | | | | |
| zinc | | ng/m3 | | *not reported* | | | | | | | | | | | |
| 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 | | *not reported* | | | | | | | | | | | |
| *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 seperately, but in combination with triphenalyene*

# UNITED KINGDOM

**UK - Precipitation**

### Components in precipitation

| Mandatory | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ammonium | GB0006R | mg/l | 0,03 | 0,08 | 0,29 | 0,12 | 0,08 | 0,22 | 0,08 | 0,19 | 0,05 | 0,04 | 0,08 | 0,64 | 0,17 |
| | GB0013R | mg/l | 0,09 | 0,08 | 0,43 | 0,59 | 0,52 | 0,29 | 0,24 | 9,56 | | 0,23 | 0,40 | 0,50 | 1,75 |
| | GB0014R | mg/l | 0,25 | 0,26 | 0,60 | 0,76 | 1,48 | 0,30 | 0,35 | 0,65 | 0,77 | 0,32 | 0,48 | 0,65 | 0,51 |
| | GB0016R | mg/l | 2,04 | 0,12 | 0,96 | 0,30 | 0,12 | 0,42 | 0,11 | 0,43 | 0,24 | 0,31 | 0,12 | 0,16 | 0,45 |
| nitrate | GB0006R | mg/l | 0,06 | 0,06 | 0,23 | 0,09 | 0,12 | 0,14 | 0,08 | 0,20 | 0,04 | 0,36 | 0,06 | 0,04 | 0,10 |
| | GB0013R | mg/l | 0,04 | 0,20 | 0,39 | 0,44 | 0,54 | 0,31 | 0,39 | 0,16 | 0,13 | 0,27 | 0,29 | 0,10 | 0,26 |
| | GB0014R | mg/l | 0,30 | 0,26 | 0,45 | 0,64 | 1,32 | 0,35 | 0,35 | 0,51 | 0,54 | 0,40 | 0,38 | 0,36 | 0,44 |
| | GB0016R | mg/l | 4,96 | 0,16 | 0,87 | 0,33 | 0,43 | 0,28 | 0,16 | 0,43 | 0,32 | 0,56 | 0,22 | 0,19 | 0,59 |
| precipitation | GB0006R | mm | 171,5 | 32,9 | 133,9 | 110,4 | 70 | 127,5 | 128,7 | 70,8 | 178,2 | 24,2 | 96 | 156,5 | 108,38 |
| | GB0013R | mm | 47,4 | 106,5 | 105,1 | 44,8 | 65,5 | 58,1 | 60,1 | 150,3 | 41,7 | 185,4 | 14,8 | 74,3 | 79,50 |
| | GB0014R | mm | 80 | 53 | 103,6 | 85,8 | 10,3 | 45,3 | 54,2 | 150,8 | 39,5 | 114,5 | 37,9 | 24,6 | 66,63 |
| | GB0016R | mm | 29,2 | 12,1 | 116,4 | 108,9 | 33,5 | 66,7 | 60,4 | 178,2 | 68,9 | 71,6 | 49,8 | 20,7 | 68,03 |
| arsenic | GB0006R | µg/l | 0,18 | 0,20 | | 0,29 | 0,20 | 0,72 | | 0,19 | | 0,20 | | 0,11 | 0,24 |
| | GB0013R | µg/l | 0,05 | 0,17 | 0,20 | 0,12 | 0,15 | 0,08 | 0,13 | 0,07 | 0,07 | 0,08 | 0,15 | 0,03 | 0,09 |
| | GB0017R | µg/l | 0,13 | | | | | | | | 0,18 | 0,12 | 0,18 | | 0,14 |
| cadmium | GB0006R | µg/l | 0,01 | 0,00 | | 0,01 | 0,01 | 0,01 | | 0,04 | | 0,01 | | 0,00 | 0,01 |
| | GB0013R | µg/l | 0,01 | 0,02 | 0,58 | 0,19 | 0,03 | 0,01 | 0,03 | 0,00 | 0,01 | 0,01 | 0,02 | 0,00 | 0,08 |
| | GB0017R | µg/l | 0,05 | | | | | | | | 0,02 | 0,03 | 0,03 | | 0,04 |
| | GB0091R | µg/l | 0,02 | 0,01 | 0,07 | 0,03 | 0,03 | 0,01 | 0,01 | 0,03 | 0,02 | 0,03 | 0,01 | 0,00 | 0,03 |
