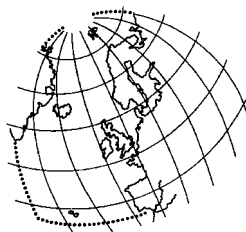


**Data Report on the
Comprehensive Study of Riverine Inputs
and Direct Discharges (RID) in 2003**



**OSPAR Commission
2005**

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.

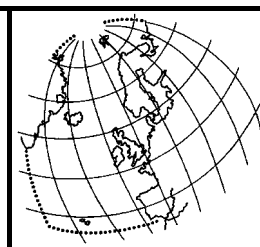
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Data Report on the Comprehensive Study of Riverine Inputs and Direct Discharges (RID) in 2003

This data report complements the report containing the overview of the results of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID) in 2003.

Previous data reports include the results of the Comprehensive Study in 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998, 1999, 2000, 2001 and 2002. 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 Commission¹ (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 provide, for a selection of their main rivers, information on the annual mean/median concentration of selected pollutants. 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. The Environmental Assessment and Monitoring Committee (ASMO) agreed in 2003 on terms of reference for an assessment of RID data from 1990 to 2001 to be prepared. ASMO 2004 agreed on a timetable for completing this assessment in time for publication in 2005.

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:

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.

“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:

- a. Hydrocarbons, in particular PAHs² and mineral oil³ (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 will also focus on encouraging greater harmonisation and transparency in the way that Contracting Parties comply with the RID Principles.

Based on the arrangements of INPUT and ASMO 2004, and taking into account a request by HOD November 2004 to consider the linkages of monitoring under RID and the Water Framework Directive with a view to seeking synergies, INPUT 2005 examined proposals by WG RID REV for a review of the RID Principles. INPUT 2005 agreed on draft revised RID Principles, a written procedure to finalise the proposal for further consideration by ASMO 2005 and on arrangements for further review work by the next INPUT meeting concerning specific identified issues. The proposal for draft revision includes 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.

2003 Report on input data

For the 2003 study, data sets on riverine inputs and direct discharges were provided by Denmark, Germany, the Netherlands, Norway, Portugal, Spain⁵, Sweden and the United Kingdom of Great Britain and Northern Ireland (UK). Belgium⁶ only reported riverine inputs. Data from France⁷ are delayed.

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. SPDS carries out the work formerly undertaken by DIFF.)

⁵ Secretariat note: Spain submitted its text report in two parts on 1 June and 29 June 2005. This report which is appended in Annex 9 was submitted too late to be taken into account in the overview report adopted by ASMO 2005.

⁶ Reporting of direct discharges has been discontinued.

⁷ Secretariat note: France submitted its data on 30 September 2005. These data which are appended in Annex 3 were submitted too late to be taken into account in the overview report and tables adopted by ASMO 2005.

Belgium reported significant decreases in the inputs of metals associated with reduced flows. As a result of the low flows there were increases in zinc supposedly as a result of desorption of Zn from muds during salt water incursions and increases in ammonium due to long periods of low oxygenation.

France reported that, following staffing changes, they hoped to be able to improve their reporting practice. France indicated that their historical data had not been consistently processed due to lack of resources. France planned to (re)calculate their data up to 2002 so that it was fit for the purpose of trend assessment and hoped to be able to report the data to OSPAR by September or October 2005. This exercise could be an opportunity to test the new RTrend software.

Germany reported that flows and inputs to the North Sea for 2003 were more comparable to 2001 and the long-term mean than to 2002, which had been an extreme year. For the Ems, direct discharges were no longer estimated but based upon measurements. Measurements of PCBs (in water) in the Elbe and Eider as well as of lindane in the Elbe tributaries were below detection limits resulting in their measurements being discontinued. In the rivers Eider and Weser there were still significant reductions of the concentrations and loads for lindane which was caused by the ban of this substance in November 1997.

The Netherlands reported for the first time direct input data from the Rotterdam area and indicated that they intended to continue reporting this data in the future. They also informed the meeting that they were taking steps to bring their reporting more into the line with the requirements of the RID Principles.

Norway reported on results from 10 main rivers monitored at least once a month and 126 tributary rivers. They reported reduced flows and generally reduced reductions in inputs of metals and organic micropollutants. Considerable reductions in total phosphorus were also observed. An increase in mercury was due to a change of analysis method. For the next RID report, Norway would return to the method used in previous years.

Portugal reported problems with regard to reporting mercury data and apologised that they had not been able to submit a text report. They hoped to improve on this for the next reporting round.

The UK reported that total river flows were lowest since 1990 which made it difficult to draw too many conclusions from 2003 data. However, direct discharges continued to decline and for lindane and PCBs a large number of the data were below the detection limit. There were downward trends also for mercury and cadmium but not for nutrients.

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 reporting of mandatory and voluntary determinands (cf. Table 1b) in 2003 was almost the same as in 2002 with the single difference being that Denmark did not report data for ammonia in direct discharges. Of those Contracting Parties reporting, several did not report data for all parameters, i.e.

- Denmark did not report data on inputs of heavy metals;
- Denmark Portugal and Sweden did not report data for inputs of γ -HCH (Norway did not report direct inputs of γ -HCH);
- Denmark and Sweden did not report on inputs of suspended particulate matter;
- Denmark, Norway, 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 (cf. Table 1b). Norway had reported on inputs from fishfarming because in Norway this activity contributed a significant part of the inputs of nitrogen and phosphorus. A number of Contracting Parties reported overall downward trends in the inputs of the RID determinands over the period 1990 to 2002.

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

Presentation of the 2003 data

Table 1a gives an overview of the information provided by Contracting Parties for 2003 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 cases⁸ 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 4a and 4b**. Table 2 gives an overview of direct inputs to OSPAR Convention waters in 2003 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 2003 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 Tables 2 to 4a and 4b.

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

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.

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.

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 2003.

List of the overview tables

Table 1a	Information Received on Inputs to the Maritime Area of the OSPAR Convention in 2003
Table 1b	Determinands Reported by Contracting Parties in 2003
Table 2	Direct Inputs to the Maritime Area of the OSPAR Convention in 2003 by Country
Table 3	Riverine Inputs to the Maritime Area of the OSPAR Convention in 2003 by Country
Table 4a	Summary of Direct (Table 2) and Riverine (Table 3) Inputs to the Maritime Area of the OSPAR Convention in 2003 by Country
Table 4b	Summary of Direct and Riverine Inputs to the Maritime Area of the OSPAR Convention by Sea Area

Appendix 1 Statistical information on river catchment areas

List of the Annexes by Contracting Party

Belgium (Annex 1)

Denmark (Annex 2)

France (Annex 3)

Germany (Annex 4)

Ireland (Annex 5)

Netherlands (Annex 6)

Norway (Annex 7)

Portugal (Annex 8)

Spain (Annex 9)

Sweden (Annex 10)

United Kingdom (Annex 11)

**Table 1a. Information Received on Inputs to the Maritime Area
of the OSPAR Convention in 2003**

Country	Direct Discharges		Coastal Areas (1)	Riverine Inputs	
	Sewage Effluents	Industrial Effluents		Main Rivers	Tributary Rivers (2)
Belgium	NA	NA	(3)	+	+
Denmark					
- Kattegat	+	+	(4)	+	(5)
- Skagerrak	+	+	(4)	+	(5)
- North Sea	+	+	(4)	+	(5)
France	No 2003 input data submitted				
- Channel/North Sea					
- Atlantic					
Germany	+	+	(6)	+	+
Iceland	No 2003 input data submitted (7)				
Ireland					
- Irish Sea	(8)	(8)	NI	+	+
- Celtic Sea	(8)	(8)	NI	+	+
- Atlantic	(8)	(8)	NI	+	+
Netherlands	+	+	(3)	+	+
Norway					
- Skagerrak	+	+	+ (9)	+	+
- North Sea	+	+	+ (9)	+	+
- Norwegian Sea	+	+	+ (9)	+	+
- Barents Sea	+	+	+ (9)	+	+
Portugal	NI	NI		+	NI
Spain	+	+	+	+	+
Sweden					
- Kattegat	+	+	(3)	+	+
- Skagerrak	+	+	(3)	+	+
United Kingdom					
- East Coast (11)	+	+	NI	+	+ (10)
- Channel	+	+	NI	+	+ (10)
- Celtic Sea	+	+	NI	+	+ (10)
- Irish Sea	+	+	NI	+	+ (10)
- Atlantic	+	+	NI	+	+ (10)

+ = 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) 1990 data since the basis for calculation remained unchanged. At ASMO 2004, Ireland stated that it planned to update its data on direct discharges in time for the next reporting cycle.
- (9) cf. category "run-off" (i.e. estimated values for diffuse contributions) in Table 6b. for Norway
- (10) Reported as main rivers
- (11) Split into East Coast (North) and East Coast (South)

Table 1b. Determinands Reported by Contracting Parties in 2003

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 - riverine inputs	NA R (4)	NA R (4)	NA R (4)	NA R (4)	NA R (3)	NA R (4)	NA R (4)	NA R (4)	NA R (4)	NA R (3)	NA R (3)	NA R (4)	NA R (3)	
Denmark - direct inputs - riverine inputs	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	+ +	+ +	+ +	+ +	NI NI	
France - direct inputs - riverine inputs	No 2003 data submitted													
Germany - direct inputs - riverine inputs* - riverine inputs** (*) Elbe (**) Other main rivers	R + (4) + (3)(4)	R + (3) + (3)	R + (3) + (3)	R + (3) + (3)	R + (3) + (3)	R + (4) + (3)(4)	R + (4) + (4)	+ + (3) + (3)(4)	+ + (3) + (3)	+ + (3) + (3)(4)	+ + (3) + (3)	+ + (3) + (3)	+ + (3) + (3)(4)	
Iceland	No 2003 data submitted (6)													
Ireland - direct inputs (9) - main riv. inputs - tributary rivers	9 R (3)(4) R	NI NI NI	9 R (3)(4) R	9 R (3)(4) R	9 R (3)(4) R	NI NI NI	NI NI NI	NI R (3)(4) R	NI +(3)(10) +	NI 3 +	9 + +	9 + +	9 3 +	
Netherlands - direct inputs - main riv. inputs - tributary rivers	+ + (3)(4) +	+ + (3) +	+ + (3) +	+ + (3) +	+ + (3)(4) +	+ (12) + (3) +	+ (12) + (3) +	NI + (3) +	+ + (3) +	NI + (3) +	+ + (3) +	+ + (3) +	+ + (3) +	
Norway - direct inputs - main riv. inputs - tributary rivers	+ + (3)(4) `+`	+ +(4) (3) `+`	+ + (4) +	+ + (3) +	+ + (3)(4) +	NI + (3)(4) E (11)	NI NI NI	+ + (3) +(5)	+ + (3) + (5)	+ + (3) +(5)	+ + (3) + (5)	+ + (3) + (5)	+ + (3)(4) + (5)	Cr, Ni As, Cr, Ni, TOC As, Cr, Ni, TOC
Portugal - direct inputs - main riv. Inputs (7) - tributary rivers	NI + NI	NI NI NI	NI + NI	NI + NI	NI + NI	NI NI NI	NI NI NI	NI + NI	NI + NI	NI + NI	NI + NI	NI + NI	NI + NI	
Spain - direct inputs - riverine inputs	+ + (3)(4)	+ R(4)	+ + (3)(4)	+ + (3)(4)	+ + (3)(4)	+ + (3)(4)	+ R(4)	+ + (3)(4)	+ + (3)(4)	+ + (3)(4)	+ + (3)(4)	+ + (3)(4)	+ + (3)(4)	
Sweden - sewage effluent - industrial effluent - main riv. inputs	+ + +	+ + +	+ + +	+ + +	+ + +	NI NI NI	NI NI NI	+ NI +	+ NI +	+ NI +	+ + +	+ + +	NI NI NI	
United Kingdom - direct inputs - riverine inputs	R R	R R	R R	R R	R R	R R	R R	R R	R R	R R	R(8) R(8)	R(8) R(8)	R 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.

(9) 1990 data since the basis for calculation remained unchanged. At ASMO 2004, Ireland stated that it planned to update its data on direct discharges in time for the next reporting cycle.

(10) Total oxidised nitrogen measured and not nitrate per se.

(11) Estimated values only

(12) estimate of the total national figure; lindane: 0-0.07 tonnes; PCBs: 0 - 0.06 tonnes

Table 2[^]. Direct Discharges to the Maritime Area of the OSPAR Convention in 2003 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) (upper estimate)	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA	NA NA
Denmark	North Sea Skagerrak Kattegat	NI NI NI	NI NI NI	NI NI NI	NI NI NI	NI NI NI	NI NI NI	NI NI NI	NI NI NI	0,09 0,01 0,35	0,004 0,002 0,020	0,12 0,03 0,49	0,01 0,00 0,04	NI NI NI
France	Channel/North Sea Atlantic	no data submitted for 2003												
Germany	North Sea (lower estimate) (upper estimate)	0,01 0,05	0,01 0,05	1,8 2,5	0,90 1,5	9,7 15	0,02 0,30	0,04 2,9	1,7 1,7	1,7 1,7	0,08 0,08	3,5 3,5	0,40 0,40	1,9 1,9
Iceland	Atlantic	no data submitted for 2003												
Ireland	Irish Sea Celtic Sea Atlantic	0,06 0,02 0,01	NI NI NI	7,5 3,2 0,83	3,3 4,4 0,39	63 22 7,7	NI NI NI	NI NI NI	NI NI NI	NI NI NI	NI NI NI	6,8 2,7 0,70	1,6 0,65 0,21	38 19 4,3
Netherlands	North Sea (upper estimate)	0,25	0,03	3,8	3,1	29	NI	NI	NI	1,1	NI	6,2	0,45	30
Norway (3)	Skagerrak North Sea Norwegian Sea Barents Sea	0,08 0,09 0,05 0,00	0,03 0,01 0,01 0,00	13 4,9 22,9 0,67	0,89 2,7 1,1 0,05	17 23 56 1,0			2,9 4,9 7,1 0,73	0,02 0,02 0,02 0,00	0,06 0,48 0,80 0,08	4,9 11,6 18,9 2,00	0,18 2,05 3,56 0,39	3,2 9 935 214
Portugal	Atlantic (lower estimate) (upper estimate)	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI
Spain	Atlantic (lower estimate) (upper estimate)	0,5 5,0	0,21 1,1	4 12	1 40	33 48	0,8 18	1 26	10 11	1,9 1,9	1,0 1,1	22 22	2,2 2,4	352 360
Sweden	Kattegat Skagerrak	0,02 0,00	0,01 0,01	1,4 0,29	0,2 0,03	4,3 0,70	NI NI	NI NI	1,0 0,20	NI NI	NI NI	1,6 0,36	0,1 0,01	NI NI
United Kingdom	North Sea North (lower estimate) (upper estimate)	0,12 0,15	0,13 0,14	25 25	4 4	45 45	2 4	0,00 18,67	11 11	3 3	2,2 2,3	18 18	3,1 3,1	64 64
	North Sea South (lower estimate) (upper estimate)	0,27 0,34	0,13 0,14	23 23	10 11	77 77	1 10	0,00 7,44	7 7	10 11	3,0 3,0	20 20	3,0 3,0	185 185
	North Sea (Channel) (lower estimate) (upper estimate)	0,03 0,04	0,02 0,02	12 12	3,0 3,1	24 24	0,5 5,8	0,00 20,42	9,0 9,0	2,2 2,3	1,5 1,5	11,5 11,6	1,5 1,5	35,1 35,2
	<i>Total North Sea</i> (lower estimate) (upper estimate)	0,43 0,53	0,28 0,29	60,5 60,7	17,6 18,0	145,5 145,5	4,2 20,5	0,00 46,5	27,7 27,8	15,5 15,7	6,8 6,9	50,2 50,4	7,6 7,7	283,8 283,8
	Celtic Sea (lower estimate) (upper estimate)	2,0 2,0	0,02 0,02	2,1 2,2	3 3	72 72	0,71 1,59	8,3 10,5	6,4 6,5	1,51 1,57	1,04 1,05	8,2 8,3	1,04 1,05	10 10
	Irish Sea (lower estimate) (upper estimate)	0,13 0,26	0,17 0,27	4 6	9 9	24 25	0,6 3,9	0,00 0,44	5,1 5,1	1,7 1,7	0,8 0,9	7 7	0,9 1,0	10 10
	Atlantic (lower estimate) (upper estimate)	0,02 0,07	0,02 0,03	5 5	0,6 0,7	18 18	0,17 1,65	0,00 0,00	3,6 3,6	1,6 1,6	0,89 0,89	9,2 9,2	1,4 1,4	22 22
	<i>Total Non-North Sea</i> (lower estimate) (upper estimate)	2,1 2,3	0,21 0,33	11,0 12,7	12,6 12,8	113,5 113,8	1,5 7,2	8,3 11,0	15,1 15,2	4,8 4,9	2,8 2,8	24,9 25,0	3,3 3,4	42,6 42,7

[^] 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

Table 3[^]. Riverine Inputs to the Maritime Area of the OSPAR Convention in 2003 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) (upper estimate)	1,0 4,9	0,1 0,2	30 42	29 45	458 608	9 39	0,0 83	3,4 5,6	24 29	1,3 1,8	33 44	0,9 4,0	226 282
Denmark	North Sea Skagerrak Kattegat	NI NI NI	NI NI NI	NI NI NI	NI NI NI	NI NI NI	NI NI NI	NI NI NI	NI NI NI	9 1,3 18	0,08 0,02 0,25	11 1,6 21	0,30 0,06 0,54	NI NI NI
France	Channel/North Sea Atlantic	no data submitted for 2003												
Germany	North Sea (lower estimate) (upper estimate)	4,2 4,3	3,1 3,1	178 178	116 117	1062 1062	27 27	2,0 25	8,6 8,6	144 144	2,2 2,2	178 178	7,0 7,0	1024 1125
Iceland	Atlantic	no data submitted for 2003												
Ireland	Irish Sea (lower estimate) (upper estimate) Celtic Sea (lower estimate) (upper estimate) Atlantic (lower estimate) (upper estimate)	0,2 0,5 0,0 1,9 0,0 1,1	0,0 0,6 0,0 2,8 0,0 1,7	12 12 31 36 12 19	10 13 19 31 0 11	79 79 185 186 47 48	NI NI NI NI NI NI	NI NI NI NI NI NI	0,2 0,2 2,0 2,1 0,2 0,3	12 12 38 38 6 6	0,2 0,2 0,8 0,8 0,2 0,2	14 14 51 51 11 11	0,4 0,4 1,5 1,5 0,4 0,4	124 124 211 211 78 78
Netherlands	North Sea (lower estimate) (upper estimate)	4	1,2	239	71	529	64	58	11	130	6	213	12	1188
Norway	Skagerrak (lower estimate) (upper estimate) North Sea (lower estimate) (upper estimate) Norwegian Sea (lower estimate) (upper estimate) Barents Sea (lower estimate) (upper estimate)	0,9 1,1 0,14 0,49 0,14 0,83 0,00 0,24	0,90 0,95 0,36 0,38 0,90 0,96 0,04 0,08	55 55 20 20 54 54 12 12	19 19 5 5 4,5 4,6 0,27 0,68	212 212 63 67 102 113 11 20	22 23 0,28 0,34 1,87 1,90 0,24 0,30		1,4 1,4 0,39 0,39 0,6 0,6 0,23 0,23	18 18 6 6 4 4 0,19 0,21	0,07 0,10 0,01 0,05 0,07 0,11 0,06 0,06	27 27 9 9 10 10 2,8 2,8	0,6 0,6 0,28 0,30 0,4 0,4 0,15 0,15	229 230 158 168 154 161 23 24
Portugal	Atlantic (lower estimate) (upper estimate)	0,3 0,3	NI NI	22 22	14 14	113 113	NI NI	NI NI	0,3 0,3	5 5	1,2 1,2	127 127	1,1 1,1	104 104
Spain	Atlantic (lower estimate) (upper estimate)	0,6 71	0,0 12	18 185	19,3 163	460 544	7 34	8 190	11 11	69 69	1 2	67 67	2 2	487 488
Sweden	Kattegat Skagerrak (estimate) (estimate)	0,2 0,0	0,0 0,01	21 2,7	5 0,8	66 8	NI NI	NI NI	0,8 0,1	12 1,0	0,1 0,03	21 2,1	0,4 0,1	NI NI
United Kingdom	North Sea North (lower estimate) (upper estimate) North Sea South (lower estimate) (upper estimate) North Sea (Channel) (lower estimate) (upper estimate) Total North Sea (lower estimate) (upper estimate) Celtic Sea (lower estimate) (upper estimate) Irish Sea (lower estimate) (upper estimate) Atlantic (lower estimate) (upper estimate) Total non-North Sea (lower estimate) (upper estimate)	1,3 2,2 1,2 1,6 0,3 0,4 2,8 4,3 0,2 0,8 0,8 1,1 0,4 1,1 1,4 3,1	0,5 0,6 0,2 0,2 0,03 0,05 0,7 0,8 0,0 0,1 0,1 0,2 0,2 0,4 0,3 0,6	64 65 60 60 28 30 151,1 155,2 26 28 46 46 33 33 104,6 107,1	37 38 74 77 3 8 114,6 123,0 14 22 22 26 8 56,1	236 244 279 281 93 97 608,3 622,2 150 152 289 293 85 88 524,4 532,9	11 30 0 32 0,4 6,9 11,8 68,5 1 17 0,2 24,7 1 14 2,7 55,6	0,0 31,8 0 95 0,0 8,6 0,0 134,9 0,0 29,7 2 33 0,0 4,2 1,6 66,7	1,0 1,2 2,2 2,3 0,3 0,3 3,6 3,8 0,7 0,7 3 4 1,2 1,4 5,3 5,6	28 28 76 76 17 17 120,9 121,1 35 35 23 24 7 7 65,5 65,7	1 2 5 5 0,6 0,6 6,5 7,3 1,6 1,6 1,9 2,0 0,7 0,7 4,2 4,3	40 40 81 81 18 18 139,1 139,2 37 37 30 30 12 12 78,8 78,9	1 2 5 5 0,6 0,6 7,0 7,7 1,6 1,6 1,9 2,0 1,0 1,0 4,6 4,7	149 163 281 282 56 57 486,3 501,5 151 152 116 125 82 90 348,2 367,0

[^] 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

Table 4a. Sum of Direct (Table 2) and Riverine (Table 3) Inputs to the Maritime Area of the OSPAR Convention in 2003 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	30	29	458	9,3	0,00	3,4	24	1,3	33	0,9	226
	(upper estimate)	5	0,2	42	45	608	39	83	5,6	29	1,8	44	4,0	282
Denmark	North Sea	NI	NI	NI	NI	NI	NI	NI	NI	9	0,08	11	0,31	NI
	Skagerrak	NI	NI	NI	NI	NI	NI	NI	NI	1,3	0,02	1,7	0,07	NI
	Kattegat	NI	NI	NI	NI	NI	NI	NI	NI	18	0,27	22	0,6	NI
France	Channel/North Sea	NI	NI	NI	NI	NI	NI	NI	0,0	0	0,0	0,0	0,00	0
	Atlantic	NI	NI	NI	NI	NI	NI	NI	0,0	0	0,0	0,0	0,00	0
Germany	North Sea (lower estimate)	4,2	3,1	180	117	1072	27	2,0	10	146	2,3	182	7,4	1026
	(upper estimate)	4,4	3,2	181	119	1077	27	28	10	146	2,3	182	7,4	1127
Iceland	Atlantic	no data submitted for 2003												
Ireland (2)	Irish Sea (lower estimate)	0,22	0,00	19	14	142	NI	NI	0,23	12	0,21	21	2,0	162
	(upper estimate)	0,55	0,58	20	16	142	NI	NI	0,23	12	0,21	21	2,0	162
	Celtic Sea (lower estimate)	0,02	0,00	34	24	206	NI	NI	2,0	38	0,79	54	2,2	230
	(upper estimate)	1,9	2,8	39	35	207	NI	NI	2,1	38	0,79	54	2,2	230
	Atlantic (lower estimate)	0,01	0,00	13	0,39	54	NI	NI	0,21	6	0,16	12	0,58	82
	(upper estimate)	1,1	1,7	20	12	55	NI	NI	0,27	6,3	0,19	12	0,58	82
Netherlands (3)	North Sea (lower estimate)						0							
	(upper estimate)	4,5	1,2	243	74	558	64	58	11	131	6,2	219	12	1217
Norway	Skagerrak (lower estimate)	1,0	0,93	68	20	229	22	NI	2,9	18	0,13	32	0,8	232
	(upper estimate)	1,1	0,98	68	20	229	23	NI	6,2	18	0,16	32	0,8	233
	North Sea (lower estimate)	0,23	0,37	25	8,2	87	0,28	NI	5,2	6,1	0,49	21	2,3	167
	(upper estimate)	0,58	0,39	25	8,2	90	0,34	NI	5,2	6,1	0,53	21	2,3	177
	Norwegian Sea (lower estimate)	0,19	0,91	77	5,7	158	1,87	NI	7,7	4,3	0,87	29	3,9	1089
	(upper estimate)	0,88	0,97	77	5,8	169	1,90	NI	7,7	4,3	0,91	29	3,9	1095
	Barents Sea (lower estimate)	0,01	0,04	13	0,32	12	0,24	NI	0,96	0,19	0,14	4,8	0,54	237
	(upper estimate)	0,24	0,08	13	0,7	21	0,30	NI	0,23	0,21	0,14	4,8	0,54	238
Portugal	Atlantic	0,00	NI	22	14,4	113	NI	NI	0,27	5	1,2	127	1,1	104
		0,3	NI	22	14,4	113	NI	NI	0,27	5	1,2	127	1,1	104

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	1,1 76	0,2 13	22 197	21 203	493 592	8,2 52	9,4 217	20 21	71 71	2,4 3,4	89 89	4,6 4,8	839 848
Sweden	Kattegat (lower estimate) Skagerrak (lower estimate)	0,18 0,03	0,04 0,01	22 3,0	4,9 0,8	70 8,6	NI NI	NI NI	1,8 0,32	12 1,0	0,13 0,03	22 2,5	0,45 0,07	NI NI
United Kingdom	North Sea North (lower estimate)	1,4	0,6	89	41	281	13,8	0	12	31	3,0	59	4,2	213
	(upper estimate)	2,4	0,7	90	42	289	34	50	13	31	3,8	59	5,0	226
	North Sea South (lower estimate)	1,5	0,32	83	84	356	1,4	0,00	10	87	8	102	8	465,7
	(upper estimate)	2,0	0,36	83	88	358	42	102	10	87	8	102	8	466,7
	North Sea Channel (lower estimate)	0,32	0,05	40	6	117	0,8	0,00	9,3	19	2,2	29	2,2	91,3
	(upper estimate)	0,47	0,06	42	11	121	13	29	9,3	19	2,2	29	2,2	92,4
	North Sea (lower estimate)	3,2	1,0	212	132	754	16	0,00	31	136	13	189	15	770
	(upper estimate)	4,8	1,1	216	141	768	89	181	32	137	14	190	15	785
	Celtic Sea (lower estimate)	2,2	0,05	28	17	222	2,0	8,3	7,1	36	2,7	45	2,7	161
	(upper estimate)	2,8	0,11	30	26	223	18	40	7,2	36	2,7	46	2,7	162
	Irish Sea (lower estimate)	1,0	0,29	50	31	313	0,8	1,60	8	25	2,7	37	2,9	126
	(upper estimate)	1,4	0,45	52	35	318	29	33	9	25	2,8	37	3,0	135
	Atlantic (lower estimate)	0,46	0,18	38	7	103	1,4	0,00	4,8	9	1,6	21	2,4	104
	(upper estimate)	1,2	0,4	38	8	106	16	4,2	5,0	9	1,6	21	2,4	113
	non-North Sea (lower estimate)	3,6	0,53	116	55	638	4,2	9,9	20	70	7,0	104	8	391
	(upper estimate)	5	1,0	120	69	647	63	78	21	71	7	104	8	410
Total reported:		15	7	815	439	4377	88	21	98	561	29	926	48	5463
		107	27	1265	757	5234	347	616	115	697	37	1157	65	6898

(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

Table 4b. Sum of Direct and Riverine Inputs to the Maritime Area of the OSPAR Convention in 2003 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		0,01	0,04	13	0,32	12	0,24	NI	0,96	0,19	0,14	4,8	0,54	237
	Barents Sea		0,24	0,08	13	0,7	21	0,30	NI	0,23	0,21	0,14	4,8	0,54	238
North Sea	Atlantic Ocean (main body)		0,47 2,3	0,18 2,1	50 58	7 20	157 161	1,4 16	0,00 4,2	5,0 5,2	15 15	1,7 1,8	33 33	3,0 3,0	186 194
	Bay of Biscay and Iberian Coast		1,1 77	0,22 13	44 219	35 217	606 705	8,2 52	9,4 217	20 22	76 76	3,6 4,6	216 216	5,7 5,9	943 952
	Kattegat	(lower estimate)	0,18	0,04	22	4,9	70	NI	NI	1,8	30	0,40	44	1,0	0,00
		(upper estimate)	0,18	0,04	22	4,9	70	NI	NI	1,8	30	0,40	44	1,0	0,00
	Skagerrak	(lower estimate)	1,0	0,94	71	21	238	22	NI	3,2	21	0,18	36	0,9	232
		(upper estimate)	1,2	1,0	71	21	238	23	NI	6,5	21	0,21	36	0,9	233
	North Sea (main body)	(lower estimate)	8,4	4,6	406	280	2254	52	2,0	41	303	15	406	23	2097
		(upper estimate)	19	6,0	664	375	2981	207	321	54	439	23	637	40	3496
	Channel	(lower estimate)	0,32	0,05	40	6	117	0,8	0,00	9,3	19	2,2	29	2,2	91
		(upper estimate)	0,47	0,06	42	11	121	13	29	9,3	19	2,2	29	2,2	92
Norwegian Sea	(lower estimate)		0,19	0,91	77	5,7	158	1,87	NI	7,7	4,3	0,87	29	3,9	1089
	(upper estimate)		0,88	0,97	77	5,8	169	1,9	NI	7,7	4,3	0,91	29	3,9	1095
Irish Sea	(lower estimate)		1,2	0,29	70	45	455	0,8	1,60	9	37	2,9	58	4,9	288
	(upper estimate)		1,9	1,03	72	51	459	29	33	9	37	3,1	58	5,0	297
Celtic Sea	(lower estimate)		2,2	0,05	62	41	429	2,0	8,3	9,1	75	3,5	100	4,9	391
	(upper estimate)		4,7	2,89	69	61	431	18	40	9,2	75	3,5	100	4,9	392

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	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]			[km2]	[%]	[10E6]	[%]	[1000 m3/d]
Statistical Information provided by Belgium:								
Coastal Area	2675						2385	NI
Western	1689	Belgium	>1082	NI			708	
		France	NI	NI	NI			
Middle	499	Belgium				0,014	501	
Eastern	487	Belgium				0,177	1175	
Scheldt basin								
Scheldt	22004					~10	11213	1949-2003
		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						1 818	1991-2003
		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
Statistical Information provided by France:								
Somme	6105	France	6105	100			3111	
Seine	73793	France	73793	100	14,9	100	41707	NI
Other rivers	36435	France	36435	100	4,1	100	17266	NI
Total Region II	116333		116333		20,0		62084	
Vilaine	10482	France	10482	100	0,8	100	6446	NI
Loire (entire bassin)	116490	France	116490	100	8,0	100	80216	NI
Charente	9491	France	11819	100	0,6	100	9283	NI
Gironde	80160	France	80160	100	0,9	100	78869	NI
Adour	15895	France	16966	100	0,9	100	15285	NI
Other rivers	25909	France	25208	# 100	1,9	#100	15128	NI
Total Region IV	258427		249384		16,67		205227	
Other rivers region II - Catchment areas : Côtiers picards (without the Somme), Côtiers haut-normands, Basse - Normandie, Cotentin, Bretagne Nord.								
Other rivers région IV - Catchments areas : Bretagne sud, Côtiers vendéens, Charente - Seudre - île d'Oléron (without Charente), Côtiers aquitains, Adour-Nivelle-Bidassoa (without Adour)								
Population : from INSEE for each catchment area (RNDE)								

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]
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	-	28166	1941-1999
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	-	2346	1974-2003
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						
								1973-02 excl.
Corrib	3138	Ireland	-	-	NI	-	9477	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 dischrng 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				
		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 km2 2) Population Rhine catchment per country requires further analysis 3) Population Meuse catchment: rough estimates 4) Estimated discharge at outlet: 2.300 m3/s * 24 h/d * 3600 s/h 5) Estimated discharge at outlet: 325 m3/s * 24 h/d * 3600 s/h								

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]
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	544	
Oro	189	Spain	189	100	0,007	100	294	
Landro	270	Spain	270	100	0,017	100	613	
Sor	202	Spain	202	100	0,007	100	518	
Mera	127	Spain	127	100	0,007	100	363	
Forcadas	68	Spain	68	100	0,000	100	183	
Grande de Jubia	182	Spain	182	100	0,017	100	475	
Belelle	60	Spain	60	100	0,003	100	1 484	
Eume	470	Spain	470	100	0,013	100	1 650	
Mandeo	457	Spain	457	100	0,039	100	1 218	
Mero	345	Spain	345	100	0,042	100	639	
Allones	516	Spain	516	100	0,049	100	985	
Grande	283	Spain	283	100	0,000	100	717	
Castro	140	Spain	140	100	0,004	100	449	
Jallas	504	Spain	504	100	0,022	100	1693	
Tambre	1530	Spain	1530	100	0,060	100	4674	
Ulla	2803	Spain	2803	100	0,292	100	6877	
Umia	440	Spain	440	100	0,035	100	1408	
Lerez	450	Spain	450	100	0,094	100	1832	
Verdugo	334	Spain	334	100	0,021	100	1469	
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	1,640		1798	1975-94
		Portugal	11525	17,2				
Piedras	550	Spain	550	100	0,046	100	61	
Odiel	2417	Spain	2417	100	0,233	100	1 194	
Tinto	1727	Spain	1727	100	0,100	100	177	
Guadalquivir	63241	Spain	63241	100	4,966	100	3423	1942-88
Guadalete	3360	Spain	3360	100	0,555	100	413	

Statistical Information on River Catchment Areas

River	Catchment area	Countries	Share in catchment area		Population (1990)		LTA*	LTA-period
	[km2]			[km2]	[%]	[10E6]	[%]	
TOTAL	355009	Spain	299494	84,4	20,979	NI	73982	
		Portugal	55515	15,6	NI			
		TOTAL	355009	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
Ätrån (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
Beaully (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
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

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]
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
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

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]
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 Cledau (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

BELGIUM

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003 by Belgium

Table 6a. Main riverine inputs

Table 6b. Tributary riverine inputs

Table 7. Contaminant concentrations

Table 8. Detection limits

Table 9. Catchment dependent information

Annual report on riverine inputs and direct discharges by Belgium to Convention waters during the year 2003

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

Federal Office for Scientific, Technical and Cultural Affairs

MUMM

Gulledelle 100

B-1200 BRUSSELS

Tel: +32 2 773 21 21

Fax: +32 2 770 69 72

Email: M.Moens@mumm.ac.be

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	Optional: national reference number	Optional: map reference number
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 for the year 2003

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

Source of data: **Vlaamse Milieumaatschappij (VMM), A. Van De Maelestraat 96, B-9320 Erembodegem.**

C. Direct discharges for the year 2003

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:

No sewage effluents are discharged directly in Belgium.

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:

No industrial effluents are discharged directly in Belgium.

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 urban run-off or storm water overflows discharge to Convention Waters under Belgian jurisdiction

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 2003

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 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 limit were taken as half the value of the detection limit. 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

Due to the lack of flow rate data, the discharges of the IJzer were calculated using the formula proposed under point 5.12 of the "Principles of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID)":

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

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 labeled "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. In contrast to former years and due to the fact that the number of determinands for which more than 30% of the measurements fell below the detection

limits has increased considerably in 2003, 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 harbor.

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)”:

$$\frac{Q_r \sum_{i=1}^n (C_i Q_i)}{\sum_{i=1}^n (Q_i)}$$

Where: Q_r is the mean flow rate for 2003

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

C_i 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 labeled “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.

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, TiCEe, 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, Acenaf, 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, TiCMA, dBz(ah)An, 112CTFEa, 3MyFol, K t, DNOC, Propanil, Aldrin, Ctoloron, 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, MxC, Atraz, Linuron, TrByaz, Benazolin, PCB, 1, PathionEy, BrfosEy, CpfosEy, PCB 170, AMPA, Carbaryl, Fonofos.

*For the **Scheldt River** other available determinants 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, TiCEe, 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, Acenaf, 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, TiCMA, dBz(ah)An, PCB 180, PCB 153, 112CTFEa, K t, Se t, Tl t, EyBz, mpXyl, aEndo, HCBdn, bHCH, gHCH, Isodrin, MxC, 14CBz, CBz, PCB 31, Acenaftyl, BBz, PCB 170.

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):

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 limit were taken as half the value of the detection limit. When more than 30% of the measurements for a determinand were below 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.

