Data Report on the Comprehensive Study of Riverine Inputs and Direct Discharges (RID) 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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This data report complements the report containing the overview of the results of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID) in 2004.

Previous data reports include the results of the Comprehensive Study in 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001, 2002 and 2003. A RID Summary Report 1990 – 1995 was published at the end of 1998, and summary tables for the years 1996-1998, 1999 and 2000-2002 have also been published.

Introduction

Background

At its Tenth Meeting (Lisbon, 1988) the Paris Commission[1] (PARCOM) adopted the Principles of the Comprehensive Study on Riverine Inputs (PARCOM 10/10/1, § 4.25 (e)). Such a comprehensive study was conducted for the first time in 1990 with the objective of assessing, as accurately as possible, all river borne and direct inputs of selected pollutants to the maritime area of the Paris Convention. Contracting Parties to the Paris Convention should aim to monitor, on a regular basis, 90 % of the inputs of each selected pollutant and are requested to report the relevant data annually (by 30 September) and to provide, for a selection of their main rivers, information on the annual mean/median concentration of selected pollutant. The results of such input studies are to be reviewed periodically with the objective of determining temporal and long-term trends of contaminant concentrations and inputs as a basis for trend assessment. Such an assessment of data collected under RID in 1990 – 2002 was carried out by the Environmental Assessment and Monitoring Committee (ASMO) in 2005 (publication number: 2005/233).

Substances

Since the adoption of revised RID principles by ASMO 1996 in March 1996 the list of determinands in the RID programme have been as follows:

"The following determinands are to be monitored on a mandatory basis:

- Total Mercury (Hg)
- Total Cadmium (Cd)
- Total Copper (Cu)
- Total Zinc (Zn)
- Total Lead (Pb)
- Gamma-HCH (lindane)
- Ammonia expressed as N
- Nitrates expressed as N
- Orthophosphates expressed as P
- Total N
- Total P
- Suspended particulate matter (SPM)
- Salinity (in saline waters)

The following determinands are recommended for monitoring on a voluntary basis:

1 The Convention for the Protection of the Marine Environment of the North East Atlantic, 1992 (OSPAR Convention) entered into force on 25 March 1998. This Convention replaces the Oslo and Paris Conventions as between the Contracting Parties. Agreements continue to be applicable to the extent that they are compatible with, or not explicitly terminated by, the Convention or by the OSPAR Commission.

a. Hydrocarbons, in particular PAHs[2] and mineral oil[3] (strongly recommended);

b. PCBs (the following congeners: IUPAC Nos 28, 52, 101, 118, 153, 138, 180);

c. Other hazardous substances (particularly organohalogen compounds - in order to determine which organohalogen compounds should be included in future input studies)[4]."

Reports on the substances that are explicitly mentioned in the 1996 revision of the RID Principles will be incorporated into future data reports as and when they become available.

ASMO 2001 agreed that there was a need to review and revise the RID Principles. Due to the considerable number of complementary developments that need to be taken into account in this revision (including, *inter alia*, the revised Joint Assessment and Monitoring Programme, the EC Water Framework Directive requirements and the European Marine Strategy), terms of reference have been adopted for an intersessional working group (WG-RID REV) to develop proposals for the revision of the RID Principles to be presented at the next meeting of INPUT. WG RID REV would also focus on encouraging greater harmonisation and transparency in the way that Contracting Parties comply with the RID Principles.

Based on the work of WG RID REV and proposals of INPUT, ASMO 2005 agreed a revised version of the RID Principles. This included a new table for future reporting on total riverine inputs and direct discharges to each OSPAR region and total riverine inputs and direct discharges from each Contracting Party, future reporting of direct discharges from aquaculture, and methodologies for reporting inputs from unmonitored areas. ASMO 2005 endorsed arrangements to continue the review of the RID Principles with regard to limits of detection and quality assurance. INPUT 2006 reviewed these elements and agreed to propose carrying out further work to support a review of these two elements of the RID Principles in the 2006/2007 cycle of meetings.

2004 Report on input data

For the 2004 study, data sets on riverine inputs and direct discharges were provided by Belgium, Denmark[5], France, Germany, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom of Great Britain and Northern Ireland (UK). Belgium[6] and France[7] only reported riverine inputs.

Belgium reported for the first time flow-rates for the Ijzer, a major load bearing river under RID, and for the Gent-Oostende canal after flow measurements had been commenced in 2004. These flow rates would be the basis for future trend assessments. There were no other significant changes to 2003. The high range of detection limits achieved for zinc in the coastal zone continued in 2004 with even higher single upper values compared to 2003. There were no direct discharges to report on since all wastewater was sent to treatment plants and discharges were made into non-convention waters. No unmonitored areas existed in Belgium since all riverine inputs discharged into Dutch catchments or were monitored.

Denmark reported continuity in monitoring criteria, methodologies and stations for nitrogen and phosphorus since 1989. Recently, the Danish monitoring programme, which had focused on nitrogen and phosphorus compounds and organic matter in the past, included monitoring of some heavy metals and hazardous substances on selected rivers and point sources. For rivers, most concentrations have been under the detection limit and no total loads to coastal waters were calculated. In 2004, the total input of nitrogen and phosphorus was quite high in terms of non-flow-adjusted figures and moderate where figures have been flow-adjusted. This is explained by weather and run-off conditions (in 2004 precipitation was 16% above

2 These are as follows: phenanthrene, anthracene, fluoranthene, pyrene, benzo[*a*]anthracene, chrysene, benzo[*a*]pyrene, benzo[*ghi*]perylene, indeno[*1,2,3-cd*]pyrene.

3 Provided that a suitable method is available.

4 INPUT November 1995 agreed not to advocate routine monitoring of riverine inputs of pesticides Convention wide but to address specific requests from SIME or DIFF* on a case by case basis. (* Secretariat note: DIFF was discontinued by OSPAR 2000. The work formerly undertaken by DIFF has been carried out by SPDS until 2004/2005 and, since then, by HSC.)

5 Danish data were received on 10 July 2006.

6 Reporting of direct discharges has been discontinued.

7 Direct discharge data were not available.

average and run-off 6% above average) and further by measures on point sources and agriculture. The effect on wastewater purification is significant with very high reductions in discharges from all kind of point sources. The measures on agriculture have markedly reduced nitrogen losses from agriculture at root zone level (between 40-50%), but the losses to inland surface waters and further to coastal areas are delayed and it can take up to 30-100 years in parts of the catchment to the North Sea before the full effect of the measures will be observed. Until very recently, the measures on agriculture were not directed to reductions in phosphorus losses, and no reductions in agricultural losses can yet be determined. In 2004, with high precipitation following a dry year, a pool of nitrogen has been accumulated in the soils. Further, quite high precipitation during winter and autumn have given cause to episodes with surface erosion events etc. affecting the diffuse losses.

France reported their 2004 RID data as part of a comprehensive report of historic RID data (1989 – 2004) which are presented as an addendum to this report in a separate document. River basins covered by the RID Principles comprised 3 major load bearing rivers – the Seine in OSPAR Region II, and the Loire and Garonne in Region IV – and 35 tributary rivers. The riverine inputs were calculated using the different modules of the RTrend software and were supplemented by flow-data, LoQs, quality assurance information, and information on monitoring frequency. Two tributary rivers had no complete monitoring data set and inputs were estimated in relation to similar tributaries. Inputs of micropollutants from tributary rivers were often only approximate values due to lack of data even if at least four measurements, as requested by the RID Principles, were carried out. Total nitrogen was not sufficiently monitored and, therefore, caution needs to be taken in interpreting these data. The data reported for 2004 were riverine data only. In the absence of reporting data for direct discharges, discharges of total nitrogen, total phosphorus and suspended particulate matter from the biggest coastal towns were estimated.

Germany reported that the flow-rates for German rivers for 2004 were lower than, or close to, the long-term mean and comparable to 2001 and 2003 but not to 2002 due to the high run-off in all German rivers and especially in the river Elbe during the summer flood event in 2002. There were no significant changes in loads compared to previous years (except 2002). For the river Weser, the significant increase in loads of NH_4-N in 2003 (up 75% compared to 2001) had fallen back to a level 50% higher than that in 2001. Equally the loads of mercury (125% higher in 2003 than in 2001) decreased to a level of 50% higher than that in 2001. The low concentrations of lindane in water and suspended matter of 2003 were confirmed in 2004. For the Weser and Eider, significant reductions in concentrations and loads in lindane continued to be observed as a result of the ban of the substance in 1997. For the rivers Elbe and Eider, no measurements of PCBs were carried out because the substances were found at concentrations mostly below detection limits. This was also the case for measurements of lindane in water in the Elbe tributaries. With regard to unmonitored areas, loads were determined by extrapolating the loads of the monitored parts of the catchment area.

The Netherlands reported that 2004 had been an average year taking into account the higher river flow. Inputs from the main rivers were considerably higher than in 2003. This was in accordance with the higher flow and suspended particulate concentrations. Riverine input data included loads from upstream countries (Germany and Belgium). The direct discharge data that the Netherlands had reported for the last six years had lagged one year behind, due to the time delay in registering discharges. The data for 2004 will become available in May 2006. There were few unmonitored areas (coastal run-off areas, harbours) since all large and small rivers were monitored as well as the effluents from industry in the major harbours. The overall contribution of discharges from unmonitored areas was considered negligible. The direct discharges downstream of the monitoring sites in the Rotterdam area were estimated to amount to 5% of the total inputs from that area and were therefore considered to have little, if any, impact on the trend assessments.

Norway reported that 2004 was a wet year with early snow melt in spring and high rainfall in autumn but with a dry summer, thus higher flow-rates were observed than in 2003. While the basis for RID data reporting for the 10 major load bearing rivers remained unchanged, monitoring of tributary rivers for measured RID data had been reduced from 145 to 36 tributary rivers; inputs from the other 109 small rivers were calculated instead. For the 36 monitored tributary rivers, the sampling frequency had been changed from once a year in 2003 to four times a year in 2004. This resulted in higher metal concentrations from tributary rivers in 2004 compared to 2003 which contributed to a general slight increase in inputs of metals from the 10 main rivers. Riverine inputs for copper and zinc were highest compared to other metals. In 2004, the Norwegian Institute for Water Research (NIVA) was commissioned for the first time in five years to carry out the Norwegian RID programme. This meant a change in analytical methods. The change in analytical method for mercury was most likely responsible for the significant decrease of inputs in 2004 (the method used was the same as that in the years 1990 – 1998). Compared to 2003, the inputs of phosphorus remained stable whereas inputs of nitrogen increased by 10%. The discharges from fish farming contributed 63% to the total phosphorus 20% to the total nitrogen inputs.

Spain reported that in 2004 there was no clear trend in concentration values for total riverine inputs and direct discharges; it was increasing for some elements and compounds (Cd, Cu, Pb, PCBs,) and decreasing for others (Hg, NH4-N, NO3-N, PO4-P, total N, total P, and SPM). Flow rate for riverine inputs decreased significantly from 2002 (73,504.2 x1000 m^3/d) and 2003 (71,183.7 x1000 m^3/d) to 2004 (46,076.6 x1000 m^3/d). This decrease was due mostly to the decrease in the Norte I discharge area (Miño river), attributable to the exceptional drought in 2004. For direct discharges, however, the flow rate increased in comparison to previous years (2002: 3,292.9 x1000 m^3/d; 2003: 3,869.4 x1000 m^3/d; 2004: 4,282.2 x1000 m^3/d) due to the addition of marine culture factories discharges to the reported data, and probably because of the improved availability of discharge data.

Sweden reported continuity in the use of their analytical methods. For reporting total inputs (Table 4b), a mean value was given instead of lower and upper estimates due to lack of accessibility of the necessary raw data. The only instance in which reporting of lower and upper estimates would be significant might be for mercury and cadmium from point sources. There were few unmonitored areas only since most of the tributary rivers, in particular on the North and West coasts, have their own separate catchments. For inputs from unmonitored areas, calibration methods were used. There were, however, no large point sources and little comparison was possible. With regard to nutrient inputs from tributary rivers, which includes one larger river, these amounted to 15 – 20% of the total nutrient inputs in 2004.

The UK reported their 2004 data using for the first time the RID text reporting format. In 2004, there was significantly higher rainfall and river flows in many areas (up 30%) compared with 2003, and in a number of areas, particularly in the North of the UK, flows were higher than for the national long-term average. This resulted in loads (particularly riverine) to tidal waters being higher than in 2003. The contribution of fish farming to total inputs of nitrogen amounted to 2%.

Significant gaps occur in the data from several Contracting Parties. The part of the maritime area best covered remains the OSPAR Region II (the Greater North Sea) and especially the main body of the North Sea, although even here gaps still exist. The riverine input data reported by France for 1989 – 2004 close some of these gaps for Region II and Region IV.

In 2004, inputs of nitrogen and phosphorus from fish farming had been reported by Norway and the UK. In previous years, such data had been reported on a voluntary basis by Norway because this activity contributed a significant part of Norway's inputs of nitrogen and phosphorus.

The reporting of mandatory and voluntary determinands (cf. Table 1b) in 2004 was almost the same as in 2003 for those Contracting Parties that reported in 2005/2006. Of those Contracting Parties reporting, several did not report data for all parameters, i.e.

- Portugal and Sweden did not report data for inputs of γ-HCH (Norway did not report direct inputs of γ-HCH);
- Sweden did not report on inputs of suspended particulate matter;
- Portugal and Sweden did not report on the voluntary parameter PCBs.

A number of additional parameters, not summarised in the overview Tables 3 and 4, were reported again by Norway (see Table 1b).

Information on characteristics of the catchment areas of the rivers is included in Appendix 1.

Presentation of the 2004 data

Table 1a gives an overview of the information provided by Contracting Parties for 2004 and shows how the information was categorised:

- Direct inputs:
    - Sewage effluents

- Industrial effluents

- Coastal areas:
  - Data reported under "coastal areas" include discharges and run-off from coastal areas between rivers and also polder effluents. Depending on their nature, discharges from "coastal areas" are either counted under direct discharges or under riverine inputs.

- Riverine inputs:
  - Main rivers
  - Tributary rivers

Table 1b gives an overview of the determinands reported by Contracting Parties and shows where there are gaps in the reporting of mandatory determinands. Table 1b also indicates the precision of the estimate where the relevant information was provided by Contracting Parties. The last column of Table 1b informs on any additional determinands reported.

The data from Contracting Parties have in many cases[8] been rounded to one significant number for data reported less than the unit in which they appear and to two significant numbers for data reported greater than one unit; the following examples illustrate this rounding convention:

Amount reported by Contracting Party	Figure reported in the tables
0,0011	0,001
0,011	0,01
0,11	0,1
1,11	1,1
11,1	11
111 and above	not rounded

Due to this procedure, there are sometimes slight differences between the calculated totals given in this report and those calculated by Contracting Parties.

Overviews of the input information by country and sea area are given in **Tables 2 to 4 a and b**. Table 2 gives an overview of direct inputs to OSPAR Convention Waters in 2004 and summarises the information which is set out in detail in Tables 5 on a country by country basis. Table 3 gives an overview of riverine inputs to OSPAR Convention waters in 2004 and summarises the information which is set out in detail in Tables 6 on a country by country basis. Table 4a summarises the information contained in Tables 2 and 3 and gives overall figures on inputs from land-based sources. Table 4b contains the same information as Table 4a but lists inputs by sea area. Please note that, due to major gaps in the reporting, no totals for the Convention area are given in Table 4b.

Annexes (country by country)

Where submitted by the Contracting Party concerned, additional relevant information, *inter alia*, on the data originators, the methods and calculation procedures used, and on discharge areas or catchment areas is given in a separate report at the beginning of the annex.

Table 4b, where provided, gives the total of riverine inputs and direct discharges country by country broken down by sea area.

Tables 5 a-c, where provided, give the detailed data for direct inputs (direct discharges) country by country, broken down into sewage effluents (Table 5a) and industrial effluents (Table 5b). A summary table for the total direct discharges is given as Table 5c.

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8 Secretariat note: Not all Contracting Parties wished to have their data rounded in accordance with this procedure.

Tables 6 a-c, where provided, give the detailed data for riverine inputs country by country broken down into main rivers (Table 6a) and tributary rivers (Table 6b). A summary Table 6c is given for the total riverine inputs.

Table 7 gives statistical data of the measured concentrations in rivers, as reported by Contracting Parties.

Table 8 gives information concerning the analytical detection limits of determinands.

Table 9 gives, for those Contracting Parties reporting data in the format compatible with the new RID database at the OSPAR Secretariat (RIDAB), catchment-dependent information which, for the other Contracting Parties, is included in tables (5 and) 6.

"Extra" data on other voluntary determinands, usually added at the end of the relevant annex in the data report, have not been submitted for 2004.

List of the overview tables

List of the Annexes by Contracting Party

Table 1a. Information Received on Inputs to the Maritime Area of the OSPAR Convention in 2004

Country	Direct Discharges			Riverine Inputs	
	Sewage Effluents	Industrial Effluents	Coastal Areas (1)	Main Rivers	Tributary Rivers (2)
Belgium	NA	NA	(3)	+	+
Denmark*					
- Kattegat	+	+	(4)	+	(5)
- Skagerrak	+	+	(4)	+	(5)
- North Sea	+	+	(4)	+	(5)
France					
- Channel/North Sea	NI	NI		+	+
- Atlantic	NI	NI		+	+
Germany	+	+	(6)	+	+
Iceland	No 2004 input data submitted (7)				
Ireland	No 2004 data submitted				
- Irish Sea					
- Celtic Sea					
- Atlantic					
Netherlands	+	+	(3)	+	+
Norway					
- Skagerrak	+	+	+ (8)	+	+
- North Sea	+	+	+ (8)	+	+
- Norwegian Sea	+	+	+ (8)	+	+
- Barents Sea	+	+	+ (8)	+	+
Portugal	NI	NI		+	NI
Spain	+	+	NI	+	+
Sweden					
- Kattegat	+	+	(3)	+	+
- Skagerrak	+	+	(3)	+	+
United Kingdom					
- East Coast (10)	+	+	NI	+	+ (9)
- Channel	+	+	NI	+	+ (9)
- Celtic Sea	+	+	NI	+	+ (9)
- Irish Sea	+	+	NI	+	+ (9)
- Atlantic	+	+	NI	+	+ (9)

\+ = Information available
NI = No information
NA = Not applicable
(1) Coastal areas: - 'downstream areas' of main and tributary rivers and rivers not monitored;
- areas discharging to the maritime area which, however, are located outside the catchment area of a river.
(2) Tributary Rivers: - any tributary river flowing into (the estuary of) a main river, downstream from the sampling point;
- any minor river which was not deemed to be a main river.
(3) Included in data on riverine inputs ("tributary rivers")
(4) Included in the totals for Danish inputs to the North Sea, the Skagerrak and the Kattegat
(5) All 25 rivers are reported as main rivers
(6) Included in data on direct inputs
(7) Iceland stated in 1988 that it had no plans to monitor riverine inputs; however, Iceland announced in 1996 that it was setting up a monitoring plan which would also result in calculations of riverine inputs
(8) cf. category "run-off" (i.e. estimated values for diffuse contributions) in Table 6b. for Norway
(9) Reported as main rivers
(10) Split into East Coast (North) and East Coast (South)
* Denmark's data have not been validated

Table 1b. Determinands Reported by Contracting Parties in 2004

Country	Determinands													
	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1) (voluntary)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM (2)	Others
Belgium														
- direct inputs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
- riverine inputs	R (4)	R (4)	R (4)	R (4)	R (3)	R (4)	R (4)	R (4)	R (4)	R (3)	R (3)	R (4)	R (3)	
Denmark*														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	+	+	+	+	+	NI	
- riverine inputs	NI	NI	NI	NI	NI	NI	NI	+	+	+	+	+	NI	
France														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
- riverine inputs	NI	NI	NI	NI	NI	NI	NI	+	+	+	NI	+	+	
Germany														
- direct inputs	R	R	R	R	R	R	R	+	+	+	+	+	+	
- riverine inputs*	+ (4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (4)	+ (4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	
- riverine inputs**	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)(4)	+ (4)	+ (3)(4)	+ (3)	+ (3)(4)	+ (3)	+ (3)	+ (3)(4)	
*) Elbe **) Other main rivers														
Iceland	No data submitted for 2004 (6)													
Ireland	No data submitted for 2004													
- direct inputs														
- main riv. inputs														
- tributary rivers														
Netherlands														
- direct inputs	+	+	+	+	+	+ (12)	+ (12)	NI	+	NI	+	+	+	
- main riv. inputs	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	
- tributary rivers	+	+	+	+	+	+	+	+	+	+	+	+	+	
Norway														
- direct inputs	+	+	+	+	+	NI	NI	+	+	+	+	+	+	Cr, Ni
- main riv. inputs	+ (3)(4)	+(4) (3)	+	+ (3)	+ (3)	+ (3)(4)	NI	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	As, TOC
- tributary rivers	`+	`+	+	+	+	E (11)	NI	+(5)	+ (5)	+(5)	+ (5)	+ (5)	+ (5)	As, TOC
Portugal														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
- main riv. Inputs (7)	+	NI	+	+	+	NI	NI	+	+	+	+	+	+	
- tributary rivers	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
Spain														
- direct inputs	+	+	+	+	+	+	+	+	+	+	+	+	+	
- riverine inputs	+ (3)(4)	+(4)	+ (3)(4)	+ (3)(4)	+ (3)(4)	+(4)	+(4)	+ (3)(4)	+ (3)(4)	+ (3)(4)	+ (3)(4)	+ (3)(4)	+ (3)(4)	
Sweden														
- sewage effluents	+	+	+	+	+	NI	NI	+	NI	NI	+	+	NI	
- industrial effluents	+	+	+	+	+	NI	NI	+	NI	NI	+	+	NI	
- main riv. inputs	+	+	+	+	+	NI	NI	+	+	+	+	+	NI	
United Kingdom														
- direct inputs	R	R	R	R	R	R	R	R	R	R	R(8)	R(8)	R	
- riverine inputs	R	R	R	R	R	R	R	R	R	R	R(8)	R(8)	R	

+ : Data provided
R: Estimate given as a range
NI: No information
NA: Not applicable; riverine inputs > 90% total inputs
DL: Detection limit
(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180
(2) Suspended particulate matter
(3) 70 % of measurements above detection limit
(4) Less than 70 % of measurements above detection limit
(5) Includes 'run-off', i.e. estimated values for diffuse contributions.
(6) Iceland stated in 1988 that it had no plans to monitor riverine inputs; however, Iceland announced in 1996 that it was setting up a monitoring plan which would also result in calculations of riverine inputs
(7) River Tejo only
(8) In England and Wales, Total-N and Total-P were not measured. To avoid anomalies, values equal to (i) the sum of the inorganic forms of N and (ii) orthophosphate-P respectively have been used.
* Denmark's data have not been validated

Table 2^. Direct Discharges to the Maritime Area of the OSPAR Convention in 2004 by Country

Country	Region		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Belgium	North Sea	(lower estimate)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		(upper estimate)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denmark*	North Sea		NI	NI	NI	NI	NI	NI	NI	12	0,09	0,004	0,12	0,01	NI
	Skagerrak		NI	NI	NI	NI	NI	NI	NI	3,1	0,01	0,002	0,03	0,01	NI
	Kattegat		NI	NI	NI	NI	NI	NI	NI	51	0,41	0,021	0,51	0,04	NI
France	Channel/North Sea		Direct discharges data is not yet available.												
	Atlantic														
Germany	North Sea	(lower estimate)	0,01	0,01	1,8	0,9	10	0,02	0,04	1,7	1,7	0,08	3,6	0,4	1,9
		(upper estimate)	0,05	0,05	2,6	1,5	15	0,28	2,9	1,7	1,7	0,08	3,6	0,4	1,9
Iceland	Atlantic		No data submitted for 2004												
Ireland	Irish Sea		No data submitted for 2004												
	Celtic Sea														
	Atlantic														
Netherlands	North Sea	(upper estimate)	0,17	0,02	3,6	2,5	30	NI	0,0003	NI	1,1	NI	6,0	0,46	4
Norway (3)	Skagerrak		0,07	0,14	16	0,82	9			2,5	0,16	0,11	4,6	0,19	1,7
	North Sea		0,00	0,01	1,0	0,0				9,4	1,24	1,54	1,2	2,27	10
	Norwegian Sea		0,02	0,00	1,0	1,4	14			2,7	0,40	2,35	17,7	3,45	353
	Barents Sea		NI	NI	NI	NI	NI			1,53	0,21	0,26	1,92	0,39	NI
Portugal	Atlantic	(lower estimate)	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		(upper estimate)	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Spain	Atlantic	(lower estimate)	1,4	0,96	7	2	37	0,2	0	12	1,6	0,9	20	2,4	334
		(upper estimate)	9,2	1,7	19	46	45	18	24	13	1,6	0,9	21	2,6	342
Sweden	Kattegat		0,021	0,005	1,8	0,22	4,3	NI	NI	1,04	NI	NI	1,8	0,1	NI
	Skagerrak		0,001	0,001	0,78	0,03	0,6	NI	NI	0,19	NI	NI	0,36	0,01	NI
United Kingdom	North Sea North	(lower estimate)	0,30	0,02	27	8	51	2	0,00	11	4	2,9	17	3,8	136
		(upper estimate)	0,31	0,03	27	8	51	6	32	11	4	3,2	17	4,1	136
	North Sea South	(lower estimate)	0,10	0,11	22	7	64	2	0,00	6	10	3,2	16	3,2	116
		(upper estimate)	0,17	0,11	22	7	64	10	5,60	6	10	3,2	16	3,2	116
	North Sea (Channel)	(lower estimate)	0,01	0,02	5	1,4	21	0,1	0,00	6,3	2,3	1,1	8,1	1,1	16,4
		(upper estimate)	0,02	0,02	5	1,5	21	3,0	5,60	6,4	2,4	1,2	8,6	1,2	16,4
	Total North Sea	*(lower estimate)*	*0,41*	*0,15*	*54,10*	*16,80*	*134,80*	*3,80*	*0,00*	*23,70*	*15,80*	*7,21*	*41,20*	*8,09*	*268,40*
		(upper estimate)	*0,50*	*0,16*	*54,20*	*17,10*	*134,90*	*18,80*	*42,80*	*23,80*	*15,90*	*7,60*	*41,70*	*8,47*	*268,40*
	Celtic Sea	(lower estimate)	0,04	0,00	2,1	2	79	0,05	2,2	3,1	0,60	0,51	3,7	0,51	6
		(upper estimate)	0,04	0,00	2,1	2	79	0,90	3,6	3,1	0,60	0,60	3,7	0,52	6
	Irish Sea	(lower estimate)	0,01	0,01	3	8	32	0,1	0,00	5,5	1,3	1,1	7	1,3	12
		(upper estimate)	0,11	0,09	4	8	33	4,6	0,55	5,7	1,3	1,1	7	1,4	12
	Atlantic	(lower estimate)	0,02	0,00	6	0,7	24	11,72	0,00	4,7	2,0	1,43	9,5	2,3	24
		(upper estimate)	0,08	0,02	6	0,9	24	13,23	0,00	4,7	2,0	1,43	9,5	2,3	25
	Total Non-North Sea	*(lower estimate)*	*0,1*	*0,0*	*10,9*	*10,3*	*134,6*	*11,9*	*2,2*	*13,3*	*3,9*	*3,0*	*20,5*	*4,1*	*42,5*
		(upper estimate)	*0,2*	*0,1*	*12,3*	*10,9*	*135,4*	*18,8*	*4,2*	*13,5*	*3,9*	*3,2*	*20,6*	*4,2*	*42,9*

^ For explanation of data and reasons for lack of information, see Tables 1a and 1b

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180

(2) Suspended particulate matter

(3) Includes data on fish farming effluents

* Denmark's data have not been validated

Table 3^. Riverine Inputs to the Maritime Area of the OSPAR Convention in 2004 by Country

Country	Sea area		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Belgium	North Sea	(lower estimate)	1,0	0,1	38	36	394	2	0,0	3,1	25	1,1	28	1,4	294
		(upper estimate)	3,6	0,2	56	71	539	19	75	4,2	31	1,5	43	3,7	398
Denmark*	North Sea		NI	NI	NI	NI	NI	NI	NI	0,42	15	0,12	18	0,49	NI
	Skagerrak		NI	NI	NI	NI	NI	NI	NI	0,08	1,7	0,02	2,1	0,07	NI
	Kattegat		NI	NI	NI	NI	NI	NI	NI	0,44	22	0,30	27	0,66	NI
France	Channel/North Sea	(lower estimate)	NI	NI	NI	NI	NI	NI	NI	1,0	87	1,0	NI	2,4	301
		(upper estimate)	NI	NI	NI	NI	NI	NI	NI	1,0	90	1,1	NI	2,7	315
	Atlantic	(lower estimate)	NI	NI	NI	NI	NI	NI	NI	3,3	220	3,1	NI	2,4	301
		(upper estimate)	NI	NI	NI	NI	NI	NI	NI	4,1	225	3,3	NI	2,7	315
Germany	North Sea	(lower estimate)	4,6	1,9	161	137	921	25	5,7	6,8	127	1,8	162	6,7	1239
		(upper estimate)	4,7	1,9	161	138	921	25	26	6,8	127	1,8	162	6,7	1307
Iceland	Atlantic		No data submitted for 2004												
Ireland	Irish Sea Celtic Sea Atlantic		No data submitted for 2004												
Netherlands	North Sea	(lower estimate)	5,1	1,6	261	181	943	20		10	189	5,6	245	16	2040
		(upper estimate)	6,4	1,6	261	183	947	93		10	189	5,6	259	16	2041
Norway	Skagerrak	(lower estimate)	1,3	0,08	81	20	250	7		1,3	19	0,23	31	0,6	255
		(upper estimate)	1,3	0,11	81	20	250	11		1,3	19	0,24	31	0,6	255
	North Sea	(lower estimate)	0,69	0,12	26	12	120	0,03		0,55	10	0,17	16	0,42	146
		(upper estimate)	0,73	0,13	26	12	120	0,35		0,58	10	0,19	16	0,43	146
	Norwegian Sea	(lower estimate)	0,72	0,18	97	10,3	198	0,00		0,6	7	0,21	15	0,5	273
		(upper estimate)	0,85	0,21	98	10,3	199	1,50		0,7	7	0,23	15	0,5	273
	Barents Sea	(lower estimate)	0,54	0,04	62	1,87	30	0,00		0,22	0,61	0,05	4,0	0,15	43
		(upper estimate)	0,57	0,05	62	1,87	30	0,36		0,23	0,61	0,05	4,0	0,15	43
Portugal	Atlantic	(lower estimate)	0,3	NI	12	5	62	NI	NI	0,5	8	1,2	10	1,2	52
		(upper estimate)	0,3	NI	12	5	62	NI	NI	0,5	8	1,2	10	1,2	52
Spain	Atlantic	(lower estimate)	1,0	0,5	58	1,1	416	1	18	7	39	1	44	1	430
		(upper estimate)	83	3	199	310	642	90	310	8	39	2	44	2	441
Sweden	Kattegat	(estimate)	0,35	0,05	33	10	123	NI	NI	1,2	17	0,26	31	0,65	NI
	Skagerrak	(estimate)	0,06	0,01	4,8	1,5	17	NI	NI	0,16	1,4	0,06	3,4	0,11	NI
United Kingdom	North Sea North	(lower estimate)	1,4	0,1	67	162	407	8	0,0	1,3	38	1	50	2	260
		(upper estimate)	2,3	0,3	69	163	421	42	48,8	1,4	38	1	50	2	280
	North Sea South	(lower estimate)	0,9	0,1	56	48	252	1	0	1,8	71	25	65	25	123
		(upper estimate)	1,2	0,2	56	52	254	32	62	1,8	71	25	65	25	124
	North Sea (Channel)	(lower estimate)	0,2	0,10	26	3	102	0,1	0,0	0,3	23	0,8	20	0,8	65
		(upper estimate)	0,3	0,13	30	10	107	10,5	8,2	0,4	23	0,8	40	0,8	68
	Total North Sea	*(lower estimate)*	*2,5*	*0,3*	*149,8*	*213,1*	*761,4*	*8,5*	*0,0*	*3,4*	*131,6*	*26,9*	*134,4*	*27,7*	*447,6*
		(upper estimate)	*3,8*	*0,6*	*154,4*	*224,4*	*782,3*	*84,1*	*118,7*	*3,6*	*131,7*	*27,1*	*154,4*	*27,9*	*471,5*
	Celtic Sea	(lower estimate)	0,5	0,1	47	36	228	0	0,0	0,6	26	0,7	26	0,7	346
		(upper estimate)	1,4	0,2	48	49	230	11	8,6	0,6	26	0,7	27	0,7	347
	Irish Sea	(lower estimate)	1,4	0,2	85	74	392	1,8	0	3	36	2,7	46	2,8	385
		(upper estimate)	1,9	0,3	86	80	399	30,3	63	4	37	2,7	46	2,8	394
	Atlantic	(lower estimate)	0,4	0,1	80	26	137	4	0,0	1,7	12	1,2	18	1,7	229
		(upper estimate)	1,4	0,4	81	28	143	24	6,8	1,8	12	1,2	18	1,7	243
	Total non-North Sea	*(lower estimate)*	*2,2*	*0,4*	*211,6*	*135,6*	*757,1*	*5,9*	*0,2*	*5,7*	*74,0*	*4,5*	*90,6*	*5,1*	*960,1*
		(upper estimate)	*4,7*	*0,9*	*214,7*	*157,2*	*771,7*	*65,0*	*78,6*	*6,0*	*74,2*	*4,6*	*92,0*	*5,2*	*983,1*

^ For explanation of data and reasons for lack of information, see Tables 1a and 1b

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180

(2) Suspended particulate matter

* Denmark's data have not been validated

Table 4a. Sum of Direct (Table 2) and Riverine (Table 3) Inputs to the Maritime Area of the OSPAR Convention in 2004 by Country

Country	Sea Area		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Belgium	North Sea	(lower estimate)	1,0	0,1	38	36	394	1,9	0,00	3,1	25	1,1	28	1,4	294
		(upper estimate)	4	0,2	56	71	539	19	75	4,2	31	1,5	43	3,7	398
Denmark*	North Sea		NI	NI	NI	NI	NI	NI	NI	12,42	15	0,12	18	0,50	NI
	Skagerrak		NI	NI	NI	NI	NI	NI	NI	3,15	1,7	0,02	2,1	0,08	NI
	Kattegat		NI	NI	NI	NI	NI	NI	NI	50,95	23	0,32	27	0,7	NI
France	Channel/North Sea	(lower estimate)	NI	NI	NI	NI	NI	NI	NI	1,0	87	1,0	0,0	2,38	301
		(upper estimate)	NI	NI	NI	NI	NI	NI	NI	1,0	90	1,1	0,0	2,69	315
	Atlantic	(lower estimate)	NI	NI	NI	NI	NI	NI	NI	3,3	220	3,1	0,0	2,38	301
		(upper estimate)	NI	NI	NI	NI	NI	NI	NI	4,1	225	3,3	0,0	2,69	315
Germany	North Sea	(lower estimate)	4,7	1,9	162	138	931	25	5,8	9	129	1,8	165	7,1	1241
		(upper estimate)	4,8	2,0	163	139	936	26	29	9	129	1,9	165	7,1	1309
Iceland	Atlantic		No data submitted for 2004												
Ireland (2)	Irish Sea	(lower estimate)	0,00	0,00	0	0	0	NI	NI	0,00	0	0,00	0	0,0	0
		(upper estimate)	0,00	0,00	0	0	0	NI	NI	0,00	0	0,00	0	0,0	0
	Celtic Sea	(lower estimate)	0,00	0,00	0	0	0	NI	NI	0,0	0	0,00	0	0,0	0
		(upper estimate)	0,0	0,0	0	0	0	NI	NI	0,0	0	0,00	0	0,0	0
	Atlantic	(lower estimate)	0,00	0,00	0	0,00	0	NI	NI	0,00	0	0,00	0	0,00	0
		(upper estimate)	0,0	0,0	0	0	0	NI	NI	0,00	0,0	0,00	0	0,00	0
Netherlands (3) (4)	North Sea	(lower estimate)	5,3	1,6	264	184	974	20	0	10	190	5,6	251	16	2045
		(upper estimate)	6,6	1,7	264	186	977	93	0	10	190	5,6	265	16	2045
Norway	Skagerrak	(lower estimate)	1,3	0,22	96	21	259	7	NI	2,5	19	0,34	35	0,8	257
		(upper estimate)	1,3	0,25	96	21	259	11	NI	10,7	19	0,36	35	0,8	257
	North Sea	(lower estimate)	0,69	0,12	27	12,1	120	0,03	NI	10,0	11,2	1,71	17	2,7	156
		(upper estimate)	0,73	0,14	27	12,1	120	0,35	NI	10,0	11,2	1,72	17	2,7	156
	Norwegian Sea	(lower estimate)	0,74	0,18	99	11,7	212	0,00	NI	3,3	7,2	2,56	32	3,9	626
		(upper estimate)	0,87	0,21	99	11,7	213	1,50	NI	3,4	7,2	2,58	32	3,9	626
	Barents Sea	(lower estimate)	0,54	0,04	62	1,87	30	0,00	NI	1,75	0,82	0,31	5,9	0,54	43
		(upper estimate)	0,57	0,05	62	1,9	30	0,36	NI	1,76	0,83	0,32	5,9	0,54	43
Portugal	Atlantic		0,3	NI	12	5,4	62	NI	NI	0,47	8	1,2	10	1,2	52
			0,3	NI	12	5,4	62	NI	NI	0,47	8	1,2	10	1,2	52

Table 4a Continued

Country	Sea Area		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Spain	Atlantic		2,4	1,4	65	3	452	1,0	17,6	19	40	1,7	64	3,7	765
			92	5	218	356	687	109	334	20	40	2,8	65	4,4	782
Sweden	Kattegat	(lower estimate)	0,37	0,06	34	10,7	127	NI	NI	2,2	17	0,26	33	0,72	NI
	Skagerrak	(lower estimate)	0,06	0,01	5,6	1,5	17,6	NI	NI	0,35	1,4	0,06	3,8	0,12	NI
United Kingdom	North Sea North	(lower estimate)	1,7	0,2	95	170	457	9,4	0	12	42	4,0	67	5,7	396
		(upper estimate)	2,6	0,3	96	171	471	48	80	13	42	4,5	67	6,1	416
	North Sea South	(lower estimate)	1,0	0,20	77	56	316	2,7	0,00	8	81	28	81	28	238,7
		(upper estimate)	1,4	0,28	78	59	318	42	67	8	81	28	81	28	239,5
	North Sea Channel	(lower estimate)	0,20	0,12	32	5	123	0,2	0,00	6,6	25	1,9	28	1,9	81,5
		(upper estimate)	0,35	0,15	35	11	128	14	14	6,8	25	1,9	48	1,9	84,5
	North Sea	*(lower estimate)*	*2,9*	*0,5*	*204*	*230*	*896*	*12*	*0,00*	*27*	*147*	*34*	*176*	*36*	*716*
		(upper estimate)	*4,3*	*0,8*	*209*	*241*	*917*	*103*	*161*	*27*	*148*	*35*	*196*	*36*	*740*
	Celtic Sea	(lower estimate)	0,5	0,10	49	38	306	0,2	2,2	3,7	26	1,2	30	1,2	353
		(upper estimate)	1,4	0,18	50	51	308	11	12	3,7	26	1,3	31	1,2	353
	Irish Sea	(lower estimate)	1,4	0,17	88	82	424	1,9	0,20	9	38	3,8	53	4,1	397
		(upper estimate)	2,0	0,40	89	88	432	35	64	9	38	3,9	54	4,2	406
	Atlantic	(lower estimate)	0,38	0,09	86	27	161	15,7	0,00	6,3	14	2,6	28	3,9	253
		(upper estimate)	1,5	0,5	87	29	167	37	6,8	6,4	14	2,7	28	4,0	267
	non-North Sea	*(lower estimate)*	*2,3*	*0,36*	*223*	*146*	*892*	*17,7*	*2,4*	*19*	*78*	*7,6*	*111*	*9*	*1003*
		(upper estimate)	*5*	*1,0*	*227*	*168*	*907*	*84*	*83*	*19*	*78*	*8*	*113*	*9*	*1026*
Total reported:		(lower estimate)	**22**	**6**	**1260**	**796**	**5244**	**85**	**26**	**172**	**1001**	**61**	**953**	**88**	**7731**
		(upper estimate)	**120**	**11**	**1438**	**1214**	**5664**	**433**	**669**	**184**	**1007**	**64**	**984**	**91**	**7965**

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180

(2) NH4-N, NO3-N,PO4-P: riverine inputs only; Total N: direct discharge only

(3) Data provided comprise approx. 90% of the total pollution loads of the Netherlands into Convention Waters

(4) For direct inputs the upper estimate is used since there is no lower estimate.

* Denmark's data have not been validated

Table 4b. Sum of Direct and Riverine Inputs to the Maritime Area of the OSPAR Convention in 2004 by Sea Area

Sea Area			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs(1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
North-East Atlantic Ocean	***Arctic Ocean***		0,54	0,04	62	1,87	30	0,00	NI	1,75	0,82	0,31	5,9	0,54	43
	Barents Sea		0,57	0,05	62	1,9	30	0,36	NI	1,76	0,83	0,32	5,9	0,54	43
	Atlantic Ocean		0,38	0,09	86	27	161	15,7	0,00	6,3	14	2,6	28	3,9	253
	(main body)		1,5	0,5	87	29	167	37	6,8	6,4	14	2,7	28	4,0	267
	Bay of Biscay and Iberian Coast		2,7	1,44	77	8	514	1,0	17,6	23	268	6,0	74	7,3	1117
			92	5	231	362	749	109	334	25	274	7,3	75	8,3	1148
North Sea															
	Kattegat	(lower estimate)	0,37	0,06	34	10,7	127	NI	NI	53,2	40	0,57	60	1,4	NI
		(upper estimate)	0,37	0,06	34	10,7	127	NI	NI	53,2	40	0,57	60	1,4	NI
	Skagerrak	(lower estimate)	1,4	0,23	102	22	277	7	NI	6,0	22	0,42	41	1,0	257
		(upper estimate)	1,4	0,3	102	22	277	11	NI	14,2	22	0,44	41	1,0	257
	North Sea	(lower estimate)	14,4	4,1	663	595	3192	59	5,8	65	492	43	629	62	4370
	(main body)	(upper estimate)	20	4,5	684	638	3361	228	252	66	498	44	657	65	4564
	Channel	(lower estimate)	0,20	0,12	32	5	123	0,2	0,00	7,6	112	2,9	28	4,3	382
		(upper estimate)	0,35	0,15	35	11	128	14	14	7,8	115	3,0	48	4,6	399
Norwegian Sea		(lower estimate)	0,74	0,18	99	11,7	212	0,00	NI	3,3	7,2	2,56	32	3,9	626
		(upper estimate)	0,87	0,21	99	11,7	213	1,5	NI	3,4	7,2	2,58	32	3,9	626
Irish Sea		(lower estimate)	1,4	0,17	88	82	424	1,9	0,20	9	38	3,8	53	4,1	397
		(upper estimate)	2,0	0,40	89	88	432	35	64	9	38	3,9	54	4,2	406
Celtic Sea		(lower estimate)	0,5	0,10	49	38	306	0,2	2,2	3,7	26	1,2	30	1,2	353
		(upper estimate)	1,4	0,18	50	51	308	11	12	3,7	26	1,3	31	1,2	353

Note: Some Contracting Parties have not submitted information on direct inputs because under the current Principles of the Comprehensive Study, these inputs do not fall under the 90 % (of total inputs) monitoring requirement.

Appendix 1

Statistical information on river catchment areas

Statistical Information on River Catchment Areas

River	Catchment area [km2]	Countries	Share in catchment area [km2]	Share in catchment area [%]	Population (1990) [10E6]	Population (1990) [%]	LTA* [1000 m3/d]	LTA-period [a]
Statistical Information provided by Belgium:								
Coastal Area	**2675**				**~0.497**		**2367**	NI
Western	1689	*Belgium*	>1082	NI	>0,305	NI	708	
		France	NI	NI	NI	NI		
Middle	499	*Belgium*			0,014		501	
Eastern	487	*Belgium*			0,177		1158	
Scheldt basin								
Scheldt	**22004**				**~10**		**11312**	1949-2004
		Belgium (1)	13324	*61*	6,9			
		France	6680	*30*	~2,7			
		Netherlands (1)	2000	*9*	0,4			
		(1) Ghent-Terneuzen canal comprised						
Ghent-Terneuzen canal	**NI**						**1 775**	1991-2004
		Belgium	NI		NI			
		Netherlands	NI		NI			
Statistical Information provided by Denmark:								
Vid å	248,3	*DK*	*248*	*81*			304	78-99
Brøns å	94,1	*DK*	*94*	*100*		*100*	106,6	74-99
Ribe å	675	*DK*	*675*	*100*		*100*	743,1	33-99
Kongeaen	426,6	*DK*	*427*	*100*		*100*	612,3	90-99
Sneum å	223	*DK*	*223*	*100*		*100*	280,8	66-99
Varde å	815	*DK*	*815*	*100*		*100*	1042,7	69-99
Skjern å	1558,4	*DK*	*1558*	*100*		*100*	2079,7	74-99
Stor å	1096,7	*DK*	*1097*	*100*		*100*	1399,4	71-99
Brede å	290	*DK*	*290*	*100*		*100*	327,5	94-99
Omme å	612	*DK*	*612*	*100*		*100*	728,9	83-99
Grøn å	563	*DK*	*563*	*100*		*100*	605,3	59-99
Total	**6602,1**	**=Total of Danish rivers discharging to the North Sea**					**8230**	**71-90**
Liver å	249,8	*DK*	*250*	*100*		*100*	223,3	95-99
Uggerby å	347,5	*DK*	*348*	*100*		*100*	316,6	89-99
	597,3	**=Total of Danish rivers discharging to the Skagerrak**					**863**	**71-90**
Karup å	626,8	*DK*	*527*	*100*		*100*	621,4	86-99
Jordbro å	110,9	*DK*	*111*	*100*		*100*	111,8	80-99
Skals å	556,4	*DK*	*556*	*100*		*100*	380,2	73-99
Simmersted å	214,9	*DK*	*215*	*100*		*100*	199	92-99
Elling å	132,2	*DK*	*132*	*100*		*100*	110,9	89-99
Voer å	238,7	*DK*	*239*	*100*		*100*	224,3	89-99
Ger å	153,8	*DK*	*154*	*100*		*100*	143,1	85-99
Lindeborg å	317,8	*DK*	*318*	*100*		*100*	297,4	83-99
Haslevgard å	75	*DK*	*75*	*100*		*100*	57,5	89-99
Kastbjerg å	96,3	*DK*	*96*	*100*		*100*	67,8	76-99
Guden å	2602,9	*DK*	*2 603*	*100*		*100*	2820,1	78-99
Ry å	285	*DK*	*285*	*100*		*100*	250,5	72-99
	5125,7	**=Total of Danish rivers discharging to the Kattegat**					**5284**	**71-90**
Aa	2308	*France*		*100*	0,6	*100*	2 808	1989-2004
Canche	3895	*France*		*100*	0,4	*100*	4 579	1962-2005
Somme	5916	*France*		*100*	0,6	*100*	3 197	1963-2005
Béthune et Bresle	2153	*France*		*100*	0,2	*100*	1 722	1989-2004
Saane	1718	*France*		*100*	0,2	*100*	2 938	1997-2005
Seine	64953	*France*		*100*	13,9	*100*	43 373	1974-2003
Andelle	789	*France*		*100*	0,1	*100*	691	1973-2005
Eure	6023	*France*		*100*	0,6	*100*	2 246	1971-2005
Coastal area	2439	*France*		*100*	0,9	*100*	1 650	1989-2004
Risle	2545	*France*		*100*	0,2	*100*	1 642	1967-2005
Dives	1815	*France*		*100*	0,1	*100*	1 296	1969-2005
Douve	1474	*France*		*100*	0,1	*100*	659	1989-2004
Orne	2976	*France*		*100*	0,4	*100*	2 592	1983-2004
Seulles	547	*France*		*100*	0,1	*100*	518	1971-2005
Touques	1311	*France*		*100*	0,1	*100*	1 037	1982-2005
Vire	2077	*France*		*100*	0,1	*100*	2 246	1993-2005
Coastal area	1302	*France*		*100*	0,2	*100*	1 153	1989-2004
Sélune et Sée	1623	*France*		*100*	0,1	*100*	1 987	1990-2005
Sienne	1135	*France*		*100*	0,1	*100*	1 325	1989-2004
Aulne	4312	*France*		*100*	0,5	*100*	6 653	1970-2005
Rance et Couesnon	2848	*France*		*100*	0,3	*100*	2 160	1984-2005
Coastal area	4961	*France*		*100*	0,5	*100*	3 806	1989-2004
	119122	=Total of rivers discharging in ZONE II			20,1		90 279	
Blavet et Scorff	4649	*France*		*100*	0,5	*100*	5 702	1983-2005
Coastal area	2868	*France*		*100*	0,3	*100*	4 635	1989-2004
Vilaine	10144	*France*		*100*	0,9	*100*	6 172	1989-2004
Erdre	3636	*France*		*100*	0,8	*100*	2 977	1989-2004

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Loire	110178	*France*		*100*	6,7	*100*	73 699	1863-2005
Sèvre Nantaise	4664	*France*		*100*	0,5	*100*	4 579	1994-2005
Lay	4522	*France*		*100*	0,4	*100*	3 456	1969-2005
Sèvre Niortaise	4363	*France*		*100*	0,4	*100*	4 752	1994-2005
Arnoult	291	*France*		*100*	0	*100*	257	1989-2004
Boutonne	2141	*France*		*100*	0,1	*100*	1 888	1989-2004
Charente	7526	*France*		*100*	0,4	*100*	5 357	1977-2005
Livenne	1172	*France*		*100*	0,1	*100*	484	1989-2004
Seudre	988	*France*		*100*	0,1	*100*	354	1989-2004
Eyre	2036	*France*		*100*	0	*100*	1 901	1980-2005
Canal des étangs	2810	*France*		*100*	0,1	*100*	2 370	1989-2004
Dordogne	14605	*France*		*100*	0,5	*100*	21 859	1996-2004
Isle	8472	*France*		*100*	0,4	*100*	7 171	1972-2005
Coastal area	870	*France*		*100*	0,1	*100*	660	1989-2004
Dropt	2672	*France*		*100*	0,2	*100*	2 175	1989-2004
Garonne	38227	*France*		*100*	2,2	*100*	40 522	1967-2005
Lot	11541	*France*		*100*	0,4	*100*	13 392	1989-2004
Coastal area	3875	*France*		*100*	0,8	*100*	11 229	1989-2004
Coastal area	3105	*France*		*100*	0,2	*100*	2 617	1989-2004
Adour	7977	*France*		*100*	0,4	*100*	7 776	1918-2005
Bidouze	1041	*France*		*100*	0	*100*	989	1989-2004
Gaves réunis	5504	*France*		*100*	0,3	*100*	17 453	1923-2005
Luy	1367	*France*		*100*	0,1	*100*	1 814	1967-2005
Nive	1153	*France*		*100*	0,1	*100*	3 197	1967-2005
Coastal area	644	*France*		*100*	0,1	*100*	1 866	1989-2004
	263040	=total of rivers discharging in ZONE IV			17,2		251 305	
Statistical Information provided by Germany:								
Ems	15552						7690	1941-2002
		Germany	13152	85,00	3,75	85		
		Netherlands	2400	15,00	0,6	15		
Weser	46306	*Germany*	-	-	9,0	-	31445	1941-2002
Elbe	148268		148268	100	25,11	-	74100	1926-2000
		Germany	*96932*	*65,38*	*19,09*	*76,03*		
		Czech Republic	*50176*	*33,84*	*5,97*	*23,78*		
		Austria	*920*	*0,62*	*0,05*	*0,20*		
		Poland	*240*	*0,16*	*NI*	*NI*		
Eider	2065	*Germany*	-	-	0,159	-	2411	1974-2004
Statistical Information provided by Ireland:								
Boyne	2695	Ireland	-	-	NI	-	3395	1975-2002
Liffey	1256	Ireland	-	-	NI	-	1561	1981-2002
Avoca	652	Ireland	-	0	NI	-	1314	1967-2000
Slaney	1762	Ireland	-	-	NI	-	3424	1980-2002
	6365	**=Total of main Irish rivers discharging to the Irish Sea**						
Barrow*	3067	Ireland	-	-	NI	-	4229	1946-1969
*New gauge recently installed. LTA still based on the period of reliable record for the old gauge.								
Nore	2530	Ireland	-	-	NI	-	3751	1972-2002
Suir	3610	Ireland	-	-	NI	-	6685	1968-2002
Blackwater	3324	Ireland	-	-	NI	-	7667	1956-2002
Lee	1253	Ireland	-	-	NI	-	3335	1957-2001
Bandon	608	Ireland	-	-	NI	-	1858	1975-2002
Deel	486	Ireland	-	-	NI	-	623	1983-2002
Maigue	1052	Ireland	-	-	NI	-	1583	1977-2002
Shannon Old Chan.	11700	Ireland	-	-	NI	-	4649	1932-2002
Shannon Tailrace		Ireland					17997	1932-2002
Fergus	1042	Ireland	-	-	NI	-	1626	1973-2002
	28672	**=Total of main Irish rivers discharging to the Celtic Sea**						
Corrib	3138	Ireland	-	-	NI	-	9477	1973-02 excl. 86-90, 92-93
Moy	2086	Ireland	-	-	NI	-	5306	1970-2002
Erne	4372	Ireland/UK	2572/1800	60/40	NI	-	8499	1951-2002
	9596	**=Total of main Irish rivers dischrging to the Atlantic**						
Statistical Information provided by The Netherlands (with assistance from Germany and Belgium)								
Rhine	185000				2) 55.6		4) 198720	1901-1995
		Switzerland	1) 28000	15	3,0	6		
		France	24000	13	3,7	7		
		Luxembourg	2500	1	0,3	1		
		Germany	105900	57	32,5	65		
		Netherlands	21000	11	10,9	21		
		Belgium	700	0				
		Austria	2500	1				
		Liechtenstein	300	0				

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
		Italy	100	0				
Meuse	33500				3) 7.15		5) 28080	1911-1995
		France	8500	25	0,50			
		Luxembourg	100	0	0,05			
		Belgium	13150	39	2,00			
		Germany	4300	13	1,00			
		Netherlands	7400	22	3,60			
Scheldt	22004				~10		9331	1949-1995
		France	6680	30,00	~2.7	~27		
		Belgium	13324	61,00	6,9	69		
		Netherlands	2000	9,00	0,4	4		
Ems	15552						7630	1941-1995
		Germany	13152	85,00	3,75	85		
		Netherlands	2400	15,00	0,6	15		

1) Catchment areas rounded off to the nearest hundred km
2) Population Rhine catchment per country requires further analys
3) Population Meuse catchment: rough estimate
4) Estimated discharge at outlet: 2.300 m3/s * 24 h/d * 3600 s/
5) Estimated discharge at outlet: 325 m3/s * 24 h/d * 3600 s/

Statistical Information provided by Norway:

Glomma (1)	41918	Norway		100,00	0,62	100	61350	1961-1990
Drammenselva (2)	17034	Norway		100,00	0,2	100	28850	1961-1990
Numedalslågen (3)	5577	Norway		100,00	0,04	100	10200	1961-1990
Skienselva (4)	10772	Norway		100,00	0,11	100	23535	1961-1990
Otra (5)	3738	Norway		100,00	0,03	100	12870	1961-1990
	79039	**=Total of Norwegian rivers discharging to the Skagerrak**						
Orreelva (6)	105	Norway		100,00	0,01	100	335	1961-1990
Suldalslågen (7)	1457	Norway		100,00	0,003	100	7420	1961-1990
	1562	**=Total of Norwegian rivers discharging to the North Sea**						
Orkla (8)	3053	Norway		100,00	0,02	100	5710	1961-1990
Vefsna (9)	4122	Norway		100,00	0,01	100	15655	1961-1990
	7175	**=Total of Norwegian rivers discharging to the Norwegian Sea**						
Altaelva (10)	7373	Norway		100,00	0,005	100	7495	1961-1990
	95149	**Total catchment for main rivers discharging to all four regions**						
	126706	**Total catchment for tributary rivers discharging to all four regions**						
	221855	**Total catchment for monitored rivers**						

Statistical Information provided by Portugal:

Tejo	80149	Portugal	24380	30,8	2,89	32,0	15900	50
		Spain	55769	69,2	6,14	68,0	34800	50
Douro	97600	Portugal	18600	19,1	1,76	43,5	22500	50
		Spain	79000	80,9	2,28	56,5	40900	50
Miño/Minho	17000	Portugal	900	5,3	0,07	7,9	6000	15
		Spain	16100	94,7	0,86	92,1	29000	15

Statistical Information provided by Spain:

Oyarzun	74	Spain	74	100	0,055	100	166	
Urumea	266	Spain	266	100	0,176	100	633	
Oria	860	Spain	860	100	0,020	100	740	
Urola	342	Spain	342	100	0,082	100	447	
Deva	531	Spain	531	100	0,146	100	694	
Artibay	106	Spain	106	100	0,016	100	NI	
Lea	81	Spain	81	100	0,010	100	NI	
Oca	132	Spain	132	100	0,022	100	NI	
Butron	175	Spain	175	100	0,024	100	NI	
Barbadun	135	Spain	135	100	0,020	100	NI	
Nervión	1764	Spain	1764	100	0,997	100	1 105	
Saja	955	Spain	955	100	0,104	100	1 166	
Nalón	4866	Spain	4866	100	0,539	100	6 977	
Miera	291	Spain	291	100	0,016	100	352	
Sella	1246	Spain	1246	100	0,035	100	832	
Masma	291	Spain	291	100	0,014	100	404	1970-2004
Oro	189	Spain	189	100	0,007	100	389	1970-2004
Landro	270	Spain	270	100	0,017	100	629	1975-2004
Sor	202	Spain	202	100	0,007	100	528	1996-2001
Mera	127	Spain	127	100	0,007	100	435	1970-2004
Forcadas	68	Spain	68	100	0,000	100	183	1970-2004
Grande de Jubia	182	Spain	182	100	0,004	100	318	1970-2004
Belelle	60	Spain	60	100	0,003	100	1 484	1970-2004
Eume	470	Spain	470	100	0,013	100	1 696	1970-2004
Mandeo	457	Spain	457	100	0,039	100	771	1970-2004
Mero	345	Spain	345	100	0,042	100	456	1984-2004
Allones	516	Spain	516	100	0,049	100	988	1970-2004

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Grande	283	Spain	283	100	0,002	100	647	1970-2004
Castro	140	Spain	140	100	0,004	100	167	1970-2004
Jallas	504	Spain	504	100	0,022	100	739	1970-2004
Tambre	1530	Spain	1530	100	0,059	100	3828	1994-2001
Traba	122	Spain	122	100	0,004	100	316	1970-2004
Ulla	2803	Spain	2803	100	0,104	100	1337	1971-2004
Umia	440	Spain	440	100	0,052	100	846	1970-2000
Lerez	450	Spain	450	100	0,085	100	1249	1970-1999
Verdugo	334	Spain	334	100	0,021	100	484	1970-2004
Miño	17247	Spain	16347	94,8	0,881		25716	1975-95
		Portugal	900	5,2				
Duero	97670	Spain	78960	80,8	3,093			
		Portugal	18710	19,2				
Tajo	80190	Spain	55810	69,6	6,459			
		Portugal	24380	30,4				
Guadiana	67122	Spain	55597	82,8	1,800		8556	1.912 - 1.995
		Portugal	11525	17,2				
Piedras	550	Spain	550	100	0,034	100	61	
Odiel	2417	Spain	2417	100	0,211	100	1 200	
Tinto	1727	Spain	1727	100	0,090	100	178	
Guadalquivir	63241	Spain	63241	100	4,966	100	3423	1942-88
Guadalete	3360	Spain	3360	100	0,555	100	413	
TOTAL	**355131**	**Spain**	**299616**	**84,4**	**20,907**	**NI**	**70553**	
		Portugal	**55515**	**15,6**	**NI**			
		TOTAL	**355131**	**100**				
Statistical Information provided by Sweden:					1995			
Vege å (95)	498	Sweden	498	100	0,04300	100	440	1961-1990
Rönne å (96)	1890	Sweden	1890	100	0,08810	100	2030	1961-1990
Stensån (97)	284	Sweden	284	100	0,00710	100	350	1961-1990
Lagan (98)	6444	Sweden	6444	100	0,11890	100	7410	1961-1990
Genevadsån (99)	225	Sweden	225	100	0,00470	100	350	1961-1990
Fylleån (100)	359	Sweden	359	100	0,00900	100	650	1961-1990
Nissan (101)	2682	Sweden	2682	100	0,08280	100	3690	1961-1990
Suseån (102)	441	Sweden	441	100	0,00760	100	640	1961-1990
Ätran (103)	3343	Sweden	3343	100	0,06560	100	5070	1961-1990
Himleån (104)	214	Sweden	214	100	0,00820	100	330	1961-1990
Viskan (105)	2201	Sweden	2201	100	0,12120	100	2760	1961-1990
Rolfsån (106)	723	Sweden	723	100	0,02710	100	1030	1961-1990
Kungsbackaån (107)	310	Sweden	310	100	0,03740	100	410	1961-1990
Göta älv (108)	50230	Sweden	42780,00	85,20	0,82190	ni	50530	1961-1990
		Norway	7450,00	14,80	ni	ni		
	69844	**=Total of Swedish rivers discharging to the Kattegat**						
Bäveån (109)	302	Sweden	302	100	0,02130	100	350	1961-1990
Örekilsälven (110)	1327	Sweden	1327	100	0,01450	100	2050	1961-1990
Strömsån (111)	253	Sweden	253	100	0,00490	100	390	1961-1990
Enningsdalsälven (112)	704	Sweden	704	100	0,00319	100	1360	1961-1990
	2586	**=Total of Swedish rivers discharging to the Skagerrak**						
Statistical Information provided by the United Kingdom:								
Dionard (SC2b)	NI	-	-	-	NI	-	NI	NI
Hope (SC2b)	NI	-	-	-	NI	-	NI	NI
Borgie (SC2b)	NI	-	-	-	NI	-	NI	NI
Naver (SC2b)	NI	-	-	-	NI	-	NI	NI
Strathy (SC2b)	NI	-	-	-	NI	-	NI	NI
Halladale (SC2b)	NI	-	-	-	NI	-	NI	NI
Thurso (SC2b)	NI	-	-	-	NI	-	NI	NI
Wick (SC2b)	NI	-	-	-	NI	-	NI	NI
Dunbeath (SC2b)	NI	-	-	-	NI	-	NI	NI
Berriedale (SC2b)	NI	-	-	-	NI	-	NI	NI
Langwell (SC2b)	NI	-	-	-	NI	-	NI	NI
Helmsdale (SC2b)	NI	-	-	-	NI	-	NI	NI
Brora (SC2b)	NI	-	-	-	NI	-	NI	NI
Oykle (K.S.; SC2b)	NI	-	-	-	NI	-	NI	NI
Cassley (K.S.; SC2b)	NI	-	-	-	NI	-	NI	NI
Shin (K.S.; SC2a)	NI	-	-	-	NI	-	NI	NI
Carron (K.S.; SC2a)	NI	-	-	-	NI	-	NI	NI
Alness (SC2b)	NI	-	-	-	NI	-	NI	NI
Cannon (SC2b)	NI	-	-	-	NI	-	NI	NI
Beauly (SC2b)	NI	-	-	-	NI	-	NI	NI
Ness (SC2b)	NI	-	-	-	NI	-	7600	NI
Nairn (SC2b)	NI	-	-	-	NI	-	NI	NI
Findhorn (SC2b)	NI	-	-	-	NI	-	NI	NI
Spey (SC3)	NI	-	-	-	NI	-	5600	NI
Deveron (SC3)	NI	-	-	-	NI	-	NI	NI