| chromium | GB0006R | µg/l | 0,12 | 0,16 | | 0,02 | 0,19 | 0,16 | | 0,07 | | 0,07 | | 0,08 | 0,11 |
| | GB0013R | µg/l | 0,12 | 0,21 | 0,09 | 0,05 | 0,11 | 0,08 | 0,09 | 0,05 | 0,05 | 0,04 | 0,10 | 0,02 | 0,07 |
| | GB0017R | µg/l | 0,08 | | | | | | | | 0,15 | 0,06 | 0,09 | | 0,08 |
| | GB0091R | µg/l | 0,81 | 0,22 | 0,12 | 0,05 | 0,14 | 0,06 | 0,11 | 0,10 | 0,25 | 0,06 | 0,13 | 0,24 | 0,10 |
| copper | GB0006R | µg/l | 0,46 | 0,15 | | 0,39 | 0,29 | 0,53 | | 0,81 | | 0,49 | | 0,15 | 0,43 |
| | GB0013R | µg/l | 0,20 | 0,74 | 0,47 | 2,24 | 0,69 | 0,37 | 1,39 | 0,34 | 0,32 | 0,30 | 0,56 | 0,10 | 0,50 |
| | GB0017R | µg/l | 1,15 | | | | | | | | 1,31 | 1,00 | 0,90 | | 1,12 |
| | GB0091R | µg/l | 1,62 | 0,42 | 0,92 | 0,40 | 0,76 | 0,26 | 0,44 | 0,57 | 22,01 | 0,43 | 0,21 | 0,40 | 1,20 |
| lead | GB0006R | µg/l | 0,16 | 0,03 | | 0,23 | 0,32 | 1,20 | | 0,39 | | 0,26 | | 0,08 | 0,29 |
| | GB0013R | µg/l | 0,31 | 1,45 | 1,49 | 0,81 | 1,71 | 0,66 | 1,60 | 0,21 | 0,29 | 0,49 | 0,52 | 0,10 | 0,66 |
| | GB0017R | µg/l | 1,63 | | | | | | | | 1,40 | 1,30 | 1,70 | | 1,59 |
| | GB0091R | µg/l | 0,99 | 0,28 | 2,27 | 1,01 | 1,02 | 1,16 | 0,61 | 1,24 | 2,97 | 0,99 | 0,31 | 0,11 | 1,11 |
| nickel | GB0006R | µg/l | 0,06 | 0,06 | | 0,05 | 0,06 | 0,09 | | 0,12 | | 0,06 | | 0,02 | 0,06 |
| | GB0013R | µg/l | 0,18 | 0,73 | 0,24 | 0,23 | 0,27 | 0,30 | 0,58 | 0,21 | 0,22 | 0,23 | 0,31 | 0,06 | 0,24 |
| | GB0017R | µg/l | 0,27 | | | | | | | | 0,34 | 0,22 | 0,31 | | 0,27 |
| | GB0091R | µg/l | 0,29 | 0,50 | 0,30 | 0,18 | 1,50 | 0,12 | 0,77 | 0,35 | 2,00 | 0,16 | 0,12 | 0,06 | 0,38 |
| zinc | GB0006R | µg/l | 2,60 | 2,33 | | 1,62 | 2,07 | 1,04 | | 6,48 | | 2,50 | | 1,50 | 2,43 |
| | GB0013R | µg/l | 3,48 | 5,80 | 7,42 | 11,00 | 5,92 | 3,40 | 7,72 | 2,38 | 1,29 | 2,38 | 11,18 | 12,01 | 5,11 |
| | GB0017R | µg/l | 5,84 | | | | | | | | 8,34 | 6,00 | 6,30 | | 5,99 |
| | GB0091R | µg/l | 17,05 | 4,45 | 9,33 | 4,31 | 5,57 | 4,88 | 3,76 | 4,72 | 8,71 | 4,85 | 10,59 | 5,31 | 5,68 |
| precipitation | GB0006R | mm | 803,7 | 68,6 | | 90,4 | 89,7 | 179,6 | | 96,6 | | 129,3 | | 183,4 | 1641,3 |
| | GB0013R | mm | 259,2 | 41,3 | 128,5 | 84,7 | 82,2 | 25,0 | 41,2 | 162,2 | 41,6 | 278,5 | 33,7 | 90,1 | 1268,2 |
| | GB0017R | mm | 597,4 | | | | | | | | 31,2 | 71,8 | 51,5 | | 751,7 |
| | GB0091R | mm | 3,2 | 5,1 | 50,5 | 121,1 | 50,9 | 94,5 | 36,5 | 145,8 | 26,4 | 166,1 | 62,7 | 18 | 780,8 |
| mercury | | ng/l | | *not reported* | | | | | | | | | | | |
| γ-HCH | | ng/l | | *not reported* | | | | | | | | | | | |