Due to the lack of flow rate data, the discharges of the different canals 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)”:

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

Where: Qr is an estimated LTA flow rate for the watercourse under consideration

C_i 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 labeled “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.

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 Ghent-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)”:

$$\frac{Qr \sum_{i=1}^n (C_i Q_i)}{\sum_{i=1}^n (Q_i)}$$

Where: Qr is the mean flow rate for 2002, evaluated on a daily basis

Q_i is the flow rate on the sampling day i

C_i 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 labeled “minimum” were given the value “ND” (Not Detected). See also section E.

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.

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

None

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):

*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, TiCEe, 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, TiCMa, dBz(ah)An, 112CTFEa, K t, Demeton-S-My, 23CFol, 246CFol, 4C2MyFol, 3MyFol, DNOC, Propanil, Aldrin, Ctoloron, 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 determinants 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.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.:

None

E. Limits of detection

E.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.

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 no one measurement was below 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 2 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 determinant 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.

F. National Comments

F.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.

No comment

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

Summer and autumn 2003 were exceptionally dry compared to previous years and this seems to have had a marked effect upon the inputs. Heavy metal discharges, except for Zn that increased by 10%, decreased by 60 to 90% compared to 2002. The same picture was revealed for Lindane, the nutrients and SPM, although somewhat less accentuated. For ammonium the decrease was only 4%. These effects seem to confirm the fact that heavy metal inputs are generally flow dependent while this is much less so for nutrients.

No definite mechanism is put forward to explain the opposite or lesser effects of low flow rates on Zn and NH₄ discharges. In the case of Zn, where the effect is prominent in the Scheldt, one could think of the effect of desorption on Zn loaded mud by the increase in salinity that inevitably accompanies low freshwater rates in the Scheldt estuary. For NH₄, more frequent situations of lesser oxygenation during the exceptional dry and warm summer might have played a role.

F.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 the change
- incomplete or distorted data

None

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 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	0,00	0,5	0,15	2,3	4	0	0,22	0,7	0,17	1,3	0,17	5,0
	upper	0,03	0,01	0,8	0,29	2,6	5	2,5	0,30	0,8	0,17	1,5	0,22	5,0
	comment													
238 Coastal Area	lower	0	0,00	0,5	0,15	2,3	4	0	0,22	0,7	0,17	1,3	0,17	5,0
	upper	0,03	0,01	0,8	0,29	2,6	5	2,5	0,30	0,8	0,17	1,5	0,22	5,0
	comment													
102 Schelde	lower	0,1	0,08	26	26	419	1,9548	0	1,4462	19	0,4	23	0,2	200
	upper	4	0,1	36	39	568	27	67	3,3	23	0,9	33	2,7	256
	comment													
245 Schelde Basin	lower	0,1	0,08	26	26	419	1,9548	0	1,4462	19	0,4	23	0,2	200
	upper	4	0,1	36	39	568	27	67	3,3	23	0,9	33	2,7	256
	comment													
79 North Sea (BE)	lower	0,2	0,09	27	26	422	6	0	1,66	20	0,6	24	0,4	205
	upper	4	0,1	36	40	570	31	69	3,6	24	1,0	35	2,9	261
	comment													

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 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 upper comment	0,0029 0,01		0,03 0,07	0,00 0,02	0,06 0,16	0,35 0,45	0 0,3027	0,01 0,02	0,02 0,03	0,02 0,02	0,09 0,11	0,02 0,03	0,68 0,68
246	Langeleed	lower upper comment	0 0,00		0,01 0,03	0,00 0,01	0,03 0,07			0,01 0,01	0,01 0,01	0,01 0,01	0,02 0,03	0,01 0,01	0,18 0,18
248	Vladslovaart	lower upper comment	0 0,00		0,11 0,14	0,03 0,04	0,22 0,22			0,02 0,03	0,06 0,07	0,02 0,02	0,15 0,16	0,03 0,03	1,1 1,1
239	Western Coastal Area	lower upper comment	0,003 0,009		0,16 0,23	0,04 0,07	0,31 0,45	0 0	0 0	0,04 0,06	0,09 0,11	0,05 0,05	0,26 0,30	0,05 0,07	2,0 2,0
255	Blankenbergse vaart	lower upper comment	0,02 0,03		0,02 0,04	0,01 0,01	0,12 0,14			0,01 0,01	0,01 0,02	0,01 0,01	0,03 0,05	0,00 0,01	0,41 0,41
252	Leopold canal	lower upper comment	0,03 0,04	0,00 0,00	0,29 0,39	0,14 0,21	2,3 2,3	0,61 0,91	0 1,3	0,16 0,20	0,16 0,21	0,10 0,10	0,58 0,67	0,10 0,14	0,4 0,4
254	Schipdonk canal	lower upper comment	0,54 0,56	0,01 0,02	1,3 1,6	1,1 1,3	12,1 12,1	0,5 1,8	0 3,6	0,24 0,39	0,93 1,0	0,17 0,17	1,6 1,9	0,05 0,25	8,4 8,6
242	Eastern Coastal Area	lower upper comment	0,60 0,62	0,02 0,02	1,6 2,0	1,3 1,5	14,4 14,5	1,1 2,7	0 4,9	0,40 0,60	1,1 1,2	0,27 0,27	2,2 2,6	0,16 0,41	9,2 9,4

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 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	0,20	0,00	0,47	0,36	4,8	0,68	0	0,58	0,74	0,10	1,7	0,07	2,6
		upper comment	0,22	0,01	0,60	0,42	4,8	1,2	1,9	0,59	0,74	0,10	1,773	0,17	2,6
250	Noordede	lower	0,01		0,11	0,04	0,53			0,03	0,03	0,02	0,18	0,03	1,4
		upper comment	0,01		0,13	0,05	0,55			0,04	0,04	0,02	0,19	0,04	1,4
241	Middle Coastal Area	lower	0,21	0,00	0,58	0,39	5,3	0,7	0	0,61	0,77	0,12	1,9	0,10	3,9
		upper comment	0,23	0,01	0,7	0,47	5,3	1,2	1,9	0,63	0,78	0,12	2,0	0,20	3,9
238	Coastal Area	lower	0,81	0,02	2,3	1,7	20,1	2,2	0	1,0	2,0	0,43	4,4	0,31	15,1
		upper comment	0,86	0,03	3,0	2,0	20,2	4,4	7,1	1,3	2,1	0,44	4,9	0,68	15,3
244	Gent-Terneuzen Canal	lower	0,03	0,00	0,8	1,5	17	1,1	0	0,67	3,0	0,26	4,1	0,22	4,9
		upper comment	0,11	0,01	2,3	3,1	18	3,2	6,8	0,78	3,2	0,28	4,4	0,41	6
245	Schelde Basin	lower	0,03	0,00	0,8	1,5	17	1,1	0	0,67	3,0	0,26	4,1	0,22	4,9
		upper comment	0,11	0,01	2,3	3,1	18	3,2	6,8	0,78	3,2	0,28	4,4	0,41	6
79 North Sea (BE)		lower	0,84	0,02	3,1	3,2	37	3,3	0	1,7	4,9	0,69	9	0,53	20
		upper comment	0,97	0,04	5,3	5,1	38	7,6	14	2,1	5,3	0,71	9	1,1	21

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 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 maximum more than 70% > D.L. n info st.Dev.	ND (1) 1,4 no 12 NI (3)	ND 14 no 12 NI	ND 1,9 no 12 NI	ND 10 no 12 NI	ND 60 no 6 NI	ND (2) 6 6 NI	ND 1,7 no 12 NI	ND 4,7 no 12 NI	0,27 1,1 yes 12 0,21	ND 8,69 yes 12 2,06	6,2 1,4 no 12 NI	6,2 50 yes 12 12,41
243	Ijzer	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 0,46 no 12 NI	ND 0,08 no 12 NI	ND 16 no 12 NI	ND 2,1 yes 11 6,73	ND 26 no 12 NI	ND 80 no 9 NI	ND 4,2 no 12 NI	ND 11 yes 12 NI	0,26 1,7 yes 12 0,49	0,51 14,04 yes 12 4,26	ND 1,8 no 12 NI	ND 57 yes 12 15,56
246	Langeleed	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 0,68 no 12 NI	ND 16 no 12 NI	ND 3 no 12 NI	ND 19 no 12 NI			ND 2,4 no 12 NI	ND 2,6 no 12 NI	0,32 2 yes 12 0,60	ND 5,66 yes 12 1,52	ND 2,2 no 12 NI	ND 34 yes 12 11,73
248	Vladslovaart	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND ND no 12 NI	ND 38 no 12 NI	ND 5,1 no 12 NI	ND 23 yes 12 5,56			ND 7,5 no 12 NI	ND 11 no 12 NI	0,4 2,3 yes 12 0,63	2,7 16,06 yes 12 4,54	ND 3,6 no 12 NI	14 211 yes 12 58,69
239	Western Coastal Area	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND ND no 48 NI	ND 0,08 no 10 NI	ND 38 no 48 NI	ND 5,1 no 47 NI	ND 26 no 36 NI	ND 80 no 15 NI	ND 7,5 no 48 NI	ND 11 no 36 NI	0,26 2,3 yes 48 0,51	ND 16,06 yes 48 3,91	ND 3,6 no 48 NI	ND 211 yes 36 34,24

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 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 v	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 21 no 12 NI	ND 21 no 12 NI	ND 4,2 no 12 NI	ND 19 yes 12 5,26			ND 1,5 no 12 NI	ND 4,9 no 12 NI	0,13 1,2 yes 12 0,36	ND 9 yes 12 2,63	ND 1,7 no 12 NI	9,2 72 yes 12 23,31
252	Leopold canal	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 2,5 no 12 NI	ND 0,11 no 11 NI	ND 14 no 12 NI	ND 4 yes 12 12,98	9,1 53 no 12 NI	ND 35 no 9 NI	ND 3,7 no 12 NI	ND 4,7 no 12 NI	0,24 1,5 yes 12 0,42	0,19 7,56 yes 12 1,69	ND 2,1 no 12 NI	ND 5,7 yes 12 1,54
254	Schipdonk canal	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 13 no 12 NI	ND 0,22 no 11 NI	ND 15 no 12 NI	ND 15 yes 12 31,98	11 115 no 12 NI	ND 9 no 9 NI	ND 3,2 no 12 NI	ND 6,6 yes 12 2,74	0,22 1,1 yes 12 0,26	0,06 10,88 yes 12 3,34	ND 1,2 no 12 NI	ND 131 yes 12 45,03
242	Eastern Coastal Area	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 21 no 36 NI	ND 0,22 no 22 NI	ND 21 no 35 NI	ND 15 yes 36 23,23	ND 115 no 36 NI	ND 35 no 18 NI	ND 3,7 no 36 NI	ND 6,6 no 36 NI	0,13 1,5 yes 36 0,38	ND 10,88 yes 36 2,78	ND 2,1 no 36 NI	ND 131 yes 36 31,20

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 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	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 12 no 12 NI	ND 0,1 no 11 NI	ND 9,3 no 12 NI	ND 5,9 yes 12 10,05	18 47 no 12 NI	ND 16 no 9 NI	ND 7,1 yes 12 2,20	2,3 7,3 yes 12 1,67	0,33 1,1 yes 12 0,27	6,83 19,11 yes 12 2,79	ND 2,3 no 12 NI	6 37 yes 12 11,19
250	Noordende	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 1,3 no 12 NI	ND 22 no 12 NI	ND 13 no 12 NI	ND 96 yes 12 24,83			ND 6 no 12 NI	ND 5,8 no 12 NI	ND 1,7 yes 12 0,52	2,6 11,07 yes 12 2,61	ND 2,4 yes 12 0,90	19 103 yes 12 27,68
241	Middle Coastal Area	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 12 no 24 NI	ND 0,1 no 11 NI	ND 22 no 24 NI	ND 13 yes 23 19,07	ND 96 no 9 NI	ND 16 no 9 NI	ND 7,1 no 24 NI	ND 7,3 no 24 NI	ND 1,7 yes 24 0,422	19,11 yes 24 3,2678	ND 2,4 no 24 NI	6 103 yes 24 28,31
238	Coastal Area	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND ND no 108 NI	ND 0,22 no 43 NI	ND 38 no 107 NI	ND 15 yes 107 18,48	115 95 no 42 NI	ND 80 no 42 NI	ND 7,5 no 108 NI	ND 11 no 96 NI	ND 2,3 yes 108 0,46	19,11 yes 108 3,80	ND 3,6 no 108 NI	ND 211 yes 96 32,21

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 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 maximum more than 70% > D.L. n info st.Dev.	ND 0,5 no 24 NI	ND 0,09 no 14 NI	ND 5 no 24 NI	ND 13 yes 24 12,22	ND 10 no 16 2,56	ND ND no 16 NI	ND 2,8 no 24 NI	2,48 7,25 yes 24 1,0319	0,32 0,77 yes 24 0,143	6,04 11,14 yes 24 1,3261	ND 1,1 no 24 NI	ND 17 yes 24 5,28
102	Schelde	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 0,45 no 26 NI	ND 0,12 no 13 NI	ND 17,6 yes 26 4,29712	ND 20 no 23 NI	11 435 yes 25 121,2473	ND 6 no 13 NI	ND ND no 13 NI	ND 1,2 yes 26 0,8911	2,3 5,43 no 26 NI	ND 0,31 yes 26 1,492	2,36 7,71 no 22 NI	ND 0,7 yes 26 24,3
245	Schelde Basin	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND 0,5 no 50 NI	ND 0,12 no 27 NI	ND 17,6 no 50 NI	ND 20 yes 47 95,1	ND 435 no 49 NI	ND 10 no 29 NI	ND 2,8 no 50 NI	2,3 7,25 yes 50 1,20	ND 0,77 yes 50 0,22	2,36 11,14 yes 50 2,16	ND 1,1 no 46 NI	ND 79 yes 50 21,6
79	North Sea (BE)	lower upper minimum maximum more than 70% > D.L. n info st.Dev.	ND ND no 158 NI	ND 0,22 no 70 NI	ND 38 no 157 NI	ND 20 yes 144 60,22799	ND 435 no 71 NI	ND 80 no 71 NI	ND 7,5 no 158 NI	ND 11 yes 146 NI	ND 2,3 yes 158 0,449	ND 19,11 yes 158 3,3497	ND 3,6 no 154 NI	ND 211 yes 146 29,25551

ND(1), ND(2) and ND(3): see submission report p. 4.

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2003 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	1 - 3	0,6 - 1,7	2 - 7	6	1 - 12	0,52	0,48 - 0,94	0,1	NI	0,48 - 0,94	NI	
243	Ijzer	Sewage Industrial Riverine	0,1	0,01 - 0,09	1 - 3	0,6 - 1,7	2 - 7	2 - 6	1 - 12	0,52 - 1,0	0,48 - 0,94	0,1	NI	0,48 - 0,94	2,37
246	Langeleed	Sewage Industrial Riverine	0,1		1 - 3	0,6 - 1,7	2 - 7			0,52 - 1,0	0,48 - 0,94	0,1	NI	0,48 - 0,94	2,37
248	Vladslovaart	Sewage Industrial Riverine	0,1		1 - 3	0,6 - 1,7	2			0,52 - 1,0	0,48 - 0,94	0,1	NI	0,48 - 0,94	NI
239	Western Coastal Area	Sewage Industrial Riverine	0,1	0,01 - 0,09	1 - 3	0,6 - 1,7	2 - 7	2 - 6	1 - 12	0,52 - 1,0	0,48 - 0,94	0,1	NI	0,48 - 0,94	NI
255	Blankenbergs	Sewage Industrial Riverine	0,1 - 0,3		1 - 3	0,6	7			0,52 - 1	0,48 - 1,0	0,1	NI	0,48 - 0,94	NI
252	Leopold canal	Sewage Industrial Riverine	0,1	0,01 - 0,03	0,3 - 3	0,6 - 1,7	5	2 - 6	1 - 12	0,52 - 1	0,94	0,1	NI	0,94	2,3
254	Schipdonk canal	Sewage Industrial Riverine	0,1	0,01 - 0,03	1 - 3	0,6 - 1,7	5	2 - 6	1 - 12	0,52 - 1	0,48	0,1	NI	0,48 - 0,94	2,37 - 4,73
242	Eastern Coastal Area	Sewage Industrial Riverine	0,1 - 0,3	0,01 - 0,03	0,3 - 3	0,6 - 1,7	5 - 7	2 - 6	1 - 12	0,52 - 1	0,48 - 1,0	0,1	NI	0,48 - 0,94	NI

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2003 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-Oostend	Sewage												
		Industrial	0,1	0,01 - 0,03	1 - 3	0,6 - 1,7	5	6	1 - 12	0,52	0,1	0,1	NI	0,48 - 0,94
		Riverine												
250	Noordende	Sewage												
		Industrial	0,1		1 - 3	0,6 - 1,7	5		0,52 - 1	0,48	0,05	NI	0,48 - 0,94	NI
		Riverine												
241	Middle Coastal Area	Sewage												
		Industrial	0,1	0,01 - 0,03	1 - 3	0,6 - 1,7	5	2 - 6	1 - 12	0,52 - 1	0,1 - 0,48	0,05 - 0,1	NI	0,48 - 0,94
		Riverine												
238	Coastal Area	Sewage												
		Industrial	0,1 - 0,3	0,01 - 0,03	0,3 - 3,0	0,6 - 1,7	2 - 7	2 - 6	1 - 12	0,52 - 1,0	0,1 - 1,0	0,05 - 0,1	NI	0,48 - 0,94
		Riverine												
244	Gent-Terneuzen Canal	Sewage												
		Industrial	0,1 - 0,3	0,01 - 0,03	1 - 5	5	5	6	1 - 12	0,4 - 1	0,1	0,1	NI	0,48 - 0,94
		Riverine												2,37 - 4,73
102	Schelde	Sewage												
		Industrial	0,1 - 1,2	0,01 - 0,08	1 - 3	6	5	2 - 6	1 - 12	0,11 - 1,0	0,1	0,15	NI	0,48 - 0,94
		Riverine												
245	Schelde Basin	Sewage												
		Industrial	0,1 - 1,2	0,01 - 0,03	1 - 5	5 - 6	5	2 - 6	1 - 12	0,11 - 1	0,1	0,1 - 0,15	NI	0,48 - 0,94
		Riverine												
79	North Sea (BE)	Sewage												
		Industrial	0,1 - 1,2	0,01 - 0,03	0,3 - 5	0,6 - 6	2 - 7	2 - 6	1 - 12	0,11 - 1,0	0,1 - 1,0	0,05 - 0,15	NI	0,48 - 0,94
		Riverine												

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2003 by Belgium

	Flow Rate [1000m ³ /d]	LTA [1000m ³ /d]	Minimum FR [1000m ³ /d]	Maximum FR [1000m ³ /d]	LTA info (years)	Number of sites	Mean or Median
247 Beverdijk	NI	69,1	NI	NI	NI	1	Mean
243 Ijzer	NI	561,6	NI	NI	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	NI	NI	NI	NI	NI	0	Mean
252 Leopold canal	NI	302,4	NI	NI	NI	1	Mean
256 Lissewege vaart	NI	17,3	NI	NI	NI	0	Mean
254 Schipdonk canal	NI	820,8	NI	NI	1987-1992	1	Mean
242 Eastern Coastal Area	NI	1175,1	NI	NI	NI	3	Mean
249 Gent-Oostende canal	NI	432	NI	NI	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	2384,6	NI	NI	NI	9	Mean
244 Gent-Terneuzen Canal	1403	1818	389	15025	1991-2003	1	Mean
102 Schelde	11844	11213	4320	37152	1949-2003	1	Mean
245 Schelde Basin	13247	13031	4709	52177	NI	2	Mean
79 North Sea (BE)	NI	15416	NI	NI	NI	11	Mean

DENMARK

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003 by Denmark

Table 5a	Sewage effluents. Reported Maritime Area of the OSPAR Convention in 2003 by Denmark.
Table 5b	Industrial effluents. Maritime Area of the OSPAR Convention in 2003 by Denmark.
Table 6a	Main riverine inputs. Reported Maritime Area of the OSPAR Convention in 2003 by Denmark.
Table 7	Contaminant Concentration. Reported Maritime Area of the OSPAR Convention in 2003 by Denmark.
Table 8	Detection limits. Reported Maritime Area of the OSPAR Convention in 2003 by Denmark.
Table 9	Catchment-dependent information. Reported Maritime Area of the OSPAR Convention in 2003 by Denmark.

Annual report on riverine inputs and direct discharges by Denmark to Convention waters during the year 2003

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, 2003			
Name of river, subarea and discharge area ¹	Nature of the receiving water ²	optional: national ref. no.	optional map ref. no.
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		
Lindborg Å	River in catchment to the Kattegat		
Simsted 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

Denmark reports in total 25 riverine monitoring stations and total riverine load plus direct discharges to three coastal waters (North Sea, Kattegat and Skagerrak). In table 9 catchment area for each river monitoring station are given. Further, in table 9 the long-term flow rate are given for the 25 monitored rivers and in total to each of the coastal waters.

Some years ago Denmark forwarded information on the location of the 25 monitoring stations. This information could be provided again if it is requested.

B. Total riverine inputs and direct discharges for the year 2003

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

There is no table 4a in the reporting format, but the figures for Denmark are included in the tables below where figures are given as tonnes. Besides the given values there is a further minor contribution from marine fish farms.

TOTAL NITROGEN (tonnes)	North Sea	Kattegat	Skagerrak
<i>Riverine input including unmonitored areas (table 6a)</i>	10959	21158	1623
<i>Direct sewage effluents (table 5a)</i>	87,7	367	10,8
<i>Direct industrial effluents (table 5b)</i>	32,0	124	23,7
Total	11079	21649	1657

NO₃-N (tonnes)	North Sea	Kattegat	Skagerrak
<i>Riverine input including unmonitored areas (table 6a)</i>	9076	17920	1324
<i>Direct sewage effluents (table 5a)</i>	78,9	330	9,7
<i>Direct industrial effluents (table 5b)</i>	6,4	24,8	4,7
Total	9161	18275	1338

TOTAL PHOSPHORUS (tonnes)	North Sea	Kattegat	Skagerrak
<i>Riverine input including unmonitored areas (table 6a)</i>	301	543	62,6
<i>Direct sewage effluents (table 5a)</i>	4,9	37,7	1,8
<i>Direct industrial effluents (table 5b)</i>	5,3	5,1	3,1
Total	310	585	67,5

PO₄-P (tonnes)	North Sea	Kattegat	Skagerrak
<i>Riverine input including unmonitored areas (table 6a)</i>	78,2	253	19,2
<i>Direct sewage effluents (table 5a)</i>	2,4	18,8	0,9
<i>Direct industrial effluents (table 5b)</i>	1,6	1,5	0,9
Total	82,2	273	21,0

C. Direct discharges for the year 2003

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:

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 an 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
$30 \leq x < 200$	2	Random samples ¹⁾
$200 \leq x < 1,000$	4	Time-weighted daily samples ²⁾
$1,000 \leq x < 50,000$	12	Flow-weighted daily samples
$50,000 \leq x$	24	Flow-weighted daily samples

1) Time-weighted samples, random samples or empirical values.

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 (BI₅), 4.4 kg total-N per year or 1.0 kg total-P per year.

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

Calculation of total discharges follow the guidelines.

Plants with a capacity > 500PE covers 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 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 2003, but measurements have been performed on individual wastewater treatment plants of heavy metals and hazardous substances.

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:

In Denmark all point sources bigger than 30 PE are monitored even if they are situated in an 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 (BI₅ (modified) and COD) discharged together with the sampling frequency.

Discharge class	Discharge (tonnes/yr)				Frequency/yr
	BOD₅ (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 continuous registration of the water volume on the day in question. Calculation of total discharges follow the guidelines.

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

There are no estimates on total direct sewage effluent discharges of other determinands in 2003, but measurements have been performed on individual industrial plants of heavy metals and hazardous substances.

C.5 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:

The loads from direct storm water overflows and from scattered dwellings are included in the riverine load to coastal waters. In addition to these loads, discharges from marine aquaculture have been calculated in 2003, as given in the table below:

Marine aquaculture (tonnes)	North Sea	Kattegat	Skagerrak
Total nitrogen	27,8	0,5	8,0
Total phosphorus	2,4	0,03	1,5

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):

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 2003, but annual loads for some plants can be provided if required.

D. Riverine inputs for the year 2003

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 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):

This is reported in table 6.a

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):

In 2003 extra determinands have only been monitored at two RID stations, and with most values detected under the detection limit. Therefore no information is provided on voluntary determinands.

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):

All Danish RID rivers are reported as main rivers using table 7a. In table 7a the total for 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 inputs 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 direct load from storm water overflow and scattered dwellings but these sources are of minor importance.

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

None

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):

See point D3

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.:

None

E. Limits of detection

E.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.

None

F. National Comments

F.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.

Total input of nitrogen and phosphorus was low in 2003 both as uncorrected and 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 (see F.2) with very high reduction in discharge from all kinds of point sources. The measures against agriculture have reduced nitrogen losses from agriculture markedly at root zone level, but the losses to inland surface waters and further to coastal areas are delayed and it could take up to 30-100 years in parts of the catchment to the North Sea before the full effect will be observed. The measures against agriculture have until now not been directed to reducing phosphorus losses. In 2003 with low precipitation, no big surface erosion events etc. the diffuse losses have been low.

Precipitation in 2003 for Denmark was on average 630 mm, 12% lower than the normal 712 mm (1961-1990). Run-off from Denmark was on average 24% lower than the normal average. 2003 followed five quite wet years with high precipitation and run-off. Further, the average air temperature in 2003 was 1 °C above normal.

The natural background losses were also low in 2003 as shown in the table below:

	<i>Q_med</i> l/s/km ²	<i>Q_avg</i> l/s/km ²	<i>TN_med</i> mg/l	<i>TN_med</i> kg/ha	<i>TP_med</i> mg/l	<i>TP_med</i> kg/ha
1989	5	4,9	1,6	1,6	0,044	0,057
1990	4,6	5,2	1,6	2,4	0,049	0,077
1991	6,3	5,9	1,5	2,2	0,052	0,073
1992	6	5,4	1,9	1,4	0,054	0,05
1993	5,8	5,7	1,6	2,1	0,046	0,06
1994	8,6	8,9	1,6	4,3	0,052	0,116
1995	7,2	7,2	1,4	3,1	0,055	0,121

1996	2,73	3,98	1,06	0,6	0,04	0,046
1997	3,14	3,42	1,4	0,61	0,033	0,04
1998	5,01	6,43	1,52	3,16	0,05	0,07
1999	7,42	7,92	1,23	3,22	0,062	0,12
2000	6,02	6,46	1,24	2,52	0,045	0,055
2001	5,42	6,4	1,3	2,01	0,048	0,063
2002	7,71	8,39	1,35	3,2	0,055	0,091
2003	4,1	4,66	1,19	1,1	0,051	0,04

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

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

The overall reduction in phosphorus inputs to Danish marine waters since 1989 have been reduced by 81% if the inputs are flow corrected. This reduction can only be assigned to a large reduction in the load from point sources (about 85 % 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 70 % since the mid-1980s) but also as an effect of reduced losses from agriculture. To the North Sea there is no significant trend, because the catchment is mainly sandy soils with large groundwater magazines and high residence time in the groundwater. Further large pools of nitrogen are stored in the top soils. It is therefore expected to take a longer period before the reduced agricultural losses can be monitored as significantly reduced inputs to the North Sea.

F.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 the change
- incomplete or distorted data

Denmark overall follows common agreed methodologies. Danish rivers are small and even though it reports 25 monitored rivers, Denmark only covers 43% of the Danish catchment area to the OSPAR convention. Monitoring in a lot of other small rivers is included in the sums in tables 6a. 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.

Some years ago Denmark make a new reporting of old 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, some heavy metals and hazardous substances have also been monitored on selected rivers and point sources. For rivers, most concentrations have been below the detection limit and no total loads to coastal waters are calculated.

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2003 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 upper comment								78,926	2,429	87,696	4,857	
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	Lindborg 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								330,69	18,827	367,44	37,654	
123	Liver å	lower upper comment												
124	Uggerby å	lower upper comment												
74	Skagerrak (DK)	lower upper comment								9,699	0,876	10,777	1,752	

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2003 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 upper comment								6,393	1,58	31,966	5,266	
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	Lindborg 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								24,813	1,529	124,07	5,097	
123	Liver å	lower upper comment												
124	Uggerby å	lower upper comment												
74	Skagerrak (DK)	lower upper comment								4,737	0,932	23,683	3,106	

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 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							0,0028	0,0746	0,0003	0,0908	0,0012	0,1846
291	Brede å	lower upper comment							0,012	0,1914	0,0015	0,2616	0,0066	0,6992
292	Omme å	lower upper comment							0,0312	0,4776	0,003	0,59	0,016	0,939
112	Kongeåen	lower upper comment							0,0258	0,5825	0,0067	0,689	0,023	1,0948
293	Ribe å	lower upper comment							0,0257	0,682	0,0056	0,7956	0,022	1,5257
104	Skjern å	lower upper comment							0,0586	1,2602	0,0085	1,5164	0,0389	3,3108
294	Sneum å	lower upper comment									0,0018	0,27	0,0111	0,6617
115	Storå	lower upper comment							0,0435	0,904	0,0092	1,0639	0,0296	2,1059
295	Varde å	lower upper comment							0,0488	0,7588	0,0049	0,905	0,023	1,864
109	Vid å	lower upper comment							0,007	0,1366	0,001	0,177	0,0066	0,8302
296	Grøn å	lower upper comment							0,0135	0,2567	0,003	0,3424	0,016	1,6688
80	North Sea (DK)	lower upper comment								9,0766	0,0782	10,959	0,3009	
125	Elling å	lower upper comment							0,0101	0,1152	0,0027	0,1482	0,0066	0,5018
127	Ger å	lower upper comment							0,0089	0,1209	0,0012	0,1619	0,0049	0,6547
103	Gudenå	lower upper comment							0,0834	1,588	0,0248	2,0525	0,0713	5,2625
129	Haslevgårds å	lower upper comment							0,0053	0,0873	0,0019	0,111	0,003	0,1692
297	Ry å	lower upper comment							0,0173	0,3286	0,006	0,4112	0,0194	1,8237
120	Jordbr å	lower upper comment								0,0633	0,0016	0,0838	0,0049	
118	Karup å	lower upper comment									0,005	0,532	0,0186	
130	Kastbjerg å	lower upper comment							0,0017	0,1757	0,0014	0,199	0,0022	0,2376
128	Lindborg å	lower upper comment							0,0097	0,624	0,0084	0,688	0,0142	1,595
122	Simsted å	lower upper comment								0,7325	0,0084	0,7896	0,0145	
121	Skals å	lower upper comment								0,4685	0,0053	0,609	0,0175	
126	Voer å	lower upper comment							0,0128	0,2831	0,0043	0,3439	0,014	2,5856
77	Kattegat (DK)	lower upper comment								17,92	0,2532	21,158	0,5436	
123	Liver å	lower upper comment							0,0164	0,3472	0,0037	0,4222	0,0179	2,531
124	Uggerby å	lower upper comment							0,0264	0,407	0,0067	0,5172	0,0213	2,8327
74	Skagerrak (DK)	lower upper comment								1,3236	0,0192	1,6228	0,0626	

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 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							0,106	2,875	0,0113	3,465	0,0459	5,5737
		upper												
		minimum							0,027	2	0,005	2,2	0,026	0,5
		maximum							0,25	4,2	0,025	5,5	0,11	23
		more than 70% > D.L.												
		n							20	20	20	20	20	19
291	Brede å	info												
		st.Dev.							0,0647	0,6958	0,0044	0,9155	0,0199	5,2244
		lower							0,1076	2,1429	0,0166	2,8667	0,074	7,7905
		upper												
		minimum							0,007	1	0,006	1,5	0,028	1
		maximum							0,44	6,2	0,032	6,8	0,18	19
292	Omme å	more than 70% > D.L.												
		n							21	21	21	21	21	21
		info												
		st.Dev.							0,1181	1,1919	0,0074	1,2808	0,0387	4,8447
		lower							0,177	2,5939	0,018	3,2043	0,0852	4,9087
		upper												
112	Kongeåen	minimum							0,1	1,93	0,005	2,3	0,033	1,3
		maximum							0,26	4,03	0,031	4,8	0,21	9,9
		more than 70% > D.L.												
		n							23	23	23	23	23	23
		info												
		st.Dev.							0,0493	0,5029	0,0066	0,6086	0,0404	2,3004
293	Ribe å	lower							0,1601	3,529	0,0417	4,2	0,1434	6,765
		upper												
		minimum							0,067	1,43	0,018	2,7	0,091	0,7
		maximum							0,25	5,22	0,066	5,8	0,34	30
		more than 70% > D.L.												
		n							20	20	20	20	20	20
104	Skjern å	info												
		st.Dev.							0,0535	0,9933	0,0181	0,9476	0,057	6,7843
		lower							0,1122	2,922	0,0235	3,435	0,0945	6,11
		upper												
		minimum							0,038	1,52	0,001	2,4	0,045	0,7
		maximum							0,18	4,46	0,04	5,1	0,23	16
294	Sneum å	more than 70% > D.L.												
		n							20	20	20	20	20	20
		info												
		st.Dev.							0,0406	0,6544	0,0101	0,6831	0,0444	4,5226
		lower							0,1059	2,1935	0,014	2,6261	0,0659	5,4913
		upper												
115	Storå	minimum							0,015	1,61	0,004	1,9	0,026	1,5
		maximum							0,17	2,97	0,043	3,7	0,12	16
		more than 70% > D.L.												
		n							23	23	23	23	23	23
		info												
		st.Dev.							0,0501	0,3909	0,0089	0,5163	0,0265	3,8121
294	Sneum å	lower									0,0271	3,915	0,1536	8,855
		upper												
		minimum									0,014	2,7	0,048	0,8
		maximum									0,053	5,2	0,48	33
		more than 70% > D.L.												
		n									20	20	20	20
115	Storå	info									0,009	0,6968	0,1	8,0721
		st.Dev.												
		lower							0,1103	2,2292	0,0218	2,6231	0,074	5,2846
		upper												
		minimum							0,031	1,58	0,01	1,8	0,039	1,2
		maximum							0,2	3,2	0,061	3,6	0,11	10
115	Storå	more than 70% > D.L.												
		n							13	13	13	13	13	13
		info												
		st.Dev.							0,0543	0,4637	0,0155	0,5003	0,0193	2,4829

		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]
295	Varde å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,1744 0,058 0,26 20 0,0682	2,681 2,1 3,1 20 0,2637	0,0169 0,006 0,054 20 0,01	3,18 2,6 3,8 20 0,3302	0,0807 0,051 0,12 20 0,0212	6,315 3,5 13 20 2,5956
109	Vid å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,0921 0,007 0,22 20 0,0656	1,81 1,1 2,9 20 0,4217	0,0135 0,008 0,026 20 0,0041	2,35 1,5 3,6 20 0,5316	0,0878 0,038 0,14 20 0,0382	10,495 2,3 18 20 5,1054
296	Grøn å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,0828 0,016 0,24 20 0,0601	1,603 0,85 2,8 20 0,596	0,0232 0,011 0,041 20 0,0076	2,155 1,2 3,5 20 0,7075	0,1053 0,046 0,2 20 0,0473	10,75 2,9 25 20 6,2921
80	North Sea (DK)	lower upper minimum maximum more than 70% > D.L. n info st.Dev.								2,59	0,022	3,13	0,086	
125	Elling å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,2141 0,082 0,4 18 0,09	2,5833 1,9 3,2 18 0,2792	0,0644 0,037 0,089 18 0,0162	3,3056 2,8 4 18 0,3605	0,1522 0,12 0,26 18 0,038	10,206 2,6 26 18 7,3557
127	Ger å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,1702 0,026 0,4 18 0,1139	2,3833 1,7 4,2 18 0,754	0,0298 0,012 0,044 18 0,0075	3,2333 2,2 5,2 18 0,8911	0,1055 0,066 0,16 18 0,0269	11,983 1,8 36 18 8,8624
103	Gudenå	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,0863 0,012 0,36 24 0,0657	1,6567 0,83 3,2 24 0,7184	0,0285 0,001 0,051 24 0,0166	2,1708 1,3 3,9 24 0,7954	0,0816 0,054 0,12 24 0,0172	5,9946 0,5 14 37 3,2891
129	Haslevgårds å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,2241 0,01 0,71 18 0,1653	4,1278 1,7 8,1 18 1,4495	0,103 0,049 0,16 18 0,0365	5,2889 3,3 9,6 18 1,5484	0,1717 0,1 0,24 18 0,0454	7,1778 1,5 14 18 4,0489
297	Ry å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,1493 0,018 0,33 18 0,1024	3,2056 2 4,4 18 0,6111	0,0671 0,044 0,12 18 0,0226	4,0056 3,2 5,3 18 0,6734	0,1817 0,1 0,41 18 0,0795	15,667 1,7 46 18 12,987
120	Jordbro å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.								1,8382 0,988 2,24 18 0,3097	0,0471 0,029 0,1 18 0,0201	2,4056 1,9 2,9 18 0,296	0,1417 0,079 0,27 18 0,0605	