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Ugie (SC3)	NI	-	-	-	NI	-	NI	NI
Ythan (SC3)	NI	-	-	-	NI	-	NI	NI
Lossie (SC3)	NI	-	-	-	NI	-	NI	NI
Don (SC3)	NI	-	-	-	NI	-	NI	NI
Dee (SC3)	NI	-	-	-	NI	-	NI	NI
Bervie (SC3)	NI	-	-	-	NI	-	NI	NI
Dighty (SC4)	NI	-	-	-	NI	-	NI	NI
Earn (SC4)	NI	-	-	-	NI	-	NI	NI
Eden (SC4)	NI	-	-	-	NI	-	NI	NI
North Esk (SC4)	NI	-	-	-	NI	-	NI	NI
South Esk (SC4)	NI	-	-	-	NI	-	NI	NI
Lunan (SC4)	NI	-	-	-	NI	-	NI	NI
Tay (SC4)	NI	-	-	-	NI	-	14000	NI
Leven (SC5)	NI	-	-	-	NI	-	NI	NI
Black Devon (SC5)	NI	-	-	-	NI	-	NI	NI
Devon (SC5)	NI	-	-	-	NI	-	NI	NI
Allan (SC5)	NI	-	-	-	NI	-	NI	NI
Teith (SC5)	NI	-	-	-	NI	-	NI	NI
Forth (SC5)	NI	-	-	-	NI	-	4300	NI
Avon (SC5)	NI	-	-	-	NI	-	NI	NI
Carron (SC5)	NI	-	-	-	NI	-	NI	NI
Almond (SC5)	NI	-	-	-	NI	-	NI	NI
Leith (SC5)	NI	-	-	-	NI	-	NI	NI
Esk (SC5)	NI	-	-	-	NI	-	NI	NI
Tyne (SC5)	NI	-	-	-	NI	-	3900	NI
Whiteadder (SC5)	NI	-	-	-	NI	-	NI	NI
Eye (SC5)	NI	-	-	-	NI	-	NI	NI
Tweed (E1)	NI	-	-	-	NI	-	NI	NI
Coquet (E1)	NI	-	-	-	NI	-	NI	NI
Wansbeck (E1)	NI	-	-	-	NI	-	NI	NI
Blyth (E1)	NI	-	-	-	NI	-	NI	NI
Tyne (E2)	NI	-	-	-	NI	-	NI	NI
Derwent (E2)	NI	-	-	-	NI	-	NI	NI
Team (E2)	NI	-	-	-	NI	-	NI	NI
Wear (E3)	NI	-	-	-	NI	-	NI	NI
Skerne (E5)	NI	-	-	-	NI	-	NI	NI
Tees (E5)	NI	-	-	-	NI	-	NI	NI
Tot.N.Sea (N) catch.	50000						89300	
Aire (E8)	NI	-	-	-	NI	-	NI	NI
Derwent (E8)	NI	-	-	-	NI	-	NI	NI
Don (E8)	NI	-	-	-	NI	-	NI	NI
Ouse (E8)	NI	-	-	-	NI	-	NI	NI
Wharfe (E8)	NI	-	-	-	NI	-	NI	NI
Ancholme (E8)	NI	-	-	-	NI	-	NI	NI
Trent (E8)	NI	-	-	-	NI	-	7800	NI
Idle (E8)	NI	-	-	-	NI	-	NI	NI
Welland (E9)	NI	-	-	-	NI	-	NI	NI
Nene (E9)	NI	-	-	-	NI	-	NI	NI
Ouse (E9)	NI	-	-	-	NI	-	NI	NI
Witham (E9)	NI	-	-	-	NI	-	NI	NI
Glan (E9)	NI	-	-	-	NI	-	NI	NI
Hundred Foot River (E9	NI	-	-	-	NI	-	NI	NI
Ten Mile River (E9)	NI	-	-	-	NI	-	NI	NI
Bure (E10)	NI	-	-	-	NI	-	NI	NI
Wensum (E10)	NI	-	-	-	NI	-	NI	NI
Stour (E10)	NI	-	-	-	NI	-	NI	NI
Gipping (E10)	NI	-	-	-	NI	-	NI	NI
Waveney (E10)	NI	-	-	-	NI	-	NI	NI
Yare (E10)	NI	-	-	-	NI	-	NI	NI
Colne (E11)	NI	-	-	-	NI	-	NI	NI
Chalmer (E11)	NI	-	-	-	NI	-	NI	NI
Blackwater (E11)	NI	-	-	-	NI	-	NI	NI
Thames (E12)	NI	-	-	-	NI	-	6700	NI
Beam (E12)	NI	-	-	-	NI	-	NI	NI
Beverley Brook (E12)	NI	-	-	-	NI	-	NI	NI
Brent (E12)	NI	-	-	-	NI	-	NI	NI
Crane (E12)	NI	-	-	-	NI	-	NI	NI
Ingrebourne (E12)	NI	-	-	-	NI	-	NI	NI
Lee (E12)	NI	-	-	-	NI	-	NI	NI
Ravensbourne (E12)	NI	-	-	-	NI	-	NI	NI
Roding (E12)	NI	-	-	-	NI	-	NI	NI
Wandle (E12)	NI	-	-	-	NI	-	NI	NI
Tot.N.Sea (S) catch.	62000						32300	
Medway (E13)	NI	-	-	-	NI	-	NI	NI
Stour (E13)	NI	-	-	-	NI	-	1130	NI
Rother (E13)	NI	-	-	-	NI	-	NI	NI

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Adur (E14)	NI	-	-	-	NI	-	NI	NI
Ouse (E14)	NI	-	-	-	NI	-	NI	NI
Cuckmere (E14)	NI	-	-	-	NI	-	NI	NI
Arun (E14)	NI	-	-	-	NI	-	NI	NI
Itchen (E15)	NI	-	-	-	NI	-	NI	NI
Test (E15)	NI	-	-	-	NI	-	NI	NI
Blackwater (E15)	NI	-	-	-	NI	-	NI	NI
Frome (E16)	NI	-	-	-	NI	-	NI	NI
Stour (E16)	NI	-	-	-	NI	-	NI	NI
Avon (E16)	NI	-	-	-	NI	-	1330	NI
Axe (E17)	NI	-	-	-	NI	-	NI	NI
Dart (E17)	NI	-	-	-	NI	-	NI	NI
Exe (E17)	NI	-	-	-	NI	-	1360	NI
Gara (E17)	NI	-	-	-	NI	-	NI	NI
Otter (E17)	NI	-	-	-	NI	-	NI	NI
Teign (E17)	NI	-	-	-	NI	-	NI	NI
Cober (E18)	NI	-	-	-	NI	-	NI	NI
Erme (E18)	NI	-	-	-	NI	-	NI	NI
Fal (E18)	NI	-	-	-	NI	-	NI	NI
Fowey (E18)	NI	-	-	-	NI	-	NI	NI
Gara (E18)	NI	-	-	-	NI	-	NI	NI
Lynher (E18)	NI	-	-	-	NI	-	NI	NI
Par (E18)	NI	-	-	-	NI	-	NI	NI
Plym (E18)	NI	-	-	-	NI	-	NI	NI
Porthleven (E18)	NI	-	-	-	NI	-	NI	NI
St Austel (E18)	NI	-	-	-	NI	-	NI	NI
Tavy (E18)	NI	-	-	-	NI	-	NI	NI
Tamar (E18)	NI	-	-	-	NI	-	1940	NI
Tot.Channel catch.	22000						16500	
Camel (E19)	NI	-	-	-	NI	-	NI	NI
Hayle (E19)	NI	-	-	-	NI	-	NI	NI
Menalhyl (E19)	NI	-	-	-	NI	-	NI	NI
Red River (E19)	NI	-	-	-	NI	-	NI	NI
Taw (Yeo) (E19)	NI	-	-	-	NI	-	NI	NI
Taw (2) (E20)	NI	-	-	-	NI	-	NI	NI
Torridge (E20)	NI	-	-	-	NI	-	NI	NI
Parrett (E21)	NI	-	-	-	NI	-	NI	NI
Tone (E21)	NI	-	-	-	NI	-	NI	NI
Bristol Avon (E22)	NI	-	-	-	NI	-	NI	NI
Severn (2) (E22)	NI	-	-	-	NI	-	9100	NI
Wye (E23)	NI	-	-	-	NI	-	6200	NI
Usk (E23)	NI	-	-	-	NI	-	NI	NI
Rhymney (E23)	NI	-	-	-	NI	-	NI	NI
Ely (E23)	NI	-	-	-	NI	-	NI	NI
Afon Lwyd (E23)	NI	-	-	-	NI	-	NI	NI
Ebbw Fawr (E23)	NI	-	-	-	NI	-	NI	NI
Taff (E23)	NI	-	-	-	NI	-	NI	NI
Cadoxton (E24)	NI	-	-	-	NI	-	NI	NI
Neath (E24)	NI	-	-	-	NI	-	NI	NI
Ogmore (E24)	NI	-	-	-	NI	-	NI	NI
Thaw (E24)	NI	-	-	-	NI	-	NI	NI
Tawe (E24)	NI	-	-	-	NI	-	NI	NI
Ewenny (E24)	NI	-	-	-	NI	-	NI	NI
Nant Y Fendrod (E24)	NI	-	-	-	NI	-	NI	NI
Thaw Kenson (E24)	NI	-	-	-	NI	-	NI	NI
Dafen (E25)	NI	-	-	-	NI	-	NI	NI
W Cleddau (E25)	NI	-	-	-	NI	-	NI	NI
Tywi (E25)	NI	-	-	-	NI	-	3700	NI
Taf (E25)	NI	-	-	-	NI	-	NI	NI
Loughor (E25)	NI	-	-	-	NI	-	NI	NI
Tot.Celtic S. catch.	32000						36400	
Teifi (E26)	NI	-	-	-	NI	-	NI	NI
Ystwyth (E26)	NI	-	-	-	NI	-	NI	NI
Rheidol (E26)	NI	-	-	-	NI	-	NI	NI
Mawddach (E26)	NI	-	-	-	NI	-	NI	NI
Dyfi (E26)	NI	-	-	-	NI	-	NI	NI
Glaslyn (E26)	NI	-	-	-	NI	-	NI	NI
Afon Goch (2) (E27)	NI	-	-	-	NI	-	NI	NI
Clwyd (E27)	NI	-	-	-	NI	-	NI	NI
Cefni (E27)	NI	-	-	-	NI	-	NI	NI
Conwy (E27)	NI	-	-	-	NI	-	NI	NI
Dee (E27)	NI	-	-	-	NI	-	3020	NI
Nant Glywdyr (E27)	NI	-	-	-	NI	-	NI	NI
Alt (E28)	NI	-	-	-	NI	-	NI	NI
Mersey (E28)	NI	-	-	-	NI	-	3540	NI
Weaver (E28)	NI	-	-	-	NI	-	NI	NI

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]		[km2]	[%]	[10E6]	[%]	[1000 m3/d]	[a]
Darwen (E29)	NI	-	-	-	NI	-	NI	NI
Douglas (E29)	NI	-	-	-	NI	-	NI	NI
Ribble (E29)	NI	-	-	-	NI	-	NI	NI
Kent (E29)	NI	-	-	-	NI	-	NI	NI
Lune (E29)	NI	-	-	-	NI	-	3020	NI
Wyre (E29)	NI	-	-	-	NI	-	NI	NI
Leven (E29)	NI	-	-	-	NI	-	NI	NI
Derwent (E30)	NI	-	-	-	NI	-	NI	NI
Eden (E30)	NI	-	-	-	NI	-	4320	NI
Liddel (SC1)	NI	-	-	-	NI	-	NI	NI
Esk (SC1)	NI	-	-	-	NI	-	NI	NI
Kirtle (SC1)	NI	-	-	-	NI	-	NI	NI
Annan (SC1)	NI	-	-	-	NI	-	NI	NI
Nith (SC1)	NI	-	-	-	NI	-	NI	NI
Urr (SC1)	NI	-	-	-	NI	-	NI	NI
Dee (SC1)	NI	-	-	-	NI	-	NI	NI
Cree (SC1)	NI	-	-	-	NI	-	NI	NI
Bladnoch (SC1)	NI	-	-	-	NI	-	NI	NI
Luce (SC1)	NI	-	-	-	NI	-	NI	NI
Piltanton (SC1)	NI	-	-	-	NI	-	NI	NI
Newry (NI2)	NI				NI	-	NI	NI
Quoile (NI2)	NI				NI	-	NI	NI
Lagan (NI2)	NI				NI	-	NI	NI
Tot.Irish Sea catch.	35000						48400	
Clyde (SC2)	NI	-	-	-	NI	-	4000	NI
Kelvin (SC2)	NI	-	-	-	NI	-	NI	NI
White Cart (SC2)	NI	-	-	-	NI	-	NI	NI
Black Cart (SC2)	NI	-	-	-	NI	-	NI	NI
Leven (SC2)	NI	-	-	-	NI	-	NI	NI
Garnock (SC2)	NI	-	-	-	NI	-	NI	NI
Lugton (SC2)	NI	-	-	-	NI	-	NI	NI
Annick (SC2)	NI	-	-	-	NI	-	NI	NI
Irvine (SC2)	NI	-	-	-	NI	-	NI	NI
Ayr (SC2)	NI	-	-	-	NI	-	NI	NI
Doon (SC2)	NI	-	-	-	NI	-	NI	NI
Girvan (SC2)	NI	-	-	-	NI	-	NI	NI
Stinchar (SC2)	NI	-	-	-	NI	-	NI	NI
Leven (SC2a)	NI	-	-	-	NI	-	NI	NI
Nevis (SC2a)	NI	-	-	-	NI	-	NI	NI
Lochy (SC2a)	NI	-	-	-	NI	-	5400	NI
Shiel (Sunart; SC2a)	NI	-	-	-	NI	-	NI	NI
Ailort (SC2a)	NI	-	-	-	NI	-	NI	NI
Morar (SC2a)	NI	-	-	-	NI	-	NI	NI
Shiel (G.S.; SC2a)	NI	-	-	-	NI	-	NI	NI
Elchaig (SC2a)	NI	-	-	-	NI	-	NI	NI
Ling (SC2a)	NI	-	-	-	NI	-	NI	NI
Carron (N.K.; SC2a)	NI	-	-	-	NI	-	NI	NI
Ewe (SC2a)	NI	-	-	-	NI	-	NI	NI
Little Gruinad (SC2a)	NI	-	-	-	NI	-	NI	NI
Gruinard (SC2a)	NI	-	-	-	NI	-	NI	NI
Broom (SC2a)	NI	-	-	-	NI	-	NI	NI
Ullapool (SC2a)	NI	-	-	-	NI	-	NI	NI
Inver (SC2a)	NI	-	-	-	NI	-	NI	NI
Laxford (SC2b)	NI	-	-	-	NI	-	NI	NI
Bush (NI1)	NI				NI		NI	NI
Bann (NI1)	NI				NI		7900	NI
Roe (NI1)	NI				NI		NI	NI
Faughan (NI1)	NI				NI		NI	NI
Burn Dennet NI1	NI				NI		NI	NI
Mourne (NI1)	NI				NI		NI	NI
Finn (NI1)	NI				NI		NI	NI
Tot.Atlantic catchm.	42000						49700	

***) LTA = Long-term average**

Annex 1

BELGIUM

Annual report on riverine inputs and direct discharges by Belgium to Convention waters during the year 2004

Name, address and contact numbers of reporting authority to which any further enquiry should be addressed:

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MUMM
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Tel: +32 2 773 21 21
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A. General information

Table 1: General overview of river systems (for riverine inputs) and direct discharge areas (for direct discharges) included in the data report

Country: Belgium	
Name of river, sub-area and discharge area[1]	Nature of the receiving water[2]
Belgian Coastal zone	
Western area (23 km)	Coastal water
Middle area (20 km)	Coastal water
Eastern area (22 km)	Coastal water
Scheldt estuary	
Scheldt river	Estuary, tidal range ~4m
Ghent-Terneuzen canal	Estuary, tidal range ~4m

[1] i.e. name of estuary or length of coastline

[2] i.e. estuary or coastal water; if an estuary, state the tidal range and the daily flushing volume

B. Total riverine inputs and direct discharges (Tables 4a and 4b) for the year: 2004

Note: Table 4b is total direct discharges and riverine inputs to maritime area by region. Please provide totals for each OSPAR region and for total inputs.

B.1 Give general comments on the total riverine inputs and direct discharges (e.g. changes from last year, trends, percentage of particle bound determinand, results that need to be highlighted etc.):

The total flow rate is 10% lower than in 2003 which is reflected in lower nutrients, cadmium, zinc and Lindane inputs. Nevertheless, copper, lead and suspended matter inputs rose.

For the first time since Belgian reporting to OSPAR, monitored flow rates for the IJzer main river and the Ghent-Oostende canal were used to calculate the inputs to the Coastal area. This change in approach does not significantly alter the flow budget as the overall effect is only -88 1000 m³/d on a total of 2367 1000 m³/d, representing less than 4% for the area.

C. Direct discharges for the year: 2004

Sewage Effluents (Table 5a)

C.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (cf. section 7 of the RID Principles), including for those under voluntary reporting:

No sewage effluents are discharged directly to Belgium's convention waters.

C.2 Describe the determinands, other than those specified in paragraph 2.1 of the RID Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

C.3 Give general comments on the discharges of sewage effluents (e.g. compared to previous years, and/or extent to which industrial effluents are discharged through sewerage systems):

None

Industrial Effluents (Table 5b)

C.4 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (ref.: Section 7 of the RID Principles), including for those under voluntary reporting:

No industrial effluents are discharged directly to Belgium's convention waters.

C.5 Give any other relevant information (e.g. proportion of substance discharged as insoluble material):

None

C.6 Give any available information on other discharges directly to Convention Waters - through e.g. urban run-off and stormwater overflows - that are not covered by the data in Tables 5a and 5b:

No urban run-off or storm water overflows discharge to Convention Waters under Belgian jurisdiction.

C.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

C.8 Give general comments on industrial effluents (e.g. compared to previous years):

None

Total direct discharges (Table 5c)

C.9 Give general comments on total direct discharges (e.g. compared to previous years):

There are no longer direct discharges to Belgian convention waters since 1996.

D. Riverine inputs for the year: 2004

Main Rivers (Tables 6a and 7a)

D.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7a) upon which the measurement is based (ref.: Section 6 of the RID Principles), including for those under voluntary reporting:

No information on the methods of measurements is available at this moment. The number of samples is reported in Table 7 for every determinand.

For the calculation of the standard deviation of the sets of determinand concentrations, all concentrations lower than the detection limits were taken as half the value of the detection limits. When more than 30% of the measurements for a determinand were beneath the detection limit, no calculation for this parameter was made and the value reported is "NI" (No Information).

Coastal Area

For the first time since Belgium reports to OSPAR, monitored flow rates were used to calculate the inputs via the IJzer river. As a consequence, the formula proposed under point 5.11 of the "Principles of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID)" was used:

$$\frac{Qr\sum_{i=1}^{n}(CiQi)}{\sum_{i=1}^{n}(Qi)}$$

Where:

Qr is the mean flow rate for 2004

Qi is the mean flow rate of the day during which sample I was taken

Ci is the concentration measured in sample i

Ref. (1) table 7: the detection limit was reached, a nominal minimum concentration could not be detected. Consequently, the fields in the rows labelled "minimum" were given the value "ND" (Not Detected). See also section E.1.

Ref. (2) table 7: all measurements were below the detection limit, a nominal maximum concentration could not be detected. Consequently, the fields in the rows labeled "maximum" were given the value "ND" (Not Detected). See also section E.1.

Ref. (3) table 7: due to lack of valuable data, the standard deviation could not be calculated. Hence the value "NI" (No Information) was given. The standard deviations for these determinands were no longer calculated. Instead those fields were labeled "NI".

Scheldt estuary

The flow rates for the Scheldt were calculated on the basis of the fresh water flow at the upstream measuring station "Schelle", corrected with an empirical factor. As was explained in the 2001 submission report, this factor comprises corrections for downstream lateral drainage and for the actual water balance of the Antwerp harbour.

Source of data: Flemish Region, Department of Environment & Infrastructure, Waterways and Maritime Affairs Administration, Maritime Section Scheldt.

The loads of the Scheldt were calculated using the formula proposed under point 5.11 of the "Principles of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID)":

$$\frac{Qr\sum_{i=1}^{n}(CiQi)}{\sum_{i=1}^{n}(Qi)}$$

Where:

Qr is the mean flow rate for 2004

Qi is the mean flow rate of the ten-day period during which sample I was taken

Ci is the concentration measured in sample i

Ref. (1) table 7: the detection limit was reached; a nominal minimum concentration could not be detected. Consequently, the fields in the rows labelled "minimum" were given the value "ND" (Not Detected). See also section E.1.

Ref. (2) table 7: all measurements were beneath the detection limit, a nominal maximum concentration could not be detected. Consequently, the fields in the rows labeled "maximum" were given the value "ND" (Not Detected). See also section E.1.

Ref. (3) table 7: due to lack of valuable data, the standard deviation could not be calculated. Hence the value "NI" (No Information) was given.

Loads are calculated twice: once with and once without salinity correction on the concentration data (for explanation see the Belgian report on 1990 inputs). In addition, where detection limits were reached, loads were calculated twice more: once with a concentration "zero" and once with a concentration set equal to the nominal value of the detection limit. The highest and the lowest results of these calculations were then reported for every substance as upper and lower limits. The 'real' pollutant load is currently estimated to be situated between these two figures. No information on the precision of the measurement is available.

The formula for the salinity correction of a concentration figure is:

$$C_{corrected} = \frac{(18000 \times C_{measured})}{(18000 - [chloride])}$$

This formula assumes that the chloride content of fresh water is close to zero.

D.2 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

None

D.3 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

Other determinands available for the **IJzer River** are:

Ni t, Sn t, 123CPa, 12CEa, 2346CFol, 26CFol, 3CFol, TBMa, B(ghi)Pe, 2C4tByFol, EndoS, Endr.al, 44DDT, Telodrin, Dsulfoton, PCB 138, PCB 49, Demeton-S, Ffamidon, Alachlor, Picarb, BI, Al t, Be t, Cr t, 135MyBz, 1122CEa, 124CBz, 135CBz, 13CBz, 13CPa, c13CPe, 35CFol, DBCMa, IP, sByBz, 4MyFol, 2EyFol, c12CEe, 2C5MyFol, 24BrFol, 245-T, 24-DP, HpC, HCBz, MCPP, Diuron, DCvos, Demeton-O, Ethion, 1234CBz, Mbromuron, O2 sat, F-, Co t, Mo t, 24MyFol, iPyBz, PCFol, 235CFol, 236CFol, TtCEe, Chr, DiPyatraz, Dmetoat, Cumafos, Ioxynil, 2356CNiBz, Heptfos, 1235CBz, DCMa, SO4=, P t, Mn t, 2356CFol, 23CPe, 2CFol, 4CFol, Fen, Naft, PyBz, Ca t, B(e)P, 24DDE, 44DDE, Simaz, Terbutryn, Triazofos, Tfluralin, tCdane, TclofosMy, B t, Fe t, V t, COD, 111CEa, 12CBz, 24CFol, 4C3MyFol, HCEa, Acenaft, B(b)Flu, 12BEa, Te t, DBMa, nByBz, 2iPyFol, 35MyFol, Perylene, 4C2BzyFol, aHCH, 24DDT, 2345CNiBz, Propaz, Mevinfos, Sebutylaz, cCdane, CpfosMy, Cdazon, PCB 169, Carbdzim, pH, Cl-, NO2-, Ba t, 1112CEa, TCEe, Flu, 124MyBz, tByBz, Mg t, 2FyFol, 2BzyFol, Dieldrin, bEndo, 44DDD, Iproturon, Ethopfos, Bentazone, PirfosMy, Hexazinon, Prochlor, PCBz, Dinoterb, Clfyl a, Benzene, 112CEa, t13CPe, 234CFol, 2CTol, 345CFol, 3CTol, BDCMa, B(a)A, B(k)Flu, U t, 4EyFol, 23MyFol, 34MyFol, Endrin, cHpCEpx, 24DDD, Mlinuron, 1245CBz, Fenthion, As t, Ti t, oXyl, Toluene, 123CBz, 12CPa, 2345CFol, 34CFol, TCMa, Fluorene, Pyr, 2MyFol, 235MyFol, t12CEe, 24NiFol, MCPA, mBthiaz, AzinfosEy, Bromoxyn, 2hAtraz, Terbufos, T, H t, Sb t, Fe o, BOD5, 245CFol, Ant, B(a)P, BCMa, piPyTol, 3EyFol, 26MyFol, 25CFol, Metola, DEyatraz, Metoxur, Malathion, MCPB, PathionMy, Desmetryn, Prometryn, Diazinon, Na t, Ag t, 11CEa, 23CFol, 246CFol, 3CPe, 4C2MyFol, 4CTol, TtCMa, dBz(ah)An, 112CTFEa, 3MyFol, K t, DNOC, Propanil, Aldrin, Ctoluron, Cyanaz, AzinfosMy, Fenithion, Cprofam, 24-DB, Cfvinfos, Methidat, Dinoseb, Glyfosaat, Demeton-S-My, Cd t, Cu o, Mn o, Se t, Tl t, EyBz, mpXyl, 14CBz, CBz, Acenaftyl, BBz, Fol, 25MyFol, 4C35MyFol, Metaza, 24-D, aEndo, HCBdn, bHCH, Isodrin, MxyC, Atraz, Linuron, TrByaz, Benazolin, PCB , 1, PathionEy, BrfosEy, CpfosEy, PCB 170, AMPA, Carbaryl, Fonofos

For the **Scheldt River** other available determinands are:

EC 20, O2, Ni t, Sn t, EndoS, Endr.al, 44DDT, Telodrin, 123CPa, 12CEa, TBMa, B(ghi)Pe, PCB 49, Cr t, Al t, Be t, 135MyBz, HpC, HCBz, 1122CEa, 124CBz, 135CBz, 13CBz, 13CPa, c13CPe, DBCMa, IP, sByBz, c12CEe, 1234CBz, F-, O2 sat, Co t, Mo t, iPyBz, TtCEe, Chr, 2356CNiBz, 1235CBz, DCMa, SO4=, Mn t, 24DDE, 44DDE, 23CPe, Tfluralin, Fen, Naft, tCdane, PyBz, Ca t, B(e)P, B t, Fe t, COD, V t, Styrene, aHCH, 24DDT, 2345CNiBz, 111CEa, 12CBz, HCEa, Acenaft, B(b)Flu, 12BEa, Te t, cCdane, DBMa, nByBz, PCB 169, Perylene, Cl-, pH, Ba t, Dieldrin, bEndo, 44DDD, 1112CEa, TCEe, Flu, 124MyBz, tByBz, Mg t, PCBz, Clfyl a, Benzene, Endrin, cHpCEpx, 24DDD, 112CEa, 1245CBz, t13CPe, 2CTol, 3CTol, BDCMa, B(a)A, B(k)Flu, U t, As t, Ti t, oXyl, Toluene, 123CBz, 12CPa, TCMa, Fluorene, Pyr, t12CEe, T, Sb t, BOD5, Ant, B(a)P, BCMa, piPyTol, Na t, Ag t, Aldrin, 11CEa, 3CPe, 4CTol, TtCMa, dBz(ah)An, PCB 180, PCB 153, 112CTFEa, K t, Se t, Tl t, EyBz, mpXyl, aEndo, HCBdn, bHCH, gHCH, Isodrin, MxyC, 14CBz, CBz, PCB 31, Acenaftyl, BBz, PCB 170

D.4 Give general comments on the inputs from main rivers (e.g. significant changes in inputs, concentrations and flows compared to previous years):

IJzer river

Comparison with former years is not very significant as the inputs for 2004 are for the first time based on monitored flow rates instead of the LTA. The mean flow rate for this year is 63% of the LTA used for reporting in former years. It is thus remarkable that significantly higher inputs than in 2003 were monitored for copper, lead and zinc. Lindane input on the other hand fell with a factor 6 to 10. Total nitrogen input rose by 50% but total phosphorus input slightly diminished. Suspended particulate matter input rose by a factor 3.

Scheldt river

The mean flow rate for 2004 fell by 22% compared to 2003. Heavy metals inputs are not significantly different when uncertainties due to moving detection limits are taken into account. Here also, a strongly diminished Lindane input is revealed. Nutrients inputs are not significantly different but suspended particulate matter input remarkably rose by 30-40%.

Tributary Rivers (Tables 6b and 7b)

D.5 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7b.) upon which the measurement is based (ref.: Section 6 of the Principles):

No information on the methods of measurement is available at this moment. The number of samples is reported in Table 7 for every determinand.

For the calculation of the standard deviation of the sets of determinand concentrations, all concentrations lower than the detection limits were taken as half the value of the detection limits. When more than 30% of the measurements for a determinand were beneath the detection limit no calculation for this parameter was made and the value reported was "NI" (No Information).

Coastal Area

No information on the methods of measurement is available at this moment. The number of samples is reported in Table 7 for every determinand.

For the first time since Belgium reports to OSPAR, monitored flow rates were used to calculate the inputs via the Gent-Oostende canal. As a consequence, the formula proposed under point 5.11 of the "Principles of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID)" was used for this tributary only:

$$\frac{Qr\sum_{i=1}^{n}(CiQi)}{\sum_{i=1}^{n}(Qi)}$$

Where:

Qr is the mean flow rate for 2004

Qi is the mean flow rate of the day during which sample I was taken

Ci is the concentration measured in sample i

As in former years, due to the lack of flow rate data, the inputs of the other tributaries and polders of the coastal zone were calculated using the formula proposed under point 5.12 of the "Principles of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID)":

$$\frac{Qr\sum_{i=1}^{n} Ci}{n}$$

Where:

Qr is an estimated LTA flow rate

Ci is the concentration measured in sample i

Ref. (1) table 7: the detection limit was reached, a nominal minimum concentration could not be detected. Consequently, the fields in the rows labelled "minimum" were given the value "ND" (Not Detected). See also section E.1.

Ref. (2) table 7: all measurements were beneath the detection limit, a nominal maximum concentration could not be detected. Consequently, the fields in the rows labeled "maximum" were given the value "ND" (Not Detected). See also section E.1.

Ref (3) table 7: due to lack of valuable data, the standard deviation could not be calculated. Hence the value "NI" (No Information) was given.

All concentrations were measured in fresh water reaches. Therefore salinity was nowhere monitored nor was a correction for salinity necessary.

Scheldt estuary

The fresh water flow rates for the Gent-Terneuzen canal were obtained from the Ministry of the Flemish Community, Department of Environment and Infrastructure, Waterways and Maritime Affairs Administration, Upper Scheldt Section.

The loads of the Gent-Terneuzen canal were calculated using the formula proposed under point 5.11 of the "Principles of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID)":

$$\frac{Qr\sum_{i=1}^{n}(CiQi)}{\sum_{i=1}^{n}(Qi)}$$

Where:

Qr is the mean flow rate for 2004, evaluated on a daily basis

Qi is the flow rate on the sampling day i

Ci is the concentration measured in the sample taken at day i

Ref. (1) table 7: the detection limit was reached, a nominal minimum concentration could not be detected. Consequently, the fields in the rows labelled "minimum" were given the value "ND" (Not Detected). See also section E.1.

Ref. (2) table 7: all measurements were beneath the detection limit, a nominal maximum concentration could not be detected. Consequently, the fields in the rows labeled "maximum" were given the value "ND" (Not Detected). See also section E.1.

Ref. (3) table 7: due to lack of valuable data, the standard deviation could not be calculated. Hence the value "NI" (No Information) was given.

The same corrections with respect to the detection limits and salinity were applied as explained under D1.

D.6 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

None

D.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

Determinands available for the **Gent-Terneuzen canal,** the **Gent-Oostende canal,** the **Leopold canal** and the **Schipdonk canal** are**:**

Ni t, Sn t, 123CPa, 12CEa, TBMa, B(ghi)Pe, EC 20, O2, Demeton-S, 4nOyFol, 2346CFol, 26CFol, 3CFol, 2C4tByFol, EndoS, Endr.al, 44DDT, Telodrin, Dsulfoton, PCB 49, Ffamidon, Alachlor, Picarb, BI, Al t, Be t, Cr t, 135MyBz, 1122CEa, 124CBz, 135CBz, 13CBz, 13CPa, c13CPe, DBCMa, IP, sByBz, c12CEe, Demeton-O, Methamfos, 35CFol, 4MyFol, 2EyFol, 2C5MyFol, 24BrFol, 245-T, 24-DP, HpC, HCBz, MCPP, Diuron, DCvos, Ethion, 1234CBz, Mbromuron, F-, Co t, Mo t, iPyBz, TtCEe, Chr, O2 sat, Foxim, 4nPyFol, 24MyFol, PCFol, 235CFol, 236CFol, DiPyatraz, Dmetoat, PCB 101, Cumafos, Ioxynil, 2356CNiBz, Heptfos, 1235CBz, DCMa, SO4=, Mn t, 23CPe, Fen, Naft, PyBz, Ca t, B(e)P, 2356CFol, 2CFol, 4CFol, 24DDE, 44DDE, Simaz, Terbutryn, Triazofos, Tfluralin, PCB 28, tCdane, TclofosMy, B t, Fe t, V t, Styrene, COD, 111CEa, 12CBz, HCEa, Acenaft, B(b)Flu, 12BEa, Te t, DBMa, nByBz, Perylene, 4tPyFol, 24CFol, 4C3MyFol, 2iPyFol, 35MyFol, 4C2BzyFol, aHCH, 24DDT, 2345CNiBz, Propaz, Mevinfos, cCdane, CpfosMy, Cdazon, PCB 169, Carbdzim, Sebutylaz, Cl-, Ba t, 1112CEa, TCEe, Flu, 124MyBz, tByBz, Mg t, pH, TCfon, 4tOyFol, 2FyFol, 2BzyFol, Clfyl a, Dieldrin, bEndo, 44DDD, Iproturon, Ethopfos, Bentazone, PirfosMy, Hexazinon, Prochlor, PCBz, Dinoterb, Benzene, 112CEa, t13CPe, 2CTol, 3CTol, BDCMa, B(a)A, B(k)Flu, U t, 234CFol, 345CFol, 4EyFol, 23MyFol, 34MyFol, Endrin, cHpCEpx, 24DDD, Mlinuron, 1245CBz, Fenthion, As t, Ti t, oXyl, Toluene, 123CBz, 12CPa, TCMa, Fluorene, Pyr, t12CEe, 4nNyFol, 2345CFol, 34CFol, 2MyFol, 235MyFol, 24NiFol, MCPA, mBthiaz, AzinfosEy, Bromoxyn, 2hAtraz, Terbufos, Sb t, BOD5, Ant, B(a)P, BCMa, piPyTol, Na t, T, 245CFol, 3EyFol, 26MyFol, 25CFol, Metola, DEyatraz, Metoxur, Malathion, MCPB, PathionMy, Desmetryn, Prometryn, Diazinon, Ag t, 11CEa, 3CPe, 4CTol, TtCMa, dBz(ah)An, 112CTFEa, K t, Demeton-S-My, 23CFol, 246CFol, 4C2MyFol, 3MyFol, DNOC, Propanil, Aldrin, Ctoluron, Cyanaz, AzinfosMy, Fenithion, Cprofam, 24-DB, Cfvinfos, Methidat, Dinoseb, Glyfosaat, Se t, Tl t, EyBz, mpXyl, 14CBz, CBz, Acenaftyl, BBz, Omethoaat, Fol, 25MyFol, 4C35MyFol, Metaza, 24-D, aEndo, HCBdn, bHCH, Isodrin, MxyC, Atraz, Linuron, TrByaz, Benazolin, PCB 31, PathionEy, BrfosEy, CpfosEy, PCB 170, AMPA, Carbaryl, Fonofos

For the **Vladslo vaart,** the **Langeleed and the Noordede** the following determinands are available:

Ni t, Sn t, EC 20, O2, BI, Al t, Be t, Cr t, Co t, Mo t, O2 sat, Mn t, Ca t, B t, Fe t, V t, COD, Te t, Cl-, Ba t, Mg t, pH, Clfyl a, U t, As t, Ti t, H t, Sb t, Fe o, BOD5, T, Na t, Ag t, K t, Mn o, Se t, Tl t, Cu o

D.8 Give any available information on other inputs - through e.g. polder effluents or from coastal areas - that are not covered by data in Tables 6b and 7b:

None

D.9 Give general comments on the inputs from tributary rivers (e.g. significant change in inputs, concentrations and flows compared to previous years):

For the first time since Belgium reports to OSPAR, monitored flow rates were used to calculate the inputs by the Ghent-Ostend canal. It follows that comparison of the inputs by this canal with former years is not very significant. It can be noted that the mean flow rate for 2004 for the tributaries in the coastal zone was 16% higher than the LTA used hitherto for this zone.

To be noted is that the heavy metal inputs are comparable to those for 2003 but that for zinc and Lindane there is a fall in level of 25% approximately. On the other hand, total nitrogen inputs rose by this same % while suspended matter inputs went down by some 30%.

Total riverine inputs (Table 6c)

D.10 Give general comments on the total riverine inputs (e.g. significant change in inputs, concentrations and flows compared to previous years):

As there are no direct discharges in Belgium, the comment on the total riverine inputs is the same as the one formulated under point B1 for total direct discharges and riverine inputs.

E. Unmonitored areas

E.1 Describe the methods of quantification used for the different determinands or groups of determinands:

No unmonitored areas are included in the Belgian report.

F. Limits of detection (Table 8)

F.1 Information concerning limits of detection should be presented in Table 8 which includes different columns for rivers/tributaries, sewage effluents and industrial effluents. Give comments if the detection limits are higher than stated in the RID Principles:

Information about the limits of detection given by the monitoring authority is partly inconclusive. In some cases the limits reported in table 8 follow from the measurements themselves, and not from the nominal information given by the measuring authority. For Hg, γ-HCH, total N and SPM, no nominal detection limits were given by the monitoring organism. When, for these determinands, all measurements were above the detection limit, then this limit could not be deduced. Values for these determinands are then reported "NI" (No Information).

As samples from the same locality sometimes have more than one detection limit throughout the year for the same determinand, it was necessary to mention two figures, the minimum and the maximum detection limits, in one field in text format.

Another fact to be stated is that some of those limits are rather high (e.g. Cd, Hg, Zn, Cu, Pb, γ-HCH, PCB, NH4, NO3). Consequently, very often more than 30% of the measurements are under those limits. When all measurements for a given determinand are beneath the limit of detection, there is no information about the lowest value measured, and the minimum values in table 7 are then reported as "ND" (not detected). The same reasoning was applied to the highest values when all measurements are under the limit of detection. In that case there is no information about a maximum concentration and this value is reported as "ND" (not detected). See also the references in sections D.1 and D.4.

Further, as a consequence of the higher limits of detection, there is sometimes a huge spread between the calculated upper and lower limits of the loads. This spread often largely hampers the interpretation of the year to year variability between input loads.

G. Additional comments

G.1 Indicate and explain, if appropriate:

- where and why the applied procedures do not comply with agreed procedures;
- significant changes in monitoring sites, important for comparison of the data before and after the date of the change;
- incomplete or distorted data.

As already noted under the points B.1, D.1 and D.5, monitored flow rates for the IJzer river and the Gent-Oostende canal were available for the first time since reporting, for 2004. As the inputs for these rivers were formerly calculated on the basis of the LTAs, these actual flow data surely mark the time series. It is as yet not perceivable to what amount or extent these data will be of influence on trends to be calculated in the future.

Another fact to be noted is the high spread in detection limits for zinc in the coastal zone. Being 2-7µg/l in 2003, this parameter is now 2-13µg/l for that zone.

Table 4b. Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by Belgium

TOTAL INPUTS			Quantities --->												
Discharge region	**Estimate**	**Flow rate m^3/d)**	**Cd [10^3 kg]**	**Hg [10^3 kg]**	**Cu [10^3 kg]**	**Pb [10^3 kg]**	**Zn [10^3 kg]**	**g-HCH [kg]**	**PCBs [kg]**	**NH4-N [10^6 kg]**	**NO3-N [10^6 kg]**	**PO4-P [10^6 kg]**	**Total N [10^6 kg]**	**Total P [10^6 kg]**	**SPM [10^6 kg]**
INPUTS TO OSPAR REGION II Greater North Sea															
RIVERINE INPUTS															
	lower		1,0	0,1	35	33	361	0,5	0,0	1,4	17	0,5	18	0,9	280
Main Rivers	upper	10074	3,3	0,1	50	66	501	13	61	2,4	23	0,8	31	2,7	383
	lower		0,1	0,0	2,5	2,3	34	1,4	0,0	1,7	7,3	0,7	11	0,5	14
Tributary Rivers	upper	3398	0,2	0,0	5,6	4,3	38	5,9	14	1,8	7,8	0,7	12	1,0	15
	lower		1,0	0,1	38	36	394	1,9	0,0	3,1	25	1,1	28	1,4	294
Total Riverine Inputs	**upper**	13472	3,6	0,2	56	71	539	19	75	4,2	31	1,5	43	3,7	398
DIRECT DISCHARGES															
	lower														
Sewage Effluents	upper	0													
	lower														
Industrial Effluents	upper	0													
	lower														
Fish Farming	upper	0													
	lower														
Total Direct Inputs	**upper**	**0**													
UNMONITORED AREAS															
	lower														
Unmonitored Areas	upper	0													
	lower														
REGION TOTAL	**upper**	**13472**													

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
243	Ijzer	lower	0,000	0,001	1,3	0,906	7,2	0,473	0,000	0,140	1,7	0,037	2,0	0,113	18
		upper	0,014	0,002	1,4	0,950	7,2	1,2	1,7	0,142	1,7	0,037	2,1	0,141	18
		comment													
238	Coastal Area	lower	0,000	0,001	1,3	0,906	7,2	0,473	0,000	0,140	1,7	0,037	2,0	0,113	18
		upper	0,014	0,002	1,4	0,950	7,2	1,2	1,7	0,142	1,7	0,037	2,1	0,141	18
		comment													
102	Schelde	lower	0,963	0,096	34	33	353	0,000	0,000	1,3	16	0,446	16	0,748	262
		upper	3,3	0,143	49	65	494	12	59	2,3	21	0,788	29	2,6	365
		comment													
245	Schelde Basin	lower	0,963	0,096	34	33	353	0,000	0,000	1,3	16	0,446	16	0,748	262
		upper	3,3	0,143	49	65	494	12	59	2,3	21	0,788	29	2,6	365
		comment													
79	North Sea (BE)	lower	0,963	0,097	35	33	361	0,473	0,000	1,4	17	0,484	18	0,860	280
		upper	3,3	0,145	50	66	501	13	61	2,4	23	0,825	31	2,7	383
		comment													

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
247	Beverdijk	lower	0,000		0,031	0,021	0,137			0,008	0,074	0,011	0,114	0,003	0,652
		upper	0,003		0,078	0,046	0,327			0,011	0,079	0,011	0,144	0,021	0,652
		comment													
246	Langeleed	lower	0,000	0,000	0,014	0,000	0,045			0,004	0,014	0,006	0,019	0,004	0,156
		upper	0,001	0,000	0,031	0,012	0,123			0,005	0,017	0,006	0,035	0,009	0,156
		comment													
248	Vladslovaart	lower	0,000		0,041	0,371	0,098			0,007	0,103	0,014	0,149	0,015	0,773
		upper	0,002		0,085	0,295	0,251			0,011	0,108	0,014	0,164	0,021	0,773
		comment													
239	Western Coastal Area	lower	**0,000**	**0,000**	**0,086**	**0,392**	**0,280**			**0,019**	**0,192**	**0,031**	**0,282**	**0,022**	**1,6**
		upper	**0,006**	**0,000**	**0,193**	**0,353**	**0,700**			**0,027**	**0,204**	**0,031**	**0,343**	**0,051**	**1,6**
		comment													
255	Blankenbergse vaart	lower	0,000	0,000	0,026	0,000	0,066	0,015	0,000	0,004	0,022	0,006	0,040	0,005	0,392
		upper	0,001	0,000	0,045	0,014	0,156	0,053	0,151	0,006	0,024	0,006	0,057	0,011	0,392
		comment													
252	Leopold canal	lower	0,000	0,004	0,476	0,079	0,570	0,196	0,000	0,137	0,622	0,066	0,913	0,045	1,1
		upper	0,013	0,005	0,669	0,212	1,6	0,417	1,3	0,139	0,629	0,066	0,962	0,119	1,1
		comment													
254	Schipdonk canal	lower	0,000	0,008	0,524	0,320	6,0	0,000	0,000	0,233	1,2	0,136	1,8	0,025	3,3
		upper	0,035	0,011	1,2	0,634	6,6	1,3	3,6	0,253	1,2	0,136	2,1	0,237	3,8
		comment													
242	Eastern Coastal Area	lower	**0,000**	**0,012**	**1,0**	**0,399**	**6,6**	**0,211**	**0,000**	**0,375**	**1,8**	**0,209**	**2,8**	**0,075**	**4,8**
		upper	**0,049**	**0,017**	**1,9**	**0,860**	**8,4**	**1,7**	**5,1**	**0,398**	**1,9**	**0,209**	**3,1**	**0,366**	**5,4**
		comment													

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
249	Gent-Oostende canal	lower	0,000	0,006	0,768	0,224	6,5	0,426	0,000	0,700	1,7	0,112	2,6	0,014	3,2
		upper	0,030	0,009	1,2	0,462	6,8	1,4	3,2	0,704	1,7	0,112	2,8	0,207	3,2
		comment													
250	Noordede	lower	0,000	0,001	0,184	0,022	0,450	0,109	0,000	0,031	0,055	0,014	0,180	0,016	1,2
		upper	0,003	0,001	0,209	0,034	0,574	0,135	0,303	0,033	0,060	0,014	0,186	0,028	1,2
		comment													
241	Middle Coastal Area	lower	0,000	0,006	0,953	0,246	7,0	0,535	0,000	0,731	1,8	0,126	2,8	0,031	4,3
		upper	0,033	0,010	1,4	0,496	7,4	1,6	3,5	0,736	1,8	0,126	3,0	0,236	4,3
		comment													
238	Coastal Area	lower	0,000	0,018	2,1	1,0	14	0,746	0,000	1,1	3,8	0,366	5,8	0,127	11
		upper	0,088	0,026	3,5	1,7	16	3,3	8,6	1,2	3,9	0,366	6,4	0,653	11
		comment													
244	Gent-Terneuzen Canal	lower	0,080	0,005	0,436	1,2	20	0,641	0,000	0,569	3,6	0,292	4,7	0,422	3,3
		upper	0,135	0,008	2,1	2,6	22	2,6	5,7	0,630	3,9	0,333	5,3	0,347	4,2
		comment													
245	Schelde Basin	lower	0,080	0,005	0,436	1,2	20	0,641	0,000	0,569	3,6	0,292	4,7	0,422	3,3
		upper	0,135	0,008	2,1	2,6	22	2,6	5,7	0,630	3,9	0,333	5,3	0,347	4,2
		comment													
79	North Sea (BE)	lower	0,080	0,023	2,5	2,3	34	1,4	0,000	1,7	7,3	0,658	11	0,549	14
		upper	0,223	0,035	5,6	4,3	38	5,9	14	1,8	7,8	0,700	12	1,0	15
		comment													

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium:

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
247	Beverdijk	lower													
		upper													
		minimum	ND (1)		ND	ND	ND			ND	ND	0,05	ND	ND	10
		maximum	0,12		6,1	8,1	50			1,4	14	0,85	16,55	1,2	45
		more than 70% > D.L.	no		no	no	no			no	no	yes	yes	no	yes
		n	12		12	12	12			12	12	12	12	12	12
		info													
		st.Dev.	NI(3)		NI	NI	NI			NI	NI	0,22	4,90	NI	9,97
243	Ijzer	lower													
		upper													
		minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,06	1,46	ND	5,6
		maximum	ND(2)	0,04	109	9,8	76	20	ND	3,1	17	1,7	17,26	2,3	206
		more than 70% > D.L.	no	no	no	no	no	no	no	no	yes	yes	yes	no	yes
		n	12		12	12	12	9	9	12	12	12	12	12	12
		info													
		st.Dev.	NI	NI	NI	NI	NI	NI	NI	NI	6,17	0,53	5,99	NI	55,64
246	Langeleed	lower													
		upper													
		minimum	ND	ND	ND	ND	ND			ND	ND	0,16	ND	ND	5,4
		maximum	ND	0,05	5,8	ND	22			2,5	8,8	2,4	8,88	2,6	34
		more than 70% > D.L.	no	no	no	no	no			no	no	yes	no	no	yes
		n	12	10	9	12	12			12	12	12	12	12	12
		info													
		st.Dev.	NI	NI	NI	NI	NI			NI	NI	0,63	NI	NI	9,57
248	Vladslovaart	lower													
		upper													
		minimum	ND		ND	ND	ND			ND	ND	0,02	2,6	ND	20
		maximum	ND		5,8	162	31			1,7	20	1,6	20,12	2	67
		more than 70% > D.L.	no		no	no	no			no	no	yes	yes	no	yes
		n	12		12	12	12			12	12	12	12	12	12
		info													
		st.Dev.	NI		NI	NI	NI			NI	NI	0,53	7,09	NI	16,40
239	Western Coastal Area	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0,02**	**ND**	**ND**	**5,4**
		maximum	**ND**	**0,05**	**109**	**162**	**76**	**20**	**ND**	**3,1**	**20**	**2,4**	**20,12**	**2,6**	**206**
		more than 70% > D.L.	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**yes**	**yes**	**no**	**yes**
		n	**48**	**21**	**45**	**48**	**48**	**9**	**9**	**48**	**48**	**48**	**48**	**48**	**48**
		info													
		st.Dev.	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**0,50**	**5,69**	**NI**	**30,89**

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium:

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
255	Blankenbergse vaart	lower													
		upper													
		minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	15
		maximum	ND	0,09	10	ND	15	7	ND	2	4,4	1,3	8,89	1,6	55
		more than 70% > D.L.	no	no	no	no	no	no	no	no	no	yes	yes	no	yes
		n	13	12	13	13	13	6	6	13	13	13	13	13	13
		info													
		st.Dev.	NI	NI	NI	NI	NI	NI	NI	NI	NI	0,38	2,40	NI	13,85
252	Leopold canal	lower													
		upper													
		minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	0,13	0,1	ND	ND
		maximum	ND	0,13	37	6,5	32	10	ND	3,9	32	2,1	36,67	2,3	18
		more than 70% > D.L.	no	no	no	no	no	no	no	yes	yes	yes	yes	no	yes
		n	12	11	12	12	12	9	9	12	12	12	12	12	12
		info													
		st.Dev.	NI	NI	NI	NI	NI	NI	NI	0,99	8,68	0,53	9,24	NI	5,55
254	Schipdonk canal	lower													
		upper													
		minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND
		maximum	ND	0,07	6,6	4	43	ND	ND	3,1	15	0,92	18,04	1	35
		more than 70% > D.L.	no	no	no	no	yes	no	no	no	no	yes	yes	no	no
		n	12	12	12	12	12	9	9	12	12	12	12	12	12
		info													
		st.Dev.	NI	NI	NI	NI	11,17	NI	NI	NI	NI	0,30	5,35	NI	NI
242	Eastern Coastal Area	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		maximum	**ND**	**0,13**	**37**	**6,5**	**43**	**10**	**ND**	**3,9**	**32**	**2,1**	**36,67**	**2,3**	**55**
		more than 70% > D.L.	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**yes**	**yes**	**yes**	**no**	**yes**
		n	**37**	**35**	**36**	**37**	**37**	**24**	**24**	**37**	**37**	**37**	**37**	**37**	**37**
		info													
		st.Dev.	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**5,74**	**0,41**	**6,37**	**NI**	**14,47**

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium:

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
249	Gent-Oostende canal	lower													
		upper													
		minimum	ND	ND	ND	ND	ND	ND	ND	ND	3,3	0,36	4,5	ND	6
		maximum	ND	0,07	9,1	3,1	33	8	ND	5,6	9,9	1	14,6	1,1	21
		more than 70% > D.L.	no	no	no	no	yes	no	no	yes	yes	yes	yes	no	yes
		n	12	11	12	12	12	9	9	12	12	11	12	12	12
		info													
		st.Dev.	NI	NI	NI	NI	7,96	NI	NI	1,87	2,02	0,18	2,78	NI	4,86
250	Noordende	lower													
		upper													
		minimum	ND	ND	ND	ND	ND	ND	ND	ND	ND	ND	2,9	ND	11
		maximum	ND	0,06	34	5,8	85	13	ND	4,8	8	1,5	12,91	2,3	143
		more than 70% > D.L.	no	no	no	no	no	no	no	no	no	yes	yes	no	yes
		n	12	11	12	12	12	6	6	12	12	11	12	12	12
		info													
		st.Dev.	NI	NI	NI	NI	NI	NI	NI	NI	NI	0,42	3,02	NI	36,29
241	Middle Coastal Area	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**2,9**	**ND**	**6**
		maximum	**ND**	**0,07**	**34**	**5,8**	**85**	**13**	**ND**	**5,6**	**9,9**	**1,5**	**14,6**	**2,3**	**143**
		more than 70% > D.L.	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**yes**	**yes**	**yes**	**yes**	**no**	**yes**
		n	**24**	**22**	**24**	**24**	**24**	**15**	**15**	**24**	**24**	**22**	**24**	**24**	**24**
		info													
		st.Dev.	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**1,71**	**2,96**	**0,32**	**3,00**	**NI**	**30,41**
238	Coastal Area	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		maximum	**ND**	**0,13**	**109**	**162**	**85**	**20**	**ND**	**5,6**	**32**	**2,4**	**36,67**	**2,6**	**206**
		more than 70% > D.L.	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**yes**	**yes**	**no**	**yes**
		n	**109**	**78**	**105**	**109**	**109**	**48**	**48**	**109**	**109**	**107**	**109**	**109**	**109**
		info													
		st.Dev.	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**0,44**	**5,51**	**NI**	**26,84**

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium:

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
244	Gent-Terneuzen Canal	lower													
		upper													
		minimum	ND	ND	ND	ND	22	ND	ND	ND	5,5	0,45	5,74	0,54	ND
		maximum	0,71	0,05	9,4	13	299	7	ND	2,8	9,14	0,86	12,32	2,49	23,5
		more than 70% > D.L.	no	no	no	no	yes	no	no	no	yes	yes	yes	yes	no
		n	25	13	25	25	25	10	10	25	25	24	25	24	25
		info													
		st.Dev.	NI	NI	NI	NI	55,37	NI	NI	NI	0,91	0,13	1,89	0,22	NI
102	Schelde	lower													
		upper													
		minimum	ND	ND	ND	ND	14	ND	ND	ND	2,79	ND	2,8	ND	25
		maximum	2,1	0,2	18,1	25	267	ND	ND	1	5,8	0,19	5,89	1,3	203
		more than 70% > D.L.	no	yes	yes	no	yes	no	no	no	yes	yes	yes	no	yes
		n	23	11	23	23	23	11	11	23	23	23	23	21	23
		info													
		st.Dev.	NI	0,06	3,62	NI	80,93	NI	NI	NI	1,03	0,03	1,14	NI	37,74
245	Schelde Basin	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**14**	**ND**	**ND**	**ND**	**2,79**	**ND**	**2,8**	**ND**	**ND**
		maximum	**2,1**	**0,2**	**18,1**	**25**	**299**	**7**	**ND**	**2,8**	**9,14**	**0,86**	**12,32**	**2,49**	**203**
		more than 70% > D.L.	**no**	**no**	**no**	**no**	**yes**	**no**	**no**	**no**	**yes**	**yes**	**yes**	**no**	**yes**
		n	**48**	**24**	**48**	**48**	**48**	**21**	**21**	**48**	**48**	**47**	**48**	**45**	**48**
		info													
		st.Dev.	**NI**	**NI**	**NI**	**NI**	**74,72**	**NI**	**NI**	**NI**	**1,72**	**0,33**	**2,59**	**NI**	**43,27**
79	North Sea (BE)	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		maximum	**ND**	**0,2**	**109**	**162**	**299**	**20**	**ND**	**5,6**	**32**	**2,4**	**36,67**	**2,6**	**206**
		more than 70% > D.L.	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**no**	**yes**	**yes**	**yes**	**no**	**yes**
		n	**157**	**102**	**153**	**157**	**157**	**69**	**69**	**157**	**157**	**154**	**157**	**154**	**157**
		info													
		st.Dev.	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**4,47**	**0,41**	**4,81**	**NI**	**33,09**

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
247	Beverdijk	Sewage													
		Industrial													
		Riverine	0,1 - 0,12		1 - 4	0,6 - 2	4 - 13			0,08 - 0,27	0,23 - 0,77	0,1	NI	0,48 - 0,94	NI
243	Ijzer	Sewage													
		Industrial													
		Riverine	0,1 - 0,12	0,01 - 0,03	4	0,6 - 2	0,6 - 2	2 - 6	1 - 12	0,08 - 0,27	0,23 - 0,77	0,1	NI	0,48 - 0,94	NI
246	Langeleed	Sewage													
		Industrial													
		Riverine	0,1 - 0,12	0,01 - 0,03	1,3 - 4	0,6 - 2	4 - 13			0,08 - 1	0,23 - 0,77	0,1	NI	0,48 - 0,94	NI
248	Vladslovaart	Sewage													
		Industrial													
		Riverine	0,1 - 0,12		4	2	4 - 13			0,08 - 1	0,23 - 0,77	0,1	NI	0,48 - 0,94	NI
239	Western Coastal Area	Sewage													
		Industrial													
		Riverine	**0,1 - 0,12**	**0,01 - 0,03**	**1 - 4**	**0,6 - 2**	**0,6 - 13**	**2 - 6**	**1 - 12**	**0,08 - 1**	**0,23 - 0,77**	**0,1**	**NI**	**0,48 - 0,94**	**NI**
255	Blankenbergse vaart	Sewage													
		Industrial													
		Riverine	0,1 - 0,12	0,01 - 0,03	1 - 4	0,6 - 2	2 - 13	2 - 6	1 - 12	0,08 - 1	0,23 - 0,77	0,1	NI	0,48 - 0,94	NI
252	Leopold canal	Sewage													
		Industrial													
		Riverine	0,1 - 0,12	0,03	1 - 4	0,6 - 2	7 - 13	2 - 6	1 - 12	0,27	0,77	0,1	NI	0,48 - 0,94	2,37 - 4,73
254	Schipdonk canal	Sewage													
		Industrial													
		Riverine	0,1 - 0,12	0,01 - 0,03	1 - 4	0,6 - 2	13	2 - 6	1 - 12	0,08 - 0,27	0,23 - 0,77	0,1	NI	0,48 - 0,94	2,37 - 4,73
242	Eastern Coastal Area	Sewage													
		Industrial													
		Riverine	**0,1 - 0,12**	**0,01 - 0,03**	**1 - 4**	**0,6 - 2**	**2 - 13**	**2 - 6**	**1 - 12**	**0,08 - 1**	**0,23 - 0,77**	**0,1**	**NI**	**0,48 - 0,94**	**2,37 - 4,73**

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
249	Gent-Oostende canal	Sewage Industrial Riverine	0,1 - 0,12	0,01 - 0,03	1 - 4	0,6 - 2	13	2 - 6	1 - 12	0,08 - 0,27	NI	0,1	NI	0,94	NI
250	Noordende	Sewage Industrial Riverine	0,1 - 0,12	0,01 - 0,03	1 - 4	0,6	7 - 13	2 - 6	1 - 12	0,08 - 0,27	0,23 - 0,77	0,1	NI	0,94	NI
241	Middle Coastal Area	Sewage Industrial Riverine	**0,1 - 0,12**	**0,01 - 0,03**	**1 - 4**	**0,6 - 2**	**7 - 13**	**2 - 6**	**1 - 12**	**0,08 - 0,27**	**0,23 - 0,77**	**0,1**	**NI**	**0,94**	**NI**
238	Coastal Area	Sewage Industrial Riverine	**0,1 - 0,12**	**0,01 - 0,03**	**1 - 4**	**0,6 - 2**	**2 - 13**	**2 - 6**	**1 - 12**	**0,08 - 1**	**0,23 - 0,77**	**0,1**	**NI**	**0,48 - 0,94**	**2,37 - 4,73**
244	Gent-Terneuzen Canal	Sewage Industrial Riverine	0,1 - 0,25	0,01 - 0,04	1 - 5	5	5	6	1 - 12	0,08 - 0,4	0,1	0,1	NI	1	4,73 - 5
102	Schelde	Sewage Industrial Riverine	0,1 - 1,2	0,03	3	6 - 11	5	2 - 6	1 - 12	0,11 - 1	0,1	0,1	NI	0,48 - 0,7	NI
245	Schelde Basin	Sewage Industrial Riverine	**0,1 - 1,2**	**0,01 - 0,04**	**1 - 5**	**5 - 11**	**5**	**2 - 6**	**1 - 12**	**0,11 - 1**	**0,1**	**0,1**	**NI**	**0,48 - 1**	**4,73 - 5**
79	North Sea (BE)	Sewage Industrial Riverine	**0,1 - 1,2**	**0,01 - 0,04**	**1 - 5**	**0,6 - 11**	**0,6 - 13**	**2 - 6**	**1 - 12**	**0,08 - 1,0**	**0,1 - 0,77**	**0,1**	**NI**	**0,48 - 1**	**2,37 - 5**

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2004 by Belgium

		Flow Rate [1000m³/d]	LTA [1000m³/d]	Minimum FR [1000m³/d]	Maximum FR [1000m³/d]	LTA info (years)	Number of sites	Mean or Median
247	Beverdijk	NI	69,1	NI	NI	NI	1	Mean
243	Ijzer	354	561,6	0	8554	1987-1992	1	Mean
246	Langeleed	NI	25,9	NI	NI	NI	1	Mean
248	Vladslovaart	NI	51,8	NI	NI	NI	1	Mean
239	Western Coastal Area	NI	708,4	NI	NI	NI	4	Mean
255	Blankenbergse vaart	NI	34,6	NI	NI	NI	1	Mean
251	Boudewijn canal	NA	NA	NA	NA	NA	0	Mean
252	Leopold canal	NI	302,4	NI	NI	NI	1	Mean
256	Lissewege vaart	NA	NA	NA	NA	NA	0	Mean
254	Schipdonk canal	NI	820,8	NI	NI	1987-1992	1	Mean
242	Eastern Coastal Area	NI	1157,8	NI	NI	NI	3	Mean
249	Gent-Oostende canal	727	432	0	3819	NI	1	Mean
250	Noordende	NI	69,1	NI	NI	NI	1	Mean
241	Middle Coastal Area	NI	501,1	NI	NI	NI	2	Mean
238	Coastal Area	NI	2367,3	NI	NI	NI	9	Mean
244	Gent-Terneuzen Canal	1297	1775	302	7862	1991-2004	1	Mean
102	Schelde	9720	11312	5616	23328	1949-2004	1	Mean
245	Schelde Basin	11017	13087	5918	31190	NI	2	Mean
79	North Sea (BE)	NI	15454	NI	NI	NI	11	Mean

Annex 2

DENMARK

Annual report on riverine inputs and direct discharges to Convention waters during the year 2004 by Denmark

Annual report on riverine inputs and direct discharges by Denmark to Convention waters during the year 2004

Name, address and contact numbers of reporting authority to which any further enquiry should be addressed:
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A. General information

Table 1: General overview of river systems (for riverine inputs) and direct discharge areas (for direct discharges) included in the data report

Country: **Denmark 2004**	
Name of river, sub-area and discharge area[1]	Nature of the receiving water[2]
Brøns Å	River in catchment to the North Sea
Brede Å	River in catchment to the North Sea
Omme Å	River in catchment to the North Sea
Kongeåen	River in catchment to the North Sea
Ribe Å	River in catchment to the North Sea
Skjern Å	River in catchment to the North Sea
Sneum Å	River in catchment to the North Sea
Store Å	River in catchment to the North Sea
Varde Å	River in catchment to the North Sea
Vid Å	River in catchment to the North Sea
Grøn Å	River in catchment to the North Sea
North Sea (DK)	Coastal water, includes direct discharges and unmonitored catchment area downstream river monitoring stations
Elling Å	River in catchment to the Kattegat
Ger Å	River in catchment to the Kattegat
Gudenå	River in catchment to the Kattegat
Havslevgårds Å	River in catchment to the Kattegat
Ry Å	River in catchment to the Kattegat
Jordbro Å	River in catchment to the Kattegat
Karup Å	River in catchment to the Kattegat
Kastbjerg Å	River in catchment to the Kattegat
Lindenborg Å	River in catchment to the Kattegat
Simested Å	River in catchment to the Kattegat
Skals Å	River in catchment to the Kattegat
Voer Å	River in catchment to the Kattegat
Kattegat (DK)	Coastal water, includes direct discharges and unmonitored catchment area downstream river monitoring stations
Liver Å	River in catchment to the Skagerrak
Uggerby Å	
Skagerrak (DK)	Coastal water, includes direct discharges and unmonitored catchment area downstream river monitoring stations

[1] i.e. name of estuary or length of coastline
[2] i.e. estuary or coastal water; if an estuary, state the tidal range and the daily flushing volume

B. Total riverine inputs and direct discharges (Tables 4a and 4b) for the year: 2004

B.1 Give general comments on the total riverine inputs and direct discharges (e.g. changes from last year, trends, percentage of particle bound determinand, results that need to be highlighted etc.):

Note: Table 4b is total direct discharges and riverine inputs to maritime area by region. Please provide totals for each OSPAR region and for total inputs.