| voluntary | | | | |
|---|---|---|---|---|
| PCB_101 | | ng/l | | *not reported* |
| PCB_118 | | ng/l | | *not reported* |
| PCB_138 | | ng/l | | *not reported* |
| PCB_153 | | ng/l | | *not reported* |
| PCB_180 | | ng/l | | *not reported* |
| PCB_28 | | ng/l | | *not reported* |
| PCB_52 | | ng/l | | *not reported* |
| anthracene | | ng/l | | *not reported* |
| benzo(a)anthracene | | ng/l | | *not reported* |
| benzo(a)pyrene | | ng/l | | *not reported* |
| benzo(ghi)perylene | | ng/l | | *not reported* |
| chrysene | | ng/l | | *not reported* |
| flouranthene | | ng/l | | *not reported* |
| indeno(1,2,3-cd)pyrene | | ng/l | | *not reported* |
| phenanthrene | | ng/l | | *not reported* |

**UK airborne**

**Airborne components**

| **mandatory** | | | january | february | march | april | may | june | july | august | september | october | november | december | mean |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| $NO_2$ | GB0006R | $\mu g/m^3$ | 0,72 | 0,83 | 1,05 | 0,94 | 0,29 | 0,23 | 0,02 | 0,18 | 0,57 | 0,89 | 0,47 | 0,78 | 0,58 |
| | GB0013R | $\mu g/m^3$ | 5,31 | 9,73 | 10,29 | 6,48 | 7,84 | 6,14 | 4,20 | 4,77 | 8,19 | 8,18 | 8,59 | 11,71 | 7,62 |
| | GB0014R | $\mu g/m^3$ | 10,34 | 9,91 | 7,89 | 8,02 | 0,00 | 0,00 | 7,22 | 1,63 | 1,56 | 7,70 | 11,18 | 14,92 | 6,70 |
| | GB0016R | $\mu g/m^3$ | 0,48 | 0,43 | 0,96 | 0,37 | 0,50 | 0,14 | 0,32 | 0,02 | 0,54 | 0,87 | 0,62 | 1,73 | 0,58 |
| $NO_3$ | GB0006R | $\mu g/m^3$ | 0,02 | 0,04 | 0,12 | 0,01 | 0,05 | 0,03 | 0,02 | 0,09 | 0,04 | 0,04 | 0,03 | 0,04 | 0,04 |
| | GB0013R | $\mu g/m^3$ | 0,05 | 0,18 | 0,14 | 0,11 | 0,13 | 0,08 | 0,04 | 0,07 | 0,09 | 0,07 | 0,08 | 0,14 | 0,10 |
| | GB0014R | $\mu g/m^3$ | 0,05 | 0,10 | 0,17 | 0,20 | 0,10 | 0,08 | 0,06 | 0,15 | 0,09 | 0,11 | 0,09 | 0,15 | 0,11 |
| | GB0016R | $\mu g/m^3$ | 0,11 | 0,12 | 0,27 | 0,37 | 0,18 | 0,22 | 0,20 | 0,43 | 0,08 | 0,29 | 0,09 | 0,19 | 0,21 |
| $HNO_3$ | GB0006R | $\mu g/m^3$ | 0,00 | 0,03 | 0,07 | 0,02 | 0,05 | 0,03 | 0,02 | 0,07 | 0,04 | 0,04 | 0,02 | 0,04 | 0,04 |
| | GB0013R | $\mu g/m^3$ | 0,07 | 0,18 | 0,13 | 0,08 | 0,24 | 0,17 | 0,09 | 0,00 | 0,16 | 0,09 | 0,10 | 0,22 | 0,13 |
| | GB0014R | $\mu g/m^3$ | 0,17 | 0,12 | 0,18 | 0,20 | 0,11 | 0,10 | 0,11 | 0,29 | 0,14 | 0,20 | 0,17 | 0,31 | 0,18 |
| $NH_3$ | GB0006R | $\mu g/m^3$ | 0,12 | 0,24 | 0,46 | 0,17 | 0,49 | 0,57 | 0,34 | 0,65 | 0,40 | 0,24 | 0,17 | 0,20 | 0,34 |
| | GB0013R | $\mu g/m^3$ | 0,18 | 0,52 | 0,42 | 0,50 | 0,60 | 0,56 | 0,36 | 0,45 | 0,45 | 0,23 | 0,28 | 0,18 | 0,39 |
| | GB0014R | $\mu g/m^3$ | 0,28 | 0,35 | 0,51 | 0,82 | 0,50 | 0,71 | 0,50 | 0,77 | 0,72 | 0,39 | 0,41 | 0,43 | 0,53 |
| | GB0016R | $\mu g/m^3$ | 0,12 | 0,20 | 0,21 | 0,32 | 0,25 | 0,08 | 0,28 | 0,36 | 0,12 | 0,19 | 0,14 | 0,29 | 0,21 |
| $NH_4$ | GB0006R | $\mu g/m^3$ | 0,13 | 0,31 | 0,92 | 0,16 | 0,49 | 0,25 | 0,18 | 0,35 | 0,27 | 0,28 | 0,21 | 0,35 | 0,33 |
| | GB0013R | $\mu g/m^3$ | 0,26 | 1,20 | 1,00 | 0,94 | 1,34 | 0,48 | 0,43 | 0,55 | 0,49 | 0,40 | 0,55 | 0,99 | 0,72 |
| | GB0014R | $\mu g/m^3$ | 0,64 | 0,73 | 1,19 | 1,61 | 0,82 | 0,47 | 0,58 | 1,21 | 0,50 | 0,67 | 0,68 | 1,02 | 0,84 |
| | GB0016R | $\mu g/m^3$ | 0,19 | 0,21 | 0,45 | 0,68 | 0,42 | 0,31 | 0,39 | 0,87 | 0,11 | 0,23 | 0,15 | 0,22 | 0,35 |