		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]
118	Karup å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.								2,094 1,83 2,35 10 0,1921	0,025 0,019 0,033 18 0,0046	2,65 2,3 2,9 18 0,2121	0,0919 0,044 0,14 18 0,0265	
130	Kastbjerg å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,0795 0,01 0,23 17 0,057	7,4437 5,9 8,9 16 0,8839	0,0613 0,035 0,098 17 0,0164	8,4125 6,9 10 16 0,9208	0,1042 0,051 0,31 17 0,058	10,35 2,2 16 16 4,6725
128	Lindborg å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,0746 0,0095 0,22 12 0,0584	5,3917 3,2 6,7 12 1,0405	0,0756 0,04 0,2 12 0,0436	5,9417 3,9 7,5 12 0,9199	0,1195 0,057 0,24 12 0,055	11,983 1,8 35 12 11,131
122	Simested å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.								9,9344 7,64 11,3 18 0,8465	0,1145 0,074 0,15 18 0,0214	10,696 8,3 12 18 0,9566	0,1938 0,099 0,34 18 0,0641	
121	Skals å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.								3,5589 1,83 4,49 18 0,6329	0,0384 0,012 0,087 18 0,0202	4,5944 4,1 5,3 18 0,3556	0,1283 0,072 0,19 18 0,025	
126	Voer å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,1394 0,044 0,33 18 0,0837	3,4556 2,7 4,7 18 0,4668	0,0594 0,028 0,097 18 0,0208	4,1667 3,5 5,6 18 0,579	0,1761 0,12 0,39 18 0,0733	30,994 7,5 74 18 20,092
77	Kattegat (DK)	lower upper minimum maximum more than 70% > D.L. n info st.Dev.								3,93	0,0555	4,64	0,119	
123	Liver å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,2181 0,071 0,57 19 0,1392	4,2474 3,3 6,6 19 1,0074	0,0494 0,022 0,08 19 0,0181	5,2053 4 7,4 19 1,1043	0,2332 0,12 0,81 19 0,1734	33,105 8 180 19 38,163
124	Uggerby å	lower upper minimum maximum more than 70% > D.L. n info st.Dev.							0,196 0,056 0,46 17 0,1188	3,1647 2,5 4,5 17 0,6051	0,0596 0,035 0,088 17 0,0187	4,0412 3,2 5,3 17 0,6699	0,1765 0,11 0,39 17 0,0714	21,612 4,6 71 17 18,84
74	Skagerrak (DK)	lower upper minimum maximum more than 70% > D.L. n info st.Dev.								3,70	0,054	4,54	0,175	

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2003 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													
294	Sneum å	Sewage Industrial Riverine	>0,005	>0,005	>0,04	>0,02	>0,05	>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 Industrial Riverine						>10	>10						
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 2003 by Denmark

		Flow Rate [1000m³/d]	LTA [1000m³/d]	Minimum FR [1000m³/d]	Maximum FR [1000m³/d]	LTA info (years)	Number of sites	Mean or Median	Catchment area km²	
110	Brøns å	68,1	107	52,4	163	74-99	1	Mean	94,1	
291	Brede å	236	328	172	462	94-99	1	Mean	290	
292	Omme å	497	729	408	969	83-99	1	Mean	612	
112	Kongeåen	436	612	365	862	90-99	1	Mean	426,6	
293	Ribe å	605	743	296	1364	33-99	1	Mean	675	
104	Skjern å	1588	2080	1346	2718	74-99	1	Mean	1550	
294	Sneum å	185	281	160	405	66-99	1	Mean	223	
115	Stor å	1087	1399	856	1884	71-99	1	Mean	1096,7	
295	Varde å	773	1043	686	1558	69-99	1	Mean	815	
109	Vid å	196	304	145	444	78-99	1	Mean	248,3	
296	Grøn å	406	605	198	904	59-99	1	Mean	563	
80	North Sea (DK)	9591	13452			1971-2000		Mean	10809	6031
125	Elling å	120	111	87,7	173	89-99	1	Mean	132,2	
127	Ger å	122	143	79,9	212	85-99	1	Mean	153,8	
103	Gudenå	2350	2820	1998	3665	78-99	1	Mean	2602,9	
129	Haslevgårds å	53,8	57,5	37,9	97,5	89-99	1	Mean	75	
297	Ry å	264	251	155	386	72-99	1	Mean	285	
120	Jordbro å	96,7	112	80,8	141	80-99	1	Mean	110,9	
118	Karup å	553	621	472	749	86-99	1	Mean	626,8	
130	Kastbjerg å	65,6	67,8	48,1	90,1	76-99	1	Mean	96,3	
128	Lindborg å	312	297	227	392	83-99	1	Mean	317,8	
122	Simested å	203	199	168	247	92-99	1	Mean	214,9	
121	Skals å	362	380	234	540	73-99	1	Mean	556,4	
126	Voer å	218	224	164	334	89-99	1	Mean	238,7	
77	Kattegat (DK)	12493	13668			1971-2000		Mean	15828	5411
123	Liver å	216	223	129	345	95-99	1	Mean	249,8	
124	Uggerby å	337	317	233	498	89-99	1	Mean	347,5	
74	Skagerrak (DK)	979	934			1971-2000		Mean	1098	597,3
Total									27735	12039

FRANCE

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003 by France

Table 4a Total riverine inputs and direct discharges to each OSPAR region reported in 2003 by France

Table 4b Total riverine inputs and direct discharges reported in 2003 by France

Table 6a Main riverine inputs to the maritime area of the OSPAR Convention in 2003 by France

Table 6a Tributary riverine inputs to the maritime area of the OSPAR Convention in 2003 by France

Table 6c Unmonitored areas inputs to the maritime area of the OSPAR Convention in 2003 by France

Table 7 Contaminant concentrations in French rivers discharging to the maritime area of the OSPAR Convention

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

Table 9 Catchment dependent information in the maritime area

Table 4a. Total Riverine Inputs and Direct Discharges to each OSPAR Region
Reported Maritime Area of the OSPAR Convention by France 2003

TOTAL INPUTS			Quantities --->												
	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 II															
RIVERINE INPUTS															
Main Rivers	lower upper	46798						32,6 64,98		16,621 16,661	104,089 104,089	2,870 2,895		4,344 4,376	782,448 782,448
Tributary Rivers	lower upper	28717								0,624 0,653	64,394 64,398	0,805 0,808		1,508 1,650	229,410 229,606
Total Riverine Inputs	lower upper	75515								17,245 17,314	168,483 168,487	3,675 3,703		5,852 6,026	1011,858 1012,054
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	8679								0,791 0,808	20,685 20,685	0,267 0,269		0,553 0,628	95,728 95,814
REGION II TOTAL	lower upper														
INPUTS TO OSPAR IV															
RIVERINE INPUTS															
Main Rivers	lower upper									3,148 19,809	153,464 257,553	2,681 5,648		7,836 12,610	1340,287 2123,306
Tributary Rivers	lower upper	47844								1,870 1,877	53,875 53,875	0,768 0,809		2,878 3,071	233,679 233,726
Total Riverine Inputs	lower upper									5,018 21,686	207,339 311,428	3,449 6,457		10,714 15,681	1573,966 2357,032
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	24848								1,682 1,699	41,203 41,203	0,492 0,529		1,936 2,186	207,741 207,833
REGION IV TOTAL	lower upper														

(comment : items are not fulfilled if one input is absent in the total)

Table 4b. Total Riverine Inputs and Direct Discharges from each Contracting Party
Reported Maritime Area of the OSPAR Convention by France 2003

TOTAL INPUTS			Quantities ---->												
OSPAR II and IV	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]
RIVERINE INPUTS															
Main Rivers	lower upper									19,769 36,47	257,553 361,642	5,551 8,543		12,18 16,986	2122,735 2905,754
Tributary Rivers	lower upper	76561								2,494 2,53	118,269 118,273	1,573 1,617		4,386 4,721	463,089 463,332
Total Riverine Inputs	lower upper									22,263 39	375,822 479,915	7,124 10,16		16,566 21,707	2585,824 3369,086
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	33527								2,473 2,507	61,888 61,888	0,759 0,798		2,489 2,814	303,469 303,647
REGIONS II and IV TOTAL	lower upper														

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention by France

2003

			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]
3	II-AP-SO-SOMME	lower						0		0,216	7,919	0,04	2,723	0,039	31,275
		upper						31,255		0,247	7,919	0,065	6,232	0,071	31,275
		comment	0	0	0	0	0	10	0	11	11	11	8	8	11
6	II-SN-SE-SEINE	lower	0,415	0,044	48,892	3,316	58,303	32,6		16,405	96,17	2,83	120,651	4,305	751,173
		upper	0,447	0,079	48,892	3,552	58,303	33,725		16,414	96,17	2,83	120,651	4,305	751,173
		comment	24	24	24	24	24	24	0	44	44	44	32	48	47
25	IV-LB-SB-VILAINE	lower						0		0,222	12,804	0,12	4,915	0,377	37,67
		upper						18,739		0,222	12,804	0,121	15,1	0,392	37,67
		comment	0	0	0	0	0	24	0	28	28	28	24	28	24
27	IV-LB-LO-LOIRE	lower	0	0	0	0	511,44	0		1,649	90,889	1,943	39,084	4,661	1007,512
		upper	31,629	1,083	33,21	54,164	511,44	248,139		1,649	90,889	1,947	121,965	4,778	1007,512
		comment	2	2	1	2	1	22	0	28	28	28	24	28	24
33	IV-AG-CH-CHARENTE	lower						7,024		0,156	10,182	0,071	8,277	0,481	30,555
		upper						14,858		0,156	10,182	0,077	11,14	0,49	30,719
		comment	0	0	0	0	0	10	0	10	10	10	10	10	10
38	IV-AG-GD-DORDOGNE	lower								0,096	6,894	0,082	0,495	0	31,397
		upper								0,096	6,894	0,098	10,904	0,197	31,804
		comment	0	0	0	0	0	0	0	11	11	11	10	11	11
42	IV-AG-GG-GARONNE	lower						0		0,393	17,745	0,214		1,143	141,86
		upper						69,041		0,393	17,745	0,253		1,197	141,86
		comment	0	0	0	0	0	10	0	6	6	6	0	6	6
43	IV-AG-GG-LOT	lower	0,061	0	12,681	0,115	19,796	0		0,343	9,133	0,09	6,795	0,843	37,39
		upper	0,526	0,259	13,429	5,203	20,083	12,125		0,343	9,133	0,096	11,468	0,845	37,39
		comment	12	12	12	12	12	10	0	12	12	12	12	12	12
46	IV-AG-AD-ADOUR	lower						0		0,289	5,817	0,161	7,711	0,331	53,903
		upper						9,114		0,289	5,817	0,161	8,009	0,335	53,903
		comment	0	0	0	0	0	10	0	10	10	10	10	10	10

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention by France

2003

			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]
2	II-AP-SO-Canche	lower						0		0,13	9,083	0,115	0,037	0,121	53,311
		upper						35,644		0,157	9,083	0,118	9,402	0,135	53,311
		comment	0	0	0	0	0	9	0	28	28	28	8	8	28
4	II-SN-NO-Bethune	lower								0,049	2,417	0,048		0,117	25,12
		upper								0,049	2,417	0,048		0,117	25,12
		comment	0	0	0	0	0	12	0	12	12	12	12	12	12
5	II-SN-NO-Saane	lower						0,171		0,023	2,711	0,034	1,803	0,063	9,485
		upper						0,594		0,023	2,711	0,034	3,059	0,063	9,485
		comment	0	0	0	0	0	12	0	12	12	12	2	12	12
7	II-SN-SE-Andelle	lower						0		0,014	1,218	0,017		0,034	5,823
		upper						0,4		0,014	1,218	0,017		0,035	5,823
		comment	0	0	0	0	0	1	0	12	12	12	0	12	12
8	II-SN-SE-Eure	lower						1,372		0,034	6,938	0,101	2,983	0,153	10,986
		upper						1,732		0,034	6,938	0,101	7,622	0,153	10,986
		comment	0	0	0	0	0	12	0	12	12	12	12	12	12
10	II-SN-SE-Risle	lower						0		0,032	2,783	0,05	3,24	0,084	10,89
		upper						0,875		0,032	2,783	0,05	3,24	0,084	10,89
		comment	0	0	0	0	0	1	0	6	6	6	6	6	6
11	II-SN-NC-Dives	lower						0		0,03	4,969	0,045	4,85	0,119	13,554
		upper						3,184		0,03	4,969	0,045	5,431	0,119	13,554
		comment	0	0	0	0	0	12	0	10	10	10	10	12	12
12	II-SN-NC-Douve	lower						0		0,024	4,036	0,036	3,939	0,097	11,009
		upper						2,586		0,024	4,036	0,036	4,411	0,097	11,009
		comment	0	0	0	0	0	4	0	11	11	11	11	12	12
13	II-SN-NC-Orne	lower						0		0,031	5,651	0,062	6,546	0,169	13,896
		upper						5,971		0,033	5,651	0,062	6,609	0,181	14,092
		comment	0	0	0	0	0	12	0	11	11	11	11	12	12
14	II-SN-NC-Seulles	lower						0		0,02	1	0,023	1,178	0,031	5,123
		upper						0,295		0,02	1	0,023	1,178	0,031	5,123
		comment	0	0	0	0	0	4	0	10	10	10	10	12	12
15	II-SN-NC-Touques	lower						0		0,031	1,163	0,047	1,327	0,081	8,163
		upper						1,929		0,031	1,163	0,047	1,513	0,081	8,163
		comment	0	0	0	0	0	12	0	12	12	12	12	12	12
16	II-SN-NC-Vire	lower								0,049	2,654	0,11	3,38	0,129	10,22
		upper								0,049	2,658	0,11	3,399	0,129	10,22
		comment	0	0	0	0	0	0	0	11	11	11	11	12	12
18	II-SN-SC-Selune	lower						0		0,016	3,031	0,016	2,847	0,052	8,413
		upper						2,133		0,016	3,031	0,016	3,312	0,052	8,413
		comment	0	0	0	0	0	4	0	9	9	9	9	12	12
19	II-SN-SC-Sienne	lower								0,019	1,474	0,023	1,82	0,055	5,908
		upper								0,019	1,474	0,023	1,82	0,055	5,908
		comment	0	0	0	0	0	0	0	9	9	9	9	12	12

20	II-LB-NB-Aulne	lower	0	0	0,902	4,64	2,401	1,658		0,074	9,973	0,04	1,431	0,114	21,271
		upper	1,249	0,054	0,902	4,89	2,401	18,504		0,074	9,973	0,04	11,981	0,224	21,271
		comment	3	3	1	3	1	24	0	24	24	24	24	24	24
21	II-LB-NB-Couesnon	lower								0,048	5,293	0,038	2,172	0,089	16,238
		upper								0,048	5,293	0,038	6,017	0,094	16,238
		comment	0	0	0	0	0	0	0	12	12	12	12	12	12
23	IV-LB-SB-Blavet	lower						0		0,091	12,518	0,068	0,851	0,109	20,421
		upper						15,501		0,093	12,518	0,068	14,345	0,196	20,421
		comment	0	0	0	0	0	7	0	18	18	18	18	18	18
28	IV-LB-LO-Sevre-Nantaise	lower						0		0,188	7,154	0,176	7,514	0,354	21,153
		upper						7,807		0,188	7,154	0,176	9,613	0,369	21,153
		comment	0	0	0	0	0	7	0	12	12	12	12	12	12
29	IV-LB-SL-Lay	lower						0		0,148	6,93	0,1	3,104	0,353	38,452
		upper						10,516		0,148	6,93	0,1	8,424	0,353	38,452
		comment	0	0	0	0	0	7	0	12	12	12	12	12	12
30	IV-LB-SL-Sevre-Niortaise	lower						0		0,34	9,668	0,138	6,055	0,249	14,183
		upper						8,869		0,34	9,668	0,138	11,085	0,257	14,183
		comment	0	0	0	0	0	7	0	12	12	12	12	12	12
32	IV-AG-CH-Boutonne	lower						1,998		0,044	2,896	0,02	2,354	0,137	8,691
		upper						4,226		0,044	2,896	0,022	3,169	0,139	8,738
		comment	0	0	0	0	0	10	0	6	6	6	0	6	6
35	IV-AG-CH-Seudre	lower						0,512		0,003	0,661	0		0,014	0,655
		upper						0,719		0,003	0,661	0,003		0,016	0,655
		comment	0	0	0	0	0	9	0	10	10	10	0	10	10
36	IV-AG-BA-Eyre	lower						0		0,023	0,723	0,003	0,434	0,068	4,525
		upper						1,921		0,023	0,723	0,008	0,927	0,079	4,525
		comment	0	0	0	0	0	10	0	12	12	12	12	12	12
39	IV-AG-GD-Isle	lower						0		0,144	3,77	0,066	1,814	0,302	26,98
		upper						9,115		0,144	3,77	0,068	4,632	0,338	26,98
		comment	0	0	0	0	0	10	0	10	10	10	10	10	10
41	IV-AG-GG-Dropt	lower						0		0,028	1,284	0,026		0,059	23,105
		upper						0,87		0,028	1,284	0,026		0,061	23,105
		comment	0	0	0	0	0	10	0	12	12	12	0	12	12
47	IV-AG-AD-Bidouze	lower						0		0,038	0,759	0,021	1,002	0,042	7,017
		upper						1,189		0,038	0,759	0,021	1,038	0,042	7,017
		comment													
48	IV-AG-AD-GavesReunis	lower						0		0,768	5,657	0,12	6,557	0,832	58,16
		upper						25,088		0,768	5,657	0,142	9,008	0,858	58,16
		comment	0	0	0	0	0	10	0	10	10	10	10	10	10
49	IV-AG-AD-Luy	lower								0,016	0,92	0,007	0,095	0,008	4,555
		upper								0,016	0,92	0,007	1,053	0,008	4,555
		comment	0	0	0	0	0	0	0	6	6	6	6	6	6
50	IV-AG-AD-Nive	lower								0,039	0,935	0,023		0,351	5,782
		upper								0,044	0,935	0,03		0,355	5,782
		comment	0	0	0	0	0	0	0	12	12	12	0	12	12

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8	II-SN-SE-Eure	lower						1,083		0,03	7,455	0,114	3,48	0,167	10,575
		upper						1,583		0,03	7,455	0,114	8,207	0,167	10,575
		minimum						1		0,008	6,548	0,059	7,786	0,13	2,4
		maximum						5		0,078	8,107	0,153	8,697	0,22	19,3
		more than 70% > D.L.						50		91,667	100	100	41,667	100	100
		n	0	0	0	0	0	12	0	12	12	12	12	12	12
		info													
		St. Dev.						1,472		0,026	0,457	0,03	0,364	0,027	6,431
10	II-SN-SE-Risle	lower						0		0,04	4,565	0,086	5,316	0,14	15,767
		upper						1		0,04	4,565	0,086	5,316	0,14	15,767
		minimum								0,016	4,177	0,062	4,896	0,08	6
		maximum								0,109	5,081	0,121	5,793	0,16	29,4
		more than 70% > D.L.						0		100	100	100	100	100	100
		n	0	0	0	0	0	1	0	6	6	6	6	6	6
		info													
		St. Dev.								0,035	0,33	0,024	0,33	0,031	8,686
11	II-SN-NC-Dives	lower						0		0,043	8,59	0,089	6,6	0,16	11,467
		upper						5		0,043	8,59	0,089	9,278	0,16	11,467
		minimum								0,023	7,226	0,016	8,279	0,07	2,2
		maximum								0,093	9,416	0,16	10,181	0,25	48
		more than 70% > D.L.						0		90	100	100	70	100	100
		n	0	0	0	0	0	12	0	10	10	10	10	12	12
		info													
		St. Dev.								0,027	0,74	0,042	0,749	0,05	12,908
13	II-SN-NC-Orne	lower						0		0,03	5,399	0,061	6,192	0,123	10,7
		upper						5		0,032	5,399	0,061	6,192	0,123	10,867
		minimum								0,016	4,065	0,016	4,878	0,08	2,1
		maximum								0,078	7,316	0,098	8,084	0,19	64
		more than 70% > D.L.						0		72,727	100	100	100	100	91,667
		n	0	0	0	0	0	12	0	11	11	11	11	12	12
		info													
		St. Dev.								0,024	1,124	0,024	1,068	0,039	17,706
14	II-SN-NC-Seulles	lower						0		0,224	6,085	0,157	7,606	0,317	31,733
		upper						5		0,224	6,085	0,157	7,606	0,317	31,733
		minimum								0,031	4,945	0,042	6,005	0,16	3,6
		maximum								0,482	7,768	0,255	9,668	0,68	113
		more than 70% > D.L.						0		100	100	100	100	100	100
		n	0	0	0	0	0	4	0	10	10	10	10	12	12
		info													
		St. Dev.								0,155	0,839	0,058	0,996	0,158	35,274
15	II-SN-NC-Touques	lower						0		0,071	3,016	0,128	3,282	0,201	14,3
		upper						5		0,072	3,016	0,128	3,87	0,201	14,3
		minimum								0,016	2,732	0,082	3,348	0,14	3,2
		maximum								0,171	3,365	0,193	4,4	0,3	68
		more than 70% > D.L.						0		91,667	100	100	83,333	100	100
		n	0	0	0	0	0	12	0	12	12	12	12	12	12
		info													
		St. Dev.								0,048	0,192	0,031	0,325	0,044	18,391
16	II-SN-NC-Vire	lower								0,12	2,336	0,164	3,73	0,296	22,317
		upper								0,12	2,439	0,164	4,103	0,296	22,317
		minimum								0,016	1,4	0,016	2,337	0,17	7,8
		maximum								0,334	3,907	0,496	5,901	0,65	40
		more than 70% > D.L.								100	81,818	100	81,818	100	100
		n	0	0	0	0	0	0	0	11	11	11	11	12	12
		info													
		St. Dev.								0,111	0,828	0,142	1,169	0,134	11,178

18	II-SN-SC-Selune	lower						0		0,029	6,629	0,048	5,538	0,128	22,192
		upper						5		0,03	6,629	0,048	7,323	0,13	22,192
		minimum								0,008	5,487	0,013	6,275	0,08	4,1
		maximum								0,062	7,655	0,075	8,135	0,2	51
		more than 70% > D.L.						0		88,889	100	100	77,778	91,667	100
		n	0	0	0	0	0	4	0	9	9	9	9	12	12
		info													
		St. Dev.								0,019	0,842	0,018	0,715	0,038	17,258
19	II-SN-SC-Sienne	lower								0,046	3,234	0,114	4,323	0,206	15,883
		upper								0,048	3,234	0,114	4,323	0,206	15,883
		minimum								0,023	1,129	0,029	2,094	0,1	3
		maximum								0,124	6,481	0,196	8,311	0,35	90
		more than 70% > D.L.								66,667	100	100	100	100	100
		n	0	0	0	0	0	0	0	9	9	9	9	12	12
		info													
		St. Dev.								0,034	1,863	0,052	1,989	0,077	23,923
20	II-LB-NB-Aulne	lower	0	0	6	6,333	16	2,083		0,062	4,348	0,025	1,795	0,053	13,042
		upper	3	0,1	6	8	16	11,667		0,062	4,348	0,026	5,443	0,105	13,042
		minimum			6	7	16	50		0,016	0,181	0,013	1,435	0,08	5
		maximum			6	12	16	50		0,156	7,407	0,062	6,624	0,17	25
		more than 70% > D.L.	0	0	100	66,667	100	4,167		95,833	100	83,333	41,667	45,833	100
		n	3	3	1	3	1	24	0	24	24	24	24	24	24
		info													
		St. Dev.				3,536				0,039	2,242	0,014	1,934	0,028	6,154
21	II-LB-NB-Couesnon	lower								0,062	5,88	0,063	1,857	0,115	13
		upper								0,062	5,88	0,063	7,009	0,14	13
		minimum								0,031	2,642	0,036	4,454	0,12	4
		maximum								0,179	8,739	0,088	8,08	0,2	45
		more than 70% > D.L.								100	100	100	33,333	75	100
		n	0	0	0	0	0	0	0	12	12	12	12	12	12
		info													
		St. Dev.								0,044	2,033	0,018	1,7	0,023	10,863
23	IV-LB-SB-Blavet	lower						0		0,06	6,883	0,054	1,067	0,083	11,944
		upper						10		0,06	6,883	0,054	7,949	0,13	11,944
		minimum								0,008	3,703	0,016	4,731	0,11	4
		maximum								0,179	9,1	0,17	8,863	0,23	31
		more than 70% > D.L.						0		94,444	100	94,444	16,667	55,556	100
		n	0	0	0	0	0	7	0	18	18	18	18	18	18
		info													
		St. Dev.								0,042	1,915	0,044	2,175	0,041	5,965
25	IV-LB-SB-VILAINE	lower						0		0,159	4,401	0,051	3,618	0,145	19,5
		upper						10		0,159	4,401	0,051	6,42	0,154	19,5
		minimum								0,016	0,09	0,013	1,509	0,09	11
		maximum								0,824	9,371	0,111	9,914	0,57	37
		more than 70% > D.L.						0		100	100	96,429	66,667	89,286	100
		n	0	0	0	0	0	24	0	28	28	28	24	28	24
		info													
		St. Dev.								0,159	3,218	0,028	3,071	0,09	6,554
27	IV-LB-LO-LOIRE	lower	0	0	0	0	77	0		0,066	3,173	0,048	1,644	0,156	31,792
		upper	3,5	0,1	5	5	77	10		0,066	3,173	0,048	4,698	0,163	31,792
		minimum					77			0,016	0,745	0,007	2,527	0,09	15
		maximum					77			0,35	5,555	0,186	7,316	0,53	190
		more than 70% > D.L.	0	0	0	0	100	0		100	100	96,429	37,5	92,857	100
		n	2	2	1	2	1	22	0	28	28	28	24	28	24
		info													
		St. Dev.								0,07	1,315	0,045	1,465	0,087	35,204

28	IV-LB-LO-Sevre-Nantaise	lower						0		0,156	2,943	0,183	3,522	0,323	17,917
		upper						10		0,156	2,943	0,183	4,539	0,323	17,917
		minimum								0,008	0,113	0,088	1,692	0,14	7
		maximum								0,568	9,71	0,32	11,819	0,47	35
		more than 70% > D.L.						0		100	100	100	83,333	100	100
		n	0	0	0	0	0	7	0	12	12	12	12	12	12
		info													
		St. Dev.								0,15	2,986	0,08	3,312	0,099	7,038
29	IV-LB-SL-Lay	lower						0		0,133	3,022	0,083	2,475	0,218	39,5
		upper						10		0,133	3,022	0,083	4,526	0,218	39,5
		minimum								0,047	0,09	0,033	1,786	0,08	9
		maximum								0,257	7,926	0,16	10,314	0,84	100
		more than 70% > D.L.						0		100	100	100	66,667	100	100
		n	0	0	0	0	0	7	0	12	12	12	12	12	12
		info													
		St. Dev.								0,06	2,951	0,038	2,95	0,203	24,641
30	IV-LB-SL-Sevre-Niortaise	lower						0		0,128	3,289	0,087	1,705	0,173	9,583
		upper						10		0,128	3,289	0,087	4,538	0,173	9,583
		minimum								0,023	0,723	0,033	2,232	0,11	2
		maximum								0,358	6,323	0,16	5,944	0,3	26
		more than 70% > D.L.						0		100	100	100	41,667	100	100
		n	0	0	0	0	0	7	0	12	12	12	12	12	12
		info													
		St. Dev.								0,103	1,697	0,044	1,526	0,063	7,775
32	IV-AG-CH-Boutonne	lower						1,7		0,065	5,784	0,024		0,058	23,5
		upper						5,7		0,065	5,784	0,027		0,075	23,5
		minimum						8		0,023	0,09	0,016		0,05	10
		maximum						9		0,148	8,874	0,049		0,1	54
		more than 70% > D.L.						20		100	100	83,333		66,667	100
		n	0	0	0	0	0	10	0	6	6	6	0	6	6
		info													
		St. Dev.						0,707		0,045	3,8	0,014		0,025	16,208
33	IV-AG-CH-CHARENTE	lower						3,8		0,084	5,18	0,038	3,625	0,26	11,4
		upper						11,8		0,084	5,18	0,041	5,652	0,265	11,5
		minimum						12		0,047	2,777	0,016	4,994	0,15	2
		maximum						13		0,124	7,068	0,065	7,401	0,55	54
		more than 70% > D.L.						30		100	100	80	60	90	90
		n	0	0	0	0	0	10	0	10	10	10	10	10	10
		info													
		St. Dev.						0,577		0,024	1,23	0,016	1,002	0,139	15,827
35	IV-AG-CH-Seudre	lower						4,444		0,06	6,609	0,008		0,17	8,8
		upper						7,222		0,06	6,609	0,019		0,19	9,1
		minimum						9		0,008	4,223	0,016		0,1	1
		maximum						11		0,397	11,607	0,049		0,45	33
		more than 70% > D.L.						44,444		100	100	30		70	70
		n	0	0	0	0	0	9	0	10	10	10	0	10	10
		info													
		St. Dev.						0,816		0,119	2,006	0,019		0,14	13,464
36	IV-AG-BA-Eyre	lower						0		0,05	1,364	0,01	1,007	0,125	7,5
		upper						5		0,05	1,364	0,018	1,817	0,158	7,5
		minimum								0,031	0,677	0,016	1,029	0,05	4
		maximum								0,07	2,868	0,033	3,577	0,7	15
		more than 70% > D.L.						0		100	100	50	41,667	58,333	100
		n	0	0	0	0	0	10	0	12	12	12	12	12	12
		info													
		St. Dev.								0,011	0,702	0,007	1,003	0,221	3,631

38	IV-AG-GD-DORDOGNE	lower								0,03	1,702	0,02	0,37	0	5,636
		upper								0,03	1,702	0,024	2,804	0,05	6
		minimum								0,008	1,107	0,02	3,704		2
		maximum								0,07	2,168	0,042	3,704		14
		more than 70% > D.L.								100	100	72,727	10	0	81,818
		n	0	0	0	0	0	0	0	11	11	11	10	11	11
		info													
		St. Dev.								0,019	0,345	0,008			4,485
39	IV-AG-GD-Isle	lower						0		0,093	1,718	0,036	0,649	0,16	10,2
		upper						5		0,093	1,718	0,037	2,154	0,175	10,2
		minimum								0,016	0,474	0,016	1,67	0,1	3
		maximum								0,311	2,958	0,082	3,047	0,45	35
		more than 70% > D.L.						0		100	100	90	30	70	100
		n	0	0	0	0	0	10	0	10	10	10	10	10	10
		info													
		St. Dev.								0,083	0,867	0,02	0,767	0,144	9,601
41	IV-AG-GG-Dropt	lower						0		0,097	2,533	0,054		0,133	31,167
		upper						5		0,097	2,533	0,056		0,15	31,167
		minimum								0,047	0,158	0,016		0,1	10
		maximum								0,218	6,255	0,114		0,25	122
		more than 70% > D.L.						0		100	100	91,667		75	100
		n	0	0	0	0	0	10	0	12	12	12	0	12	12
		info													
		St. Dev.								0,053	2,091	0,034		0,062	31,42
42	IV-AG-GG-GARONNE	lower						0		0,064	2,077	0,038		0,175	17,667
		upper						5		0,064	2,077	0,041		0,183	17,667
		minimum								0,039	0,881	0,016		0,05	9
		maximum								0,124	4,065	0,065		0,35	39
		more than 70% > D.L.						0		100	100	83,333		83,333	100
		n	0	0	0	0	0	10	0	6	6	6	0	6	6
		info													
		St. Dev.								0,032	1,096	0,018		0,129	12,226
43	IV-AG-GG-LOT	lower	0,042	0	1	0,333	3,75	0		0,126	0,965	0,024	0,768	0,179	4,833
		upper	0,108	0,05	1,583	1,083	4,083	5		0,126	0,965	0,027	1,379	0,183	4,833
		minimum	0,1		1	1	1			0,031	0,068	0,016	0,84	0,05	1
		maximum	0,2		5	2	14			0,319	2,574	0,065	3,199	0,75	10
		more than 70% > D.L.	33,333	0	41,667	25	66,667	0		100	100	83,333	41,667	91,667	100
		n	12	12	12	12	12	10	0	12	12	12	12	12	12
		info													
		St. Dev.	0,05		1,673	0,577	4,173			0,091	0,77	0,017	0,99	0,207	2,949
46	IV-AG-AD-ADOUR	lower						0		0,222	2,807	0,122	3,167	0,235	22,9
		upper						5		0,222	2,807	0,122	3,726	0,235	22,9
		minimum								0,101	0,497	0,049	1,721	0,1	9
		maximum								0,467	8,919	0,212	10,362	0,4	43
		more than 70% > D.L.						0		100	100	100	80	100	100
		n	0	0	0	0	0	10	0	10	10	10	10	10	10
		info													
		St. Dev.								0,116	2,259	0,051	2,745	0,118	10,837
48	IV-AG-AD-GavesReunis	lower						0		0,177	1,118	0,026	1,096	0,16	10,6
		upper						5		0,177	1,118	0,031	1,694	0,17	10,6
		minimum								0,093	0,926	0,016	1,48	0,05	5
		maximum								0,49	1,581	0,065	2,68	0,35	33
		more than 70% > D.L.						0		100	100	70	60	90	100
		n	0	0	0	0	0	10	0	10	10	10	10	10	10
		info													
		St. Dev.								0,121	0,195	0,018	0,439	0,087	8,356

49	IV-AG-AD-Luy	lower								0,113	4,486	0,052	1,238	0,053	38,667
		upper								0,113	4,486	0,052	5,359	0,053	38,667
		minimum								0,078	1,31	0,026	2,753	0,03	10
		maximum								0,148	10,319	0,101	4,673	0,1	87
		more than 70% > D.L.								100	100	100	33,333	100	100
		n	0	0	0	0	0	0	0	6	6	6	6	6	6
		info													
		St. Dev.								0,029	3,332	0,028	1,358	0,027	28,09
50	IV-AG-AD-Nive	lower								0,074	0,807	0,027		0,279	10,75
		upper								0,075	0,807	0,042		0,288	10,75
		minimum								0,039	0,339	0,016		0,05	1
		maximum								0,187	1,107	0,082		1,5	96
		more than 70% > D.L.								83,333	100	83,333		83,333	100
		n	0	0	0	0	0	0	0	12	12	12	0	12	12
		info													
		St. Dev.								0,047	0,216	0,02		0,431	26,979

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention by France 2003

			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]
1	II-AP-PC-Aa	Sewage													
		Industrial													
		Riverine													
2	II-AP-SO-Canche	Sewage													
		Industrial													
		Riverine						20		0,077		0,032	6,328	0,05	
3	II-AP-SO-SOMME	Sewage													
		Industrial													
		Riverine						20		0,077		0,032	5,534	0,05	
4	II-SN-NO-Bethune	Sewage													
		Industrial													
		Riverine						1					4,177		
5	II-SN-NO-Saane	Sewage													
		Industrial													
		Riverine						1					6,059		
6	II-SN-SE-SEINE	Sewage													
		Industrial													
		Riverine	0,01	0,005		0,1		0,5		0,038					
7	II-SN-SE-Andelle	Sewage													
		Industrial													
		Riverine						1				0,009		0,07	
8	II-SN-SE-Eure	Sewage													
		Industrial													
		Riverine						1		0,007			8,104		
9	II-SN-SE-H7	Sewage													
		Industrial													
		Riverine													
10	II-SN-SE-Risle	Sewage													
		Industrial													
		Riverine						1							
11	II-SN-NC-Dives	Sewage													
		Industrial													
		Riverine						5		0,007			8,926		
12	II-SN-NC-Douve	Sewage													
		Industrial													
		Riverine						5							
13	II-SN-NC-Orne	Sewage													
		Industrial													
		Riverine						5		0,007					2
14	II-SN-NC-Seulles	Sewage													
		Industrial													
		Riverine						5							
15	II-SN-NC-Touques	Sewage													
		Industrial													
		Riverine						5		0,007			3,532		
16	II-SN-NC-Vire	Sewage													
		Industrial													
		Riverine									0,564		2,056		

[illegible]

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention by France

2003

		Flow Rate [1000m³/d]	LTA [1000m³/d]	Minimum FR [1000m³/d]	Maximum FR [1000m³/d]	LTA info (years)	Number of sites	Mean or Median
1	II-AP-PC-Aa	2729					0	Mean
2	II-AP-SO-Canche	4605	4579	2688	11104	1962 - 2005	1	Mean
3	II-AP-SO-SOMME	3919	3197	2116	7553	1963 - 2005	1	Mean
4	II-SN-NO-Bethune	1705		855	9583		1	Mean
5	II-SN-NO-Saane	1386	2938	978	8206	1997 - 2005	1	Mean
6	II-SN-SE-SEINE	42879	43373	12692	166630	1974 - 2003	1	Mean
7	II-SN-SE-Andelle	761	691	463	3142	1973 - 2005	1	Mean
8	II-SN-SE-Eure	2509	2246	1529	5656	1971 - 2005	1	Mean
9	II-SN-SE-H7	1610					0	Mean
10	II-SN-SE-Risle	1671	1642	1091	6234	1967 - 2005	1	Mean
11	II-SN-NC-Dives	874	1296	253	6393	1969 - 2005	1	Mean
12	II-SN-NC-Douve	710					1	Mean
13	II-SN-NC-Orne	3269	2592	2448	18617	1983 - 2004	1	Mean
14	II-SN-NC-Seulles	312	518	47	2326	1971 - 2005	1	Mean
15	II-SN-NC-Touques	1057	1037	671	3891	1982 - 2005	1	Mean
16	II-SN-NC-Vire	1187	2246	115	11484	1993 - 2005	2	Mean
17	II-SN-SC-I6	1431					0	Mean
18	II-SN-SC-Selune	1456	1987	383	9537	1990 - 2005	2	Mean
19	II-SN-SC-Sienne	841		59	10186		1	Mean
20	II-LB-NB-Aulne	4703	6653	298	39582	1970 - 2005	1	Mean
21	II-LB-NB-Couesnon	1670	2160	171	15255	1984 - 2005	2	Mean
22	II-LB-NB-J1J2	2909					0	Mean
23	IV-LB-SB-Blavet	4612	5702	293	37540	1983 - 2005	2	Mean
24	IV-LB-SB-J4	3128					0	Mean
25	IV-LB-SB-VILAINE						1	Mean
26	IV-LB-LO-Erdre	2316					0	Mean
27	IV-LB-LO-LOIRE	67937	73699	11777	368896	1863 - 2005	1	Mean
28	IV-LB-LO-Sevre-Nantaise	3478	4579	142	71300	1994 - 2005	1	Mean
29	IV-LB-SL-Lay	2880	3456	4	55369	1969 - 2005	1	Mean
30	IV-LB-SL-Sevre-Niortaise	3425	4752	397	44471	1994 - 2005	2	Mean
31	IV-AG-CH-Arnoult	215					0	Mean
32	IV-AG-CH-Boutonne	1581					1	Mean
33	IV-AG-CH-CHARENTE	5559	5357	1110	36850	1977 - 2005	1	Mean
34	IV-AG-CH-Livenne	375					0	Mean
35	IV-AG-CH-Seudre	316		70	1015		1	Mean
36	IV-AG-BA-Eyre	1229	1901	469	5713	1980 - 2005	1	Mean
37	IV-AG-BA-S1	1697					0	Mean
38	IV-AG-GD-DORDOGNE	17892	21859	1929	127229	1996 - 2004	1	Mean
39	IV-AG-GD-Isle	6477	7171	1971	62520	1972 - 2005	2	Mean
40	IV-AG-GD-P9	665					0	Mean
41	IV-AG-GG-Dropt	829		33	14398		1	Mean
42	IV-AG-GG-GARONNE	38154	40522	3916	445487	1967 - 2005	3	Mean
43	IV-AG-GG-LOT	14175	13392	1305	307719		1	Mean
44	IV-AG-GG-O9	12500					0	Mean
45	IV-AG-CL-S3S4	1874					0	Mean
46	IV-AG-AD-ADOUR	6373	7776	868	43921	1918 - 2005	1	Mean
47	IV-AG-AD-Bidouze	832					1	Mean
48	IV-AG-AD-GavesReunis	17753	17453	3067	113902	1923 - 2005	2	Mean
49	IV-AG-AD-Luy	1364	1814	1	21769	1967 - 2005	1	Mean
50	IV-AG-AD-Nive	3067	3197	483	36396	1967 - 2005	1	Mean
51	IV-AG-AD-Pays-Basque	2077					0	Mean

GERMANY

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003 by Germany

Table 5a.	Direct discharges to the maritime area in 2003 by Germany (sewage effluents)
Table 5b.	Direct discharges to the maritime area in 2003 by Germany (industrial effluents)
Table 5c.	Direct discharges to the maritime area in 2003 by Germany (total direct discharges)
Table 6a.	Riverine inputs to the maritime area in 2003 by Germany (main riverine inputs)
Table 7a.	Contaminant concentrations of German rivers discharging to the maritime area (main rivers)
Table 7b.	Contaminant concentrations of German rivers (tributaries) discharging to the maritime area
Table 8.	Detection limits for contaminant concentrations of German inputs to the maritime area

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003

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: <u>Federal Republic of Germany</u>			
Name of river, sub-area and discharge area ¹	Nature of the receiving water ²	optional: national reference number	optional: map reference number
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

B. Total riverine inputs and direct discharges for the year 2003

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

None

C. Direct discharges for the year 2003

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:

*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 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:

*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.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 stormwater overflows - that are not covered by the data in tables 5a. and 5b.:

None

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 2003

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 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 km²) as well as in the tributary Treene (measurement sites: Treene, Friedrichstadt, size of catchment area: 797 km²).