Table 4b has been filled in using the forwarded format and is attached.

C. Direct discharges for the year: 2004

Sewage Effluents (Table 5a)

C.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (cf. section 7 of the RID Principles), including for those under voluntary reporting:

Tables 5a and 5b give the total direct load to the coastal waters of North Sea, Kattegat and Skagerrak of sewage effluents and industrial effluents respectively.

In Denmark all point sources bigger than 30 PE are monitored even if they are situated in a unmonitored (part of) river catchment area. The frequency and sampling method is given in the table below:

Annual sampling frequency (minimum) for wastewater treatment plant outflows:

Plant capacity (PE)	Frequency/yr (min.)	Sampling method
$30 \le x < 200$	2	Random samples [1)]
$200 \le x < 1,000$	4	Time-weighted daily samples [2)]
$1,000 \le x < 50,000$	12	Flow-weighted daily samples
$50,000 \le x$	24	Flow-weighted daily samples

1) Time-weighted samples, random samples or empirical values, and 2) Time-weighted samples or random samples if the necessary facilities for collection of flow-weighted samples are not available. PE: Person equivalent to be equivalent to 21.9 kg organic matter per year measured as biochemical oxygen demand (BI_5), 4.4 kg total-N per year or 1.0 kg total-P per year.

Measurement of the water volume discharged is in general the continuous registration of the water volume on the day in question.

Calculation of total discharges follow the guidelines.

Plants with a capacity > 500PE cover 99% of the total wastewater load to wastewater treatment plants.

C.2 Describe the determinands, other than those specified in paragraph 2.1 of the RID Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

There are no estimates on total direct sewage effluent discharges of other determinands in 2004, but measurement have been performed on individual wastewater treatment plants of heavy metals and hazardous substances.

C.3 Give general comments on the discharges of sewage effluents (e.g. compared to previous years, and/or the extent to which industrial effluents are discharged through sewerage systems):

Most of the purification measures in Denmark were taken during the 1980s and 1990s, therefore there have only been small reduction in discharges from municipal wastewater treatment (MWWT) plants in more recent years. Some industries have their wastewater treated by MWWT and that part is included under sewage effluent. Separate discharges from industries are included in table 5b.

Industrial Effluents (Table 5b)

C.4 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (ref.: Section 7 of the RID Principles), including for those under voluntary reporting:

In Denmark all point sources bigger than 30 PE are monitored even if they are situated in a unmonitored (part of) river catchment area. The frequency and sampling method is given in the table below:

Table 4.4 *Discharge classes for industries with separate wastewater discharges indicating the amount of nitrogen (total-N), phosphorus (total-P) and organic matter (BI_5 (modified) and COD) discharged together with the sampling frequency.*

Discharge class	Discharge (tonnes/yr)				Frequency/yr
	BOD_5 (mod.)	**COD**	**Total-N**	**Total-P**	
I	0.6 < x < 4.3	1.6 < x < 10.8	0.13 < x < 0.9	0.005 < x < 0.3	2 samples
II	4.3 < x < 21.6	10.8 < x < 54	0.9 < x < 4.4	0.3 < x < 1.5	4 samples
III	21.6 < x < 108	54 < x < 270	4.4 < x < 22	1.5 < x < 7.5	12 samples
IV	x > 108	x > 270	x > 22	x > 7.5	12 samples

Measurement of the water volume discharged is in general continual registration of the water volume on the day in question. Calculation of total discharges follow the guidelines.

C.5 Give any other relevant information (e.g. proportion of substance discharged as insoluble material):

None

C.6 Give any available information on other discharges directly to Convention Waters - through e.g. urban run-off and stormwater overflows - that are not covered by the data in Tables 5a and 5b:

Stormwater overflows (not connected to MWWT) and
other stormwater in 2005 discharging directly:

	TN (tonnes)	TP (tonnes)
North Sea	13	3
Skagerrak	1	0,3
Kattegat	63	16

Scattered dwelling etc. in 2005 discharging directly:

	TN (tonnes)	TP (tonnes)
North Sea	0	0
Skagerrak	0	0
Kattegat	2	0,5

C.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

Many heavy metals and hazardous substances are monitored on some waste water treatment plants and separate discharging industrial plants, but not on all plants. Therefore totals have not been calculated for 2004, but annual loads for some plants can be provided if required.

C.8 Give general comments on industrial effluents (e.g. compared to previous years):

Same comment as under C.3.

Total direct discharges (Table 5c)

C.9 Give general comments on total direct discharges (e.g. compared to previous years):

None

D. Riverine inputs for the year 2004

Main Rivers (Tables 6a and 7a)

D.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7a) upon which the measurement is based (ref.: Section 6 of the RID Principles), including for those under voluntary reporting:

All monitored RID rivers are reported as main rivers (tables 6a), therefore table 6b is not used. The sampling frequency at each monitoring site is given in table 7 as "n". The highest and the lowest measured concentrations for each substance are given in table 7 under maximum and minimum, respectively. Samples are collected as discrete samples. Stage is recorded continuously at all RID monitoring stations. Discharge is measured at least 12 times per year, and the run off (every 10 minutes) is calculated from a well-established stage-discharge relationship. Transport at each RID monitoring station is calculated by multiplying daily discharge with daily concentration, the latter estimated by linear interpolation of measured values.

D.2 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

None

D.3 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

D.4 Give general comments on the inputs from main rivers (e.g. significant changes in inputs, concentrations and flows compared to previous years):

None

Tributary Rivers (Tables 6b and 7b)

D.5 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7b.) upon which the measurement is based (ref.: Section 6 of the Principles):

All Danish RID-rivers are reported as main river using tables 6.a. Therefore, table 6a the total riverine inputs includes loads from the unmonitored part of monitored catchments and the unmonitored rivers including discharges from point sources in the catchment areas to surface waters. The totals to coastal waters therefore include all landbased input that are not direct discharges. The diffuse riverine load from unmonitored areas is calculated by multiplying flow-weighted concentrations with a specific discharge and the size of the unmonitored catchment. Flow-weighted concentrations and specific discharges are selected from catchments with similar soil types, land-use, geology and climate, and with small inputs from point sources. Further, the load from point sources is added to the calculated diffuse riverine load, yielding the total load from unmonitored areas. The load from point sources in unmonitored areas is in fact based on measured values of load from point sources, as these areas are only unmonitored with respect to the riverine load. Further, the total riverine load to coastal waters includes the direct load from storm water overflow and scattered dwellings but these sources are of minor importance. Within the next few years, Denmark will develop a GIS-based empirical model for an improved and even more harmonised methodology estimating the diffuse inputs from unmonitored areas.

D.6 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

None

D.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

D.8 Give any available information on other inputs - through e.g. polder effluents or from coastal areas - that are not covered by data in Tables 6b and 7b:

None

D.9 Give general comments on the inputs from tributary rivers (e.g. significant change in inputs, concentrations and flows compared to previous years):

None

Total riverine inputs (Table 6c)

D.10 Give general comments on the total riverine inputs (e.g. significant change in inputs, concentrations and flows compared to previous years):

Total input of nitrogen and phosphorus was quite high in 2004 in non flow corrected figures and moderate in flow corrected figures. This is explained by weather and run-off condition and further by measures against point sources and agriculture. The effect on wastewater purification is significant with very high reductions in discharges from all kind of point sources. The measures against agriculture have reduced nitrogen losses from agriculture markedly at root zone level (between 40-50%), but the losses to inland surface waters and further to coastal areas are delayed and it can take up to 30-100 years in parts of the catchment to the North Sea before the full effect of the measures will be observed. The measures against agriculture have not until very recently been directed to reduction in phosphorus losses, and no reductions in agricultural losses can yet be determined. In 2004, with high precipitation following a dry year, a pool of nitrogen has accumulated in the soils. Further, quite high precipitation during winter and autumn have given rise to surface erosion events etc. affecting the diffuse losses.

Precipitation in 2004 for Denmark was on average 827 mm 16% higher compared with the 712 mm as the normal (1961-1990). Run-off from Denmark was on average 347 mm and 6% higher than the normal average. The year 2004 followed one quite dry year with low discharge. Further, the average air temperature in 2004 was approx. 1 ℃ over the normal.

The natural background losses were moderate in 2004 as shown in the table below:

	Q_med $l/s/km^2$	**Q_avg** $l/s/km^2$	**TN_avg** mg/l	**TN_avg** kg/ha	**TP_avg** mg/l	**TP_aqvg** kg/ha
1989	5	4,9	1,6	2,6	0,048	0,068
1990	4,6	5,2	1,6	2,3	0,062	0,082
1991	6,3	5,9	1,4	2,4	0,051	0,082
1992	6	5,4	1,7	2,6	0,054	0,085
1993	5,8	5,7	1,6	2,6	0,050	0,075
1994	8,6	8,9	1,7	4,3	0,055	0,136
1995	7,2	7,2	1,6	3,3	0,052	0,107
1996	2,73	3,98	1,5	1,5	0,049	0,043
1997	3,14	3,42	1,3	1,3	0,042	0,034
1998	5,01	6,43	1,7	3,1	0,046	0,077
1999	7,42	7,92	1,5	3,3	0,055	0,130
2000	6,02	6,46	1,4	2,4	0,041	0,076
2001	5,42	6,4	1,3	2,2	0,048	0,084
2002	7,71	8,39	1,6	3,4	0,049	0,113
2003	4,1	4,66	1,2	1,4	0,048	0,063
2004	6,2	6,99	1,6	3,0	0,051	0,100

Q= discharge; med = median value; avg= average; TN = total nitrogen; TP = total phosphorus

The overall reduction in phosphorus inputs to Danish marine waters since 1989 is 77% if the inputs are flow corrected. This reduction can only be assigned to a large reduction in the load from point sources (about 90 % from the mid-1980s). There has been no reduction in the losses from diffuse sources concerning phosphorus.

A reduction of 43% since 1989 in the nitrogen inputs to all Danish coastal waters can be calculated if the inputs are adjusted for discharge variation. This reduction in nitrogen inputs can be assigned to a reduction in the load from point sources (approx 75% since the mid-1980s) but also as an effect of reduced losses from agriculture. To the North Sea, the Skagerrak and the Kattegat there is a significant trend (reduction) on a 99% in total nitrogen discharges.

E. Unmonitored areas

E.1 Describe the methods of quantification used for the different determinands or groups of determinands:

Please read the comments under item D.5

F. Limits of detection (Table 8)

F.1 Information concerning limits of detection should be presented in Table 8 which includes different columns for rivers/tributaries, sewage effluents and industrial effluents. Give comments if the detection limits are higher than stated in the RID Principles:

No comments.

G. Additional comments

G.1 Indicate and explain, if appropriate:

- where and why the applied procedures do not comply with agreed procedures
- significant changes in monitoring sites, important for comparison of the data before and after the date of the change;
- incomplete or distorted data

Denmark overall follows common agreed methodologies. Danish rivers are small and reporting on 25 monitored rivers Denmark only covers 43% of the Danish catchment area to OSPAR convention. Monitoring in a lot of other small rivers are included in the sums in tables 6.a. Due to the influence of tides in part of the catchment to the North Sea it will be impossible to cover the whole catchment. It should be remarked that even in unmonitored catchments discharges from point sources >30 PE are monitored.

Denmark some years ago make a new reporting of the inputs to the three coastal OSPAR waters that Denmark is discharging to. Therefore the Danish time series since 1989 are based on the same 25 RID monitoring stations and the same methodology. The monitoring criteria for point sources have also been unchanged since 1989. The Danish monitoring programme has until recently been focused on nitrogen and phosphorus compounds and organic matter. Recently, also some heavy metals and hazardous substances have been monitored on selected rivers and point sources. For rivers, most concentration have been under the detection limit and no total loads to coastal waters are calculated.

Table 4b. Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by Denmark

Contracting Parties should use this format to report (i) their total inputs to each OSPAR region and (ii) their total inputs to their marine environment

TOTAL INPUTS			Quantities --->												
Discharge region	**Estimate**	**Flow rate (1000 m3/d)**	**Cd [10^3 kg]**	**Hg [10^3 kg]**	**Cu [10^3 kg]**	**Pb [10^3 kg]**	**Zn [10^3 kg]**	**g-HCH [kg]**	**PCBs [kg]**	**NH4-N [10^6 kg]**	**NO3-N [10^6 kg]**	**PO4-P [10^6 kg]**	**Total N [10^6 kg]**	**Total P [10^6 kg]**	**SPM [10^6 kg]**
INPUTS TO OSPAR REGION *(North Sea 80)*															
RIVERINE INPUTS															
Main Rivers	lower	8662,24								373,13	9289,8	72,6	11316,8	310,5	17541
	upper														
Tributary Rivers	lower														
	upper														
Total Riverine Inputs	**lower**	8662,24								373,13	9289,8	72,6	11316,8	310,5	17541
	upper														
DIRECT DISCHARGES															
Sewage Effluents	lower									9,03	81,241	2,668	90,268	5.335	
	upper														
Industrial Effluents	lower									2,97	5,94	1,65	29,7	5,5	
	upper														
Fish Farming	lower									10,719	10,719	1,167	21,438	1,796	
	upper														
Total Direct Inputs	**lower**									22,719	97,9	5,485	141,406	12,631	
	upper														
UNMONITORED AREAS															
Unmonitored Areas	lower	5507,4								48,9	5844	47,6	7045,8	184,27	
	upper														
REGION TOTAL	**lower**	14169,6								444,7	15231,7	125,7	18504,0	507,4	17541
	upper														

Table 4b. Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by Denmark

Contracting Parties should use this format to report (i) their total inputs to each OSPAR region and (ii) their total inputs to their marine environment

TOTAL INPUTS			**Quantities --->**												
Discharge region	**Estimate**	**Flow rate (1000 m3/d)**	**Cd [10^3 kg]**	**Hg [10^3 kg]**	**Cu [10^3 kg]**	**Pb [10^3 kg]**	**Zn [10^3 kg]**	**g-HCH [kg]**	**PCBs [kg]**	**NH4-N [10^6 kg]**	**NO3-N [10^6 kg]**	**PO4-P [10^6 kg]**	**Total N [10^6 kg]**	**Total P [10^6 kg]**	**SPM [10^6 kg]**
INPUTS TO OSPAR REGION *(Kattegat 77)*															
RIVERINE INPUTS															
Main Rivers	lower	5525,4	0,0195	0,0031	1,348	0,294	5,101			191,9	6294,9	92,3	7765,8	235,9	13728
	upper														
Tributary Rivers	lower														
	upper														
Total Riverine Inputs	**lower**									191,9	6294,9	92,3	7765,8	235,9	13728
	upper														
DIRECT DISCHARGES															
Sewage Effluents	lower									42,13	379,21	20,25	421,34	40,49	
	upper														
Industrial Effluents	lower									8,38	16,75	1,30	83,83	4,33	
	upper														
Fish Farming	lower														
	upper														
Total Direct Inputs	**lower**									50,51	395,96	21,55	505,17	44,82	
	upper														
UNMONITORED AREAS															
Unmonitored Areas	lower	9447,7													
	upper														
REGION TOTAL	**lower**	**14973,1**								493,1	22846,7	320,5	27027,2	705,7	
	upper														

Table 4b. Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by Denmark

Contracting Parties should use this format to report (i) their total inputs to each OSPAR region and (ii) their total inputs to their marine environment

TOTAL INPUTS			Quantities --->												
Discharge region	**Estimate**	**Flow rate (1000 m3/d)**	**Cd [10 ^{3} kg]**	**Hg [10 ^{3} kg]**	**Cu [10 ^{3} kg]**	**Pb [10 ^{3} kg]**	**Zn [10 ^{3} kg]**	**g-HCH [kg]**	**PCBs [kg]**	**NH4-N [10^6 kg]**	**NO3-N [10^6 kg]**	**PO4-P [10^6 kg]**	**Total N [10^6 kg]**	**Total P [10^6 kg]**	**SPM [10^6 kg]**
INPUTS TO OSPAR REGION *(Skagerrak 74)*															
RIVERINE INPUTS															
Main Rivers	lower	606,7								44,2	934,9	12,9	1176,8	45,7	5351,8
	upper														
Tributary Rivers	lower														
	upper														
Total Riverine Inputs	**lower**	606,7								44,2	934,9	12,9	1176,8	45,7	5351,8
	upper														
DIRECT DISCHARGES															
Sewage Effluents	lower									1,11	10,03	0,62	11,15	1,23	
	upper														
Industrial Effluents	lower									1,96	3,91	1,14	19,57	3,81	
	upper														
Fish Farming	lower														
	upper														
Total Direct Inputs	**lower**									3,07	13,94	1,76	30,72	5,04	
	upper														
UNMONITORED AREAS															
Unmonitored Areas	lower	487,6								31,0	715,1	9,6	887,3	28,1	
	upper														
REGION TOTAL	**lower**	**1094,3**								78,3	1663,9	24,3	2094,8	78,8	
	upper														

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2004 by Denmark

Figures are given in tonnes as a yearly load

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [tonnes]	12 PO4-P [tonnes]	13 Total N [tonnes]	14 Total P [tonnes]	3 SPM [kt]
110	Brøns å	lower													
		upper													
		comment													
291	Brede å	lower													
		upper													
		comment													
292	Omme å	lower													
		upper													
		comment													
112	Kongeåen	lower													
		upper													
		comment													
293	Ribe å	lower													
		upper													
		comment													
104	Skjern å	lower													
		upper													
		comment													
294	Sneum å	lower													
		upper													
		comment													
115	Storå	lower													
		upper													
		comment													
295	Varde å	lower													
		upper													
		comment													
109	Vid å	lower													
		upper													
		comment													
296	Grøn å	lower													
		upper													
		comment													
80	North Sea (DK)	lower								9,03	81,241	2,668	90,268	5 335	
		upper													
		comment													
125	Elling å	lower													
		upper													
		comment													
127	Ger å	lower													
		upper													
		comment													
103	Gudenå	lower													
		upper													
		comment													
129	Haslevgårds å	lower													
		upper													
		comment													
297	Ry å	lower													
		upper													
		comment													
120	Jordbro å	lower													
		upper													
		comment													
118	Karup å	lower													
		upper													
		comment													
130	Kastbjerg å	lower													
		upper													
		comment													
128	Lindenborg å	lower													
		upper													
		comment													
122	Simested å	lower													
		upper													
		comment													
121	Skals å	lower													
		upper													
		comment													
126	Voer å	lower													
		upper													
		comment													
77	Kattegat (DK)	lower								42,13	379,21	20,245	421,34	40,489	
		upper													
		comment													
123	Liver å	lower													
		upper													
		comment													
124	Uggerby å	lower													
		upper													
		comment													
74	Skagerrak (DK)	lower								1,11	10,031	0,617	11,145	1,234	
		upper													
		comment													

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2004 by Denmark

Figures are given in tonnes as a yearly load

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [tonnes]	12 PO4-P [tonnes]	13 Total N [tonnes]	14 Total P [tonnes]	3 SPM [kt]
110	Brøns å	lower													
		upper													
		comment													
291	Brede å	lower													
		upper													
		comment													
292	Omme å	lower													
		upper													
		comment													
112	Kongeåen	lower													
		upper													
		comment													
293	Ribe å	lower													
		upper													
		comment													
104	Skjern å	lower													
		upper													
		comment													
294	Sneum å	lower													
		upper													
		comment													
115	Storå	lower													
		upper													
		comment													
295	Varde å	lower													
		upper													
		comment													
109	Vid å	lower													
		upper													
		comment													
296	Grøn å	lower													
		upper													
		comment													
80	North Sea (DK)	lower								2,97	5,94	1,65	29,7	5,5	
		upper													
		comment													
125	Elling å	lower													
		upper													
		comment													
127	Ger å	lower													
		upper													
		comment													
103	Gudenå	lower													
		upper													
		comment													
129	Haslevgårds å	lower													
		upper													
		comment													
297	Ry å	lower													
		upper													
		comment													
120	Jordbro å	lower													
		upper													
		comment													
118	Karup å	lower													
		upper													
		comment													
130	Kastbjerg å	lower													
		upper													
		comment													
128	Lindenborg å	lower													
		upper													
		comment													
122	Simested å	lower													
		upper													
		comment													
121	Skals å	lower													
		upper													
		comment													
126	Voer å	lower													
		upper													
		comment													
77	Kattegat (DK)	lower								8,38	16,765	1,298	83,826	4,328	
		upper													
		comment													
123	Liver å	lower													
		upper													
		comment													
124	Uggerby å	lower													
		upper													
		comment													
74	Skagerrak (DK)	lower								1,96	3,914	1,142	19,571	3,806	
		upper													
		comment													

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by Denmark

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
110	Brøns å	lower								0,005	0,1821	0,0007	0,22	0,0041	
		upper													
		comment													
291	Brede å	lower								0,0153	0,3911	0,0023	0,49	0,0119	
		upper													
		comment													
292	Omme å	lower								0,0362	0,814	0,006	0,9983	0,024	2
		upper													
		comment													
112	Kongeåen	lower								0,0353	1,0826	0,0104	1,2263	0,0373	1,4285
		upper													
		comment													
293	Ribe å	lower								0,0358	1,1765	0,0109	1,3747	0,0335	2,1513
		upper													
		comment													
104	Skjern å	lower								0,067	1,9736	0,0116	2,3645	0,0533	4,8633
		upper													
		comment													
294	Sneum å	lower								0,0229	0,3744	0,0031	0,4813	0,0149	1,1186
		upper													
		comment													
115	Storå	lower								0,0548	1,5733	0,0117	1,8957	0,0468	3,3245
		upper													
		comment													
295	Varde å	lower								0,0702	1,0516	0,0079	1,3872	0,0387	2,6283
		upper													
		comment													
109	Vid å	lower								0,0103	0,2294	0,0017	0,2982	0,0096	
		upper													
		comment													
296	Grøn å	lower								0,0203	0,4412	0,0063	0,5806	0,0364	
		upper													
		comment													
80	North Sea (DK)	lower								0,422	15,134	0,1202	18,363	0,493	
		upper													
		comment													
125	Elling å	lower								0,0105	0,1278	0,0031	0,1687	0,0083	0,9476
		upper													
		comment													
127	Ger å	lower								0,0104	0,2098	0,0017	0,268	0,0064	0,7
		upper													
		comment													
103	Gudenå	lower	0,0195	0,0031	1,348	0,294	5,101			0,0796	2,332	0,0386	3,0613	0,1053	6,607
		upper													
		comment													
129	Haslevgårds å	lower								0,0064	0,1229	0,0025	0,1524	0,0041	0,2523
		upper													
		comment													
297	Ry å	lower								0,0202	0,4299	0,007	0,5322	0,0174	1,4328
		upper													
		comment													
120	Jordbr å	lower								0,0028	0,0658	0,0016	0,0857	0,0038	
		upper													
		comment													
118	Karup å	lower								0,0179	0,5486	0,0065	0,6551	0,0246	
		upper													
		comment													
130	Kastbjerg å	lower								0,002	0,1862	0,0017	0,209	0,0026	0,1958
		upper													
		comment													
128	Lindenborg å	lower								0,0097	0,6264	0,009	0,7006	0,015	1,3988
		upper													
		comment													
122	Simested å	lower								0,0115	0,713	0,0088	0,7779	0,0133	
		upper													
		comment													
121	Skals å	lower								0,0071	0,5519	0,0063	0,6865	0,019	
		upper													
		comment													
126	Voer å	lower								0,0138	0,3806	0,0055	0,4684	0,0161	2,1934
		upper													
		comment													
77	Kattegat (DK)	lower								0,4425	22,451	0,2989	26,522	0,6608	
		upper													
		comment													
123	Liver å	lower								0,0203	0,4267	0,0049	0,5325	0,0229	2,385
		upper													
		comment													
124	Uggerby å	lower								0,0239	0,5082	0,008	0,6443	0,0228	2,9668
		upper													
		comment													
74	Skagerrak (DK)	lower								0,0752	1,65	0,0225	2,0641	0,0738	
		upper													
		comment													

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by Denmark

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
110	Brøns å	lower													
		upper													
		comment													
291	Brede å	lower													
		upper													
		comment													
292	Omme å	lower													
		upper													
		comment													
112	Kongeåen	lower													
		upper													
		comment													
293	Ribe å	lower													
		upper													
		comment													
104	Skjern å	lower													
		upper													
		comment													
294	Sneum å	lower													
		upper													
		comment													
115	Storå	lower													
		upper													
		comment													
295	Varde å	lower													
		upper													
		comment													
109	Vid å	lower													
		upper													
		comment													
296	Grøn å	lower													
		upper													
		comment													
80	North Sea (DK)	lower													
		upper													
		comment													
125	Elling å	lower													
		upper													
		comment													
127	Ger å	lower													
		upper													
		comment													
103	Gudenå	lower													
		upper													
		comment													
129	Haslevgårds å	lower													
		upper													
		comment													
297	Ry å	lower													
		upper													
		comment													
120	Jordbr å	lower													
		upper													
		comment													
118	Karup å	lower													
		upper													
		comment													
130	Kastbjerg å	lower													
		upper													
		comment													
128	Lindenborg å	lower													
		upper													
		comment													
122	Simested å	lower													
		upper													
		comment													
121	Skals å	lower													
		upper													
		comment													
126	Voer å	lower													
		upper													
		comment													
77	Kattegat (DK)	lower													
		upper													
		comment													
123	Liver å	lower													
		upper													
		comment													
124	Uggerby å	lower													
		upper													
		comment													
74	Skagerrak (DK)	lower													
		upper													
		comment													

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2004 by Denmark

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
110	Brøns å	lower								0,1076	4,028	0,0157	4,844	0,0892	8,406
		upper													
		minimum								0,01	2,2	0,005	2,8	0,022	1,3
		maximum								0,23	6,4	0,028	7,7	0,34	17
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0,0535	1,105	0,0068	1,2344	0,0749	4,7174
291	Brede å	lower								0,0977	2,366	0,0139	3,017	0,0799	6,1889
		upper													
		minimum								0,008	0,88	0,001	1,4	0,022	0,5
		maximum								0,42	3,4	0,03	4,3	0,2	12
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0,0972	0,7963	0,0077	0,8604	0,0426	3,62
292	Omme å	lower								0,1381	2,72	0,0218	3,353	0,084	6,3
		upper													
		minimum								0,059	1,74	0,013	2,1	0,038	1,8
		maximum								0,26	4,18	0,029	5,1	0,15	15
		more than 70% > D.L.													
		n								15	15	15	15	15	15
		info													
		st.Dev.								0,06	0,5798	0,0055	0,6823	0,0318	4,0629
112	Kongeåen	lower								0,1523	4,327	0,0454	4,933	0,1591	5,6133
		upper													
		minimum								0,076	2,61	0,03	3,2	0,08	1,6
		maximum								0,35	6,49	0,07	7,3	0,6	15
		more than 70% > D.L.													
		n								15	15	15	15	15	15
		info													
		st.Dev.								0,0728	1,1519	0,0121	1,1493	0,1276	4,0089
293	Ribe å	lower								0,1097	3,473	0,0327	4,073	0,1029	6,14
		upper													
		minimum								0,015	2,23	0,013	2,4	0,045	1
		maximum								0,16	6,55	0,13	7,6	0,19	11
		more than 70% > D.L.													
		n								15	15	15	15	15	15
		info													
		st.Dev.								0,0383	1,0657	0,0279	1,2168	0,035	2,795
104	Skjern å	lower								0,0647	2,322	0,0146	2,7933	0,0627	5,7357
		upper													
		minimum								0,0025	1,55	0,006	1,7	0,032	2
		maximum								0,16	3,81	0,03	4,4	0,09	8,8
		more than 70% > D.L.													
		n								16	15	16	15	15	14
		info													
		st.Dev.								0,0438	0,5638	0,0062	0,6745	0,0173	2,0638
294	Sneum å	lower								0,1921	3,3	0,0279	4,287	0,1359	10,773
		upper													
		minimum								0,042	1,86	0,018	3	0,055	1,7
		maximum								0,35	4,25	0,043	6,5	0,28	36
		more than 70% > D.L.													
		n								14	14	15	15	15	15
		info													
		st.Dev.								0,0982	0,721	0,007	0,8895	0,0631	9,755
115	Storå	lower								0,0929	2,7337	0,0198	3,306	0,0853	5,9937
		upper													
		minimum								0,014	1,47	0,001	1,9	0,041	2,2
		maximum								0,16	4,93	0,031	5,9	0,14	15
		more than 70% > D.L.													
		n								17	16	17	16	16	16
		info													
		st.Dev.								0,0455	0,9222	0,0078	1,04	0,0251	3,5718
295	Varde å	lower								0,1796	2,7369	0,0203	3,52	0,0949	6,5071
		upper													
		minimum								0,09	0,057	0,011	2,5	0,052	3,5
		maximum								0,28	3,65	0,031	4,2	0,18	18
		more than 70% > D.L.													
		n								14	14	14	15	15	14
		info													
		st.Dev.								0,0706	0,8897	0,0058	0,5784	0,0315	3,7232

109	Vid å	lower								0,0876	2	0,0144	2,6	0,0808	11,406
		upper													
		minimum								0,019	1,1	0,005	1,8	0,022	1,9
		maximum								0,16	3,9	0,027	4,4	0,13	23
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0,0459	0,6435	0,0045	0,6695	0,0319	6,0549
296	Grøn å	lower								0,0859	1,8189	0,0272	2,411	0,1537	11,283
		upper													
		minimum								0,025	0,86	0,009	1,4	0,03	2,7
		maximum								0,15	3,1	0,044	3,9	0,71	23
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0,0386	0,6799	0,0082	0,7324	0,1486	5,8771
80	North Sea (DK)	lower								0,08	2,92	0,023	3,55	0,096	
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													
125	Elling å	lower								0,2187	2,66	0,0714	3,5125	0,185	21,144
		upper													
		minimum								0,074	2,06	0,051	2,6	0,12	2,2
		maximum								0,46	3,44	0,11	4,6	0,5	150
		more than 70% > D.L.													
		n								16	16	16	16	16	16
		info													
		st.Dev.								0,1013	0,4661	0,0184	0,6249	0,0897	35,647
127	Ger å	lower								0,1758	3,3754	0,0318	4,3923	0,12	12,677
		upper													
		minimum								0,017	1,48	0,022	2,2	0,066	2,5
		maximum								0,34	5,4	0,049	6,6	0,16	22
		more than 70% > D.L.													
		n								13	13	13	13	13	13
		info													
		st.Dev.								0,0865	1,4902	0,0073	1,7246	0,0283	6,323
103	Gudenå	lower	0,0185	0,0023	1,261	0,2788	4,3			0,0701	1,7521	0,035	2,5883	0,0983	6,3821
		upper	0,0197	0,0032	1,264	0,2809	4,342								
		minimum	0	0	0	0	0			0,008	0,658	0,006	1,3	0,058	1,4
		maximum	0,057	0,01	2,2	0,88	13			0,14	3,95	0,06	4,9	0,2	24
		more than 70% > D.L.													
		n	12	12	12	12	12			28	28	28	29	29	28
		info													
		st.Dev.	0,0152	0,0028	0,589	0,2349	3,244			0,0304	0,9868	0,0173	1,0644	0,028	4,6425
129	Haslevgårds å	lower								0,0022	4,5019	0,1076	5,675	0,1681	8,6938
		upper													
		minimum								0,013	1,28	0,059	1,8	0,1	2
		maximum								0,44	8,3	0,18	9,7	0,23	24
		more than 70% > D.L.													
		n								16	16	16	16	16	16
		info													
		st.Dev.								0,1631	1,8366	0,0325	2,1505	0,0329	6,3376
297	Ry å	lower								0,1689	3,6847	0,0671	4,54	0,162	12,247
		upper													
		minimum								0,016	2,18	0,043	2,9	0,12	3
		maximum								0,27	6,6	0,12	7,9	0,21	24
		more than 70% > D.L.													
		n								15	15	15	15	15	15
		info													
		st.Dev.								0,081	1,1859	0,0203	1,4387	0,0246	6,1408
120	Jordbro å	lower								0,0785	1,7547	0,0419	2,3067	0,1032	
		upper													
		minimum								0,006	0,011	0,013	1,6	0,059	
		maximum								0,13	2,45	0,057	3,2	0,12	
		more than 70% > D.L.													
		n								16	15	16	15	15	
		info													
		st.Dev.								0,0375	0,5863	0,0097	0,4415	0,0187	
118	Karup å	lower								0,0806	2,415	0,0293	2,9	0,1113	
		upper													
		minimum								0,016	1,72	0,022	2,2	0,068	
		maximum								0,14	3,05	0,059	3,9	0,15	
		more than 70% > D.L.													
		n								15	15	15	15	15	
		info													
		st.Dev.								0,0384	0,3646	0,009	0,444	0,0253	
130	Kastbjerg å	lower								0,073	6,8211	0,0677	7,7	0,1109	6,911
		upper													
		minimum								0,0025	4,95	0,013	6,4	0,031	2,1
		maximum								0,13	7,63	0,13	8,5	0,23	17
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0,038	0,8409	0,0287	0,5831	0,0507	4,0903

128	Lindenborg å	lower								0,0802	5,4008	0,0775	6,0192	0,131	11,282
		upper													
		minimum								0,022	3,45	0,021	4,2	0,041	3,6
		maximum								0,22	6,6	0,12	7,3	0,27	32
		more than 70% > D.L.													
		n								12	12	12	12	12	11
		info													
		st.Dev.								0,0538	0,995	0,0299	0,9136	0,0581	8,04
122	Simested å	lower								0,1489	9,594	0,1161	10,48	0,1743	
		upper													
		minimum								0,0025	8,49	0,051	9,4	0,075	
		maximum								0,85	11,1	0,17	12	0,28	
		more than 70% > D.L.													
		n								15	15	15	15	15	
		info													
		st.Dev.								0,2132	0,5838	0,027	0,9398	0,058	
121	Skals å	lower								0,0432	3,609	0,0379	4,4533	0,1241	
		upper													
		minimum								0,0025	2,91	0,009	3,7	0,088	
		maximum								0,16	4,31	0,066	5,1	0,18	
		more than 70% > D.L.													
		n								15	15	15	15	15	
		info													
		st.Dev.								0,0429	0,5027	0,0187	0,4779	0,0248	
126	Voer å	lower								0,1312	3,7333	0,0626	4,57	0,1713	21,167
		upper													
		minimum								0,039	2,45	0,038	3	0,13	4,8
		maximum								0,27	4,8	0,12	6	0,28	40
		more than 70% > D.L.													
		n								15	15	15	15	15	15
		info													
		st.Dev.								0,0637	0,8058	0,0216	1,0513	0,0402	11,233
77	Kattegat (DK)	lower								0,081	4,1	0,055	4,84	0,120	
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													
123	Liver å	lower								0,196	4,2053	0,0615	5,2765	0,2306	24,547
		upper													
		minimum								0,073	2,55	0,033	3,2	0,13	4,5
		maximum								0,39	6,4	0,13	7,6	0,82	66
		more than 70% > D.L.													
		n								17	17	17	17	17	17
		info													
		st.Dev.								0,0851	1,2009	0,0283	1,3549	0,1586	18,277
124	Uggerby å	lower								0,1524	3,3689	0,0708	4,2611	0,1711	17,744
		upper													
		minimum								0,027	2,29	0,045	2,7	0,13	2,9
		maximum								0,35	5,1	0,12	6,4	0,23	51
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0,0939	0,9046	0,0244	1,1793	0,0338	13,555
74	Skagerrak (DK)	lower								0,19	4,13	0,056	5,16	0,180	
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2004 by Denmark

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
110	Brøns å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
291	Brede å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
292	Omme å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
112	Kongeåen	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
293	Ribe å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
104	Skjern å	Sewage													
		Industrial													
		Riverine	>0,004	>0,0005	>0,04	>0,025	>0,5	>10	>10	>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
294	Sneum å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
115	Stor å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
295	Varde å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
109	Vid å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
296	Grøn å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
80	North Sea (DK)	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
125	Elling å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
127	Ger å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
103	Gudenå	Sewage	>0,004	>0,0005	>0,04	>0,025	>0,5	>10	>10						
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
129	Haslevgårds å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
297	Ry å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
120	Jordbro å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
118	Karup å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
130	Kastbjerg å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
128	Linden borg å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
122	Simested å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
121	Skals å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
126	Voer å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
77	Kattegat (DK)	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
123	Liver å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
124	Uggerby å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
74	Skagerrak (DK)	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2004 by Denmark

		Flow Rate [1000m^3/d]	LTA [1000m^3/d	inimum F [1000m^3/d	aximum F [1000m^3/d	LTA info (years)	Number of sites	Mean or Median	Catchment area km2
110	Brøns å	118,06	106	35,91	370,1	74-04	1	Mean	94,1
291	Brede å	399,72	338,1	115,33	1498,3	94-04	1	Mean	290
292	Omme å	756,59	735,5	319,32	1830,2	83-04	1	Mean	612
112	Kongeåen	642	619,1	245,38	2013,7	90-04	1	Mean	426,6
293	Ribe å	870,45	751,8	275,7	2568,6	33-04	1	Mean	675
104	Skjern å	2140,33	2272,2	1022,2	5709,9	93-04	1	Mean	1550
294	Sneum å	292,78	281,9	109,12	1277,4	66-04	1	Mean	223
115	Stor å	1465,74	1412,4	696,29	3845,5	71-04	1	Mean	1096,7
295	Varde å	1052,43	1045,7	353,89	3628,3	69-04	1	Mean	815
109	Vid å	299,37	301,1	100,49	955,24	78-04	1	Mean	248,3
296	Grøn å	624,77	604,1	171,31	1902,1	59-04	1	Mean	563
80	North Sea (DK)	**14142**						**Mean**	**10809**
125	Elling å	125,2	120,8	47,63	617,78	89-04	1	Mean	132,2
127	Ger å	143,2	146,5	34,17	670,42	85-04	1	Mean	153,8
103	Gudenå	2916,75	2843,3	1549,3	6250,6	78-04	1	Mean	2602,9
129	Haslevgårds å	62,01	61,3	10,51	354,26	89-04	1	Mean	75
	Ry å	295,8	260	115,29	1223,1	72-04	1	Mean	285
120	Jordbro å	100,5	111,7	63,83	315,41	80-04	1	Mean	110,9
118	Karup å	619,88	633,6	362,69	1381,2	86-04	1	Mean	626,8
130	Kastbjerg å	75,18	70,2	39,48	212,63	76-04	1	Mean	96,3
128	Lindenborg å	308,52	306,8	179,46	855,99	83-04	1	Mean	317,8
122	Simested å	204,07	207,6	139,19	553,24	92-04	1	Mean	214,9
121	Skals å	416,47	387,1	218,48	817,69	73-04	1	Mean	556,4
126	Voer å	257,78	238,8	72,04	1418,6	89-04	1	Mean	238,7
77	Kattegat (DK)	**14973**						**Mean**	**15828**
123	Liver å	248,4	277,1			98-04	1	Mean	249,8
124	Uggerby å	358,29	342,2	92,73	1348,9	89-04	1	Mean	347,5
74	Skagerrak (DK)	**1094**						**Mean**	**1098**

Annex 4

GERMANY

Annual report on riverine inputs and direct discharges to Convention waters during the year 2004 by Germany

Annual report on riverine inputs and direct discharges by Germany to Convention waters during the year 2004

Name, address and contact numbers of reporting authority to which any further enquiry should be addressed:

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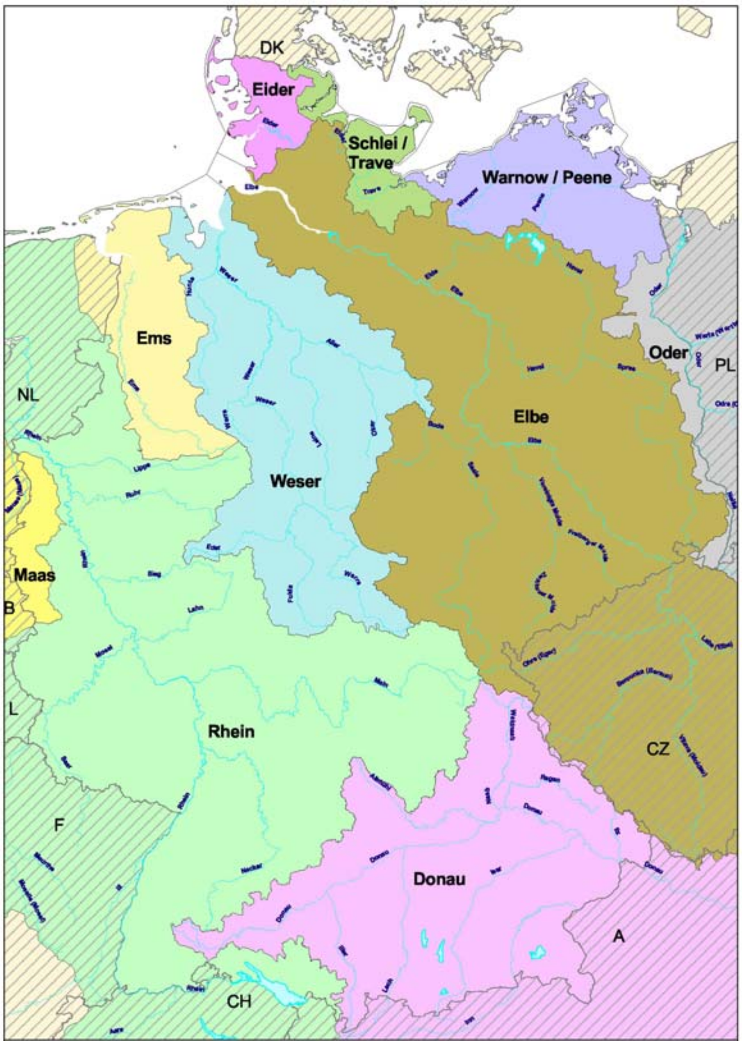
A. General information

Table 1: General overview of river systems (for riverine inputs) and direct discharge areas (for direct discharges) included in the data report

Country: **Federal Republic of Germany**	
Name of river, sub-area and discharge area[1]	Nature of the receiving water[2]
Elbe St. Pauli (estuary)	tidal range 3.25 m
Weser Farge (estuary)	tidal range 3.7 m
Ems Herbrum (at tidal weir)	no tidal influence
Eider estuary (at tidal weir)	no tidal influence

[1] i.e. name of estuary or length of coastline
[2] i.e. estuary or coastal water; if an estuary, state the tidal range and the daily flushing volume



Flussgebietseinheiten in der Bundesrepublik Deutschland (Richtlinie 2000/60/EG - Wasserrahmenrichtlinie)

Die Markierung und Kennzeichnung der außerhalb der Grenzen der Bundesrepublik Deutschland liegenden Teile internationaler Flussgebietseinheiten dienen lediglich der Veranschaulichung und lassen Festlegungen anderer Staaten sowie internationale Abstimmungen unberührt.

Quelle: Umweltbundesamt, Februar 2002

B. Total riverine inputs and direct discharges for the year 2004 (Tables 4a and 4b)

Note: Table 4b is total direct discharges and riverine inputs to maritime area by region. Please provide totals for each OSPAR region and for total inputs.

B.1 Give general comments on the total riverine inputs and direct discharges (e.g. changes from last year, trends, percentage of particle bound determinand, results that need to be highlighted etc.):

Compared to previous years (except 2002, extreme flood event in summer) there are no significant changes in the concentrations and inputs for the year 2004.

C. Direct discharges for the year 2004

Sewage Effluents (Table 5a)

C.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (cf. section 6 of the RID Principles), including for those under voluntary reporting:

For the ***Elbe,*** *all discharges of sewage effluents were determined downstream of the "Seemannshöft" measurement site. Dischargers have to carry out a mandatory monitoring of their discharges. The results of such monitoring were used to determine the inputs of the major dischargers. Measurements are based on 4 to 8 2-hour-mixed-samples. All other data are estimates.*

The loads of ***Weser*** *and* ***Ems*** *downstream of the measurement sites for riverine inputs and those of the* ***Jade*** *are estimates based on population equivalents.*

Estimates for the ***Eider*** *are included in the riverine inputs.*

C.2 Describe the determinands, other than those specified in paragraph 2.1 of the RID Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

C.3 Give general comments on the discharges of sewage effluents (e.g. compared to previous years, and/or extent to which industrial effluents are discharged through sewerage systems):

There is nearly no change compared to previous years.

Industrial Effluents (Table 5b)

C.4 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (ref.: Section 6 of the RID Principles), including for those under voluntary reporting:

For the ***Elbe,*** *all discharges of industrial effluents were determined downstream from the "Seemannshöft" measurement site. Dischargers have to carry out a mandatory monitoring of their discharges. The results of such monitoring were used to determine the inputs of the major dischargers. Measurements are based on 2-hour-mixed-samples. All other data are estimates.*

The loads of ***Weser*** *and* ***Ems*** *downstream of the measurement sites for riverine inputs and those of the* ***Jade*** *are estimates.*

Estimates for the ***Eider*** *are included in the riverine inputs.*

C.5 Give any other relevant information (e.g. proportion of substance discharged as insoluble material):

None

C.6 Give any available information on other discharges directly to Convention Waters - through e.g. urban run-off and stormwater overflows - that are not covered by the data in tables 5a and 5b:

None

C.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

C.8 Give general comments on industrial effluents (e.g. compared to previous years):

Total direct discharges (Table 5c)

C.9 Give general comments on total direct discharges (e.g. compared to previous years):

There have been no significant changes compared to previous years. In the catchment area of the river Ems the direct discharges from sewage and industrial effluents were calculated on the basis of measurements (no estimates), so that these discharges (mostly lower) are not directly comparable to those of former years.

D. Riverine inputs for the year 2004

Main Rivers (Tables 6a and 7a)

D.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7a) upon which the measurement is based (ref.: Section 5 of the RID Principles), including for those under voluntary reporting:

The load data for the ***Elbe*** *at the Seemannshöft measurement site comprise approx. 95% of the total input. The loads of the major tributaries (left side: Este, Lühe, Schwinge, Oste; right side: Pinnau, Krückau, Stör) have to be added.*

The Farge measurement site covers 90% of the ***Weser*** *catchment area, the Herbrum measurements site covers 70% of the* ***Ems*** *catchment area. The remainder is covered by the estimates of direct inputs given in table 5a-c.*

The measurement sites "Eider" and "Treene" cover approx. 82% of the total catchment area of the ***Eider****, with the loads measured being extrapolated to cover 100% of the catchment area.*

Sampling frequencies *are as follows for the respective rivers:*

Elbe: *For the main river (cross-section measurements taken fortnightly): 26 measurements per year for all parameters to be monitored except heavy metals (25 measurements per year).*

Weser: *12 measurements per year (cross-section measurements taken once a month) for all parameters to be monitored.*

Ems: *12 measurements per year (cross-section measurements taken once a month) for all parameters to be monitored.*

Eider: *Measurements include samples in the main river on the basis of representative random samples: 26 measurements per year for nutrients and 13 measurements per year for all the other parameters.*

Sampling site

In the ***Elbe****, sampling to obtain riverine input data is carried out upstream of the freshwater limit (Seemannshöft measurement site) in the tidal river. In 1994 the monitoring station was shifted upstream from Grauerort (km 660,5) to Seemannshöft (km 628,8) to get out of the high turbidity zone. In the* ***Weser*** *sampling is carried out upstream of the freshwater limit in the tidal river (Farge measurement site) and in the* ***Ems*** *it is carried out at the tidal limit (Herbrum measurement site). Sampling in the* ***Eider*** *is carried out at the tidal limit in the main river (measurement sites: Eider, Nordfeld, size of catchment area: 905 km^2) as well as in the tributary Treene (measurement sites: Treene, Friedrichstadt, size of catchment area: 797 km^2).*

Estimation of annual load
Annual loads L are calculated as follows for the various river systems:

Elbe:

$$L = \frac{Q_r \cdot \sum_{i=1}^{n} (c_i \cdot Q_i)}{\sum_{i=1}^{n} (Q_i)}$$

Where: *ci* *is the concentration measured in sample i;*
Qi *is the corresponding mean daily flow for sample i;*
Qr *is the mean daily flow rate for each sampling period (year); and*
n *is the number of samples taken in the sampling period (year).*

Weser, Ems, Eider:

$$L = \frac{\sum_{i=1}^{n} (c_i \cdot Q_i)}{n}$$

Measurements in tidal areas

For the Elbe, flow is determined for a cross-section at the freshwater limit, which lies within the tide-influenced zone, using a one-dimensional mathematical flow model. In keeping with the "Principles of the Comprehensive Study on Riverine Inputs" a mass balance was drawn up in 1986/1987 (cf. INPUT 3/INFO 3: Drawing up a Balance for Inputs of Substances to the Elbe Estuary). Originally, the sampling site was directly located at the freshwater limit. Based on the balance, however, the sampling site was moved 15 km upstream to Grauerort in 1988 in order to get out of the turbidity zone. In 1991, 1992 and 1993 the influence of the turbidity zone made itself strongly felt also at this measurement site, resulting in part in an overestimation of loads. As a consequence, the measurement site was again moved further upstream to Seemannshöft in 1994.

Flow in the Weser was determined at the PARCOM measurement site Farge. When the tide is outgoing (ebb stream) the RID measurement site Farge must be regarded as being located distinctly upstream from the freshwater limit. There is virtually no influence of North Sea water at the Farge measurement site during the ebb tide, the tidal phase during which the RID measurements are carried out.

The loads of Ems and Eider were measured at the tidal weir.

D.2 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

None

D.3 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

D.4 Give general comments on the inputs from main rivers (e.g. significant change in inputs, concentrations and flows compared to previous years):

Compared to previous years (except 2002, flood year) there are no significant changes in the concentrations and inputs during the year 2004.

For the river Weser the significant increase of the load of NH_4-N in 2003 (75% higher than in 2001) has fallen back to only nearly 50% higher than in 2001. The loads of mercury (in 2003 125% higher than in 2001) now have fallen back to nearly 50% less than in 2001. The low measurements of lindane and suspended particulate matters in 2003 could be confirmed.

Although slightly increased concentrations occurred in the river Eider, the loads of nutrients in 2003 are considerably lower and the loads of heavy metals are in the same range than 1997, a year with a comparable flow. In the left side Elbe tributaries the load figures for Mercury, Cadmium and Lead in each case are based on only 3 measurements in 2003.

Additionally, in the rivers Eider and Weser there are still significant reductions of the concentrations and loads for lindane which is caused by the ban of this substance in November 1997.

Tributary Rivers (Tables 6b and 7b)

D.5 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7b.) upon which the measurement is based (ref.: Section 5 of the Principles):

Elbe: *For the tributaries 2 to 13 measurements per year were carried out for heavy metals and 13 to 23 measurements per year for nutrients and SPM on the basis of representative random samples.*

Weser: *No measurements were carried out for the tributaries.*

Ems: *No measurements were carried out for the tributaries.*

Eider: *For the tributary Treene at Friedrichstadt 26 measurements per year for nutrients and 13 measurements per year for all the other parameters were carried out for all parameters, on the basis of representative random samples.*

D.6 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

None

D.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

D.8 Give any available information on other inputs - through e.g. polder effluents or from coastal areas - that are not covered by data in tables 6b and 7b:

None

D.9 Give general comments on the inputs from tributary rivers (e.g. significant change in inputs, concentrations and flows compared to previous years):

None

Total riverine inputs (Table 6c)

D.10 Give general comments on the total riverine inputs (e.g. significant change in inputs, concentrations and flows compared to previous years):

In 2004 the flow of the rivers Elbe and Weser were lower than the long-term average flow and comparable to 2001 and 2003. In 2003 the flows of the German rivers discharging to the North Sea except the river Eider were close to the long-term average flows and comparable to 2001. Only in the river Eider the flow was significantly lower and comparable to the flow in the dry year 1997. Flows and loads should not be compared to 2002 due to the high run-off in all German rivers and especially in the river Elbe during the summer flood event in 2002.

E. Unmonitored areas

E.1 Describe the methods of quantification used for the different determinands or groups of determinands:

Within the Eider catchment area the loads of the unmonitored part of the catchment area were determined by extrapolating the loads of the monitored parts of the catchment area.

F. Limits of detection (Table 8)

F.1 Information concerning limits of detection should be presented in Table 8 which includes different columns for rivers/tributaries, sewage effluents and industrial effluents. Give comments if the detection limits are higher than stated in the RID principles:

See table 8 in the reporting formats.

G. Additional comments

G.1 Indicate and explain, if appropriate:

- where and why the applied procedures do not comply with agreed procedures
- significant changes in monitoring sites, important for comparison of the data before and after the date of the change
- incomplete or distorted data

In the river Elbe and its tributaries as well as in the river Eider no measurements for PCBs (in water) were carried out, because the concentrations are mostly below the detection limit. This is also the case for γ-HCH measurements in water in the Elbe tributaries.

Table 4b. Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by Germany

TOTAL INPUTS			Quantities --->												
Discharge region	Estimate	Flow rate (1000 m3/d)	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM [10^6 kg]
INPUTS TO OSPAR REGION II: GREATER NORTH SEA															
RIVERINE INPUTS															
	lower		4,3	1,9	151	128	858	25	5,7	6,3	117	1,6	149	6,2	1130
Main Rivers	upper	91312	4,4	1,9	151	128	858	25	26	6,3	117	1,7	149	6,2	1198
	lower		0,3	0,04	9,70	9,8	63	NI	NI	0,5	9,8	0,1	13	0,6	109
Tributary Rivers	upper	2800	0,3	0,04	9,70	9,8	63	NI	NI	0,5	9,8	0,1	13	0,6	109
	lower		4,644	1,90428	160,569	137,491	920,547	25,054	5,723	6,832	126,88	1,7543	161,75	6,717	1239,363
Total Riverine Inputs	**upper**	94112	4,710	1,90428	160,569	137,821	920,547	25,363	26,049	6,842	126,88	1,7983	161,75	6,717	1306,828
DIRECT DISCHARGES															
	lower		0,01	0,01	1,8	0,9	10	0,02	0,04	1,7	1,2	0,07	2,7	0,3	1,9
Sewage Effluents	upper	385	0,04	0,04	2,3	1	15	0,28	1,85	1,7	1,2	0,07	2,7	0,3	1,9
	lower		0,0005	0,004	0,08	0,007	0,2	NI	0	0,01	0,5	0,01	0,8	0,05	NI
Industrial Effluents	upper	138	0,01	0,02	0,30	0,50	0,20	NI	1,00	0,01	0,50	0,01	0,80	0,05	NI
	lower														
Fish Farming	upper	523													
	lower		0,0105	0,014	1,88	0,907	10,2	0,02	0,04	1,71	1,7	0,08	3,5	0,35	1,9
Total Direct Inputs	**upper**	523	0,05	0,06	2,6	1,5	15,2	0,28	2,85	1,71	1,7	0,08	3,5	0,35	1,9
UNMONITORED AREAS															
	lower														
Unmonitored Areas	upper														
	lower		**4,7**	**1,9**	**162**	**138**	**931**	**25**	**5,8**	**8,5**	**129**	**1,8**	**165**	**7,1**	**1241**
REGION TOTAL	**upper**	**94634**	**4,8**	**2,0**	**163**	**139**	**936**	**26**	**29**	**8,6**	**129**	**1,9**	**165**	**7,1**	**1309**

The load from the unmonitored parts of the river Eider are included in the riverine loads.