| **voluntary** | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| NO | GB0014R | ng/m3 | 1,26 | 1,61 | 1,70 | 1,12 | 0,00 | 0,00 | 1,16 | 0,30 | 0,27 | 1,02 | 3,00 | 4,86 | 1,36 |
| arsenic | GB0013R | ng/m3 | 0,38 | 1,02 | 0,82 | 0,58 | 0,69 | 0,28 | 0,36 | 0,35 | 0,56 | 0,50 | 0,49 | 0,74 | 0,56 |
| | GB0017R | ng/m3 | | | | 0,91 | 0,53 | | | | 0,51 | 0,62 | 1,69 | | 0,85 |
| | GB0091R | ng/m3 | 0,07 | 0,37 | 0,38 | 0,20 | 0,25 | 0,12 | 0,17 | 0,28 | | | | 0,34 | 0,24 |
| cadmium | GB0013R | ng/m3 | 0,03 | 0,06 | 0,14 | 0,08 | 0,09 | 0,03 | 0,17 | 0,03 | 0,03 | 0,07 | 0,05 | 0,12 | 0,07 |
| | GB0017R | ng/m3 | | | | 0,36 | 0,11 | | | | 0,09 | 0,16 | 0,41 | | 0,22 |
| | GB0091R | ng/m3 | 0,01 | 0,03 | 0,06 | 0,04 | 0,03 | 0,08 | 0,04 | 0,07 | | | | 0,07 | 0,05 |
| chromium | GB0013R | ng/m3 | 0,76 | 1,26 | 0,80 | 1,16 | 1,21 | 1,25 | 1,55 | 1,25 | 0,91 | 1,39 | 1,25 | 1,72 | 1,21 |
| | GB0017R | ng/m3 | | | | 1,66 | 1,45 | | | | 1,39 | 1,58 | 2,34 | | 1,68 |
| | GB0091R | ng/m3 | 0,17 | 1,11 | 1,00 | 0,95 | 1,23 | 0,98 | 0,96 | 0,71 | | | | 1,35 | 0,94 |
| copper | GB0013R | ng/m3 | 0,48 | 2,39 | 1,33 | 1,54 | 3,00 | 5,13 | 1,22 | 1,16 | 1,69 | 1,81 | 1,36 | 2,55 | 1,97 |
| | GB0017R | ng/m3 | | | | 6,84 | 1,83 | | | | 2,77 | 2,81 | 6,65 | | 4,18 |
| | GB0091R | ng/m3 | 0,07 | 0,55 | 1,10 | 1,02 | 2,07 | 0,47 | 0,72 | 2,52 | | | | 2,58 | 1,23 |
| lead | GB0013R | ng/m3 | 2,30 | 8,56 | 5,10 | 4,70 | 8,27 | 2,37 | 3,17 | 2,17 | 1,87 | 3,95 | 4,47 | 5,75 | 4,39 |
| | GB0017R | ng/m3 | | | | 13,86 | 7,02 | | | | 5,82 | 7,72 | 26,74 | | 12,23 |
| | GB0091R | ng/m3 | 0,34 | 3,26 | 2,99 | 2,08 | 2,42 | 2,64 | 1,38 | 2,46 | | | | 3,09 | 2,30 |
| mercury | GB0017R | ng/m3 | | | | | 1,67 | 1,41 | 1,63 | 1,56 | | 1,96 | | | 1,65 |
| | GB0091R | ng/m3 | | | | | | | | 1,32 | 1,35 | 0,41 | 0,00 | 1,49 | 0,91 |