Estimation of annual load

Annual loads L are calculated as follows for the various river systems:

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

Where: c_i is the concentration measured in sample i ;
 Q_i is the corresponding mean daily flow for sample i ;
 Q_r 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

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):

Elbe: *For the tributaries 12 measurements per year were carried out for heavy metals and 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.5 Give any other relevant information (e.g. proportion of substance transported by the river in particulate form):

None

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):

None

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.:

None

E. Limits of detection

E.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.

None

F. National Comments

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

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.

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

Compared to previous years (except 2002) there are no significant changes in the concentrations and inputs during the year 2003. Only in the river Weser the loads in 2003 compared to 2001 are 75% higher for $\text{NH}_4\text{-N}$, 125% higher for mercury, 40% lower for lindane and more than 50% lower for suspended particulate matters. 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 as 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.

In 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.

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.

- F.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 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 $\gamma\text{-HCH}$ measurements in water in the Elbe tributaries.

Table 5a. Direct discharges to the maritime area in 2003 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 (downstream of Herbrum)	Estuary	(lower estimate)	26	0,01	0,01	0,3	0,1	2,1	0,01	0,01	0,03	0,04	0,02	0,08	0,009	0,4
		(upper estimate)		0,01	0,01	0,3	0,1	2,1	0,01	0,01	0,03	0,04	0,02	0,08	0,009	0,4
Jade	Estuary	(lower estimate)	47	0,0	0,0	0,03	0,01	0,2	NI	NI	0,07	0,09	NI	0,1	0,01	NI
		(upper estimate)		0,005	0,005	0,03	0,01	0,2	NI	NI	0,07	0,09	NI	0,1	0,01	NI
Weser Estuary (downstream of Farge)	Estuary	(lower estimate)	230	0,0	0,0	1,4	0,7	7,3	0,01	0,03	1,6	0,9	0,04	2,1	0,3	1,1
		(upper estimate)		0,01	0,01	1,4	0,7	7,5	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:			378	0,01	0,01	1,8	0,9	10	0,02	0,04	1,6	1,2	0,07	2,7	0,3	1,9
				0,04	0,04	2,3	1,0	15	0,3	1,9	1,6	1,2	0,07	2,7	0,3	1,9

Table 5b. Direct discharges to the maritime area in 2003 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 (downstream of Herbrum)	Estuary (lower estimate)	22	0,0001	0,0001	0,0008	0,0003	0,08	NI	NI	0,01	0,01	NI	0,02	0,008	NI
	(upper estimate)		0,0001	0,0001	0,0008	0,0003	0,08	NI	NI	0,01	0,01	NI	0,02	0,008	NI
Jade (area Wilhelmshaven)	Estuary (lower estimate)	6,0	0,0	0,001	0,06	0,002	0,03	NI	NI	0,0009	0,0009	NI	NI	0,002	NI
	(upper estimate)		0,001	0,002	0,06	0,003	0,04	NI	NI	0,001	0,0009	NI	NI	0,002	NI
Weser Estuary (area Nordenham)	Estuary (lower estimate)	37	NI	0,0	0,0	0,001	0,004	NI	NI	0,0004	0,0005	NI	NI	0,001	NI
	(upper estimate)		NI	0,002	0,1	0,008	0,006	NI	NI	0,0004	0,0005	NI	NI	0,001	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:		135	0,0001	0,001	0,06	0,003	0,1	NI	0,0	0,01	0,5	0,01	0,8	0,05	NI
			0,01	0,01	0,3	0,5	0,1	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 2003 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)	48	0,01	0,01	0,3	0,1	2,2	0,01	0,01	0,04	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	0,04	0,1	0,02	0,1	0,02	0,4
Jade	Estuary (lower estimate)	53	0,0	0,001	0,1	0,0	0,2	NI	NI	0,07	0,1	NI	0,1	0,01	NI
	(upper estimate)		0,01	0,01	0,1	0,0	0,3	NI	NI	0,07	0,1	NI	0,1	0,01	NI
Weser Estuary	Estuary (lower estimate)	267	0,0	0,0	1,4	0,7	7,3	0,01	0,03	1,6	0,9	0,04	2,1	0,3	1,1
	(upper estimate)		0,01	0,01	1,5	0,7	7,5	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:		513	0,01	0,01	1,8	0,9	9,7	0,02	0,04	1,7	1,7	0,08	3,5	0,4	1,9
			0,05	0,05	2,5	1,5	15,0	0,3	2,9	1,7	1,7	0,08	3,5	0,4	1,9

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

(2) Suspended particulate matter

NI: No information

Table 6a. Riverine inputs to the maritime area in 2003 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 (Herbrum: 70 %)	7290		7690 (5)	0,07 0,2	0,14 0,14	6,1 6,1	1,6 2,3	28 28	1,2 1,2	0,3 4,5	0,7 0,8	10 10	0,05 0,07	14 14	0,4 0,4	22 56
Weser (Farge: 90%)	28944		28166 (6)	1,1 1,1	1,7 1,7	40 40	39 39	254 254	6,0 6,0	1,5 20	1,9 1,9	43 43	0,6 0,6	55 55	1,7 1,7	208 275
Elbe Estuary	65700		74100 (7)	2,7 2,8	1,2 1,2	120 120	67 67	710 710	19 19	NI NI	5,2 5,2	83 83	1,4 1,4	98 98	3,9 3,9	670 670
Elbe tributaries (3)	1700		2100 (8)	0,03 0,03	0,01 0,01	2,0 2,0	1,7 1,7	14 14	NI NI	NI NI	0,3 0,3	1,7 1,7	0,05 0,05	2,4 2,4	0,2 0,2	40 40
Elbe tributaries (4)	1600		2400 (9)	0,2 0,2	0,02 0,02	8,8 8,8	6,1 6,1	53 53	NI NI	NI NI	0,34 0,34	4,5 4,5	0,06 0,06	7 7	0,3 0,3	77 77
Eider	1465		2346 (10)	0,01 0,02	0,003 0,003	1,37 1,37	0,36 0,40	3,2 3,2	0,4 0,4	NI NI	0,12 0,12	1,12 1,12	0,03 0,03	1,9 1,9	0,1 0,1	6,6 6,6
Total	106699		116802	4,2 4,3	3,1 3,1	178 178	116 117	1062 1062	27 27	2,0 25	8,6 8,6	144 144	2,2 2,2	178 178	7,0 7,0	1024 1125

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180; Elbe, Weser and Ems also No 31

(2) Suspended particulate matter

(3) Left side tributaries: Este, Lühe, Schwinge, Ost

(4) Right side tributaries: Pinnau, Krückau, Stö

ND: Not detected

LTA: Long-term average flow (5) 1941 - 2002

(6) 1941 - 1999

(7) 1926 - 2000

(8) 1961 - 2000

(9) 1971 - 2000

(10) 1974 - 2003

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

Main river Ems			Contaminant concentrations -->													
Discharge area	Flow rate [1000 m³/d]	Mean or median?	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)	
	annual	LTA	[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]	
Ems 2003 (Herbrum: 70 %)	7290	7690	Mean	0,04	0,035	2,6	0,58	9,0	0,63	0,27	0,21	3,5	0,02	4,8	0,14	9,7
Minimum	1770		upper	0,07	0,036	2,6	0,87	9,0	0,63	2,0	0,22	3,5	0,03	4,8	0,14	23
Maximum	51600			0,05	0,005	1,4	0,5	4,2	0,2	1,8	0,05	2	0,02	2,3	0,08	20
> 70 % > d.L. ?				0,29	0,150	3,9	2,4	16	1,0	2,9	0,5	6,6	0,04	9,0	0,38	38
n			yes/no	no	yes	yes	no	yes	yes	no	yes	yes	no	yes	yes	no
				12	12	12	12	12	12	12	12	12	12	12	12	12

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 18

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]		Mean or median?	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
	annual	LTA		[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]
Weser 2003 (Farge: 90%)	28944	28166	Mean	0,1	0,20	4,2	4,0	23	0,733	0,3	0,2	3,4	0,06	4,5	0,2	25
Minimum	9927		upper	0,1	0,20	4,2	4,0	23	0,733	2,0	0,2	3,4	0,06	4,5	0,2	30
Maximum	87350			0,06	0,03	2,7	2,4	16	0,2	1,8	0,06	2,0	0,04	3	0,1	20
> 70 % > d.l. ?			yes/no	0,2	1,40	7,0	7,3	39	1,0	2,6	0,2	5,6	0,08	6,3	0,2	39
<i>n</i>				12	12	12	12	12	12	12	12	12	12	12	12	12

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 18

LTA: Long-term average flow: Weser: 1941 - 1999

(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]		Mean or median?	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
	annual	LTA		[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]
Eider 2003	1465	2346	Mean	0,026	0,005	1,90	1,00	6	0,81	NI	0,18	1,8	0,058	3,3	0,21	16
Minimum	542		upper	0,037	0,005	1,90	1,05	6	0,81	NI	1,18	1,8	0,058	3,3	0,21	156
Maximum	5090			< 0,02	0,001	0,7	< 0,2	2,6	0,33	< NI	< 0,01	0,1	< 0,005	1,2	0,09	1,0
> 70 % > d.l. ?			yes/no	0,12	0,04	5,9	4,5	11	1,5		0,7	4,8	0,1	6,6	2,1	51
<i>n</i>				24	24	24	24	24	23		48	48	48	48	48	48

(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]		Mean or median?	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
	annual	LTA		[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]
Elbe Estuary 2003	65700	74100	Median upper	0,14	0,055	5,8	3,0	32	0,9	NI	0,27	2,5	0,07	3,6	0,18	31
Minimum	18100		<	0,14	0,055	5,8	3,0	32	0,9	NI	0,27	2,5	0,07	3,6	0,18	31
Maximum	317000			0,065	0,033	3,1	1,3	14	0,6	<	0,05	1	0,03	2,1	0,13	13
> 70 % > d.l. ?				0,20	0,13	9,9	8	52	2		0,46	5,2	0,10	6	0,39	103
<i>n</i>			yes/no	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes
			<i>n</i>	25	25	25	25	25	26		26	26	26	26	26	26

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 18

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

Discharge area	Flow rate [1000 m³/d]		Mean or median?	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
	annual	LTA		[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]
Elbe tributary (3) 2003	1700	2100	Median	0,08	0,029	2,8	3,6	19	NI	NI	0,32	2,9	0,06	4,2	0,24	39
Minimum	450		upper	0,08	0,029	2,8	3,6	19	NI	NI	0,32	2,9	0,06	4,2	0,24	39
Maximum	5800			0,05	0,011	1,1	< 1,2	10			< 0,05	1,7	< 0,03	2,1	0,13	11
> 70 % > d.l. ?			yes/no	0,22	0,08	8,4	20	60			2,4	5,3	0,14	6,2	0,67	240
<i>n</i>				3	3	13	3	13			13	13	13	13	13	13

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 18

LTA: Long-term average flow: Oste only: 1961 - 2000

(2) Suspended particulate matter

(3) Left side tributaries: Este, Lüche, 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]	Mean or	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)	
	annual	LTA	[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]	
Elbe tributary (3)	1600	2400	Median	0,13	0,0081	3,5	3,2	25,5	NI	NI	0,17	1,7	0,019	2,8	0,12	15
2003			upper	0,13	0,0081	3,5	3,2	25,5	NI	NI	0,17	1,7	0,019	2,8	0,12	15
Minimum	590			0,05	0,0031	1,3	1	5,3			0,01	0,5	0,006	1,2	0,05	3,0
Maximum	5000			0,5	0,042	24	19	140			0,55	4,7	0,07	6,2	0,44	140
> 70 % > d.l. ?			yes/no	yes	yes	yes	yes	yes			yes	yes	yes	yes	yes	yes
<i>n</i>				12	12	12	12	12			23	23	23	23	23	23

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 18

LTA: Long-term average flow: Stör only: 1971 - 2000

(2) Suspended particulate matter

(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	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
				[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]
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	ND	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

IRELAND

Table 5a	Direct inputs to the maritime area in 2003 by Ireland (Sewage effluents)
Table 5b	Direct inputs to the maritime area in 2003 by Ireland (Industrial effluents)
Table 5c	Direct inputs to the maritime area in 2003 by Ireland (Total direct discharges)
Table 6a	Riverine inputs to the maritime area in 2003 by Ireland (Main riverine inputs)
Table 6b	Riverine inputs to the maritime area in 2003 by Ireland (Inputs of tributary rivers)
Table 6c	Riverine inputs to the maritime area in 2003 by Ireland (Total riverine inputs)
Table 7	Contaminant concentrations of Irish rivers discharging to the maritime area
Table 8	Detection limits for contaminant concentrations of Irish inputs to the maritime area.

Annual report on riverine inputs and direct discharges by Ireland to Convention waters during the year 2003

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

**Environmental Protection Agency,
Richview, Clonskeagh Road,
Dublin 14, Ireland
Tel: +353 1 2680100
Fax: +353 1 2680199
Email: (Contact person – Shane O’Boyle) s.oboye@epa.ie**

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: Ireland			
Name of river, subarea and discharge area ¹	Nature of the receiving water ²	optional: national reference number	optional: map reference number
Irish Sea	Estuary/Coastal waters		Cf. below table
Celtic Sea	Do.		Cf. below table
Atlantic	Do.		Cf. below table

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

IRISH SEA DISCHARGE AREA:

From border with N. Ireland (54° 7' N, 6° 18' W) to Hook Head (52° 7' N, 6° 56' W)

CELTIC SEA DISCHARGE AREA:

From Hook Head to Loop Head (52° 33' N, 9° 56' W)

ATLANTIC DISCHARGE AREA:

From Loop Head to border with N. Ireland (55° 4' N, 7° 16' W)

B. Total riverine inputs and direct discharges for the year 2003

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

Estimates/measurements of Direct Discharges made for 1990 are still being presented as there has been no update of the position. However, it is intended that a full update will be carried out in time for the next reporting cycle.

C. Direct discharges for the year 2003

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:

Estimates/measurements made for 1990 are still being presented as there has been no update of the position.

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:

Estimates/measurements made for 1990 are still being presented as there has been no update of the position.

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

NA

C.5 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:

NA

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 2003

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 Principles), including for those under voluntary reporting:

Loads are calculated as the products of flow-weighted annual mean concentrations and annual flow. In 2003 between six (6) and seven (7) sampling runs were made for each river in the January to April and September to December periods. Nutrients were measured on an automated analyzer system (LCHAT) (total P following persulphate digestion), suspended solids by gravimetry and metals by ICP-MS.

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

Oxidised N ($\text{NO}_2 + \text{NO}_3$) for nitrate. Mercury not measured as all concentrations have been less than the detection limit of 0.1 ug/l currently achieved. Lindane is not being measured due to lack of resources.

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):

Biochemical Oxygen Demand as 5-day BOD

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):

Loads in these cases are estimated by extrapolation from those calculated for relevant main rivers on the basis of catchment areas.

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

None

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):

BOD (by extrapolation from main river loads)

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.:

NA

E. Limits of detection

E.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.

F. National Comments

F.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.

There has been no further update of the data for direct discharges since 1990, though it is intended to address this situation in 2004. Riverine inputs in 2003 were based on measurements at the full set of sampling points used in previous years. However, some reduction in sampling frequency was again necessary due to other commitments. Annual flow data from the Avoca river catchment was not available due to resource issues, but will be available for the 2004 report.

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

Pollutant loads in most rivers in 2003 were generally substantially lower than the comparable figures for 2002, and average for the 1990-2000 period. This was largely attributable to below normal rainfall in 2003. Mean annual flows in the rivers in 2003 were on average only 75% per cent of the respective averages for the period 1990 to 2000. This figure is reflected in the annual rainfall pattern that was much drier than a normal year, with only around 75% of normal rainfall measured at some stations.

F.3 Indicate and explain, if appropriate:

- where any 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

Sampling frequency is less than 12 times per annum but is concentrated in the period of expected higher river flows (October to May). The specified detection levels for metals cannot be achieved in the present circumstances. In both cases, the reason for the non-compliance is the lack of resources.

Table 5a. Direct inputs to the maritime area in 2003 by Ireland

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]
Irish Sea	Estuarine and coastal waters		0,02	NI	3,4	1,5	29	NI	NI	NI	NI	NI	3,706	0,866	21,44
Celtic Sea	Estuarine and coastal waters		0,01	NI	1,1	0,5	9,2	NI	NI	NI	NI	NI	1,323	0,387	8,57
Atlantic	Estuarine and coastal waters		0,002	NI	0,35	0,17	3,1	NI	NI	NI	NI	NI	0,414	0,12	2,579
Total:			0,032		4,85	2,17	41,3						5,443	1,373	32,59

Table 5b. Direct inputs to the maritime area in 2003 by Ireland

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]
Irish Sea	Estuarine and coastal waters		0,04	NI	4,1	1,8	34	NI	NI	NI	NI	NI	3,127	0,709	16,69
Celtic Sea	Estuarine and coastal waters		0,013	NI	2,1	3,9	12,3	NI	NI	NI	NI	NI	1,348	0,267	10,02
Atlantic	Estuarine and coastal waters		0,005	NI	0,48	0,22	4,6	NI	NI	NI	NI	NI	0,288	0,086	1,744
Total:			0,058		6,68	5,92	50,9						4,763	1,062	28,45

NI: No information

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

(2) Suspended particulate matter

* 1990 data, since the basis for calculation remained unchanged.

Table 5c. Direct inputs to the maritime area in 2003 by Ireland

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]
Irish Sea	Estuarine and coastal waters		0,06	NI	7,5	3,3	63	NI	NI	NI	NI	NI	6,833	1,575	38,13
Celtic Sea	Estuarine and coastal waters		0,023	NI	3,2	4,4	21,5	NI	NI	NI	NI	NI	2,671	0,654	18,59
Atlantic	Estuarine and coastal waters		0,007	NI	0,83	0,39	7,7	NI	NI	NI	NI	NI	0,702	0,206	4,323
Total:			0,09		11,53	8,09	92,2						10,206	2,435	61,04

NI: No information

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

(2) Suspended particulate matter

* 1990 data, since the basis for calculation remained unchanged.

Table 6a. Riverine inputs to the maritime area in 2003 by Ireland

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]	TKN (2) [t]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM (3) [kt]
	2002		LTA														
Irish Sea: Boyne	2536		3345	0,093 0	NM	2,427 2,306	2,166 1,687	10,17 10,17	NM	NM	0,032 0,032	2,7118	NM	0,05434 0,05434	3,221	0,096	16,963
Irish Sea: Liffey	1062		1544	0,039 0	NM	0,848 0,768	0,881 0,646	28,24 28,24	NM	NM	0,03 0,03	0,831	NM	0,02164 0,02164	0,984	0,032	3,3112
Irish Sea: Avoca	0		1749	0 0	NM	0 0	0 0	0 0	NM	NM	0 0	0	NM	0 0	0	0	0
Irish Sea: Slaney	2204		2867	0,112 0,058	NM	1,821 1,723	1,45 0,928	8,41 8,41	NM	NM	0,029 0,028	3,3115	NM	0,03936 0,03916	3,759	0,115	31,455
Total Irish Sea:	5802			0,243 0,058		5,096 4,797	4,497 3,26	46,82 46,82			0,09 0,089	6,8543		0,11534 0,11514	7,963	0,242	51,729
Celtic Sea: Barrow	2988		3846	0,109 0	NM	2,081 1,96	1,459 0,577	11,01 11,01	NM	NM	0,045 0,044	4,2156	NM	0,06653 0,06653	5,147	0,136	25,503
Celtic Sea: Nore	2575		3705	0,094 0	NM	1,626 1,318	1,308 0,875	7,369 7,369	NM	NM	0,052 0,052	2,3786	NM	0,07035 0,07028	3,129	0,146	30,676
Celtic Sea: Suir	4916		6623	0,159 0	NM	3,056 2,666	2,166 1,355	15,91 17,71	NM	NM	1,088 1,094	3,7632	NM	0,13037 0,1407	5,694	0,298	38,619
Celtic Sea: Blackwater	3495		7231	0,128 0	NM	2,831 2,536	3,23 2,908	16,14 16,14	NM	NM	0,11 0,108	3,9046	NM	0,06862 0,0686	5,036	0,13	10,733
Celtic Sea: Lee	2372		3476	0,087 0	NM	1,45 1,237	2,084 1,629	4,478 4,478	NM	NM	0,022 0,021	1,8479	NM	0,02207 0,02207	2,294	0,044	5,4764
Celtic Sea: Bandon	1428		1820	0,052 0	NM	1,044 0,956	0,956 0,649	3,194 3,207	NM	NM	0,015 0,014	1,5982	NM	0,01926 0,01926	1,911	0,032	3,7893
Celtic Sea: Deel	416		637	0,015 0	NM	0,329 0,308	0,177 0,063	1,255 1,255	NM	NM	0,014 0,014	0,3587	NM	0,01464 0,01464	0,457	0,023	2,0264
Celtic Sea: Maigue	1004		1423	0,037 0	NM	0,778 0,685	0,367 0	2,088 2,088	NM	NM	0,012 0,011	0,7927	NM	0,02891 0,02891	0,965	0,041	2,6419
Celtic Sea: Shannon (old channel)	2588	combined 16381	NA	0,094 0	NM	2,382 2,284	1,101 0,432	9,781 9,781	NM	NM	0,038 0,038	1,0187	NM	0,03 0,03	1,519	0,051	7,9686
Celtic Sea: Shannon (tailrace)	13793		NA	0,503 0	NM	8,726 7,049	6,385 2,702	67,45 66,55	NM	NM	0,11 0,08	5,25	NM	0,10 0,09	7,835	0,171	32,021
Celtic Sea: Fergus	1068		1607	0,055 0	NM	1,44 1,193	0,551 0	3,28 3,28	NM	NM	0,065 0,065	0,376	NM	0,01827 0,01827	0,721	0,033	4,2931
Total Celtic Sea:	36642,78			1,332 0		25,74 22,19	19,78 11,19	142 142,9			1,575 1,538	25,5		0,56145 0,57161	34,71	1,104	163,75

Table 6a. Continued

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]	TKN (2) [t]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM (3) [kt]
	2002		LTA														
Atlantic: Corrib	6344		9055	0,232 0	NM	3,103 1,41	2,315 0	9,727 9,727	NM	NM	0,03 0,015	1,562	NM	0,01913 0,01073	2,316	0,057	14,489
Atlantic: Moy	4065		5312	0,148 0	NM	2,332 1,033	1,484 0	5,381 5,07	NM	NM	0,022 0,016	0,613	NM	0,01521 0,0111	1,184	0,034	10,857
Atlantic : Erne	2536		8786	0,093 0	NM	2,294 2,294	0,926 0	4,419 4,376	NM	NM	0,009 0,001	0,5594	NM	0,04258 0,04258	1,086	0,062	5,5403
Total Atlantic:	12944,57			0,472 0		7,729 4,738	4,725 0	19,53 19,17			0,061 0,033	2,7345		0,07693 0,06441	4,586	0,153	30,887
Grand total:				2,048 0,058		38,57 31,73	29,01 14,45	208,3 208,9			1,726 1,659	35,089		0,75372 0,75116	47,26	1,499	246,36

LTA: Long-term average flow

NI: No information

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

(2) Organic-N (Kjeldahl)

(3) Suspended particulate matter

Table 6b. Riverine inputs to the maritime area in 2003 by Ireland

Inputs of tributary rivers		Quantities --->													
Discharge area	Catchment Areas	Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	TKN (2) [t]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM (3) [kt]
Irish Sea	48 minor catchment areas: 4500 km2	0,252 0,108	NM	7,35 7,183	8,464 7,53	33,02 33,02	NM	NM	0,148 0,148	5,2553	NM	0,09785 0,09776	6,218	0,183	73,558
Celtic Sea	100 minor catchment areas: 9800 km2	0,499 0	NM	10,22 8,995	10,51 8,014	41,78 42,12	NM	NM	0,483 0,476	12,394	NM	0,21926 0,2211	15,96	0,412	43,248
Atlantic	180 minor catchment areas: 11498 km2	0,664 0	NM	11,67 7,025	6,635 0	28,18 27,46	NM	NM	0,205 0,178	3,5713	NM	0,1086 0,0933	6,389	0,218	46,633
Total:		1,415 0,108		29,24 23,37	25,61 16,48	103 102,6			0,837 0,802	21,221		0,42572 0,41216	28,56	0,813	163,44

NI: No information

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

(2) Organic-N (Kjeldahl)

(3) Suspended particulate matter

Table 6c. Riverine inputs to the maritime area in 2003 by Ireland

Total 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]	TKN (2) [t]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM (3) [kt]
Irish Sea	(upper estimate)	0,50		12,4	13,0	79,8			0,2	12,1		0,21	14,2	0,42	125,3
	(lower estimate)	0,17		12,0	10,8	79,8			0,2			0,21			
Celtic Sea	(upper estimate)	1,83		36,0	30,3	183,7			2,1	37,9		0,78	50,7	1,52	207,0
	(lower estimate)	0,00		31,2	19,2	185,0			2,0			0,79			
Atlantic	(upper estimate)	1,14		19,4	11,4	47,7			0,3	6,3		0,19	11,0	0,37	77,5
	(lower estimate)	0,00		11,8	0,0	46,6			0,2			0,16			
Total: (upr est)		3,46		67,8	54,6	311,3			2,6	56,3		1,18	75,8	2,31	409,8
Total: (lr est)		0,17		54,9	30,0	311,5			2,5			1,16			

NI: No information

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

(2) Suspended particulate matter

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

2003

Main riverine inputs			Contaminant Concentrations --->														
Discharge area	Flow rate [1000 m³/d]		Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [mg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	TKN [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
	annual	LTA															
Irish Sea: Boyne - 2003	2433	3345	Median	<0.1	NM	2	<1.0	0,008	NM	NM	0,02	2,27	NM	0,063	3,2	0,082	10
Minimum				<0.1		<1.0	<1.0	0,005			<0.01	1,66		0,015	2,22	0,042	8,8
Maximum				<0.1		4	6	0,024			0,06	4,65		0,11	5,81	0,22	53,4
> 70 % > d.L. ?			yes/no	no		no	no	yes			yes	yes		yes	yes	yes	no
n				21		21	21	21			21	21		21	21	21	21
Irish Sea: Liffey - 2003	1044	1544	Median	<0.1	NM	1,7	<1.0	0,013	NM	NM	0,07	2,44	NM	0,056	2,6	0,085	9,4
Minimum				<0.1		<1.0	<1.0	0,005			0,018	1,56		0,024	2,05	0,058	<5.0
Maximum				<0.1		4,6	9	0,88			0,1	2,65		0,12	3,63	0,14	18,4
> 70 % > d.L. ?			yes/no	no		no	no	yes			yes	yes		yes	yes	yes	no
n				15		15	15	15			15	15		15	15	15	15
Irish Sea: Avoca - 2003	1746	1748	Median	0,4	NM	15	6	0,129	NM	NM	0,12	1,50	NM	<0.01	2,06	0,029	10
Minimum				0,2		7	0,62	0,074			<0.01	1,02		<0.01	1,56	0,011	4,6
Maximum				0,65		28,3	7,9	0,237			0,449	2,75		0,024	2,67	0,1	10
> 70 % > d.L. ?			yes/no	yes		yes	yes	yes			yes	yes		no	yes	yes	no
n				18		18	18	18			18	18		18	18	18	18
Irish Sea: Slaney - 2003	1758	2867	Median	<0.1	NM	1,4	<1.0	0,006	NM	NM	0,021	3,645	NM	0,024	4,52	0,041	10
Minimum				<0.1		<1.0	<1.0	0,005			<0.01	2,83		<0.01	3,94	0,011	<5.0
Maximum				0,22		3,9	3,4	0,017			0,083	5,89		0,098	5,34	0,217	105
> 70 % > d.L. ?			yes/no	no		no	no	yes			yes	yes		yes	yes	yes	no
n				14		14	14	14			14	14		14	14	14	14
Celtic Sea: Barrow - 2003	3319	3846	Median	<0.1	NM	1,8	<1.0	0,008	NM	NM	0,037	3,265	NM	0,05	4,97	0,078	10
Minimum				<0.1		<1.0	<1.0	0,005			<0.01	2,55		0,008	4,14	0,046	<5.0
Maximum				<0.1		2,6	3,8	0,014			0,067	5,49		0,091	5,43	0,217	55
> 70 % > d.L. ?			yes/no	no		yes	no	yes			yes	yes		yes	yes	yes	no
n				14		14	14	14			14	14		14	14	14	14
Celtic Sea: Nore - 2003	2890	3705	Median	<0.1	NM	<1.0	<1.0	0,006	NM	NM	0,038	2,88	NM	0,042	3,62	0,073	10
Minimum				<0.1		<1.0	<1.0	0,004			<0.01	1,52		<0.01	2,77	0,039	<5.0
Maximum				<0.1		2,4	1,9	0,012			0,12	4,24		0,112	4,43	0,26	63
> 70 % > d.L. ?			yes/no	no		no	yes	yes			yes	yes		yes	yes	yes	no
n				21		21	21	21			21	21		21	21	21	21
Celtic Sea: Suir - 2003	5028	6633	Median	<0.1	NM	<1.0	<1.0	0,007	NM	NM	0,07	2,40	NM	0,049	3,09	0,077	10
Minimum				<0.1		<1.0	<1.0	0,003			<0.01	1,68		<0.01	2,65	0,017	<5.0
Maximum				<0.1		2,8	2	0,019			1,86	3,37		0,155	4,67	0,472	54
> 70 % > d.L. ?			yes/no	no		no	no	yes			yes	yes		yes	yes	yes	no
n				21		21	21	21			21	21		21	21	21	21
Celtic Sea: Blackwater - 2003	5426	7231	Median	<0.1	NM	2	2	0,012	NM	NM	0,016	2,98	NM	0,042	3,81	0,07	10
Minimum				<0.1		<1.0	<1.0	0,005			<0.01	2,37		<0.01	3,21	0,025	<5.0
Maximum				<0.1		6,3	8	0,038			0,32	4,05		0,103	4,83	0,19	13
> 70 % > d.L. ?			yes/no	no		no	yes	yes			yes	yes		yes	yes	yes	no
n				21		21	21	21			21	21		21	21	21	21
Celtic Sea: Lee - 2003	2531	3476	Median	<0.1	NM	1	<1.0	0,004	NM	NM	0,02	1,96	NM	0,028	2,53	0,043	<5.0
Minimum				<0.1		<1.0	<1.0	0,001			<0.01	1,46		0,015	1,77	0,025	<5.0
Maximum				<0.1		4	9	0,009			0,05	3,16		0,048	3,94	0,079	10
> 70 % > d.L. ?			yes/no	no		no	no	yes			yes	yes		yes	yes	yes	no
n				21		21	21	21			21	21		21	21	21	21
Celtic Sea: Bandon - 2003	1795	1820	Median	<0.1	NM	1,6	<1.0	0,006	NM	NM	0,02	3,39	NM	0,042	3,67	0,066	<5.0
Minimum				<0.1		<1.0	<1.0	0,001			<0.01	2,21		0,022	2,7	0,024	<5.0
Maximum				<0.1		4	13	0,016			0,05	4,16		0,052	4,67	0,081	32
> 70 % > d.L. ?			yes/no	no		no	no	yes			yes	yes		yes	yes	yes	no
n				21		21	21	21			21	21		21	21	21	21
Celtic Sea: Deel - 2003	492	637	Median	<0.1	NM	2	<1.0	0,009	NM	NM	0,04	2,29	NM	0,096	3,07	0,153	10
Minimum				<0.1		<1.0	<1.0	0,002			<0.01	0,775		0,032	1,82	0,089	<5.0
Maximum				<0.1		3	2	0,015			0,3	3,15		0,31	3,65	0,36	24,4
> 70 % > d.L. ?			yes/no	no		yes	no	yes			yes	yes		yes	yes	yes	no
n				12		12	12	12			14	14		14	14	14	14
Celtic Sea: Maigue - 2003	880	1423	Median	<0.1	NM	1,9	<1.0	0,005	NM	NM	0,012	2,08	NM	0,089	2,495	0,12	9,4
Minimum				<0.1		<1.0	<1.0	0,002			<0.01	1,18		0,042	1,5	0,044	<5.0
Maximum				<0.1		3	<1.0	0,01			0,06	2,48		0,18	2,97	0,19	10
> 70 % > d.L. ?			yes/no	no		no	no	yes			no	yes		yes	yes	yes	no
n				14		14	14	14			16	16		16	16	16	16

Celtic Sea: Shannon** - 2003 (old channel)	2279	NA	Median	<0.1	NM	2	<1.0	0,01	NM	NM	0,035	1,03	NM	0,029	1,61	0,048	10
Minimum				<0.1		<1.0	<1.0	0,004			0,026	0,623		0,012	1,03	0,017	<5.0
Maximum				<0.1		10	3	0,018			0,06	1,45		0,042	1,91	0,13	15,8
> 70 % > d.L. ?			yes/no	no	yes	yes	no	yes			yes	yes	yes	yes	yes	yes	no
n				20		20	20	20			23	23		23	23	23	23
Celtic Sea: Shannon** - 2003 (tailrace)	11002	NA	Median	<0.1	NM	2	<1.0	0,007	NM	NM	<0.01	1,105	NM	0,017	1,35	0,032	7,5
Minimum				<0.1		<1.0	<1.0	0,001			<0.01	0,51		0,008	0,96	0,016	<5.0
Maximum				<0.1		2,8	3	0,079			0,11	607		0,033	1,85	0,061	10
> 70 % > d.L. ?			yes/no	no	no	no	no	yes			no	yes	yes	yes	yes	yes	no
n				21		21	21	21			24	24		24	24	24	24
Celtic Sea: Fergus - 2003	1213	1607	Median	<0.1	NM	2,5	<1.0	0,006	NM	NM	0,082	0,59	NM	0,039	1,34	0,051	9
Minimum				<0.1		<1.0	<1.0	0,002			0,04	0,131		0,013	1,02	0,033	<5.0
Maximum				<0.1		10,9	<1.0	0,016			0,539	0,95		0,16	2	0,24	23
> 70 % > d.L. ?			yes/no	no	yes	yes	no	yes			yes	yes	yes	yes	yes	yes	no
n				14		14	14	14			16	16		16	16	16	16
Atlantic: Corrib - 2003	6823	9055	Median	<0.1	NM	<1.0	<1.0	0,005	NM	NM	<0.01	0,43	NM	<0.01	0,78	0,019	<5.0
Minimum				<0.1		<1.0	<1.0	0,002			<0.01	0,01		<0.01	0,71	0,006	<5.0
Maximum				<0.1		3	<1.0	0,02			0,02	1,13		0,017	1,55	0,133	10
> 70 % > d.L. ?			yes/no	no	no	no	no	yes			no	yes	no	no	yes	yes	no
n				21		21	21	21			15	15		15	18	21	21
Atlantic: Moy - 2003	4311	5312	Median	<0.1	NM	<1.0	<1.0	0,004	NM	NM	<0.01	0,358	NM	0,01	0,89	0,023	7
Minimum				<0.1		<1.0	<1.0	0,001			<0.01	0,207		<0.01	0,64	0,011	<5.0
Maximum				<0.1		10	<1.0	0,009			0,03	0,51		0,017	0,98	0,035	10
> 70 % > d.L. ?			yes/no	no	no	no	no	yes			no	yes	yes	no	yes	yes	no
n				21		21	21	21			15	15		15	18	21	21
Atlantic : Erne - 2003	6560	8786	Median	<0.1	NM	2	<1.0	0,003	NM	NM	<0.01	0,6	NM	0,045	1,07	0,056	<5.0
Minimum				<0.1		2	<1.0	0,001			<0.01	0,491		0,026	0,94	0,039	<5.0
Maximum				<0.1		4,1	<1.0	0,009			0,01	0,69		0,057	1,37	0,098	10
> 70 % > d.L. ?			yes/no	no	yes	yes	no	yes			no	yes	yes	yes	yes	yes	no
n				21		21	21	21			15	15		15	18	21	21

LTA: Long-term average flow

NI: No information

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

(2) Organic-N (Kjeldahl)

(3) Suspended particulate matter

NB: ** The bulk of the flow of the river Shannon is diverted to a hydroelectricity generating facility a short distance above the estuary. Sampling was carried out in the Old Channel below the diversion point and in the tailrace of the power station.