Table 5a. Direct discharges to the maritime area in 2004 by Germany

Sewage effluents			Quantities --->													
Discharge area	Nature of receiving water		Flow rate [1000 m³/d]	Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Ems Estuary	Estuary	(lower estimate)	31,9	0,01	0,01	0,3	0,1	2,1	0,01	0,01	0,03	0,05	0,02	0,08	0,008	0,4
(downstream of Herbrum)		(upper estimate)		0,01	0,01	0,3	0,1	2,1	0,01	0,01	0,03	0,05	0,02	0,08	0,008	0,4
Jade	Estuary	(lower estimate)	47	0,0	0,0	0,02	0,0	0,0	NI	NI	0,05	0,10	NI	0,1	0,01	NI
		(upper estimate)		0,005	0,005	0,03	0,01	0,1	NI	NI	0,05	0,10	NI	0,1	0,01	NI
Weser Estuary	Estuary	(lower estimate)	231	0,003	0,0	1,4	0,7	7,6	0,01	0,03	1,6	0,9	0,04	2,1	0,3	1,1
(downstream of Farge)		(upper estimate)		0,01	0,01	1,4	0,7	7,6	0,3	1,8	1,6	0,9	0,04	2,1	0,3	1,1
Elbe Estuary	Estuary	(lower estimate)	75	0,0	0,0	0,0	0,0	0,0	NI	NI	NI	0,2	0,02	0,4	0,02	0,4
		(upper estimate)		0,01	0,01	0,5	0,1	5,0	NI	NI	NI	0,2	0,02	0,4	0,02	0,4
	Total:		**385**	**0,01**	**0,01**	**1,8**	**0,9**	**10**	**0,02**	**0,04**	**1,7**	**1,2**	**0,07**	**2,7**	**0,3**	**1,9**
				0,04	**0,04**	**2,3**	**1,0**	**15**	**0,3**	**1,9**	**1,7**	**1,2**	**0,07**	**2,7**	**0,3**	**1,9**

Table 5b. Direct discharges to the maritime area in 2004 by Germany

Industrial effluents			Quantities --->													
Discharge area	Nature of receiving water		Flow rate [1000 m³/d]	Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Ems Estuary	Estuary	(lower estimate)	21,1	0,0001	0,0001	0,004	0,0002	0,09	NI	NI	0,01	0,01	NI	0,03	0,007	NI
(downstream of Herbrum)		(upper estimate)		0,0001	0,0001	0,004	0,0004	0,09	NI	NI	0,01	0,01	NI	0,03	0,007	NI
Jade	Estuary	(lower estimate)	6,6	0,0004	0,003	0,07	0,003	0,07	NI	NI	0,0001	0,0007	NI	0,001	0,002	NI
(area Wilhelmshaven)		(upper estimate)		0,002	0,004	0,07	0,004	0,07	NI	NI	0,0002	0,0008	NI	0,001	0,002	NI
Weser Estuary	Estuary	(lower estimate)	40	NI	0,001	0,0	0,004	0,007	NI	NI	0,0005	0,0007	NI	NI	0,002	NI
(area Nordenham)		(upper estimate)		NI	0,004	0,1	0,004	0,010	NI	NI	0,0005	0,0007	NI	NI	0,002	NI
Elbe Estuary	Estuary	(lower estimate)	70	0,0	0,0	0,0	0,0	NI	NI	0,0	NI	0,5	0,01	0,8	0,04	NI
		(upper estimate)		0,01	0,01	0,1	0,5	NI	NI	1,0	NI	0,5	0,01	0,8	0,04	NI
	Total:		**138**	**0,0005**	**0,004**	**0,08**	**0,007**	**0,2**	**NI**	**0,0**	**0,01**	**0,5**	**0,01**	**0,8**	**0,05**	**NI**
				0,01	**0,02**	**0,3**	**0,5**	**0,2**	**NI**	**1,0**	**0,01**	**0,5**	**0,01**	**0,8**	**0,05**	**NI**

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180
(2) Suspended particulate matter
NI: No information

Table 5c. Direct discharges to the maritime area in 2004 by Germany

Total direct discharges				Quantities --->												
Discharge area	Nature of receiving water		Flow rate [1000 m³/d]	Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Ems Estuary	Estuary	(lower estimate)	53	0,01	0,01	0,3	0,1	2,2	0,01	0,01	0,05	0,1	0,02	0,1	0,02	0,4
		(upper estimate)		0,01	0,01	0,3	0,1	2,2	0,01	0,01	0,05	0,1	0,02	0,1	0,02	0,4
Jade	Estuary	(lower estimate)	54	0,0	0,003	0,1	0,0	0,1	NI	NI	0,05	0,1	NI	0,1	0,01	NI
		(upper estimate)		0,01	0,01	0,1	0,0	0,2	NI	NI	0,05	0,1	NI	0,1	0,01	NI
Weser Estuary	Estuary	(lower estimate)	271	0,0	0,0	1,4	0,7	7,6	0,01	0,03	1,6	0,9	0,04	2,1	0,3	1,1
		(upper estimate)		0,01	0,02	1,6	0,7	7,6	0,3	1,8	1,6	0,9	0,04	2,1	0,3	1,1
Elbe Estuary	Estuary	(lower estimate)	145	0,0	0,0	0	0,0	0	NI	0,0	NI	0,7	0,03	1,2	0,06	0,4
		(upper estimate)		0,02	0,02	0,6	0,6	5,0	NI	1,0	NI	0,7	0,03	1,2	0,06	0,4
		Total:	**523**	**0,01**	**0,01**	**1,8**	**0,9**	**9,8**	**0,02**	**0,04**	**1,7**	**1,7**	**0,08**	**3,6**	**0,4**	**1,9**
				0,05	**0,05**	**2,6**	**1,5**	**14,9**	**0,3**	**2,9**	**1,7**	**1,7**	**0,08**	**3,6**	**0,4**	**1,9**

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180
(2) Suspended particulate matte
NI: No information

Table 6a. Riverine inputs to the maritime area in 2004 by Germany

Main riverine inputs				Quantities --->												
Discharge area	Flow rate [1000 m³/d]			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
	2003		LTA													
Ems	8110		7690 (5)	0,14	0,04	7,7	4,0	37	1,0	1,3	0,8	15	0,1	21	0,5	26
(Herbrum: 70 %)				0,2	0,04	7,7	4,3	37	1,1	6,0	0,8	15	0,1	21	0,5	63
Weser	27562		31445(6)	1,4	0,4	31	48	252	5,5	4,4	1,6	40	0,5	52	1,8	252
(Farge: 90%)				1,4	0,4	31	48	252	5,7	20	1,6	40	0,5	52	1,8	283
Elbe Estuary	53400		74100 (7)	2,7	1,4	110	75	560	18	NI	3,7	59	1,0	71	3,7	840
				2,7	1,4	110	75	560	18	NI	3,7	59	1,0	71	3,7	840
Elbe tributaries (3)	1000		2100 (8)	0,03	0,02	1,3	3,9	11	NI	NI	0,11	1,6	0,03	1,9	0,13	29
				0,03	0,02	1,3	3,9	11	NI	NI	0,11	1,6	0,03	1,9	0,13	29
Elbe tributaries (4)	1800		2400 (9)	0,3	0,02	8,4	5,9	52	NI	NI	0,40	8,2	0,09	11	0,43	80
				0,3	0,02	8,4	5,9	52	NI	NI	0,40	8,2	0,09	11	0,43	80
Eider	2240		2411 (10)	0,03	0,006	2,2	0,8	8,6	0,6	NI	0,2	3,0	0,08	4,6	0,2	12
				0,04	0,006	2,2	0,8	8,6	0,6	NI	0,2	3,0	0,08	4,6	0,2	12
Total	**94112**		**116802**	**4,6**	**1,9**	**161**	**137**	**921**	**25**	**6,0**	**6,8**	**127**	**1,8**	**162**	**7,0**	**1239**
				4,7	**1,9**	**161**	**138**	**921**	**25**	**26**	**6,8**	**127**	**1,8**	**162**	**7,0**	**1307**

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180; Elbe, Weser and Ems also No 31
(2) Suspended particulate matte
(3) Left side tributaries: Este, Lühe, Schwinge, Ost
(4) Right side tributaries: Pinnau, Krückau, Stö
ND: Not detectec
LTA: Long-term average flow
(5) 1941 - 2002
(6) 1941 - 2002
(7) 1926 - 2000
(8) 1961 - 2000
(9) 1971 - 2000
(10) 1974 - 2004

Table 7a. Contaminant concentrations of German rivers discharging to the maritime area

Main river Ems Contaminant concentrations -->

Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Ems 2004	8110	7690	Mean	0,04	0,010	2,3	0,83	10,0	0,46	0,45	0,21	4,1	0,03	5,3	0,13	8,3
(Herbrum: 70 %)			upper	0,06	0,010	2,3	1	10,0	0,47	2,1	0,21	4,1	0,04	5,3	0,13	22
Minimum	2290			< 0,05	< 0,005	1,5	< 0,5	1,8	< 0,08	0	< 0,05	2,3	< 0,02	3,1	0,07	< 20
Maximum	29300			0,11	0,019	3,4	2,8	20	0,8	1,8	0,5	7,6	0,08	11,0	0,26	27
> 70 % > d.l. ?			yes/nc	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes	no
n				*11*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow Ems: 1941 - 2002
(2) Suspended particulate matter
ND: Not detected > 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table 8)

Main river Weser Contaminant concentrations -->

Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Weser 2004	27562	31445	Mean	0,1	0,04	3,3	3,8	22	0,7	0,4	0,2	3,3	0,05	4,2	0,2	27
(Farge: 90%)			upper	0,1	0,04	3,3	3,8	22	0,7	2,0	0,2	3,3	0,05	4,2	0,2	31
Minimum	14867			0,07	0,02	1,9	1,8	10	0,5	1,8	0,08	1,6	0,02	2,6	0,1	21
Maximum	86019			0,4	0,10	7,1	9,2	36	1,0	2,7	0,2	6	0,09	8,4	0,2	47
> 70 % > d.l. ?			yes/nc	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes
n				*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*	*12*

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow Weser: 1941 - 2002
(2) Suspended particulate matter
ND: Not detected > 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table 8)

Main river Eider Contaminant concentrations -->

Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Eider 2004	2240	2411	Mean	0,019	0,005	2,08	0,88	7,17	0,83	NI	0,18	2,7	0,079	4,2	0,19	16
			upper	0,029	0,005	2,08	0,90	7,17	0,83	NI	0,18	2,7	0,079	4,2	0,19	16
Minimur	-26114			< 0,02	< 0,001	1,1	< 0,2	2,9	0,36		< 0,01	0,30	< 0,005	1,8	0,10	4,0
Maximur	51749			0,08	0,02	4,1	1,9	23	1,4		0,51	6,2	0,191	7,8	0,3	54
> 70 % > d.l. ?			yes/nc	no	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes
n				*24*	*24*	*24*	*24*	*24*	*17*		*46*	*46*	*46*	*46*	*46*	*46*

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow Eider: 1974 - 2003
(2) Suspended particulate matter
ND: Not detected > 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table 8)

Main river Elbe Contaminant concentrations -->

Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Elbe Estuary	53400	74100	Median	0,14	0,076	6,5	4,0	31	0,9	NI	0,21	2,8	0,06	3,7	0,20	50
2004			upper	0,14	0,076	6,5	4,0	31	0,9	NI	0,21	2,8	0,06	3,7	0,20	50
Minimum	21100			< 0,067	0,038	4,4	2,2	19	0,5		0,09	0,95	0,03	1,8	0,16	28
Maximum	147000			0,23	0,11	9,4	6,1	47	7		0,51	5,2	0,10	6,4	0,49	71
> 70 % > d.l. ?			yes/nc	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes
n			*n*	*25*	*25*	*25*	*25*	*25*	*26*		*26*	*26*	*26*	*26*	*26*	*26*

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow Elbe: 1926 - 2000
(2) Suspended particulate matter
NI: No information > 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table 8)

Table 7b. Contaminant concentrations of German rivers (tributaries) discharging to the maritime area

Left side tributaries of the Elbe Contaminant concentrations -->

Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Elbe tributary (3)	1000	2100	Median	0,10	0,04	3,3	6,6	20	NI	NI	0,17	3,2	0,06	4	0,22	38
2004			upper	0,10	0,04	3,3	6,6	20	NI	NI	0,17	3,2	0,06	4	0,22	38
Minimum	320			0,05	< 0,005	< 1	2,7	< 10			< 0,05	1,3	< 0,03	1,7	0,09	12
Maximum	2000			0,27	0,12	14	25	64			0,9	9,0	0,10	9,5	0,55	173
> 70 % > d.l. ?			yes/nc	yes	no	no	yes	no			yes	yes	yes	yes	yes	yes
n				*2*	*2*	*13*	*2*	*13*			*13*	*13*	*13*	*13*	*13*	*13*

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow Oste only: 1961 - 2000
(2) Suspended particulate matter Este, Lühe, Schwinge, Oste: 1961 - 2000
(3) Left side tributaries: Este, Lühe, Schwinge, Oste
NI: No information > 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table 8)

Right side tributaries of the Elbe Contaminant concentrations -->

Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Elbe tributary (3)	1800	2400	Median	0,08	0,01	2,9	1,8	16,5	NI	NI	0,17	2,8	0,021	3,9	0,11	12
2004			upper	0,08	0,01	2,9	1,8	16,5	NI	NI	0,17	2,8	0,021	3,9	0,11	12
Minimur	670			0,01	0,0018	1,6	0,4	6,7			0,005	0,78	0,003	1,4	0,022	3,0
Maximur	5700			0,56	0,020	11	15	72			0,48	7,7	0,08	9,1	0,77	267
> 70 % > d.l. ?			yes/nc	yes	yes	yes	yes	yes			yes	yes	yes	yes	yes	yes
n				*10*	*10*	*10*	*10*	*10*			*23*	*23*	*23*	*23*	*23*	*23*

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow Stör only: 1971 - 2000
(2) Suspended particulate matter Pinnau, Krückau, Stör: 1971 - 2000
(3) Right side tributaries: Pinnau, Krückau, Stör
NI: No information > 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table 8)

Table 8. Detection limits for contaminant concentrations of German inputs to the maritime area

				Detection limits for contaminant concentrations -->												
Sampling point	Type (3)			Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Ems	S			NL	NL	NL	NL	NL	NL	NL	0,05	0,1	NL	1,0	0,02	NL
	I			0,5	0,5	30	1,0	10	ND	ND	0,05	0,1	NL	1,0	0,02	NL
	R			0,05	0,005	0,5	0,5	1,0	0,08	1,8	0,05	0,1	0,02	1,0	0,02	20
Weser	S			NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL	NL
	I			0,5	0,5	30	1,0	10	ND	ND	NL	NL	NL	NL	0,02	NL
	R			0,05	0,005	0,5	0,5	1,0	0,08	1,8	0,05	0,1	0,02	1,0	0,02	20
Elbe	S			NL	NL	NL	NL	NL	ND	ND	ND	NL	NL	NL	NL	NL
	I			0,1	0,1	1,0	1,0	ND	ND	1,0	ND	0,1	0,01	1,0	0,05	ND
	R			0,02	0,001	0,1	0,2	1,0	0,5	ND	0,05	0,5	0,03	0,5	0,1	1,0
Eider	R			0,02	0,001	0,5	0,2	0,1	0,3	ND	0,01	0,05	0,005	0,05	0,01	1,0
Jade	S			0,5	0,5	30	1,0	10	ND	ND	0,05	0,1	ND	1,0	0,02	ND
	I			0,5	0,5	30	1,0	10	ND	ND	0,05	0,1	ND	1,0	0,02	ND

ND **Not detected**
NL **No limit of detection can be given because all figures are estimates.**

 # specify here to which part of the inputs this table relates

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180; make separate list if needed
(2) Suspended particulate matter
(3) S: sewage; I: Industrial discharges; R: riverine inputs (main and tributary
ND: Not detected

Annex 6

THE NETHERLANDS

Annual report on riverine inputs and direct discharges to Convention waters during the year 2004 by the Netherlands

Annual report on riverine inputs and direct discharges by The Netherlands to Convention waters during the year 2004

Name, address and contact numbers of reporting authority to which any further enquiry should be addressed:

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A. General information

Table 1: General overview of river systems (for riverine inputs) and direct discharge areas (for direct discharges) included in the data report

Country: The Netherlands	
Name of river, sub area and discharge area	**Nature of the receiving water**
Western Scheldt Estuary:	
Spuikanaal Bath, Kanaal Gent-Terneuzen, polder effluents Westerschelde (Wielingen included)	Coastal water
Southern Delta Coast:	
Oosterschelde (Krammersluizen), polder effluents Oosterschelde	Coastal water
Northern Delta Coast:	
Haringvlietsluizen, Maassluis (Nieuwe Waterweg)	Coastal water
Closed Holland Coast:	
Noordzeekanaal, gemaal Katwijk (Oude Rijn) and polder effluents Closed Holland Coast (gemalen Scheveningen and Vlotwatering)	Coastal water
Wadden Coast:	
IJsselmeer (outlets Den Oever and Kornwerderzand) and polder effluents/canals Wadden Coast (De Helsdeur, Harlingen/Van Harinxmakanaal, Krassekreet, Lauwersmeer, Roptazijl, Spuisluis Oostoever, Wieringermeer and Zwarte Haan)	Coastal water
Ems Dollard estuary:	
Polder effluents/canals Ems-Dollard (Damsterdiep, Duurswold, Eemskanaal, Nieuwe Statenzijl, Termunsterzijl)	Coastal water

[1] i.e. name of estuary or length of coastline
[2] i.e. estuary or coastal water; if an estuary, state the tidal range and the daily flushing volume

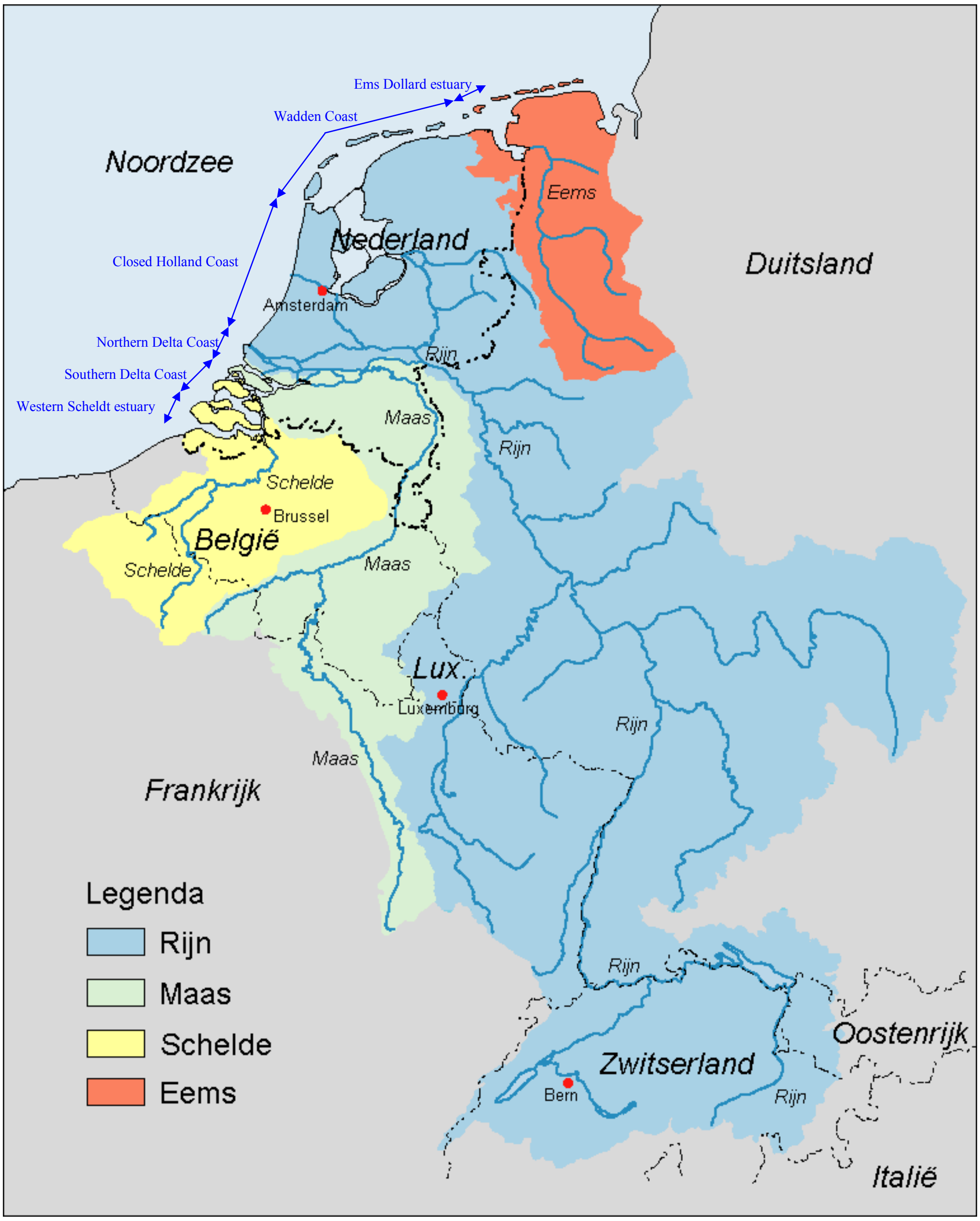

Figure 1 River basin of the rivers Rhine, Meuse, Scheldt and Ems

The main river inputs of substances account on average for over 90% of the total national input. Direct inputs and tributary river inputs are of equal magnitude.

Figure 1 shows the coast of the Netherlands divided into six sections, namely the Ems Dollard estuary, the Wadden coast, the Closed Holland coast, Northern Delta coast, Southern Delta coast and the Western Scheldt estuary.

B. Total riverine inputs and direct discharges for the year 2004

B.1 Comments on the Total Riverine Inputs and Direct Discharges as presented in Table 4a:

- *Riverine Input data: including loads from countries upstream (Germany and Belgium).*
- *Direct discharges data are lagging behind by one year due to the period needed to register discharges. Therefore the figures represent the year 2003. 2004 is only available from May 2006.*

- *For some discharges (tributary rivers in the Scheldt Estuary) only upper estimates were provided, whilst for others only lower estimates were provided. For these cases, the lower estimates were also used as upper estimates in the total figures.*
- *Due to missing tributary river figures the total flow rate is an underestimate.*

C. Direct discharges for the year 2004

Sewage Effluents (Table 5a)

C.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (ref.: Section 6 of the Principles), including for those under voluntary reporting:

- *Method: Product of annual flow and flow-weighted concentration*
- *There are no measurements of PCBs and lindane in sewage effluents. There is only an estimate of the total national figure of PCBs and lindane in all sewage effluents available, with no further distinction into single effluents or catchments. As the total figure for sewage effluents is already very low (γ-HCH < 0.07 kg/yr, PCBs < 0.0007 kg/yr), the contribution of that part of sewage effluents that is discharged directly into the sea is negligible compared to the riverine inputs.*

C.2 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

[none]

Industrial Effluents (Table 5b)

C.3 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (ref.: Section 6 of the Principles), including for those under voluntary reporting:

Method: see paragraph C.1

C.4 Give any other relevant information (e.g. proportion of substance discharged as insoluble material):

[none]

C.5 Give any available information on other discharges directly to Convention Waters - through e.g. urban run-off and storm water overflows - that are not covered by the data in tables 5a and 5b:

No information available. The expectation is that this attribution is low for the Netherlands.

C.6 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

[none]

D. Riverine inputs for the year 2004

Main Rivers (Tables 6a and 7)

D.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7a) upon which the measurement is based (ref.: Section 5 of the Principles), including for those under voluntary reporting:

12 samples per year. Loads calculated following the flow weighted concentration method

D.2 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

Loads from countries upstream are included

D.3 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

** PAKs.*

Tributary Rivers (Tables 6b and 7b)

D.4 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7b) upon which the measurement is based (ref.: Section 5 of the Principles):

12 samples per year, except for the measurement of heavy metals in polderwater, which is 4 samples per year. Loads calculated following each flow weighted concentration method.

D.5 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

No comments

D.6 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

No comments

D.7 Give any available information on other inputs - through e.g. polder effluents or from coastal areas - that are not covered by data in tables 6a and 6b:

Diffuse contribution like atmospheric deposition, groundwater influence and runoff are not taken into account.

E. Unmonitored areas

E.1 Describe the methods of quantification used for the different determinands or groups of determinands:

There are few unmonitored areas (coastal runoff, harbours). Overall the contribution of emissions from these areas is negligible. The output of all large and small rivers is monitored as well are the effluents from industry in the major harbours.

F. Limits of detection

F.1 Information concerning limits of detection should be presented in Table 8 which includes different columns for rivers/tributaries, sewage effluents and industrial effluents. Any important comments may be presented here.

It is also important to include detection limits for measurements in suspended materials. The Netherlands have included this information in table 8. PCBs are measured in the sediment-phase. Detection limits for PCBs are: PCB138 = 2 ug/kg, PCB153 = 3 ug/kg, other PCBs = 1 ug/kg.

G. Additional Comments

G.1 Give a general summary of the main results as presented in the tables 5, 6 and 7 and comment, as appropriate, on these results.

2004 has been an average year taking into account the river flow. Input from the main rivers is considerably higher than in 2003 in accordance with the higher flow and suspended particulate concentrations.

G.2 Indicate any significant change in inputs and concentrations in comparison to previous years. Comment on these changes as appropriate.

See above. For the tributary river input the picture is incomplete (see G3). For the Western Schelde the differences between 2003 and 2004 are relatively small.

G.3 Indicate and explain, if appropriate:

- where and why the applied procedures do not comply with agreed procedures
- significant changes in monitoring sites, important for comparison of the data before and after the date of change
- incomplete or distorted data

Tributary river input is missing from "gemaal scheveningen en Vlotwatering", Wadden coast and EmsDollard estuary. After several requests no data were received (yet).

Table 4b. Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by the Netherlands

TOTAL INPUTS			Quantities --->												
Discharge region	**Estimate**	**Flow rate (1000 m3/d)**	**Cd [10^3 kg]**	**Hg [10^3 kg]**	**Cu [10^3 kg]**	**Pb [10^3 kg]**	**Zn [10^3 kg]**	**g-HCH [kg]**	**PCBs [kg]**	**NH4-N [10^6 kg]**	**NO3-N [10^6 kg]**	**PO4-P [10^6 kg]**	**Total N [10^6 kg]**	**Total P [10^6 kg]**	**SPM [10^6 kg]**
INPUTS TO OSPAR REGION II Greater North Sea															
RIVERINE INPUTS															
Main Rivers	lower		5,0060	1,5603	255,469	175,009	920,169	19,5		8,6347	179,880	4,7703	231,443	14,498	2013,500
	upper	198204	6,0794	1,5612	255,469	175,143	923,434	93,3		8,6347	179,880	4,7703	245,655	14,498	2014,100
Tributary Rivers	lower		0,1412	0,0491	5,108	6,172	23,122			1,6342	9,167	0,7864	13,743	1,201	26,838
	upper	5415	0,3497	0,0782	5,313	8,215	23,542			1,6342	9,167	0,7864	13,743	1,219	27,056
Total Riverine Inputs	**lower**		5,1472	1,6094	260,577	181,181	943,291	19,5		10,2688	189,047	5,5567	245,186	15,700	2040,338
	upper	203619	6,4291	1,6394	260,782	183,358	946,976	93,3		10,2688	189,047	5,5567	259,398	15,717	2041,156
DIRECT DISCHARGES															
Sewage Effluents	lower														
	upper		0,0284	0,0088	1,700	0,541	4,990				0,509		4,369	0,248	2,594
Industrial Effluents	lower														
	upper		0,1457	0,0126	1,905	1,923	25,230		0,0003		0,622		1,582	0,212	1,723
Fish Farming	lower														
	upper														
Total Direct Inputs	**lower**														
	upper		0,1741	0,0214	3,605	2,464	30,220		0,0003		1,131		5,951	0,460	4,317
UNMONITORED AREAS															
Unmonitored Areas	lower														
	upper														
REGION TOTAL	**lower**		5,1472	1,6094	260,577	181,181	943,291	19,5		10,2688	189,047	5,5567	245,186	15,700	2040,338
	upper	203619	6,6031	1,6608	264,387	185,822	977,196	93,3	0,0003	10,2688	190,178	5,5567	265,349	16,178	2045,473

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2004 by the Netherlands

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
224	Closed Holland Coast	lower upper comment	0,0120	0,0039	1,094	0,280	2,990				0,200		3,790	0,110	1,830
225	Wadden Coast	lower upper comment	0,0017	0,0001	0,027	0,017	0,130				0,010		0,021	0,005	0,035
222	Western Schelde	lower upper comment	0,0140	0,0045	0,480	0,220	1,400				0,250		0,470	0,100	0,620
153	Northern Delta Coast	lower upper comment	0,0004	0,0001	0,053	0,019	0,360				0,036		0,062	0,025	0,091
223	Southern Delta Coast	lower upper comment	0,0002	0,0002	0,046	0,005	0,110				0,013		0,026	0,008	0,018
82	North Sea (NL)	lower upper comment	0,0284	0,0088	1,700	0,541	4,990				0,509		4,369	0,248	2,594

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2004 by the Netherlands

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]	mineral oil [kt]	EOX [kt]	PAK6 [kt]
224	Closed Holland Coast	lower																
		upper	0,0062	0,0055	0,170	0,350	2,290		0,0003		0,290		0,800	0,050	0,220	0,910	0,000	
		comment																
226	Ems Dollard Estuary	lower																
		upper	0,0950	0,0004	1,090	1,440	18,590				0,003		0,160	0,002	0,018	0,024	0,130	
		comment																
225	Wadden Coast	lower																
		upper	0,0000	0,0000	0,005	0,000	0,010		0		0,041		0,052	0,014	0,005	0,027	0,020	
		comment																
222	Western Schelde	lower																
		upper	0,0360	0,0060	0,440	0,033	3,190				0,190		0,340	0,083	0,870	2,080	0,004	0,012
		comment																
153	Northern Delta Coast	lower																
		upper	0,0085	0,0007	0,200	0,100	1,150				0,098		0,230	0,063	0,610	27,250	0,130	
		comment																
82	North Sea (NL)	lower																
		upper	0,1457	0,0126	1,905	1,923	25,230		0,0003		0,622		1,582	0,212	1,723	30,291	0,284	0,012
		comment																

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by the Netherlands

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
282	Noordzeekanaal	lower	0,2847	0,0176	10,324	1,773	20,187	3,0		0,9212	7,580	0,5345	10,558	0,788	16,500
		upper	0,3962	0,0180	10,324	1,814	20,513	4,1		0,9212	7,580	0,5345	10,578	0,788	17,100
		comment													
224	Closed Holland Coast	lower	0,2847	0,0176	10,324	1,773	20,187	3,0		0,9212	7,580	0,5345	10,558	0,788	16,500
		upper	0,3962	0,0180	10,324	1,814	20,513	4,1		0,9212	7,580	0,5345	10,578	0,788	17,100
		comment													
157	IJsselmeer	lower	0,6155	0,2215	44,891	31,340	172,731	0,0		0,5335	23,100	0,1238	33,941	3,210	466,000
		upper	1,0748	0,2216	44,891	31,355	174,074	20,5		0,5335	23,100	0,1238	47,782	3,210	466,000
		comment													
225	Wadden Coast	lower	0,6155	0,2215	44,891	31,340	172,731	0,0		0,5335	23,100	0,1238	33,941	3,210	466,000
		upper	1,0748	0,2216	44,891	31,355	174,074	20,5		0,5335	23,100	0,1238	47,782	3,210	466,000
		comment													
154	Haringvlietsluizen	lower	0,5438	0,1572	31,493	18,118	107,952	2,5		1,2800	34,200	0,8221	42,964	2,100	101,000
		upper	0,6564	0,1576	31,493	18,196	108,513	13,7		1,2800	34,200	0,8221	42,994	2,100	101,000
		comment													
155	Maasluis	lower	3,5620	1,1640	168,761	123,778	619,299	14,0		5,9000	115,000	3,2900	143,980	8,400	1430,000
		upper	3,9520	1,1640	168,761	123,778	620,334	55,0		5,9000	115,000	3,2900	144,300	8,400	1430,000
		comment													
153	Northern Delta Coast	lower	4,1058	1,3212	200,254	141,896	727,251	16,5		7,1800	149,200	4,1121	186,944	10,500	1531,000
		upper	4,6084	1,3216	200,254	141,974	728,847	68,7		7,1800	149,200	4,1121	187,294	10,500	1531,000
		comment													
82	North Sea (NL)	lower	5,0060	1,5603	255,469	175,009	920,169	19,5		8,6347	179,880	4,7703	231,443	14,498	2013,500
		upper	6,0794	1,5612	255,469	175,143	923,434	93,3		8,6347	179,880	4,7703	245,655	14,498	2014,100
		comment													

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by the Netherlands

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]
259	Katwijk	lower	0,0000	0,0008	0,660	0,274	3,344	0,3	
		upper	0,0200	0,0041	0,660	0,503	3,344	0,3	
		comment							
258	Scheveningen	lower							
		upper							
		comment							
257	Vlotwatering	lower							
		upper							
		comment							
224	Closed Holland Coast	lower	0,0000	0,0008	0,660	0,274	3,344	0,3	
		upper	0,0200	0,0041	0,660	0,503	3,344	0,3	
		comment							
226	Ems Dollard Estuary	lower							
		upper							
		comment							
225	Wadden Coast	lower							
		upper							
		comment							
290	Polder Effluents Westerschelde	lower	0,0860	0,0420	1,194	4,304	6,821		
		upper	0,1000	0,0500	1,197	4,996	6,848		
		comment							
289	Kanaal Gent - Terneuzen	lower	0,0470	0,0030	1,914	1,212	9,014		
		upper	0,0470	0,0030	1,914	1,212	9,014		
		comment							
288	Spuikanaal Bath	lower	0,0000	0,0018	0,613	0,164	1,434		
		upper	0,0170	0,0018	0,613	0,164	1,434		
		comment							
222	Western Schelde	lower	0,1330	0,0468	3,721	5,680	17,269		
		upper	0,1640	0,0548	3,724	6,372	17,295		
		comment							
153	Northern Delta Coast	lower							
		upper							
		comment							
260	Oosterschelde	lower	0,0000	0,0014	0,629	0,124	0,879		
		upper	0,1387	0,0014	0,629	0,124	0,879		
		comment							
283	Polder Effluents Oosterschelde	lower	0,0082	0,0001	0,098	0,094	1,630		
		upper	0,0270	0,0179	0,300	1,216	2,024		
		comment							
223	Southern Delta Coast	lower	0,0082	0,0015	0,727	0,218	2,509		
		upper	0,1657	0,0193	0,929	1,340	2,903		
		comment							
82	North Sea (NL)	lower	0,1412	0,0491	5,108	6,172	23,122		
		upper	0,3497	0,0782	5,313	8,215	23,542		
		comment							

			10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
259	Katwijk	lower	0,1410	0,478	0,1105	0,902	0,111	1,506
		upper	0,1410	0,478	0,1105	0,902	0,128	1,724
		comment						
258	Scheveningen	lower						
		upper						
		comment						
257	Vlotwatering	lower						
		upper						
		comment						
224	Closed Holland Coast	lower	0,1410	0,478	0,1105	0,902	0,111	1,506
		upper	0,1410	0,478	0,1105	0,902	0,128	1,724
		comment						
226	Ems Dollard Estuary	lower						
		upper						
		comment						
225	Wadden Coast	lower						
		upper						
		comment						
290	Polder Effluents Westerschelde	lower	0,4790	2,476	0,2380	3,956	0,341	13,021
		upper	0,4790	2,476	0,2380	3,956	0,341	13,021
		comment						
289	Kanaal Gent - Terneuzen	lower	0,7778	3,947	0,3435	5,541	0,529	3,450
		upper	0,7778	3,947	0,3435	5,541	0,529	3,450
		comment						
288	Spuikanaal Bath	lower	0,0482	0,886	0,0218	1,293	0,072	2,307
		upper	0,0482	0,886	0,0218	1,293	0,072	2,307
		comment						
222	Western Schelde	lower	1,3049	7,309	0,6033	10,790	0,942	18,778
		upper	1,3049	7,309	0,6033	10,790	0,942	18,778
		comment						
153	Northern Delta Coast	lower						
		upper						
		comment						
260	Oosterschelde	lower	0,0273	0,688	0,0161	0,991	0,054	2,143
		upper	0,0273	0,688	0,0161	0,991	0,054	2,143
		comment						
283	Polder Effluents Oosterschelde	lower	0,1610	0,692	0,0566	1,059	0,094	4,411
		upper	0,1610	0,692	0,0566	1,059	0,094	4,411
		comment						
223	Southern Delta Coast	lower	0,1883	1,380	0,0727	2,051	0,149	6,554
		upper	0,1883	1,380	0,0727	2,051	0,149	6,554
		comment						
82	North Sea (NL)	lower	1,6342	9,167	0,7864	13,743	1,201	26,838
		upper	1,6342	9,167	0,7864	13,743	1,219	27,056
		comment						

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2004 by the Netherlands

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ug/kg]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
282	Noordzeekanaal	lower													
		upper													
		minimum	0,05	0,001	1,0	0,10	0,50	1	40,6	0,14	1,23	0,110	1,64	0,18	2,9
		maximum	0,80	0,021	7,2	1,80	24,00	2	101,0	0,70	4,05	0,230	5,74	0,39	7,8
		more than 70% > D.L.													
		n	13	13	13	13	13	13	13	13	13	13	13	13	13
		info													
		st.Dev.	0,21	0,006	1,7	0,47	7,31	0	18,6	0,16	0,92	0,040	1,30	0,05	1,7
157	IJsselmeer	lower													
		upper													
		minimum	0,05	0,001	1,3	0,10	0,50	1	11,5	0,01	0,05	0,001	1,36	0,06	7,9
		maximum	0,10	0,035	4,9	4,70	30,00	2	26,3	0,09	3,73	0,042	5,66	0,71	83,4
		more than 70% > D.L.													
		n	13	13	13	13	13	13	13	13	13	13	13	13	13
		info													
		st.Dev.	0,02	0,012	1,2	1,45	8,34	0	4,2	0,03	1,26	0,013	1,47	0,16	20,4
154	Haringvlietsluizen	lower													
		upper													
		minimum	0,05	0,001	1,8	0,10	0,50	1	65,3	0,01	1,16	0,004	1,93	0,06	2,8
		maximum	0,07	0,024	3,3	2,50	14,00	5	126,0	0,16	4,24	0,120	5,04	0,73	11,8
		more than 70% > D.L.													
		n	13	13	13	13	13	13	13	13	13	13	13	13	13
		info													
		st.Dev.	0,01	0,007	0,4	0,71	4,35	1	17,5	0,05	1,06	0,034	1,13	0,19	2,9
155	Maasluis	lower													
		upper													
		minimum	0,05	0,009	0,6	0,40	0,50	0	8,2	0,03	1,43	0,019	1,75	0,07	9,2
		maximum	0,50	0,071	8,4	21,00	45,00	3	102,1	0,41	4,38	0,150	5,93	0,75	104,2
		more than 70% > D.L.													
		n	26	26	26	26	26	13	26	26	26	26	26	26	26
		info													
		st.Dev.	0,09	0,016	1,5	4,08	10,64	1	21,5	0,08	0,94	0,030	1,17	0,13	24,9

2) PCBs are measured in the sediment-phase, therefore data are in ug/kg.

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2004 by the Netherlands

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
259	Katwijk	Sewage													
		Industrial													
		Riverine	0,1	0,02	1	2	5	1		0,2	0,05	0,01	0,1	0,02	5
282	Noordzeekanaal	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	0,05	10	3)	0,01	0,01	0,005	0,1	0,01	5
258	Scheveningen	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,2	0,001	0,1	0,1	1	10	3)	0,01	0,01	0,005	0,1	0,01	5
257	Vlotwatering	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,2	0,001	0,1	0,1	1	10	3)	0,01	0,01	0,005	0,1	0,01	5
224	Closed Holland Coast	Sewage													
		Industrial													
		Riverine													
280	Damsterdiep	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
266	Duurswold	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
267	Eemskanaal	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
268	Nieuwe Statenzijl	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
281	Termunsterzijl	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
226	Ems Dollard Estuary	Sewage													
		Industrial													
		Riverine													
261	De Helsdeur	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
265	Harlingen/Van Harinxmakanaal	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
284	Ijsselmeer	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,05	0,001	0,1	0,1	0,05	10	3)	0,01	0,01	0,005	0,1	0,01	5
263	Krassekreet/Texel	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
264	Lauwersmeer	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
287	Roptazijl	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
262	Spuisluis Oostoever	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
285	Wieringermeer	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
286	Zwarte Haan	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
225	Wadden Coast	Sewage													
		Industrial													
		Riverine													
290	Polder Effluents Westerschelde	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
289	Kanaal Gent - Terneuzen	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
288	Spuikanaal Bath	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
222	Western Schelde	Sewage													
		Industrial													
		Riverine													
154	Haringvlietsluizen	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,05	0,001	0,1	0,1	0,1	10	3)	0,01	0,01	0,005	0,1	0,01	5
155	Maasluis	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	0,05	10	3)	0,01	0,01	0,005	0,1	0,01	5
153	Northern Delta Coast	Sewage													
		Industrial													
		Riverine													
260	Oosterschelde	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
283	Polder Effluents Oosterschelde	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
223	Southern Delta Coast	Sewage	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Industrial	1	0,1	1	30	1	50	3)	0,1	0,01	0,01	0,1	0,2	10
		Riverine	0,01	0,001	0,1	0,1	1	50	3)	0,01	0,01	0,005	0,1	0,01	5
82	North Sea (NL)	Sewage													
		Industrial													
		Riverine													

3) PCBs are measured in the sediment-phase. Detection limits are: PCB138 = 2 ug/kg, PCB153 = 3 ug/kg, other PCBs = 1 ug/kg

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2004 by the Netherlands

			Flow Rate [1000m³/d]	LTA [1000m³/d]	Minimum FR [1000m³/d]	Maximum FR [1000m³/d]	LTA info (years)	Number of sites	Mean or Median
259		Katwijk	547		0	4666			
282		Noordzeekanaal	8327	8200					
258		Scheveningen							
257		Vlotwatering							
224	Closed Holland Coast		*8874*						
280		Damsterdiep							
266		Duurswold							
267		Eemskanaal							
268		Nieuwe Statenzijl							
281		Termunsterzijl							
226	Ems Dollard Estuary		*0*						
261		De Helsdeur							
265		Harlingen/Van Harinxmakanaal							
157		IJsselmeer	43534	43200					
263		Krassekreet/Texel							
264		Lauwersmeer							
287		Roptazijl							
262		Spuisluis Oostoever							
285		Wieringermeer							
286		Zwarte Haan							
225	Wadden Coast		*43534*						
290		Polder Effluents Westerschelde	1337						
289		Kanaal Gent - Terneuzen	1607						
288		Spuikanaal Bath	914						
222	Western Schelde		*3858*						
154		Haringvlietsluizen	29434	67800					
155		Maasluis	116909	115300					
153	Northern Delta Coast		*146342*	*183100*					
260		Oosterschelde	760						
283		Polder Effluents Oosterschelde	250						
223	Southern Delta Coast		*1010*						
82	North Sea (NL)		203618						

Annex 7

NORWAY

Annual report on riverine inputs and direct discharges by Norway to Convention Waters during the year 2004

Name, address and contact numbers of reporting authority to which any further enquiry should be addressed:

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A. General information

Table 1 and Figure 1 give general overview of the river systems and location of sampling sites and drainage basins in the Norwegian RID-program.

Table 1. General overview of river systems (for riverine inputs) and direct discharge areas (for direct discharges) included in the data report.

Country: Norway				
Name of river and discharge area[1]	Catchment area (km^2)	LTA, 1000 m^3/day	Nature of the receiving waters	Map reference number
Skagerrak:				
(1) Glomma	41918	61350	Coastal waters	M711: 1913-1
(2) Drammenselva	17034	28850	"	1914-4
(3) Numedalslågen	5577	10200	"	1813-3
(4) Skienselva	10772	23535	"	1713-3
(5) Otra	3738	12870	"	1511-3
North Sea:				
(6) Orreelva	105	335	Coastal waters	M711: 1212-3
(7) Suldalslågen	1457	7420	"	1313-4
The Norwegian Sea:				
(8) Orkla	3053	5710	Coastal waters	M711: 1521-2
(9) Vefsna	4122	15655	"	1926-3
The Barents Sea:				
(10) Alta	7373	7495	Coastal waters	M711: 1834-1

[1] i.e. name of length of coastline

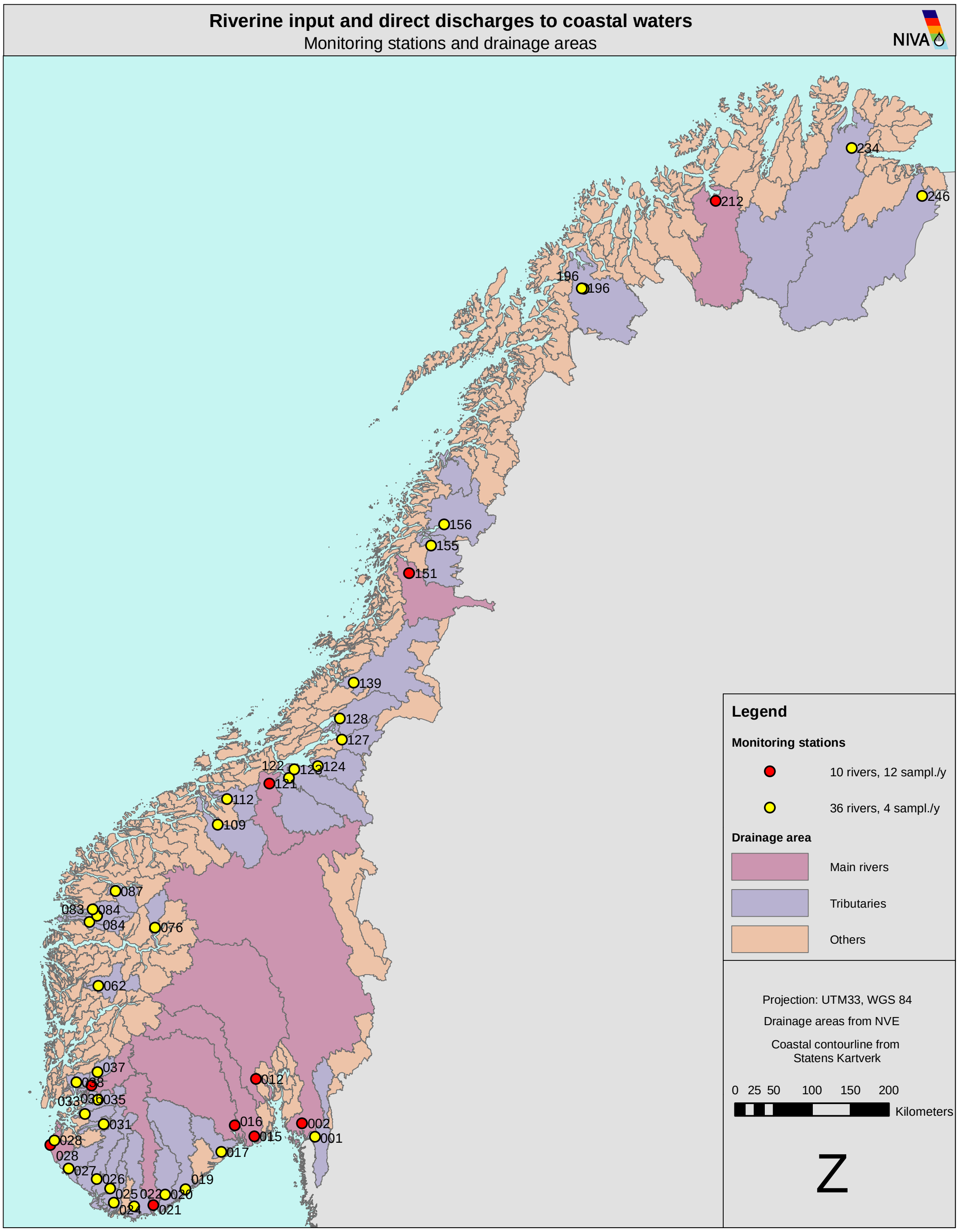


Figure 1. Map of the sampling sites and drainage basins included in the Norwegian RID-programme

B. Total riverine inputs and direct discharges (Tables 4a and 4b) for the year 2004

Note: Table 4b shows total direct discharges and riverine inputs to the Maritime Area by region, totals for each OSPAR region and for total inputs.

B.1 General comments on the total riverine inputs and direct discharges (e.g. changes from 2003, trends, percentage of particle bound determinand, results that need to be highlighted):

The Norwegian results for 2004 are given based on measurements for 10 main rivers, 36 tributaries (smaller) rivers and calculated for 109 other small rivers. The Norwegian coastline is divided into four areas, Skagerrak, North Sea, Norwegian Sea and Barents Sea. The numbers of main rivers are the same as earlier years. The numbers of monitored tributaries have been reduced from 126 to 36 rivers. The 36 tributaries have been monitored four times during the year 2004, instead of once a year previously. The 36 tributaries in this report are those tributaries with the largest catchments and most important inputs of the previous 126. All of these 36 rivers have separate outlet from the ten larger rivers. The active monitoring programme covers drainage from approximately 72 % of the main land areas.

For discharges entering directly into marine recipients, i.e. sewage and industrial effluents, as well as discharges from aquaculture plants, estimates are based on data from effluent control programmes.

Total phosphorus, total nitrogen, phosphates, nitrates and ammonia from coastal zones downstream RID monitoring points are estimated by use of area specific runoff coefficients.

As from 2004, Norwegian Authorities have again contracted the Norwegian Institute for Water Research (NIVA) to perform the Norwegian RID programme. This is a change from the previous last five years. This means that there is also a change in laboratory from 2003 to 2004.

The Skagerrak region is the part of the Norwegian coastline with highest population, most intensive agriculture and largest rivers. The coastline is classified as OSPAR problem area with regard to eutrophication. There is no aquaculture on the Skagerrak coast.

According to the results of the 2004 monitoring, total annual nutrient loads to coastal waters from land-based sources and fish farming in Norway are estimated to 8600 tonnes of phosphorus and 128 000 tonnes of nitrogen. Compared to 2003 this is about the same amount of phosphorous, but gives an increase of about 10% for nitrogen. The discharges from fish farming contribute about 63% of the total phosphorous loading and 20% of the total nitrogen inputs. Riverine inputs of metals range from 0.5 tonnes for mercury to 599 tonnes for zinc. Total input of lindane is estimated to about 10 kg.

Inputs of cadmium were estimated at about 3 tonnes, mercury about 0.6 tonnes, arsenic 32-37 tonne and lead about 52 tonnes. Copper and zinc comprised the largest inputs of heavy metals, which in 2004 amounted to 284 tonnes and 622 tonnes respectively. In general, riverine inputs of most heavy metals were higher in 2004 than in 2003. For example, both arsenic and zinc show a significant increase from 2003 to 2004. The increased metal concentrations in 2004 is mainly due to changes of sampling frequency in the 36 tributary rivers from once to four times a year, in addition to slightly higher metal concentrations in the ten main rivers in 2004 compared to 2003. For mercury there is a significant reduction in inputs, most likely due to change in laboratory and analytical method. The method used in 2004 is the same as in the years 1990-1998.

C. Direct discharges for the year: 2004

Sewage Effluents (Table 5a)

C.1 Description of the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (see section 7 of the RID Principles), including for those under voluntary reporting:

Statistics Norway (SSB) and the Norwegian Pollution Control Authority (SFT) have jointly initiated annual registration of data of nutrients from all wastewater treatment plants in the country with a capacity of more than 50 person equivalents (p.e.). The data are updated each year by the County

Environmental Agencies. The computer programme KOSTRA has been used for the reporting of effluent data from the municipalities directly to SSB. Discharge figures from KOSTRA are used in the transport model "TEOTIL" to calculate the total discharges of total phosphorus, ammonia, nitrates, orthophosphates and total nitrogen from population (wastewater treatment plants and scattered dwellings not connected to wastewater treatment plants), industry, agriculture and aquaculture sources to Norwegian coastal waters. The Norwegian Institute for Water Research (NIVA) performs this modelling. The figures take account of retention in lakes.

Based on 2002 data the major part (53%) of the treatment plants have only primary treatment, 12% chemical treatment, 6% biological treatment, 14% chemical and biological treatment and 15% unconventional, unknown or other treatment. The major part of treatment plants with only primary treatment are serving smaller settlements, while the majority of advanced treatment plants (plants with chemical and/or biological treatment) are found near the larger cities, and therefore treat the main part of the produced wastewater. Of the total hydraulic capacity of 5.74 million p.e., chemical plants account for 37%, primary treatment for 24%, chemical/biological for 27%, direct discharges for 8%, biological for 2% and others for 2%. In the North Sea area of Norway, most of the wastewater is treated in chemical or combined biological-chemical treatment plants, whereas the most common treatment methods along the coast from Hordaland county and northwards are primary treatment or no treatment.

C.2 Description of the determinands, other than those specified in paragraph 2.1 of the RID Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

No additional determinands.

C.3 General comments on the discharges of sewage effluents (e.g. compared to previous years, and/or extent to which industrial effluents are discharged through sewerage systems):

There is a slight decrease of sewage effluents the last couple of years, also from 2003 to 2004. Measures have been taken to reduce discharges of nitrogen and phosphorous from sewage effluents, in particular on the Skagerrak coast. Most Norwegian cities are close to the coastline and all major cities have direct discharges to the sea.

A large proportion of minor industries discharge their waste water through sewerage systems. Large industries plants usually have their own treatment plant and own outlet to the sea (direct discharge).

The information about discharge of metals through sewerage systems is limited. The calculations are based on few monitoring samples.

Industrial Effluents (Table 5b)

C.4 Description of the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (ref.: Section 7 of the RID Principles), including for those under voluntary reporting:

Sampling frequency for industrial wastewater varies from weekly composite samples to random grab samples. Sampling is though undertaken at least twice a year. Industrial wastewater discharged upstream the RID monitoring points are included in the riverine inputs. Industrial effluents downstream RID monitoring points are categorised as direct discharges. NIVA has applied the TEOTIL model for the estimation of total nitrogen and total phosphorous load based on reporting on discharges from relevant industrial plants. The data on discharges from individual industrial plants were provided from SFT's data base INKOSYS (SFT 2004), based on procedures for yearly reporting form industry.

The reporting of nutrients from industry has increased the last three-four years. The increase in discharges of nutrients from industry in this period does therefore not necessarily reflect increased discharges, but more likely improved reporting.

C.5 Other relevant information (e.g. proportion of substance discharged as insoluble material):

No available information

C.6 Other discharges directly to Convention Waters - through e.g. urban run-off and storm water overflows - that are not covered by the data in Tables 5a and 5b:

Nutrient discharges (Tot-N, NH_4, Tot-P and PO_4) from fish farming effluents in 2004 are based on reporting from each fish farmer to the Norwegian Fisheries Directorate. Equations and factors described in OSPAR's HARP Guidelines (Harmonised Quantifications and Reporting Procedures for Nutrients) (SFT, 2000b) are used. From this year (2004) discharges from fish farming are included in the tables from each region and not as a separate table.

From 2000 on, the discharges of nutrients from fish farming have been included in the grand total values. These inputs were not included in the previous input calculations from 1990-1999, but they need to be taken into account when the results from different years are to be compared.

C.7 Determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

No other determinands included.

C.8 General comments on industrial effluents (e.g. compared to previous years):

Industrial effluents represent a minor proportion of the total discharges from Norwegian land-based sources, both for nutrients and metals. A number of minor industrial plants have discharges to municipal sewage treatment systems and discharges from such industry are included in the figures from sewage effluents.

For nutrients, industrial effluents represent approximately 2% of the total nutrient discharges into water bodies in Norway. For heavy metals the industrial discharges represent between 2-5 % of the total discharges.

The reporting of nutrients from industry has increased the last few years. For 2004 the reported discharges of nutrients from industry were higher than in previous years. This does not necessarily reflect a real increase in discharges of nutrients from industry, but more likely improved reporting.

Total direct discharges (Table 5c)

C.9 General comments on total direct discharges (e.g. compared to previous years):

Total direct discharges of nutrient inputs into Norwegian coastal waters are heavily influenced by the production of farmed fish.

Both for nitrogen and phosphorous fish farming contributes to the largest proportion of direct discharges. This is particularly the case for tot-P, where the contribution from fish farming is considerable. Nearly all fish farms in Norway are located on the west and northern coast. There are no fish farms on the Skagerrak coast.

Direct discharges of nutrients from sewerage systems decrease slightly each year.

Direct nutrient discharges from industry are in general low.

D. Riverine inputs for the year: 2004

Main Rivers (Tables 6a and 7a)

D.1 Description of the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7a) upon which the measurement is based (ref.: Section 6 of the RID Principles), including for those under voluntary reporting:

Site selection

The sampling sites are located in regions of unidirectional freshwater flow. The sites chosen, have been areas where the water is well mixed (such as, at or immediately downstream from a weir, in waterfalls, rapids or in channels in connection with hydroelectric power stations) and where uniform water quality is expected. When possible, samples are taken from the middle of bridges across the rivers. The water is well mixed both horizontally and vertically. Only one sampling site and one sampling depth have been used in each of the rivers.

The sampling sites were located as close to the freshwater limit as possible, but are not influenced by seawater. During 2004 a few samples were influenced by fresh water and they were discarded when estimating the inputs.

Several of the most significant discharges from industrial plants and municipal wastewater treatment plants are located downstream from the RID sampling sites.

Strategy and frequency

Most monitoring effort has been directed towards the rivers with the highest input loads (Glomma and Drammen rivers), and the other rivers draining into the Skagerrak. In 2004 weekly samples of mercury were collected from the river Glomma in the period July-December.

In the main rivers, with some exceptions, 12 random water samples or more have been taken at regular monthly intervals during the sampling period from January to December 2004. Two of the main rivers (Glomma and Drammenselva) were sampled weekly or every fortnightly in the period with the highest anticipated flow (May – June/July) (See table 2).

Daily measurements of water flow were used in each of the 10 main rivers.

Table 2. Sampling frequency in the 10 Norwegian main rivers in 2004.

X: number of samples

River/Location	***J***	***F***	***M***	***A***	***M***	***J***	***J***	***A***	***S***	***O***	***N***	***D***
Glomma at Sarpsfoss	*xx*	*x*	*x*	*x*	*xxxx*	*xxxx*	*x*	*x*	*x*	*x*	*x*	[1)]
Drammen river upstream the town bridge	*x*	*x*	*x*	*x*	*xxxx*	*xxxx*	*x*	*x*	*x*	*x*	*x*	[1)]
Numedalslågen at Bommestad	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Skien river at Klosterfoss	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Otra at Skråstad	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Orre near the outlet	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Orkla at Vormstad	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Vefsna at Kvalfors [3)]		*x*	*x*	*x*			*x*		*x*			
Suldalslågen near the outlet	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Alta river just upstream Alta	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*

Chemical parameters – detection limits and analytical methods

In 2004, the following parameters were monitored:

Six fractions of nutrients (total phosphorus, orthophosphates, total nitrogen, ammonia, nitrate + nitrite and silicate)

Six heavy metals (copper, zinc, cadmium, lead, mercury and arsenic)

One pesticide (lindane) and two general parameters (suspended particulate matter (S.P.M.) and organic carbon (TOC)).

Information on methodology and obtainable limits of detection for all parameters included in the sampling programme are shown in the table below.

Table 3. *Obtainable limits of detection for all parameters included in the sampling programme*

Parameter	*Detection limit*	*Analytical Methods (NS: Norwegian Standard)*
Conductivity (mS/m)	-	*NS-ISO 7888*
Suspended particulate matter (S.P.M.) (mg/L)	*0.6*	*NS 4733 modified*
Total Organic Carbon (TOC) (mg C/L)	*0.1-0.4*	*EPA number 415.1 and 9060A STD.*
Total phosphorus (µg P/L)	*1.0*	*NS 4725 – Peroxidisulphate oxidation method*
Orthophosphate (PO4-P) (µg P/L)	*1.0*	*NS 4724 – Automated molybdate method*
Total nitrogen (µg N/L)	*10*	*NS 4743 – Peroxidisulphate oxidation method*
Nitrate (µgN/L)	*4*	*NS-EN ISO 10304-1*
Ammonia (NH4) (µg N/L)	*2*	*NS-EN ISO 14911*
Silicate (SiO2) (mg/L)	*0.09*	*ISI/DIS 11885 + NIVA's accredited method E9-5*
Lead (Pb) (µg Pb/L)	*0.02*	*NIVA's accredited method E8-3*
Cadmium (Cd) (µg Cd/L)	*0.01*	*NIVA's accredited method E8-3*
Copper (Cu) (µg Cu/L)	*0.05-0.1*	*NIVA's accredited method E8-3*
Zinc (Zn) (µg Zn/L)	*0.1-0.5*	*NIVA's accredited method E8-3*
Arsenic (As) (µg As/L)	*0.05*	*NIVA's accredited method E8-3*
Mercury (Hg) (ng Hg/L)	*2*	*NS-EN 1483 and NIVA's accredited method E4-3*
Lindane (ng/L)	*0.1*	*NIVA's accredited method H-3 (PCB)*

For the period 1931-60 the annual specific runoff from the total area of Norway is estimated at 42.9 l/s km². Expressed in volumetric units this amounts to 438 km³ water which, distributed over the whole country, and equals a mean run-off of 1350 mm. For the period 1961-1990 it is 1140 mm. Mean annual runoff in Norway and from the sub-regions to the main surrounding seas for the period 1931-60 is shown in Table 5. The mean figures for run-off in Norway in 2002 and 2003 were 1013 mm and 1044 mm respectively. For the main rivers mean annual runoff for the last LTA-period (1961-90) has been estimated. As for precipitation, normals for Norway based on the LTA-period 1961-90 were published in 1993 (DNMI, 1993).

D.2 Any other relevant information (e.g. proportion of substance transported by the river in particulate form):

In 2003 there was a study on particle bound metals in the two main rivers (Glomma and Drammen river). The results show that there are great variances in particle bound metals between rivers and also between metals in the same river.

There is an ongoing study on particles in the river Numedalslågen. Preliminary results with basis in daily depth-integrated samples indicate that particle transport estimates with monthly grab-samples might be seriously underestimated especially in situations when water quality sampling misses water flow peaks.

Another results from the same river, showed that alternative methods for load estimations (ratio-methods and linear interpolation method) may differ significantly compared to the RID-method in single years.

D.3 Description of the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

No additional determinands.

D.4 General comments on the inputs from main rivers (e.g. significant changes in inputs, concentrations and flows compared to previous years):

Compared to 2003, the inputs from main rivers in 2004 of metals are in the same order of magnitude, with indications of slight increases. There is a significant decrease in mercury inputs, but this is most likely due to a change in analytical method. Compared to 2003: for nutrients there is a slight increase of nitrogen and a slight decrease for phosphorous.

Tributary Rivers (Tables 6b and 7b)

D.5 Description of the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7b) upon which the measurement is based (ref.: Section 6 of the Principles).

In 2004, 36 minor rivers were sampled four times each. This is a change from the previous sampling strategy when 126-145 minor rivers were sampled once a year. The sampling has been planned to cover periods of high flows. More precisely, the year was divided into 4 seasons based on the typical meteorological condition and historical water flow records. From each of this strata one grab sample was collected.

In addition to the measurements in 36 tributary rivers, the inputs from 109 other tributary rivers were estimated based on previous years' concentrations and modelled 2004 water flow.

All of the minor rivers have separate outlet to the sea (not part of a main river).

Modelled daily water flow was used in the estimation of the loads in the tributary rivers.

D.6 Any other relevant information (e.g. proportion of substance transported by the river in particulate form):

No detailed information. See D 2.

D.7 Description of the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

No additional determinands.

D.8 Any available information on other inputs - through e.g. polder effluents or from coastal areas - that are not covered by data in Tables 6b and 7b:

No additional data.

D.9 General comments on the inputs from tributary rivers (e.g. significant change in inputs, concentrations and flows compared to previous years):

In general there is an increase in inputs from tributary rivers. The reason is that we now take four samples a year in these rivers, compared to once a year previously. Four samples a year gives a better estimate. Because of change in analytical method for mercury, inputs of mercury from tributaries have also decreased.

Total riverine inputs (Table 6c)

D.10 General comments on the total riverine inputs (e.g. significant change in inputs, concentrations and flows compared to previous years):

See D 4.

E. Unmonitored areas

E.1 Description of the methods of quantification used for the different determinands or groups of determinands:

Norway has calculated the inputs of nutrients from unmonitored areas (downstream RID monitoring points and between catchments), based on the TEOTIL export-coefficient model.

No estimation of metal loads is performed.

F. Limits of detection (Table 8)

F.1 Information concerning limits of detection is at Table 8, which includes different columns for rivers/tributaries, sewage effluents and industrial effluents.

G. Additional comments

G.1 Indicate and explain, if appropriate:

- where and why the applied procedures do not comply with agreed procedures
- significant changes in monitoring sites, important for comparison of the data before and after the date of the change;
- incomplete or distorted data

The number of monitored tributaries has been reduced from 126 to 36 rivers. The 36 tributaries have been monitored four times during the year 2004, instead of once a year previously.

In 2004, modelled water discharge data for the tributary rivers has been used compared to precipitation-corrected LTA-values.

No estimation of metal loads from unmonitored areas.