| nickel | GB0013R | ng/m3 | 1,23 | 1,46 | 0,93 | 1,59 | 1,56 | 2,08 | 1,47 | 2,66 | 0,57 | 1,78 | 0,66 | 2,36 | 1,53 |
| | GB0017R | ng/m3 | | | | 5,53 | 1,94 | | | | 2,02 | 1,49 | 2,21 | | 2,64 |
| | GB0091R | ng/m3 | 0,05 | 0,80 | 0,50 | 0,96 | 0,62 | 0,32 | 0,99 | 0,83 | | | | 1,70 | 0,75 |
| zinc | GB0013R | ng/m3 | 16,33 | 24,62 | 16,40 | 13,16 | 30,58 | 6,67 | 8,27 | 5,70 | 9,80 | 13,13 | 9,68 | 14,78 | 14,09 |
| | GB0017R | ng/m3 | | | | 42,55 | 11,05 | | | | 23,87 | 16,97 | 38,55 | | 26,60 |
| | GB0091R | ng/m3 | 2,87 | 16,48 | 25,10 | 9,20 | 22,94 | 8,68 | 4,73 | 7,79 | | | | 7,90 | 11,74 |
| PCB_28 | GB0014R | pg/m3 | 12,64 | | | | | | | | | | | | 12,64 |
| PCB_52 | GB0014R | pg/m3 | 7,45 | | | | | | | | | | | | 7,45 |
| PCB_101 | GB0014R | pg/m3 | 1,42 | | | | | | | | | | | | 1,42 |
| PCB_118 | GB0014R | pg/m3 | 0,95 | | | | | | | | | | | | 0,95 |
| PCB_138 | GB0014R | pg/m3 | 1,13 | | | | | | | | | | | | 1,13 |
| PCB_153 | GB0014R | pg/m3 | 1,20 | | | | | | | | | | | | 1,20 |
| PCB_180 | GB0014R | pg/m3 | 0,25 | | | | | | | | | | | | 0,25 |
| anthracene | GB0014R | ng/m3 | 0,13 | | | | | | | | | | | | 0,13 |
| benzo(a)anthracene | GB0014R | ng/m3 | 0,03 | | | | | | | | | | | | 0,03 |
| benzo(a)pyrene | GB0014R | ng/m3 | 0,02 | | | | | | | | | | | | 0,02 |
| benzo(ghi)perylene | GB0014R | ng/m3 | 0,03 | | | | | | | | | | | | 0,03 |
| chrysene | GB0014R | ng/m3 | 0,05 | | | | | | | | | | | | 0,05 |
| fluoranthene | GB0014R | ng/m3 | 0,54 | | | | | | | | | | | | 0,54 |
| indeno(1,2,3-cd)pyrene | GB0014R | ng/m3 | 0,02 | | | | | | | | | | | | 0,02 |
| phenanthrene | GB0014R | ng/m3 | 3,15 | | | | | | | | | | | | 3,15 |

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

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