THE NETHERLANDS

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003 by the Netherlands

Table 5a	Sewage effluents (direct discharges) to the maritime area in 2003 by the Netherlands
Table 5b	Industrial effluents (direct discharges) to the maritime area in 2003 by the Netherlands
Table 6a	Main riverine inputs to the maritime area in 2003 by the Netherlands
Table 6b	Tributary riverine inputs to the maritime area in 2003 by the Netherlands
Table 7a	Contaminant concentrations of rivers in the Netherlands discharging to the maritime area in 2003 (Maasssluis, Haringvlietsluis, IJsselmeer, Noordzeekanaal)
Table 8	Detection limits for contaminant concentrations of inputs from the Netherlands to the maritime area
Table 9	Catchment-dependent information (flow rates, long term average flow rates) in 2003 by the Netherlands

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003 by the Netherlands

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 polder effluents/canals) included in the data report

Country: The Netherlands	
Name of river, subarea and discharge area	Nature of the receiving water
Spuikanaal Bath, Kanaal Gent-Terneuzen, polder effluents Westerschelde (Wielingen included)	Western Scheldt Estuary
Oosterschelde (Krammersluizen), polder effluents Oosterschelde	Southern Delta Coast
Haringvlietsluizen, Maassluis (Nieuwe Waterweg)	Northern Delta Coast
Noordzeekanaal, gemaal Katwijk (Oude Rijn) and polder effluents Closed Holland Coast (gemalen Scheveningen and Vlotwatering)	Closed Holland 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)	Wadden Coast
Polder effluents/canals Ems-Dollard (Damsterdiep, Duurswold, Eemskanaal, Nieuwe Statenzijl, Termunsterzijl)	Ems Dollard estuary

B. Total riverine inputs and direct discharges for the year 2003

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

- *Riverine Input data: including loads from countries upstream*
- *See comments at C.1 on PCBs and lindane in sewage effluents*

C. Direct discharges for the year 2003

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*
- *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 to 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*

** Industrial effluents partly concern 2000 figures*

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.:

None

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 2003

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:

** Method: see paragraph 5.11 of the Principles*

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):

** Method: see paragraph 5.11 of the principles*

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

None

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):

None

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:

None

E. Limits of detection

E.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.

F. National Comment

F.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.

2003 has been a very dry year which has led to significantly lower inputs for all substances

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

For the Northern Delta coast industrial and sewage effluents “downstream” (as far as can be spoken of downstream in a tidal zone) of Maassluis (main river input) are included this year. This leads to an increase of about 10 to 20 % of the total North sea industrial and sewage effluent input.

The sewage effluents for the Ems-Dollard have been falsely attributed in the past, they all should be attributed to the Waddencoast. This has been corrected for 2003 (and can be corrected for past years).

F.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”. After several requests no data were received (yet).

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2003 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	0,010	0,0051	1,51	0,35	4,82			0,16		4,12	0,12	2,63
226	Wadden Coast*	lower upper comment	0,00042	0,00026	0,018	0,013	0,14			0,010		0,021	0,0049	0,032
222	Western Schelde	lower upper comment	0,016	0,0043	0,74	0,36	3,52			0,28		0,54	0,087	0,75
153	Northern Delta Coast**	lower upper comment	0,00063	0,00024	0,050	0,017	0,49			0,042		0,083	0,024	0,044
223	Southern Delta Coast	lower upper comment	0,00010	0,00025	0,015	0,0038	0,11			0,016		0,024	0,0082	0,077
82	North Sea (NL)	lower upper comment	0,027	0,010	2,333	0,744	9,080	0,000	0,000	0,000	0,508	0,000	4,788	0,244 3,533

* used to be Ems Dollard, but the RWZI were falsely attributed. They all contribute to the Waddensea

** New, before not taken into account

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2003 by the Netherlands

		1 Cd	5 Hg	6 Cu	2 Pb	7 Zn	8 g-HCH	9 PCB	10 NH4-N	11 NO3-N	12 PO4-P	13 Total N	14 Total P	3	
		[t]	[t]	[t]	[t]	[t]	[kg]	[kg]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	
224	Closed Holland Coast	lower upper comment	0,01	0,00	0,20	0,32	1,77	0	0		0,22		0,61	0,01	3,135
226	Ems Dollard Estuary	lower upper comment	0,12	0	0,68	1,89	14,02	0	0		0,03		0,18	0,00	16,93
225	Wadden Coast	lower upper comment	0	0,00	0,00	0	0,00	0	0		0,01		0,018	0,01	0,036
222	Western Schelde	lower upper comment	0,09	0,01	0,38	0,05	3,04	0	0		0,26		0,43	0,13	4,394
153	Northern Delta Coast *	lower upper comment	0,01	0,00	0,25	0,13	0,96	0	0		0,04		0,22	0,05	1,663
82	North Sea (NL)	lower upper comment	0,22	0,02	1,51	2,393	19,79	0	0		0,56		1,458	0,20	26,15

* new, before not taken into account

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 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 upper comment	0,082	0,009	10,503	1,58	25,6	2		0,53	4,8	0,5	7,84	0,6	15,3
224	Closed Holland Coast	lower upper comment	0,082	0,009	10,503	1,58	25,6	2	0	0,53	4,8	0,5	7,84	0,63	15,3
157	Ijsselmeer	lower upper comment	0,511	0,132	31,126	15,04	68,7	7	3	0,791	16,36	0,219	34,06	1,37	259,1
225	Wadden Coast	lower upper comment	0,511	0,132	31,126	15,04	68,7	7	3	0,791	16,36	0,219	34,06	1,37	259,1
154	Haringvlietsluizen	lower upper comment	1,12	0,2	68,5	35,7	241,4	17	20	1,971	13,3	1,34	39,7	2,676	216
155	Maasluis	lower upper comment	1,65	0,686	112,4	5,47	107,51	33	34	4,725	83,35	2,856	107,2	5,08	622
153	Northern Delta Coast	lower upper comment	2,77	0,886	180,9	41,17	348,91	50	54	6,696	96,65	4,196	146,9	7,756	838
82	North Sea (NL)	lower upper comment	3,363	1,027	222,53	57,79	443,21	59	57	8,017	117,81	4,915	188,8	9,756	1112

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 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]
259	Katwijk	lower upper comment	0 0,021	0,0023 0,005	1,05 1,05		3,35 3,35	0,32 0,32		0,11 0,11	0,44 0,44	0,1 0,1	0,86 0,86	0,1 0,1	1,56 1,8
258	Scheveningen	lower upper comment													
257	Vlotwatering	lower upper comment													
224	Closed Holland Coast	lower upper comment	0,021	0,005	1,05	0	3,35	0,32	0	0,11	0,44	0,1	0,86	0,1	1,8
280	Damsterdiep	lower upper comment	0,003	0,002	0,150	0,080	1,541			0,014	0,096	0,019	0,225	0,027	1,023
266	Duurswold	lower upper comment	0,010	0,002	0,173	0,085	1,510			0,029	0,148	0,003	0,305	0,008	1,012
267	Eemskanaal	lower upper comment	0,011	0,006	0,433	0,225	4,069			0,188	0,574	0,012	1,134	0,036	2,684
268	Nieuwe Statenzijl	lower upper comment	0,016	0,006	0,734	0,325	3,360			0,183	0,452	0,012	1,069	0,034	4,592
281	Termunsterzijl	lower upper comment	0,006	0,002	0,149	0,133	0,819			0,028	0,117	0,003	0,303	0,012	1,917
226	Ems Dollard Estuary	lower upper comment	0,067	0,022	2,689	0,848	14,649	0,320		0,552	1,827	0,149	3,896	0,217	13,028
261	De Helder	lower upper comment	0,042	0,010	0,733	1,047	3,454	2,093		0,090			0,579	0,153	5,390
265	Harlingen/Van Harlingen	lower upper comment	0,007	0,003	0,500	0,382	1,111	0,174	0,743	0,042	0,180	0,032	0,415	0,053	4,234
263	Krassiekreet/Texel	lower upper comment	0,008	0,001	0,242	0,211	0,453	0,421		0,024	0,069	0,007	0,168	0,030	1,495
264	Lauwersmeer	lower upper comment	0,061	0,025	3,091	1,858	29,843			0,300	1,047	0,242	3,976	0,417	20,271
287	Roptazijl	lower upper comment	0,002	0,000	0,050	0,062	1,020	0,024	0,105	0,007	0,016	0,007	0,051	0,011	0,606
262	Spuisluis Oostvoeren	lower upper comment	0,016	0,006	0,177	0,392	1,462	0,785		0,015			0,200	0,031	1,608
285	Wieringermeer	lower upper comment	0,032	0,023	0,500	0,604	2,781	1,209		0,139	0,055	0,023	0,576	0,042	3,316
286	Zwarte Haan	lower upper comment	0,001	0,000	0,059	0,068	0,207	0,025	0,106	0,007	0,016	0,000	0,049	0,009	0,810
225	Wadden Coast	lower upper comment	0,169	0,069	5,351	4,624	40,330	4,730	0,953	0,623	1,384	0,311	6,015	0,746	37,730
290	Polder Effluents Westerschelde	lower upper comment	0,363	0,014	1,726	3,637	5,269			0,26	2,712	0,129	3,636	0,231	7,186
289	Kanaal Gent - Terneuzen	lower upper comment	0,058	0,0048	3,131	1,001	16,238			0,904	4,147	0,436	6,023	0,554	5,165
288	Spuikanaal Bath	lower upper comment	0,0038	0,0004	0,564	0,146	1,015			0,044	0,588	0,016	0,876	0,029	1,458
	Gemaal Wielingen	lower upper comment	0,038	0,0014	0,181	0,378	0,55			0,027	0,287	0,013	0,382	0,023	0,746
222	Western Schelde	lower upper comment	0,4628	0,0206	5,602	5,162	23,072	0	0	1,235	7,734	0,594	10,917	0,837	14,555
153	Northern Delta Coast	lower upper comment													
260	Oosterschelde - Kraai	lower upper comment	0,0068	0,0011	1,082	0,215	1,016			0,041	0,549	0,037	0,943	0,049	2,882
283	Polder Effluents Oosterschelde	lower upper comment	0,189	0,0091	0,94	1,979	3,495			0,217	0,024	0,079	1,711	0,14	5,243
223	Southern Delta Coast	lower upper comment	0,1958	0,0102	2,022	2,194	4,511	0	0	0,258	0,573	0,116	2,654	0,189	8,125
82	North Sea (NL)	lower upper comment	0,915	0,127	16,714	12,828	85,912	5,370	0,953	2,779	11,958	1,270	24,342	2,089	75,238

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 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	2,8	0,1	0,1	30	0,06	0,98	0,042	1,38	0,09	1,7
		maximum	0,07	0,011	9	1,8	36	61,4	0,21	2,91	0,362	4,71	0,36	19,9
		more than 70% > D.L.												
157	Ijsselmeer	n	13	13	13	13	13	14	13	13	13	13	13	13
		info												
		st.Dev.			1,6			10,2	0,16	0,64	0,09	1,03	0,09	
		lower												
		upper												
154	Haringvlietsluizen	minimum	0,05	0,001	1,3	0,20	0,05	6,7	0,02	0,01	0,006	1,31	0,03	3,2
		maximum	0,08	0,034	3,9	2,70	15,00	57,5	0,28	3,50	0,057	5,00	0,22	62,1
		more than 70% > D.L.												
		n	13	13	12	13	13	13	16	16	16	16	16	16
		info			0,8	0,8			0,06		0,013	1,04	0,05	15,5
155	Maasluis	st.Dev.												
		lower												
		upper												
		minimum	0,05	0,006	2,4	0,09	0,05	29,1	0,06	1,28	0,022	1,48	0,01	5,1
		maximum	0,20	0,062	6,9	6,20	35,00	118,6	0,24	3,40	0,125	4,60	0,26	106,3
155	Maasluis	more than 70% > D.L.												
		n	27	27	26	27	27	13	27	27	27	27	27	27
		info												
		st.Dev.		0,013	1,2	1,38		1	21,6	0,04	0,68	0,028	0,91	0,05
		lower												

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 2003 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	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	Vlietwatering	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	Krasskeet/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	Haringvlietstuizen	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	Maasluiz	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 2003 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	413		0	4666			
282	Noordzeekanaal	6826	8200					
258	Scheveningen							
257	Vlotwatering							
224	Closed Holland Coast	7239						
280	Damsterdiep	142						
266	Duurswold	176						
267	Eemskanaal	474						
268	Nieuwe Statenzijl	614						
281	Termunsterzijl	180						
226	Ems Dollard Estuary	1586						
261	De Helsdeur	573						
265	Harlingen/Van Harinxmakanaal	380						
157	Ijsselmeer	34301	43200					
263	Krassekreet/Texel	115						
264	Lauwersmeer	3085						
287	Roptazijl	54						
262	Spuisluis Oostoever	215						
285	Wieringermeer	331						
286	Zwarte Haan	54						
225	Wadden Coast	39109						
290	Polder Effluents Westerschelde	996						
289	Kanaal Gent - Terneuzen	2074						
288	Spuikanaal Bath	421						
	Gemaal Wielingen	103						
222	Western Schelde	3594						
154	Haringvlietsluizen	49075	67800					
155	Maasluis	94349	115300					
153	Northern Delta Coast	143424	183100					
260	Oosterschelde (Krammersluis)	745						
283	Polder Effluents Oosterschelde	517						
223	Southern Delta Coast	1262						
82	North Sea (NL)	196214						

Annex 7

NORWAY

Table 5a	Sewage effluents. Reported Maritime Area of the OSPAR Convention in 2003 by Norway
Table 5b	Industrial effluents. Reported Maritime Area of the OSPAR Convention in 2003 by Norway
Table 6a	Main riverine inputs. Reported Maritime Area of the OSPAR Convention in 2003 by Norway
Table 6b	Tributary inputs. Reported Maritime Area of the OSPAR Convention in 2003 by Norway
Table 7	Contaminant concentrations. Reported Maritime Area of the OSPAR Convention in 2003 by Norway
Table 8	Detection limits
Table 9	Catchment dependent information
Table 10	Fish farming effluents reported Maritime Area of the OSPAR Convention in 2003 by Norway

Annual report on riverine inputs and direct discharges Norway to Convention waters during the year 2003

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: Norway				
Name of river, subarea and discharge area ¹	Catchment area (km ²)	LTA, 1000 m ³ /day	Nature of the receiving water ²	optional: map reference number
Skagerrak:				
(1) Glomma	41918	61350	Coastal water	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
The remaining North Sea:				
(6) Orreelva	105	335	Coastal water	M711: 1212-3
(7) Suldalslågen	1457	7420	"	1313-4
The Norwegian Sea:				
(8) Orkla	3053	5710	Coastal water	M711: 1521-2
(9) Vefsna	4122	15655	"	1926-3
The Barents Sea:				
(10) Alta	7373	7495	Coastal water	M711: 1834-1

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

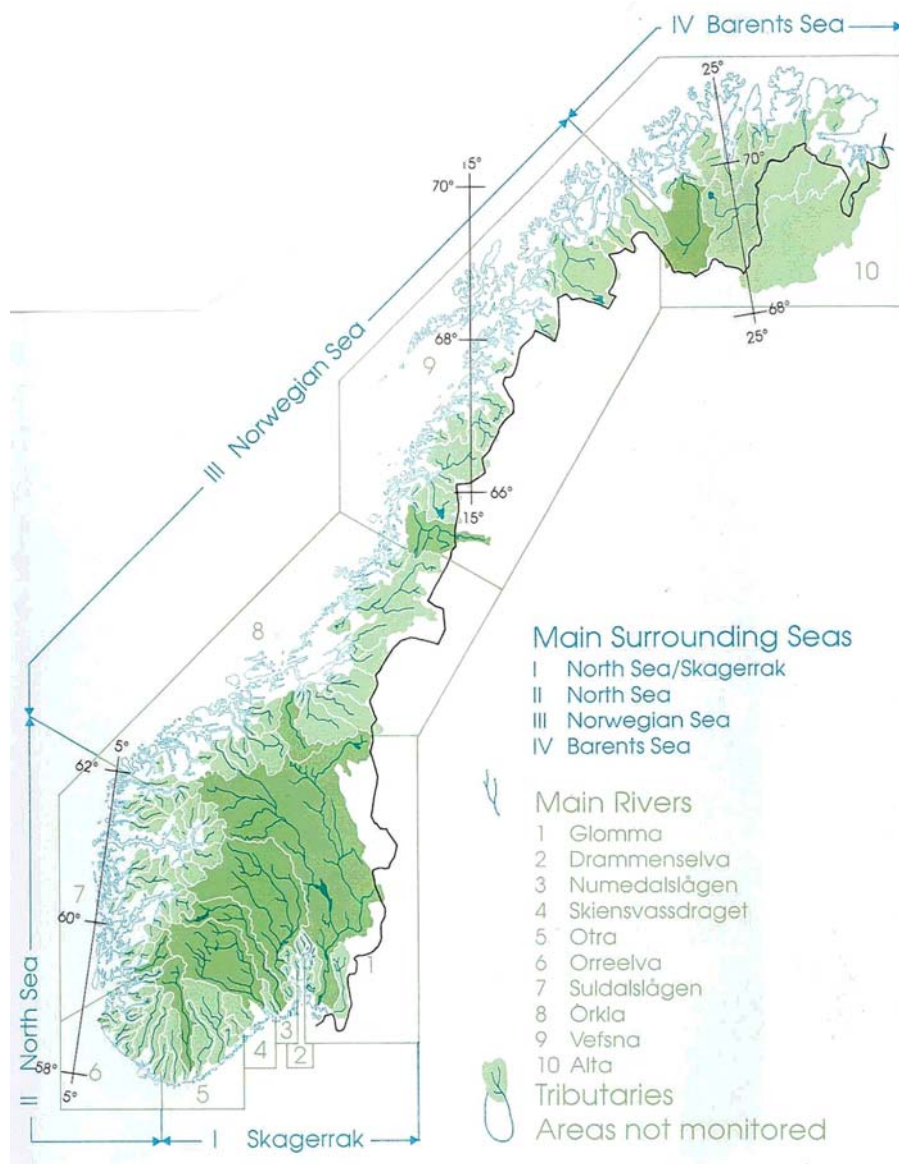


Figure 1. Norway divided into four Discharge Areas. Main Rivers and Tributaries with Drainage Basins.

B. Total riverine inputs and direct discharges for the year 2003

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

The results for 2003 are given for riverine inputs of 10 main rivers and 126 tributaries. The Norwegian coastline is divided into four areas, Skagerrak, Remaining North Sea, Norwegian Sea and Barents Sea. The numbers of rivers are the same as in 2002, a reduction of 19 tributaries compared to earlier years. All tributaries in this report are rivers with minor catchments and separate outlet from main rivers. The active monitoring programme covers drainage from approximately 72 per cent of the main land areas. For discharges entering directly into marine recipients, i.e. sewage and industrial effluents and from aquaculture plants, estimates are based on data from effluent control programmes. Runoff of Total phosphorus, Total nitrogen, phosphates, nitrates and ammonia from coastal zones downstream from RID monitoring points are estimated by use of area specific runoff coefficients.

The greatest emphasis with regard to accuracy has been given to the input estimate of the Skagerrak region, as this is the part of the Norwegian coastline with the highest population, the most intensive agriculture, the biggest rivers and the coastline is classified as a problem area with regard to eutrophication.

According to the results of the 2003 investigation total annual nutrient loads to coastal waters from landbased sources in Norway are found to be 8500 tonnes of phosphorus and 116100 tonnes of nitrogen. This is a decrease of ca 20% for phosphorous compared to 2002 and about the same amount of nitrogen as in 2002. The loading from fish farming contributes to about 61 per cent of the total phosphorous loading and 21 per cent of the total nitrogen loading. Riverine inputs of metals and lindane are low. Some concentrations found for heavy metals and lindane were lower than the detection limit requested from OSPAR. Therefore, two quantities have been estimated: one assuming that the true concentration is zero and the other assuming that the true concentration is the limit of detection. This provides maximum and minimum concentrations between which lies the true estimate. When evaluating inputs these data provide a basis for upper and lower estimates.

Inputs of cadmium are thus measured/calculated to be between 1.4 and 2.8 tonnes, mercury between 2.3-2.4 tonnes, arsenic 19-23 tonnes, total chromium 36-38 tonnes, lead 34-35 tonnes and nickel 93-107 tonnes. Copper and zinc comprised the largest inputs of heavy metals which in 2003 amounted to 183 and 486-509 respectively. In general riverine inputs of nearly all heavy metals were lower than in 2002. The pesticide lindane was found in most samples, but in very small concentrations. It is assumed that lindane contamination in Norwegian rivers is due to long range transboundary air pollution. Total load is estimated to about 25 kg.

Retention of nutrients and micropollutants in the many sill fjords of Norway is not included in the above given input figures. Estimates of retention of these substances would presumably reduce the actual input to open marine waters.

C. Direct discharges for the year 2002

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:

Statistics Norway (SSB) and Norwegian Pollution Control Authority (SFT) have jointly initiated annual registration of data 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 program KOSTRA has been used for the reporting of effluent data from the municipalities directly to SSB. Discharge figures from KOSTRA are used in the model "TEOTIL" to calculate the total discharges of total phosphorus, ammonia, nitrates, orthophosphates and total nitrogen from different sources to Norwegian coastal waters. Norwegian Institute for Water Research (NIVA) has performed this modelling. The figures take into account retention in water courses.

In 2003, 2285 wastewater treatment plants with a hydraulic capacity of at least 50 p.e. were registered in Norway (SSB, 2003). This is 210 less than in 2002 and 354 less than in 2001 due to fusion of treatment plants to larger units. 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.

Preferably, the annual loads from municipal wastewater effluents have been estimated as the product of annual flow and flow-weighted concentrations. For the rest of the municipal wastewater, the loads were estimated by multiplying the number of people with Norwegian per capita loads.

For raw (untreated) wastewater discharges, the document “Principles of the Comprehensive Study of Riverine Inputs and Direct Discharges” (Paris Commission, 1988), recommends the derived per capita loads listed in Table 7 to be used.

The Norwegian per capita loads are based on studies of Norwegian sewerage districts (SFT, 1995). These data are also used to calculate pollutional loads from the different treatment plants, reduced by the removal efficiency of the treatment plants. Municipal wastewater also includes a portion of industrial effluents. The fraction of the total person equivalents (p.e.) is proportioned between sewage and industrial wastewater according to the number of persons and the size of industrial effluents connected to each treatment plant.

Table 1. Per capita loads used for estimation of untreated sewage discharges.

Parameter	Parcom	Norway
BOD (kg O/person/day)	0.063	0.060 ¹⁾
COD (kg O/person/day)		0.120
TOC (kg TOC /person/day)		0.023
S.P.M. (kg S.P.M./person/day)	0.063	0.042
Tot-N (kg N/person/day)	0.009	0.012
Tot-P (kg P/person/day)	0.0027	0.0016

1) Average value of max. 5 days

The metal loads are estimated on the basis of measured concentrations in effluents from 14 treatment plants in 2002 (SSB, 2003) and measured or calculated flows from the wastewater effluents in 2002. For effluents without any measured flow, the 2002-flow was calculated to 600 litres per p.e. per day, (average for effluents with measured flows).

Table 2. Concentrations of metals in discharges from Norwegian municipal wastewater treatment plants in 1999 (Nedland, 2000).

Metal	Direct discharges	Primary + Unconventional (except infiltration) Other Unknown		Chemical Biological Biological/chemical Infiltration	
	µg/L	µg/L	% reduction	µg/L	% reduction
Cadmium (Cd)	0.25	0.20	20	0.15	40
Mercury (Hg)	0.10	0.08	20	0.05	50
Lead (Pb)	4	2.7	33	1.4	65
Nickel (Ni)	7	6.0	14	5.0	29
Chromium (Cr)	7	5.0	29	3.0	57
Zinc (Zn)	90	63	30	36	60
Copper (Cu)	60	38	37	15	75

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:

Sampling frequency for industrial wastewater varies from weekly composite samples to random grab samples, sampling are performed at least twice a year. NIVA has performed the TEOTIL modelling for estimation of total nitrogen and total phosphorous loading. The calculations of the other discharges were performed by Aquateam. The metal data were collected from SFT's data base INKOSYS (SFT, 2003).

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 stormwater overflows - that are not covered by the data in tables 5a. and 5b.:

Nutrient loading (Tot-N, NH₄, Tot-P and PO₄) from fish farming effluents in 2003 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 2000 on, the loading from fish farming has been included in the grand total values. These loads have not been 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.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 2003

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 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 should be 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 should not be influenced by seawater. Several of the most significant discharges from the industry and the municipal wastewater system are located downstream the sampling sites. These supplies will not be included in the riverine inputs, but are included in the direct discharge estimates (Table 1 (Appendix I) and Appendices II and III, Report B).

Sampling Strategy and Frequency

The sampling strategy has been designed on the basis of historical records. Although it should aim to cover the whole flow cycle, it has been concentrated on periods with expected high river-flow. Experience has shown that there is a positive correlation between periods of high river-flow and high input load, especially for suspended solids and trace metals.

Most monitoring effort has been directed towards the rivers with the highest input load (Glomma and Drammenselva), and the other rivers draining into the Skagerrak. PCB was left out from the programme in 1999, since the concentrations have been lower than the detection limit (0.03 ng/l) in most of the samples in the period 1990-1998.

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 2003, as described in PARCOM 10/3/2. Two of the main rivers (Glomma and Drammenselva) were sampled weekly or every fortnight in the period with the highest anticipated flow (May – June/July). In most of the main rivers the parameter lindane have been sampled and analysed 4 times in 2003.

River/Location	J	F	M	A	M	J	J	A	S	O	N	D
<i>Glomma at Sarpsfoss</i>	xx	x	x	x	xxxx	xxxx	x	x	x	x	x	¹⁾
<i>Drammenselva upstream the town bridge</i>	x	x	x	x	xxxx	xxxx	x	x	x	x	x	¹⁾
<i>Numedalslågen at Bommestad</i>	x	x	x	x	x	x	x	x	x	x	x	x
<i>Skienselva at Klosterfoss</i>	x	x	x	x	x	X	x	x	x	x	x	X
<i>Otra at Skråstad</i>	x	x	x	x	x	X	x	x	x	x	x	X
<i>Orre near the outlet</i>	x	x	x	x	x	X	x	x	x	x	x	X
<i>Orkla at Vormstad</i>	x	x	x	x	x	X	x	x	x	x	x	X
<i>Vefsna at Kvalfors ³⁾</i>		x	x	x			x		x			
<i>Suldalslågen near the outlet</i>	x	x	x	x	x	X	x	x	x	x	x	X
<i>Alta just upstream Alta</i>	x	x	x	x	x	x	x	x	x	x	x	X

The tributary rivers were sampled once in 2003. Lindane was not analysed in the tributary rivers. The concentrations of lindane were estimated on the basis of knowledge about the activity in the different drainage areas, and the findings from the main rivers and samples/analyses from these areas in 1990-1997.

The samples were sent to the laboratory used by Aquateam (AnalyCen, Moss) immediately after sampling, usually arriving at the laboratory within 1 to 2 days. The samples were not conserved in the field. They were either conserved at the laboratory immediately after receiving or the analytical work was started immediately.

Chemical parameters – detection limits and analytical methods

In 2003 the following parameters were monitored: 6 nutrients (total phosphorus, orthophosphates, total nitrogen, ammonia, nitrate + nitrite and silicate), 8 metals (copper, zinc, cadmium, lead, total chromium, nickel, mercury and arsenic), 1 pesticide (lindane) and two general parameters (suspended particulate matter (S.P.M.) and total organic carbon (TOC)).

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

<i>Parameter</i>	<i>Detection limit</i>	<i>Analytical Methods</i> (NS: Norwegian Standard)
Conductivity (mS/m)	-	ISO 7888
Suspended particulate matter (S.P.M.) (mg/L)	0.6	NS 4733
Total Organic Carbon (TOC) (mg C/L)	0.1-0.4	ISO 8245
Total Phosphorus ($\mu\text{g P/L}$)	1.0	NS 4725 – Peroxidisulphate oxidation method
Orthophosphate ($\text{PO}_4\text{-P}$) ($\mu\text{g P/L}$)	1.0	NS 4724 – Automated molybdate method
Total Nitrogen ($\mu\text{g N/L}$)	10	NS 4743 – Peroxidisulphate oxidation method
Nitrate and nitrite ($\text{NO}_3 + \text{NO}_2$) ($\mu\text{gN/L}$)	4	NS 4745 – Automated cadmium reduction method
Ammonia (NH_4) ($\mu\text{g N/L}$)	2	NS 4746
Silicate (SiO_2) (mg/L)	0.09	Std.Met 3120 A-B
Lead (Pb) ($\mu\text{g Pb/L}$)	0.02	EPA2008M – ICP/MS
Cadmium (Cd) ($\mu\text{g Cd/L}$)	0.01	EPA2008M – ICP/MS
Copper (Cu) ($\mu\text{g Cu/L}$)	0.05-0.1	EPA2008M – ICP/MS
Zinc (Zn) ($\mu\text{g Zn/L}$)	0.1-0.5	EPA2008M – ICP/MS
Chromium (Cr-tot) ($\mu\text{g Cr/L}$)	0.05-0.2	EPA2008M – ICP/MS
Nickel (Ni) ($\mu\text{g Ni/L}$)	0.02-0.2	EPA2008M – ICP/MS
Arsenic (As) ($\mu\text{g As/L}$)	0.05	EPA2008M – ICP/MS
Mercury (Hg) (ng Hg/L)	2	NS 4768 (CETAC)
Lindane (ng/L)	0.1	EPA 508 mod. – GC/ECD

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 equals a mean runoff of 1350 mm. Mean annual runoff in Norway and from the sub-regions to the main surrounding seas for the period 1931-60 are shown in Table 5. For the main rivers mean annual runoff for the last LTA-period (1961-90) have been estimated. For the main rivers mean annual runoff (1931-60 and 1961-90) together with annual runoff for the years 1985, 1990-2001 is shown in Figure 2. Mean annual and annual precipitation for the same stations and periods are presented in Figure 3. As for precipitation, normal for Norway based on the LTA-period 1961-90 were published in 1993 (DNMI, 1993).

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

There has been performed a study on particle bound metals in the two main rivers. The results show that there are great variance between rivers and also between metals in the same river.

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):

Nickel

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):

Description for tributary rivers included in D.1.

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

None

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):

None

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.:

None

E. Limits of detection

E.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.

None

F. National Comments

F.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.

The results for nutrients of the 2003 investigation show that total load in 2003 to coastal waters from land-based sources and marine aquaculture in Norway include approximately 8500 tonnes of total phosphorus (Tot-P) and 116 100 tonnes of total nitrogen (Tot-N). These loads were lower than in 2002 for phosphorous, but the same for nitrogen. Fish farming contributes to approximately 61% of the total loading of Tot-P and 21% of the total loading of Tot-N from mainland Norway. Respectively, 16 and 42 % of the grand total inputs of Tot-P and Tot-N are monitored in the main and tributary rivers.

For the main rivers in the Skagerrak area, the calculated loads decreased by 60 % for Tot-P. This large decrease is because of decreased water flow compared to 2002 (11%) and also decreased river concentrations.

For all the metals, except lead, the 2003 reported totals were lower than in 2002. The reduction is between 12 per cent (zinc) to 19 per cent (nickel).

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

Due to reduced water flow in 2003 since 2000 the inputs from Norwegian rivers were lower in 2003 than the last couple of years. The rivers with outlets to the Skagerrak area, which also are the main rivers, have a reduced flow of 11-29% between 2001- 2002 and from 4 to 15% between 2002-2003. The increase in Tot-N and Tot-P from fish farming is because of a new reporting system and increased production.

It is indicated that most of the higher loads of lead is particle bound and not bioavailable.