TOTAL INPUTS																			
Discharge region	Estimate	Flow rate (m^3/s)	Cd [tonnes]	Hg [tonnes]	Cu [tonnes]	Zn [tonnes]	Pb [tonnes]	As [tonnes]	Cr [tonnes]	Ni [tonnes]	NH_4-N [tonnes]	NO_3-N [tonnes]	PO_4-P [tonnes]	TOT-N [tonnes]	TOT-P [tonnes]	Si-O_2 [tonnes]	SPM [tonnes]	TOC [tonnes]	g-HCH [kg]
INPUTS TO OSPAR REGION: TOTAL NORWAY																			
RIVERINE INPUTS																			
Main Rivers	lower avg.		0,81	0,06	98,7	226	14,680	9,8			971	13 686	205	23 338	489	147 061	239 460	182 170	7,5
	upper avg.	1 764	0,84	0,09	98,7	227	14,690	9,9			999	13 686	216	23 338	489	147 061	239 630	182 170	12,7
Tributary Rivers (36)	lower avg.		1,57	0,07	117,5	274	21,170	13,6			845	13 402	310	26 083	663	220 634	351 530	270 200	
	upper avg.	3 099	1,74	0,12	130,9	275	21,180	18,2			954	13 407	350	26 083	664	220 634	351 560	270 200	
Tributary Rivers (109)	lower avg.		0,82	0,29	56,9	197	14,490	8,2			798	9 151	145	16 196	519	98 782	125 850	124 670	
	upper avg.	2 157	0,82	0,29	58,5	197	14,490	8,2			798	9 151	145	16 196	519	98 782	125 850	124 670	
Total Riverine Inputs	**lower avg.**		**3,20**	**0,42**	**273,1**	**698**	**50,340**	**31,6**			**2 614**	**36 240**	**659**	**65 616**	**1 671**	**466 477**	**716 840**	**577 040**	**7,5**
	upper avg.	**7 020**	**3,40**	**0,50**	**288,1**	**699**	**50,360**	**36,3**			**2 751**	**36 244**	**711**	**65 616**	**1 673**	**466 477**	**717 040**	**577 040**	**12,7**
DIRECT DISCHARGES																			
Sewage Effluents	lower avg.		0,03	0,13	1,5	7	0,179		0,6	1,7	6 704	447	424	8 939	705				
	upper avg.		0,03	0,13	1,5	7	0,179		0,6	1,7	6 704	447	423	8 939	705				
Industrial Effluents	lower avg.		0,06	0,02	16,1	17	2,063	0,8	0,3	7,2	143	1	114	2 056	190	1	365 458		
	upper avg.		0,06	0,02	16,1	17	2,063	0,8	0,3	7,2	143	1	114	2 056	190	1	365 458		
Fish Farming	lower avg.										20 386	3 058	3 729	25 482	5 404				
	upper avg.										20 386	3 058	3 729	25 482	5 404				
Total Direct Inputs	**lower avg.**		**0,10**	**0,14**	**17,5**	**24**	**2,242**	**0,8**	**0,8**	**8,9**	**27 232**	**3 506**	**4 267**	**36 477**	**6 300**	**1**	**365 458**		
	upper avg.		**0,10**	**0,14**	**17,5**	**24**	**2,242**	**0,8**	**0,8**	**8,9**	**27 232**	**3 506**	**4 266**	**36 477**	**6 300**	**1**	**365 458**		
UNMONITORED AREAS																			
Unmonitored Areas	lower avg.										51	410	174	26 142	631				
	upper avg.	2 758									51	410	174	26 142	631				
REGION TOTAL	**lower avg.**		**3,29**	**0,56**	**290,6**	**722**	**52,582**	**32,4**	**0,8**	**8,9**	**29 898**	**40 156**	**5 099**	**128 235**	**8 601**	**466 478**	**1 082 298**		**7,5**
	upper avg.	**9 778**	**3,49**	**0,65**	**305,7**	**723**	**52,602**	**37,1**	**0,8**	**8,9**	**30 035**	**40 160**	**5 151**	**128 235**	**8 603**	**466 478**	**1 082 498**		**12,7**

TOTAL INPUTS																			
Discharge region	**Estimate**	**Flow rate (m^3/s)**	**Cd [tonnes]**	**Hg [tonnes]**	**Cu [tonnes]**	**Zn [tonnes]**	**Pb [tonnes]**	**As [tonnes]**	**Cr [tonnes]**	**Ni [tonnes]**	**NH_4-N [tonnes]**	**NO_3-N [tonnes]**	**PO_4-P [tonnes]**	**TOT-N [tonnes]**	**TOT-P [tonnes]**	**Si-O_2 [tonnes]**	**SPM [tonnes]**	**TOC [tonnes]**	**g-HCH [kg]**
INPUTS TO OSPAR REGION: Skagerrak																			
RIVERINE INPUTS																			
	lower avg.		0,62	0,05	63,1	156	13,610	9			892	12 529	185	20 842	430	124 762	208 100	154 840	7,5
Main Rivers	upper avg.	1 417	0,62	0,08	63,1	156	13,610	9			897	12 529	193	20 842	431	124 762	208 200	154 840	10,5
	lower avg.		0,48	0,01	9,8	72	4,710	3			177	3 369	12	5 958	72	29 425	19 990	58 280	
Tributary Rivers (36)	upper avg.	389	0,48	0,02	9,8	72	4,710	3			183	3 369	16	5 958	72	29 425	19 990	58 280	
	lower avg.		0,15	0,02	7,7	23	1,591	2			216	2 648	33	4 132	109	10 957	26 930	21 070	
Tributary Rivers (109)	upper avg.	136	0,15	0,02	7,7	23	1,591	2			216	2 648	33	4 132	109	10 957	26 930	21 070	
	lower avg.		**1,25**	**0,08**	**80,6**	**250**	**19,911**	**14**			**1 286**	**18 546**	**230**	**30 932**	**612**	**165 144**	**255 020**	**234 190**	**7,5**
Total Riverine Inputs	**upper avg.**	**1 943**	**1,25**	**0,11**	**80,6**	**250**	**19,911**	**14**			**1 296**	**18 546**	**241**	**30 932**	**612**	**165 144**	**255 120**	**234 190**	**10,5**
DIRECT DISCHARGES																			
	lower avg.		0,03	0,13	1,5	7	0,179		0,6	1,7	2 387	159,1	54	3 182	89				
Sewage Effluents	upper avg.		0,03	0,13	1,5	7	0,179		0,6	1,7	2 387	159,1	54	3 182	89				
	lower avg.		0,04	0,01	14,1	2	0,644	0,7	0,1	2,4	71	0,5	57	1 346	95	1	1 661		
Industrial Effluents	upper avg.		0,04	0,01	14,1	2	0,644	0,7	0,1	2,4	71	0,5	57	1 346	95	1	1 661		
	lower avg.										21	3,1	4	26	5				
Fish Farming	upper avg.										21	3,1	4	26	5				
	lower avg.		**0,07**	**0,14**	**15,6**	**9**	**0,823**	**0,7**	**0,6**	**4,0**	**2 479**	**162,7**	**114**	**4 554**	**190**	**1**	**1 661**		
Total Direct Inputs	**upper avg.**		**0,07**	**0,14**	**15,6**	**9**	**0,823**	**0,7**	**0,6**	**4,0**	**2 479**	**162,7**	**114**	**4 554**	**190**	**1**	**1 661**		
UNMONITORED AREAS																			
	lower avg.										5	43	18	3 057	64				
Unmonitored Areas	upper avg.	91									5	43	18	3 057	64				
	lower avg.		**1,32**	**0,22**	**96,2**	**259**	**20,734**	**14,3**	**0,6**	**4,0**	**3 769**	**18 752**	**363**	**38 543**	**866**	**165 145**	**256 681**		**7,5**
REGION TOTAL	**upper avg.**	**2 033**	**1,32**	**0,25**	**96,2**	**259**	**20,734**	**14,4**	**0,6**	**4,0**	**3 780**	**18 752**	**374**	**38 543**	**866**	**165 145**	**256 781**		**10,5**

TOTAL INPUTS

Discharge region	Estimate	Flow rate (m^3/s)	Cd [tonnes]	Hg [tonnes]	Cu [tonnes]	Zn [tonnes]	Pb [tonnes]	As [tonnes]	Cr [tonnes]	Ni [tonnes]	NH_4-N [tonnes]	NO_3-N [tonnes]	PO_4-P [tonnes]	TOT-N [tonnes]	TOT-P [tonnes]	Si-O_2 [tonnes]	SPM [tonnes]	TOC [tonnes]	g-HCH [kg]
INPUTS TO OSPAR REGION: North Sea																			
RIVERINE INPUTS																			
Main Rivers	lower avg.		0,02	0,00	0,8	3	0,21	0,2			24	482	7	724	20	1 798	4 970	2 640	0,0
	upper avg.	53	0,02	0,00	0,8	3	0,21	0,2			28	482	7	724	20	1 798	4 970	2 640	0,4
Tributary Rivers (36)	lower avg.		0,32	0,02	13,3	69	7,36	2,4			263	5 449	118	8 588	213	41 837	109 530	57 640	
	upper avg.	928	0,36	0,04	13,3	69	7,36	2,9			284	5 449	133	8 588	214	41 837	109 560	57 640	
Tributary Rivers (109)	lower avg.		0,35	0,09	12,0	48	4,55	2,7			264	4 310	48	6 824	191	31 565	31 210	33 750	
	upper avg.	925	0,35	0,09	12,0	48	4,55	2,7			264	4 310	48	6 824	191	31 565	31 210	33 750	
Total Riverine Inputs	**lower avg.**		**0,69**	**0,12**	**26,1**	**120**	**12,12**	**5,3**			**550**	**10 241**	**174**	**16 137**	**424**	**75 200**	**145 710**	**94 030**	**0,0**
	upper avg.	**1 906**	**0,73**	**0,13**	**26,1**	**120**	**12,12**	**5,8**			**576**	**10 241**	**189**	**16 137**	**425**	**75 200**	**145 740**	**94 030**	**0,4**
DIRECT DISCHARGES																			
Sewage Effluents	lower avg.										2 025	135	154	2 700	255				
	upper avg.										2 025	135	153	2 700	255				
Industrial Effluents	lower avg.			0,01	1,0		0,024	0,1	0,2	4,3	51	0	41	409	68		10 464		
	upper avg.			0,01	1,0		0,024	0,1	0,2	4,3	51	0	41	409	68		10 464		
Fish Farming	lower avg.										7 354	1 103	1 342	9 193	1 944				
	upper avg.										7 354	1 103	1 342	9 193	1 944				
Total Direct Inputs	**lower avg.**		**0,00**	**0,01**	**1,0**		**0,024**	**0,1**	**0,2**	**4,3**	**9 430**	**1 238**	**1 536**	**12 302**	**2 267**		**10 464**		
	upper avg.		**0,00**	**0,01**	**1,0**		**0,024**	**0,1**	**0,2**	**4,3**	**9 430**	**1 238**	**1 535**	**12 302**	**2 267**		**10 464**		
UNMONITORED AREAS																			
Unmonitored Areas	lower avg.										18	136	59	9 241	207				
	upper avg.	857									18	136	59	9 241	207				
REGION TOTAL	**lower avg.**		**0,69**	**0,12**	**27,1**	**120**	**12,146**	**5,4**	**0,2**	**4,3**	**9 998**	**11 616**	**1 769**	**37 679**	**2 898**	**75 200**	**156 174**		**0,0**
	upper avg.	**2 764**	**0,73**	**0,14**	**27,1**	**120**	**12,146**	**5,9**	**0,2**	**4,3**	**10 024**	**11 616**	**1 784**	**37 679**	**2 899**	**75 200**	**156 204**		**0,4**

TOTAL INPUTS																			
Discharge region	**Estimate**	**Flow rate (m^3/s)**	**Cd [tonnes]**	**Hg [tonnes]**	**Cu [tonnes]**	**Zn [tonnes]**	**Pb [tonnes]**	**As [tonnes]**	**Cr [tonnes]**	**Ni [tonnes]**	**NH_4-N [tonnes]**	**NO_3-N [tonnes]**	**PO_4-P [tonnes]**	**TOT-N [tonnes]**	**TOT-P [tonnes]**	**Si-O_2 [tonnes]**	**SPM [tonnes]**	**TOC [tonnes]**	**g-HCH [kg]**
INPUTS TO OSPAR REGION: Norwegian Sea																			
RIVERINE INPUTS																			
Main Rivers	lower avg.		0,17	0,01	33,5	67	0,830	0,9			50	620	11	1 471	32	12 904	25 190	18 670	0,0
	upper avg.	237	0,19	0,01	33,6	67	0,840	1,0			63	620	14	1 471	32	12 904	25 220	18 670	1,5
Tributary Rivers (36)	lower avg.		0,28	0,03	50,2	107	7,260	4,6			244	4 144	139	8 547	260	83 546	185 800	95 270	
	upper avg.	1 379	0,39	0,05	50,2	108	7,270	8,6			324	4 145	158	8 547	260	83 546	185 800	95 270	
Tributary Rivers (109)	lower avg.		0,27	0,15	13,8	24	2,183	2,7			262	2 077	56	4 526	193	41 794	61 670	56 230	
	upper avg.	907	0,27	0,15	13,8	24	2,183	2,7			262	2 077	56	4 526	193	41 794	61 670	56 230	
Total Riverine Inputs	**lower avg.**		**0,72**	**0,18**	**97,5**	**198**	**10,273**	**8,2**			**557**	**6 841**	**207**	**14 544**	**484**	**138 244**	**272 660**	**170 170**	**0,0**
	upper avg.	**2 524**	**0,85**	**0,21**	**97,6**	**199**	**10,293**	**12,3**			**650**	**6 842**	**229**	**14 544**	**485**	**138 244**	**272 690**	**170 170**	**1,5**
DIRECT DISCHARGES																			
Sewage Effluents	lower avg.										2 106	140	195	2 809	325				
	upper avg.										2 106	140	195	2 809	325				
Industrial Effluents	lower avg.		0,02	0,00	1,0	14	1,395	0,0		0,6	21	0	17	301	28		353 333		
	upper avg.		0,02	0,00	1,0	14	1,395	0,0		0,6	21	0	17	301	28		353 333		
Fish Farming	lower avg.										11 669	1 750	2 140	14 587	3 101				
	upper avg.										11 669	1 750	2 140	14 587	3 101				
Total Direct Inputs	**lower avg.**		**0,02**	**0,00**	**1,0**	**14**	**1,395**	**0,0**		**0,6**	**13 796**	**1 891**	**2 351**	**17 697**	**3 454**		**353 333**		
	upper avg.		**0,02**	**0,00**	**1,0**	**14**	**1,395**	**0,0**		**0,6**	**13 796**	**1 891**	**2 351**	**17 697**	**3 454**		**353 333**		
UNMONITORED AREAS																			
Unmonitored Areas	lower avg.										27	211	89	12 250	328		0		
	upper avg.	1 498									27	211	89	12 250	328		0		
REGION TOTAL	**lower avg.**		**0,74**	**0,18**	**98,5**	**212**	**11,668**	**8,2**		**0,6**	**14 380**	**8 943**	**2 647**	**44 491**	**4 266**	**138 244**	**625 993**		**0,0**
	upper avg.	**4 022**	**0,87**	**0,21**	**98,6**	**213**	**11,688**	**12,3**		**0,6**	**14 473**	**8 945**	**2 669**	**44 491**	**4 267**	**138 244**	**626 023**		**1,5**

TOTAL INPUTS

Discharge region	Estimate	Flow rate (m^3/s)	Cd [tonnes]	Hg [tonnes]	Cu [tonnes]	Zn [tonnes]	Pb [tonnes]	As [tonnes]	Cr [tonnes]	Ni [tonnes]	NH_4-N [tonnes]	NO_3-N [tonnes]	PO_4-P [tonnes]	TOT-N [tonnes]	TOT-P [tonnes]	Si-O_2 [tonnes]	SPM [tonnes]	TOC [tonnes]	g-HCH [kg]
INPUTS TO OSPAR REGION: Barents Sea																			
RIVERINE INPUTS																			
	lower avg.		0,00	0,00	1,3	1	0,030	0,2			5	55	1	301	7	7 597	1 200	6 020	0,0
Main Rivers	upper avg.	56	0,01	0,00	1,3	1	0,030	0,2			10	55	2	301	7	7 597	1 240	6 020	0,4
	lower avg.		0,49	0,01	56,8	26	1,660	3,9			161	441	40	2 990	118	65 826	35 450	59 010	
Tributary Rivers (36)	upper avg.	402	0,51	0,02	56,8	26	1,660	3,9			163	444	43	2 990	118	65 826	35 450	59 010	
	lower avg.		0,05	0,03	3,9	4	0,184	0,4			56	116	7	713	26	14 466	6 800	13 620	
Tributary Rivers (109)	upper avg.	188	0,05	0,03	3,9	4	0,184	0,4			56	116	7	713	26	14 466	6 800	13 620	
	lower avg.		**0,54**	**0,04**	**62,0**	**30**	**1,874**	**4,5**			**221**	**612**	**49**	**4 004**	**151**	**87 890**	**43 450**	**78 650**	**0,0**
Total Riverine Inputs	**upper avg.**	**647**	**0,57**	**0,05**	**62,0**	**30**	**1,874**	**4,5**			**229**	**615**	**53**	**4 004**	**151**	**87 890**	**43 490**	**78 650**	**0,4**
DIRECT DISCHARGES																			
	lower avg.										185	12	21	247	35				
Sewage Effluents	upper avg.										185	12	21	247	35				
	lower avg.																		
Industrial Effluents	upper avg.																		
	lower avg.										1 342	201	244	1 677	354				
Fish Farming	upper avg.										1 342	201	244	1 677	354				
	lower avg.										**1 527**	**214**	**265**	**1 924**	**389**				
Total Direct Inputs	**upper avg.**										**1 527**	**214**	**265**	**1 924**	**389**				
UNMONITORED AREAS																			
	lower avg.										2	19	7	1 594	32				
Unmonitored Areas	upper avg.	312									2	19	7	1 594	32				
	lower avg.		**0,54**	**0,04**	**62,0**	**30**	**1,874**	**4,5**			**1 750**	**845**	**320**	**7 522**	**571**	**87 890**	**43 450**		**0,0**
REGION TOTAL	**upper avg.**	**959**	**0,57**	**0,05**	**62,0**	**30**	**1,874**	**4,5**			**1 758**	**847**	**324**	**7 522**	**571**	**87 890**	**43 490**		**0,4**

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

		1 Cd [t]	5 Hg [t]	6 Cu [t]	7 Zn [t]	2 Pb [t]	15 As [t]	16 Total Cr [t]	17 Ni [t]	10 NH4-N [t]	11 NO3-N [t]	12 PO4-P [t]	13 Total N [t]	14 Total P [t]	3 SPM [t]	18 TOC [t]	8 g-HCH [kg]	9 PCB [kg]	20 AOX [t]
73 Barents Sea (NO)	lower									185	12	21	247	35					
	upper									185	12	21	247	35					
	comment																		
75 Skagerrak (NO)	lower	0,032	0,127	1,453	6,953	0,179		0,561	1,660	2387	159	54	3182	89					
	upper	0,032	0,127	1,453	6,953	0,179		0,561	1,660	2387	159	54	3182	89					
	comment																		
83 North Sea (NO)	lower									2025	135	154	2700	255					
	upper									2025	135	154	2700	255					
	comment																		
72 Norwegian Sea (NO	lower									2106	140	195	2809	325					
	upper									2106	140	195	2809	325					
	comment																		

Table 5b. Industrial Effluents

Reported Maritime Area of the OSPAR Convention in 2004 by Norway

		1 Cd [t]	5 Hg [t]	6 Cu [t]	7 Zn [t]	2 Pb [t]	15 As [t]	16 Total Cr [t]	17 Ni [t]	10 NH4-N [t]	11 NO3-N [t]	12 PO4-P [t]	13 Total N [t]	14 Total P [t]	3 SPM [t]
73 Barents Sea (NO)	lower														
	upper														
	comment														
75 Skagerrak (NO)	lower	0,037	0,011	14,104	2,311	0,644	0,676	0,055	2,353	71		57	1346	95	1661
	upper	0,037	0,011	14,104	2,311	0,644	0,676	0,055	2,353	71		57	1346	95	1661
	comment														
83 North Sea (NO)	lower	0,000	0,005	0,978	0,000	0,024	0,136	0,184	4,295	51		41	409	68	10464
	upper	0,000	0,005	0,978	0,000	0,024	0,136	0,184	4,295	51		41	409	68	10464
	comment														
72 Norwegian Sea (NO)	lower	0,023	0,001	1,014	14,339	1,395	0,024	0,000	0,595	21		17	301	28	353333
	upper	0,023	0,001	1,014	14,339	1,395	0,024	0,000	0,595	21		17	301	28	353333
	comment														

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

			1 Cd [t]	5 Hg [kg]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [t]	11 NO3-N [t]	12 PO4-P [t]	13 Total N [t]	14 Total P [t]	3 SPM [kt]	15 As [t]	18 TOC [kt]
168	Alta	lower	0	2,09	1,29	0,03	0,66	0	0	4,82	55,14	0,95	300,9	6,72	1,2	0,18	6,02
		upper	0,01	3,08	1,29	0,03	0,66	0,36	2,52	10,32	55,14	2,08	300,9	6,72	1,24	0,19	6,02
		comment															
73	Barents Sea (NO)	lower	0	2,09	1,29	0,03	0,66	0	0	4,82	55,14	0,95	300,9	6,72	1,2	0,18	6,02
		upper	0,01	3,08	1,29	0,03	0,66	0,36	2,52	10,32	55,14	2,08	300,9	6,72	1,24	0,19	6,02
		comment															
160	Drammenselva	lower	0,09	5,63	8,68	3,66	27,97	1,39	0	140,44	2225,03	15,93	3795,87	49,71	29,11	1,73	30,56
		upper	0,09	11,59	8,68	3,66	27,97	2,03	12,6	140,44	2225,03	18,1	3795,87	49,71	29,11	1,73	30,56
		comment															
159	Glomma	lower	0,25	14,14	39,83	4,83	66,09	3,29	0	511,93	7465,09	143,15	11983,4	295,89	142,27	4,49	76,14
		upper	0,25	24,75	39,83	4,83	66,09	4,81	26,4	511,93	7465,09	143,15	11983,4	295,89	142,27	4,49	76,14
		comment															
161	Numedalslågen	lower	0,06	4,25	3,3	1,15	17,61	0	0	92,91	827,17	13,44	1557,3	34,04	18,19	0,72	15,45
		upper	0,06	5,65	3,3	1,15	17,61	0,66	4,62	93,64	827,17	13,44	1557,3	34,04	18,19	0,72	15,45
		comment															
163	Otra	lower	0,1	18,54	4,64	1,22	20,55	0,28	0	55,38	516,25	1,63	1054,45	12,64	4,02	0,55	11,84
		upper	0,1	20,79	4,64	1,22	20,55	0,48	5,88	56,85	516,25	4,2	1054,45	12,8	4,12	0,55	11,84
		comment															
162	Skienselva	lower	0,12	7,54	6,64	2,75	23,58	2,53	0	91,43	1495,41	11,03	2450,65	38,06	14,51	1,03	20,85
		upper	0,12	12,65	6,64	2,75	23,58	2,53	11,76	94,25	1495,41	13,67	2450,65	38,06	14,51	1,03	20,85
		comment															
75	Skagerrak (NO)	lower	0,62	50,1	63,09	13,61	155,8	7,49	0	892,09	12529	185,18	20841,7	430,34	208,1	8,52	154,84
		upper	0,62	75,43	63,09	13,61	155,8	10,51	61,26	897,11	12529	192,56	20841,7	430,5	208,2	8,52	154,84
		comment															

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

			1 Cd [t]	5 Hg [kg]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [t]	11 NO3-N [t]	12 PO4-P [t]	13 Total N [t]	14 Total P [t]	3 SPM [kt]	15 As [t]	18 TOC [kt]
164	Orreelva	lower	0	0,46	0,31	0,07	0,51	0	0	19,500	236,89	5,32	392,73	17,11	2,32	0,06	1,33
		upper	0	0,49	0,31	0,07	0,51	0,05	0,35	19,500	236,9	5,32	392,73	17,11	2,32	0,06	1,33
		comment															
165	Suldalslågen	lower	0,02	1,15	0,46	0,14	2,42	0,03	0	4,27	245,42	1,71	331,21	3,32	2,65	0,11	1,31
		upper	0,02	2	0,46	0,14	2,42	0,3	2,03	8,74	245,42	2,1	331,21	3,32	2,65	0,12	1,31
		comment															
83	North Sea (NO)	lower	0,02	1,61	0,77	0,21	2,93	0,03	0	23,77	482,31	7,03	723,94	20,43	4,97	0,17	2,64
		upper	0,02	2,49	0,77	0,21	2,93	0,35	2,38	28,24	482,32	7,42	723,94	20,43	4,97	0,18	2,64
		comment															
166	Orkla	lower	0,16	3	28,5	0,42	63,06	0	0	24,25	474,04	4,16	982,5	14,06	10,06	0,41	12,02
		upper	0,16	4,8	28,5	0,42	63,06	0,61	4,27	26,93	474,04	5,14	982,5	14,16	10,06	0,41	12,02
		comment															
167	Vefsna	lower	0,010	2,48	5,02	0,41	4	0	0	25,93	145,66	7,32	488,66	17,44	15,13	0,5	6,65
		upper	0,03	5,63	5,08	0,42	4,3	0,89	6,09	36,33	145,66	9,01	488,66	17,44	15,16	0,56	6,65
		comment															
72	Norwegian Sea (NO	lower	0,170	5,480	33,520	0,830	67,060	0,000	0,000	50,180	619,700	11,480	#######	31,500	25,190	0,910	18,670
		upper	0,190	10,430	33,580	0,840	67,360	1,500	10,360	63,260	619,700	14,150	#######	31,600	25,220	0,970	18,670
		comment															

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

		1 Cd [t]	5 Hg [kg]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [t]	11 NO3-N [t]	12 PO4-P [t]	13 Total N [t]	14 Total P [t]	3 SPM [kt]	15 As [t]	18 TOC [kt]
73 Barents Sea (NO)	lower	0,5	41,720	60,7	1,84	30			216,49	556,75	47,76	3702,89	144,18	42,3	4,334	73
	upper	0,6	46,810	60,7	1,84	30			219,17	559,56	50,50	3702,89	144,18	42,3	4,334	73
	comment															
75 Skagerrak (NO)	lower	0,6	28,5	17,5	6,3	94,1			393,80	6017,00	44,88	10090,00	181,27	46,92	5,13	79,35
	upper	0,6	36,31	17,52	6,30	94,14			399,37	6017,00	48,52	10090,00	181,27	46,92	5,17	79,35
	comment															
83 North Sea (NO)	lower	0,7	115,42	25,30	11,91	117,17			526,37	9758,91	166,70	15412,59	403,69	140,74	5,12	91
	upper	0,7	130,34	25,30	11,91	117,17			547,46	9758,91	181,70	15412,59	404,74	140,77	5,59	91
	comment															
72 Norwegian Sea (NO)	lower	0,5	174,62	63,98	9,44	131,01			506,69	6221,09	195,20	13073,17	452,99	247,47	7,24	152
	upper	0,7	197,91	63,98	9,45	131,64			586,46	6222,45	214,40	13073,17	453,53	247,47	11,30	152
	comment															

Table 6c. Unmonitored areas
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

		1,0 Cd [t]	5 Hg [kg]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [t]	11 NO3-N [t]	12 PO4-P [t]	13 Total N [t]	14 Total P [t]	3 SPM [kt]
73 Barents Sea (NO)	lower								1,7	19,1	6,6	1594,3	31,7	
	upper								1,7	19,1	6,6	1594,3	31,7	
	comment													
75 Skagerrak (NO)	lower								4,84	43,31	18,40	3057,50	64,20	
	upper								4,84	43,31	18,40	3057,50	64,20	
	comment													
83 North Sea (NO)	lower								17,71	136,46	59,24	9240,79	207,12	
	upper								17,71	136,46	59,24	9240,79	207,12	
	comment													
72 Norwegian Sea (NO)	lower								27,12	211,46	89,34	12249,91	327,55	
	upper								27,12	211,46	89,34	12249,91	327,55	
	comment													

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

			3 SPM [mg/l]	18 TOC [mg/l C]	12 PO4_P [µg/l P]	14 Tot_P [µg/l P]	11 NO3_N [µg/l N]	10 NH4_N [µg/l N]	13 Tot_N [µg/l N]	15 As [µg/l]	2 Pb [µg/l]	1 Cd [µg/l]	6 Cu [µg/l]	7 Zn [µg/l]	5 Hg [ng/l]	8 HCHG [ng/l]
168	Alta	lower	0,70	3,4	0	4	29	2	169	0,10	0,018	0,003	0,78	0,47	1,2	0,00
		upper	0,70	3,4	1	4	29	6	169	0,10	0,019	0,006	0,78	0,47	1,7	0,20
		minimum	0,10	2,7	1	2	2	5	150	0,05	0,005	0,005	0,37	0,20	1,0	0,20
		maximum	1,74	4,2	1	6	64	8	200	0,20	0,064	0,020	1,61	2,59	6,0	0,20
		more than 70% > D.L.	yes	yes	no	yes	yes	no	yes	yes	yes	no	yes	yes	no	no
		n	12	12	12	12	12	12	12	12	12	12	12	12	12	4
		info														
		st.Dev.	0,48	0,6	0	1	19	1	16	0,03	0,016	0,004	0,40	0,67	1,5	0,00
73	Barents Sea (NO)	lower	0,695	3,375	0,3333	3,5833	29	2,41667	169	0,098	0,018	0,003	0,778	0,468	1,2083	0
		upper	0,703	3,375	1	3,5833	29	5,75	169	0,103	0,019	0,006	0,778	0,468	1,7083	0,2
		minimum	0,100	2,700	1	2	2	5	150	0,05	0,005	0,005	0,374	0,2	1	0,2
		maximum	1,740	4,200	1	6	64	8	200	0,2	0,064	0,02	1,61	2,59	6	0,2
		more than 70% > D.L.	yes	yes	no	yes	yes	no	yes	yes	yes	no	yes	yes	no	no
		n	12	12	12	12	12	12	12	12	12	12	12	12	12	4
		info														
		st.Dev.	0,476	0,577	0,00	1,31	19,15	1,14	15,644	0,034	0,0165	0,0043	0,3991	0,672	1,469	0,00
160	Drammenselva	lower	2,949	3,250	1,6875	5,4375	231,25	15,25	406,88	0,181	0,415	0,012	1,149	3,195	0,6	0,115
		upper	2,949	3,250	1,875	5,4375	231,25	15,25	406,88	0,181	0,415	0,012	1,149	3,195	1,2667	0,215
		minimum	0,330	2,500	1	2	160	7	350	0,100	0,077	0,006	0,647	0,85	1	0,2
		maximum	10,400	3,900	6	11	310	24	475	0,310	1,110	0,026	2,610	7,23	3,5	0,24
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no
		n	16	16	16	16	16	16	16	15	15	15	15	15	15	4
		info														
		st.Dev.	2,971	0,378	1,41	2,39	48,94	5,18	41,023	0,065	0,333	0,006	0,546	1,388	0,678	0,02
159	Glomma	lower	6,833	3,688	7	14,813	374,06	26,75	603,75	0,229	0,229	0,013	1,921	3,277	0,5441	0,2075
		upper	6,833	3,688	7	14,813	374,06	26,75	603,75	0,229	0,229	0,013	1,921	3,277	1,1912	0,2575
		minimum	1,080	2,200	2	6	205	9	405	0,100	0,070	0,007	1,060	1,4	1	0,2
		maximum	20,700	5,900	29	50	920	78	1205	0,630	0,655	0,028	6,330	6,5	2,5	0,3
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes
		n	16	16	16	16	16	16	16	16	16	16	16	16	34	4
		info														
		st.Dev.	5,229	1,185	6,88	11,06	191,28	21,33	216,74	0,133	0,166	0,007	1,228	1,532	0,390	0,04
161	Numedalslågen	lower	4,600	4,433	3,5	8,8333	245,42	30,75	456,25	0,208	0,291	0,018	0,969	5,106	1,25	0
		upper	4,600	4,433	3,5	8,8333	245,42	31,1667	456,25	0,208	0,291	0,018	0,969	5,106	1,6667	0,2
		minimum	1,040	2,200	1	4	100	5	265	0,100	0,093	0,008	0,569	0,97	1	0,2
		maximum	10,200	7,900	7	18	450	59	640	0,300	0,667	0,030	1,880	12,6	3	0,2
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no
		n	12	12	12	12	12	12	12	12	12	12	12	12	12	4
		info														
		st.Dev.	2,689	1,672	1,93	4,34	117,23	16,60	133,04	0,064	0,168	0,008	0,373	2,825	0,807	0,00
163	Otra	lower	1,045	2,658	0,3333	3	119,25	11,75	248,33	0,118	0,254	0,024	1,030	4,373	3,6667	0,0767
		upper	1,045	2,658	1	3	119,25	12,5833	248,33	0,123	0,254	0,024	1,030	4,373	4,1667	0,21
		minimum	0,540	1,600	1	2	79	5	200	0,050	0,080	0,010	0,493	0,61	1	0,2
		maximum	1,610	5,000	1	5	195	21	320	0,220	0,652	0,037	3,250	11,8	24	0,23
		more than 70% > D.L.	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no
		n	12	12	12	12	12	12	12	12	12	12	12	12	12	3
		info														
		st.Dev.	0,386	0,972	0,00	0,95	32,45	5,04	34,201	0,053	0,153	0,007	0,760	2,709	6,675	0,02
162	Skienselva	lower	1,646	2,458	1,25	4,4167	177,08	10,6667	290,42	0,123	0,296	0,014	0,781	2,726	0,9167	0,2975
		upper	1,646	2,458	1,5833	4,4167	177,08	11,0833	290,42	0,123	0,296	0,014	0,781	2,726	1,5	0,2975
		minimum	0,620	2,200	1	3	120	5	255	0,050	0,041	0,010	0,361	0,91	1	0,21
		maximum	7,340	2,900	5	12	220	24	345	0,220	2,520	0,025	1,660	5,39	3	0,35
		more than 70% > D.L.	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes
		n	12	12	12	12	12	12	12	12	12	12	12	12	12	4
		info														
		st.Dev.	1,863	0,202	1,24	2,50	31,87	4,96	26,325	0,053	0,703	0,006	0,478	1,146	0,769	0,06

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

			3 SPM [mg/l]	18 TOC [mg/l C]	12 PO4_P [µg/l P]	14 Tot_P [µg/l P]	11 NO3_N [µg/l N]	10 NH4_N [µg/l N]	13 Tot_N [µg/l N]	15 As [µg/l]	2 Pb [µg/l]	1 Cd [µg/l]	6 Cu [µg/l]	7 Zn [µg/l]	5 Hg [ng/l]	8 HCHG [ng/l]
75	Skagerrak (NO)	lower														
		upper														
		minimum														
		maximum														
		more than 70% > D.L.														
		n														
		info														
		st.Dev.														
164	Orreelva	lower	7,917	5,617	15,667	58,833	748,58	90,6667	1431,3	0,270	0,226	0,005	1,375	1,708	1,125	0
		upper	7,917	5,617	15,667	58,833	748,75	90,6667	1431,3	0,270	0,226	0,007	1,375	1,708	1,4583	0,2
		minimum	2,070	4,900	3	34	1	45	680	0,100	0,049	0,005	0,777	0,77	1	0,2
		maximum	15,000	6,200	37	109	1550	179	2075	0,460	0,452	0,010	2,880	2,89	3,5	0,2
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	yes	yes	no	no
		n	12	12	12	12	12	12	12	12	12	12	12	12	12	4
		info														
		st.Dev.	4,479	0,376	9,43	23,60	625,50	48,55	499,24	0,090	0,162	0,002	0,552	0,853	0,811	0,00
165	Suldalslågen	lower	1,943	0,928	1,25	2,5	195	3,16667	255,83	0,077	0,103	0,012	0,345	1,923	0,875	0,06
		upper	1,943	0,928	1,5	2,5	195	6,08333	255,83	0,081	0,103	0,012	0,345	1,923	1,375	0,21
		minimum	0,600	0,540	1	1	125	5	175	0,050	0,037	0,009	0,220	0,41	1	0,2
		maximum	2,960	1,700	3	4	300	10	395	0,100	0,190	0,026	0,835	4,17	3	0,24
		more than 70% > D.L.	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	no	no
		n	12	12	12	12	12	12	12	12	12	12	12	12	12	4
		info														
		st.Dev.	0,826	0,366	0,67	0,90	61,39	1,83	69,44	0,013	0,042	0,005	0,178	0,901	0,644	0,02
83	North Sea (NO)	lower														
		upper														
		minimum														
		maximum														
		more than 70% > D.L.														
		n														
		info														
		st.Dev.														
166	Orkla	lower	2,526	3,325	1,1667	4,1667	151,92	7,33333	305,83	0,123	0,155	0,046	8,928	17,52	1,0833	0
		upper	2,526	3,325	1,5833	4,1667	151,92	8,58333	305,83	0,128	0,155	0,046	8,928	17,52	1,5833	0,2
		minimum	0,430	1,700	1	2	48	5	220	0,050	0,007	0,024	5,230	2	1	0,2
		maximum	9,750	7,800	5,0	8	250	16	395	0,210	1,260	0,084	12,700	34,5	3	0,2
		more than 70% > D.L.	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	no	no
		n	12	12	12	12	12	12	12	12	12	12	12	12	12	4
		info														
		st.Dev.	2,686	1,671	1,16	1,99	63,11	3,18	62,189	0,057	0,352	0,021	2,708	9,708	0,8747	0,00
167	Vefsna	lower	1,806	1,494	1,0833	3,0833	49,75	9,58333	127,42	0,076	0,059	0,001	0,828	0,801	0,7917	0
		upper	1,806	1,494	1,5833	3,0833	49,75	11,6667	127,42	0,088	0,059	0,005	0,828	0,801	1,2083	0,2
		minimum	0,150	0,780	1	1	9	5	83	0,050	0,020	0,005	0,230	0,1	1	0,2
		maximum	6,440	2,400	4	7	133	49	200	0,200	0,170	0,010	2,430	1,5	2	0,2
		more than 70% > D.L.	yes	yes	no	yes	yes	no	yes	yes	yes	no	yes	yes	no	no
		n	12	9	12	12	12	12	12	12	12	12	12	12	12	4
		info														
		st.Dev.	1,890	0,497	1,08	2,15	41,14	12,47	43,421	0,042	0,050	0,001	0,678	0,438	0,334	0,00
72	Norwegian Sea (NO)	lower														
		upper														
		minimum														
		maximum														
		more than 70% > D.L.														
		n														
		info														
		st.Dev.														

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

			1 Cd [µg/l]	5 Hg [ng/l]	6 Cu [µg/l]	2,000 Pb [µg/l]	7,000 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]	15 As [µg/l]	16 Total Cr [µg/l]	17 Ni [µg/l]	18 TOC [µg/l]
168	Alta	Sewage																	
		Industrial																	
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
73	Barents Sea (NO)	Sewage																	
		Industrial																	
		Riverine																	
160	Drammenselva	Sewage																	
		Industrial																	
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
159	Glomma	Sewage																	
		Industrial																	
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
170	Inner Oslofjord	Sewage																	
		Industrial																	
		Riverine																	
161	Numedalslågen	Sewage																	
		Industrial																	
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
163	Otra	Sewage																	
		Industrial																	
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
162	Skienselva	Sewage																	
		Industrial																	
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
75	Skagerrak (NO)	Sewage																	
		Industrial																	
		Riverine																	
164	Orreelva	Sewage																	
		Industrial																	

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

			1 Cd [µg/l]	5 Hg [ng/l]	6 Cu [µg/l]	2,000 Pb [µg/l]	7,000 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]	15 As [µg/l]	16 Total Cr [µg/l]	17 Ni [µg/l]	18 TOC [µg/l]
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
165	Suldalslågen	Sewage																	
		Industrial																	
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
83	North Sea (NO)	Sewage																	
		Industrial																	
		Riverine																	
166	Orkla	Sewage																	
		Industrial																	
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
167	Vefsna	Sewage																	
		Industrial																	
		Riverine	0,005	1	0,01	0,005	0,050	0,2		0,005	0,001	0,001	0,01	0,001	0,1	0,05			100
72	Norwegian Sea (NO)	Sewage																	
		Industrial																	
		Riverine																	

There is a difference in the detection limits in 2004 compared with 2003. The detection limits for 2003 were:

Cd	0,01 in 2003
Hg	2 in 2003
Cu	0,05 in 2003
Pb	0,02 in 2003
Zn	0,1 in 2003
g-HCH	0,1 in 2003
NH4-N	0,002 in 2003
NO3-N	0,004 in 2003
SPM	0,6 in 2003

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

		Flow Rate [1000m³/d]	LTA [1000m³/d]	Minimum FR [1000m³/d]	Maximum FR [1000m³/d]	LTA info (years)	Number of sites	Mean or Median
168	Alta	4 868	7495	2177	23082	1961-90	1	mean
73	Barents Sea (NO)							
160	Drammenselva	25 507	28850	7439	85867	1961-90	1	mean
159	Glomma	53 447	61350	19911	134952	1961-90	1	mean
170	Inner Oslofjord							
161	Numedalslågen	8 978	10200	3433	27318	1961-90	1	mean
163	Otra	11 501	12870	4754	21292	1961-90	1	mean
162	Skienselva	23 014	23535	6353	56647	1961-90	1	mean
75	Skagerrak (NO)							
164	Orreelva	636	335	35	1354	1961-90	1	mean
165	Suldalslågen	3 984	7420	1148	12547	1961-90	1	mean
83	North Sea (NO)							
166	Orkla	3 984	5710	943	67561	1961-90	1	mean
167	Vefsna	12 167	15655	2179	49052	1961-90	1	mean
72	Norwegian Sea (NO)							

Table 10. Fish Farming Effluents
Reported Maritime Area of the OSPAR Convention in 2004 by Norway

		10 NH4-N [t]	11 NO3-N [t]	12,0000 PO4-P [t]	13 Total N [t]	14 Total P [t]	3 SPM [t]	15 As [t]	16 Total Cr [t]	17 Ni [t]	18 TOC [t]	20 AOX [t]
73 Barents Sea (NO)	lower	1341,538	201,231	244,121	1676,922	353,799						
	upper	1341,538	201,231	244,121	1676,922	353,799						
	comment											
75 Skagerrak (NO)	lower	20,704	3,106	3,759	25,880	5,448						
	upper	20,704	3,106	3,759	25,880	5,448						
	comment											
83 North Sea (NO)	lower	7354,111	1103,117	1341,520	9192,639	1944,232						
	upper	7354,111	1103,117	1341,520	9192,639	1944,232						
	comment											
72 Norwegian Sea (NO)	lower	11669,204	1750,381	2139,526	14586,505	3100,762						
	upper	11669,204	1750,381	2139,526	14586,505	3100,762						
	comment											

Annex 8

PORTUGAL

Annual report on riverine inputs and direct discharges to Convention waters during the year 2004 by Portugal.

Table 4b. Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by Portugal

Contracting Parties should use this format to report (i) their total inputs to each OSPAR region and (ii) their total inputs to their marine environment

TOTAL INPUTS			Quantities --->												
Discharge region	**Estimate**	**Flow rate (1000 m3/d)**	**Cd [10^3 kg]**	**Hg [10^3 kg]**	**Cu [10^3 kg]**	**Pb [10^3 kg]**	**Zn [10^3 kg]**	**g-HCH [kg]**	**PCBs [kg]**	**NH4-N [10^6 kg]**	**NO3-N [10^6 kg]**	**PO4-P [10^6 kg]**	**Total N [10^6 kg]**	**Total P [10^6 kg]**	**SPM [10^6 kg]**
INPUTS TO OSPAR REGION ***Region IV - Portugal***															
RIVERINE INPUTS															
Main Rivers	lower	192 m3/s	0,30	NI	12,4	5,35	61,8	NI	NI	0,47	7,75	1,24	9,99	1,17	51,6
	upper		0,30	NI	12,4	5,35	61,8	NI	NI	0,47	7,75	1,24	9,99	1,17	51,6
Tributary Rivers	lower														
	upper														
Total Riverine Inputs	**lower**														
	upper														
DIRECT DISCHARGES															
Sewage Effluents	lower														
	upper														
Industrial Effluents	lower														
	upper														
Fish Farming	lower														
	upper														
Total Direct Inputs	**lower**														
	upper														
UNMONITORED AREAS															
Unmonitored Areas	lower														
	upper														
REGION TOTAL	**lower**														
	upper														

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2004 by Portugal

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
229	Douro	lower													
		upper													
		comment													
230	Minho	lower													
		upper													
		comment													
228	Tejo	lower													
		upper													
		comment	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
93	Bay of Biscay and Iberian Coast (PO)	lower													
		upper													
		comment													

The data reported by Portugal were submitted to confirmation

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2004 by Portugal

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
229	Douro	lower													
		upper													
		comment													
230	Minho	lower													
		upper													
		comment													
228	Tejo	lower													
		upper													
		comment	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
93	Bay of Biscay and Iberian Coast (PO)	lower													
		upper													
		comment													

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by Portugal

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
229	Douro	lower													
		upper													
		comment													
230	Minho	lower													
		upper													
		comment													
228	Tejo	lower	0,3	NI	12,4	5,35	61,8			0,47	7,75	1,2	10	1,2	51,6
		upper	0,30	NI	12,4	5,35	61,8			0,47	7,75	1,2	10	1,2	51,6
		comment	Average		Average		Average	NI	NI	Average	Average	Average	Average	Average	Average
93	Bay of Biscay and Iberian Coast (PO)	lower													
		upper													
		comment													

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2004 by Portugal

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
229	Douro	lower													
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													
230	Minho	lower													
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													
228	Tejo	lower													
		upper													
		minimum	0,05	NI	0,05	0,75	9			0,06	0,87	0,10	1,6	0,22	2,4
		maximum	0,05	NI	3,9	1,5	20			0,18	1,63	0,35	2,6	0,32	18,0
		more than 70% > D.L.													
		n	12		12	12	12			12	12	12	5	7	12
		info						NI	NI						
		st.Dev.													
93	Bay of Biscay and Iberian Coast (PO)	lower													
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													

Table 8. Detection Limits

Reported Maritime Area of the OSPAR Convention in 2004 by Portugal

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
229	Douro	Sewage													
		Industrial													
		Riverine													
230	Minho	Sewage													
		Industrial													
		Riverine													
228	Tejo	Sewage	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		Industrial	NI		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
		Riverine	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
93	Bay of Biscay and Iberian Coast (PO)	Sewage													
		Industrial													
		Riverine													

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2004 by Portugal

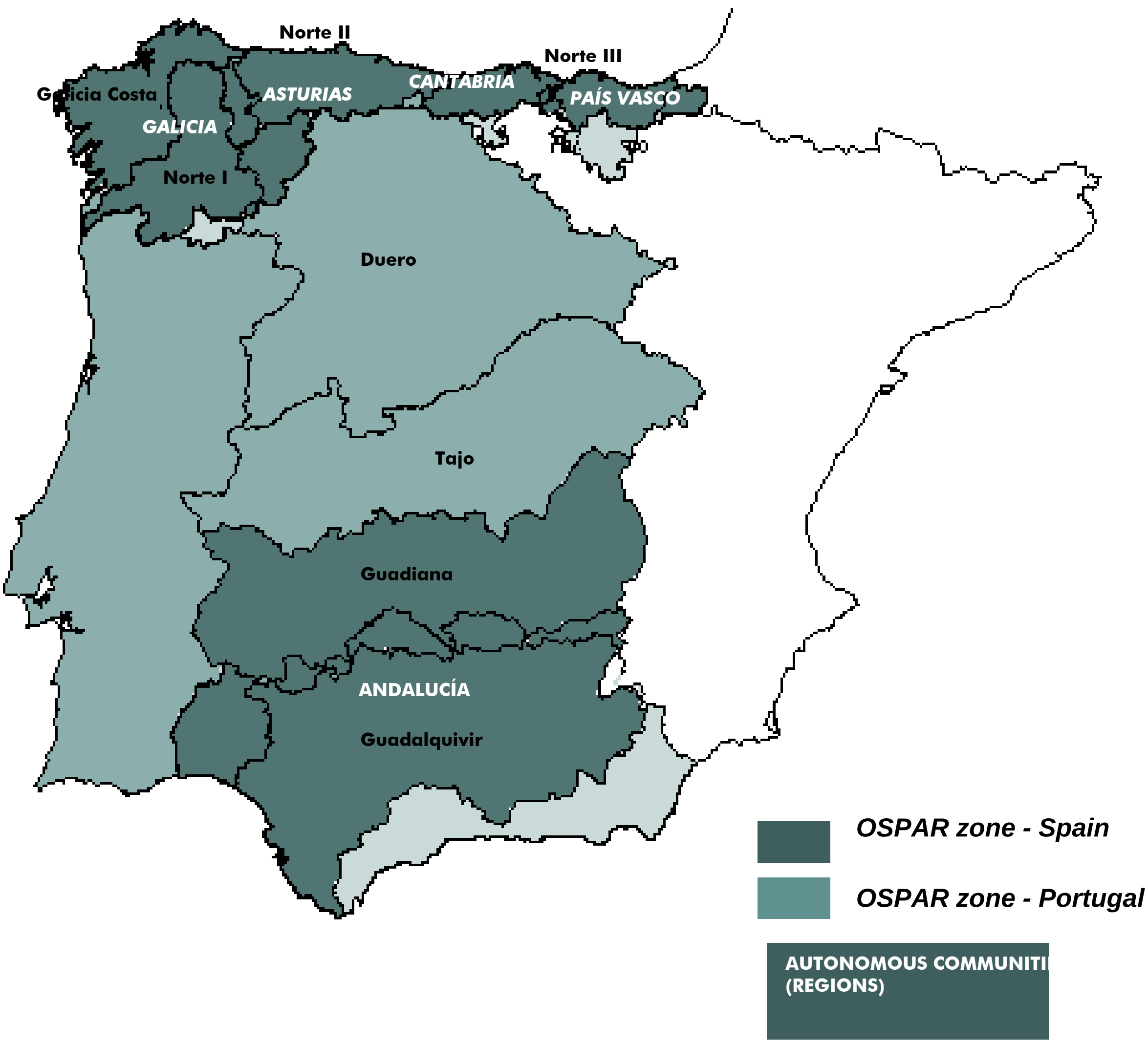
		Flow Rate [1000m³/d]	LTA [1000m³/d]	Minimum FR [1000m³/d]	Maximum FR [1000m³/d]	LTA info (years)	Number of sites	Mean or Median
229	Douro							
230	Minho							
228	Tejo	192						
93	Bay of Biscay and Iberian Coast (PO)							

Annex 9

SPAIN

Annual report on riverine inputs and direct discharges to Convention waters during the year 2004 by Spain.

Spanish annual report on
Riverine Inputs and Direct Discharges (RID)
to Convention waters during the year



2004

Annual report on riverine inputs and direct discharges by Spain to Convention waters during the year 2004

Name, address and contact numbers of reporting authority to which any further enquiry should be addressed:

MINISTERIO DE MEDIO AMBIENTE
Pza. San Juan de la Cruz s/n
28071 MADRID (ESPAÑA)

Contact Person:
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A. General information

Table 1: General overview of river systems (for riverine inputs) and direct discharge areas (for direct discharges) included in the data report

Country: SPAIN				
Name of river, subarea and discharge area[1]		Nature of the receiving water[2]	Optional: national reference number	Rivers not included in previous reports
Discharge area	Name of river			
País Vasco	Oyarzun	coastal water	0102	
	Urumea	coastal water	0103	
	Oria	coastal water	0104	
	Urola	coastal water	0105	
	Deva	coastal water	0106	
	Artibay	coastal water	0107	
	Oca	coastal water	0108	
	Butrón	coastal water	0109	
	Cadagua	estuary	011003	
	Galindo	estuary	011005	
	Ibaizabal	estuary		x
	Asúa	estuary	011008	
	Barbadum	coastal water		
	Lea	coastal water		
Norte III	Nervión	coastal water	0110	
Norte II	Saja	coastal water	0115	
	Nalón	coastal water	0119	
	Sella	coastal water	0145	
	Miera	coastal water	0146	
Galicia Costa	Masma	coastal water	0125	
	Oro	coastal water	0126	
	Landro	coastal water	0127	
	Sor	coastal water	0128	
	Mera	coastal water	0129	
	Forcadas	coastal water		
	Grande de Jubia	coastal water	0130	
	Belelle	coastal water	0131	
	Eume	coastal water	0132	
	Mandeo	coastal water	0133	
	Mero	coastal water	0134	

Country: SPAIN				
Name of river, subarea and discharge area[1]		Nature of the receiving water[2]	Optional: national reference number	Rivers not included in previous reports
Discharge area	Name of river			
	Allones	coastal water	0135	
	Grande	coastal water	0136	
	Castro	coastal water	0137	
	Jallas	coastal water	0138	
	Tambre	coastal water	0139	
	Ulla	coastal water	0140	
	Traba	Tributary		x
	Deza	Tributary	014003	
	Furelos	Tributary	014004	
	Umia	coastal water	0141	
	Lerez	coastal water	0142	
	Verdugo	coastal water	0143	
Norte I	Miño	coastal water	0144	
	Louro	Miño tributary	014428	
Guadiana	Guadiana	coastal water	0401	
	Piedras	coastal water	0402	
	Odiel	coastal water	0403	
	Tinto	coastal water	0404	
Guadalquivir	Guadalquivir	coastal water	0501	
	Guadaira	Guadalquivir tributary	050151	
	Guadiamar	Guadalquivir tributary	050140	
	Guadalete	coastal water	0502	

[1] i.e. name of estuary or length of coastline
[2] i.e. estuary or coastal water; if an estuary, state the tidal range and the daily flushing volume

The Spanish area draining waters to the Convention waters is divided into nine discharge areas, the seven mentioned above and two more transboundary rivers (Duero and Tajo) that have to be monitored by Portugal. (See map above)

B. Total riverine inputs and direct discharges (Tables 4a and 4b) for the year 2004

B.1 Give general comments on the total riverine inputs and direct discharges (e.g. changes from last year, trends, percentage of particle bound determinand, results that need to be highlighted etc.):

Increases in flow values for certain rivers are due to the addition of new control sites. Also, certain increases in Cd, Cu, Pb, and Zn are due to greater sensitivity in lab tests. Total flow rate has significantly decreased due mostly to the decrease in the Norte I discharge, attributable to the exceptional draught experienced during the year 2004. There is no clear trend in concentration values, increasing for some elements and compounds (Cd, Cu, Pb, PCBs,) and decreasing for others (Hg, NH_4-N, NO_3-N, PO_4-P, Total N, Total P, and SPM).

When no data were available for direct discharges, calculations were made assuming a 0 value.

Total riverine inputs and direct discharges in comparison to previous years

Year		2002		2003		2004	
Estimate		lower	upper	lower	upper	lower	upper
Flow rate (1000 m^3/d)		76,797.1		75,053.1		50,358.9	
Cd	[10^3 kg]	3.007	18.295	1.069	76.213	2.372	92.030
Hg	[10^3 kg]	0.964	12.217	0.22	13.273	1.438	4.675
Cu	[10^3 kg]	19.163	134.128	21.815	196.679	64.708	218.272
Pb	[10^3 kg]	15.158	127.392	20.543	202.936	3.147	356.161
Zn	[10^3 kg]	928.495	943.211	492.748	592.066	452.302	686.849
g-HCH	[kg]	11.134	42.109	8.185	52.071	0.983	108.926
PCBs	[kg]	78.563	104.776	9.441	216.537	17.639	333.894
NH_4-N	[10^6 kg]	21.269	21.443	20.194	21.289	18.977	20.298
NO_3-N	[10^6 kg]	112.932	113.409	70.765	70.895	40.290	40.382
PO_4-P	[10^6 kg]	3.147	3.827	2.447	3.355	1.745	2.763
Total N	[10^6 kg]	78.841	78.800	88.539	88.981	64.066	64.672
Total P	[10^6 kg]	6.741	6.757	4.625	4.828	3.728	4.391
SPM	[10^6 kg]	577.129	580.042	839.127	847.703	764.860	782.106

C. Direct discharges for the year 2004

Sewage Effluents (Table 5a)

C.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (cf. section 7 of the RID Principles), including for those under voluntary reporting:

> *Measurement and reporting of direct discharges data in Spain is carried out by the different Autonomous Communities (Regions). Therefore, methodologies change from one discharge area to another, and also within the same discharge area, as different laboratories perform the analyses. However, some general comments can be extracted.*
>
> *There are basically four data sources for flow calculations: annual discharge declarations provided by sewage plant managers, discharge permits issued, official discharge registries based on direct measurement from sewage plants (performed daily, weekly or monthly depending on the plant), and population estimations (taking into account seasonal population variations).*
>
> *For concentration values, data sources are: annual discharge declarations provided by sewage plant managers, laboratory measurements from samples of sewage effluents and other direct discharges, estimations based on RID methodology or on historical studies, and different detection limits depending on the lab analyses.*

C.2 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

> *Other parameters measured in sewage effluents are DQO and DBO_5 (Andalucía, Galicia and País Vasco), fats and oils (Andalucía and País Vasco), and COT and PAHs (Andalucía).*

Industrial Effluents (Table 5b.)

C.4 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (ref.: Section 7 of the RID Principles), including for those under voluntary reporting:

The sources of information for industrial effluents are: the industries' discharge declarations, regional discharge registries, direct control measurements, discharge permits, concentration values from previous years when effluents were similar and data were not available, and fixed values when measurements were below detection limits.

The number of samples varies among different discharge sites.

C.5 Give any other relevant information (e.g. proportion of substance discharged as insoluble material):

In the Andalucía region, the flow considered for industrial effluents includes refrigeration water (82% of total flow), but parameter measurements only reflect the analyses of water from industrial processes, which only represents 18% of industrial discharges.

In the País Vasco discharge area hydroelectric refrigeration waters have not been included in the industrial effluents.

C.6 Give any available information on other discharges directly to Convention Waters - through e.g. urban run-off and stormwater overflows - that are not covered by the data in tables 5a. and 5b.:

Urban run-off and stormwater overflows were not sampled separately, but some sewage plants and industries include those discharges in their declarations. Also, in Andalucía there are some authorised stormwater and run-off discharge sites, but flow measurements are not available.

C.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

Galicia has included DBO_5 and DQO in the analyses, but values have not been submitted. There is only additional information for the Andalucía region (parameters recommended by EPER for industrial activities), but classified by provinces and not by discharge area:

Pollutant load (t/year) Industrial direct discharges 2004				
Province	Cádiz	Huelva	Sevilla	Total
Flow rate (10^3 m^3/year)	4,455	489,668	73	494,195
Fats and Oils		19.4	6.97	26.4
DQO	18.1	7.327	78.6	7.424
COT	32.1	2.671	25.0	2.728
Arsenic (As)	0.0003	2.65		2.65
Chromo (Cr)	0.001	0.24		0.24
Nickel (Ni)	0.003	0.62		0.47
PAHs (kg/year)		11.2	0.16	11.3
1,2 dichloroethane		0.10		0.10
AOX –Organochlorates	0.07	71		71.1
Phenols		0.72		0.72
Chlorides		3.948		3.948
Cyanides		0.27		0.27
Fluorides		7.55		7.55
Non polar HC		0.06		0.06
Cl_3CH.		0.18		0.18

C.8 Give general comments on industrial effluents (e.g. compared to previous years):

In 2003 Galicia already included marine culture factories discharges in the industrial effluents data. This year the data have been included in a separate table, and therefore flow rate is significantly lower. For the other discharge areas, changes are minor, with a tendency to decrease.

Total direct discharges (Table 5c)

C.9 Give general comments on total direct discharges (e.g. compared to previous years):

Flow rate has increased in comparison to previous years due to the addition of marine culture factories discharges to this table, and probably because of the improved availability of discharges data. There is no clear trend in concentration values.

Total direct discharges to the maritime area 2002-2004

Year		2002		2003		2004	
Estimate		lower	upper	lower	upper	lower	upper
Flow rate (1000 m^3/d)		3,292.91		3,869.39		4,282.25	
Cd	[10^3 kg]	1.737	9.122	0.461	5.028	1.354	9.153
Hg	[10^3 kg]	0.870	1.448	0.212	1.059	0.963	1.652
Cu	[10^3 kg]	8.873	17.404	4.000	11.674	6.921	18.792
Pb	[10^3 kg]	9.756	59.227	1.242	40.269	2.057	46.052
Zn	[10^3 kg]	78.576	87.983	32.970	48.089	36.803	44.939
g-HCH	[kg]	1.884	17.162	0.757	18.205	0.150	18.430
PCBs	[kg]	58.700	69.858	1.135	26.401	0.000	23.700
NH_4-N	[10^6 kg]	10.360	10.389	9.607	10.609	11.671	12.705
NO_3-N	[10^6 kg]	4.126	4.178	1.866	1.919	1.567	1.626
PO_4-P	[10^6 kg]	1.512	1.519	1.032	1.062	0.855	0.910
Total N	[10^6 kg]	21.762	21.679	21.630	22.066	20.388	20.995
Total P	[10^6 kg]	3.387	3.400	2.213	2.369	2.399	2.575
SPM	[10^6 kg]	348.647	350.248	352.300	360.163	334.430	341.603

D. Riverine inputs for the year 2004

Main Rivers (Tables 6a and 7a)

D.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7a) upon which the measurement is based (ref.: Section 6 of the RID Principles), including for those under voluntary reporting:

For Pais Vasco discharge area the method used for the calculation of the annual load is the one described in paragraph 5.12 of the principles. For Guadiana, Guadalquivir and Galicia Costa the method used is the one described in paragraph 5.11 of the principles. For the rest, the load has been calculated as the product of the best estimation of the annual flow and the annual mean concentration.

For the Guadiana discharge area loads of heavy metals from Odiel and Tinto have not been taken into account due to high natural concentrations that could distort the assessment of trends.

The basic sampling frequency is 12 samples a year, but it differs for each discharge area and parameter (see Table 7).

D.2 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

There are substantial differences in the concentration values of metals throughout the year, higher values occurring mostly in summer and fall whereas the rest of the year levels are generally below detection limits.

D.3 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

PCBs have been measured in the Guadalquivir discharge area, and PCBs, PAHs have been measured in the Norte discharge area.

Tributary Rivers (Tables 6b and 7b)

D.5 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7b.) upon which the measurement is based (ref.: Section 6 of the Principles):

The method used is the same as for main rivers. Generally the concentrations of pollutants have been obtained by monthly measurements.

D.6 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

Concentration values vary throughout the year.

D.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

PCBs have been measured in the Guadalquivir discharge area, and PCBs, PAHs have been measured in the Norte discharge area.

Total riverine inputs (Table 6c)

D.10 Give general comments on the total riverine inputs (e.g. significant change in inputs, concentrations and flows compared to previous years):

Total Riverine inputs compared to previous years

Year		2002		2003		2004	
Estimate		lower	upper	lower	upper	lower	upper
Flow rate (1000 m^3/d)		73,504.2		71,183.74		46,076.65	
Cd	[10^3 kg]	1.270	9.173	0.608	71.185	1.018	82.877
Hg	[10^3 kg]	0.093	11.769	0.010	12.214	0.475	3.023
Cu	[10^3 kg]	10.290	116.723	17.815	185.005	57.787	199.480
Pb	[10^3 kg]	5.402	68.164	19.302	162.667	1.090	310.109
Zn	[10^3 kg]	849.918	855.228	459.777	543.977	15.500	641.911
g-HCH	[kg]	9.250	24.947	7.428	33.866	0.833	90.496
PCBs	[kg]	19.863	34.917	8.306	190.135	17.639	310.194
NH_4-N	[10^6 kg]	10.910	11.054	10.587	10.681	7.306	7.594
NO_3-N	[10^6 kg]	108.806	109.231	68.899	68.796	38.723	38.756
PO_4-P	[10^6 kg]	1.635	2.308	1.414	2.293	0.890	1.853
Total N	[10^6 kg]	57.079	57.122	66.909	66.915	43.677	43.677
Total P	[10^6 kg]	3.354	3.357	2.411	2.459	1.329	1.816
SPM	[10^6 kg]	228.482	229.74	486.826	487.540	430.429	440.503

Total flow rate has significantly decreased due mostly to the decrease in the Norte I discharge, attributable to the exceptional draught experienced during the year 2004.

F. Limits of detection (Table 8)

F.1 Information concerning limits of detection should be presented in Table 8 which includes different columns for rivers/tributaries, sewage effluents and industrial effluents. Give comments if the detection limits are higher than stated in the RID Principles.

There are variations in these values from urban to industrial effluents and among the different discharge areas because analyses were carried out by different laboratories. For the Guadalquivir and Guadiana discharge areas, table 8 sometimes shows two values, corresponding with two different labs and methods. In Asturias, detection limits are different than those recommended by RID, and in 2004 are higher than in 2003 due to a change in the methodology used by the laboratory that performs the analyses

G. Additional comments

G.1 Indicate and explain, if appropriate:

- where and why the applied procedures do not comply with agreed procedures
- significant changes in monitoring sites, important for comparison of the data before and after the date of the change;
- incomplete or distorted data

When no data were available, calculations were made assuming a 0 value.

Methods vary depending on the laboratory that carried out the analyses, and may not be consistent with RID methodology.

Some increases in flow rates and pollutant inputs, instead of reflecting the actual evolution of inputs, may be due to more information availability than in previous years because discharge declarations and registries are undergoing an on-going improvement.

New rivers have been included in the following discharge areas:

- *Galicia Costa: Forcadas and Belelle*
- *País Vasco: Artibay, Lea, Oca ,Butron and Barbadun*

Table 4a. Total Direct discharges and Riverine inputs to the maritime area in 2004 by Spain.

Total inputs			Quantities --->												
Discharge area	**Estimate**	**Flow rate (1000 m3/d)**	**Cd [10^3 kg]**	**Hg [10^3 kg]**	**Cu [10^3 kg]**	**Pb [10^3 kg]**	**Zn [10^3 kg]**	**g-HCH [kg]**	**PCBs [kg]**	**NH4-N [10^6 kg]**	**NO3-N [10^6 kg]**	**PO4-P [10^6 kg]**	**Total N [10^6 kg]**	**Total P [10^6 kg]**	**SPM [10^6 kg]**
PAÍS VASCO	lower	10 355,45	0,439	0,030	10,846	2,340	63,099	0,005	0,014	5,267	6,430	0,473	18,140	1,599	87,471
	upper		5,175	1,917	27,253	52,665	71,676	0,022	0,023	5,316	6,430	1,321	18,140	1,606	87,654
NORTE III	lower	2 729,64	0,000	0,134	2,293	0,000	43,911	0,000	0,000	0,160	2,034	0,056	4,689	0,072	177,513
	upper		2,309	0,156	8,988	17,300	44,858	9,963	22,243	0,160	2,034	0,056	4,689	0,109	177,513
NORTE II	lower	5 969,64	0,327	0,302	10,079	0,197	42,796	0,000	0,000	6,142	2,247	0,178	12,665	0,583	273,318
	upper		7,963	0,790	30,599	64,170	95,604	20,100	57,284	6,161	2,266	0,179	12,833	0,634	277,043
GALICIA COSTA	lower	10 731,38	0,588	0,000	0,000	0,000	0,000	0,000	0,000	0,784	15,075	0,064	0,208	0,021	28,766
	upper		0,617	0,088	2,693	0,064	0,041	0,000	0,000	1,798	15,075	0,119	0,647	0,182	35,761
NORTE I (Miño)	lower	13 502,76	0,000	0,223	19,661	0,000	33,875	0,828	0,000	0,283	3,779	0,010	8,914	0,043	23,197
	upper		9,369	0,651	56,785	126,710	146,616	49,699	87,043	0,371	3,779	0,118	8,914	0,370	29,539
GUADIANA	lower	1 444,80	0,000	0,000	0,248	0,060	1,900	0,000	0,000	0,805	1,708	0,331	4,147	0,355	88,500
	upper		62,650	0,050	63,160	63,780	160,390	12,000	127,410	0,945	1,746	0,331	4,147	0,436	88,500
GUADALQUIVIR	lower	5 625,22	1,018	0,750	21,581	0,550	266,722	0,150	17,625	5,535	9,018	0,634	15,302	1,054	86,095
	upper		3,948	1,023	28,793	31,472	323,816	17,142	39,891	5,548	9,053	0,639	15,302	1,054	86,097
TOTAL	**lower**	**50 358,90**	**2,372**	**1,438**	**64,708**	**3,147**	**452,302**	**0,983**	**17,639**	**18,977**	**40,290**	**1,745**	**64,066**	**3,728**	**764,860**
	upper		**92,030**	**4,675**	**218,272**	**356,161**	**686,849**	**108,926**	**333,894**	**20,298**	**40,382**	**2,763**	**64,672**	**4,391**	**782,106**

Table 5a. Sewage direct discharges to the maritime area in 2004 by Spain.

Sewage direct discharges				Quantities --->												
Discharge area	Nature of receiving waters	Flow rate (1000 m3/d)	Estimate	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM [10^6 kg]
PAIS VASCO	Coastal	228,95	lower	0,439	0,030	5,773	1,199	16,087	NI	NI	1,197	0,101	0,002	2,223	0,260	56,943
			upper	1,604	0,090	6,469	16,913	16,674	NI	NI	1,197	0,101	0,002	2,223	0,266	56,943
	Estuary	354,89	lower	0,000	NI	0,000	0,000	0,107	NI	NI	0,177	0,817	0,365	3,871	0,893	2,839
			upper	0,022	NI	0,089	0,166	0,232	NI	NI	0,193	0,817	0,365	3,871	0,893	2,851
Norte II (Cantabria)	Coastal	169,34	lower	NI	NI	NI	0,087	2,01	NI	NI	0,699	0,084	NI	2,162	0,311	5,138
			upper	0,091	NI	0,002	0,089	2,019	NI	NI	0,699	0,084	NI	2,162	0,311	5,138
	Estuary	8,81	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0,157	0,031	0,589
			upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0,157	0,031	0,589
Norte II (Asturias)	Coastal	112,62	lower	0,000	0,000	0,000	0,000	5,482	NI	NI	1,846	0,055	0,002	2,320	0,002	7,065
			upper	2,055	0,206	2,899	8,221	5,588	NI	NI	1,846	0,065	0,002	2,320	0,002	7,065
	Estuary	20,15	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,090	0,033	0,022	0,173	0,026	0,151
			upper	0,368	0,037	0,515	1,471	0,368	NI	NI	0,090	0,034	0,022	0,173	0,026	0,151
SUBTOTAL NORTE II	Coastal	281,96	lower	0,000	0,000	0,000	0,087	7,492	0,000	0,000	2,545	0,139	0,002	4,482	0,313	12,202
			upper	2,146	0,206	2,900	8,310	7,607	0,000	0,000	2,545	0,149	0,002	4,482	0,313	12,202
	Estuary	28,96	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,090	0,033	0,022	0,330	0,057	0,740
			upper	0,368	0,037	0,515	1,471	0,368	0,000	0,000	0,090	0,034	0,022	0,330	0,057	0,740
GALICIA COSTA	Coastal	4,48	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0,015
			upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0,015
	Estuary	264,21	lower	0,588	NI	0,000	NI	NI	NI	NI	NI	NI	NI	0,208	0,021	2,014
			upper	0,591	NI	2,668	NI	NI	NI	NI	NI	NI	NI	0,208	0,021	2,014
GUADIANA (Andalucía)	Coastal	25,80	lower	0,000	0,000	0,010	0,000	0,000	0,000	0,000	0,173	0,001	0,005	0,235	0,010	0,676
			upper	0,060	0,010	0,100	0,260	0,530	0,470	0,470	0,173	0,003	0,005	0,235	0,010	0,676
	Estuary	57,00	lower	0,000	0,000	0,000	0,000	0,040	0,000	0,000	0,463	0,089	0,052	0,569	0,077	0,590
			upper	0,130	0,020	0,230	0,580	1,170	1,040	1,040	0,463	0,094	0,052	0,569	0,077	0,590
GUADALQUIVIR (Andalucía)	Coastal	84,50	lower	0,000	0,000	0,000	0,000	0,930	0,000	0,000	0,807	0,125	0,132	1,013	0,209	1,801
			upper	0,840	0,060	1,020	2,860	1,900	2,210	2,210	0,807	0,127	0,132	1,013	0,209	1,801
	Estuary	276,00	lower	0,000	0,750	0,160	0,550	4,180	0,150	0,000	2,762	0,095	0,242	3,744	0,474	3,931
			upper	1,600	0,810	1,610	9,440	6,410	13,590	19,000	2,762	0,126	0,242	3,744	0,474	3,931
TOTAL	Coastal	**625,69**	**lower**	**0,439**	**0,030**	**5,783**	**0,840**	**24,509**	**0,000**	**0,000**	**4,722**	**0,366**	**0,141**	**7,953**	**0,792**	**71,637**
			upper	**4,650**	**0,366**	**10,489**	**28,343**	**26,711**	**2,680**	**2,680**	**4,722**	**0,379**	**0,141**	**7,953**	**0,798**	**71,637**
	Estuary	**981,05**	**lower**	**0,588**	**0,750**	**0,160**	**0,550**	**4,327**	**0,150**	**0,000**	**3,491**	**1,034**	**0,681**	**8,723**	**1,523**	**10,114**
			upper	**2,711**	**0,867**	**5,112**	**11,657**	**8,180**	**14,630**	**20,040**	**3,508**	**1,071**	**0,681**	**8,723**	**1,523**	**10,126**
OVERALL TOTAL:		**1 606,75**	**lower**	**1,027**	**0,780**	**5,943**	**1,390**	**28,836**	**0,150**	**0,000**	**8,213**	**1,400**	**0,822**	**16,676**	**2,315**	**81,752**
			upper	**7,361**	**1,232**	**15,601**	**40,000**	**34,891**	**17,310**	**22,720**	**8,230**	**1,450**	**0,822**	**16,676**	**2,320**	**81,763**

Table 5b. Industrial direct discharges to the maritime area in 2004 by Spain.

Industrial direct discharges				Quantities --->												
Discharge area	Nature of receiving waters	Flow rate (1000 m3/d)	Estimate	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM [10^6 kg]
PAIS VASCO	Coastal	8,11	lower	0,000	0,000	0,008	0,052	0,128	NI	NI	0,010	0,011	0,001	0,021	0,000	0,100
			upper	0,030	0,003	0,030	0,162	0,143	NI	NI	0,013	0,011	0,001	0,021	0,000	0,100
	Estuary	11,21	lower	0,000	0,000	0,651	0,000	0,715	NI	NI	0,005	0,000	0,000	0,000	0,001	0,678
			upper	0,013	0,002	0,693	0,027	0,722	NI	NI	0,005	0,000	0,000	0,000	0,001	0,679
Norte II (Cantabria)	Coastal	54,71	lower	0,009	0,040	0,020	NI	0,561	NI	NI	0,398	0,000	NI	0,382	0,013	241,295
			upper	0,009	0,040	0,020	NI	0,561	NI	NI	0,398	0,000	NI	0,382	0,013	241,295
	Estuary	6,01	lower	0,000	0,061	0,001	0,001	0,001	NI	NI	0,459	NI	NI	0,738	0,007	7,096
			upper	0,000	0,061	0,001	0,001	0,001	NI	NI	0,459	NI	NI	0,738	0,011	7,131
Norte II (Asturias)	Coastal	45,62	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,123	0,027	0,009	0,000	0,015	1,361
			upper	0,833	0,083	1,166	3,330	0,833	NI	NI	0,123	0,028	0,009	0,167	0,015	1,361
	Estuary	45,51	lower	0,318	0,082	0,062	0,109	4,699	NI	NI	2,296	0,080	0,008	2,258	0,006	0,271
			upper	0,884	0,144	0,911	2,047	5,211	NI	NI	2,296	0,086	0,008	2,259	0,010	0,402
SUBTOTAL NORTE II	Coastal	100,33	lower	0,009	0,040	0,020	0,000	0,561	NI	NI	0,521	0,027	0,009	0,382	0,028	242,657
			upper	0,842	0,123	1,185	3,330	1,394	NI	NI	0,521	0,029	0,009	0,549	0,028	242,657
	Estuary	51,52	lower	0,318	0,143	0,062	0,110	4,700	0,000	0,000	2,755	0,080	0,008	2,996	0,013	7,367
			upper	0,884	0,205	0,913	2,048	5,212	0,000	0,000	2,755	0,086	0,008	2,997	0,021	7,534
GALICIA COSTA	Coastal	33,92	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	0,018	0,001	0,000	0,969
	Estuary	162,95	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			upper	NI	NI	NI	NI	NI	NI	NI	0,001	NI	0,034	NI	NI	1,240
GUADIANA (Andalucía)	Coastal	0,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
			upper	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
	Estuary	1 342,00	lower	0,000	0,000	0,200	0,060	1,860	0,000	0,000	0,149	0,026	0,013	0,271	0,037	1,580
			upper	0,000	0,000	0,330	0,480	2,540	1,120	0,980	0,149	0,026	0,013	0,271	0,037	1,580
GUADALQUIVIR (Andalucía)	Coastal	0,30	lower	0,000	0,000	0,000	0,000	0,002	0,000	0,000	0,001	0,002	0,000	0,003	0,001	0,004
			upper	0,000	0,000	0,000	0,000	0,002	0,000	0,000	0,001	0,002	0,000	0,003	0,001	0,004
	Estuary	12,10	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,006	0,001	0,049
			upper	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,006	0,001	0,049
TOTAL	Coastal	**142,66**	**lower**	**0,009**	**0,040**	**0,028**	**0,052**	**0,691**	**0,000**	**0,000**	**0,532**	**0,040**	**0,010**	**0,406**	**0,028**	**242,760**
			upper	**0,871**	**0,126**	**1,216**	**3,493**	**1,539**	**0,000**	**0,000**	**0,535**	**0,041**	**0,028**	**0,574**	**0,029**	**243,729**
	Estuary	**1 579,78**	**lower**	**0,318**	**0,143**	**0,913**	**0,170**	**7,275**	**0,000**	**0,000**	**2,909**	**0,106**	**0,021**	**3,273**	**0,051**	**9,675**
			upper	**0,898**	**0,207**	**1,935**	**2,555**	**8,474**	**1,120**	**0,980**	**2,910**	**0,113**	**0,055**	**3,274**	**0,059**	**11,082**
OVERALL TOTAL:		**1 722,44**	**lower**	**0,327**	**0,183**	**0,940**	**0,221**	**7,967**	**0,000**	**0,000**	**3,441**	**0,146**	**0,031**	**3,680**	**0,079**	**252,434**
			upper	**1,769**	**0,333**	**3,151**	**6,048**	**10,013**	**1,120**	**0,980**	**3,444**	**0,155**	**0,083**	**3,848**	**0,088**	**254,810**

Table 5b1. Marine culture factories discharges to the maritime area in 2004 by Spain.

Industrial direct discharges				Quantities --->												
Discharge area	Nature of receiving waters	Flow rate (1000 m3/d)	Estimate	Cd $[10^3$ kg]	Hg $[10^3$ kg]	Cu $[10^3$ kg]	Pb $[10^3$ kg]	Zn $[10^3$ kg]	g-HCH [kg]	PCBs [kg]	NH4-N $[10^6$ kg]	NO3-N $[10^6$ kg]	PO4-P $[10^6$ kg]	Total N $[10^6$ kg]	Total P $[10^6$ kg]	SPM $[10^6$ kg]
PAIS VASCO	**Coastal**	146,40	lower	NI	NI	NI	NI	NI	NI	NI	0,017	0,019	0,001	0,031	0,004	0,210
			upper	NI	NI	NI	NI	NI	NI	NI	0,017	0,019	0,001	0,031	0,004	0,210
	Estuary	0,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
			upper	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
Norte II (Cantabria)	**Coastal**	NI	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Estuary	NI	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Norte II (Asturias)	**Coastal**	NI	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Estuary	NI	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
SUBTOTAL NORTE II	**Coastal**	0,00	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,000	0,000	0,000	0,000	0,000	0,000
			upper	0,000	0,000	0,000	0,000	0,000	NI	NI	0,000	0,000	0,000	0,000	0,000	0,000
	Estuary	0,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
			upper	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
GALICIA COSTA	**Coastal**	289,28	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			upper	NI	0,077	NI	NI	NI	NI	NI	0,482	NI	0,002	0,003	0,004	2,158
	Estuary	497,38	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			upper	0,023	0,010	NI	0,003	0,034	NI	NI	0,532	NI	0,002	0,435	0,157	2,627
GUADIANA (Andalucía)	**Coastal**	0,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
			upper	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
	Estuary	20,00	lower	0,000	0,000	0,038	0,000	0,000	0,000	0,000	0,000	0,002	0,000	0,002	0,002	0,034
			upper	0,000	0,000	0,040	0,000	0,000	0,000	0,000	0,000	0,002	0,000	0,002	0,002	0,034
GUADALQUIVIR (Andalucía)	**Coastal**	0,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
			upper	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
	Estuary	0,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
			upper	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000
TOTAL	**Coastal**	**435,68**	**lower**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,017**	**0,019**	**0,001**	**0,031**	**0,004**	**0,210**
			upper	**0,000**	**0,077**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,499**	**0,019**	**0,003**	**0,035**	**0,007**	**2,369**
	Estuary	**517,38**	**lower**	**0,000**	**0,000**	**0,038**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,002**	**0,000**	**0,002**	**0,002**	**0,034**
			upper	**0,023**	**0,010**	**0,040**	**0,003**	**0,034**	**0,000**	**0,000**	**0,532**	**0,002**	**0,002**	**0,437**	**0,159**	**2,661**
OVERALL TOTAL:		**953,06**	**lower**	**0,000**	**0,000**	**0,038**	**0,000**	**0,000**	**0,000**	**0,000**	**0,017**	**0,021**	**0,001**	**0,033**	**0,005**	**0,244**
			upper	**0,023**	**0,087**	**0,040**	**0,003**	**0,034**	**0,000**	**0,000**	**1,031**	**0,021**	**0,005**	**0,471**	**0,166**	**5,030**

Table 5c. Total direct discharges to the maritime area in 2004 by Spain.

Total direct discharges				Quantities --->												
Discharge area	**Nature of receiving waters**	**Flow rate (1000 m3/d)**	**Estimate**	**Cd** [10^3 kg]	**Hg** [10^3 kg]	**Cu** [10^3 kg]	**Pb** [10^3 kg]	**Zn** [10^3 kg]	**g-HCH** [kg]	**PCBs** [kg]	**NH4-N** [10^6 kg]	**NO3-N** [10^6 kg]	**PO4-P** [10^6 kg]	**Total N** [10^6 kg]	**Total P** [10^6 kg]	**SPM** [10^6 kg]
PAIS VASCO	**Coastal**	383,46	lower	0,439	0,030	5,781	1,251	16,215	0,000	0,000	1,224	0,131	0,004	2,276	0,263	57,253
			upper	1,633	0,093	6,499	17,075	16,817	0,000	0,000	1,227	0,131	0,004	2,276	0,269	57,253
	Estuary	366,09	lower	0,000	0,000	0,651	0,000	0,823	0,000	0,000	0,182	0,817	0,365	3,871	0,894	3,518
			upper	0,036	0,002	0,781	0,194	0,954	0,000	0,000	0,198	0,817	0,365	3,871	0,894	3,530
Norte II (Cantabria)	**Coastal**	224,05	lower	0,009	0,040	0,020	0,087	2,571	0,000	0,000	1,097	0,084	0,000	2,544	0,324	246,433
			upper	0,100	0,040	0,021	0,089	2,580	0,000	0,000	1,097	0,084	0,000	2,544	0,324	246,433
	Estuary	14,82	lower	0,000	0,061	0,001	0,001	0,001	0,000	0,000	0,459	0,000	0,000	0,895	0,038	7,686
			upper	0,000	0,061	0,001	0,001	0,001	0,000	0,000	0,459	0,000	0,000	0,895	0,043	7,721
Norte II (Asturias)	**Coastal**	158,24	lower	0,000	0,000	0,000	0,000	5,482	0,000	0,000	1,969	0,082	0,011	2,320	0,017	8,426
			upper	2,888	0,289	4,064	11,552	6,421	0,000	0,000	1,969	0,093	0,011	2,487	0,017	8,426
	Estuary	65,66	lower	0,318	0,082	0,062	0,109	4,699	0,000	0,000	2,386	0,112	0,031	2,431	0,032	0,422
			upper	1,252	0,181	1,426	3,518	5,579	0,000	0,000	2,386	0,120	0,031	2,432	0,036	0,553
SUBTOTAL NORTE II	**Coastal**	382,29	lower	0,009	0,040	0,020	0,087	8,053	0,000	0,000	3,066	0,167	0,011	4,864	0,341	254,859
			upper	2,988	0,329	4,086	11,640	9,001	0,000	0,000	3,066	0,178	0,011	5,031	0,341	254,859
	Estuary	80,48	lower	0,318	0,143	0,062	0,110	4,700	0,000	0,000	2,845	0,112	0,031	3,326	0,070	8,107
			upper	1,252	0,242	1,427	3,519	5,580	0,000	0,000	2,845	0,120	0,031	3,327	0,079	8,274
GALICIA COSTA	**Coastal**	327,68	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,015
			upper	0,000	0,077	0,000	0,000	0,000	0,000	0,000	0,482	0,000	0,019	0,004	0,004	3,142
	Estuary	924,54	lower	0,588	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,208	0,021	2,014
			upper	0,615	0,010	2,668	0,003	0,034	0,000	0,000	0,532	0,000	0,035	0,643	0,178	5,881
GUADIANA (ANDALUCIA)	**Coastal**	25,80	lower	0,000	0,000	0,010	0,000	0,000	0,000	0,000	0,173	0,001	0,005	0,235	0,010	0,676
			upper	0,060	0,010	0,100	0,260	0,530	0,470	0,470	0,173	0,003	0,005	0,235	0,010	0,676
	Estuary	1 419,00	lower	0,000	0,000	0,238	0,060	1,900	0,000	0,000	0,612	0,117	0,066	0,842	0,115	2,204
			upper	0,130	0,020	0,600	1,060	3,710	2,160	2,020	0,612	0,123	0,066	0,842	0,116	2,204
GUADALQUIVIR (ANDALUCIA)	**Coastal**	84,80	lower	0,000	0,000	0,000	0,000	0,932	0,000	0,000	0,807	0,127	0,132	1,016	0,210	1,805
			upper	0,840	0,060	1,020	2,860	1,902	2,210	2,210	0,807	0,128	0,132	1,016	0,210	1,805
	Estuary	288,10	lower	0,000	0,750	0,160	0,550	4,180	0,150	0,000	2,762	0,095	0,242	3,750	0,475	3,980
			upper	1,600	0,810	1,610	9,440	6,410	13,590	19,000	2,762	0,126	0,242	3,750	0,475	3,980
TOTAL	**Coastal**	1 204,03	lower	**0,449**	**0,070**	**5,811**	**1,338**	**25,200**	**0,000**	**0,000**	**5,270**	**0,425**	**0,152**	**8,391**	**0,824**	**314,607**
			upper	**5,521**	**0,569**	**11,705**	**31,836**	**28,250**	**2,680**	**2,680**	**5,755**	**0,439**	**0,172**	**8,561**	**0,834**	**317,735**
	Estuary	3 078,22	lower	**0,906**	**0,893**	**1,110**	**0,720**	**11,603**	**0,150**	**0,000**	**6,401**	**1,141**	**0,703**	**11,997**	**1,575**	**19,823**
			upper	**3,632**	**1,083**	**7,087**	**14,216**	**16,688**	**15,750**	**21,020**	**6,950**	**1,186**	**0,738**	**12,434**	**1,740**	**23,869**
OVERALL TOTAL:		**4 282,25**	**lower**	**1,354**	**0,963**	**6,921**	**2,057**	**36,803**	**0,150**	**0,000**	**11,671**	**1,567**	**0,855**	**20,388**	**2,399**	**334,430**
			upper	**9,153**	**1,652**	**18,792**	**46,052**	**44,939**	**18,430**	**23,700**	**12,705**	**1,626**	**0,910**	**20,995**	**2,575**	**341,603**

Table 6a. Main riverine inputs to the maritime area in 2004 by Spain

Main riverine inputs				Quantities --->												
Discharge area (or name of river)	Flow rate [1000 m³/d] 2004	Flow rate [1000 m³/d] LTA	Estimate	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM [10^6 kg]
Deva	1 183,42	NI	lower	0,000	NI	0,400	0,000	17,980	NI	NI	3,282	0,491	0,06364	1,963	0,114	5,713
			upper	0,432	NI	2,289	4,319	17,980	NI	NI	3,282	0,491	0,13412	1,963	0,114	5,713
Urola	898,69	NI	lower	0,000	0,000	1,148	0,000	1,592	0,000	0,005	0,012	0,709	0,01148	1,095	0,052	1,997
			upper	0,328	0,328	2,490	3,280	2,636	0,003	0,007	0,017	0,709	0,08641	1,095	0,052	2,038
Oria	2 121,94	NI	lower	0,000	NI	0,000	0,000	3,950	NI	NI	0,265	1,032	0,00000	1,290	0,037	4,647
			upper	0,775	NI	3,873	7,745	5,886	NI	NI	0,265	1,032	0,20219	1,290	0,037	4,647
Urumea	766,11	NI	lower	0,000	0,000	0,422	0,000	3,768	0,000	0,004	0,037	0,169	0,00000	1,812	0,014	1,202
			upper	0,280	0,280	1,587	2,796	4,118	0,003	0,000	0,042	0,169	0,07300	1,812	0,014	1,237
Oyarzun	319,66	NI	lower	0,000	0,000	0,090	0,000	8,623	0,000	0,005	0,004	0,140	0,00000	0,175	0,006	0,191
			upper	0,117	0,117	0,625	1,167	8,672	0,001	0,006	0,006	0,140	0,03046	0,175	0,006	0,235
Barbadun	277,51	NI	lower	0,000	0,000	0,257	0,000	0,430	0,000	0,000	0,011	0,119	0,00000	0,165	0,007	0,908
			upper	0,101	0,101	0,679	1,013	0,853	0,001	0,001	0,014	0,119	0,02644	0,165	0,007	0,933
Butrón	398,74	NI	lower	0,000	0,000	0,275	0,165	0,713	0,000	0,000	0,072	0,223	0,02883	0,604	0,058	1,805
			upper	0,146	0,146	0,937	1,488	1,110	0,001	0,001	0,072	0,223	0,05258	0,604	0,058	1,805
Oca	395,99	NI	lower	0,000	0,000	0,891	0,171	0,872	0,000	0,000	0,053	0,178	0,00000	0,464	0,050	0,918
			upper	0,145	0,145	1,285	1,485	1,398	0,001	0,001	0,054	0,178	0,03773	0,464	0,050	0,918
Lea	296,51	NI	lower	0,000	0,000	0,075	0,000	0,098	0,000	0,000	0,001	0,087	0,00000	0,261	0,004	0,277
			upper	0,108	0,108	0,567	1,082	0,590	0,001	0,001	0,005	0,087	0,02825	0,261	0,004	0,291
Artibay	198,24	NI	lower	0,000	0,000	0,109	0,072	0,588	0,000	0,000	0,025	0,059	0,00000	0,451	0,006	1,005
			upper	0,072	0,072	0,405	0,730	0,785	0,001	0,001	0,026	0,059	0,01889	0,451	0,006	1,014
PAÍS VASCO SUBTOTAL	**6 856,83**		**lower**	**0,000**	**0,000**	**3,666**	**0,409**	**38,616**	**0,000**	**0,014**	**3,762**	**3,205**	**0,104**	**8,279**	**0,349**	**18,662**
			upper	**2,503**	**1,296**	**14,736**	**25,106**	**44,028**	**0,013**	**0,018**	**3,782**	**3,205**	**0,690**	**8,279**	**0,349**	**18,830**
Nervión	2729,64	2729,64	lower	0,000	0,134	2,293	0,000	43,911	0,000	0,000	0,160	2,034	0,05560	4,689	0,072	177,513
			upper	2,309	0,156	8,988	17,300	44,858	9,963	22,243	0,160	2,034	0,05560	4,689	0,109	177,513
NORTE III SUBTOTAL	**2 729,64**	**2 729,64**	**lower**	**0,000**	**0,134**	**2,293**	**0,000**	**43,911**	**0,000**	**0,000**	**0,160**	**2,034**	**0,056**	**4,689**	**0,072**	**177,513**
			upper	**2,309**	**0,156**	**8,988**	**17,300**	**44,858**	**9,963**	**22,243**	**0,160**	**2,034**	**0,056**	**4,689**	**0,109**	**177,513**
Saja	510,34	510,34	lower	0,000	0,016	0,610	0,000	29,870	0,000	0,000	0,085	0,180	0,01290	0,473	0,031	1,804
			upper	0,330	0,022	1,555	3,681	29,870	1,863	3,988	0,085	0,180	0,01290	0,473	0,031	1,804
Nalón	3 778,15	3 778,15	lower	0,000	0,089	8,650	0,000	0,000	0,000	0,000	0,120	1,397	0,10410	2,892	0,124	4,204
			upper	2,570	0,147	18,273	35,064	39,488	13,790	53,296	0,134	1,397	0,10410	2,892	0,143	6,899
Sella	950,40	950,40	lower	0,000	0,013	0,511	0,000	0,000	0,000	NI	0,016	0,243	0,00870	0,723	0,003	0,841
			upper	0,637	0,041	4,247	8,305	8,818	3,469	NI	0,020	0,243	0,01000	0,723	0,026	1,629
Miera	267,98	267,98	lower	0,000	0,001	0,227	0,000	0,173	0,000	NI	0,011	0,149	0,01010	0,387	0,015	3,502
			upper	0,187	0,010	1,012	1,962	2,848	0,978	NI	0,011	0,149	0,01010	0,387	0,015	3,577
NORTE II SUBTOTAL	**5 506,87**	**5 506,87**	**lower**	**0,000**	**0,118**	**9,998**	**0,000**	**30,043**	**0,000**	**0,000**	**0,232**	**1,968**	**0,136**	**4,475**	**0,172**	**10,352**
			upper	**3,723**	**0,220**	**25,086**	**49,011**	**81,023**	**20,100**	**57,284**	**0,250**	**1,968**	**0,137**	**4,475**	**0,214**	**13,910**

Table 6a. Main riverine inputs to the maritime area in 2004 by Spain

Main riverine inputs				Quantities --->												
Discharge area (or name of river)	Flow rate [1000 m³/d] 2004	Flow rate [1000 m³/d] LTA	Estimate	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM [10^6 kg]
Masma	272,51	403,89	lower	0,00000	0,00000	0,00000	0,00000	0,00000	NI	NI	0,02740	0,39748	0,00162	NI	NI	0,38664
			upper	0,00008	0,00004	0,00041	0,00203	0,00020	NI	NI	0,02740	0,39748	0,00162	NI	NI	0,38664
Ouro	212,88	388,93	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,022	0,218	0,00068	NI	NI	0,349
			upper	0,000	0,000	0,000	0,002	0,000	NI	NI	0,022	0,218	0,00068	NI	NI	0,349
Landro	367,44	629,21	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,030	0,306	0,00147	NI	NI	0,450
			upper	0,000	0,000	0,001	0,003	0,000	NI	NI	0,030	0,306	0,00147	NI	NI	0,450
Sor	317,56	527,77	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,012	0,210	0,00022	NI	NI	0,293
			upper	0,000	0,000	0,000	0,002	0,000	NI	NI	0,012	0,210	0,00022	NI	NI	0,293
Mera	252,45	435,34	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,015	0,281	0,00079	NI	NI	1,377
			upper	0,000	0,000	0,000	0,001	0,000	NI	NI	0,015	0,281	0,00079	NI	NI	1,377
Jubía	181,73	318,33	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,006	0,166	0,00045	NI	NI	0,374
			upper	0,000	0,000	0,000	0,001	0,000	NI	NI	0,006	0,166	0,00045	NI	NI	0,374
Forcadas	81,07	140,70	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,008	0,094	0,00031	NI	NI	0,589
			upper	0,000	0,000	0,000	0,000	0,000	NI	NI	0,008	0,094	0,00031	NI	NI	0,589
Belelle	126,81	220,07	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,005	0,125	0,00020	NI	NI	0,235
			upper	0,000	0,000	0,000	0,000	0,000	NI	NI	0,005	0,125	0,00020	NI	NI	0,235
Eume	977,05	1695,65	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,069	0,841	0,00078	NI	NI	1,063
			upper	0,000	0,000	0,001	0,005	0,000	NI	NI	0,069	0,841	0,00078	NI	NI	1,063
Mandeo	435,19	771,01	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,051	0,660	0,00163	NI	NI	1,104
			upper	0,000	0,000	0,001	0,003	0,000	NI	NI	0,051	0,660	0,00163	NI	NI	1,104
Mero	293,76	456,19	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,028	0,659	0,00067	NI	NI	0,748
			upper	0,000	0,000	0,001	0,003	0,000	NI	NI	0,028	0,659	0,00067	NI	NI	0,748
Allones	528,91	987,73	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,056	1,569	0,01140	NI	NI	2,021
			upper	0,000	0,000	0,001	0,004	0,000	NI	NI	0,056	1,569	0,01140	NI	NI	2,021
Grande	346,48	647,05	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,043	0,766	0,00571	NI	NI	1,030
			upper	0,000	0,000	0,001	0,003	0,000	NI	NI	0,043	0,766	0,00571	NI	NI	1,030
Castro	89,38	166,91	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,005	0,094	0,00013	NI	NI	0,157
			upper	0,000	0,000	0,000	0,001	0,000	NI	NI	0,005	0,094	0,00013	NI	NI	0,157
Jallas	395,46	738,51	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,025	0,899	0,00099	NI	NI	0,504
			upper	0,000	0,000	0,001	0,003	0,000	NI	NI	0,025	0,899	0,00099	NI	NI	0,504
Tambre	1564,32	3828,06	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,160	3,627	0,01603	NI	NI	9,938
			upper	0,000	0,000	0,014	0,011	0,001	NI	NI	0,160	3,627	0,01603	NI	NI	9,938
Traba	146,06	315,61	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,018	0,306	0,00455	NI	NI	0,196
			upper	0,000	0,000	0,000	0,001	0,000	NI	NI	0,018	0,306	0,00455	NI	NI	0,196
Ulla	734,40	1337,48	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,057	0,818	0,00380	NI	NI	1,375
			upper	0,000	0,000	0,001	0,005	0,001	NI	NI	0,057	0,818	0,00380	NI	NI	1,375

Table 6a. Main riverine inputs to the maritime area in 2004 by Spain

Main riverine inputs				Quantities --->												
Discharge area (or name of river)	Flow rate [1000 m³/d] 2004	Flow rate [1000 m³/d] LTA	Estimate	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM [10^6 kg]
Umia	523,49	846,27	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,037	0,534	0,00272	NI	NI	0,658
			upper	0,000	0,000	0,001	0,003	0,000	NI	NI	0,037	0,534	0,00272	NI	NI	0,658
Lérez	345,52	1248,93	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,017	0,231	0,00041	NI	NI	0,529
			upper	0,000	0,000	0,000	0,002	0,000	NI	NI	0,017	0,231	0,00041	NI	NI	0,529
Verdugo _ Oitabén	246,60	483,92	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,007	0,146	0,00037	NI	NI	0,200
			upper	0,000	0,000	0,000	0,001	0,000	NI	NI	0,007	0,146	0,00037	NI	NI	0,200
GALICIA COSTA SUBTOTAL	**8 439,05**	**16 587,58**	**lower**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,699**	**12,947**	**0,055**	**0,000**	**0,000**	**23,578**
			upper	**0,002**	**0,001**	**0,024**	**0,057**	**0,006**	**0,000**	**0,000**	**0,699**	**12,947**	**0,055**	**0,000**	**0,000**	**23,578**
Miño	13 243,31	13 243,31	lower	0,000	0,215	18,495	0,000	25,597	0,000	0,000	0,184	3,683	0,00270	8,572	0,011	17,341
			upper	9,185	0,638	55,247	124,355	137,821	48,338	84,590	0,272	3,683	0,11120	8,572	0,338	23,683
NORTE I SUBTOTAL	**13 243,31**	**13 243,31**	**lower**	**0,000**	**0,215**	**18,495**	**0,000**	**25,597**	**0,000**	**0,000**	**0,184**	**3,683**	**0,003**	**8,572**	**0,011**	**17,341**
			upper	**9,185**	**0,638**	**55,247**	**124,355**	**137,821**	**48,338**	**84,590**	**0,272**	**3,683**	**0,111**	**8,572**	**0,338**	**23,683**
Guadiana	NI	8 556,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,020	1,590	0,260	3,070	0,230	85,620
			upper	62,460	0,020	62,460	62,460	156,150	9,370	124,920	0,160	1,620	0,260	3,070	0,310	85,620
Piedras	NI	NI	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
			upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Odiel *	NI	1 200,00	lower	16,430	0,000	2 057,140	12,050	4 683,680	0,000	0,000	0,090	0,170	0,000	0,280	0,000	14,270
			upper	17,880	0,000	2 057,140	15,690	4 683,680	1,310	17,520	0,090	0,180	0,000	0,290	0,040	14,270
Tinto *	NI	178,00	lower	4,010	0,000	856,680	10,340	874,230	0,000	0,000	0,080	0,110	0,000	0,170	0,000	1,300
			upper	4,220	0,000	856,680	10,340	874,230	0,190	2,600	0,080	0,110	0,000	0,170	0,010	1,300
GUADIANA SUBTOTAL	**NI**	**9 934,00**	**lower**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,020**	**1,590**	**0,260**	**3,070**	**0,230**	**85,620**
			upper	**62,460**	**0,020**	**62,460**	**62,460**	**156,150**	**9,370**	**124,920**	**0,160**	**1,620**	**0,260**	**3,070**	**0,310**	**85,620**
Guadalquivir	4 197,96	19 808,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	15,952	0,516	8,418	0,16722	8,839	0,226	47,304
			upper	0,460	0,123	4,597	15,323	50,564	1,073	16,785	0,528	8,418	0,16722	8,839	0,226	47,304
Guadalete	18,73	1 515,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,064	0,008	0,019	0,00170	0,047	0,002	0,336
			upper	0,002	0,001	0,021	0,068	0,226	0,005	0,067	0,008	0,019	0,00170	0,047	0,002	0,336
GUADALQUIVIR SUBTOTAL	**4 216,69**	**21 323,00**	**lower**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**16,016**	**0,523**	**8,438**	**0,169**	**8,886**	**0,227**	**47,640**
			upper	**0,462**	**0,123**	**4,617**	**15,391**	**50,790**	**1,077**	**16,852**	**0,536**	**8,438**	**0,169**	**8,886**	**0,227**	**47,640**
TOTAL	**40 992,38**	**69 324,40**	**lower**	**0,000**	**0,467**	**34,452**	**0,409**	**138,167**	**0,000**	**16,030**	**5,579**	**33,865**	**0,782**	**37,972**	**1,061**	**380,705**
			upper	**80,644**	**2,454**	**171,159**	**293,679**	**358,525**	**88,862**	**305,907**	**5,859**	**33,895**	**1,478**	**37,972**	**1,548**	**390,774**

*** Loads from Odiel and Tinto have not been taken into account due to high natural concentrations of heavy metals that could distort the assessment of trends**

Table 6b. Tributary riverine inputs to the maritime area in 2004 by Spain

Tributary riverine inputs				Quantities --->												
Discharge area (or name of river)	Flow rate [1000 m³/d] 2004	Flow rate [1000 m³/d] LTA	Estimate	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM [10^6 kg]
Asúa	41,82	NI	lower	0,000	0,000	0,056	0,000	0,117	0,000	0,000	0,004	0,019	0,001	0,035	0,002	0,094
			upper	0,015	0,015	0,111	0,153	0,145	0,000	0,000	0,004	0,019	0,004	0,035	0,002	0,094
Cadagua	1 399,24	NI	lower	0,000	0,000	0,268	0,681	3,694	0,005	0,000	0,041	0,643	0,000	0,961	0,042	3,224
			upper	0,511	0,511	2,609	5,363	5,184	0,009	0,005	0,044	0,643	0,133	0,961	0,042	3,224
Ibaizabal	1 290,73	NI	lower	0,000	NI	0,424	0,000	3,633	NI	NI	0,051	1,611	0,000	2,699	0,048	4,705
			upper	0,471	NI	2,485	4,711	4,517	NI	NI	0,056	1,611	0,123	2,699	0,048	4,705
Galindo	17,28	NI	lower	0,000	NI	0,000	0,000	0,000	NI	NI	0,004	0,003	0,000	0,017	0,001	0,015
			upper	0,006	NI	0,032	0,063	0,032	NI	NI	0,004	0,003	0,002	0,017	0,001	0,018
PAÍS VASCO SUBTOTAL	**2 749,07**	**0,00**	**lower**	**0,000**	**0,000**	**0,748**	**0,681**	**7,445**	**0,005**	**0,000**	**0,100**	**2,277**	**0,001**	**3,714**	**0,093**	**8,038**
			upper	**1,003**	**0,526**	**5,237**	**10,289**	**9,877**	**0,009**	**0,005**	**0,108**	**2,277**	**0,262**	**3,714**	**0,093**	**8,041**
NORTE III SUBTOTAL			**lower**													
			upper													
NORTE II SUBTOTAL			**lower**													
			upper													
Furelos	288,85	530,08	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,031	0,459	0,004	NI	NI	1,155
			upper	0,000	0,000	0,000	0,002	0,000	NI	NI	0,031	0,459	0,004	NI	NI	1,155
Deza	751,26	1 584,58	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,054	1,669	0,006	NI	NI	2,005
			upper	0,000	0,000	0,000	0,002	0,000	NI	NI	0,054	1,669	0,006	NI	NI	2,005
GALICIA COSTA SUBTOTAL	**1 040,11**	**2 114,66**	**lower**	**0,000**	**0,000**	**0,000**	**0,000**	**0,000**	**NI**	**NI**	**0,085**	**2,128**	**0,009**	**NI**	**NI**	**3,160**
			upper	**0,000**	**0,000**	**0,001**	**0,005**	**0,000**	**NI**	**NI**	**0,085**	**2,128**	**0,009**	**NI**	**NI**	**3,160**
Louro	259,46	259,46	lower	0,000	0,008	1,166	0,000	8,279	0,828	0,000	0,099	0,096	0,007	0,342	0,032	5,856
			upper	0,183	0,012	1,538	2,355	8,795	1,361	2,453	0,099	0,096	0,007	0,342	0,032	5,856
NORTE I SUBTOTAL	**259,46**	**259,46**	**lower**	**0,000**	**0,008**	**1,166**	**0,000**	**8,279**	**0,828**	**0,000**	**0,099**	**0,096**	**0,007**	**0,342**	**0,032**	**5,856**
			upper	**0,183**	**0,012**	**1,538**	**2,355**	**8,795**	**1,361**	**2,453**	**0,099**	**0,096**	**0,007**	**0,342**	**0,032**	**5,856**
GUADIANA SUBTOTAL			**lower**													
			upper													
Guadaira	257,69	1 515,00	lower	0,000	0,000	1,156	0,000	0,000	0,000	0,199	1,384	0,033	0,090	1,303	0,125	7,157
			upper	0,028	0,008	1,280	0,941	3,104	0,066	0,260	1,384	0,036	0,090	1,303	0,125	7,159
Guadiamar	777,94	611,00	lower	1,018	0,000	20,265	0,000	261,609	0,000	1,410	0,059	0,325	0,001	0,346	0,017	25,513
			upper	1,018	0,023	20,265	2,839	261,609	0,199	1,568	0,059	0,325	0,007	0,346	0,018	25,513
GUADALQUIVIR SUBTOTAL	**1 035,63**	**2 126,00**	**lower**	**1,018**	**0,000**	**21,421**	**0,000**	**261,609**	**0,000**	**1,609**	**1,442**	**0,358**	**0,091**	**1,650**	**0,143**	**32,670**
			upper	**1,046**	**0,030**	**21,545**	**3,780**	**264,713**	**0,265**	**1,828**	**1,443**	**0,361**	**0,097**	**1,650**	**0,143**	**32,673**
TOTAL	**5 084,27**	**4 500,12**	**lower**	**1,018**	**0,008**	**23,335**	**0,681**	**277,333**	**0,833**	**1,609**	**1,727**	**4,858**	**0,108**	**5,706**	**0,268**	**49,724**
			upper	**2,233**	**0,569**	**28,321**	**16,429**	**283,386**	**1,634**	**4,286**	**1,735**	**4,861**	**0,375**	**5,706**	**0,268**	**49,730**

Table 6c. Total riverine inputs to the maritime area in 2004 by Spain

Total riverine inputs				**Quantities --->**												
Discharge area (or name of river)	**Flow rate [1000 m³/d]** 2004	**Flow rate [1000 m³/d]** LTA	**Estimate**	**Cd [10^3 kg]**	**Hg [10^3 kg]**	**Cu [10^3 kg]**	**Pb [10^3 kg]**	**Zn [10^3 kg]**	**g-HCH [kg]**	**PCBs [kg]**	**NH4-N [10^6 kg]**	**NO3-N [10^6 kg]**	**PO4-P [10^6 kg]**	**Total N [10^6 kg]**	**Total P [10^6 kg]**	**SPM [10^6 kg]**
PAÍS VASCO SUBTOTAL	**9 605,89**	**NI**	lower	0,000	0,000	4,415	1,090	46,061	0,005	0,014	3,862	5,482	0,105	11,993	0,442	26,700
			upper	3,506	1,822	19,973	35,396	53,905	0,022	0,023	3,890	5,482	0,952	11,993	0,443	26,871
NORTE III SUBTOTAL	**2 729,64**	**2 729,64**	lower	0,000	0,134	2,293	0,000	43,911	0,000	0,000	0,160	2,034	0,056	4,689	0,072	177,513
			upper	2,309	0,156	8,988	17,300	44,858	9,963	22,243	0,160	2,034	0,056	4,689	0,109	177,513
NORTE II SUBTOTAL	**5 506,87**	**5 506,87**	lower	0,000	0,118	9,998	0,000	30,043	0,000	0,000	0,232	1,968	0,136	4,475	0,172	10,352
			upper	3,723	0,220	25,086	49,011	81,023	20,100	57,284	0,250	1,968	0,137	4,475	0,214	13,910
GALICIA COSTA SUBTOTAL	**9 479,16**	**18 702,24**	lower	0,000	0,000	0,000	0,000	0,000	NI	NI	0,784	15,075	0,064	0,000	0,000	26,738
			upper	0,002	0,001	0,025	0,061	0,006	NI	NI	0,784	15,075	0,064	0,000	0,000	26,738
NORTE I SUBTOTAL	**13 502,76**	**13 502,76**	lower	0,000	0,223	19,661	0,000	33,875	0,828	0,000	0,283	3,779	0,010	8,914	0,043	23,197
			upper	9,369	0,651	56,785	126,710	146,616	49,699	87,043	0,371	3,779	0,118	8,914	0,370	29,539
GUADIANA SUBTOTAL	**NI**	**9 934,00**	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,020	1,590	0,260	3,070	0,230	85,620
			upper	62,460	0,020	62,460	62,460	156,150	9,370	124,920	0,160	1,620	0,260	3,070	0,310	85,620
GUADALQUIVIR SUBTOTAL	**5 252,32**	**23 449,00**	lower	1,018	0,000	21,421	0,000	261,609	0,000	17,625	1,966	8,796	0,260	10,536	0,370	80,310
			upper	1,508	0,153	26,163	19,171	315,503	1,342	18,681	1,978	8,799	0,266	10,536	0,370	80,312
TOTAL	**46 076,65**	**73 824,52**	**lower**	**1,018**	**0,475**	**57,787**	**1,090**	**415,500**	**0,833**	**17,639**	**7,306**	**38,723**	**0,890**	**43,677**	**1,329**	**430,429**
			upper	**82,877**	**3,023**	**199,480**	**310,109**	**641,911**	**90,496**	**310,194**	**7,594**	**38,756**	**1,853**	**43,677**	**1,816**	**440,503**

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2004

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM [mg/l]
OYARZUN (País Vasco)	319,66	NI														
Lower estimate			Mean	0,000	0,000	0,775	0,000	73,908	0,000	45,000	0,032	1,200	0,000	1,500	0,051	1,638
Upper estimate				1,000	1,000	5,358	10,000	74,325	10,000	50,000	0,051	1,200	0,261	1,500	0,051	2,013
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,842	0,261	1,050	0,014	1,000
Maximum				1,000	1,000	9,300	10,000	201,000	10,000	90,000	0,086	2,007	0,261	2,300	0,103	5,400
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
n				*12*	*4*	*12*	*12*	*12*	4	2	*12*	*8*	*8*	*8*	*8*	*8*
URUMEA (País Vasco)	766,11	NI														
Lower estimate			Mean	0,000	0,000	1,508	0,000	13,475	10,000	10,000	0,133	0,603	0,000	6,481	0,050	4,300
Upper estimate			Mean	1,000	1,000	5,675	10,000	14,725	10,000	15,000	0,149	0,603	0,261	6,481	0,051	4,425
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,436	0,261	0,650	0,010	1,000
Maximum				1,000	1,000	9,100	10,000	50,000	10,000	20,000	0,537	0,885	0,261	24,390	0,134	15,800
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
n				*12*	*4*	*12*	*12*	*12*	4	2	*12*	*8*	*8*	*8*	*8*	*8*
ORIA (País Vasco)	2 121,94	NI														
Lower estimate			Mean	0,000	NI	0,000	0,000	5,100	NI	NI	0,342	1,332	0,000	1,665	0,048	6,000
Upper estimate			Mean	1,000	NI	5,000	10,000	7,600	NI	NI	0,342	1,332	0,261	1,665	0,048	6,000
Minimum				1,000	NI	5,000	10,000	5,000	NI	NI	0,078	0,835	0,261	1,050	0,011	2,800
Maximum				1,000	NI	5,000	10,000	10,200	NI	NI	0,607	1,829	0,261	2,280	0,085	9,200
> 70 % > d.l. ?			*yes/NO*	NO		NO	NO	NO			NO	NO	NO	NO	NO	yes
n				*2*		*2*	*2*	*2*			*2*	*2*	*2*	*2*	*2*	*2*
UROLA (País Vasco)	898,69	NI														
Lower estimate			Mean	0,000	0,000	3,500	0,000	4,855	0,000	15,000	0,035	2,160	0,035	3,338	0,158	6,088
Upper estimate			Mean	1,000	1,000	7,591	10,000	8,036	10,000	20,000	0,053	2,160	0,263	3,338	0,158	6,213
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	1,490	0,261	2,240	0,058	1,000
Maximum				1,000	1,000	27,600	10,000	14,700	10,000	30,000	0,101	3,252	0,280	6,690	0,287	12,200
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
n				*11*	*4*	*11*	*11*	*11*	4	2	*11*	*8*	*8*	*8*	*8*	*8*
DEVA (País Vasco)	1 183,42	NI														
Lower estimate			Mean	0,000	NI	0,925	0,000	41,625	NI	NI	7,598	1,136	0,147	4,544	0,265	13,225
Upper estimate			Mean	1,000	NI	5,300	10,000	41,625	NI	NI	7,598	1,136	0,310	4,544	0,265	13,225
Minimum				1,000	NI	5,000	10,000	11,000	NI	NI	0,086	0,603	0,261	1,470	0,037	1,700
Maximum				1,000	NI	7,400	10,000	74,000	NI	NI	53,363	1,897	0,448	7,490	0,512	40,000
> 70 % > d.l. ?			*yes/NO*	NO		NO	NO	NO			NO	NO	NO	NO	NO	yes
n				*8*		*8*	*8*	*8*			*8*	*8*	*8*	*8*	*8*	*8*
BARBADUN (País Vasco)	277,51	NI														
Lower estimate			Mean	0,000	0,000	2,533	0,000	4,250	0,000	0,000	0,110	1,174	0,000	1,630	0,067	8,963
Upper estimate			Mean	1,000	1,000	6,700	10,000	8,417	10,000	10,000	0,136	1,174	0,261	1,630	0,068	9,213
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,829	0,261	1,040	0,010	1,000
Maximum				1,000	1,000	24,800	10,000	34,000	10,000	10,000	1,097	1,445	0,261	3,020	0,118	58,000
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
n				12	4	12	12	12	4	2	12	8	8	8	8	8
BUTRON (País Vasco)	398,74	NI														
Lower estimate			Mean	0,000	0,000	1,891	1,136	4,900	0,000	0,000	0,495	1,531	0,198	4,150	0,399	12,400
Upper estimate			Mean	1,000	1,000	6,436	10,227	7,627	10,000	10,000	0,495	1,531	0,361	4,150	0,399	12,400
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,101	0,596	0,261	1,400	0,059	6,200
Maximum				1,000	1,000	20,800	12,500	13,000	10,000	10,000	1,742	1,987	0,951	17,000	1,018	29,600
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	yes
n				11	4	11	11	11	4	2	11	8	8	8	8	8

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2004

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM [mg/l]
OCA (País Vasco)	395,99	NI														
Lower estimate			Mean	0,000	0,000	6,164	1,182	6,036	0,000	0,000	0,369	1,230	0,000	3,208	0,347	6,350
Upper estimate			Mean	1,000	1,000	8,891	10,273	9,673	10,000	10,000	0,373	1,230	0,261	3,208	0,348	6,350
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,768	0,261	1,000	0,010	2,200
Maximum				1,000	1,000	22,400	13,000	48,400	10,000	10,000	1,626	2,077	0,261	7,770	1,861	12,000
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	yes
n				11	4	11	11	11	4	2	11	8	8	8	8	8
LEA (País Vasco)	296,51	NI														
Lower estimate			Mean	0,000	0,000	0,691	0,000	0,909	0,000	0,000	0,010	0,801	0,000	2,414	0,040	2,563
Upper estimate			Mean	1,000	1,000	5,236	10,000	5,455	10,000	10,000	0,042	0,801	0,261	2,414	0,041	2,688
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,587	0,261	0,910	0,010	1,000
Maximum				1,000	1,000	7,600	10,000	10,000	10,000	10,000	0,062	1,163	0,261	5,860	0,091	6,200
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
n				11	4	11	11	11	4	2	11	8	8	8	8	8
ARTIBAY (País Vasco)	198,24	NI														
Lower estimate			Mean	0,000	0,000	1,509	1,000	8,127	0,000	0,000	0,340	0,817	0,000	6,234	0,086	13,888
Upper estimate			Mean	1,000	1,000	5,600	10,091	10,855	10,000	10,000	0,358	0,817	0,261	6,234	0,087	14,013
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,361	0,261	0,870	0,010	1,000
Maximum				1,000	1,000	9,800	11,000	49,000	10,000	10,000	2,831	1,206	0,261	24,010	0,275	55,500
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
n				11	4	11	11	11	4	2	11	8	8	8	8	8
SAJA (Norte II)	510,34	510,34														
Lower estimate				0,000	0,091	6,375	0,000	149,818	0,000	0,000	0,524	1,043	0,068	3,040	0,181	17,545
Upper estimate				1,909	0,200	12,625	27,500	149,818	10,000	70,000	0,524	1,043	0,075	3,040	0,195	17,545
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,632	0,000	1,644	0,000	3,000
Maximum				2,000	0,500	24,000	40,000	283,000	10,000	70,000	1,400	1,761	0,190	4,595	0,710	83,000
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*YES*	*NO*	*NO*	*YES*	*YES*	*NO*	*YES*	*YES*	*YES*
n				11	11	8	8	11	11	5	10	10	10	10	10	11
NALÓN (Norte II)	3 778,15	3 778,15														
Lower estimate				0,000	0,055	5,889	0,000	3,636	0,000	0,000	0,058	1,107	0,064	2,088	0,108	4,182
Upper estimate				1,909	0,100	12,556	25,000	25,455	10,000	70,000	0,072	1,107	0,068	2,088	0,127	5,818
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,677	0,000	1,695	0,000	0,000
Maximum				2,000	0,200	20,000	40,000	20,000	10,000	70,000	0,140	1,254	0,165	2,434	0,350	12,000
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	NO
n				11	11	9	9	9	11	4	11	11	11	11	11	11
SELLA (Norte II)	950,40	950,40														
Lower estimate				0,000	0,057	2,429	0,000	5,714	0,000	0,000	0,057	0,775	0,029	2,027	0,044	25,000
Upper estimate				1,857	0,129	12,429	20,714	27,429	10,000	0,000	0,062	0,775	0,035	2,027	0,094	27,143
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,429	0,000	1,829	0,000	0,000
Maximum				2,000	0,200	20,000	40,000	40,000	10,000	0,000	0,078	0,946	0,070	2,335	0,180	165,000
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	YES	NO	NO
n				7	7	7	7	7	7	0	7	7	7	7	7	7
MIERA (Norte II)	267,98	267,98														
Lower estimate				0,000	0,014	5,286	0,000	2,857	0,000	0,000	0,191	1,321	0,175	3,310	0,203	11,571
Upper estimate				1,857	0,100	11,000	20,714	28,571	10,000	0,000	0,191	1,321	0,175	3,310	0,203	13,286
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,704	0,000	1,996	0,000	0,000
Maximum				2,000	0,100	14,000	40,000	30,000	10,000	0,000	0,330	1,606	0,587	4,930	0,490	55,000
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	YES	YES	YES	NO	YES	NO
n				7	7	7	7	7	7	0	7	7	7	7	7	7

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2004

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM [mg/l]
MASMA (Galicia Costa)	272,51	403,89														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,151	4,427	0,021	NI	NI	2,667
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,151	4,427	0,021	NI	NI	2,667
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,022	2,591	0,006	NI	NI	0,800
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,710	5,356	0,044	NI	NI	8,000
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
ORO (Galicia Costa)	212,88	388,93														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,175	2,986	0,011	NI	NI	3,633
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,175	2,986	0,011	NI	NI	3,633
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,026	1,912	0,004	NI	NI	1,600
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,671	3,793	0,028	NI	NI	12,000
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
LANDRO (Galicia Costa)	367,44	629,21														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,170	2,293	0,012	NI	NI	2,800
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,170	2,293	0,012	NI	NI	2,800
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,024	1,620	0,004	NI	NI	1,200
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,482	2,925	0,022	NI	NI	6,400
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
SOR (Galicia Costa)	317,56	527,77														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,078	1,950	0,002	NI	NI	1,567
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,078	1,950	0,002	NI	NI	1,567
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,007	1,100	0,000	NI	NI	0,400
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,188	2,847	0,003	NI	NI	5,200
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
MERA (Galicia Costa)	252,45	435,34														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,087	2,977	0,005	NI	NI	4,900
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,087	2,977	0,005	NI	NI	4,900
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,028	2,480	0,001	NI	NI	0,400
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,268	3,400	0,014	NI	NI	28,400
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
Jubía (Galicia Costa)	181,73	318,33														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,136	2,729	0,010	NI	NI	7,033
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,136	2,729	0,010	NI	NI	7,033
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,000	2,000	0,000	NI	NI	2,400
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,429	3,600	0,052	NI	NI	13,200
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
Forcadas (Galicia Costa)	81,07	140,70														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,188	3,212	0,011	NI	NI	16,233
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,188	3,212	0,011	NI	NI	16,233
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,043	0,130	0,003	NI	NI	1,600
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,504	6,530	0,049	NI	NI	150,000
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2004

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d]		Mean or	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
	annual	LTA	median?	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[ng/l]	[ng/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]
Belelle (Galicia Costa)	126,81	220,07														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,057	4,444	0,004	NI	NI	2,000
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,057	4,444	0,004	NI	NI	2,000
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,008	1,119	0,000	NI	NI	0,400
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,169	5,691	0,006	NI	NI	7,600
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
EUME (Galicia Costa)	977,05	1 695,65														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,104	2,657	0,003	NI	NI	2,300
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,104	2,657	0,003	NI	NI	2,300
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,007	1,893	0,001	NI	NI	0,400
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,282	3,000	0,006	NI	NI	7,200
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
MANDEO (Galicia Costa)	435,19	771,01														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,202	4,625	0,009	NI	NI	4,533
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,202	4,625	0,009	NI	NI	4,533
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,034	3,187	0,004	NI	NI	1,600
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,560	5,948	0,017	NI	NI	16,400
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
MERO (Galicia Costa)	293,76	456,19														
Lower estimate				0,000	0,000	7,900	0,000	0,000	NI	NI	0,247	5,696	0,007	NI	NI	6,800
Upper estimate				2,000	1,000	7,900	50,000	5,000	NI	NI	0,247	5,696	0,007	NI	NI	6,800
Minimum				2,000	1,000	n.d	50,000	5,000	NI	NI	0,060	1,040	0,002	NI	NI	2,800
Maximum				2,000	1,000	7,900	50,000	5,000	NI	NI	0,552	8,810	0,012	NI	NI	14,400
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				2	2	2	2	2			12	12	12			12
ALLONES (Galicia Costa)	528,91	987,73														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,260	9,176	0,093	NI	NI	6,433
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,260	9,176	0,093	NI	NI	6,433
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,063	6,900	0,026	NI	NI	2,800
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,804	10,918	0,248	NI	NI	26,000
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
GRANDE (Galicia Costa)	346,48	647,05														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,268	6,994	0,080	NI	NI	4,500
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,268	6,994	0,080	NI	NI	4,500
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,041	5,300	0,024	NI	NI	0,800
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,630	9,580	0,196	NI	NI	18,400
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
CASTRO (Galicia Costa)	89,38	166,91														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,118	2,976	0,005	NI	NI	3,500
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,118	2,976	0,005	NI	NI	3,500
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,014	1,944	0,002	NI	NI	0,400
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,366	3,600	0,008	NI	NI	9,600
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2004

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m^3/d]		Mean or	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
	annual	LTA	median?	[μg/l]	[μg/l]	[μg/l]	[μg/l]	[μg/l]	[ng/l]	[ng/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]
JALLAS (Galicia Costa)	395,46	738,51														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,149	6,074	0,007	NI	NI	3,633
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,149	6,074	0,007	NI	NI	3,633
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,042	3,300	0,004	NI	NI	1,600
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,349	7,790	0,012	NI	NI	6,800
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
TAMBRE (Galicia Costa)	1 564,32	3 828,06														
Lower estimate				0,000	0,000	25,000	19,500	0,000	NI	NI	0,180	6,229	0,017	NI	NI	7,467
Upper estimate				2,000	1,000	25,000	19,500	5,000	NI	NI	0,180	6,229	0,017	NI	NI	7,467
Minimum				2,000	1,000	NI	NI	5,000	NI	NI	0,046	4,850	0,006	NI	NI	2,000
Maximum				2,000	1,000	25,000	19,500	5,000	NI	NI	0,601	7,193	0,070	NI	NI	51,200
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				2	2	2	2	2			12	12	12			12
Traba (Galicia Costa)	146,06	315,61														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,397	6,073	0,135	NI	NI	3,033
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,397	6,073	0,135	NI	NI	3,033
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,077	4,820	0,038	NI	NI	0,800
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	1,060	8,375	0,275	NI	NI	11,600
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
ULLA (Galicia Costa)	734,40	1 337,48														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,229	2,852	0,014	NI	NI	3,500
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,229	2,852	0,014	NI	NI	3,500
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,050	1,960	0,003	NI	NI	1,200
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,583	3,500	0,048	NI	NI	15,200
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				2	2	2	2	2			12	12	12			12
UMIA (Galicia Costa)	523,49	846,27														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,193	2,675	0,020	NI	NI	3,600
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,193	2,675	0,020	NI	NI	3,600
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,023	2,100	0,006	NI	NI	0,800
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,372	3,300	0,054	NI	NI	10,000
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				2	2	2	2	2			12	12	12			12
LÉREZ (Galicia Costa)	345,52	1 248,93														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,066	1,837	0,004	NI	NI	2,233
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,066	1,837	0,004	NI	NI	2,233
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,000	0,520	0,001	NI	NI	0,400
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,315	2,500	0,011	NI	NI	12,400
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12
VERDUGO (Galicia Costa)	246,60	483,92														
Lower estimate				0,000	0,000	0,000	0,000	0,000	NI	NI	0,052	1,670	0,008	NI	NI	2,000
Upper estimate				2,000	1,000	10,000	50,000	5,000	NI	NI	0,052	1,670	0,008	NI	NI	2,000
Minimum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,000	1,340	0,001	NI	NI	0,400
Maximum				2,000	1,000	10,000	50,000	5,000	NI	NI	0,187	2,400	0,020	NI	NI	5,600
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*			*YES*	*YES*	*YES*			*YES*
n				1	1	1	1	1			12	12	12			12