F.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 the change
- incomplete or distorted data

None

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [t]	16 Total Cr [t]	17 Ni [t]	18 TOC [t]	20 AOX [t]
168	Alta	lower upper comment	0,003 0,003	0,001 0,001	0,666 0,666	0,045 0,045	1,01 1,01		0,190 0,190	0,001 0,001	0,02 0,02	0,3 0,3	0,033 0,033			0,08 0,08	0,08 0,08		
							NI	NI						NI	NI			NI	NI
73	Barents Sea (NO)	lower upper comment	0,003 0,003	0,001 0,001	0,666 0,666	0,045 0,045	1,01 1,01		0,190 0,190	0,001 0,001	0,02 0,02	0,3 0,3	0,033 0,033			0,08 0,08	0,08 0,08		
160	Drammenselva	lower upper comment	0,003 0,003	0,001 0,001	0,317 0,317	0,028 0,028	0,70 0,70		0,218 0,218	0,001 0,001	0,005 0,005	0,3 0,3	0,008 0,008			0,06 0,06	0,09 0,09		
							NI	NI						NI	NI			NI	NI
159	Glomma	lower upper comment	0,029 0,029	0,010 0,010	2,979 2,979	0,293 0,293	9,39 9,39		1,464 1,464	0,009 0,009	0,03 0,03	1,8 1,8	0,050 0,050			0,64 0,64	1,26 1,26		
							NI	NI						NI	NI			NI	NI
170	Inner Oslofford	lower upper comment														Summarized with Glomma			
			Summarized with Glomma				NI	NI	Summarized with Glomma					NI	NI	Summarized with Glomma		NI	NI
161	Numedalslågen	lower upper comment	0,009 0,009	0,004 0,004	0,827 0,827	0,166 0,166	2,72 2,72		0,450 0,450	0,003 0,003	0,009 0,009	0,6 0,6	0,015 0,015			0,13 0,13	0,33 0,33		
							NI	NI						NI	NI			NI	NI
163	Otra	lower upper comment	0,007 0,007	0,003 0,003	1,261 1,261	0,090 0,090	2,22 2,22		0,492 0,492	0,003 0,003	0,011 0,011	0,7 0,7	0,019 0,019			0,41 0,41	0,36 0,36		
							NI	NI						NI	NI			NI	NI
162	Skienelva	lower upper comment	0,003 0,003	0,001 0,001	0,307 0,307	0,028 0,028	0,71 0,71		0,297 0,297	0,002 0,002	0,004 0,004	0,4 0,4	0,006 0,006			0,06 0,06	0,10 0,10		
							NI	NI						NI	NI			NI	NI
75	Skagerrak (NO)	lower upper comment	0,051 0,051	0,019 0,019	5,691 5,691	0,605 0,605	15,7 15,7		2,920 2,920	0,019 0,019	0,059 0,059	3,745 3,745	0,099 0,099			1,297 1,297	2,136 2,136		

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [t]	16 Total Cr [t]	17 Ni [t]	18 TOC [t]	20 AOX [t]
164	Orreelva	lower	0,010	0,003	0,926	0,104	1,0		0,756	0,005	0,037	1,0	0,062			0,20	0,44		
		upper	0,010	0,003	0,926	0,104	1,0		0,756	0,005	0,037	1,0	0,062			0,20	0,44		
		comment					NI	NI						NI	NI			NI	NI
165	Suldalslågen	lower	0,017	0,007	3,272	0,231	5,35		1,578	0,011	0,146	2,1	0,243			0,42	0,50		
		upper	0,017	0,007	3,272	0,231	5,35		1,578	0,011	0,146	2,1	0,243			0,42	0,50		
		comment					NI	NI						NI	NI			NI	NI
83	North Sea (NO)	lower	0,027	0,010	4,198	0,335	6,4		2,335	0,016	0,183	3,1	0,305			0,624	0,933		
		upper	0,027	0,010	4,198	0,335	6,4		2,335	0,016	0,183	3,1	0,305			0,624	0,933		
		comment																	
166	Orkla	lower	0,021	0,008	3,825	0,274	6,42		1,473	0,010	0,145	2,0	0,242			0,51	0,62		
		upper	0,021	0,008	3,825	0,274	6,42		1,473	0,010	0,145	2,0	0,242			0,51	0,62		
		comment					NI	NI						NI	NI			NI	NI
167	Vefsna	lower	0,012	0,005	2,591	0,178	4,08		0,937	0,006	0,091	1,3	0,152			0,32	0,35		
		upper	0,012	0,005	2,591	0,178	4,08		0,937	0,006	0,091	1,3	0,152			0,32	0,35		
		comment					NI	NI						NI	NI			NI	NI
72	Norwegian Sea (NO)	lower	0,033	0,013	6,416	0,452	10,5		2,411	0,016	0,236	3,2	0,394			0,83	0,97		
		upper	0,033	0,013	6,416	0,452	10,5		2,411	0,016	0,236	3,2	0,394			0,83	0,97		
		comment																	

Metal values are from 2002

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [t]	16 Total Cr [t]	17 Ni [t]	18 TOC [t]	20 AOX [t]
168	Alta	lower upper comment										0,001 0,001	0,000 0,000	214,0 214,0					
			NI	NI	NI	NI	NI	NI	NI	NI	NI				NI	NI	NI	NI	NI
73	Barents Sea (NO)	lower upper comment										0,001 0,001	0,000 0,000	214,0 214,0					
160	Drammenselva	lower upper comment	0,000 0,000	0,000 0,000	0,000 0,000	0,000 0,000						0,105 0,105	0,022 0,022	0,11 0,11	0,000 0,000	0,001 0,001	0,001 0,001	0,000 0,000	
							NI	NI	NI	NI	NI								NI
159	Glomma	lower upper comment	0,025 0,025	0,006 0,006	6,928 6,928	0,246 0,246	0,661 0,661					0,233 0,233	0,035 0,035	1,51 1,51	0,000 0,000	0,053 0,053	0,350 0,350	0,000 0,000	
							NI	NI	NI	NI	NI								NI
170	Inner Oslofford	lower upper comment																	
			Summed with Glomma				NI	NI	NI	NI	NI	Summed with Glomma			Summed with Glomma				NI
161	Numedalslågen	lower upper comment	0,003 0,003	0,001 0,001	0,001 0,001	0,025 0,025	0,018 0,018					0,073 0,073	0,014 0,014	0,06 0,06	0,000 0,000	0,001 0,001	0,115 0,115	50,500 50,500	
							NI	NI	NI	NI	NI								NI
163	Otra	lower upper comment	0,000 0,000	0,000 0,000	0,724 0,724	0,010 0,010	0,156 0,156					0,003 0,003	0,000 0,000	0,35 0,35	0,515 0,515	0,147 0,147	1,027 1,027	0,000 0,000	
							NI	NI	NI	NI	NI								NI
162	Skienselva	lower upper comment	0,000 0,000	0,000 0,000	0,038 0,038	0,002 0,002	0,022 0,022					0,769 0,769	0,011 0,011	1,16 1,16	0,000 0,000	0,001 0,001	0,360 0,360	54,800 54,800	
							NI	NI	NI	NI	NI								NI
75	Skagerrak (NO)	lower upper comment	0,028 0,028	0,007 0,0066	7,691 7,691	0,283 0,283	0,857 0,857					1,182 1,182	0,083 0,083	3,178 3,18	0,515 0,515	0,202 0,202	1,853 1,853	105,300 105,300	

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [t]	16 Total Cr [t]	17 Ni [t]	18 TOC [t]	20 AOX [t]
164	Orreelva	lower upper comment	0,003 0,003	0,002 0,002	0,065 0,065	0,022 0,022	0,206 0,206					0,077 0,077	0,007 0,007	1,04 1,04	0,028 0,028	0,061 0,061	6,410 6,410	16,000 16,000	
165	Suldalslågen	lower upper comment	0,060 0,060	0,003 0,003	0,597 0,597	2,384 2,384	16,71 16,71					0,405 0,405	0,044 0,044	8,0 8,0	0,062 0,062	0,405 0,405	0,161 0,161	176,000 176,000	
83	North Sea (NO)	lower upper comment	0,063 0,063	0,004 0,004	0,662 0,662	2,406 2,406	16,918 16,92					0,482 0,482	0,051 0,051	9,022 9,0	0,090 0,090	0,466 0,466	6,571 6,57	192,000 192,000	
166	Orkla	lower upper comment	0,002 0,002	0,000 0,000	12,095 12,095	0,020 0,020	40,125 40,125					0,143 0,143	0,023 0,023	417,6 417,6	0,001 0,001	0,012 0,012	0,008 0,008	53,000 53,000	
167	Vefsna	lower upper comment	0,012 0,012	0,000 0,000	4,346 4,346	0,672 0,672	5,417 5,417					0,722 0,722	0,034 0,034	517,2 517,2	0,522 0,522	0,203 0,203	1,067 1,067	0,450 0,450	
72	Norwegian Sea (NO)	lower upper comment	0,014 0,014	0,001 0,001	16,441 16,441	0,692 0,692	45,542 45,542					0,865 0,865	0,057 0,057	934,840 934,8	0,523 0,523	0,215 0,215	1,075 1,075	53,450 53,450	

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [t]	16 Total Cr [t]	17 Ni [t]	18 TOC [t]	20 AOX [t]
168	Alta	lower upper comment	0 0,018071	0,0087 0,00887	1,043 1,043	0,0823 0,1118	7,2499 7,6054	0,24 0,297	0,015 0,015	0,111 0,111	0,0047 0,0049	0,302 0,302	0,0149 0,0149	2,59604 2,73697	0,312 0,312	0,37343 0,37343	0,574 0,632	6801,4841 6801,4841	
73	Barents Sea (NO)	lower upper comment	0 0,018071	0,0087 0,00887	1,043 1,043	0,0823 0,1118	7,2499 7,6054	0,24 0,297	0,015 0,015	0,111 0,111	0,0047 0,0049	0,302 0,302	0,0149 0,0149	2,59604 2,73697	0,312 0,312	0,37343 0,37343	0,574 0,632	6801,4841 6801,4841	
160	Drammenselva	lower upper comment	0,068784 0,106327	0,45621 0,46577	7,552 7,552	0,9948 0,9948	26,027 26,027	3,185 3,774	0,28 0,28	2,5 2,5	0,008 0,011	3,78 3,78	0,063 0,063	19,1962 19,2328	1,082 1,113	1,0867 1,0867	4,715 4,715	31473,433 31473,433	
159	Glomma	lower upper comment	0,146326 0,242786	0,12939 0,14503	28,6 28,6	9,7675 9,7675	72,763 72,763	12,52 12,52	0,508 0,508	8,063 8,063	0,034 0,034	10,87 10,87	0,311 0,311	124,525 124,525	2,905 2,951	5,24298 5,24298	13,79 13,79	81698,184 81698,184	
170	Inner Oslofjord	lower upper comment																	
161	Numedalslågen	lower upper comment	0,052403 0,057854	0,01067 0,01291	2,632 2,632	0,9215 0,9215	13,693 13,693	0,69 0,69	0,091 0,091	0,858 0,858	0,004 0,005	1,357 1,357	0,043 0,043	18,9596 18,9596	0,517 0,517	0,66898 0,66898	1,329 1,329	14969,223 14969,223	
163	Otra	lower upper comment	0,081377 0,081377	0,01697 0,02319	1,924 1,924	0,8825 0,8825	13,651 13,651	1,379 1,379	0,052 0,052	0,53 0,53	0,001 0,004	0,918 0,818	0,009 0,01	2,6137 3,09216	0,422 0,422	0,2531 0,27711	2,624 2,624	11077,432 11077,432	
162	Skienelva	lower upper comment	0,095268 0,103729	0,19652 0,20135	3,51 3,51	0,555 0,555	16,265 16,265	4,172 4,172	0,127 0,127	1,344 1,344	0,013 0,017	2,098 2,098	0,048 0,048	7,13664 7,76789	0,563 0,626	0,55922 0,58853	1,907 2,001	19820,353 19820,353	
75	Skagerrak (NO)	lower upper comment	0,444158 0,592073	0,80976 0,84825	44,22 44,22	13,121 13,121	142,4 142,4	21,95 22,54	0 0	1,058 1,058	13,295 13,295	0,06 0,071	19,02 18,92	0,474 0,475	172,431 173,577	5,49 5,629	7,81099 7,8643	24,37 24,46	159038,62 159038,62

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [t]	16 Total Cr [t]	17 Ni [t]	18 TOC [t]	20 AOX [t]
164	Orreelva	lower upper comment	0,001157 0,001921	0 0,00029	0,155 0,155	0,0625 0,0625	0,9472 0,9472	0,06 0,06	0,003 0,003	0,068 0,068	0,0003 0,0003	0,165 0,165	0,012 0,012	2,08549 2,08549	0,075 0,075	0,02677 0,02677	0,137 0,137	1196,7094 1196,7094	
165	Suldalslågen	lower upper comment	0,014208 0,016959	0,0134 0,01577	2,27 2,283	0,1731 0,1731	2,7663 2,7663	0,223 0,278	0,0072 0,0078	0,262 0,262	0,00069 0,0016	0,342 0,342	0,01 0,01	1,76627 1,79856	0,152 0,158	0,0837 0,10156	0,311 0,361	2960,4131 2960,4131	
83	North Sea (NO)	lower upper comment	0,015365 0,018879	0,0134 0,01605	2,424 2,437	0,2356 0,2356	3,7135 3,7135	0,283 0,338	0,0106 0,0112	0,33 0,33	0,00099 0,0019	0,507 0,507	0,022 0,022	3,85176 3,88405	0,227 0,233	0,11047 0,12833	0,447 0,497	4157,1225 4157,1225	
166	Orkla	lower upper comment	0,075976 0,076469	0,00687 0,00799	11,25 11,25	0,0653 0,0653	34,469 34,494	0,346 0,378	0,031 0,031	0,276 0,276	0,0014 0,0026	0,464 0,464	0,0085 0,0087	1,93642 2,07291	0,156 0,163	0,32018 0,32265	1,363 1,368	6771,0998 6771,0998	
167	Vefsna	lower upper comment	0,000 0,069538	0,02733 0,03065	2,023 2,184	0,4153 0,4521	6,8886 9,0007	1,523 1,523	0,028 0,028	0,373 0,373	0,004 0,007	0,646 0,646	0,026 0,026	22,8767 23,1605	0,825 0,917	0,46288 0,58911	1,273 1,87	8610,954 8610,954	
72	Norwegian Sea (NO)	lower upper comment	0,076 0,146	0,034 0,039	13,274 13,438	0,481 0,517	41,358 43,494	1,868 1,900	0,059 0,059	0,649 0,649	0,005 0,010	1,110 1,110	0,035 0,035	24,813 25,233	0,981 1,080	0,783 0,912	2,636 3,241	15382,054 15382,054	

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [t]	16 Total Cr [t]	17 Ni [t]	18 TOC [t]	20 AOX [t]
168 Alta	lower	0	0,036	11,2	0,19	3,71			0,21	0,08	0,05	2,49	0,13	19,9	1,707	2,845	14,1	68946,7	
	upper	0,22	0,069	11,2	0,57	12,5			0,21	0,10	0,06	2,49	0,14	21,1	1,811	3,4475	14,1	68946,7	
	runoff comment								0,09	1,03	0,02	1,70	0,09						
73 Barents Sea (NO)	lower	0	0,036	11,2	0,19	3,71			0,21	0,08	0,05	2,49	0,13	19,9	1,707	2,845	14,1	68946,7	
	upper	0,22	0,069	11,2	0,57	12,5			0,21	0,10	0,06	2,49	0,14	21,1	1,811	3,4475	14,1	68946,7	
	runoff comment								0,09	1,03	0,02	1,70	0,09						
160 Drammenselva	lower	0,01	0,003	0,94	0,5	3,71			0,00	0,37	0,00	0,43	0,02	28,6	0,194	0,371	0,6	1419,55	
	upper	0,01	0,003	0,94	0,5	3,71			0,00	0,37	0,00	0,43	0,02	28,6	0,194	0,371	0,6	1419,55	
	runoff comment								0,01	0,10	0,00	0,16	0,00						
159 Glomma	lower	0,01	0,001	1,2	0,22	2,2			0,01	0,55	0,00	0,84	0,02	3,403	0,3	0,3	0,9	7488,89	
	upper	0,02	0,003	1,2	0,22	2,2			0,01	0,55	0,00	0,84	0,02	3,403	0,3	0,3	0,9	7488,89	
	runoff comment								0,06	0,62	0,01	0,95	0,03						
170 Inner Oslofjord	lower	0,02	0,003	1,16	0,39	3,06			0,03	0,57	0,01	0,74	0,02	6,2	0,179	0,2051	0,56	3578,98	
	upper	0,02	0,00388	1,16	0,39	3,06			0,03	0,57	0,01	0,74	0,02	6,2	0,179	0,2051	0,56	3578,98	
	runoff comment								0,01	0,12	0,00	0,18	0,01						
161 Numedalslågen	lower	0,02	0,014	0,58	0,1	3,65			0,02	0,28	0,00	0,40	0,01	1,6	0,125	0,1104	0,2	2719,24	
	upper	0,02	0,014	0,58	0,1	3,65			0,02	0,28	0,00	0,40	0,01	1,6	0,168	0,1534	0,37	2719,24	
	runoff comment								0,05	0,52	0,01	0,76	0,02						
163 Otra	lower	0,38	0,066	6,46	4,85	51,4			0,24	3,08	0,00	5,13	0,02	14,8	2,627	1,3086	0,88	60831,2	
	upper	0,38	0,075	6,46	4,85	51,4			0,24	3,08	0,02	5,13	0,02	14,8	2,627	1,3086	3,58	60831,2	
	runoff comment								0,03	0,32	0,00	0,51	0,01						
162 Skienselva	lower	0,03	0,003	0,46	0,21	5,97			0,00	0,18	0,00	0,33	0,01	1,9	0,157	0,1256	0,39	5862,58	
	upper	0,03	0,003	0,46	0,21	5,97			0,00	0,18	0,00	0,33	0,01	1,9	0,157	0,1256	0,39	5862,58	
	runoff comment								0,02	0,27	0,00	0,43	0,01						

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		1	5	6	2	7	8	9	10	11	12	13	14	3	15	16	17	18	20
		Cd	Hg	Cu	Pb	Zn	g-HCH	PCB	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM	As	Total Cr	Ni	TOC	AOX
		[t]	[t]	[t]	[t]	[t]	[kg]	[kg]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[t]	[t]	[t]	[t]	[t]
75 Skagerrak (NO)	lower	0,47	0,09	10,85	6,26	69,95			0,30	5,02	0,01	7,87	0,11	56,49	3,58	2,40	3,49	81900,43	
	upper	0,48	0,10	10,85	6,26	69,95			0,30	5,02	0,03	7,87	0,11	56,49	3,62	2,44	6,36	81900,43	
	runoff comment								0,18	1,95	0,02	3,00	0,09						
164 Orreelva	lower	0,07	0,04	2,43	1,26	11,3			0,13	2,29	0,01	2,92	0,03	4,60	0,589	0,3606	3,58	18007,5	
	upper	0,11	0,043	2,43	1,26	11,5			0,13	2,29	0,02	2,92	0,03	7,1	0,753	0,5236	4,87	18007,5	
	runoff comment								0,19	2,02	0,02	3,10	0,07						
165 Suldalslågen	lower	0,05	0,310	15	3,95	48,3			0,25	3,50	0,00	5,73	0,23	149,3	0,461	5,7	4,64	60943	
	upper	0,35	0,316	15	3,98	51,8			0,25	3,50	0,03	5,73	0,24	157,2	1,881	5,9545	10,4	60943	
	runoff comment								0,49	5,41	0,04	8,47	0,16						
83 North Sea (NO)	lower	0,12	0,35	17,43	5,21	59,62			0,38	5,79	0,01	8,66	0,26	153,90	1,05	6,06	8,22	78950	
	upper	0,47	0,36	17,43	5,24	63,30			0,38	5,79	0,05	8,66	0,28	164,30	2,63	6,48	15,23	78950	
	runoff comment								0,68	7,44	0,06	11,57	0,23						
166 Orkla	lower	0,00	0,410	24,2	1,95	22,8			0,24	2,73	0,02	6,08	0,16	95,7	4,215	6,3917	13,8	103264	
	runoff	0,3	0,428	24,2	1,97	25,7			0,24	2,73	0,04	6,08	0,16	97,7	4,383	6,5777	15,7	103264	
	runoff comment								0,64	6,78	0,09	10,22	0,35						
167 Vefsna	lower	0,06	0,453	16,3	2,09	37,8			0,29	0,91	0,05	2,84	0,19	33,7	0,704	4,764	11,6	40417,2	
	upper	0,38	0,493	16,3	2,15	43,4			0,30	0,91	0,06	2,84	0,19	37,7	2,091	5,0887	13	40417,2	
	runoff comment								0,20	2,17	0,04	3,38	0,16						
72 Norwegian Sea (NO)	lower	0,06	0,86	40,47	4,04	60,59			0,53	3,64	0,07	8,92	0,34	129,40	4,92	11,16	25,45	143681	
	upper	0,68	0,92	40,47	4,13	69,04			0,53	3,64	0,10	8,92	0,35	135,40	6,47	11,67	28,73	143681	
	runoff comment								0,84	8,96	0,13	13,60	0,51						

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [µg/l]	16 Total Cr [µg/l]	17 Ni [µg/l]	18 TOC [µg/l]	20 AOX [mg/l]
168	Alta	lower	0,000	4,310	0,4638	0,041	1,3069	0,15		0,009	0,073	0,004	0,170	0,008	0,816	0,2015	0,1689	0,1873	3110
		upper	0,010	4,460	0,4638	0,063	1,61	0,17		0,096	0,073	0,004	0,170	0,008	0,959	0,2015	0,1689	0,25	3100
		minimum	<0,01	<0,002	0,24	<0,02	<0,5	<0,2		0,003	0,01	0,001	0,136	0,003	<0,1	0,1	<0,1	0,15	2400
		maximum	0,010	0,014	0,81	0,2	10	14		0,026	0,155	0,008	0,21	0,011	2,7	0,33	0,29	0,58	5100
		more than 70% > D.L.	no	yes	yes	no	no	yes		yes	yes	yes	yes	yes	no	yes	yes	no	yes
		n	13	13	13	13	3	4		13	13	13	13	13	13	13	13	13	13
		info																	
	st.Dev.	0,000	0,003	0,15	0,06	2,61	0,00		0,006	0,04	0,002	0,022	0,002	0,6	0,074	0,06	0,11	700,00	
73	Barents Sea (NO)	lower	0,000	4,310	0,4638	0,041	1,3069	0,15		0,009	0,073	0,004	0,170	0,008	0,816	0,2015	0,1689	0,1873	3110
		upper	0,010	4,460	0,4638	0,063	1,61	0,17		0,096	0,073	0,004	0,170	0,008	0,959	0,2015	0,1689	0,25	3100
		minimum	<0,01	<0,002	0,24	<0,02	<0,5	<0,2		0,003	0,01	0,001	0,136	0,003	<0,1	0,1	<0,1	0,15	2400
		maximum	0,010	0,014	0,81	0,2	10	14		0,026	0,155	0,008	0,21	0,011	2,7	0,33	0,29	0,58	5100
		more than 70% > D.L.	no	yes	yes	no	no	yes		yes	yes	yes	yes	yes	no	yes	yes	no	yes
		n	13	13	13	13	3	4		13	13	13	13	13	13	13	13	13	13
		info																	
	st.Dev.	0,000	0,003	0,15	0,06	2,61	0,00		0,006	0,04	0,002	0,022	0,002	0,6	0,074	0,06	0,11	700,00	
160	Drammenselva	lower	0,008	0,043	0,8942	0,112	2,8842	0,395		0,032	0,274	0,001	0,421	0,008	2,2	0,1284	0,1192	0,5311	3700
		upper	0,008	0,046	0,8942	0,112	2,8842	0,395		0,032	0,274	0,002	0,421	0,008	2,2	0,1284	0,1192	0,5311	3700
		minimum	0,007	<0,002	0,58	<0,04	1,9	<0,1		0,011	0,158	<0,001	0,304	<0,001	2,4	<0,05	0,075	0,34	2500
		maximum	0,020	0,568	1,5	0,28	4,5	1,02		0,073	0,398	0,004	0,593	0,014	7,7	0,21	0,19	0,77	64600
		more than 70% > D.L.	no	no	yes	yes	yes	yes		yes	yes	no	yes	yes	yes	yes	yes	yes	yes
		n	19	19	19	19	18	4		19	19	19	19	19	19	19	19	19	19
		info																	
	st.Dev.	0,003	0,134	0,20	0,06	0,84	0,42		0,016	0,076	0,001	0,082	0,004	1,8	0,040	0,03	0,11	600,00	
159	Glomma	lower	0,012	<0,009	1,53	0,54	4,09	0,74		0,029	0,483	0,002	0,639	0,017	6,5	0,16	0,29	0,74	4440
		upper	0,012	<0,009	1,53	0,54	4,09	0,74		0,029	0,483	0,002	0,639	0,017	6,5	0,16	0,29	0,74	4440
		minimum	<0,01	<0,002	1,1	0,11	0,98	0,18		0,004	0,201	<0,001	0,341	0,006	1,2	<0,05	0,08	0,44	2800
		maximum	0,024	0,038	2,1	2,4	8,7	1,63		0,065	1,710	0,006	2,060	0,039	12,1	0,23	0,61	1,1	7200
		more than 70% > D.L.	no	no	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
		n	18	18	18	18	18	4		18	18	18	18	18	18	18	18	18	18
		info																	
	st.Dev.	0,004	<0,011	0,29	0,55	1,95	0,66		0,017	0,345	0,002	0,392	0,008	3	0,050	0,17	0,18	1200,00	
161	Numedalslågen	lower	0,015	0,004	0,8	0,015	3,8	0,22		0,036	0,278	0,001	0,443	0,012	4,8	0,17	0,22	0,39	4400
		upper	0,020	0,004	0,8	0,015	3,8	0,22		0,036	0,278	0,002	0,443	0,012	4,8	0,17	0,22	0,39	4400
		minimum	<0,01	0,002	0,49	0,077	1,5	0,1		0,016	0,105	<0,001	0,242	0,004	0,8	0,09	0,06	0,22	2800
		maximum	0,040	0,008	1,2	0,6	7,5	0,35		0,072	0,770	0,004	1,000	0,032	16,1	0,32	0,74	0,69	6300
		more than 70% > D.L.	no	no	yes	yes	yes	yes		yes	yes	no	yes	yes	yes	yes	yes	yes	yes
		n	12	12	12	12	12	4		12	12	12	12	12	12	12	12	12	12
		info																	
	st.Dev.	0,010	0,002	0,23	0,01	1,79	0,11		0,017	0,209	0,001	0,234	0,008	4,8	0,070	0,19	0,13	1300,00	

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [µg/l]	16 Total Cr [µg/l]	17 Ni [µg/l]	17 TOC [µg/l]	18 AOX [mg/l]	20
163	Otra	lower	0,021	0,004	0,53	0,23	3,56	0,34		0,014	0,138	0,000	0,240	0,002	0,7	0,114	0,06	0,69	2800	
	upper	0,021	0,006	0,53	0,23	3,56	0,34		0,014	0,138	0,001	0,240	0,003	0,8	0,114	0,071	0,69	2800		
	minimum	0,014	<0,002	0,18	0,11	2,1	0,19		0,003	0,090	<0,001	0,198	0,001	<0,6	0,053	<0,05	0,37	1400		
	maximum	0,039	0,044	1,6	0,36	6	0,54		0,027	0,190	0,001	0,330	0,006	1,1	0,2	0,099	1,1	4300		
	more than 70% > D.L. n	yes 12	no 12	yes 12	yes 12	yes 12	yes 4		yes 12	yes 12	no 12	yes 12	no 12	yes 12	yes 12	yes 12	yes 12	yes 12		
	info st.Dev.	0,007	0,012	0,36	0,07	1,01	0,15		0,007	0,033	0,000	0,038	0,002	0,2	0,036	0,02	0,24	800		
162	SkienSelva	lower	0,015	0,019	0,46	0,069	2,19	0,49		0,020	0,183	0,001	0,290	0,006	0,82	0,092	0,08	0,27	2700	
	upper	0,015	0,020	0,46	0,069	2,19	0,49		0,020	0,183	0,002	0,290	0,006	0,92	0,092	0,08	0,27	2700		
	minimum	<0,01	<0,002	0,32	<0,02	<0,5	0,37		0,004	0,104	<0,001	0,210	0,003	0,6	0,065	<0,05	0,17	2200		
	maximum	0,210	0,075	2,4	0,23	4	0,96		0,026	0,293	0,008	0,356	0,022	1,1	0,11	0,2	0,57	2600		
	more than 70% > D.L. n	yes 12	no 12	yes 12	yes 12	yes 12	yes 4		yes 12	yes 12	no 12	yes 12	yes 12	yes 12	yes 12	no 12	yes 12	yes 12		
	info st.Dev.	0,009	0,040	0,10	0,03	0,40	0,38		0,009	0,029	0,002	0,029	0,003	0,44	0,025	0,03	0,05	400,00		
75	Skagerrak (NO)	lower	0,014	0,017	0,8428	0,193	3,3048	0,437		0,026	0,271	0,001	0,407	0,009	3,004	0,1329	0,1538	0,5242	3608	
	upper	0,015	0,019	0,8428	0,193	3,3048	0,437		0,026	0,271	0,002	0,407	0,009	3,044	0,1329	0,156	0,5242	3608		
	minimum	<0,01	<0,002	0,16	<0,02	<0,5	0,14		0,003	0,063	<0,001	0,132	0,003	<0,6	0,065	<0,05	0,17	1700		
	maximum	0,210	0,195	3,9	0,88	13	0,96		0,058	0,695	0,027	0,895	0,083	10,5	0,35	0,8	1,6	6600		
	more than 70% > D.L. n	no 73	no 73	yes 73	yes 73	yes 73	yes 20		yes 73	yes 73	yes 73	yes 73	yes 73	yes 73	yes 73	yes 73	yes 73	yes 73		
	info st.Dev.	0,015	0,019	0,84	0,19	3,30	0,44		0,0262	0,2712	0,00166	0,4066	0,00913	3,044	0,13	0,16	0,52	3608		
164	Orreelva	lower	0,000	0,000	1,09	0,27	6,46	0,36		0,020	0,592	0,002	1,197	0,061	10	0,46	0,18	0,95	7400	
	upper	0,011	0,002	1,09	0,27	6,46	0,36		0,020	0,592	0,002	1,197	0,061	10	0,46	0,18	0,95	7400		
	minimum	<0,01	<0,002	0,74	0,09	1	0,19		0,001	0,007	<0,001	0,589	<0,001	4,5	0,21	0,07	0,63	5300		
	maximum	0,020	0,002	1,7	0,9	26	0,62		0,078	1,260	0,004	2,025	0,149	26,9	0,97	0,39	1,4	11000		
	more than 70% > D.L. n	no 12	no 12	yes 12	yes 12	yes 12	yes 4		yes 12	yes 12	no 12	yes 12	yes 12	yes 12	yes 12	yes 12	yes 12	yes 12		
	info st.Dev.	0,003	0,000	0,28	0,27	6,84	0,19		0,023	0,523	0,001	0,494	0,041	7	0,250	0,10	0,19	1900,00		
165	Suldalslågen	lower	0,013	0,007	0,86	0,08	1,8	0,18		0,005	0,208	0,001	0,255	0,006	0,93	0,085	0,04	0,21	1600	
	upper	0,013	0,009	0,86	0,08	1,8	0,18		0,006	0,208	0,001	0,255	0,007	1	0,085	0,06	0,27	1600		
	minimum	<0,01	<0,002	<0,1	0,03	1,1	0,1		<0,001	0,145	<0,001	0,198	<0,001	<0,06	<0,05	<0,05	0,2	700		
	maximum	0,022	0,071	6,5	0,26	2,5	0,33		0,018	0,318	0,002	0,329	0,023	2,7	0,25	0,1	0,72	4100		
	more than 70% > D.L. n	yes 10	no 10	yes 10	yes 10	yes 10	no 3		no 10	yes 10	no 10	yes 10	yes 10	no 10	yes 10	no 10	no 10	yes 10		
	info st.Dev.	0,004	0,022	1,98	0,07	0,45	0,13		0,005	0,053	0,000	0,045	0,008	0,7	0,060	0,02	0,16	1040,00		

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [µg/l]	16 Total Cr [µg/l]	17 Ni [µg/l]	18 TOC [µg/l]	20 AOX [mg/l]
83 North Sea (NO)	lower	0,007	0,004	0,975	0,175	4,13	0,27		0,013	0,400	0,001	0,726	0,034	5,465	0,2725	0,11	0,58	4500	
	upper	0,012	0,006	0,975	0,175	4,13	0,27		0,013	0,400	0,001	0,726	0,034	5,5	0,2725	0,12	0,61	4500	
	minimum	<0,01	<0,002	<0,1	0,03	1	0,1		<0,001	0,007	<0,001	0,198	<0,001	<0,06	<0,05	<0,05	0,2	700	
	maximum	0,022	0,071	6,5	0,9	26	0,62		0,078	1,260	0,004	2,024	0,149	26,9	0,97	0,39	1,4	11000	
	more than 70% > D.L.	no	no	yes	yes	yes	yes		yes	yes	no	yes	yes	yes	yes	yes	yes	yes	
	n	22	22	22	22	22	7		22	22	22	22	22	22	22	22	22	22	
166 Orkla	info																		
	st.Dev.	0,009	0,005	0,16	0,13	3,30	0,13		0,0106	0,2715	0,00028	0,66609	0,03861	6,413	0,27	0,10	0,52	4101,2193	
	lower	0,049	0,004	6,83	0,052	21,3	0,17		0,018	0,185	0,001	0,292	0,005	1,3	0,098	0,18	0,78	3600	
	upper	0,049	0,005	6,83	0,052	21,3	0,19		0,018	0,185	0,002	0,292	0,005	1,3	0,098	0,18	0,78	3600	
	minimum	<0,01	<0,002	<0,05	0,021	<0,5	<0,1		0,002	0,102	<0,001	0,203	0,001	<0,6	<0,05	<0,05	<0,1	1700	
	maximum	0,110	0,020	12,0	0,14	48	0,3		0,080	0,286	0,005	0,417	0,009	4	0,15	0,28	1,1	6200	
167 Vefsna	more than 70% > D.L.	yes	no	yes	yes	yes	yes		yes	yes	no	yes	yes	yes	yes	yes	yes	yes	
	n	12	12	12	12	12	4		12	12	12	12	12	12	12	12	12	12	
	info																		
	st.Dev.	0,029	0,005	3,15	0,04	13,10	0,09		0,021	0,062	0,001	0,061	0,003	0,9	0,037	0,06	0,29	1500	
	lower	0,000	0,005	0,63	0,151	1,32	0,32		0,008	0,123	0,001	0,183	0,005	3,24	0,46	0,08	0,35	1800	
	upper	0,025	0,006	0,63	0,151	2,36	0,32		0,008	0,123	0,002	0,183	0,005	3,4	0,506	0,17	0,59	1800	
72 Norwegian Sea (NO)	minimum	<0,01	<0,002	0,27	<0,02	<0,5	0,2		<0,002	0,031	0,001	0,080	0,001	0,6	<0,05	0,06	<0,2	900	
	maximum	0,100	0,015	2,5	0,94	8	0,71		0,025	0,498	0,004	0,610	0,012	12,4	4,6	0,5	2,5	2700	
	more than 70% > D.L.	no	no	yes	yes	no	yes		yes	yes	no	yes	yes	yes	yes	yes	no	yes	
	n	12	12	12	12	12	4		12	12	12	12	12	12	12	12	12	12	
	info																		
	st.Dev.	0,035	0,005	0,63	0,26	2,64	0,26		0,006	0,135	0,001	0,151	0,003	3,9	1,295	0,16	0,79	500,00	
72 Norwegian Sea (NO)	lower	0,025	0,005	3,730	0,102	11,310	0,245		0,013	0,154	0,001	0,238	0,005	2,270	0,279	0,130	0,565	2700,000	
	upper	0,037	0,006	3,730	0,102	11,830	0,255		0,013	0,154	0,002	0,238	0,005	2,350	0,302	0,175	0,685	2700,000	
	minimum	<0,01	<0,002	<0,05	<0,02	<0,5	<0,1		<0,002	0,031	<0,001	0,080	0,001	<0,6	<0,05	<0,05	<0,1	900	
	maximum	0,110	0,020	12	0,94	48	0,71		0,080	0,498	0,004	0,610	0,012	12,4	4,6	0,5	2,5	6200	
	more than 70% > D.L.	no	no	yes	yes	yes	yes		yes	yes	no	yes	yes	yes	yes	yes	yes	yes	
	n	24	24	24	24	24	8		24	24	24	24	24	24	24	24	24	24	
72 Norwegian Sea (NO)	info																		
	st.Dev.	0,017	0,001	4,38	0,07	13,39	0,09		0,0074	0,0438	7,1E-05	0,07707	0,00028	1,485	0,29	0,01	0,13	1272,7922	

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

[illegible]

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		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]	15 As [µg/l]	16 Total Cr [µg/l]	17 Ni [µg/l]	18 TOC [µg/l]
164	Orreelva	Sewage Industrial Riverine	0,01	0,002	0,05	0,02	0,1	0,1	0,002	0,004	0,001	0,01	0,001	0,6	0,05	0,05	0,02	100
165	Suldalslågen	Sewage Industrial Riverine	0,01	0,002	0,05	0,02	0,1	0,1	0,002	0,004	0,001	0,01	0,001	0,6	0,05	0,05	0,02	100
83	North Sea (NO)	Sewage Industrial Riverine																
166	Orkla	Sewage Industrial Riverine	0,01	0,002	0,05	0,02	0,1	0,1	0,002	0,004	0,001	0,01	0,001	0,6	0,05	0,05	0,02	100
167	Vefsna	Sewage Industrial Riverine	0,01	0,002	0,05	0,02	0,1	0,1	0,002	0,004	0,001	0,01	0,001	0,6	0,05	0,05	0,02	100
72	Norwegian Sea (NO)	Sewage Industrial Riverine																

Cu	The detection limit has varied between	0,05	and	0,1	[µg/l]
Zn	The detection limit has varied between	0,1	and	0,5	[µg/l]
Ni	The detection limit has varied between	0,02	and	0,2	[µg/l]

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

	Flow Rate [1000m ³ /d]	LTA [1000m ³ /d]	Minimum FR [1000m ³ /d]	Maximum FR [1000m ³ /d]	LTA info (years)	Number of sites	Mean or Median
168 Alta	4951	7495	2177	23082	1961-90	1	mean
73 Barents Sea (NO)							
160 Drammenselva	23832	28850	7439	85867	1961-90	1	mean
159 Glomma	50795	61350	19911	134952	1961-90	1	mean
170 Inner Oslofjord							
161 Numedalslågen	8380	10200	3433	27318	1961-90	1	mean
163 Otra	10273	12870	4754	21292	1961-90	1	mean
162 Skienselva	20192	23535	6353	56647	1961-90	1	mean
75 Skagerrak (NO)							
164 Orreelva	392	335	35	1354	1961-90	1	mean
165 Suldalslågen	3880	7420	1148	12547	1961-90	1	mean
83 North Sea (NO)							
166 Orkla	4497	5710	943	67561	1961-90	1	mean
167 Vefsna	12826	15655	2179	49052	1961-90	1	mean
72 Norwegian Sea (NO)							

Table 10. Fish Farming Effluents
Reported Maritime Area of the OSPAR Convention in 2003 by Norway

		10 NH4-N [kt]	11 NO3-N [kt]	12,0000 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]	15 As [t]	16 Total Cr [t]	17 Ni [t]	18 TOC [t]	20 AOX [t]
168	Alta	lower upper comment	0,538 0,538	0,0640 0,0640	1,7 1,7	0,355 0,355						
73	Barents Sea (NO)	lower upper comment	0,538 0,538	0,0640 0,0640	1,7 1,7	0,355 0,355						
160	Drammens	lower upper comment	0,000 0,000	0,0000 0,0000	0,0 0,0	0,000 0,000						
159	Glomma	lower upper comment	0,000 0,000	0,0000 0,0000	0,0 0,0	0,000 0,000						
170	Inner Oslof	lower upper comment	0,000 0,000	0,0000 0,0000	0,0 0,0	0,000 0,000						
161	Numedalsl	lower upper comment	0,000 0,000	0,0000 0,0000	0,0 0,0	0,000 0,000						
163	Otra	lower upper comment	0,000 0,000	0,0000 0,0000	0,0 0,0	0,000 0,000						
162	Skienelva	lower upper comment	0,000 0,000	0,0000 0,0000	0,0 0,0	0,000 0,000						
75	Skagerrak (NO)	lower upper comment	0,000 0,000	0,0000 0,0000	0,0 0,0	0,000 0,000						
164	Orreelva	lower upper comment	0,239 0,239	0,0285 0,0285	0,7 0,7	0,159 0,159						
165	Suldalsl	lower upper comment	2,312 2,312	0,2749 0,2749	7,2 7,2	1,527 1,527						
83	North Sea (NO)	lower upper comment	2,552 2,552	0,3034 0,3034	8,0 8,0	1,686 1,686						
166	Orkla	lower upper comment	2,728 2,728	0,3232 0,3232	8,5 8,5	1,796 1,796						
167	Vefsna	lower upper comment	1,996 1,996	0,2373 0,2373	6,2 6,2	1,318 1,318						
72	Norwegian Sea (NO)	lower upper comment	4,724 4,724	0,5605 0,5605	14,8 14,8	3,114 3,114						

PORTUGAL

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003 by Portugal.