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2004

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM [mg/l]
MIÑO (Norte I)	13 243,31	13 243,31														
Lower estimate				0,000	0,145	2,895	0,000	7,364	0,000	0,000	0,042	0,873	0,002	1,905	0,006	3,818
Upper estimate				1,909	0,209	13,889	25,000	27,364	10,000	70,000	0,060	0,873	0,023	1,905	0,070	5,182
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,519	0,000	1,522	0,000	0,000
Maximum				2,000	0,800	21,000	40,000	40,000	10,000	70,000	0,125	1,581	0,023	2,584	0,070	15,000
> 70 % > d.l. ?			*yes/NO*	NO	NO	NO	NO	NO	NO	NO	NO	YES	NO	YES	NO	NO
n				11	11	9	9	3	11	4	11	11	11	11	11	11
GUADIANA (Guadiana)	NI	8 556,00														
Lower estimate				0,000	0,001	0,000	0,000	0,000	0,000	0,000	0,005	0,510	0,083	0,983	0,075	27,417
Upper estimate				20,000	0,006	20,000	20,000	50,000	3,000	40,000	0,051	0,518	0,083	0,983	0,100	27,417
Minimum				20,000	0,005	20,000	20,000	50,000	3,000	40,000	0,050	0,090	0,046	0,500	0,100	15,000
Maximum				20,000	0,011	20,000	20,000	50,000	3,000	40,000	0,062	1,717	0,131	2,200	0,100	72,000
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*YES*	*YES*	*YES*	*YES*	*YES*
n				12	12	12	12	12	12	12	12	12	12	12	12	12
PIEDRAS (Guadiana)	NI	NI														
Lower estimate				0,000	0,002	0,000	0,000	0,000	0,000	0,000	0,077	0,610	0,062	0,983	0,008	32,667
Upper estimate				20,000	0,006	20,000	20,000	50,000	3,000	40,000	0,086	0,632	0,062	0,983	0,100	32,667
Minimum				20,000	0,005	20,000	20,000	50,000	3,000	40,000	0,050	0,090	0,036	0,400	0,100	13,000
Maximum				20,000	0,012	20,000	20,000	50,000	3,000	40,000	0,164	1,062	0,134	1,400	0,100	64,000
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*YES*	*YES*	*YES*	*YES*	*NO*	*YES*
n				12	12	12	12	12	12	12	12	12	12	12	12	12
ODIEL (Guadiana)	NI	1 200,00														
Lower estimate				37,500	0,002	4 696,667	27,500	10 693,333	0,000	0,000	0,195	0,378	0,008	0,650	0,000	32,583
Upper estimate				40,833	0,006	4 696,667	35,833	10 693,333	3,000	40,000	0,212	0,401	0,011	0,667	0,100	32,583
Minimum				20,000	0,005	140,000	20,000	710,000	3,000	40,000	0,050	0,090	0,004	0,200	0,100	2,000
Maximum				70,000	0,010	9 910,000	70,000	18 940,000	3,000	40,000	0,663	1,310	0,049	1,500	0,100	257,000
> 70 % > d.l. ?			*yes/NO*	*YES*	*NO*	*YES*	*NO*	*YES*	*NO*	*NO*	*NO*	*YES*	*NO*	*YES*	*NO*	*YES*
n				12	12	12	12	12	12	12	12	12	12	12	12	12
TINTO (Guadiana)	NI	178,00														
Lower estimate				61,667	0,001	13 185,833	159,167	13 455,833	0,000	0,000	1,244	1,617	0,049	2,542	0,033	20,083
Upper estimate				65,000	0,005	13 185,833	159,167	13 455,833	3,000	40,000	1,244	1,617	0,050	2,542	0,117	20,083
Minimum				20,000	0,005	410,000	30,000	820,000	3,000	40,000	0,086	0,587	0,004	0,800	0,100	1,000
Maximum				150,000	0,009	36 110,000	650,000	30 940,000	3,000	40,000	2,418	2,575	0,336	4,400	0,300	178,000
> 70 % > d.l. ?			*yes/NO*	*YES*	*NO*	*YES*	*YES*	*YES*	*NO*	*NO*	*YES*	*YES*	*NO*	*YES*	*NO*	*YES*
n				12	12	12	12	12	12	12	12	12	12	12	12	12
GUADALQUIVIR (Guadalquivir)	4 197,96	19 808,00														
Lower estimate			median	0,300	0,080	3,000	10,000	33,000	0,700	0,700	0,030	0,575	0,061	1,914	0,080	12,200
Upper estimate			median	0,300	0,080	3,000	10,000	33,000	0,700	70,000	1,590	8,771	0,225	8,963	0,262	59,000
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,575	0,061	1,914	0,080	12,200
Maximum				0,000	0,000	0,000	0,000	0,000	0,000	70,000	1,590	8,771	0,225	8,963	0,262	59,000
> 70 % > d.l. ?			*yes/NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
n				12	12	12	12	12	12	12	12	12	11	12	11	12
GUADALETE (Guadalquivir)	18,73	1 515,00														
Lower estimate				0,300	0,080	3,000	10,000	33,000	0,700	0,700	0,109	0,040	0,128	1,319	0,152	23,000
Upper estimate				1,800	0,080	3,000	10,000	33,000	0,700	164,000	12,168	8,677	1,394	20,569	1,590	86,000
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,109	0,000	0,128	1,319	0,152	23,000
Maximum				1,800	0,000	0,000	0,000	0,000	0,000	164,000	12,168	8,677	1,394	20,569	1,590	86,000
> 70 % > d.l. ?			*yes / NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*	*NO*
n				12	12	12	12	12	12	12	12	12	11	12	12	12

(1) IUPAC NOs 28, 52, 101, 118, 153, 138, 180

(2) Suspended particulate matter

NI: NO information

LTA: Long-term average flow

>70%> d.l.?: yes if more than 70% of concentration measurements were above the detection limit (cf. Table 8)

Table 7b. Contaminant concentrations of Spanish tributary rivers discharging to the maritime area. 2004

Tributary river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM [mg/l]
ASUA (País Vasco)	41,82	NI														
Lower estimate			Mean	0,000	0,000	3,664	0,000	7,682	0,000	0,000	0,240	1,265	0,039	2,309	0,137	6,175
Upper estimate			Mean	0,001	0,001	7,300	0,010	9,500	10,000	10,000	0,247	1,265	0,267	2,309	0,139	6,175
Minimum				0,001	0,001	5,000	0,010	5,000	10,000	10,000	0,039	0,781	0,261	0,990	0,010	1,300
Maximum				0,001	0,001	24,900	0,010	20,200	10,000	10,000	0,661	1,831	0,310	5,740	0,339	20,400
> 70 % > d.l. ?			*yes/no*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	YES
n				*11*	*4*	*11*	*11*	*11*	4	2	*11*	*8*	*8*	*8*	*8*	*8*
CADAGUA (País Vasco)	1 399,24	NI														
Lower estimate			Mean	0,000	0,000	0,525	0,001	7,233	10,000	0,000	0,080	1,259	0,000	1,883	0,082	6,313
Upper estimate			Mean	0,001	0,001	5,108	0,011	10,150	17,500	10,000	0,087	1,259	0,261	1,883	0,082	6,313
Minimum				0,001	0,001	5,000	0,010	5,000	10,000	10,000	0,039	0,474	0,261	0,690	0,023	2,000
Maximum				0,001	0,001	6,300	0,016	37,000	40,000	10,000	0,187	1,874	0,261	3,840	0,215	11,700
> 70 % > d.l. ?			*yes/no*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
n				*12*	*4*	*12*	*12*	*12*	4	2	*12*	*8*	*8*	*8*	*8*	*8*
GALINDO (País Vasco)	17,28	NI														
Lower estimate			Mean	0,000	NI	0,000	0,000	0,000	NI	NI	0,669	0,542	0,000	2,760	0,175	2,300
Upper estimate			Mean	0,001	NI	5,000	0,010	5,000	NI	NI	0,669	0,542	0,261	2,760	0,180	2,800
Minimum				0,001	NI	5,000	0,010	5,000	NI	NI	0,062	0,045	0,261	2,390	0,010	1,000
Maximum				0,001	NI	5,000	0,010	5,000	NI	NI	1,276	1,039	0,261	3,130	0,349	4,600
> 70 % > d.l. ?			*yes/no*	no		NO	NO	NO			NO	NO	NO	NO	NO	NO
n				*2,000*		*2*	*2*	*2*			*2*	*2*	*2*	*2*	*2*	*2*
Ibaizabal (País Vasco)	1 290,73	NI														
			Mean	0,000	NI	0,900	0,000	7,713	NI	NI	0,109	3,420	0,000	5,730	0,102	9,988
			Mean	0,001	NI	5,275	0,010	9,588	NI	NI	0,119	3,420	0,261	5,730	0,102	9,988
				0,001	NI	5,000	0,010	5,000	NI	NI	0,039	1,416	0,261	2,050	0,014	2,800
				0,001	NI	7,200	0,010	15,900	NI	NI	0,226	8,671	0,261	15,340	0,234	27,600
			yes/no	NO		NO	NO	NO			NO	NO	NO	NO	NO	NO
				8		*8*	*8*	*8*			*8*	*8*	*8*	*8*	*8*	*8*
LOURO (Norte I)	259,46	259,46														
Lower estimate			Mean	0,000	0,127	13,111	0,000	65,182	3,636	0,000	1,961	1,127	0,091	4,575	0,337	35,091
Upper estimate			Mean	1,909	0,164	18,667	25,000	74,273	11,818	70,000	1,961	1,127	0,091	4,575	0,337	35,091
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,271	0,000	2,094	0,000	10,000
Maximum				2,000	0,500	28,000	40,000	360,000	20,000	70,000	6,747	2,619	0,300	10,889	0,810	142,000
> 70 % > d.l. ?			*yes/no*	NO	NO	NO	NO	NO	NO	NO	SI	SI	SI	SI	SI	SI
n				11	11	9	9	11	11	5	11	11	11	11	11	11
GUADAIRA (Guadalquivir)	257,69	1 515,00														
Lower estimate			median	1,000	0,080	3,000	10,000	279,000	0,700	0,700	0,030	0,450	0,020	0,450	0,020	8,000
Upper estimate				9,700	0,080	87,000	10,000	3 359,000	0,700	44,000	0,427	6,184	0,180	6,667	0,115	113,000
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	6,338	0,000	0,370	1,342	0,558	0,000
Maximum				0,000	0,000	22,000	0,000	0,000	0,000	40,000	31,785	2,352	2,533	39,039	2,719	108,500
> 70 % > d.l. ?			*yes/no*	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO	NO
n				12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	11,000	12,000	12,000	12,000

Table 8. Detection limits for contaminant concentrations of Spanish inputs to the maritime area 2004

Sampling point	Type		Cd	Hg	Cu	Pb	Zn	g-HCH	PCB's	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
			Detection limits for contaminant concentrations -->												
			[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[ng/l]	[ng/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]
País Vasco	S	-	10	1	10	200	10	-	-	0,3	0,1	0,02	1	1	5
País Vasco	I	-	50	10	50	100	50	-	-	0,05	0,1	0,02	0,5	0,1	2
País Vasco (all sampling points)	R	(all sampling points)	1	1	5	10	5	10	10	0,039	0,023	0,261	0,2	0,01	1
Norte III (Nervión)	R	(all sampling points)													
Norte II (Asturias)	S	-	0,05	0,005	0,08	0,2	0,05	NI	NI	1	0,09	0,05	10	0,05	2
Norte II (Asturias)	I	-	0,05	0,005	0,08	0,2	0,05	NI	NI	1	0,09	0,05	10	0,05	2
Norte II (Cantabria)	I	-													
Norte II (all sampling points)	R	(all sampling points)	2	0,1	10	20	30	10	70 (suma) 10 (individual)	0,039	0,113	0,023	1,455	0,07	3
Galicia Costa	S	(all sampling points)	0,03	0,00063	0,08	0,19									
Galicia Costa	S	REDONDELA, VILAGARCIA	0,02												
Galicia Costa	S	BETANZOS, BOIRO, REDONDELA, VILAGARCÍA		0,0005											
Galicia Costa	S	BETANZOS, O GROVE			0,18										
Galicia Costa	S	CAMBADOS, CANGAS			0,12										
Galicia Costa	S	REDONDELA			0,1										
Galicia Costa	I	-													
Galicia Costa (all sampling points)	R	(all sampling points)	2	1	10	50	5			0,02	0,1	0,01	0,02	0,01	0,5
Norte I (all sampling points)	R	(all sampling points)													
Guadiana & Guadalquivir (Andalucía)	S & I (lab. 1)	-	0,006	0,001	0,011	0,028	0,056	50	50	0,1	1,55	0,2	0,5	0,2	2,5
Guadiana & Guadalquivir (Andalucía)	S & I (lab. 2)	-	0,044	0,0011	0,055	0,111	0,055	50	50	0,1	6	0,1	5	0,3	2,5
Guadiana (all sampling points)	R	(all sampling points)	20	0,005	20	20	50	3	40	0,05	0,09	0,004	0,2	0,1	1
Guadalquivir (all sampling points)	R	(all sampling points)	0,3	0,08	3	10	33	0,7	0,7	0,03	0,04	0,02	0,03	0,02	1,7

Annex 10

SWEDEN

Annual report on riverine inputs and direct discharges to Convention waters during the year 2004 by Sweden

Annual report on riverine inputs and direct discharges by Sweden to Convention waters during the year 2004

Name, address and contact numbers of reporting authority to which any further enquiry should be addressed:

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A. General information

Table 1: General overview of river systems (for riverine inputs) and direct discharge areas (for direct discharges) included in the data report

Country: Sweden

Name of river, sub-area and discharge area[1]	Nature of the receiving water[2]
Rönne å (96), major, 1897 km^2	Kattegat
Stensån (97), minor*, 284 km^2	Kattegat
Lagan (98), major, 6 452 km^2	Kattegat
Genevadsån (99), minor*, 224 km^2	Kattegat
Fylleån (100), minor*, 394 km^2	Kattegat
Nissan (101), major, 2 686 km^2	Kattegat
Suseån (102), minor*, 450 km^2	Kattegat
Ätran (103), major, 3 342 km^2	Kattegat
Himleån (104), minor*, 201 km^2	Kattegat
Viskan (105), major, 2 202 km^2	Kattegat
Rolfsån (106), minor*, 694 km^2	Kattegat
Kungsbackaån (107), minor*, 302 km^2	Kattegat
Göta älv (108), major, 50 119 km^2	Kattegat
Bäveån (109), major, 301 km^2	Skagerrak
Örekilsälven (110), major, 1 340 km^2	Skagerrak
Strömsån (111), major, 256 km^2	Skagerrak
Enningsdalsälven (112), major, 782 km^2	Skagerrak

[1] i.e. name of estuary or length of coastline

[2] i.e. estuary or coastal water; if an estuary, state the tidal range and the daily flushing volume

* Note: Minor rivers are not monitored. The input is based on the areal input from the two small watersystems Genevadsån and Fylleån. These inputs are not given separately, but included in the input from the tributaries.

Map indicating the river systems and catchments. Note: The River Göta älv drainage area is only partly shown.

B. Total riverine inputs and direct discharges (Tables 4a and 4b) for the year 2004

Note: Table 4b is total direct discharges and riverine inputs to maritime area by region. Please provide totals for each OSPAR region and for total inputs.

B.1 Give general comments on the total riverine inputs and direct discharges (e.g. changes from last year, trends, percentage of particle bound determinand, results that need to be highlighted etc.):

As noted in the headline for Table 4b, our data for "Riverine inputs from Tributary rivers" covers both "Minor rivers" and "Unmonitored areas". It is also noted there that identical values have been given in rows "lower" and "upper". We lack the necessary raw data to produce these interval estimates. We believe, however, that the only cases where the difference is not negligible are Hg and Cd from point sources.

C. Direct discharges for the year 2004

Sewage Effluents (Table 5a)

C.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (cf. section 7 of the RID Principles), including for those under voluntary reporting:

Water flow is measured continuously. Total N, Total P, BOD7 and CODCr are sampled (in proportion to flow) 12 – 52 times annually. Metals are sampled 1 – 12 times annually, on the biggest plant even 52 times.

In computing annual emissions, concentrations are weighted by relevant water amounts. Estimated stormwater overflows at the plant have been added. For Cd and Hg, emission estimates are believed to be uncertain since most concentration measurements are probably below the limit of detection.

C.2 Describe the determinands, other than those specified in paragraph 2.1 of the RID Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

C.3 Give general comments on the discharges of sewage effluents (e.g. compared to previous years, and/or extent to which industrial effluents are discharged through sewerage systems):

None

Industrial Effluents (Table 5b)

C.4 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (ref.: Section 7 of the RID Principles), including for those under voluntary reporting:

Varies among industries. Emissions are generally reported above certain threshold values, mostly well below those applied in the EPER register. Water flows are often not reported. A few facilities discharge very large (unreported) water amounts, mostly cooling water.

C.5 Give any other relevant information (e.g. proportion of substance discharged as insoluble material):

None

C.6 Give any available information on other discharges directly to Convention Waters - through e.g. urban run-off and stormwater overflows - that are not covered by the data in Tables 5a and 5b:

As mentioned in C.1, estimated stormwater overflows at the plant are included. Contributions from overflows in the sewage net are believed to be small.

Annual reporting is restricted to municipal treatment plants designed for more than 2 000 i.e. ("person equivalents") and "the most important" industrial point sources.

C.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

C.8 Give general comments on industrial effluents (e.g. compared to previous years):

None

Total direct discharges (Table 5c)

C.9 Give general comments on total direct discharges (e.g. compared to previous years):

None

D. Riverine inputs for the year 2004

Main Rivers (Tables 6a and 7a)

D.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7a) upon which the measurement is based (ref.: Section 6 of the RID Principles), including for those under voluntary reporting:

In table 6a, concentrations have been linearly interpolated and multiplied by daily flow values obtained from models.

In table 7a, arithmetical means of concentrations are given.

D.2 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

None

D.3 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

D.4 Give general comments on the inputs from main rivers (e.g. significant changes in inputs, concentrations and flows compared to previous years):

None

Tributary Rivers (Tables 6b and 7b)

D.5 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7b) upon which the measurement is based (ref.: Section 6 of the Principles):

Area losses are calculated for representative small rivers and applied to other small rivers and coastal areas (see note on Table 1).

Details can be found at http://info1.ma.slu.se/ma/www_ma.acgi$Load?ID=Intro

D.6 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

None

D.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

None

D.8 Give any available information on other inputs - through e.g. polder effluents or from coastal areas - that are not covered by data in Tables 6b and 7b:

None

D.9 Give general comments on the inputs from tributary rivers (e.g. significant change in inputs, concentrations and flows compared to previous years):

None

Total riverine inputs (Table 6c)

D.10 Give general comments on the total riverine inputs (e.g. significant change in inputs, concentrations and flows compared to previous years):

None

E. Unmonitored areas

E.1 Describe the methods of quantification used for the different determinands or groups of determinands:

None

F. Limits of detection (Table 8)

F.1 Information concerning limits of detection should be presented in Table 8 which includes different columns for rivers/tributaries, sewage effluents and industrial effluents. Give comments if the detection limits are higher than stated in the RID Principles:

None

G. Additional comments

G.1 Indicate and explain, if appropriate:

- where and why the applied procedures do not comply with agreed procedures;
- significant changes in monitoring sites, important for comparison of the data before and after the date of the change;
- incomplete or distorted data.

Table 4b: Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by Sweden
Unmonitored areas are included in Tributary Rivers. Identical values are given in rows “lower” and “upper”.

TOTAL INPUTS			Quantities --->												
Discharge region	Estimate	Flow rate (1000 m3/d)	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM [10^6 kg]
INPUTS TO OSPAR REGION KATTEGAT															
RIVERINE INPUTS															
Main Rivers	lower	61524	0,321	0,0511	30,1	9,8	117,6	NI	NI0	0,944	12,62	0,197	24,3	0,529	NI
	upper		0,321	0,0511	30,1	9,8	117,6	NI	NI0	0,944	12,62	0,197	24,3	0,529	NI
Tributary Rivers	lower	8268	0,033	0,0038	2,4	0,67	4,9	NI	NI	0,218	4,54	0,058	6,9	0,12	NI
	upper		0,033	0,0038	2,4	0,67	4,9	NI	NI	0,218	4,54	0,058	6,9	0,12	NI
Total Riverine Inputs	**lower**	69792	0,354	0,0549	32,5	10,47	122,5	NI	NI	1,162	17,16	0,255	31,2	0,649	NI
	upper		0,354	0,0549	32,5	10,47	122,5	NI	NI	1,162	17,16	0,255	31,2	0,649	NI
DIRECT DISCHARGES															
Sewage Effluents	lower	445	0,0046	0,0045	1,587	0,088	2,345	NI	NI	1,022	NI	NI	1,611	0,061	NI
	upper		0,0046	0,0045	1,587	0,088	2,345	NI	NI	1,022	NI	NI	1,611	0,061	NI
Industrial Effluents	lower	113	0,0161	0,0001	0,179	0,127	1,944	NI	NI	0,015	NI	NI	0,149	0,013	NI
	upper		0,0161	0,0001	0,179	0,127	1,944	NI	NI	0,015	NI	NI	0,149	0,013	NI
Fish Farming	lower		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	upper		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Total Direct Inputs	**lower**	558	0,0206	0,0046	1,766	0,215	4,289	NI	NI	1,037	NI	NI	1,760	0,074	NI
	upper		0,0206	0,0046	1,766	0,215	4,289	NI	NI	1,037	NI	NI	1,760	0,074	NI
UNMONITORED AREAS															
Unmonitored Areas	lower														
	upper														
REGION TOTAL	**lower**	70350	70350	0,3746	0,0595	34,266	10,685	126,789	NI	NI	2,199	17,160	0,255	32,960	NI
	upper		70350	0,3746	0,0595	34,266	10,685	126,789	NI	NI	2,199	17,160	0,255	32,960	NI

Table 4b (continued): Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by Sweden
Unmonitored areas are included in Tributary Rivers. Identical values are given in rows "lower" and "upper".

INPUTS TO OSPAR REGION SKAGERRAK

RIVERINE INPUTS															
Main Rivers	lower	4658	0,031	0,006	2,3	0,71	8	NI	NI	0,072	0,64	0,024	1,6	0,048	NI
	upper		0,031	0,006	2,3	0,71	8	NI	NI	0,072	0,64	0,024	1,6	0,048	NI
Tributary Rivers	lower	4666	0,032	0,0069	2,5	0,8	9	NI	NI	0,091	0,72	0,032	1,8	0,061	NI
	upper		0,032	0,0069	2,5	0,8	9	NI	NI	0,091	0,72	0,032	1,8	0,061	NI
Total Riverine Inputs	**lower**	9324	0,063	0,0129	4,8	1,51	17	NI	NI	0,163	1,36	0,056	3,4	0,109	NI
	upper		0,063	0,0129	4,8	1,51	17	NI	NI	0,163	1,36	0,056	3,4	0,109	NI
DIRECT DISCHARGES															
Sewage Effluents	lower	57	0,0161	0,0001	0,179	0,127	1,944	NI	NI	0,015	NI	NI	0,149	0,013	NI
	upper		0,0161	0,0001	0,179	0,127	1,944	NI	NI	0,015	NI	NI	0,149	0,013	NI
Industrial Effluents	lower	10	0,0004	0,0005	0,660	0,006	0,501	NI	NI	0,046	NI	NI	0,051	0,002	NI
	upper		0,0004	0,0005	0,660	0,006	0,501	NI	NI	0,046	NI	NI	0,051	0,002	NI
Fish Farming	lower		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	upper		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Total Direct Inputs	**lower**	67	0,0014	0,0008	0,776	0,029	0,610	NI	NI	0,186	NI	NI	0,357	0,010	NI
	upper		0,0014	0,0008	0,776	0,029	0,610	NI	NI	0,186	NI	NI	0,357	0,010	NI
UNMONITORED AREAS															
Unmonitored Areas	lower														
	upper														
REGION TOTAL	**lower**	9391	0,0644	0,0137	5,576	1,539	17,610			0,349	1,360	0,056	3,757	0,119	NI
	upper		0,0644	0,0137	5,576	1,539	17,610			0,349	1,360	0,056	3,757	0,119	NI

Table 4b (continued): Total Riverine Inputs and Direct Discharges to the Maritime Area in 2004 by Sweden
Unmonitored areas are included in Tributary Rivers. Identical values are given in rows “lower” and “upper”.

TOTAL INPUTS TO OSPAR REGIONS															
RIVERINE INPUTS															
Main Rivers	lower	66182	0,352	0,0571	32,4	10,51	125,6	NI	NI	1,016	13,24	0,22	25,8	0,576	NI
	upper		0,352	0,0571	32,4	10,51	125,6	NI	NI	1,016	13,24	0,22	25,8	0,576	NI
Tributary Rivers	lower	12934	0,065	0,0107	4,9	1,47	13,9	NI	NI	0,309	5,26	0,09	8,7	0,181	NI
	upper		0,065	0,0107	4,9	1,47	13,9	NI	NI	0,309	5,26	0,09	8,7	0,181	NI
Total Riverine Inputs	**lower**	79116	0,417	0,0678	37,3	11,98	139,5	NI	NI	1,325	18,52	0,311	34,6	0,758	NI
	upper		0,417	0,0678	37,3	11,98	139,5	NI	NI	1,325	18,52	0,311	34,6	0,758	NI
DIRECT DISCHARGES															
Sewage Effluents	lower	502	0,0055	0,0048	1,703	0,111	2,453	NI	NI	1,162	NI	NI	1,917	0,069	NI
	upper		0,0055	0,0048	1,703	0,111	2,453	NI	NI	1,162	NI	NI	1,917	0,069	NI
Industrial Effluents	lower	122	0,0165	0,0006	0,839	0,133	2,445	NI	NI	0,061	NI	NI	0,200	0,015	NI
	upper		0,0165	0,0006	0,839	0,133	2,445	NI	NI	0,061	NI	NI	0,200	0,015	NI
Fish Farming	lower		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	upper		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Total Direct Inputs	**lower**	624	0,0220	0,0064	2,542	0,244	4,898	NI	NI	1,223	NI	NI	2,117	0,083	NI
	upper		0,0220	0,0064	2,542	0,244	4,898	NI	NI	1,223	NI	NI	2,117	0,083	NI
UNMONITORED AREAS															
Unmonitored Areas	lower														
	upper														
REGION TOTAL	**lower**	79740	0,4390	0,0742	39,842	12,224	144,398	NI	NI	2,548	18,520	0,311	36,717	0,841	NI
	upper		0,4390	0,0742	39,842	12,224	144,398	NI	NI	2,548	18,520	0,311	36,717	0,841	NI

Table 5a. Direct discharges to the maritime area in 2004 by Sweden

Sewage effluents			Quantities --->												
Discharge area	Number of sites (#)	Flow rate [1000 m3/d]	Cd [10 ^{3} kg]	Hg [10 ^{3} kg]	Cu [10 ^{3} kg]	Pb [10 ^{3} kg]	Zn [10 ^{3} kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Kattegat	14	445	0,0046	0,0045	1,587	0,088	2,345	NI	NI	1,022	NI	NI	1,611	0,061	NI
Skagerrak	19	57	0,0010	0,0004	0,116	0,022	0,109	NI	NI	0,140	NI	NI	0,306	0,008	NI
Total:	33	502	0,006	0,005	1,703	0,111	2,453	NI	NI	1,162	NI	NI	1,917	0,069	NI

Table 5b. Direct discharges to the maritime area in 2004 by Sweden

Industrial effluents			Quantities --->												
Discharge area	Number of sites (#)	Flow rate [1000 m^3/d]	Cd [10 ^{3} kg]	Hg [10 ^{3} kg]	Cu [10 ^{3} kg]	Pb [10 ^{3} kg]	Zn [10 ^{3} kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Kattegat	4	113	0,0161	0,0010	0,179	0,127	1,944	NI	NI	0,015	NI	NI	0,149	0,013	NI
Skagerrak	5	10	0,0004	0,0005	0,660	0,006	0,501	NI	NI	0,046	NI	NI	0,051	0,002	NI
Total:	9	122	0,016	0,000	0,839	0,133	2,445	NI	NI	NI	NI	NI	0,200	0,015	NI

Table 5c. Direct discharges to the maritime area in 2004 by Sweden

Total direct discharges			Quantities ---> (lower estimate (aa)/upper estimate (bb)); alternatively: (estimate (aa), precision in % (bb))												
Discharge area	Number of sites (#)	Flow rate [1000 m^3/d]	Cd [10 ^{3} kg]	Hg [10 ^{3} kg]	Cu [10 ^{3} kg]	Pb [10 ^{3} kg]	Zn [10 ^{3} kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Kattegat	18	558	0,0206	0,0055	1,766	0,215	4,289	NI	NI	1,037	NI	NI	1,760	0,074	NI
Skagerrak	24	67	0,0014	0,0009	0,776	0,029	0,610	NI	NI	0,186	NI	NI	0,357	0,010	NI
Overall total:	42	624	0,022	0,006	2,542	0,244	4,898	NI	NI	1,223	NI	NI	2,117	0,083	NI

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180
(2) Suspended particulate matter
(#) alternatively: Nature of receiving wate
NI: No information

Table 6a. Riverine inputs to the maritime area in 2004 by Sweden

Main riverine inputs			Quantities --->												
Discharge area Kattegat, Skagerrak	Flow rate [1000 m³/d] 2004	LTA 1961-90	Cd [10 ^{3} kg]	Hg [10 ^{3} kg]	Cu [10 ^{3} kg]	Pb [10 ^{3} kg]	Zn [10 ^{3} kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Rönne å	1650	2030	0,019	0,0016	0,9	0,38	5,2	NI	NI	0,057	1,78	0,021	2,5	0,055	NI
Lagan	8294	7410	0,069	0,0109	4,4	1,79	16,7	NI	NI	0,142	1,19	0,021	3,4	0,066	NI
Nissan	4320	3690	0,056	0,0077	2,2	1,23	28,8	NI	NI	0,131	0,55	0,011	1,8	0,038	NI
Ätran	5011	5070	0,05	0,0062	2,4	0,77	9,6	NI	NI	0,121	1,09	0,013	2,3	0,035	NI
Viskan	3715	3450	*0,01*	*0,0018*	*1,2*	*0,33*	*3,9*	NI	NI	0,116	0,83	0,02	1,7	0,044	NI
Göta älv	38534	50530	0,117	0,0229	19	5,3	53,4	NI	NI	0,377	7,18	0,111	12,6	0,291	NI
Bäveån	484	350	0,004	0,0007	0,5	0,13	1,2	NI	NI	0,009	0,07	0,003	0,2	0,005	NI
Örekilsälven	2333	2050	0,016	0,0034	1,2	0,4	4,5	NI	NI	0,046	0,36	0,016	0,9	0,031	NI
Strömsån	441	390	0,003	0,0007	0,2	0,08	0,9	NI	NI	0,009	0,07	0,003	0,2	0,006	NI
Enningdalsälven	1400	1360	0,008	0,0012	0,4	0,1	1,4	NI	NI	0,008	0,14	0,002	0,3	0,006	NI
Total:	66182	76330	0,352	0,0571	32,4	10,51	125,6	NI	NI	1,016	13,26	0,221	25,9	0,577	NI

Table 6b. Riverine inputs to the maritime area in 2004 by Sweden (smaller rivers and coastal areas)

Tributary riverine inputs			Quantities --->												
Discharge area Kattegat, Skagerrak	Flow rate [1000 m³/d] 2004	LTA 1961-90	Cd [10 ^{3} kg]	Hg [10 ^{3} kg]	Cu [10 ^{3} kg]	Pb [10 ^{3} kg]	Zn [10 ^{3} kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
smaller rivers and coastal areas in Kattegat	8268		0,033	0,0038	2,4	0,67	4,9	NI	NI	0,218	4,54	0,058	6,9	0,12	NI
smaller rivers and coastal areas in Skagerrak	4666		0,032	0,0069	2,5	0,8	9	NI	NI	0,091	0,72	0,032	1,8	0,061	NI
Total:			0,065	0,0107	4,9	1,47	13,9	NI	NI	0,309	5,26	0,09	8,7	0,181	NI

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180.
(2) Suspended particulate matte
LTA: Long-term average flow: specify perio

Table 6c. Riverine inputs to the maritime area in 2004 by Sweden

Total Riverine Inputs			Quantities --->												
Discharge area	Flow rate [1000 m³/d] 2004	LTA 1961-90	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Kattegat	69792		0,354	0,0549	32,5	10,47	122,5	NI	NI	1,162	17,16	0,255	31,2	0,649	NI
Skagerrak	9324		0,063	0,0129	4,8	1,51	17	NI	NI	0,163	1,36	0,056	3,4	0,109	NI
Overall total:	79116		0,417	0,0678	37,3	11,98	139,5	NI	NI	1,325	18,52	0,311	34,6	0,758	NI

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180.
(2) Suspended particulate matter
LTA: Long-term average flow: specify perio

Table 7a. Contaminant concentrations of Swedish rivers discharging to the maritime area 2004

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d]		Mean or	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
Kattegat	annual	LTA	median?	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[ng/l]	[ng/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]
Rönne å	1650	2 030	mean	0,029		1,45	0,643	8,36	ni	ni	0,08	1,11	0,013	2,49	0,098	ni
Minimum				0,014		1,2	0,35	4,4			0,024	0,36	0,007	1,78	0,033	
Maximum				0,044		2	1,42	16			0,297	1,96	0,02	3,11	0,463	
> 70 % > d.l. ?			*ves*													
n				12	0	12	12	12			12	12	12	12	12	0
Lagan	8294	7 410	mean	0,02	0,0032	1,39	0,512	5,63	ni	ni	0,043	0,28	0,0054	0,99	0,017	ni
Minimum				0,008	0,0015	1	0,25	2,7			0,023	0,16	0,004	0,8	0,009	
Maximum				0,047	0,0081	2	1,62	15			0,07	0,48	0,008	1,41	0,036	
> 70 % > d.l. ?			*yes*													
n				12	12	12	12	12			12	12	12	12	12	0
Nissan	4320	3 690	mean	0,034	0,0044	1,43	0,719	14,31	ni	ni	0,082	0,37	0,0069	1,12	0,023	ni
Minimum				0,01	0,002	0,8	0,27	4,3			0,024	0,19	0,005	0,9	0,015	
Maximum				0,079	0,011	2,5	1,5	85			0,19	0,61	0,012	1,39	0,045	
> 70 % > d.l. ?			*yes*													
n				12	12	12	12	12			12	12	12	12	12	0
Ätran	5011	5 070	mean	0,027	0,0031	1,35	0,393	5,38	ni	ni	0,063	0,6	0,0068	1,25	0,02	
Minimum				0,008	0,0005	0,85	0,12	1,8			0,029	0,38	0,004	0,94	0,005	
Maximum				0,048	0,0051	3	0,7	11			0,132	0,9	0,013	1,46	0,04	
> 70 % > d.l. ?			*yes*													
n				12	12	12	12	12			12	12	12	12	12	0
Viskan	3715	3 450	mean	calc	calc	2,23	calc	8,43	ni	ni	0,085	0,64	0,0143	1,28	0,034	ni
Minimum						1,8		2,3			0,02	0,31	0,008	0,83	0,017	
Maximum						3		12			0,235	1	0,03	1,78	0,066	
> 70 % > d.l. ?			*yes*													
n				0	0	3	0	3	0		12	12	12	12	12	0
Göta älv	38534	50 530	mean	0,008	0,0017	1,35	0,372	3,79	ni	ni	0,027	0,5	0,008	0,9	0,021	
Minimum				0,005	0,0008	1,1	0,21	2,5			0,009	0,39	0,004	0,77	0,014	
Maximum				0,018	0,0029	1,5	0,54	5,2			0,044	0,66	0,014	1,13	0,035	
> 70 % > d.l. ?			*yes*													
n				12	12	12	12	12			12	12	12	12	12	0

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow
(2) Suspended particulate matte
ND: Not detecte > 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table

Table 7a, cont. Contaminant concentrations of Swedish rivers discharging to the maritime area 2004

Main rivers, cont.				Contaminant concentrations -->												
Discharge area Skagerrak	Flow rate [1000 m³/d] annual	LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Bäveån	484	350	mean	0,019	0,0039	3,94	0,67	6,12	ni	ni	0,048	0,32	0,0148	1,05	0,032	ni
Minimum				0,01	0,0012	1,1	0,39	3,5			0,021	0,07	0,006	0,72	0,02	
Maximum				0,029	0,0082	18	1,58	11			0,099	0,54	0,027	1,88	0,06	
> 70 % > d.l. ?			*yes*													
n				12	12	12	12	12			12	12	12	12	12	0
Örekilsälven	2333	2 050	mean	0,018	0,0038	1,46	0,441	4,7	ni	ni	0,062	0,42	0,0176	1,07	0,037	
Minimum				0,01	0,0021	1,2	0,27	2			0,031	0,22	0,008	0,82	0,025	
Maximum				0,023	0,005	1,8	0,61	10			0,11	0,64	0,028	1,25	0,051	
> 70 % > d.l. ?			*yes*													
n				11	11	11	11	11			11	11	11	11	11	
Enningdalsälven	1400	1 360	mean	0,014	0,0021	0,77	0,181	2,51	ni	ni	0,016	0,26	0,0041	0,65	0,012	ni
Minimum				0,006	0,0013	0,67	0,09	1,3			0,01	0,1	0,002	0,46	0,008	
Maximum				0,022	0,004	0,91	0,31	3,7			0,024	0,39	0,007	0,83	0,019	
> 70 % > d.l. ?			*yes*													
n				12	11	12	12	12			12	12	12	12	12	0

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180
LTA: Long-term average flow
(2) Suspended particulate matter
ND: Not detected
> 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table

Table 8. Detection limits for contaminant concentrations of Swedish inputs to the maritime area

Riverine				Detection limits for contaminant concentrations -->												
Sampling point	Type (3)			Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
main rivers	R			0.003	0.0001	0.004	0.02	0.2	na	na	0.001	0.001	0.001	0.05	0.005	na

 # specify here to which part of the inputs this table relates

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180; make separate list if needed
(2) Suspended particulate matter
(3) S: sewage; I: Industrial discharges; R: riverine inputs (main and tributary
ND: Not detected

Annex 11

UNITED KINGDOM

Annual report on riverine inputs and direct discharges to Convention waters during the year 2004 by the United Kingdom

Text report, including Tables A-E

Table 5a Sewage Effluents. Reported Maritime Area of the OSPAR Convention in 2004 by the United Kingdom

Table 5b Industrial effluents. Reported Maritime Area of the OSPAR Convention in 2004 by the United Kingdom

Table 6c Riverine inputs. Reported Maritime Area of the OSPAR Convention in 2004 by the United Kingdom

Annual Report on Riverine Inputs and Direct Discharges by The United Kingdom to Convention Waters during the year 2004

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A. General information

Table 1: General overview of river systems (for riverine inputs) and direct discharge areas (for direct discharges) included in the data report

Country: UK

Name of river, sub-area and discharge area[1]	Nature of the receiving water[2]
The results are presented as summary statistics for each of six sea areas adjacent to the UK, namely: the North Sea (North); the North Sea (South); the Channel; the Celtic Sea; the Irish Sea; and the Atlantic. Each of these six sea areas is subdivided into sampling regions. The boundaries of these sampling regions are generally the same as or very close to the boundaries of the ICES Zones and are indicated on the map which accompanies this report (which also shows UK rivers and the catchment areas related to the six sea areas).	

[1] i.e. name of estuary or length of coastline

[2] i.e. estuary or coastal water; if an estuary, state the tidal range and the daily flushing volume

A map indicating river systems and catchments is attached.

B. Total riverine inputs and direct discharges (Tables 4a and 4b) for the year 2004

Information provided by the UK on total riverine inputs and direct discharges to the OSPAR Convention Area

The UK has provided **3 draft tables in the attached excel file** (**tables A, B and C**) which show the estimates of inputs to the OSPAR Maritime Area for the years 1990 to 2004. These are included to show how inputs of the various determinands are changing over time. ***However, comparisons between years must be approached with extreme caution, due to the fact that rainfall patterns strongly influence flows and the amount of land run-off, which in turn affect the loads of most determinands measured***.

Table A gives the annual estimates of UK **Direct** Inputs (sewage plus industrial) from 1990 to 2004

Table B gives the annual estimates of UK **Riverine** Inputs from 1990 to 2004

Table C gives the annual estimates of UK **Total** Inputs (direct plus riverine) from 1990 to 2004

Note that Tables A, B and C do not include inputs from fish farms

Table D provides information on how the total inputs (direct, excluding fish farms, plus riverine) are distributed across the 6 UK sea areas (North Sea North, North Sea South, Channel, Celtic Sea, Irish Sea and Atlantic).

Table DF provides information on how the total inputs (direct, **including fish farms**, plus riverine) are distributed across the 6 UK sea areas (North Sea North, North Sea South, Channel, Celtic Sea, Irish Sea and Atlantic).

In addition, **the new table 4B (agreed at INPUT 2005),** which provides information on UK total riverine inputs, and direct discharges to each OSPAR region has been included. This provides information on UK inputs from fish farming for the first time. In connection with this table, the UK has not included a row on tributary rivers, as the riverine data provided by our agencies includes both main rivers and the small number of associated tributary rivers combined together.

B.1 Give general comments on the total riverine inputs and direct discharges (e.g. changes from last year, trends, percentage of particle bound determinand, results that need to be highlighted etc.):

Generally speaking 2004 was a year with significantly higher rainfall and river flows than in 2003, with a number of areas, particularly in the North of the UK, where flows were higher than those for both 2003 and the long term average. This has resulted in loadings (particularly riverine) to tidal waters being mainly higher than in 2003. Values for all determinands except phosphate and total P are lower than the average value for 1990 to 2004.

C. Direct discharges for the year 2004

Sewage Effluents (Table 5a) Note Table 5a is provided in the attached spreadsheet

C.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (see section 7 of the RID Principles), including for those under voluntary reporting:

Methods of Measurement and Calculation for Direct and Riverine inputs

The Environment Agency in England and Wales and the Scottish Environment Protection Agency in Scotland were the statutory bodies that executed the survey. The Environment and Heritage Service undertook the survey in Northern Ireland. Methods used varied from region to region (see table 8 on detection and quantification limits) but all are subjected to formal analytical quality assurance procedures.

Generally, all the main river systems are sampled approximately monthly at a sampling point close to but upstream of the tidal limit, (i.e. the point at which the unidirectional fresh water flow ceases).

All significant “Direct” discharges of industrial or sewage effluent downstream of the riverine sampling points (i.e. direct to estuaries and to coastal waters) were sampled.

Parameters Monitored

The parameters monitored by the UK followed closely those required by RID. Acid digestions to include organic forms of nitrogen and phosphorous **were not undertaken** in England and Wales. In order to provide an estimate for England and Wales and to avoid a major anomaly in reporting overall totals, total phosphorous inputs are assumed to be equal orthophosphate phosphorous inputs. (Although this will lead to an underestimation of total P, a study of river waters and sewage effluents in Thames region showed that the ratio of the two determinands was close to unity - INPUT 5/info.3 refers. Also, the underestimation is reasonably consistent year on year and, thus, will not significantly affect the consideration of patterns of change).

Inputs of PCBs are reported as the sum of the seven recommended congeners (IUPAC numbers 28, 52, 101, 118, 138, 153 and 180). However, it should be noted that a large number of rivers and direct discharges are not now monitored for PCBs because monitoring in the early years has shown that concentrations are consistently below the level of detection (LOD). Consequently, input estimates are imprecise ***and any comparison between the overall estimates for different years will be misleading.***

Estimation of Annual Load

Both of the formulae recommended by RID were used for calculating loads. The first formula requires the mean annual flow rate for a river and was used in some parts of Scotland where continuous flow records were available. In England and Wales and in western Scotland, the second formula was used. Best available estimates for flow were used for some smaller rivers with no gauging stations.

The aim of the survey, as in earlier years, has been to achieve at least 90% coverage of the overall inputs from the UK. As with earlier years, the total inputs reported have not been proportioned up to give a 100% estimated value. This means that the results reported are consistent with the estimates reported for earlier years. (Because of the location of the monitoring stations, riverine inputs cover some 80% of the landmass. As direct inputs account for all significant inputs downstream of the riverine monitoring stations, it is considered that, overall, the 90% coverage target has been met).

Information on Concentrations

Information on concentrations has not been included.

C.2 Describe the determinands, other than those specified in paragraph 2.1 of the RID Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

Information on PCBs has been included for a number of sites.

C.3 Give general comments on the discharges of sewage effluents (e.g. compared to previous years, and/or extent to which industrial effluents are discharged through sewerage systems):

A number of results are lower in 2004, but with the exception of one site (E1) there was no discernable trend between the 2003 and 2004 data. The industrial discharges entering the sewerage is unknown but likely to be significant.

Industrial Effluents (Table 5b) Note: Table 5b is included in the attached spreadsheet

C.4 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration upon which the measurement is based (ref.: Section 7 of the RID Principles), including for those under voluntary reporting:

The methods and calculations are broadly similar to those reported above.

C.5 Give any other relevant information (e.g. proportion of substance discharged as insoluble material):

This information is not available.

C.6 Give any available information on other discharges directly to Convention Waters - through e.g. urban run-off and stormwater overflows - that are not covered by the data in Tables 5a and 5b:

No storm water overflows were sampled. It is considered that the contribution of storm water to total UK inputs will have been small and, with ongoing improvements relating to such discharges, it is progressively diminishing. Also, the riverine (tidal limit) sampling covers storm water overflows to inland river systems. Consequently, it is believed that no significant error will have resulted from not specifically monitoring these inputs.

C.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

Information on PCBs has been included for a number of sites.

C.8 Give general comments on industrial effluents (e.g. compared to previous years):

Industrial effluent levels in 2004 compared to 2003 are quite variable with some decreases and some increases. There is generally insufficient knowledge to give reasons for these changes and to say whether they are significant.

Total direct discharges (Table 5c)

Note: Table 5c has not been provided. The UK believes that Table A and Table 4b both provided in the attached spreadsheet give a better understanding of the situation with respect to inputs and trends of total direct discharges in the UK.

C.9 Give general comments on total direct discharges (e.g. compared to previous years):

Generally speaking 2004 was a year with significantly higher rainfall and river flows than in 2003, with a number of areas, particularly in the North of the UK, where flows were higher than those for both 2003 and the long term average. This has resulted in loadings (particularly riverine) to tidal waters being mainly higher than in 2003. Values for all determinands except phosphate and total P are lower than the average value for 1990 to 2004.

D. Riverine inputs for the year 2004

Main Rivers (Tables 6a and 7a)

Note: In the UK, main rivers and the small number of tributary rivers are reported together and the results for Table 6c are in the attached spreadsheet.

D.1 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7a) upon which the measurement is based (ref.: Section 6 of the RID Principles), including for those under voluntary reporting:

The methods and calculations are broadly similar to those reported above.

D.2 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

Suspended Particulate Matter measurements are included in table 6c.

D.3 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

Information on PCBs has been included for a number of sites

D.4 Give general comments on the inputs from main rivers (e.g. significant changes in inputs, concentrations and flows compared to previous years):

The total UK flow was around 30% higher than in 2003, with the highest flow in the Atlantic region. Flows in the North Sea North, and the Atlantic Regions exceeded both the Long Term National Average flow, and the Average Flow for 1990 to 2004.

Tributary Rivers (Tables 6b and 7b)

D.5 Describe the methods of measurement and calculation used, including information on the number of samples and the concentration (Table 7b.) upon which the measurement is based (ref.: Section 6 of the Principles):

Not relevant for the UK situation. UK tributary rivers are not reported separately.

D.6 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

Not relevant for the UK situation. UK tributary rivers are not reported separately.

D.7 Describe the determinands, other than those specified in paragraph 2.1 of the Principles, that are included in the current monitoring programme and which may be relevant for the Comprehensive Study on Riverine Inputs and Direct Discharges (voluntary reporting):

Not relevant for the UK situation. UK tributary rivers are not reported separately.

D.8 Give any available information on other inputs - through e.g. polder effluents or from coastal areas - that are not covered by data in Tables 6b and 7b:

Not relevant for the UK situation. UK tributary rivers are not reported separately.

D.9 Give general comments on the inputs from tributary rivers (e.g. significant change in inputs, concentrations and flows compared to previous years):

Not relevant for the UK situation. UK tributary rivers are not reported separately.

Total riverine inputs (Table 6c)

Table 6c is included in the attached spreadsheet

D.10 Give general comments on the total riverine inputs (e.g. significant change in inputs, concentrations and flows compared to previous years):

Generally speaking 2004 was a year with significantly higher rainfall and river flows than in 2003, with a number of areas, particularly in the North of the UK flows higher than both 2003 and the long term average. This has resulted in loadings (particularly riverine) to tidal waters being mainly higher than in 2003, and several regions, have reported significantly higher values due to the increased loads.

E. Unmonitored areas

E.1 Describe the methods of quantification used for the different determinands or groups of determinands:

4.2 As with earlier years, the total inputs reported have not been proportioned up to give a 100% estimated value. This means that the results reported are consistent with the estimates reported for earlier years. (Because of the location of the monitoring stations, riverine inputs cover some 80% of the landmass. As direct inputs account for all significant inputs downstream of the riverine monitoring stations, it is considered that, overall, the 90% coverage target has been met).

Also, additional factors, such as the uptake of nutrients by shellfish in shellfish-growing areas have not been factored into the RID reporting.

F. Limits of detection (Table 8)

F.1 Information concerning limits of detection should be presented in Table 8 which includes different columns for rivers/tributaries, sewage effluents and industrial effluents. Give comments if the detection limits are higher than stated in the RID Principles:

Information on the various detection limits and limits of quantification used in England and Wales, Northern Ireland and Scotland are included in the attached spreadsheet (Table 8). Several regions have reported that the detection limits recommended by INPUT 2005 are too stringent for the RID purposes and are not achievable with the equipment available.

G. Additional comments

G.1 Indicate and explain, if appropriate:

- where and why the applied procedures do not comply with agreed procedures
- significant changes in monitoring sites, important for comparison of the data before and after the date of the change;
- incomplete or distorted data

Any differences with the agreed procedures have been described in the answers to the relevant questions in the text above. In a small number of cases, it has been necessary to estimate values when a site has not been monitored, or when subsequent evaluation has indicated that the results are not of good quality. Where estimates have been made, this is indicated in the comments box in the spreadsheet. Estimates for some sampling regions for total nitrogen have been made by adding together the ammonium and nitrate nitrogen values.

UK Rivers and Catchment Areas
in Relation to OSPAR Sea Areas

(also showing boundaries of inputs' sampling regions NI 1 & 2, E 1 - E 30 and SC 1 - SC 5)

Table A: Annual Estimates of UK Direct Inputs (Sewage plus Industrial) to the OSPAR Maritime Area from 1990 to 2004 10.03.06 rport to ASMO RM

Sewage plus Industrial to All Sea Areas		Quantity: Cd [t] Lower	Cd Upper	Hg [t] Lower	Hg Upper	Cu [t] Lower	Cu Upper	Pb [t] Lower	Pb Upper	Zn [t] Lower	Zn Upper	g-HCH [kg] Lower	g-HCH Upper	PCB [kg] Lower	PCB Upper	NH4-N [kt] Lower	NH4-N Upper	NO3-N [kt] Lower	NO3-N Upper	PO4-P [kt] Lower	PO4-P Upper	Total N [kt] Lower	Total N Upper	Total P [kt] Lower	Total P Upper	SPM [kt] Lower	SPM Upper
1990		29,91	34,39	3,69	4,59	286,9	303,1	114,9	171,2	1742	1751	191	227	79	307			23,1	23,2	21,8	22,2	117,7	119,4	23,9	24,3	1283	1283
1991		18,80	22,10	3,36	3,50	272,6	278,9	133,0	146,2	1664	1668	140	185	224	429			21,1	21,2	22,1	22,3	99,7	100,2	25,1	25,2	1210	1212
1992		12,83	14,87	1,98	2,24	245,3	251,8	125,1	141,7	1360	1362	145	180	127	460	78,4	78,5	25,3	25,4	19,4	19,5	111,8	112,1	21,9	21,9	952	952
1993		9,40	11,61	1,07	1,32	208,5	215,5	129,3	143,5	1149	1150	142	156	27	162	68,7	68,8	20,5	20,7	13,7	13,8	100,7	101,1	15,4	15,4	638	638
1994		6,08	7,90	0,87	1,08	212,7	220,4	112,7	128,1	1149	1150	108	150	11	185	64,0	64,1	19,4	19,6	15,8	15,8	93,4	93,7	17,6	17,7	629	629
1995		6,04	7,75	0,62	0,80	226,2	232,5	104,4	114,2	988	990	123	154	7	168	59,7	59,9	19,3	19,5	15,3	15,3	88,8	89,1	16,9	17,1	658	659
1996		7,34	8,44	0,55	0,71	157,2	161,1	101,1	106,1	760	761	82	95	34	277	53,9	53,9	16,4	16,7	15,1	15,1	78,0	78,2	16,8	16,8	543	543
1997		5,78	7,00	0,49	0,62	156,0	163,5	93,0	97,9	634	635	176	197	3	177	55,3	55,4	17,5	17,7	15,8	15,8	81,8	82,1	18,1	18,1	570	570
1998		3,77	4,85	0,62	0,81	149,7	152,0	97,3	100,8	541	541	64	125	363	471	56,4	56,4	18,5	18,7	14,3	14,3	82,5	82,5	17,5	17,5	672	673
1999		4,35	5,28	0,63	0,73	152,5	155,2	86,4	90,2	584	585	51	80	78	162	50,2	50,3	18,2	18,5	14,4	14,5	75,4	75,8	16,0	16,0	618	618
2000		2,43	3,37	0,53	0,67	140,5	142,6	76,7	80,1	525	526	33	60	8	125	41,2	41,4	20,3	20,4	13,8	13,8	72,9	72,9	15,2	15,2	402	402
2001		1,86	2,61	0,59	0,80	108,7	111,7	57,9	60,6	363	364	23	58	46	99	42,5	42,6	19,7	19,8	12,3	12,4	71,5	71,5	13,9	13,9	650	650
2002		2,72	3,35	0,42	0,74	77,4	79,6	36,8	38,6	316	319	9	38	4	32	40,3	40,4	21,6	21,7	9,7	9,8	69,3	69,3	11,0	11,1	382	382
2003		2,57	2,86	0,49	0,62	71,4	73,4	31,1	32,1	259	259	5,7	27,7	8,3	57,5	42,8	43,0	20,3	20,5	9,6	9,7	75,0	75,4	10,9	11,1	326	327
2004		0,48	0,75	0,17	0,27	64,9	66,5	27,1	28,0	269	270	15,7	37,6	2,2	47,0	37,0	37,1	19,7	19,9	10,2	10,7	61,6	62,3	12,2	12,7	311	311
2005																											
2006																											
Ave UK Direct		7,6	9,1	1,1	1,3	168,7	173,8	88,4	98,6	820,3	822,0	87,3	118,0	68,1	210,6	53,1	53,2	20,1	20,2	14,9	15,0	85,3	85,7	16,8	16,9	656,2	656,6

Table B: Annual Estimates of UK Riverine Inputs to the OSPAR Maritime Area from 1990 to 2004

Riverine Total to All Sea Ar	Flow Rate ml/d	Quantity: Cd [t] Lower	Cd Upper	Hg [t] Lower	Hg Upper	Cu [t] Lower	Cu Upper	Pb [t] Lower	Pb Upper	Zn [t] Lower	Zn Upper	g-HCH [kg] Lower	g-HCH Upper	PCB [kg] Lower	PCB Upper	NH4-N [kt] Lower	NH4-N Upper	NO3-N [kt] Lower	NO3-N Upper	PO4-P [kt] Lower	PO4-P Upper	Total N [kt] Lower	Total N Upper	Total P [kt] Lower	Total P Upper	SPM [kt] Lower	SPM Upper
1990	255791	9,37	29,72	2,20	7,68	478,7	536,1	403,1	493,1	2104	2188	213	562	71	3865			176,1	176,3	16,1	16,4	203,9	204,6	13,6	13,9	1569	1584
1991	252010	16,34	41,56	1,86	7,01	343,8	433,7	374,8	510,7	1909	2119	463	736	14	1699			185,2	185,3	14,1	14,4	242,6	243,0	14,9	15,2	1344	1397
1992	290034	11,36	30,42	1,68	6,05	455,1	477,4	340,7	399,0	2488	2514	299	509	34	954	19,5	19,7	211,7	220,0	15,9	16,2	274,9	282,9	17,3	17,4	2138	2152
1993	279151	9,50	28,09	3,12	7,58	453,9	488,8	466,2	523,7	2017	2053	332	572	110	2535	18,0	18,2	217,5	224,7	15,6	15,9	281,3	292,3	18,5	18,7	2219	2232
1994	306000	8,70	28,83	1,45	6,26	466,2	501,4	383,4	430,7	2193	2321	254	489	11	1937	17,7	18,3	251,6	252,1	16,6	17,1	298,4	302,0	18,0	18,5	2622	2651
1995	261776	6,15	22,89	1,42	5,33	389,9	410,5	265,5	303,8	1733	1806	241	454	0	1701	20,1	20,3	240,9	241,1	16,8	17,1	287,4	288,6	19,5	19,7	1803	1820
1996	223803	4,16	18,30	1,41	3,93	291,7	308,3	187,4	224,1	1337	1354	173	275	39	1131	16,6	17,0	204,2	204,2	15,4	15,7	235,8	236,1	17,0	17,1	1205	1244
1997	237547	5,96	12,64	2,53	4,80	331,5	333,9	274,9	290,9	1523	1543	116	222	100	527	15,8	16,1	189,8	190,0	15,2	16,2	221,0	221,8	17,9	17,9	1732	1772
1998	315014	8,27	16,38	2,81	5,08	459,8	463,7	437,6	452,8	1933	1944	117	373	35	1196	14,8	15,5	274,5	279,2	19,0	19,2	306,7	310,7	21,3	21,5	1849	1901
1999	308803	8,82	17,54	1,70	3,55	503,3	509,0	447,6	467,8	1999	2024	102	414	4	1426	13,6	14,4	284,1	285,3	21,2	21,9	315,7	316,1	22,8	23,4	3268	3292
2000	365078	9,08	22,05	2,48	4,32	519,1	529,2	516,2	538,4	2523	2553	112	395	51	1519	14,2	14,8	319,0	319,5	21,5	21,9	359,1	359,1	23,3	23,5	2947	2978
2001	290131	7,39	13,06	1,11	1,87	474,3	477,8	407,4	431,5	2024	2051	54	230	43	419	15,7	16,3	302,1	303,3	20,5	20,8	336,5	336,8	21,7	21,9	3221	3245
2002	313746	8,10	14,80	2,21	3,22	448,7	453,3	468,8	487,7	2120	2168	9	256	0	265	12,9	13,5	274,0	274,9	15,6	15,9	304,0	304,5	17,4	17,6	2587	2605
2003	223774	4,25	7,33	1,05	1,49	255,7	262,2	156,6	179,1	1133	1155	15	124	2	202	8,9	9,4	186,4	186,7	10,7	11,6	217,9	218,1	11,6	12,4	834	869
2004	292147	4,70	8,50	0,67	1,50	361,4	369,1	348,7	381,6	1518	1554	14,3	149,1	0,2	197,3	9,1	9,6	205,7	205,9	31,4	31,7	225,0	246,4	32,8	33,1	1408	1455
2005																											
2006																											
Ave UK Riveri	280987	8,1	20,8	1,8	4,6	415,5	437,0	365,3	407,7	1903,5	1956,5	167,6	384,1	34,4	1304,7	15,2	15,6	234,8	236,6	17,7	18,1	274,0	277,5	19,2	19,5	2049,8	2079,8
LTA Flow Rate	273080																										

Table C: Annual Estimates of Total UK (Direct plus Riverine) Inputs to the OSPAR Maritime Area from 1990 to 2004

Riverine plus Direct to All Sea Areas		Quantity: Cd [t] Lower	Cd Upper	Hg [t] Lower	Hg Upper	Cu [t] Lower	Cu Upper	Pb [t] Lower	Pb Upper	Zn [t] Lower	Zn Upper	g-HCH [kg] Lower	g-HCH Upper	PCB [kg] Lower	PCB Upper	NH4-N [kt] Lower	NH4-N Upper	NO3-N [kt] Lower	NO3-N Upper	PO4-P [kt] Lower	PO4-P Upper	Total N [kt] Lower	Total N Upper	Total P [kt] Lower	Total P Upper	SPM [kt] Lower	SPM Upper
1990		39,28	64,11	5,89	12,28	766	839	518	664	3846	3939	404	789	150	4172			199,3	199,4	37,9	38,6	321,6	324,0	37,5	38,1	2852	2867
1991		35,14	63,66	5,22	10,51	616	713	508	657	3573	3786	602	921	237	2128			206,3	206,5	36,3	36,7	342,3	343,2	40,0	40,4	2554	2609
1992		24,19	45,29	3,65	8,30	700	729	466	541	3848	3877	444	689	162	1414	98,0	98,2	236,9	245,4	35,3	35,6	386,7	395,0	39,2	39,3	3090	3105
1993		18,90	39,70	4,19	8,90	662	704	595	667	3166	3203	475	729	137	2697	86,7	87,0	238,0	245,4	29,4	29,6	382,0	393,4	33,9	34,1	2857	2870
1994		14,78	36,73	2,33	7,35	679	722	496	559	3341	3472	362	639	22	2121	81,7	82,5	270,9	271,6	32,3	33,0	391,8	395,7	35,7	36,2	3251	3280
1995		12,19	30,65	2,04	6,13	616	643	370	418	2721	2796	364	608	8	1869	79,8	80,2	260,1	260,6	32,0	32,5	376,1	377,7	36,4	36,7	2462	2479
1996		11,50	26,74	1,96	4,65	449	469	288	330	2097	2115	255	370	73	1408	70,5	70,9	220,6	220,9	30,5	30,8	313,8	314,3	33,7	33,9	1748	1787
1997		11,75	19,64	3,03	5,43	488	497	368	389	2157	2178	292	419	103	705	71,1	71,6	207,3	207,8	30,9	31,9	302,8	303,8	36,0	36,0	2302	2342
1998		12,04	21,23	3,43	5,89	609	616	535	554	2473	2485	181	497	398	1667	71,2	71,9	293,0	297,9	33,3	33,5	389,2	393,2	38,8	39,1	2521	2573
1999		13,17	22,82	2,33	4,29	656	664	534	558	2583	2609	153	494	82	1588	63,8	64,7	302,4	303,8	35,6	36,4	391,1	392,0	38,8	39,4	3886	3910
2000		11,51	25,42	3,01	4,99	660	672	593	618	3048	3079	145	455	59	1644	55,4	56,2	339,3	339,9	35,3	35,7	432,0	432,1	38,5	38,8	3348	3380
2001		9,25	15,67	1,70	2,66	583	589	465	492	2387	2415	77	288	89	518	58,2	58,9	321,8	323,0	32,9	33,2	408,0	408,3	35,6	35,8	3870	3895
2002		10,82	18,14	2,63	3,95	526	533	506	526	2436	2486	19	294	4	297	53,2	53,9	295,6	296,6	25,3	25,7	373,3	373,8	28,3	28,7	2968	2987
2003		6,82	10,19	1,54	2,11	327	336	188	211	1392	1414	20	152	10	259	51,7	52,4	206,7	207,3	20,3	21,3	293,0	293,4	22,5	23,5	1161	1195
2004		5,19	9,25	0,84	1,77	426	436	375,8	409,6	1788	1824	30	187	2	244	46,1	46,8	225,3	225,7	41,7	42,4	286,6	308,7	45,0	45,7	1719	1766
2005																											
2006																											
Ave UK Total Inputs		15,8	29,9	2,9	5,9	584,2	610,8	453,7	506,3	2723,8	2778,5	254,9	502,1	102,5	1515,3	68,3	68,8	254,9	256,8	32,6	33,1	359,4	363,2	36,0	36,4	2706,0	2736,4

Table D: Total UK (Direct plus Riverine) Inputs to the OSPAR Maritime Area in 2004 by Sea Area (RTT = Regional Task Team)

Riverine plus Direct to Sea Area:	Quantity: Cd [t]		Hg [t]		Cu [t]		Pb [t]		Zn [t]		g-HCH [kg]		PCB [kg]		NH4-N [kt]		NO3-N [kt]		PO4-P [kt]		Total N [kt]		Total P [kt]		SPM [kt]	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
North Sea (N)	1,71	2,58	0,16	0,31	94,6	95,7	169,8	170,9	457	471	9	48	0	80	12,4	12,5	41,7	41,8	4,0	4,5	66,8	66,9	5,7	6,1	396	416
North Sea (S)	1,01	1,40	0,20	0,28	77,4	77,6	55,5	59,1	316	318	3	42	0	67	8,0	8,1	80,7	80,7	28,2	28,3	80,9	80,9	28,2	28,3	239	239
Channel	0,20	0,36	0,12	0,14	31,8	35,2	4,6	11,5	123	128	0	14	0	14	6,7	6,8	25,1	25,2	1,9	1,9	27,9	48,3	1,9	1,9	82	84
RTT II Total	**2,92**	**4,34**	**0,48**	**0,74**	**204**	**209**	**230**	**241**	**896**	**917**	**12**	**103**	**0**	**162**	**27,1**	**27,4**	**147**	**148**	**34,1**	**34,7**	**176**	**196**	**35,8**	**36,4**	**716**	**740**
Celtic Sea	0,52	1,44	0,10	0,18	48,8	50,4	37,5	51,1	306	308	0	11	2	12	3,7	3,7	26,2	26,2	1,2	1,2	29,8	31,1	1,2	1,2	353	353
Irish Sea	1,37	1,96	0,17	0,40	87,7	89,5	81,6	88,5	424	432	2	35	0	64	9,0	9,3	37,7	37,8	3,8	3,8	53,4	53,6	4,1	4,2	397	406
Atlantic	0,38	1,51	0,09	0,45	86,0	87,1	26,8	28,5	161	167	16	37	0	7	6,3	6,4	14,1	14,1	2,6	2,7	27,7	27,9	3,9	4,0	253	267
RTT III Total	**2,27**	**4,91**	**0,37**	**1,03**	**223**	**227**	**146**	**168**	**892**	**907**	**18**	**84**	**2**	**83**	**19,0**	**19,4**	**78**	**78**	**7,6**	**7,7**	**111**	**113**	**9,2**	**9,3**	**1003**	**1026**
All Sea Areas	**5,2**	**9,2**	**0,8**	**1,8**	**426,3**	**435,5**	**375,8**	**409,6**	**1787,9**	**1824,4**	**30,1**	**186,7**	**2,4**	**244,3**	**46,1**	**46,8**	**225,3**	**225,7**	**41,7**	**42,4**	**286,6**	**308,7**	**45,0**	**45,7**	**1718,6**	**1766,0**

Table DF: Total UK (Direct, including fish farms plus Riverine) Inputs to the OSPAR Maritime Area in 2004 by Sea Area

Riverine plus Direct to Sea Area:	Quantity: Cd [t]		Hg [t]		Cu [t]		Pb [t]		Zn [t]		g-HCH [kg]		PCB [kg]		NH4-N [kt]		NO3-N [kt]		PO4-P [kt]		Total N [kt]		Total P [kt]		SPM [kt]	
	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper	Lower	Upper
North Sea (N)	1,71	2,58	0,16	0,31	117,5	118,7	169,8	170,9	460	474	9	48	0	80	12,4	12,5	41,7	41,8	4,0	4,5	70,0	70,1	6,2	6,6	396	416
North Sea (S)	1,01	1,40	0,20	0,28	77,4	77,6	55,5	59,1	316	318	3	42	0	67	8,0	8,1	80,7	80,7	28,2	28,3	80,9	80,9	28,2	28,3	239	239
Channel	0,20	0,36	0,12	0,14	31,8	35,2	4,6	11,5	123	128	0	14	0	14	6,7	6,8	25,1	25,2	1,9	1,9	27,9	48,3	1,9	1,9	82	84
RTT II Total	**2,92**	**4,34**	**0,48**	**0,74**	**227**	**231**	**230**	**241**	**899**	**920**	**12**	**103**	**0**	**162**	**27,1**	**27,4**	**147**	**148**	**34,1**	**34,7**	**179**	**199**	**36,3**	**36,8**	**716**	**740**
Celtic Sea	0,52	1,44	0,10	0,18	48,8	50,4	37,5	51,1	306	308	0	11	2	12	3,7	3,7	26,2	26,2	1,2	1,2	29,8	31,1	1,2	1,2	353	353
Irish Sea	1,37	1,96	0,17	0,40	87,7	89,5	81,6	88,5	424	432	2	35	0	64	9,0	9,3	37,7	37,8	3,8	3,8	53,4	53,6	4,1	4,2	397	406
Atlantic	0,38	1,51	0,09	0,45	103,5	104,6	26,8	28,5	167	173	16	37	0	7	6,3	6,4	14,1	14,1	2,6	2,7	33,5	33,7	4,7	4,8	253	267
RTT III Total	**2,27**	**4,91**	**0,37**	**1,03**	**240**	**245**	**146**	**168**	**897**	**913**	**18**	**84**	**2**	**83**	**19,0**	**19,4**	**78**	**78**	**7,6**	**7,7**	**117**	**118**	**10,0**	**10,1**	**1003**	**1026**
All Sea Areas	**5,2**	**9,2**	**0,8**	**1,8**	**466,8**	**476,0**	**375,8**	**409,6**	**1796,8**	**1833,3**	**30,1**	**186,7**	**2,4**	**244,3**	**46,1**	**46,8**	**225,3**	**225,7**	**41,7**	**42,4**	**295,6**	**317,7**	**46,3**	**47,0**	**1718,6**	**1766,0**

Note for the NH4-N value in tables table A, B and C, the average was calculated on base of 13 rather than 15 due to fact that 2 years early data is missing

Table 4b: Total UK Riverine Inputs and Direct Discharges (including fish farms) to the OSPAR Maritime Area in 2004

(Note: fish farming only occurs in the North Sea North, and Atlantic OSPAR Sea Areas and only certain determinands are measured.)

rm March 06 draft to ASMO 06

(Note: RTT represents "Regional Task Team Areas")

Riverine plus Direct discharges to RTT Sea areas Table 4b			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
North Sea North	sewage	lower	0,04	0,01	5,61	2,44	27,47	1,94	0,00	8,84	3,20	1,32	14,96	1,58	17,50
		upper	0,05	0,01	5,61	2,44	27,47	5,45	25,05	8,85	3,24	1,52	14,96	1,78	17,52
		comment													
North Sea North	industrial	lower	0,26	0,01	21,56	5,79	23,04	0,01	0,00	2,26	0,50	1,55	1,86	2,17	118,84
		upper	0,26	0,01	21,57	5,80	23,04	0,59	6,50	2,26	0,50	1,68	1,86	2,30	118,84
		comment													
North Sea North	riverine	lower	1,41	0,13	67,43	161,53	406,81	7,51	0,00	1,32	37,98	1,15	50,01	1,99	259,50
		upper	2,26	0,29	68,55	162,66	420,74	41,77	48,81	1,43	38,05	1,27	50,11	2,06	279,65
		comment													
North Sea North	fish farms	lower			22,94		3,16						3,18	0,44	
		upper			22,94		3,16						3,18	0,44	
		comment													
North Sea North TOTAL	sewage + industrial riverine and farms	lower	1,71	0,16	117,54	169,76	460,47	9,46	0,00	12,42	41,68	4,01	70,01	6,18	395,84
		upper	2,58	0,31	118,67	170,89	474,41	47,81	80,36	12,54	41,79	4,47	70,11	6,58	416,01
		comment													
North Sea South	sewage	lower	0,04	0,02	10,02	4,59	41,89	1,83	0,00	5,98	9,75	3,19	16,01	3,19	7,39
		upper	0,10	0,03	10,03	4,65	41,90	9,76	5,37	6,02	9,77	3,21	16,03	3,21	7,42
		comment													
North Sea South	industrial	lower	0,06	0,09	11,46	2,59	21,84	0,00	0,00	0,28	0,02	0,01	0,23	0,01	108,26
		upper	0,07	0,09	11,56	2,70	21,93	0,04	0,26	0,29	0,02	0,02	0,23	0,02	108,26
		comment													
North Sea South	riverine	lower	0,91	0,09	55,95	48,32	252,24	0,85	0,00	1,76	70,91	24,97	64,65	24,97	122,96
		upper	1,23	0,17	56,04	51,79	254,34	31,82	61,66	1,79	70,91	25,07	64,65	25,07	123,81
		comment													
North Sea South	fish farms	lower													
		upper													
		comment													
North Sea South TOTAL	sewage + industrial riverine and farms	lower	1,01	0,20	77,43	55,50	315,97	2,68	0,00	8,03	80,68	28,17	80,89	28,17	238,61
		upper	1,40	0,28	77,62	59,15	318,17	41,63	67,30	8,09	80,70	28,30	80,91	28,30	239,49
		comment													
Channel	sewage	lower	0,01	0,02	5,27	1,39	20,00	0,13	0,00	6,35	2,32	1,14	8,09	1,14	16,09
		upper	0,02	0,02	5,30	1,51	20,00	2,92	5,26	6,37	2,40	1,16	8,60	1,16	16,12
		comment													
Channel	industrial	lower	0,00	0,00	0,09	0,01	0,63	0,00	0,00	0,00	0,01	0,00	0,03	0,00	0,32
		upper	0,00	0,00	0,10	0,01	0,64	0,13	0,38	0,01	0,02	0,01	0,03	0,01	0,32
		comment													
Channel	riverine	lower	0,19	0,10	26,40	3,24	102,34	0,13	0,00	0,34	22,74	0,76	19,77	0,76	65,10
		upper	0,33	0,13	29,81	9,93	107,26	10,50	8,21	0,38	22,74	0,77	39,66	0,77	68,06
		comment													
Channel	fish farms	lower													
		upper													
		comment													
Channel TOTAL	sewage + industrial riverine and farms	lower	0,20	0,12	31,76	4,64	122,97	0,26	0,00	6,69	25,08	1,91	27,89	1,91	81,51
		upper	0,36	0,14	35,21	11,45	127,90	13,55	13,85	6,76	25,16	1,93	48,29	1,93	84,50
		comment													
RTT 11 TOTAL	sewage + industrial riverine and farms	lower	2,92	0,48	226,73	229,90	899,40	12,39	0,00	27,14	147,44	34,09	178,80	36,26	715,97
		upper	4,34	0,74	231,50	241,49	920,48	102,98	161,51	27,39	147,66	34,71	199,31	36,82	740,00
		comment													
Celtic Sea	sewage	lower	0,02	0,00	1,50	0,55	11,25	0,05	0,00	2,96	0,58	0,51	3,67	0,51	2,97
		upper	0,02	0,00	1,51	0,73	11,25	0,86	0,00	2,99	0,61	0,52	3,70	0,52	2,97
		comment													
Celtic Sea	industrial	lower	0,02	0,00	0,62	1,19	67,18	0,00	2,16	0,15	0,00	0,00	0,00	0,00	3,28
		upper	0,02	0,00	0,62	1,20	67,18	0,00	3,63	0,15	0,00	0,00	0,00	0,00	3,28
		comment													
Celtic Sea	riverine	lower	0,49	0,10	46,67	35,73	227,84	0,11	0,00	0,55	25,59	0,65	26,15	0,65	346,35
		upper	1,40	0,18	48,25	49,16	229,85	10,53	8,62	0,57	25,59	0,65	27,44	0,65	346,88
		comment													
Celtic Sea	fish farms	lower													
		upper													
		comment													
Celtic Sea TOTAL	sewage + industrial riverine and farms	lower	0,52	0,10	48,78	37,47	306,27	0,16	2,16	3,67	26,17	1,16	29,82	1,16	352,60
		upper	1,44	0,18	50,38	51,09	308,29	11,39	12,25	3,71	26,20	1,18	31,13	1,18	353,13
		comment													
Irish Sea	sewage	lower	0,01	0,00	2,66	1,77	31,99	0,06	0,00	5,52	1,30	0,79	6,86	0,84	10,36
		upper	0,11	0,09	3,92	2,08	32,71	4,59	0,32	5,55	1,30	0,83	6,96	0,90	10,62
		comment													
Irish Sea	industrial	lower	0,00	0,01	0,07	6,03	0,18	0,00	0,00	0,01	0,00	0,31	0,36	0,46	1,36
		upper	0,00	0,01	0,07	6,03	0,18	0,02	0,25	0,01	0,00	0,31	0,36	0,46	1,36
		comment													
Irish Sea	riverine	lower	1,35	0,16	85,02	73,79	392,15	1,81	0,20	3,48	36,39	2,69	46,21	2,80	384,95
		upper	1,85	0,31	85,52	80,36	398,72	30,33	63,24	3,69	36,50	2,71	46,24	2,82	393,69
		comment													
Irish Sea	fish farms	lower													
		upper													
		comment													
Irish Sea TOTAL	sewage + industrial riverine & farms	lower	1,37	0,17	87,75	81,58	424,32	1,86	0,20	9,01	37,69	3,79	53,43	4,10	396,66
		upper	1,96	0,40	89,51	88,47	431,61	34,94	63,81	9,25	37,80	3,84	53,57	4,19	405,66
		comment													
Atlantic	sewage	lower	0,02	0,00	5,72	0,65	21,40	11,70	0,00	4,07	0,35	1,17	6,68	1,84	13,51
		upper	0,07	0,02	5,88	0,70	21,49	13,19	0,00	4,07	0,35	1,17	6,72	1,84	13,67
		comment													
Atlantic	industrial	lower	0,00	0,00	0,33	0,11	2,54	0,02	0,00	0,58	1,64	0,26	2,80	0,44	10,98
		upper	0,01	0,00	0,34	0,18	2,54	0,03	0,00	0,58	1,64	0,26	2,80	0,44	10,98
		comment													
Atlantic	riverine	lower	0,36	0,09	79,94	26,09	137,11	3,94	0,00	1,66	12,06	1,20	18,24	1,66	228,84
		upper	1,43	0,43	80,88	27,66	143,11	24,17	6,76	1,75	12,10	1,23	18,34	1,68	242,53
		comment													
Atlantic	fish farms	lower			17,53		5,78						5,81	0,80	
		upper			17,53		5,78						5,81	0,80	
		comment													
Atlantic TOTAL	sewage + industrial riverine and farms	lower	0,38	0,09	103,53	26,84	166,83	15,65	0,00	6,31	14,05	2,63	33,53	4,74	253,33
		upper	1,51	0,45	104,63	28,54	172,92	37,39	6,76	6,40	14,09	2,66	33,66	4,77	267,18
		comment													
RTT 111 TOTAL	sewage + industrial riverine and farms	lower	2,27	0,37	240,06	145,90	897,42	17,68	2,36	18,99	77,91	7,58	116,77	10,00	1002,59
		upper	4,91	1,03	244,52	168,09	912,82	83,72	82,82	19,37	78,09	7,68	118,37	10,14	1025,97
		comment													
All Sea Areas TOTAL	sewage + industrial riverine and farms	lower	5,19	0,84	466,79	375,79	1796,82	30,07	2,36	46,12	225,35	41,66	295,57	46,26	1718,56
		upper	9,25	1,77	476,02	409,58	1833,30	186,70	244,33	46,76	225,74	42,39	317,68	46,95	1765,97
		comment													

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2004 by United Kingdom

rm march 06 draft to ASMO 06

OSPAR RID data 2004 UK Sewage Inputs Table 5a			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
181	SC2b	lower	0,00	0,00	0,27	0,06	1,04	0,09		0,52	0,06	0,09	0,74	0,15	1,48
		upper	0,00	0,00	0,27	0,06	1,04	0,09		0,52	0,06	0,09	0,74	0,15	1,48
		comment													
182	SC3	lower	0,02	0,00	0,99	0,53	6,14	0,29		1,24	0,19	0,13	1,77	0,15	2,21
		upper	0,02	0,00	0,99	0,53	6,14	0,30		1,24	0,19	0,13	1,77	0,15	2,21
		comment													
183	SC4	lower	0,00	0,00	0,23	0,10	1,33	0,40		0,90	0,09	0,11	1,63	0,13	0,53
		upper	0,00	0,00	0,23	0,10	1,33	0,40		0,90	0,09	0,11	1,63	0,13	0,53
		comment													
184	SC5	lower	0,01	0,00	2,04	1,18	7,50	1,06		1,27	1,11	0,33	4,20	0,49	4,89
		upper	0,01	0,00	2,04	1,18	7,50	1,06		1,27	1,11	0,33	4,20	0,49	4,89
		comment													
185	E1	lower	0,00	0,00	0,15	0,05	2,00	0,10	0,00	0,29	0,59	0,18	1,13	0,18	0,57
		upper	0,00	0,00	0,15	0,05	2,00	0,51	3,98	0,29	0,59	0,21	1,13	0,21	0,58
		comment													
186	E2	lower	0,00	0,00	0,78	0,19	4,17	0,00	0,00	2,16	0,06	0,20	2,21	0,20	2,31
		upper	0,00	0,00	0,78	0,19	4,17	1,12	8,73	2,16	0,09	0,29	2,21	0,29	2,31
		comment													
187	E3	lower	0,00	0,00	0,04	0,01	0,20	0,00	0,00	0,19	0,00	0,03	0,18	0,03	0,17
		upper	0,00	0,00	0,04	0,01	0,20	0,10	0,89	0,19	0,00	0,03	0,18	0,03	0,17
		comment													
188	E4	lower	0,00	0,00	0,35	0,11	1,93	0,00	0,00	0,81	0,14	0,05	0,65	0,05	1,36
		upper	0,00	0,00	0,35	0,11	1,93	1,15	5,08	0,81	0,14	0,15	0,65	0,15	1,36
		comment													
189	E5	lower	0,00	0,00	0,76	0,22	3,17	0,00	0,00	1,47	0,98	0,19	2,45	0,19	3,99
		upper	0,01	0,00	0,76	0,22	3,17	0,71	6,38	1,48	0,98	0,19	2,45	0,19	3,99
		comment										estimate		
84a	North Sea North (UK)		**0,04**	**0,01**	**5,6**	**2,4**	**27,5**	**1,9**	**0,0**	**8,8**	**3,2**	**1,32**	**15,0**	**1,58**	**17,5**
			0,05	**0,01**	**5,6**	**2,4**	**27,5**	**5,4**	**25,1**	**8,8**	**3,2**	**1,52**	**15,0**	**1,78**	**17,5**
OSPAR RID data 2004 UK Sewage Inputs Table 5a			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
190	E6	lower	0,00	0,00	0,37	0,15	1,65	0,00	0,00	0,37	0,06	0,14	0,43	0,14	1,86
		upper	0,01	0,00	0,37	0,15	1,65	0,06	0,54	0,38	0,07	0,14	0,44	0,14	1,87
		comment											estimate		
191	E7	lower	0,00		0,03	0,01	0,18	0,00	0,00	0,12	0,00		0,12	0,00	0,09
		upper	0,00		0,03	0,01	0,18	0,05	0,41	0,12	0,00		0,12	0,00	0,09
		comment											estimate		
192	E8	lower	0,00	0,00	0,80	0,41	3,38	0,00	0,00	1,55	0,08	0,13	1,75	0,13	3,17
		upper	0,01	0,00	0,80	0,41	3,38	0,63	4,42	1,55	0,09	0,13	1,75	0,13	3,17
		comment													
193	E9	lower	0,00	0,00	0,29	0,03	1,18			0,13	0,46	0,19	0,69	0,19	0,69
		upper	0,00	0,00	0,29	0,06	1,18			0,14	0,46	0,19	0,69	0,19	0,69
		comment													
194	E10	lower	0,00	0,00	0,35	0,29	1,91			0,79	0,29	0,12	1,12	0,12	0,93
		upper	0,00	0,00	0,35	0,29	1,91			0,80	0,30	0,13	1,12	0,13	0,94
		comment													
195	E11	lower	0,00	0,00	0,96	0,33	3,09			0,28	0,50	0,21	0,81	0,21	0,66
		upper	0,00	0,00	0,96	0,33	3,09			0,28	0,50	0,21	0,81	0,21	0,66
		comment													
196	E12	lower	0,03	0,02	7,21	3,38	30,50	1,83		2,73	8,35	2,41	11,08	2,41	
		upper	0,08	0,02	7,21	3,40	30,50	9,02		2,75	8,35	2,41	11,09	2,41	
		comment											estimate		
84b	North Sea South (UK)	lower	**0,04**	**0,02**	**10,0**	**4,6**	**41,9**	**1,8**	**0,0**	**6,0**	**9,8**	**3,19**	**16,0**	**3,19**	**7,4**
		upper	**0,10**	**0,03**	**10,0**	**4,7**	**41,9**	**9,8**	**5,4**	**6,0**	**9,8**	**3,21**	**16,0**	**3,21**	**7,4**
		comment													

OSPAR RID data 2004 UK Sewage Inputs Table 5a			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
197	E13	lower	0,00	0,00	1,51	0,49	11,87	0,00	0,00	1,09	0,63	0,27	1,67	0,27	4,26
		upper	0,01	0,00	1,51	0,51	11,87	0,75	1,28	1,09	0,64	0,27	1,67	0,27	4,28
		comment													
198	E14	lower	0,01	0,01	2,66	0,61	3,78	0,00	0,00	2,23	0,13	0,26	2,39	0,26	8,29
		upper	0,01	0,01	2,66	0,61	3,78	0,79	2,32	2,23	0,16	0,26	2,39	0,26	8,29
		comment													
199	E15	lower	0,00	0,01	0,63	0,12	1,58	0,00	0,00	1,92	0,11	0,25	2,06	0,25	1,12
		upper	0,00	0,01	0,63	0,16	1,58	0,37	1,65	1,92	0,15	0,25	2,06	0,25	1,12
		comment													
200	E16	lower	0,00		0,14	0,06	1,75	0,00		0,12	0,56	0,10	0,54	0,10	0,65
		upper	0,00		0,14	0,06	1,75	0,15		0,13	0,56	0,10	0,70	0,10	0,65
		comment													
201	E17	lower	0,00	0,00	0,20	0,09	0,42	0,05		0,45	0,50	0,13	0,53	0,13	0,53
		upper	0,00	0,00	0,23	0,13	0,42	0,41		0,46	0,50	0,14	0,82	0,14	0,53
		comment													
202	E18	lower	0,00	0,00	0,13	0,03	0,60	0,08		0,54	0,39	0,12	0,90	0,12	1,24
		upper	0,00	0,00	0,13	0,05	0,60	0,44		0,55	0,39	0,12	0,96	0,12	1,25
		comment													
86	Channel (UK)	lower	**0,01**	**0,02**	**5,3**	**1,4**	**20,0**	**0,1**	**0,0**	**6,3**	**2,3**	**1,14**	**8,1**	**1,14**	**16,1**
		upper	**0,02**	**0,02**	**5,3**	**1,5**	**20,0**	**2,9**	**5,3**	**6,4**	**2,4**	**1,16**	**8,6**	**1,16**	**16,1**
		comment												Gaps were filled by using PO4-P Data	
OSPAR RID data 2004 UK Sewage Inputs Table 5a			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
203	E19	lower	0,00	0,00	0,11	0,01	0,13	0,00		0,11	0,00	0,00	0,12	0,00	0,05
		upper	0,00	0,00	0,11	0,03	0,13	0,06		0,11	0,00	0,00	0,12	0,00	0,05
		comment													
204	E20	lower	0,00	0,00	0,05	0,02	0,29	0,05		0,17	0,03	0,01	0,20	0,01	0,22
		upper	0,00	0,00	0,05	0,03	0,29	0,11		0,17	0,03	0,01	0,20	0,01	0,22
		comment													
205	E21	lower	0,00	0,00	0,15	0,04	0,84	0,00		0,43	0,04	0,02	0,49	0,02	0,45
		upper	0,00	0,00	0,16	0,08	0,84	0,12		0,43	0,05	0,03	0,50	0,03	0,45
		comment													
206	E22	lower	0,01	0,00	0,43	0,30	5,21	0,00		1,84	0,16	0,25	2,05	0,25	1,69
		upper	0,01	0,00	0,43	0,30	5,21	0,57		1,84	0,17	0,25	2,05	0,25	1,69
		comment													
207	E23	lower	0,01	0,00	0,53	0,14	1,75			0,04		0,11	0,04	0,11	
		upper	0,01	0,00	0,53	0,17	1,75			0,06		0,11	0,06	0,11	
		comment											estimate		
208	E24	lower	0,00	0,00	0,21	0,04	3,02			0,36	0,21	0,09	0,56	0,09	0,51
		upper	0,00	0,00	0,21	0,11	3,02			0,36	0,21	0,09	0,57	0,09	0,51
		comment											estimate		
209	E25	lower	0,00		0,02					0,01	0,14	0,03	0,20	0,03	0,05
		upper	0,00		0,02					0,01	0,14	0,03	0,20	0,03	0,05
		comment													
90	Celtic Sea (UK)	lower	**0,02**	**0,00**	**1,5**	**0,6**	**11,3**	**0,0**	**0,0**	**3,0**	**0,6**	**0,51**	**3,7**	**0,51**	**3,0**
		upper	**0,02**	**0,00**	**1,5**	**0,7**	**11,3**	**0,9**	**0,0**	**3,0**	**0,6**	**0,52**	**3,7**	**0,52**	**3,0**
		comment													

OSPAR RID data 2004 UK Sewage Inputs Table 5a			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
210	E26	lower					0,21			0,02	0,03	0,01	0,06	0,01	0,02
		upper					0,21			0,02	0,03	0,01	0,06	0,01	0,02
		comment													
211	E27	lower	0,00	0,00	0,08	0,10	1,70		0,00	0,02		0,04		0,04	
		upper	0,00	0,00	0,08	0,10	1,70		0,32	0,03		0,04		0,04	
		comment											data withdrawn		
212	E28	lower	0,01	0,00	1,67	1,46	19,96	0,00		4,65	0,70	0,40	5,41	0,40	7,62
		upper	0,02	0,00	1,67	1,46	19,96	3,92		4,67	0,71	0,44	5,41	0,44	7,63
		comment													
213	E29	lower	0,00	0,00	0,09	0,16	1,25			0,04	0,35	0,12	0,41	0,12	0,18
		upper	0,00	0,00	0,09	0,16	1,25			0,05	0,35	0,12	0,41	0,12	0,21
		comment													
219	E30	lower													
		upper													
		comment													
215	NI2	lower	0,00	0,00	0,74	0,03	8,54	0,06	0,00	0,65	0,18	0,20	0,76	0,24	2,28
		upper	0,08	0,08	2,00	0,34	9,26	0,66	0,00	0,65	0,18	0,20	0,86	0,27	2,49
		comment													
214	SC1	lower	0,000	0,000	0,085	0,021	0,319	0,000		0,132	0,028	0,018	0,218	0,026	0,264
		upper	0,001	0,000	0,085	0,021	0,319	0,006		0,132	0,028	0,018	0,218	0,026	0,268
		comment													
88	Irish Sea (UK)	lower	**0,01**	**0,00**	**2,7**	**1,8**	**32,0**	**0,1**	**0,0**	**5,5**	**1,3**	**0,79**	**6,9**	**0,84**	**10,4**
		upper	**0,11**	**0,09**	**3,9**	**2,1**	**32,7**	**4,6**	**0,3**	**5,6**	**1,3**	**0,83**	**7,0**	**0,90**	**10,6**
		comment													
OSPAR RID data 2004 UK Sewage Inputs Table 5a			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
218	NI1	lower	0,00	0,00	0,20	0,01	2,43	0,01	0,00	0,23	0,02	0,03	0,24	0,08	1,04
		upper	0,01	0,01	0,36	0,06	2,52	0,26	0,00	0,23	0,02	0,03	0,28	0,09	1,12
		comment													
216	SC2	lower	0,019	0,002	5,455	0,630	18,861	11,668		3,759	0,324	1,128	6,328	1,737	12,311
		upper	0,051	0,005	5,455	0,630	18,861	12,910		3,759	0,327	1,128	6,328	1,737	12,388
		comment													
217	SC2a	lower	0,00	0,00	0,07	0,01	0,11	0,02		0,08	0,00	0,01	0,12	0,01	0,16
		upper	0,00	0,00	0,07	0,01	0,11	0,02		0,08	0,00	0,01	0,12	0,01	0,16
		comment													
92	Atlantic (UK)	lower	**0,02**	**0,00**	**5,7**	**0,6**	**21,4**	**11,7**	**0,0**	**4,1**	**0,3**	**1,17**	**6,7**	**1,84**	**13,5**
		upper	**0,07**	**0,02**	**5,9**	**0,7**	**21,5**	**13,2**	**0,0**	**4,1**	**0,3**	**1,17**	**6,7**	**1,8**	**13,7**
		comment													

UK Totals	lower	**0,15**	**0,06**	**30,8**	**11,4**	**154,0**	**15,7**	**0,0**	**33,7**	**17,5**	**8,12**	**56,3**	**9,10**	**68**
SEWAGE	upper	**0,37**	**0,16**	**32,2**	**12,1**	**154,8**	**36,8**	**36,0**	**33,8**	**17,7**	**8,41**	**57,0**	**9,42**	**68**

Table 5b. Industrial Effluents

Reported Maritime Area of the OSPAR Convention in 2004 by United Kingdom

RM draft 04.03.06 to ASMO 06

OSPAR RID data 2004 UK Industrial Inputs Table 5b			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
181	SC2b	lower	0,00	0,00	13,04	0,06	1,25	0,00		0,07	0,00	0,15	0,66	0,47	4,08
		upper	0,00	0,00	13,04	0,06	1,25	0,00		0,07	0,00	0,15	0,66	0,47	4,08
		comment													
182	SC3	lower													
		upper													
		comment													
183	SC4	lower	0,00	0,00	0,00	0,00	0,01	0,01		0,01	0,00	0,01	0,02	0,01	0,07
		upper	0,00	0,00	0,00	0,00	0,01	0,01		0,01	0,00	0,01	0,02	0,01	0,07
		comment													
184	SC5	lower	0,01	0,00	1,60	0,08	4,84	0,00		0,19	0,01	0,41	0,94	0,70	11,26
		upper	0,01	0,00	1,61	0,08	4,84	0,01		0,19	0,01	0,41	0,94	0,70	11,26
		comment													
185	E1	lower	0,03	0,01	4,90	4,32	9,47	0,00	0,00	0,10	0,04	0,00	0,24	0,00	98,46
		upper	0,03	0,01	4,90	4,32	9,47	0,55	6,30	0,10	0,04	0,11	0,24	0,11	98,46
		comment													
186	E2	lower													
		upper													
		comment													
187	E3	lower													
		upper													
		comment													
188	E4	lower													
		upper													
		comment													
189	E5	lower	0,22	0,00	2,02	1,34	7,46	0,00	0,00	1,90	0,44	0,98	0,01	0,98	4,96
		upper	0,23	0,00	2,02	1,34	7,46	0,02	0,20	1,90	0,44	1,01	0,01	1,01	4,96
		comment													
	North Sea North (UK)		**0,26**	**0,01**	**21,6**	**5,8**	**23,0**	**0,0**	**0,0**	**2,3**	**0,5**	**1,55**	**1,9**	**2,17**	**118,8**
			0,26	**0,01**	**21,6**	**5,8**	**23,0**	**0,6**	**6,5**	**2,3**	**0,5**	**1,68**	**1,9**	**2,30**	**118,8**

OSPAR RID data 2004 UK Industrial Inputs Table 5b			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
190	E6	lower	0,04	0,08	9,78	1,36	4,31								99,91
		upper	0,04	0,08	9,78	1,36	4,31								99,91
		comment													
191	E7	lower													
		upper													
		comment													
192	E8	lower	0,01	0,01	1,67	1,04	11,98	0,00	0,00	0,27	0,02	0,00	0,19	0,00	8,24
		upper	0,02	0,01	1,77	1,16	12,08	0,04	0,26	0,27	0,02	0,01	0,19	0,01	8,24
		comment													
193	E9	lower	0,01	0,00	0,00	0,19	5,55			0,01		0,01	0,04	0,01	0,11
		upper	0,01	0,00	0,00	0,19	5,55			0,01		0,01	0,04	0,01	0,11
		comment													
194	E10	lower													
		upper													
		comment													
195	E11	lower													
		upper													
		comment													
196	E12	lower													
		upper													
		comment													
84	**North Sea South (UK)**	lower	**0,06**	**0,09**	**11,5**	**2,6**	**21,8**	**0,0**	**0,0**	**0,3**	**0,0**	**0,01**	**0,2**	**0,01**	**108,3**
		upper	**0,07**	**0,09**	**11,6**	**2,7**	**21,9**	**0,0**	**0,3**	**0,3**	**0,0**	**0,02**	**0,2**	**0,02**	**108,3**
		comment												= Gaps were filled by using PO4-P Data	

OSPAR RID data 2004 UK Industrial Inputs Table 5b			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
197	E13	lower	0,00	0,00	0,09	0,01	0,63	0,00	0,00	0,00	0,01	0,00	0,03	0,00	0,32
		upper	0,00	0,00	0,09	0,01	0,63	0,13	0,38	0,01	0,02	0,01	0,03	0,01	0,32
		comment													
198	E14	lower													
		upper													
		comment													
199	E15	lower	0,00		0,01	0,00	0,00								
		upper	0,00		0,01	0,00	0,01								
		comment													
200	E16	lower													
		upper													
		comment													
201	E17	lower													
		upper													
		comment													
202	E18	lower													
		upper													
		comment													
86	**Channel (UK)**	lower	**0,00**	**0,00**	**0,1**	**0,0**	**0,6**	**0,0**	**0,0**	**0,0**	**0,0**	**0,00**	**0,0**	**0,00**	**0,3**
		upper	**0,00**	**0,00**	**0,1**	**0,0**	**0,6**	**0,1**	**0,4**	**0,0**	**0,0**	**0,01**	**0,0**	**0,01**	**0,3**
		comment													

OSPAR RID data 2004 UK Industrial Inputs Table 5b			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
203	E19	lower													
		upper													
		comment													
204	E20	lower													
		upper													
		comment													
205	E21	lower													
		upper													
		comment													
206	E22	lower	0,00	0,00	0,01	0,00	0,03			0,00	0,00	0,00	0,00	0,00	0,01
		upper	0,00	0,00	0,01	0,00	0,03			0,00	0,00	0,00	0,00	0,00	0,01
		comment													
207	E23	lower	0,01		0,40	0,21	1,74		2,16						3,27
		upper	0,01		0,40	0,21	1,74		3,63						3,27
		comment													
208	E24	lower	0,01	0,00	0,21	0,98	65,41			0,15		0,00		0,00	
		upper	0,01	0,00	0,21	0,99	65,41			0,15		0,00		0,00	
		comment													
209	E25	lower													
		upper													
		comment													
90	Celtic Sea (UK)	lower	**0,02**	**0,00**	**0,6**	**1,2**	**67,2**	**0,0**	**2,2**	**0,2**	**0,0**	**0,00**	**0,0**	**0,00**	**3,3**
		upper	**0,02**	**0,00**	**0,6**	**1,2**	**67,2**	**0,0**	**3,6**	**0,2**	**0,0**	**0,00**	**0,0**	**0,00**	**3,3**
		comment													
OSPAR RID data 2004 UK Industrial Inputs Table 5b			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
210	E26	lower													
		upper													
		comment													
211	E27	lower							0,00						
		upper							0,25						
		comment													
212	E28	lower	0,00	0,01	0,01	6,02	0,03						0,34		
		upper	0,00	0,01	0,01	6,02	0,03						0,34		
		comment													
213	E29	lower	0,00	0,00	0,01	0,00	0,05			0,00					0,48
		upper	0,00	0,00	0,01	0,00	0,05			0,00					0,48
		comment													
219	E30	lower													
		upper													
		comment													
215	NI2	lower	0,00	0,00	0,03	0,00	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01
		upper	0,00	0,00	0,03	0,00	0,02	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,01
		comment													
214	SC1	lower	0,00	0,000	0,023	0,002	0,088	0,000		0,010	0,001	0,305	0,022	0,459	0,864
		upper	0,000	0,000	0,023	0,002	0,088	0,018		0,010	0,001	0,305	0,022	0,459	0,864
		comment													
88	Irish Sea (UK)	lower	**0,00**	**0,01**	**0,07**	**6,03**	**0,18**	**0,00**	**0,00**	**0,01**	**0,00**	**0,31**	**0,36**	**0,46**	**1,36**
		upper	**0,00**	**0,01**	**0,07**	**6,03**	**0,18**	**0,02**	**0,25**	**0,01**	**0,00**	**0,31**	**0,36**	**0,46**	**1,36**
		comment													
OSPAR RID data 2004 UK Industrial Inputs Table 5b			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
218	NI1	lower	0,00	0,00	0,03	0,00	0,17	0,00	0,00	0,00	0,00	0,00	0,01	0,00	0,03
		upper	0,01	0,00	0,03	0,07	0,17	0,01	0,00	0,00	0,00	0,00	0,01	0,00	0,03
		comment													
216	SC2	lower	0,00	0,00	0,29	0,11	2,36	0,02		0,58	1,64	0,26	2,79	0,44	10,76
		upper	0,00	0,00	0,29	0,11	2,36	0,02		0,58	1,64	0,26	2,79	0,44	10,76
		comment													
217	SC2a	lower	0,00	0,00	0,02	0,00	0,02	0,00		0,00	0,00	0,00	0,01	0,00	0,19
		upper	0,00	0,00	0,02	0,00	0,02	0,01		0,00	0,00	0,00	0,01	0,00	0,19
		comment													
92	Atlantic (UK)	lower	0,00	0,00	0,33	0,11	2,54	0,02	0,00	0,58	1,64	0,26	2,80	0,44	10,98
		upper	0,01	0,00	0,34	0,18	2,54	0,03	0,00	0,58	1,64	0,26	2,80	0,44	10,98
		comment													

UK Totals INDUSTRIAL	lower	**0,34**	**0,11**	**34,13**	**15,71**	**115,41**	**0,03**	**2,16**	**3,29**	**2,17**	**2,13**	**5,28**	**3,08**	243,03
	upper	**0,37**	**0,11**	**34,2**	**15,9**	**115,5**	**0,81**	**11,02**	**3,30**	**2,18**	**2,27**	**5,28**	**3,23**	**243**

UK Totals DIRECT (Sew + Ind)	lower	**0,48**	**0,17**	**64,9**	**27,1**	**269,4**	**15,7**	**2,2**	**37,0**	**19,7**	**10,2**	**61,6**	**12,2**	**311**
	upper	**0,75**	**0,27**	**66,5**	**28,0**	**270,3**	**37,6**	**47,0**	**37,1**	**19,9**	**10,7**	**62,3**	**12,7**	**311**

Table 6c. Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2004 by United Kingdom

OSPAR RID data 2004 UK Riverine Inputs Table 6c			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
181	SC2b	lower	0,40	0,05	5,67	2,18	38,32	1,16		0,08	2,29	0,08	4,89	0,42	24,57
		upper	0,79	0,08	6,38	2,59	40,61	2,93		0,11	2,33	0,14	4,99	0,44	39,83
		comment													
182	SC3	lower	0,17	0,03	18,32	6,98	82,77	3,02		0,25	10,39	0,23	12,23	0,25	59,02
		upper	0,56	0,05	18,33	7,00	82,77	3,94		0,26	10,39	0,23	12,23	0,25	59,63
		comment													
183	SC4	lower	0,14	0,01	14,87	6,13	49,48	2,35		0,19	7,81	0,08	9,76	0,30	40,30
		upper	0,15	0,05	15,22	6,19	49,48	2,56		0,19	7,81	0,09	9,76	0,30	44,40
		comment													
184	SC5	lower	0,11	0,02	12,08	5,19	31,35	0,99		0,19	5,11	0,13	6,62	0,40	51,13
		upper	0,12	0,03	12,12	5,19	31,35	1,00		0,19	5,11	0,13	6,62	0,40	51,29
		comment													
185	E1	lower	0,03	0,00	4,29	0,93	4,87	0,00	0,00	0,08	5,87	0,05	7,51	0,05	20,20
		upper	0,04	0,03	4,29	1,57	16,50	14,77	21,97	0,14	5,87	0,09	7,51	0,09	20,21
		comment													
186	E2	lower	0,27	0,01	3,93	26,25	111,27	0,00	0,00	0,17	1,52	0,07	3,63	0,07	23,81
		upper	0,28	0,03	3,93	26,25	111,27	7,80	14,33	0,19	1,54	0,09	3,63	0,09	23,81
		comment													
187	E3	lower	0,24	0,01	5,99	107,21	74,65	0,00	0,00	0,25	2,77	0,29	2,99	0,29	27,97
		upper	0,28	0,02	5,99	107,21	74,65	4,34	6,30	0,25	2,77	0,29	2,99	0,29	27,97
		comment													
188	E4	lower													
		upper													
		comment													
189	E5	lower	0,05	0,00	2,28	6,66	14,10	0,00	0,00	0,11	2,23	0,21	2,37	0,21	12,50
		upper	0,05	0,01	2,28	6,66	14,10	4,44	6,21	0,11	2,23	0,21	2,37	0,21	12,50
		comment													
84a	North Sea North (UK)		1,41	0,13	67,43	161,53	406,81	7,51	0,00	1,32	37,98	1,15	50,01	1,99	259,50
			2,26	0,29	68,55	162,66	420,74	41,77	48,81	1,43	38,05	1,27	50,11	2,06	279,65
OSPAR RID data 2004 UK Riverine Inputs Table 6c			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
190	E6	lower	0,01	0,00	0,41	0,30	3,04	0,00	0,00	0,02	0,16	0,00	0,30	0,00	2,25
		upper	0,01	0,00	0,41	0,30	3,04	0,97	1,60	0,02	0,16	0,00	0,30	0,00	2,25
		comment													
191	E7	lower													
		upper													
		comment													
192	E8	lower	0,82	0,05	37,18	39,98	197,31	0,00	0,00	1,20	22,40	1,16	15,22	1,16	79,31
		upper	0,88	0,09	37,18	40,12	198,66	22,58	36,13	1,21	22,40	1,17	15,22	1,17	79,33
		comment													
193	E9	lower	0,03	0,02	7,02	5,00	22,16	0,14	0,00	0,29	21,86	0,66	22,32	0,66	26,79
		upper	0,15	0,04	7,11	5,44	22,55	2,40	16,35	0,29	21,86	0,66	22,32	0,66	27,26
		comment													
194	E10	lower	0,02	0,01	3,20	1,87	7,47	0,13	0,00	0,08	10,89	0,24	11,02	0,24	12,43
		upper	0,02	0,02	3,20	1,92	7,78	1,82	6,94	0,08	10,89	0,24	11,02	0,24	12,73
		comment													
195	E11	lower	0,00	0,00	0,31	0,08	0,62	0,14	0,00	0,01	1,11	0,03	1,13	0,03	0,96
		upper	0,01	0,00	0,31	0,11	0,66	0,25	0,62	0,01	1,11	0,03	1,13	0,03	1,04
		comment													
196	E12	lower	0,02	0,00	7,84	1,09	21,63	0,44	0,00	0,18	14,49	22,87	14,67	22,87	1,21
		upper	0,16	0,02	7,84	3,90	21,65	3,80	0,02	0,18	14,49	22,97	14,67	22,97	1,21
		comment											estimate		
84b	North Sea South (UK)	lower	0,91	0,09	55,95	48,32	252,24	0,85	0,00	1,76	70,91	24,97	64,65	24,97	122,96
		upper	1,23	0,17	56,04	51,79	254,34	31,82	61,66	1,79	70,91	25,07	64,65	25,07	123,81
		comment													
OSPAR RID data 2004 UK Riverine Inputs Table 6c			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
197	E13	lower	0,00	0,01	3,59	1,14	7,42	0,00	0,00	0,07	2,83	0,18	2,57	0,18	17,15
		upper	0,05	0,02	3,63	1,68	7,50	1,26	3,78	0,07	2,83	0,18	2,57	0,18	17,17
		comment													
198	E14	lower	0,00	0,00	0,74	0,19	1,76	0,00	0,00	0,02	1,16	0,11	1,08	0,11	4,68
		upper	0,02	0,00	0,86	0,54	2,15	0,46	1,54	0,02	1,16	0,11	1,08	0,11	4,68
		comment													
199	E15	lower	0,00	0,03	0,65	0,03	2,59	0,00	0,00	0,04	2,87	0,06	2,43	0,06	4,43
		upper	0,04	0,03	1,37	0,85	3,37	0,88	2,90	0,04	2,87	0,06	19,80	0,06	4,62
		comment													
200	E16	lower	0,03	0,05	1,41	0,02	14,77	0,09		0,05	6,86	0,21	5,44	0,21	11,20
		upper	0,04	0,05	2,72	2,16	14,99	2,43		0,05	6,86	0,21	6,95	0,21	11,55
		comment													
201	E17	lower	0,04	0,00	1,73	0,99	7,39	0,00		0,06	3,35	0,12	2,76	0,12	11,10
		upper	0,06	0,01	2,67	2,40	10,37	4,01		0,07	3,35	0,12	3,45	0,12	11,85
		comment													
202	E18	lower	0,11	0,00	18,28	0,86	68,40	0,04		0,11	5,68	0,08	5,49	0,08	16,54
		upper	0,11	0,01	18,56	2,31	68,88	1,46		0,13	5,68	0,08	5,81	0,08	18,19
		comment											estimate		
86	Channel (UK)	lower	0,19	0,10	26,40	3,24	102,34	0,13	0,00	0,34	22,74	0,76	19,77	0,76	65,10
		upper	0,33	0,13	29,81	9,93	107,26	10,50	8,21	0,38	22,74	0,77	39,66	0,77	68,06
		comment													

OSPAR RID data 2004 UK Riverine Inputs Table 6c			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
203	E19	lower	0,05	0,00	4,64	0,18	21,48	0,00		0,00	0,31	0,00	0,26	0,00	1,18
		upper	0,05	0,00	4,64	0,22	21,48	0,06		0,00	0,31	0,00	0,31	0,00	1,21
		comment													
204	E20	lower	0,03	0,01	1,84	0,36	5,41	0,04		0,03	3,08	0,04	2,19	0,04	11,81
		upper	0,03	0,01	2,30	1,89	7,16	1,71		0,04	3,08	0,04	3,13	0,04	12,00
		comment													
205	E21	lower	0,01	0,00	0,90	0,08	3,86	0,07		0,06	1,94	0,17	2,03	0,17	4,10
		upper	0,02	0,00	0,98	0,59	3,87	0,66		0,06	1,94	0,17	2,03	0,17	4,18
		comment													
206	E22	lower	0,07	0,04	17,85	15,18	72,85	0,00	0,00	0,11	6,87	0,21	6,75	0,21	46,62
		upper	0,35	0,06	18,06	16,00	72,85	0,72	8,62	0,11	6,87	0,21	7,03	0,21	46,62
		comment													
207	E23	lower	0,23	0,06	15,67	17,59	76,96	0,00		0,22	9,27	0,18	9,49	0,18	231,84
		upper	0,68	0,09	16,05	25,13	77,20	5,29		0,22	9,27	0,18	9,49	0,18	231,93
		comment											estimate		
208	E24	lower	0,10	0,00	3,12	1,34	27,67	0,00		0,04	0,68	0,02	0,72	0,02	13,87
		upper	0,14	0,01	3,13	2,12	27,67	0,72		0,04	0,68	0,02	0,72	0,02	13,97
		comment											estimate		
209	E25	lower	0,01	0,00	2,66	1,00	19,61	0,00		0,08	3,44	0,03	4,72	0,03	36,92
		upper	0,14	0,01	3,09	3,21	19,62	1,37		0,09	3,44	0,03	4,72	0,03	36,96
		comment													
90	Celtic Sea (UK)	lower	0,49	0,10	46,67	35,73	227,84	0,11	0,00	0,55	25,59	0,65	26,15	0,65	346,35
		upper	1,40	0,18	48,25	49,16	229,85	10,53	8,62	0,57	25,59	0,65	27,44	0,65	346,88
		comment													
OSPAR RID data 2004 UK Riverine Inputs Table 6c			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
210	E26	lower	0,22	0,00	6,39	22,74	117,10	0,00		0,12	4,04	0,03	4,24	0,03	45,53
		upper	0,44	0,02	6,65	26,61	117,10	3,09		0,13	4,04	0,04	4,24	0,04	46,19
		comment													
211	E27	lower	0,15	0,00	20,68	7,40	83,04	0,00		0,09	3,99	0,10	4,08	0,10	27,74
		upper	0,34	0,02	20,92	9,72	83,04	2,61		0,10	3,99	0,10	4,09	0,10	28,03
		comment											estimate		
212	E28	lower	0,39	0,10	18,56	14,16	63,63	1,61	0,20	2,60	13,92	1,47	16,97	1,47	54,19
		upper	0,39	0,10	18,56	14,16	63,63	4,16	20,56	2,63	13,92	1,47	16,97	1,47	54,38
		comment													
213	E29	lower	0,29	0,05	15,86	12,74	48,88	0,00	0,00	0,37	5,36	0,58	5,83	0,58	60,69
		upper	0,31	0,06	15,86	13,04	53,70	3,22	22,33	0,39	5,38	0,59	5,85	0,59	63,71
		comment													
219	E30	lower	0,05	0,00	3,37	4,48	14,78	0,00	0,00	0,11	3,80	0,08	3,95	0,08	16,15
		upper	0,06	0,02	3,37	4,53	16,52	2,45	19,76	0,12	3,80	0,09	3,95	0,09	17,30
		comment													
215	NI2	lower	0,00	0,00	5,19	0,41	4,62	0,13	0,00	0,08	1,57	0,12	1,66	0,15	4,80
		upper	0,05	0,02	5,19	0,43	4,62	1,22	0,59	0,08	1,57	0,12	1,66	0,15	4,85
		comment													
214	SC1	lower	0,25	0,00	14,97	11,86	60,11	0,06		0,12	3,70	0,30	9,47	0,38	175,85
		upper	0,26	0,05	14,97	11,86	60,11	13,58		0,25	3,79	0,30	9,47	0,38	179,22
		comment													
88	Irish Sea (UK)	lower	1,35	0,16	85,02	73,79	392,15	1,81	0,20	3,48	36,39	2,69	46,21	2,80	384,95
		upper	1,85	0,31	85,52	80,36	398,72	30,33	63,24	3,69	36,50	2,71	46,24	2,82	393,69
		comment													
OSPAR RID data 2004 UK Riverine Inputs Table 6c			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
218	NI1	lower	0,00	0,01	50,14	2,02	41,19	0,10	0,00	0,50	5,38	0,40	5,95	0,70	55,81
		upper	0,58	0,29	50,14	3,22	45,07	10,80	6,76	0,51	5,38	0,40	5,96	0,70	56,18
		comment													
216	SC2	lower	0,22	0,05	27,00	23,21	73,79	0,19		1,13	5,97	0,74	9,99	0,92	165,84
		upper	0,28	0,09	27,00	23,22	73,79	9,19		1,19	5,97	0,74	9,99	0,92	168,55
		comment													
217	SC2a	lower	0,14	0,03	2,81	0,86	22,12	3,64		0,03	0,72	0,06	2,30	0,03	7,19
		upper	0,57	0,05	3,75	1,22	24,25	4,18		0,05	0,74	0,10	2,39	0,06	17,80
		comment													
92	Atlantic (UK)	lower	0,36	0,09	79,94	26,09	137,11	3,94	0,00	1,66	12,06	1,20	18,24	1,66	228,84
		upper	1,43	0,43	80,88	27,66	143,11	24,17	6,76	1,75	12,10	1,23	18,34	1,68	242,53
		comment													
UK Totals RIVERINE		lower	4,70	0,67	361,4	348,7	1518	14,3	0,2	9,1	205,7	31,42	225,0	32,84	1408
		upper	8,50	1,50	369,1	381,6	1554	149,1	197,3	9,6	205,9	31,71	246,4	33,06	1455
UK Totals (Direct + Riverine)		lower	5,19	0,84	426,3	375,8	1788	30,1	2,4	46,1	225,3	41,66	286,6	45,02	1719
		upper	9,25	1,77	435,5	409,6	1824	186,7	244,3	46,8	225,7	42,39	308,7	45,71	1766

Table 4b: Total UK Riverine Inputs and Direct Discharges (including fish farms) to the OSPAR Maritime Area in 2004

(Note: fish farming only occurs in the North Sea North, and Atlantic OSPAR Sea Areas and only certain determinands are measured.)

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(Note: RTT represents "Regional Task Team Areas")

Riverine plus Direct discharges to RTT Sea areas Table 4b			1,00 Cd [t]	5,00 Hg [t]	6,00 Cu [t]	2,00 Pb [t]	7,00 Zn [t]	8,00 g-HCH [kg]	9,00 PCB [kg]	10,00 NH4-N [kt]	11,00 NO3-N [kt]	12,00 PO4-P [kt]	13,00 Total N [kt]	14,00 Total P [kt]	3,00 SPM [kt]
North Sea North	sewage	lower	0,04	0,01	5,61	2,44	27,47	1,94	0,00	8,84	3,20	1,32	14,96	1,58	17,50
		upper	0,05	0,01	5,61	2,44	27,47	5,45	25,05	8,85	3,24	1,52	14,96	1,78	17,52
		comment													
North Sea North	industrial	lower	0,26	0,01	21,56	5,79	23,04	0,01	0,00	2,26	0,50	1,55	1,86	2,17	118,84
		upper	0,26	0,01	21,57	5,80	23,04	0,59	6,50	2,26	0,50	1,68	1,86	2,30	118,84
		comment													
North Sea North	riverine	lower	1,41	0,13	67,43	161,53	406,81	7,51	0,00	1,32	37,98	1,15	50,01	1,99	259,50
		upper	2,26	0,29	68,55	162,66	420,74	41,77	48,81	1,43	38,05	1,27	50,11	2,06	279,65
		comment													
North Sea North	fish farms	lower			22,94		3,16						3,18	0,44	
		upper			22,94		3,16						3,18	0,44	
		comment													
North Sea North TOTAL	sewage + industrial riverine and farms	lower	1,71	0,16	117,54	169,76	460,47	9,46	0,00	12,42	41,68	4,01	70,01	6,18	395,84
		upper	2,58	0,31	118,67	170,89	474,41	47,81	80,36	12,54	41,79	4,47	70,11	6,58	416,01
		comment													
North Sea South	sewage	lower	0,04	0,02	10,02	4,59	41,89	1,83	0,00	5,98	9,75	3,19	16,01	3,19	7,39
		upper	0,10	0,03	10,03	4,65	41,90	9,76	5,37	6,02	9,77	3,21	16,03	3,21	7,42
		comment													
North Sea South	industrial	lower	0,06	0,09	11,46	2,59	21,84	0,00	0,00	0,28	0,02	0,01	0,23	0,01	108,26
		upper	0,07	0,09	11,56	2,70	21,93	0,04	0,26	0,29	0,02	0,02	0,23	0,02	108,26
		comment													
North Sea South	riverine	lower	0,91	0,09	55,95	48,32	252,24	0,85	0,00	1,76	70,91	24,97	64,65	24,97	122,96
		upper	1,23	0,17	56,04	51,79	254,34	31,82	61,66	1,79	70,91	25,07	64,65	25,07	123,81
		comment													
North Sea South	fish farms	lower													
		upper													
		comment													
North Sea South TOTAL	sewage + industrial riverine and farms	lower	1,01	0,20	77,43	55,50	315,97	2,68	0,00	8,03	80,68	28,17	80,89	28,17	238,61
		upper	1,40	0,28	77,62	59,15	318,17	41,63	67,30	8,09	80,70	28,30	80,91	28,30	239,49
		comment													
Channel	sewage	lower	0,01	0,02	5,27	1,39	20,00	0,13	0,00	6,35	2,32	1,14	8,09	1,14	16,09
		upper	0,02	0,02	5,30	1,51	20,00	2,92	5,26	6,37	2,40	1,16	8,60	1,16	16,12
		comment													
Channel	industrial	lower	0,00	0,00	0,09	0,01	0,63	0,00	0,00	0,00	0,01	0,00	0,03	0,00	0,32
		upper	0,00	0,00	0,10	0,01	0,64	0,13	0,38	0,01	0,02	0,01	0,03	0,01	0,32
		comment													
Channel	riverine	lower	0,19	0,10	26,40	3,24	102,34	0,13	0,00	0,34	22,74	0,76	19,77	0,76	65,10
		upper	0,33	0,13	29,81	9,93	107,26	10,50	8,21	0,38	22,74	0,77	39,66	0,77	68,06
		comment													
Channel	fish farms	lower													
		upper													
		comment													
Channel TOTAL	sewage + industrial riverine and farms	lower	0,20	0,12	31,76	4,64	122,97	0,26	0,00	6,69	25,08	1,91	27,89	1,91	81,51
		upper	0,36	0,14	35,21	11,45	127,90	13,55	13,85	6,76	25,16	1,93	48,29	1,93	84,50
		comment													
RTT 11 TOTAL	sewage + industrial riverine and farms	lower	2,92	0,48	226,73	229,90	899,40	12,39	0,00	27,14	147,44	34,09	178,80	36,26	715,97
		upper	4,34	0,74	231,50	241,49	920,48	102,98	161,51	27,39	147,66	34,71	199,31	36,82	740,00
		comment													
Celtic Sea	sewage	lower	0,02	0,00	1,50	0,55	11,25	0,05	0,00	2,96	0,58	0,51	3,67	0,51	2,97
		upper	0,02	0,00	1,51	0,73	11,25	0,86	0,00	2,99	0,61	0,52	3,70	0,52	2,97
		comment													
Celtic Sea	industrial	lower	0,02	0,00	0,62	1,19	67,18	0,00	2,16	0,15	0,00	0,00	0,00	0,00	3,28
		upper	0,02	0,00	0,62	1,20	67,18	0,00	3,63	0,15	0,00	0,00	0,00	0,00	3,28
		comment													
Celtic Sea	riverine	lower	0,49	0,10	46,67	35,73	227,84	0,11	0,00	0,55	25,59	0,65	26,15	0,65	346,35
		upper	1,40	0,18	48,25	49,16	229,85	10,53	8,62	0,57	25,59	0,65	27,44	0,65	346,88
		comment													
Celtic Sea	fish farms	lower													
		upper													
		comment													
Celtic Sea TOTAL	sewage + industrial riverine and farms	lower	0,52	0,10	48,78	37,47	306,27	0,16	2,16	3,67	26,17	1,16	29,82	1,16	352,60
		upper	1,44	0,18	50,38	51,09	308,29	11,39	12,25	3,71	26,20	1,18	31,13	1,18	353,13
		comment													
Irish Sea	sewage	lower	0,01	0,00	2,66	1,77	31,99	0,06	0,00	5,52	1,30	0,79	6,86	0,84	10,36
		upper	0,11	0,09	3,92	2,08	32,71	4,59	0,32	5,55	1,30	0,83	6,96	0,90	10,62
		comment													
Irish Sea	industrial	lower	0,00	0,01	0,07	6,03	0,18	0,00	0,00	0,01	0,00	0,31	0,36	0,46	1,36
		upper	0,00	0,01	0,07	6,03	0,18	0,02	0,25	0,01	0,00	0,31	0,36	0,46	1,36
		comment													
Irish Sea	riverine	lower	1,35	0,16	85,02	73,79	392,15	1,81	0,20	3,48	36,39	2,69	46,21	2,80	384,95
		upper	1,85	0,31	85,52	80,36	398,72	30,33	63,24	3,69	36,50	2,71	46,24	2,82	393,69
		comment													
Irish Sea	fish farms	lower													
		upper													
		comment													
Irish Sea TOTAL	sewage + industrial riverine & farms	lower	1,37	0,17	87,75	81,58	424,32	1,86	0,20	9,01	37,69	3,79	53,43	4,10	396,66
		upper	1,96	0,40	89,51	88,47	431,61	34,94	63,81	9,25	37,80	3,84	53,57	4,19	405,66
		comment													
Atlantic	sewage	lower	0,02	0,00	5,72	0,65	21,40	11,70	0,00	4,07	0,35	1,17	6,68	1,84	13,51
		upper	0,07	0,02	5,88	0,70	21,49	13,19	0,00	4,07	0,35	1,17	6,72	1,84	13,67
		comment													
Atlantic	industrial	lower	0,00	0,00	0,33	0,11	2,54	0,02	0,00	0,58	1,64	0,26	2,80	0,44	10,98
		upper	0,01	0,00	0,34	0,18	2,54	0,03	0,00	0,58	1,64	0,26	2,80	0,44	10,98
		comment													
Atlantic	riverine	lower	0,36	0,09	79,94	26,09	137,11	3,94	0,00	1,66	12,06	1,20	18,24	1,66	228,84
		upper	1,43	0,43	80,88	27,66	143,11	24,17	6,76	1,75	12,10	1,23	18,34	1,68	242,53
		comment													
Atlantic	fish farms	lower			17,53		5,78						5,81	0,80	
		upper			17,53		5,78						5,81	0,80	
		comment													
Atlantic TOTAL	sewage + industrial riverine and farms	lower	0,38	0,09	103,53	26,84	166,83	15,65	0,00	6,31	14,05	2,63	33,53	4,74	253,33
		upper	1,51	0,45	104,63	28,54	172,92	37,39	6,76	6,40	14,09	2,66	33,66	4,77	267,18
		comment													
RTT 111 TOTAL	sewage + industrial riverine and farms	lower	2,27	0,37	240,06	145,90	897,42	17,68	2,36	18,99	77,91	7,58	116,77	10,00	1002,59
		upper	4,91	1,03	244,52	168,09	912,82	83,72	82,82	19,37	78,09	7,68	118,37	10,14	1025,97
		comment													
All Sea Areas TOTAL	sewage + industrial riverine and farms	lower	5,19	0,84	466,79	375,79	1796,82	30,07	2,36	46,12	225,35	41,66	295,57	46,26	1718,56
		upper	9,25	1,77	476,02	409,58	1833,30	186,70	244,33	46,76	225,74	42,39	317,68	46,95	1765,97
		comment													

Table 8: Limits of Detection and Limits of Quantification for UK RID Monitoring Data

		Limit of Detection												
OSPAE area	Type	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
Scotland		[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[ng/l]	[ng/l]	[ug/l]	[ug/l]	[ug/l]	[ug/l]	[mg/l]	[mg/l]
SC1, SC2	Sewage effluent	0,1	0,009	0,05	0,18	0,79	10		40	100	3	100	3	2
	Industrial effluent	0,02	0,007	0,05	0,18	0,79	3		40	100	3	100	3	2
	Riverine input	0,02	0,009	0,05	0,05	0,79	0,6		30	100	3	100	3	2
SC2A, SC2B, SC3	S	0,11	0,005	0,13	0,09	1,77	2		10	30	8	100	3	2
	I	0,11	0,005	0,4	0,08	0,31	2		5	30	8	100	3	2
	R	0,11	0,002	0,33	0,09	1,77	0,31		5	30	8	100	3	2
SC4, SC5	S	0,07	0,01	0,6	1	4	0,1		10	150	4	100	4	2
	I	0,07	0,01	20	10	40	10		10	150	4	100	4	2
	R	0,008	0,005	0,6	0,2	4	0,1		5	100	4	100	4	2

		Minimum Reportable Value												
OSPAE area	Type	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
England and Wales		[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[ng/l]	[ng/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[mg/l]
E1 to E30	Sewage effluent	0,01	0,01	0,1	0,1	0,5	5	35	500	1000	500	100		3
	Industrial effluent	0,01	0,01	0,1	0,1	0,5	5	35	500	1000	500	100		3
	Riverine input	0,01	0,01	0,1	0,1	0,5	1	7	30	200	20	100		3

		Limit of Detection												
OSPAE area	Type (3)	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
Northern Ireland		[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[ng/l]	[ng/l]	ug/l	ug/l	[ug/l]	[ug/l]	[ug/l]	[mg/l]
NI1 and NI2	All measurements	0,02	0,02	0,27	0,03	2,96	1	1	3	1,4	1,2	21	3,0	2

		Limit of Quantification												
OSPAE area	Type (3)	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
Northern Ireland		[µg/l]	[µg/l]	[µg/l]	[µg/l]	[µg/l]	[ng/l]	[ng/l]	ug/l	ug/l	[ug/l]	[ug/l]	[ug/l]	[mg/l]
NI1 and NI2	Sewage effluent	1	1	20	4	20	5	5	40	50	50	50	50	2
	Industrial effluent	1	1	20	4	20	5	5	40	50	50	50	50	2
	Riverine input	0,1	0,05	1	0,4	3	1	1	40	50	10	50	50	2

For direct discharges, the LQ for Cd is 20ug/l and the LQ for Pb is 100ug/l for saline samples

For clarification the two limits are defined as follows:

- **Limit of detection**

The lowest concentration of analyte in a sample that can be detected, but not necessarily quantitated under the stated conditions of the test.

- **Limit of quantitation / Minimum Reportable Value**

The lowest concentration of an analyte that can be determined with acceptable precision and accuracy under the stated conditions of the test.