Table 5a	Sewage effluents. Reported Maritime Area of the OSPAR Convention in 2003
Table 5b	Industrial effluents. Reported Maritime Area of the OSPAR Convention in 2003
Table 6a	Main riverine inputs. Reported Maritime Area of the OSPAR Convention in 2003
Table 7	Contaminant Concentration. Reported Maritime Area of the OSPAR Convention in 2003
Table 8	Detection limits. Reported Maritime Area of the OSPAR Convention in 2003
Table 9	Catchment-dependent information. Reported Maritime Area of the OSPAR Convention in 2003

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2003 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
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 2003 by Portugal

[illegible]

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 by Portugal

[illegible]

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2003 by Portugal

[illegible]

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2003 by Portugal

[illegible]

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2003 by Portugal

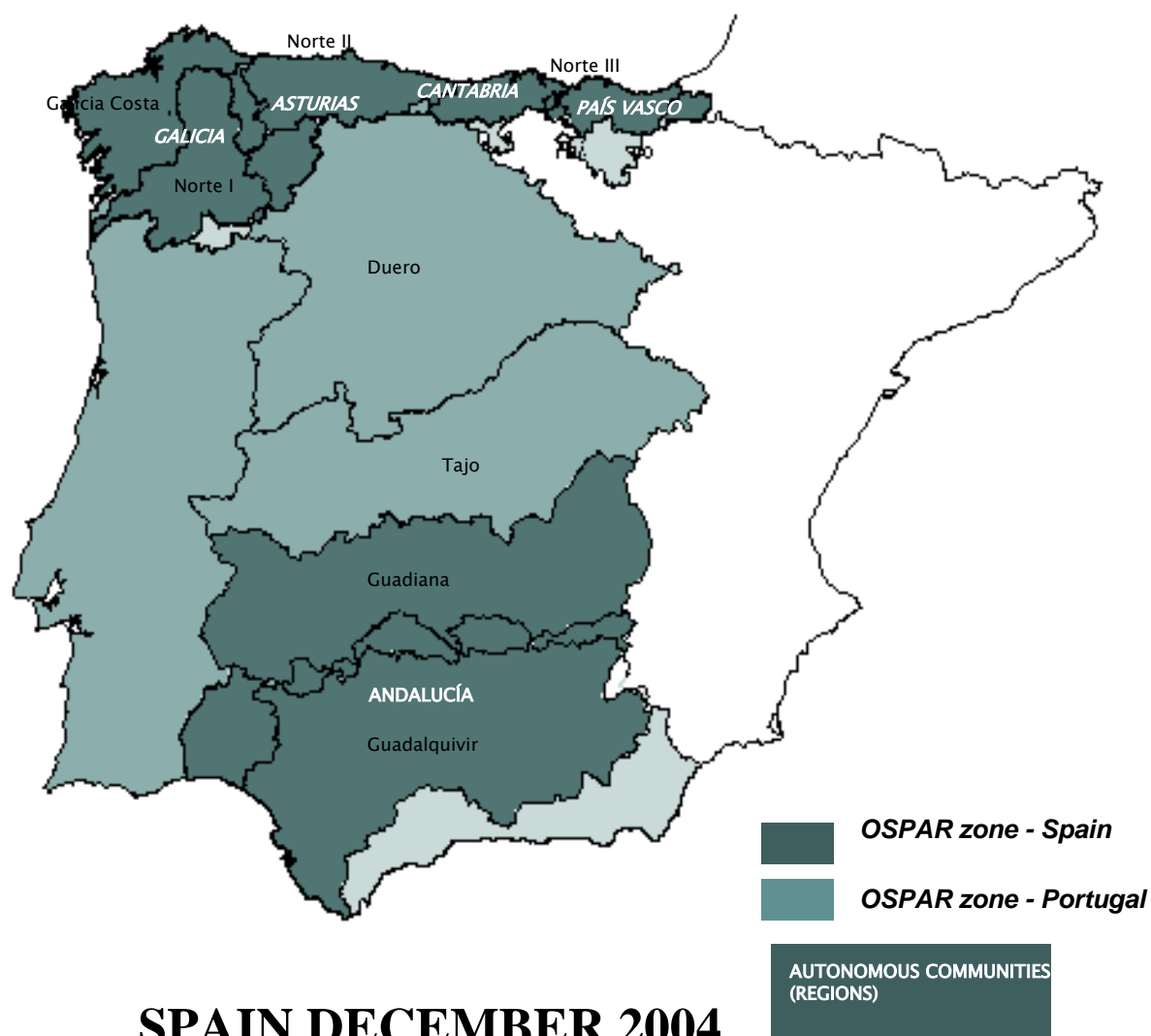
	Flow Rate [1000m ³ /d]	LTA [1000m ³ /d]	Minimum FR [1000m ³ /d]	Maximum FR [1000m ³ /d]	LTA info (years)	Number of sites	Mean or Median
229 Douro							
230 Minho							
228 Tejo	209						
93 Bay of Biscay and Iberian Coast (PO)							

SPAIN

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003 by Spain.

Table 4a	Total Direct discharges and Riverine inputs to the maritime area in 2003 by Spain.
Table 5a	Direct discharges to the maritime area in 2003 by Spain (sewage effluents)
Table 5b	Direct discharges to the maritime area in 2003 by Spain (industrial effluents)
Table 5c	Direct discharges to the maritime area in 2003 by Spain (total direct discharges)
Table 6a	Riverine inputs to the maritime area in 2003 by Spain (main riverine inputs)
Table 6b	Riverine inputs to the maritime area in 2003 by Spain (tributary riverine inputs)
Table 6c	Riverine inputs to the maritime area in 2003 by Spain (total riverine inputs)
Table 7a	Contaminant concentrations of Spanish rivers discharging to the maritime area (main riverine inputs)
Table 7b	Contaminant concentrations of Spanish rivers discharging to the maritime area (tributary riverine inputs)
Table 8	Detection limits for contaminant concentration of Spanish inputs to the maritime area.

Data Report on the Comprehensive Study of Riverine Inputs and Direct Discharges (RID) in the year 2003



Annual report on riverine inputs and direct discharges by Spain to Convention waters during the year 2003

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: 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	x
	Oca	coastal water	0108	x
	Butrón	coastal water	0109	x
	Cadagua	estuary	011003	
	Galindo	estuary	011005	
	Asúa	estuary	011008	
	Barbadum	coastal water		x
	Lea	coastal water		x
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		x
	Grande de Jubia	coastal water	0130	
	Belelle	coastal water	0131	x
	Eume	coastal water	0132	
	Mandeo	coastal water	0133	
	Mero	coastal water	0134	
	Allones	coastal water	0135	
	Grande	coastal water	0136	
	Castro	coastal water	0137	
	Jallas	coastal water	0138	
	Tambre	coastal water	0139	
	Ulla	coastal water	0140	
	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	
	Guadamar	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

Spanish area draining waters to the Convention waters is divided in nine discharge areas, the seven mentioned above and two more transboundary rivers (Duero and Tajo) that are monitored by Portugal (see map above).

B. Total riverine inputs and direct discharges for the year 2003

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

This table shows the upper and lower values calculated as the addition of coastal and estuary direct discharges plus the upper and lower values of riverine inputs. Where no data were available for direct discharges, calculations were made assuming a 0 value.

C. Direct discharges for the year 2003

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:

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, discharge permits issued, official discharge registries based on direct measurement from sewage plants, and population estimations (taking into account seasonal population variations).

For concentration values, data sources are: annual discharge declarations, 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, DBO5, and fats and oils (Guadiana, Guadalquivir and País Vasco), and COT and PAHs (Guadiana and Guadalquivir).

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:

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.

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

For the Guadiana and Guadalquivir discharge areas, the flow considered for industrial effluents includes refrigeration water (70% of total flow), but parameter measurements only reflect the analyses of water from industrial processes.

In the País Vasco and Norte III discharge areas aquaculture effluents and hydroelectric refrigeration water have not been included in the industrial effluents.

C.5 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. However, some sewage plants and industries include those discharges in their declarations.

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):

There is only additional information for the Guadiana and Guadalquivir areas (Andalucía), but classified by provinces:

Pollutant load (t/year) Industrial direct discharges 2003				
Province	Cádiz	Huelva	Sevilla	Total
Flow rate (10 ³ m ³ /year)	115	511.180	861	512.157
Fats and Oils	0,09	18,0	7,74	25,8
DQO	2,46	9.684	132	9.819
COT	4,05	3.551	39,2	3.594
Arsenic (As)		1,74		1,74
Chromo (Cr)		0,23		0,23
Nickel (Ni)		0,47		0,47
PAHs (kg/year)		9,21		9,21
1,2 dichloroethane		0,11		0,11
AOX –Organochlorates		65		65
Phenols	0,10	0,87		0,97
Chlorides		2.701		2.701
Cyanides		0,37		0,37
Fluorides		10,6	0,24	10,9
Sulphides	0,06			0,06
Total Chlorine res.		10,9		10,9
Non polar HC		0,16		0,16
Cl ₃ CH		0,19		0,19

D. Riverine inputs for the year 2003

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 Principles), including for those under voluntary reporting:

For the discharge area Pais Vasco, the method used for the calculation of the annual load is the one described in paragraph 5.12 of the principles.

For the discharge areas Norte III, Norte II, Norte I, Guadiana and Guadalquivir the method used is the one described in paragraph 5.11 of the principles.

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.

For the discharge area Galicia Costa, the method used for most of the rivers 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 Mero and Tambre rivers expression n°1 has been used while expression n° 3 has been used for Ulla and Umia rivers.

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):

No other relevant information

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):

For the discharge area Guadalquivir PCBs have been measured

For the discharge area Norte PCBs and PAHs have been measured. Dieldrin and Endrin detected at Saja, Nalon, Louro and Miño rivers

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):

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

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

No other relevant information

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):

For the Guadalquivir discharge area PCBs have been measured.

For the Norte discharge area PCBs and PAHs have been measured.

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:

Not applicable

E. Limits of detection

E.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.

There are variations in these values within and among the different discharge areas because analyses were carried out by different laboratories. In the Cantabria region (part of Norte II discharge area), the laboratory used higher detection limits than the ones established by RID:

Cu: 0,1 mg/l

Pb: 0,1 mg/l

Hg: 0,001 mg/l

Cd: 0,1 mg/l

Zn: 0,05 mg/l

F. National Comments

F.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.

No information

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

Total Direct discharges and Riverine inputs to the maritime area by Spain (2001-2003)

Year	2001		2002		2003	
Estimate	lower	upper	lower	upper	lower	upper
Flow rate (1000 m ³ /d)	665,952,0		76,797,1		75,053,1	
Cd [10 ³ kg]	6,247	12,218	3,007	18,295	1,069	76,213
Hg [10 ³ kg]	0,218	13,169	0,964	13,217	0,222	13,273
Cu [10 ³ kg]	129,313	248,951	19,163	134,128	21,815	196,679
Pb [10 ³ kg]	46,141	96,920	15,158	127,392	20,543	202,936
Zn [10 ³ kg]	1.294,271	1.314,230	928,495	943,211	492,748	592,066
g-HCH [kg]	43,402	55,996	11,134	42,109	8,185	52,071
PCBs [kg]	32,398	90,056	78,563	104,776	9,441	216,537
NH ₄ -N [10 ⁶ kg]	19,075	19,159	21,269	21,443	20,194	21,289
NO ₃ -N [10 ⁶ kg]	57,199	57,528	112,932	113,409	70,765	70,895
PO ₄ -P [10 ⁶ kg]	2,340	2,597	3,147	3,827	2,447	3,355
Total N [10 ⁶ kg]	67,689	67,703	78,841	78,800	88,539	88,981
Total P [10 ⁶ kg]	9,013	9,110	6,741	6,757	4,625	4,828
SPM [10 ⁶ kg]	475,512	478,125	577,129	580,042	839,127	847,703

F.3 Indicate and explain, if appropriate:

- where any 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

Methods vary depending on the laboratory that carried out the analyses.

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 declaration 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 2003 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	8 357,55	0,215	0,040	10,062	0,096	73,391	0,004	0,000	2,601	4,907	0,359	20,394	1,196	119,452
	upper		4,769	2,973	21,064	46,249	78,100	0,016	0,020	2,637	4,914	1,080	20,400	1,209	119,562
NORTE III	lower	1 636,10	0,000	0,000	2,006	2,386	25,240	2,218	0,000	0,256	1,068	0,090	1,982	0,113	33,801
	upper		0,149	0,299	3,613	2,689	25,240	2,218	0,557	0,256	1,068	0,090	1,982	0,113	33,801
NORTE II	lower	7 696,44	0,249	0,162	1,701	2,439	75,967	2,660	1,135	4,980	4,083	0,261	15,558	0,502	261,643
	upper		1,178	1,840	14,470	6,794	78,608	4,052	12,254	4,980	4,088	0,264	15,558	0,508	263,278
GALICIA COSTA	lower	7 335,21	0,000	0,000	0,107	0,396	3,085	0,000	0,000	1,165	33,172	0,217	0,277	0,094	66,655
	upper		0,097	0,087	3,653	8,182	6,122	0,000	0,000	2,148	33,172	0,246	0,713	0,239	72,943
NORTE I (Miño)	lower	41 214,13	0,000	0,000	1,607	14,847	91,718	2,804	0,000	1,723	11,726	0,167	21,217	0,690	10,709
	upper		3,761	7,522	75,657	37,486	94,607	16,733	47,508	1,723	11,727	0,316	21,217	0,727	11,253
GUADIANA	lower	1 478,00	0,007	0,020	0,360	0,379	1,240	0,500	0,000	0,742	2,082	0,386	4,536	0,693	242,553
	upper		62,730	0,055	63,200	63,670	158,670	11,800	127,230	0,802	2,157	0,387	4,536	0,694	242,553
GUADALQUIVIR	lower	7 335,70	0,598	0,000	5,971	0,000	222,107	0,000	8,306	8,726	13,728	0,968	24,575	1,337	104,314
	upper		3,529	0,498	15,023	37,865	306,869	17,253	28,967	8,741	13,770	0,972	24,575	1,337	104,314
TOTAL	lower upper	75 053,13	1,069 76,213	0,222 13,273	21,815 196,679	20,543 202,936	492,748 592,066	8,185 52,071	9,441 216,537	20,194 21,289	70,765 70,895	2,447 3,355	88,539 88,981	4,625 4,828	839,127 847,703

Table 5a. Sewage direct discharges to the maritime area in 2003 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	219,32	lower	0,189	0,040	3,098	0,000	23,252	NI	NI	0,990	0,023	0,020	2,317	0,209	68,063
			upper	1,677	0,108	4,190	17,504	24,068	NI	NI	0,990	0,023	0,020	2,317	0,214	68,063
	Estuary	295,11	lower	NI	NI	NI	NI	NI	NI	NI	0,080	0,669	0,295	3,248	0,756	1,764
			upper	NI	NI	NI	NI	NI	NI	NI	0,099	0,669	0,295	3,248	0,756	1,778
Norte II (Cantabria)	Coastal	189,47	lower	NI	NI	NI	NI	NI	NI	NI	0,001	0,020	NI	0,077	0,020	0,403
			upper	NI	NI	NI	NI	NI	NI	NI	0,001	0,020	NI	0,077	0,020	0,403
	Estuary	13,21	lower	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0,181	0,054	1,270
			upper	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0,181	0,054	1,270
Norte II (Asturias)	Coastal	112,00	lower	0,000	0,000	0,169	0,000	0,000	NI	0,000	1,125	0,001	0,108	1,893	0,157	6,148
			upper	0,204	0,204	0,254	0,204	2,044	NI	2,861	1,125	0,005	0,108	1,893	0,157	6,148
	Estuary	15,12	lower	0,000	0,000	0,041	0,083	0,491	NI	0,000	0,164	0,002	0,023	0,226	0,043	0,999
			upper	0,011	0,028	0,041	0,083	0,491	NI	0,386	0,164	0,002	0,023	0,226	0,043	0,999
SUBTOTAL NORTE II	Coastal	301,47	lower	0,000	0,000	0,169	0,000	0,000	0,000	0,000	1,127	0,021	0,108	1,970	0,177	6,551
			upper	0,204	0,204	0,254	0,204	2,044	0,000	2,861	1,127	0,024	0,108	1,970	0,177	6,551
	Estuary	28,33	lower	0,000	0,000	0,041	0,083	0,491	0,000	0,000	0,164	0,002	0,023	0,407	0,097	2,269
			upper	0,011	0,028	0,041	0,083	0,491	0,000	0,386	0,164	0,002	0,023	0,407	0,097	2,269
GALICIA COSTA	Coastal	102,24	lower	NI	NI	0,000	NI	NI	NI	NI	NI	NI	NI	NI	NI	9,978
			upper	NI	NI	1,101	NI	NI	NI	NI	NI	NI	NI	NI	NI	9,978
	Estuary	288,37	lower	0,000	NI	0,107	0,396	3,085	NI	NI	NI	NI	NI	0,277	0,094	7,654
			upper	0,074	NI	2,551	8,179	6,087	NI	NI	NI	NI	NI	0,277	0,094	7,654
GUADIANA (Andalucía)	Coastal	24,00	lower	0,000	0,000	0,000	0,000	0,000	0,500	0,000	0,240	0,002	0,003	0,266	0,012	0,668
			upper	0,040	0,002	0,070	0,110	0,140	0,530	0,440	0,240	0,003	0,003	0,266	0,012	0,668
	Estuary	54,00	lower	0,003	0,000	0,010	0,359	0,420	0,000	0,000	0,259	0,077	0,068	0,430	0,087	0,746
			upper	0,110	0,013	0,160	0,570	0,880	0,930	0,900	0,259	0,079	0,068	0,430	0,087	0,746
GUADALQUIVIR (Andalucía)	Coastal	81,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,583	0,134	0,166	0,892	0,218	2,619
			upper	0,760	0,039	0,930	2,550	1,410	2,060	2,060	0,583	0,140	0,166	0,892	0,218	2,619
	Estuary	275,00	lower	0,000	0,000	0,080	0,000	0,270	0,000	0,000	2,580	0,000	0,341	3,368	0,500	3,834
			upper	1,470	0,255	1,310	9,850	7,080	13,410	17,170	2,580	0,036	0,341	3,368	0,500	3,834
TOTAL	Coastal	728,03	lower	0,189	0,040	3,267	0,000	23,252	0,500	0,000	2,940	0,179	0,297	5,445	0,616	87,880
			upper	2,681	0,353	6,545	20,369	27,662	2,590	5,361	2,940	0,191	0,297	5,445	0,621	87,880
	Estuary	940,81	lower	0,003	0,000	0,238	0,838	4,266	0,000	0,000	3,084	0,749	0,727	7,730	1,534	16,267
			upper	1,665	0,296	4,063	18,682	14,539	14,340	18,456	3,102	0,786	0,727	7,730	1,534	16,282
OVERALL TOTAL::		1 668,84	lower	0,192	0,040	3,505	0,838	27,518	0,500	0,000	6,024	0,928	1,024	13,175	2,150	104,147
			upper	4,346	0,649	10,608	39,051	42,200	16,930	23,818	6,042	0,977	1,024	13,175	2,155	104,161

Table 5b. Industrial direct discharges to the maritime area in 2003 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	7,32	lower upper	0,000 0,027	0,000 0,009	0,015 0,029	0,000 0,133	0,314 0,027	NI NI	NI NI	0,015 0,015	0,018 0,018	0,001 0,001	0,042 0,042	0,000 0,000	0,061 0,061
	Estuary	11,65	lower upper	0,026 0,210	0,000 0,001	0,004 0,209	0,007 0,039	0,718 0,722	NI NI	NI NI	0,114 0,114	0,103 0,103	0,000 0,000	0,000 0,000	0,004 0,004	0,160 0,172
Norte II (Cantabria)	Coastal	54,71	lower upper	0,009 0,009	0,040 0,040	0,020 0,020	NI NI	0,561 0,561	NI NI	NI NI	0,380 0,380	NI NI	NI NI	0,382 0,382	0,005 0,005	238,010 239,523
	Estuary	8,64	lower upper	0,000 0,000	0,061 0,061	0,001 0,001	0,001 0,001	0,001 0,001	NI NI	NI NI	0,457 0,457	NI NI	NI NI	0,457 0,457	0,000 0,004	6,933 6,968
Norte II (Asturias)	Coastal	53,47	lower upper	0,000 0,039	0,000 0,098	0,000 0,098	0,000 0,098	NI NI	NI NI	NI NI	0,039 0,039	0,759 0,760	0,001 0,001	0,857 0,857	0,006 0,006	1,223 1,223
	Estuary	47,87	lower upper	0,230 0,254	0,061 0,095	0,105 0,201	0,377 0,415	3,037 3,044	0,257 0,305	1,135 1,613	2,443 2,443	0,016 0,017	0,001 0,002	6,435 6,435	0,004 0,004	0,268 0,268
SUBTOTAL NORTE II	Coastal	108,17	lower upper	0,009 0,048	0,040 0,138	0,020 0,117	0,000 0,098	0,561 0,561	NI NI	NI NI	0,419 0,419	0,759 0,760	0,001 0,001	1,239 1,239	0,011 0,011	239,233 240,746
	Estuary	56,51	lower upper	0,230 0,254	0,122 0,156	0,106 0,202	0,377 0,415	3,039 3,045	0,257 0,305	1,135 1,613	2,900 2,900	0,016 0,017	0,001 0,002	6,892 6,892	0,004 0,008	7,201 7,236
GALICIA COSTA	Coastal	56,36	lower upper	NI NI	NI 0,077	NI NI	NI NI	NI NI	NI NI	NI NI	NI 0,482	NI NI	NI 0,002	NI 0,003	NI 0,004	NI 2,723
	Estuary	557,84	lower upper	NI 0,023	NI 0,010	NI NI	NI 0,003	NI 0,034	NI NI	NI NI	NI 0,502	NI NI	NI 0,028	NI 0,433	NI 0,141	NI 3,565
GUADIANA (Andalucía)	Coastal	NI	lower 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 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	1 400,00	lower upper	0,004 0,120	0,010 0,020	0,350 0,510	0,020 0,530	0,820 1,500	0,000 0,970	0,000 0,970	0,123 0,123	0,023 0,024	0,005 0,006	0,250 0,250	0,044 0,045	1,449 1,449
GUADALQUIVIR (Andalucía)	Coastal	0,30	lower 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 0,000	0,000 0,000	0,000 0,000	0,000 0,000	0,000 0,000	0,000 0,000	0,009 0,009
	Estuary	2,40	lower 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 0,000	0,011 0,011	0,019 0,020	0,000 0,000	0,032 0,032	0,000 0,000	0,040 0,040
TOTAL	Coastal	172,15	lower upper	0,009 0,075	0,040 0,223	0,035 0,146	0,000 0,231	0,875 0,588	0,000 0,000	0,000 0,000	0,434 0,916	0,777 0,778	0,001 0,003	1,281 1,284	0,011 0,015	239,304 243,539
	Estuary	2 028,40	lower upper	0,260 0,607	0,132 0,187	0,460 0,921	0,404 0,987	4,577 5,302	0,257 1,275	1,135 2,583	3,149 3,651	0,162 0,164	0,007 0,036	7,174 7,606	0,052 0,198	8,850 12,462
OVERALL TOTAL:		2 200,55	lower upper	0,269 0,682	0,172 0,410	0,495 1,067	0,404 1,218	5,452 5,889	0,257 1,275	1,135 2,583	3,583 4,567	0,939 0,942	0,009 0,039	8,454 8,890	0,063 0,213	248,154 256,002

Table 5c. Total direct discharges to the maritime area in 2003 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	226,64	lower	0,189	0,040	3,113	0,000	23,566	0,000	0,000	1,005	0,041	0,021	2,359	0,209	68,125
			upper	1,703	0,116	4,218	17,638	24,094	0,000	0,000	1,005	0,041	0,021	2,359	0,214	68,125
	Estuary	306,76	lower	0,026	0,000	0,004	0,007	0,718	0,000	0,000	0,195	0,772	0,295	3,248	0,759	1,924
			upper	0,210	0,001	0,209	0,039	0,722	0,000	0,000	0,213	0,772	0,295	3,248	0,759	1,951
Norte II (Cantabria)	Coastal	244,18	lower	0,009	0,040	0,020	0,000	0,561	0,000	0,000	0,381	0,020	0,000	0,459	0,025	238,413
			upper	0,009	0,040	0,020	0,000	0,561	0,000	0,000	0,381	0,020	0,000	0,459	0,025	239,926
	Estuary	21,85	lower	0,000	0,061	0,001	0,001	0,001	0,000	0,000	0,457	0,000	0,000	0,638	0,054	8,203
			upper	0,000	0,061	0,001	0,001	0,001	0,000	0,000	0,457	0,000	0,000	0,638	0,059	8,238
Norte II (Asturias)	Coastal	165,46	lower	0,000	0,000	0,169	0,000	0,000	0,000	0,000	1,165	0,760	0,109	2,750	0,163	7,371
			upper	0,243	0,302	0,352	0,302	2,044	0,000	2,861	1,165	0,765	0,109	2,750	0,163	7,371
	Estuary	62,99	lower	0,230	0,061	0,147	0,460	3,529	0,257	1,135	2,608	0,018	0,025	6,661	0,047	1,267
			upper	0,265	0,123	0,242	0,498	3,535	0,305	2,000	2,608	0,019	0,025	6,661	0,047	1,267
SUBTOTAL NORTE II	Coastal	409,64	lower	0,009	0,040	0,189	0,000	0,561	0,000	0,000	1,546	0,780	0,109	3,209	0,189	245,784
			upper	0,253	0,342	0,371	0,302	2,605	0,000	2,861	1,546	0,785	0,109	3,209	0,189	247,297
	Estuary	84,84	lower	0,230	0,122	0,147	0,460	3,530	0,257	1,135	3,065	0,018	0,025	7,299	0,101	9,470
			upper	0,265	0,184	0,244	0,498	3,536	0,305	2,000	3,065	0,019	0,025	7,299	0,106	9,505
GALICIA COSTA	Coastal	158,60	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	9,978
			upper	0,000	0,077	1,101	0,000	0,000	0,000	0,000	0,482	0,000	0,002	0,003	0,004	12,701
	Estuary	846,21	lower	0,000	0,000	0,107	0,396	3,085	0,000	0,000	0,000	0,000	0,000	0,277	0,094	7,654
			upper	0,097	0,010	2,551	8,182	6,122	0,000	0,000	0,502	0,000	0,028	0,710	0,235	11,219
GUADIANA (ANDALUCIA)	Coastal	24,00	lower	0,000	0,000	0,000	0,000	0,000	0,500	0,000	0,240	0,002	0,003	0,266	0,012	0,668
			upper	0,040	0,002	0,070	0,110	0,140	0,530	0,440	0,240	0,003	0,003	0,266	0,012	0,668
	Estuary	1 454,00	lower	0,007	0,010	0,360	0,379	1,240	0,000	0,000	0,382	0,100	0,073	0,680	0,131	2,195
			upper	0,230	0,033	0,670	1,100	2,380	1,900	1,870	0,382	0,103	0,073	0,680	0,132	2,195
GUADALQUIVIR (ANDALUCIA)	Coastal	81,30	lower	0,000	0,000	0,000	0,000	0,000	0,000	0,000	0,583	0,134	0,166	0,892	0,218	2,628
			upper	0,760	0,039	0,930	2,550	1,410	2,060	2,060	0,583	0,140	0,166	0,892	0,218	2,628
	Estuary	277,40	lower	0,000	0,000	0,080	0,000	0,270	0,000	0,000	2,591	0,020	0,342	3,400	0,500	3,874
			upper	1,470	0,255	1,310	9,850	7,080	13,410	17,170	2,591	0,055	0,342	3,400	0,500	3,874
TOTAL	Coastal	900,18	lower	0,198	0,080	3,302	0,000	24,127	0,500	0,000	3,374	0,956	0,298	6,726	0,627	327,183
			upper	2,756	0,576	6,691	20,600	28,249	2,590	5,361	3,856	0,969	0,300	6,729	0,636	331,419
	Estuary	2 969,21	lower	0,263	0,132	0,698	1,242	8,843	0,257	1,135	6,233	0,910	0,734	14,904	1,586	25,117
			upper	2,272	0,483	4,984	19,669	19,840	15,615	21,040	6,753	0,950	0,762	15,336	1,732	28,744
OVERALL TOTAL:		3 869,39	lower	0,461	0,212	4,000	1,242	32,970	0,757	1,135	9,607	1,866	1,032	21,630	2,213	352,300
			upper	5,028	1,059	11,674	40,269	48,089	18,205	26,401	10,609	1,919	1,062	22,066	2,369	360,163

Table 6a. Main riverine inputs to the maritime area in 2003 by Spain

Main riverine inputs				Quantities --->												
Discharge area (or name of river)	Flow rate [1000 m³/d]		Estimate	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
	2003	LTA		[10 ⁻³ kg]	[10 ⁻³ kg]	[10 ⁻³ kg]	[10 ⁻³ kg]	[10 ⁻³ kg]	[kg]	[kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]
Deva	1 032,50		lower	0,000	0,000	2,826	0,000	13,190	0,000	0,000	0,580	0,524	0,000	2,592	0,045	10,609
			upper	0,377	0,377	2,826	3,769	13,190	0,004	0,004	0,580	0,524	0,098	2,592	0,045	10,609
Urola	889,88		lower	0,000	0,000	0,603	0,000	1,253	0,000	0,000	0,013	0,646	0,000	3,387	0,024	1,156
			upper	0,325	0,325	1,763	3,248	2,413	0,003	0,003	0,020	0,648	0,085	3,387	0,024	1,156
Oria	2 106,50		lower	0,000	0,000	2,307	0,000	14,147	NI	NI	0,257	1,086	0,000	2,676	0,036	27,987
			upper	0,769	0,769	4,613	7,689	14,916	NI	NI	0,257	1,086	0,201	2,676	0,037	27,987
Urumea	889,66		lower	0,000	0,000	0,000	0,000	6,007	NI	0,000	0,119	0,208	0,000	0,638	0,003	1,156
			upper	0,325	0,325	1,624	3,247	6,278	NI	0,003	0,119	0,209	0,085	0,638	0,005	1,156
Oyarzun	274,37		lower	0,000	0,000	0,000	0,000	5,768	0,000	0,000	0,005	0,176	0,000	0,236	0,000	1,150
			upper	0,100	0,100	0,501	1,001	5,768	0,001	0,001	0,006	0,176	0,026	0,236	0,001	1,170
Barbadun	197,76		lower	0,000	0,000	0,000	0,000	0,351	0,000	0,000	0,001	0,097	0,000	0,163	0,001	0,309
			upper	0,072	0,072	0,361	0,722	0,557	0,001	0,001	0,003	0,097	0,019	0,169	0,002	0,323
Butrón	345,60		lower	0,000	0,000	0,324	0,000	1,496	0,004	0,000	0,243	0,150	0,013	0,765	0,026	0,870
			upper	0,126	0,126	0,685	1,261	1,856	0,004	0,001	0,243	0,151	0,036	0,765	0,026	0,896
Oca	373,19		lower	0,000	0,000	0,327	0,000	1,117	0,000	0,000	0,140	0,226	0,031	0,549	0,081	0,627
			upper	0,136	0,136	0,872	1,362	1,389	0,001	0,001	0,141	0,226	0,052	0,549	0,081	0,627
Lea	315,87		lower	0,000	0,000	0,300	0,000	0,945	0,000	0,000	0,000	0,107	0,000	2,023	0,000	0,971
			upper	0,115	0,115	0,761	1,153	1,176	0,001	0,001	0,004	0,107	0,030	2,023	0,001	0,994
Artibay	208,47		lower	0,000	0,000	0,107	0,000	1,096	0,000	0,000	0,010	0,057		0,390	0,002	0,385
			upper	0,076	0,076	0,411	0,761	1,096	0,001	0,001	0,010	0,058	0,020	0,390	0,002	0,385
PAÍS VASCO SUBTOTAL	6 633,79		lower	0,000	0,000	6,794	0,000	45,370	0,004	0,000	1,368	3,277	0,044	13,419	0,218	45,220
			upper	2,421	2,421	14,417	24,213	48,639	0,016	0,016	1,383	3,282	0,652	13,425	0,224	45,303
Nervión	1 636,10	1 636,02	lower	0,000	0,000	2,006	2,386	25,240	2,218	0,000	0,256	1,068	0,090	1,982	0,113	33,801
			upper	0,149	0,299	3,613	2,689	25,240	2,218	0,557	0,256	1,068	0,090	1,982	0,113	33,801
NORTE III SUBTOTAL	1 636,10	1 636,02	lower	0,000	0,000	2,006	2,386	25,240	2,218	0,000	0,256	1,068	0,090	1,982	0,113	33,801
			upper	0,149	0,299	3,613	2,689	25,240	2,218	0,557	0,256	1,068	0,090	1,982	0,113	33,801
Saja	1 838,16	1 838,16	lower	0,010	0,000	1,366	1,877	59,707	1,063	0,000	0,152	1,817	0,024	2,306	0,055	5,752
			upper	0,171	0,335	4,066	2,048	59,707	1,429	1,597	0,152	1,817	0,027	2,306	0,057	5,752
Nalón	4 179,40	4 179,40	lower	0,000	0,000	0,000	0,000	9,532	1,061	0,000	0,161	1,167	0,082	2,168	0,123	0,526
			upper	0,381	0,763	7,627	3,051	9,935	1,759	5,796	0,161	1,167	0,082	2,168	0,123	0,576
Sella	832,32	832,32	lower	0,000	0,000	0,000	0,000	1,192	0,230		0,028	0,133	0,014	0,289	0,022	0,070
			upper	0,076	0,152	1,519	0,608	1,381	0,419		0,028	0,133	0,014	0,289	0,022	0,086
Miera	352,08	352,08	lower	0,000	0,000	0,000	0,102	1,444	0,049		0,029	0,167	0,008	0,288	0,012	0,041
			upper	0,032	0,064	0,643	0,287	1,444	0,141		0,029	0,167	0,008	0,288	0,012	0,061
NORTE II SUBTOTAL	7 201,96	7 201,96	lower	0,010	0,000	1,366	1,979	71,876	2,402	0,000	0,370	3,285	0,127	5,050	0,212	6,389
			upper	0,661	1,314	13,855	5,993	72,467	3,747	7,393	0,370	3,285	0,131	5,050	0,214	6,476

Table 6a. Main riverine inputs to the maritime area in 2003 by Spain

Main riverine inputs			Quantities ---->													
Discharge area (or name of river)	Flow rate [1000 m³/d]		Estimate	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
	2003	LTA		[10 ⁻³ kg]	[10 ⁻³ kg]	[10 ⁻³ kg]	[10 ⁻³ kg]	[10 ⁻³ kg]	[kg]	[kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]
Masma	323,47	544,32	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,015 0,015	0,532 0,532	0,003 0,003	NI NI	NI NI	0,438 0,438
Ouro	242,60	293,76	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,012 0,012	0,286 0,286	0,002 0,002	NI NI	NI NI	0,277 0,277
Landro	732,41	613,44	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,037 0,037	0,731 0,731	0,005 0,005	NI NI	NI NI	0,835 0,835
Sor		518,40	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,019 0,019	0,390 0,390	0,001 0,001	NI NI	NI NI	0,303 0,303
Mera	264,24	362,88	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,010 0,010	0,280 0,280	0,002 0,002	NI NI	NI NI	0,724 0,724
Forcadas	NI	182,74	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI
Belelle	NI	1 483,88	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI
Eume	NI	1 650,24	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,067 0,067	1,455 1,455	0,003 0,003	NI NI	NI NI	1,225 1,225
Mandeo	483,45	1 218,24	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,029 0,029	0,775 0,775	0,004 0,004	NI NI	NI NI	1,053 1,053
Mero	NI	639,36	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,054 0,054	1,443 1,443	0,003 0,003	NI NI	NI NI	2,497 2,497
Allones	1 401,37	984,96	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,057 0,057	3,757 3,757	0,037 0,037	NI NI	NI NI	4,323 4,323
Grande	NI	712,12	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,052 0,052	1,485 1,485	0,019 0,019	NI NI	NI NI	0,846 0,846
Castro	NI	449,28	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,016 0,016	0,435 0,435	0,001 0,001	NI NI	NI NI	0,295 0,295
Jallas	NI	1 693,44	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,102 0,102	2,983 2,983	0,006 0,006	NI NI	NI NI	1,772 1,772
Tambre	NI	4 674,24	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,262 0,262	10,111 10,111	0,069 0,069	NI NI	NI NI	17,175 17,175
Ulla	1 062,17	6 877,44	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,072 0,072	1,848 1,848	0,013 0,013	NI NI	NI NI	3,161 3,161
Umia	NI	1 408,32	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,122 0,122	1,135 1,135	0,012 0,012	NI NI	NI NI	2,125 2,125
Lérez	NI	1 831,68	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,056 0,056	1,134 1,134	0,005 0,005	NI NI	NI NI	2,407 2,407
Verdugo _ Oitabén	NI	1 468,80	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	0,055 0,055	0,704 0,704	0,003 0,003	NI NI	NI NI	1,019 1,019
GALICIA COSTA SUBTOTAL	4 509,71	27 607,54	lower upper	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	NI NI	1,036 1,036	29,483 29,483	0,187 0,187	NI NI	NI NI	40,474 40,474

Table 6a. Main riverine inputs to the maritime area in 2003 by Spain

Main riverine inputs			Quantities ---->													
Discharge area (or name of river)	Flow rate [1000 m³/d]		Estimate	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
	2003	LTA		[10 ⁻³ kg]	[10 ⁻³ kg]	[10 ⁻³ kg]	[10 ⁻³ kg]	[10 ⁻³ kg]	[kg]	[kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]
Miño	40 087,00	40 087,00	lower	0,000	0,000	0,000	14,701	87,479	1,633	0,000	1,579	11,306	0,153	20,427	0,660	6,429
			upper	3,658	7,316	73,159	36,614	90,350	15,553	46,922	1,579	11,306	0,298	20,427	0,694	6,973
NORTE I SUBTOTAL	40 087,00	40 087,00	lower	0,000	0,000	0,000	14,701	87,479	1,633	0,000	1,579	11,306	0,153	20,427	0,660	6,429
			upper	3,658	7,316	73,159	36,614	90,350	15,553	46,922	1,579	11,306	0,298	20,427	0,694	6,973
Guadiana	NI	8 556,00	lower	0,000	0,010	0,000	0,000	0,000	0,000	0,000	0,120	1,980	0,310	3,590	0,550	239,690
			upper	62,460	0,020	62,460	62,460	156,150	9,370	124,920	0,180	2,050	0,310	3,590	0,550	239,690
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	18,620	0,000	1 976,480	16,430	5 762,990	0,000	0,000	0,060	0,170	0,000	0,240	0,000	9,860
			upper	20,810	0,000	1 976,480	20,810	5 762,990	1,310	17,520	0,070	0,180	0,000	0,260	0,040	9,860
Tinto *	NI	178,00	lower	10,400	0,000	1 756,140	13,160	2 565,500	0,000	0,000	0,060	0,060	0,000	0,100	0,010	2,840
			upper	10,720	0,000	1 756,140	13,160	2 565,500	0,190	2,600	0,060	0,060	0,000	0,100	0,010	2,840
GUADIANA SUBTOTAL	NI	9 934,00	lower	0,000	0,010	0,000	0,000	0,000	0,000	0,000	0,120	1,980	0,310	3,590	0,550	239,690
			upper	62,460	0,020	62,460	62,460	156,150	9,370	124,920	0,180	2,050	0,310	3,590	0,550	239,690
Guadalquivir	5 534,00	19 808,00	lower	0,000	0,000	0,000	0,000	0,000	0,000	6,060	0,701	11,554	0,179	12,408	0,250	67,868
			upper	0,606	0,162	6,060	20,199	66,656	1,414	7,191	0,713	11,554	0,183	12,408	0,250	67,868
Guadalete	216,00	1 515,00	lower	0,008	0,000	0,000	0,000	0,000	0,000	0,757	0,443	0,393	0,042	0,942	0,065	4,462
			upper	0,029	0,006	0,237	0,788	2,602	0,055	0,790	0,443	0,393	0,042	0,942	0,065	4,462
GUADALQUIVIR SUBTOTAL	5 750,00	21 323,00	lower	0,008	0,000	0,000	0,000	0,000	0,000	6,817	1,145	11,947	0,221	13,350	0,316	72,330
			upper	0,635	0,168	6,296	20,987	69,258	1,469	7,981	1,157	11,947	0,225	13,350	0,316	72,330
TOTAL	65 818,57	107 789,52	lower	0,017	0,010	10,166	19,066	229,964	6,257	6,817	5,873	62,345	1,132	57,818	2,069	444,334
			upper	69,984	11,538	173,800	152,957	305,953	32,373	187,789	5,961	62,420	1,893	57,824	2,111	445,047

* 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 2003 by Spain

Tributary riverine inputs				Quantities --->												
Discharge area (or name of river)	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]
	2002	LTA														
Astúa	109,53	NI	lower	0,000	0,000	0,107	0,000	0,493	0,000	0,000	0,006	0,057	0,000	0,199	0,002	1,044
			upper	0,040	0,040	0,240	0,400	0,560	0,000	0,000	0,006	0,058	0,010	0,199	0,002	1,044
Cadagua	999,60	NI	lower	0,000	0,000	0,000	0,000	2,992	NI	0,000	0,021	0,724	0,000	1,118	0,008	2,576
			upper	0,365	0,365	1,824	3,649	3,722	NI	0,004	0,024	0,724	0,095	1,118	0,009	2,576
Galindo	81,22	NI	lower	0,000	0,000	0,044	0,089	0,252	NI	NI	0,006	0,036	0,000	0,051	0,000	0,563
			upper	0,030	0,030	0,156	0,311	0,363	NI	NI	0,006	0,036	0,008	0,051	0,001	0,563
PAÍS VASCO SUBTOTAL	1 190,35	0,00	lower	0,000	0,000	0,151	0,089	3,737	0,000	0,000	0,033	0,817	0,000	1,368	0,010	4,183
			upper	0,435	0,435	2,220	4,360	4,645	0,000	0,004	0,036	0,818	0,113	1,368	0,012	4,183
NORTE III SUBTOTAL			lower													
			upper													
NORTE II SUBTOTAL			lower													
			upper													
Furelos	486,58	572,83	lower	NI	NI	NI	NI	NI	NI	NI	0,062	0,623	0,009	NI	NI	3,560
			upper	NI	NI	NI	NI	NI	NI	NI	0,062	0,623	0,009	NI	NI	3,560
Deza	1 334,11	1 607,04	lower	NI	NI	NI	NI	NI	NI	NI	0,067	3,066	0,020	NI	NI	4,988
			upper	NI	NI	NI	NI	NI	NI	NI	0,067	3,066	0,020	NI	NI	4,988
GALICIA COSTA SUBTOTAL	1 820,69	2 179,87	lower	NI	NI	NI	NI	NI	NI	NI	0,129	3,689	0,029	NI	NI	8,548
			upper	NI	NI	NI	NI	NI	NI	NI	0,129	3,689	0,029	NI	NI	8,548
Louro	1 127,13	1 127,13	lower	0,000	0,000	1,607	0,146	4,240	1,170	0,000	0,145	0,420	0,014	0,790	0,029	4,280
			upper	0,103	0,206	2,497	0,872	4,257	1,179	0,586	0,145	0,421	0,018	0,790	0,034	4,280
NORTE I SUBTOTAL	1 127,13	1 127,13	lower	0,000	0,000	1,607	0,146	4,240	1,170	0,000	0,145	0,420	0,014	0,790	0,029	4,280
			upper	0,103	0,206	2,497	0,872	4,257	1,179	0,586	0,145	0,421	0,018	0,790	0,034	4,280
GUADIANA SUBTOTAL			lower													
			upper													
Guadaira	605,00	1 515,00	lower	0,000	0,000	0,442	0,000	0,000	0,000	1,104	4,379	0,276	0,227	5,545	0,284	15,695
			upper	0,066	0,018	1,038	2,208	7,285	0,155	1,227	4,379	0,276	0,227	5,545	0,284	15,695
Guadamar	622,00	611,00	lower	0,590	0,000	5,449	0,000	221,837	0,000	0,386	0,029	1,352	0,012	1,388	0,019	9,786
			upper	0,597	0,018	5,449	2,271	221,837	0,159	0,529	0,031	1,352	0,012	1,388	0,019	9,786
GUADALQUIVIR SUBTOTAL	1 227,00	2 126,00	lower	0,590	0,000	5,891	0,000	221,837	0,000	1,490	4,408	1,627	0,239	6,933	0,303	25,482
			upper	0,663	0,036	6,487	4,478	229,122	0,313	1,756	4,411	1,627	0,239	6,933	0,303	25,482
TOTAL	5 365,17	5 433,00	lower	0,590	0,000	7,649	0,235	229,813	1,170	1,490	4,714	6,553	0,283	9,091	0,342	42,493
			upper	1,201	0,677	11,204	9,710	238,023	1,493	2,346	4,720	6,556	0,400	9,091	0,349	42,493

Table 6c. Total riverine inputs to the maritime area in 2003 by Spain

Total riverine inputs				Quantities --->												
Discharge area (or name of river)	Flow rate [1000 m³/d]		Estimate	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
	2002	LTA		[10 ³ kg]	[10 ³ kg]	[10 ³ kg]	[10 ³ kg]	[10 ³ kg]	[kg]	[kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]
PAÍS VASCO	7 824,15	NI	lower	0,000	0,000	6,945	0,089	49,107	0,004	0,000	1,401	4,094	0,044	14,787	0,228	49,403
SUBTOTAL			upper	2,856	2,856	16,637	28,573	53,284	0,016	0,020	1,419	4,100	0,765	14,793	0,236	49,486
NORTE III	1 636,10	1 636,02	lower	0,000	0,000	2,006	2,386	25,240	2,218	0,000	0,256	1,068	0,090	1,982	0,113	33,801
SUBTOTAL			upper	0,149	0,299	3,613	2,689	25,240	2,218	0,557	0,256	1,068	0,090	1,982	0,113	33,801
NORTE II	7 201,96	7 201,96	lower	0,010	0,000	1,366	1,979	71,876	2,402	0,000	0,370	3,285	0,127	5,050	0,212	6,389
SUBTOTAL			upper	0,661	1,314	13,855	5,993	72,467	3,747	7,393	0,370	3,285	0,131	5,050	0,214	6,476
GALICIA COSTA	6 330,40	29 787,41	lower	NI	NI	NI	NI	NI	NI	NI	1,165	33,172	0,217	NI	0,000	49,022
SUBTOTAL			upper	NI	NI	NI	NI	NI	NI	NI	1,165	33,172	0,217	NI	0,000	49,022
NORTE I	41 214,13	41 214,13	lower	0,000	0,000	1,607	14,847	91,718	2,804	0,000	1,723	11,726	0,167	21,217	0,690	10,709
SUBTOTAL			upper	3,761	7,522	75,657	37,486	94,607	16,733	47,508	1,723	11,727	0,316	21,217	0,727	11,253
GUADIANA	NI	9 934,00	lower	0,000	0,010	0,000	0,000	0,000	0,000	0,000	0,120	1,980	0,310	3,590	0,550	239,690
SUBTOTAL			upper	62,460	0,020	62,460	62,460	156,150	9,370	124,920	0,180	2,050	0,310	3,590	0,550	239,690
GUADALQUIVIR	6 977,00	23 449,00	lower	0,598	0,000	5,891	0,000	221,837	0,000	8,306	5,553	13,574	0,460	20,283	0,619	97,812
SUBTOTAL			upper	1,299	0,204	12,783	25,465	298,379	1,783	9,737	5,568	13,574	0,464	20,283	0,619	97,812
TOTAL	71 183,74	113 222,52	lower	0,608	0,010	17,815	19,302	459,777	7,428	8,306	10,587	68,899	1,414	66,909	2,411	486,826
			upper	71,185	12,214	185,005	162,667	543,977	33,866	190,135	10,681	68,976	2,293	66,915	2,459	487,540

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2003

Main river			Contaminant concentrations -->													
Discharge area	Flow rate [1000 m³/d]		Mean or median?	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
	annual	LTA		[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]
OYARZUN (País Vasco)	274,37	NI														
Lower estimate			Mean	0,000	0,000	0,000	0,000	57,600	0,000	0,000	0,045	1,757	0,000	2,360	0,005	11,480
Upper estimate				1,000	1,000	5,000	10,000	57,600	10,000	10,000	0,061	1,757	0,261	2,360	0,011	11,680
Minimum				1,000	1,000	5,000	10,000	25,000	10,000	10,000	0,039	1,032	0,261	1,060	0,010	1,000
Maximum				1,000	1,000	5,000	10,000	92,000	10,000	10,000	0,093	2,574	0,261	4,910	0,013	43,000
> 70 % > d.L. ?			yes/no	no	no	yes	no	yes	no	no	no	yes	yes	yes	no	yes
n				5												
URUMEA (País Vasco)	889,66	NI														
Lower estimate			Mean	0,000	0,000	0,000	0,000	18,500	NI	0,000	0,367	0,640	0,000	1,964	0,010	3,560
Upper estimate			Mean	1,000	1,000	5,000	10,000	19,333	NI	10,000	0,367	0,644	0,261	1,964	0,016	3,560
Minimum				1,000	1,000	5,000	10,000	5,000	NI	10,000	0,047	0,023	0,261	0,510	0,010	2,000
Maximum				1,000	1,000	5,000	10,000	32,000	NI	10,000	1,556	1,204	0,261	5,480	0,028	7,200
> 70 % > d.L. ?			yes/no	no	no	yes	no	yes		no	yes	yes	yes	yes	no	yes
n				6	6	6	6	6		1	6	6	6	5	5	5
ORIA (País Vasco)	2 106,50	NI														
Lower estimate			Mean	0,000	0,000	3,000	0,000	18,400	NI	NI	0,334	1,412	0,000	3,480	0,046	3,360
Upper estimate			Mean	1,000	1,000	6,000	10,000	19,400	NI	NI	1,412	1,412	0,261	3,480	0,048	3,560
Minimum				1,000	1,000	5,000	10,000	5,000	NI	NI	0,695	0,695	0,261	0,940	0,010	1,000
Maximum				1,000	1,000	9,000	10,000	27,000	NI	NI	3,003	3,003	0,261	5,760	0,092	5,800
> 70 % > d.L. ?			yes/no	no	no	yes	no	yes			yes	yes	yes	yes	no	no
n				5	5	5	5	5			5	5	5	5	5	5
UROLA (País Vasco)	889,88	NI														
Lower estimate			Mean	0,000	0,000	1,857	0,000	3,857	0,000	0,000	0,041	1,988	0,000	10,428	0,074	3,360
Upper estimate			Mean	1,000	1,000	5,429	10,000	7,429	10,000	10,000	0,063	1,995	0,261	10,428	0,074	3,560
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,023	0,261	4,800	0,020	1,000
Maximum				1,000	1,000	7,000	10,000	16,000	10,000	10,000	0,148	3,997	0,261	28,300	0,160	5,800
> 70 % > d.L. ?			yes/no	no	no	yes	no	yes	no	no	no	yes	yes	yes	no	no
n				7	7	7	7	7	2	1	7	7	7	5	5	5
DEVA (País Vasco)	1 032,50	NI														
Lower estimate			Mean	0,000	0,000	6,000	0,000	48,000	0,000	0,000	1,467	1,622	0,000	6,708	0,122	28,000
Upper estimate			Mean	1,000	1,000	7,000	10,000	48,000	10,000	10,000	1,467	1,622	0,261	6,708	0,122	28,000
Minimum				1,000	1,000	5,000	10,000	17,000	10,000	10,000	0,109	0,838	0,261	0,860	0,060	6,200
Maximum				1,000	1,000	11,000	10,000	100,000	10,000	10,000	2,987	2,552	0,261	16,900	0,270	88,000
> 70 % > d.L. ?			yes/no	no	no	yes	no	yes	no	no	yes	yes	yes	yes	no	yes
n				5	5	5	5	5	2	1	5	5	5	5	5	5
BARBADUN (País Vasco)	197,76	NI														
Lower estimate			Mean	0,000	0,000	0,000	0,000	11,857	0,000	0,000	0,013	1,340	0,000	2,260	0,019	4,280
Upper estimate			Mean	1,000	1,000	5,000	10,000	7,714	10,000	10,000	0,041	1,347	0,261	2,340	0,023	4,480

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2003

Main river			Contaminant concentrations -->													
Discharge area	Flow rate [1000 m³/d]		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]
	annual	LTA														
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,023	0,261	0,400	0,010	1,000
Maximum				1,000	1,000	5,000	10,000	15,000	10,000	10,000	0,047	3,726	0,261	3,740	0,041	9,000
> 70 % > dL ?			yes/no	no	no	yes	no	yes	no	no	no	yes	yes	yes	no	no
n				7	7	7	7	7	2	1	7	7	7	5	5	5
BUTRON (País Vasco)	345,60	NI														
Lower estimate			Mean	0,000	0,000	2,571	0,000	11,857	30,000	0,000	1,928	1,191	0,101	6,062	0,206	6,900
Upper estimate			Mean	1,000	1,000	5,429	10,000	14,714	30,000	10,000	1,928	1,198	0,288	6,062	0,206	7,100
Minimum				1,000	1,000	5,000	10,000	5,000	20,000	10,000	0,202	0,023	0,261	1,380	0,030	1,000
Maximum				1,000	1,000	6,000	10,000	42,000	40,000	10,000	6,222	2,529	0,424	13,700	0,430	16,000
> 70 % > dL ?			yes/no	no	no	yes	no	yes	no	no	yes	yes	yes	yes	no	no
n				7	7	7	7	7	2	1	7	7	7	5	5	5
OCA (País Vasco)	373,19	NI														
Lower estimate			Mean	0,000	0,000	2,400	0,000	8,200	0,000	0,000	1,027	1,658	0,228	4,030	0,598	4,600
Upper estimate			Mean	1,000	1,000	6,400	10,000	10,200	10,000	10,000	1,034	1,658	0,385	4,030	0,598	4,600
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,903	0,261	2,430	0,040	2,000
Maximum				1,000	1,000	12,000	10,000	16,000	10,000	10,000	2,543	2,506	0,587	7,790	1,200	9,400
> 70 % > dL ?			yes/no	no	no	yes	no	yes	no	no	yes	yes	yes	yes	yes	yes
n				5	5	5	5	5	2	1	5	5	5	5	5	5
LEA (País Vasco)	315,87	NI														
Lower estimate			Mean	0,000	0,000	2,600	0,000	8,200	0,000	0,000	0,000	0,927	0,000	17,544	0,000	8,420
Upper estimate			Mean	1,000	1,000	6,600	10,000	10,200	10,000	10,000	0,039	0,927	0,261	17,544	0,010	8,622
Minimum				1,000	1,000	5,000	10,000	5,000	10,000	10,000	0,039	0,370	0,261	1,240	0,010	1,000
Maximum				1,000	1,000	13,000	10,000	24,000	10,000	10,000	0,039	1,242	0,261	74,900	0,010	23,000
> 70 % > dL ?			yes/no	no	no	yes	no	yes	no	no	no	yes	yes	yes	no	yes
n				5	5	5	5	5	2	1	5	5	5	5	5	5
ARTIBAY (País Vasco)	208,47	NI														
Lower estimate			Mean	0,000	0,000	1,400	0,000	14,400	0,000	0,000	0,132	0,754	0,000	5,120	0,027	5,060
Upper estimate			Mean	1,000	1,000	5,400	10,000	14,400	10,000	10,000	0,132	0,759	0,261	5,120	0,029	5,060
Minimum				1,000	1,000	5,000	10,000	9,000	10,000	10,000	0,047	0,023	0,261	0,790	0,010	3,200
Maximum				1,000	1,000	7,000	10,000	30,000	10,000	10,000	0,280	1,716	0,269	14,300	0,043	10,400
> 70 % > dL ?			yes/no	no	no	yes	no	yes	no	no	yes	yes	yes	yes	no	yes
n				5	5	5	5	5	2	1	5	5	5	5	5	5
SAJA (norte II)	1 838,16	1 838,16														
Lower estimate				0,033	0,000	9,083	3,250	160,000	6,500	0,000	0,596	2,355	0,099	3,583	0,165	6,000
Upper estimate				0,263	0,500	13,250	3,583	160,000	6,750	7,000	0,596	2,355	0,103	3,583	0,167	6,000
Minimum				0,250	0,500	5,000	2,000	48,000	1,000	0,000	0,050	0,100	0,020	1,000	0,020	2,000
Maximum				0,400	0,500	102,000	14,000	397,000	51,000	7,000	1,790	15,000	0,260	15,900	0,390	34,000
> 70 % > dL ?			yes/no	no	no	no	yes	yes	yes	no	yes	yes	yes	yes	yes	yes
n				12	12	12	12	12	12	4	12	12	12	12	12	12

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2003

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d]		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]
	annual	LTA														
NALÓN (norte II)	4 179,40	4 179,40														
Lower estimate				0,000	0,000	0,833	0,667	12,667	0,917	0,000	0,109	0,835	0,078	1,575	0,112	13,333
Upper estimate				0,250	0,500	5,417	2,500	13,000	1,417	7,000	0,109	0,835	0,078	1,575	0,112	13,833
Minimum				0,250	0,500	5,000	2,000	5,000	1,000	0,000	0,040	0,500	0,020	1,200	0,020	2,000
Maximum				0,250	0,500	10,000	8,000	10,000	3,000	7,000	0,290	1,200	0,170	2,100	0,200	128,000
> 70 % > dL ?			yes/no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes
n				12	12	12	12	12	12	4	12	12	12	12	12	12
SELLA (norte II)	832,32	832,32														
Lower estimate				0,000	0,000	0,000	0,000	5,000	0,583	0,000	0,093	0,591	0,032	1,957	0,056	2,750
Upper estimate				0,250	0,500	5,000	2,000	5,417	1,250	0,000	0,093	0,591	0,035	1,957	0,058	3,583
Minimum				0,250	0,500	5,000	2,000	1,000	1,000	0,000	0,040	0,200	0,020	0,700	0,020	2,000
Maximum				0,250	0,500	5,000	2,000	15,000	2,000	0,000	0,170	1,060	0,090	2,100	0,120	13,000
> 70 % > dL ?			yes/no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	no
n				12	12	12	12	12	12	0	12	12	12	12	12	12
MIERA (norte II)	352,08	352,08														
Lower estimate				0,000	0,000	0,000	0,417	8,083	1,750	0,000	0,235	1,121	0,134	2,911	0,165	1,083
Upper estimate				0,250	0,500	5,000	2,083	8,167	2,250	0,000	0,235	1,121	0,134	2,911	0,165	2,250
Minimum				0,250	0,500	5,000	2,000	1,000	1,000	0,000	0,060	0,690	0,030	1,500	0,046	2,000
Maximum				0,250	0,500	5,000	3,000	25,000	6,000	0,000	0,730	1,800	0,340	3,400	0,400	4,000
> 70 % > dL ?			yes/no	no	no	no	no	yes	no	no	yes	yes	yes	yes	yes	no
n				12	12	12	12	12	12	0	12	12	12	12	12	12
MASMA (Galicia Costa)	323,47	544,32														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,131	4,505	0,022	NI	NI	3,000
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,131	4,505	0,022	NI	NI	3,000
Minimum				NI	NI	NI	NI	NI	NI	NI	0,016	3,900	0,004	NI	NI	0,800
Maximum				NI	NI	NI	NI	NI	NI	NI	0,220	5,900	0,044	NI	NI	6,000
> 70 % > dL ?			yes/no													
n											12	12	12			12
ORO (Galicia Costa)	242,60	293,76														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,145	3,287	0,017	NI	NI	2,933
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,145	3,287	0,017	NI	NI	2,933
Minimum				NI	NI	NI	NI	NI	NI	NI	0,037	2,500	0,007	NI	NI	0,800
Maximum				NI	NI	NI	NI	NI	NI	NI	0,261	4,200	0,045	NI	NI	6,800
> 70 % > dL ?			yes/no													
n											12	12	12			12
LANDRO (Galicia Costa)	732,41	613,44														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,162	2,479	0,021	NI	NI	3,000
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,162	2,479	0,214	NI	NI	3,000

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2003

Main river			Contaminant concentrations -->													
Discharge area	Flow rate [1000 m³/d]		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]
	annual	LTA														
Minimum				NI	NI	NI	NI	NI	NI	NI	0,025	2,000	0,005	NI	NI	0,800
Maximum				NI	NI	NI	NI	NI	NI	NI	0,343	3,300	0,046	NI	NI	9,200
> 70 % > dL ?			yes/no													
n											12	12	12			12
SOR (Galicia Costa)	0,00	518,40														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,098	2,059	0,006	NI	NI	1,600
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,098	2,059	0,006	NI	NI	1,600
Minimum				NI	NI	NI	NI	NI	NI	NI	0,000	1,400	0,000	NI	NI	0,400
Maximum				NI	NI	NI	NI	NI	NI	NI	0,350	2,600	0,044	NI	NI	2,800
> 70 % > dL ?			yes/no													
n											12	12	12			12
MERA (Galicia Costa)	264,24	362,88														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,136	2,729	0,010	NI	NI	7,033
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,136	2,729	0,010	NI	NI	7,033
Minimum				NI	NI	NI	NI	NI	NI	NI	0,000	2,000	0,000	NI	NI	2,400
Maximum				NI	NI	NI	NI	NI	NI	NI	0,429	3,600	0,052	NI	NI	13,200
> 70 % > dL ?			yes/no													
n											12	12	12			12
Forcadás	NI	182,74														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,365	5,100	0,030	NI	NI	11,333
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,365	5,100	0,030	NI	NI	11,333
Minimum				NI	NI	NI	NI	NI	NI	NI	0,083	3,200	0,010	NI	NI	3,200
Maximum				NI	NI	NI	NI	NI	NI	NI	0,762	6,500	0,057	NI	NI	26,000
> 70 % > dL ?			yes/no													
n											3	3	3			3
Belelle	NI	1 483,88														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,117	4,333	0,019	NI	NI	5,867
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,117	4,333	0,019	NI	NI	5,867
Minimum				NI	NI	NI	NI	NI	NI	NI	0,049	3,300	0,002	NI	NI	2,800
Maximum				NI	NI	NI	NI	NI	NI	NI	0,153	5,500	0,050	NI	NI	11,600
> 70 % > dL ?			yes/no													
n											3	3	3			3
EUME (Galicia Costa)	NI	1 650,24														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,111	2,415	0,005	NI	NI	2,033
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,111	2,415	0,005	NI	NI	2,033
Minimum				NI	NI	NI	NI	NI	NI	NI	0,007	2,180	0,000	NI	NI	0,400
Maximum				NI	NI	NI	NI	NI	NI	NI	0,266	2,700	0,046	NI	NI	4,400
> 70 % > dL ?			yes/no													
n											12	12	12			12

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2003

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d]		Mean or median?	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
	annual	LTA		[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]
MANDEO (Galicia Costa)	483,45	1 218,24														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,197	4,345	0,014	NI	NI	7,433
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,197	4,345	0,014	NI	NI	7,433
Minimum				NI	NI	NI	NI	NI	NI	NI	0,360	3,100	0,006	NI	NI	1,600
Maximum				NI	NI	NI	NI	NI	NI	NI	0,416	5,500	0,049	NI	NI	46,000
> 70 % > d.L. ?			yes/no													
n											12	12	12			12
MERO (Galicia Costa)	NI	639,36														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,232	6,183	0,011	NI	NI	10,700
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,232	6,183	0,011	NI	NI	10,700
Minimum				NI	NI	NI	NI	NI	NI	NI	0,029	2,300	0,002	NI	NI	4,000
Maximum				NI	NI	NI	NI	NI	NI	NI	0,617	9,600	0,053	NI	NI	49,600
> 70 % > d.L. ?			yes/no													
n											12	12	12			12
ALLONES (Galicia Costa)	1 401,37	984,96														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,185	7,915	0,091	NI	NI	8,300
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,185	7,915	0,091	NI	NI	8,300
Minimum				NI	NI	NI	NI	NI	NI	NI	0,073	6,500	0,015	NI	NI	3,200
Maximum				NI	NI	NI	NI	NI	NI	NI	0,360	10,300	0,190	NI	NI	16,400
> 70 % > d.L. ?			yes/no													
n											12	12	12			12
GRANDE (Galicia Costa)	NI	712,12														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,197	5,675	0,073	NI	NI	3,233
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,197	5,675	0,732	NI	NI	3,233
Minimum				NI	NI	NI	NI	NI	NI	NI	0,024	4,400	0,016	NI	NI	1,200
Maximum				NI	NI	NI	NI	NI	NI	NI	0,312	7,500	0,159	NI	NI	8,800
> 70 % > d.L. ?			yes/no													
n											12	12	12			12
CASTRO (Galicia Costa)	NI	449,28														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,098	2,653	0,007	NI	NI	1,800
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,098	2,653	0,007	NI	NI	1,800
Minimum				NI	NI	NI	NI	NI	NI	NI	0,025	1,900	0,000	NI	NI	0,400
Maximum				NI	NI	NI	NI	NI	NI	NI	0,297	3,200	0,048	NI	NI	4,000
> 70 % > d.L. ?			yes/no													
n											12	12	12			12
JALLAS (Galicia Costa)	NI	1 693,44														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,165	4,826	0,009	NI	NI	2,867
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,165	4,826	0,009	NI	NI	2,867

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2003

Main river			Contaminant concentrations -->													
Discharge area	Flow rate [1000 m³/d]		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]
	annual	LTA														
Minimum				NI	NI	NI	NI	NI	NI	NI	0,080	3,610	0,000	NI	NI	0,800
Maximum				NI	NI	NI	NI	NI	NI	NI	0,389	6,600	0,056	NI	NI	6,000
> 70 % > dL ?			yes/no													
n											12	12	12			12
TAMBRE (Galicia Costa)	NI	4 674,24														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,154	5,927	0,040	NI	NI	10,067
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,154	5,927	0,040	NI	NI	10,067
Minimum				NI	NI	NI	NI	NI	NI	NI	0,055	4,800	0,010	NI	NI	2,000
Maximum				NI	NI	NI	NI	NI	NI	NI	0,407	7,400	0,135	NI	NI	57,200
> 70 % > dL ?			yes/no													
n											12	12	12			12
ULLA (Galicia Costa)	1 062,17	6 877,44														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,156	4,698	0,021	NI	NI	5,367
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,156	4,698	0,021	NI	NI	5,367
Minimum				NI	NI	NI	NI	NI	NI	NI	0,036	3,900	0,005	NI	NI	2,000
Maximum				NI	NI	NI	NI	NI	NI	NI	0,394	6,280	0,074	NI	NI	19,600
> 70 % > dL ?			yes/no													
n											12	12	12			12
UMIA (Galicia Costa)	NI	1 408,32														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,238	2,208	0,024	NI	NI	4,133
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,238	2,208	0,024	NI	NI	4,133
Minimum				NI	NI	NI	NI	NI	NI	NI	0,025	1,700	0,005	NI	NI	1,200
Maximum				NI	NI	NI	NI	NI	NI	NI	0,571	3,000	0,070	NI	NI	14,000
> 70 % > dL ?			yes/no													
n											12	12	12			12
LÉREZ (Galicia Costa)	NI	1 831,68														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,833	1,696	0,008	NI	NI	3,600
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,833	1,696	0,008	NI	NI	3,600
Minimum				NI	NI	NI	NI	NI	NI	NI	0,000	1,300	0,000	NI	NI	0,400
Maximum				NI	NI	NI	NI	NI	NI	NI	0,313	2,200	0,050	NI	NI	17,200
> 70 % > dL ?			yes/no													
n											12	12	12			12
VERDUGO (Galicia Costa)	NI	1 468,80														
Lower estimate				NI	NI	NI	NI	NI	NI	NI	0,103	1,313	0,006	NI	NI	1,900
Upper estimate				NI	NI	NI	NI	NI	NI	NI	0,103	1,313	0,006	NI	NI	1,900
Minimum				NI	NI	NI	NI	NI	NI	NI	0,000	0,900	0,000	NI	NI	0,400
Maximum				NI	NI	NI	NI	NI	NI	NI	0,280	1,500	0,042	NI	NI	6,000
> 70 % > dL ?			yes/no													
n											12	12	12			12

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2003

Main river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d]		Mean or median?	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
	annual	LTA		[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]
MIÑO (norte I)	40 087,00	40 087,00														
Lower estimate				0,000	0,000	0,000	0,333	5,167	0,417	0,000	0,127	0,740	0,008	2,294	0,056	4,167
Upper estimate				0,250	0,500	5,000	2,167	5,417	1,250	7,000	0,127	0,740	0,021	2,294	0,058	4,500
Minimum				0,250	0,500	5,000	2,000	1,000	1,000	0,000	0,060	0,400	0,020	0,960	0,020	2,000
Maximum				0,250	0,500	5,000	4,000	12,000	3,000	7,000	0,350	1,300	0,030	2,100	0,211	7,000
> 70 % > dL ?				no	no	no	no	yes	no	no	yes	yes	no	yes	yes	yes
n				12	12	12	12	9	12	4	12	12	12	12	12	12
GUADIANA (Guadiana)	NI	8 556,00														
Lower estimate				0,000	0,002	0,000	0,000	0,000	0,000	0,000	0,039	0,633	0,100	1,150	0,175	76,750
Upper estimate				20,000	0,005	20,000	20,000	50,000	3,000	40,000	0,059	0,655	0,100	1,150	0,175	76,750
Minimum				20,000	0,005	20,000	20,000	50,000	3,000	40,000	0,040	0,090	0,072	0,700	0,100	34,000
Maximum				20,000	0,005	20,000	20,000	50,000	3,000	40,000	0,109	1,197	0,117	1,900	0,400	178,000
> 70 % > dL ?			yes/no	no	no	no	no	no	no	no	no	yes	yes	yes	yes	YES
n				4	3	4	4	4	3	3	4	4	4	4	4	4
PIEDRAS (Guadiana)	NI	NI														
Lower estimate				0,000	0,012	0,000	0,000	0,000	0,000	0,000	0,033	0,429	0,044	0,775	0,000	30,000
Upper estimate				20,000	0,013	20,000	20,000	50,000	3,000	40,000	0,053	0,474	0,044	0,775	0,100	30,000
Minimum				20,000	0,005	20,000	20,000	50,000	3,000	40,000	0,040	0,090	0,010	0,300	0,100	5,000
Maximum				20,000	0,028	20,000	20,000	50,000	3,000	40,000	0,086	0,904	0,085	1,300	0,100	70,000
> 70 % > dL ?			yes/no	no	no	no	no	no	no	no	no	no	yes	yes	no	YES
n				4	3	4	4	4	3	3	4	4	4	4	4	4
ODIEL (Guadiana)	NI	1 200,00														
Lower estimate				42,500	0,002	4 512,500	37,500	13 157,500	0,000	0,000	0,131	0,378	0,003	0,550	0,000	22,500
Upper estimate				47,500	0,006	4 512,500	47,500	13 157,500	3,000	40,000	0,151	0,401	0,006	0,600	0,100	22,500
Minimum				20,000	0,005	440,000	20,000	1 430,000	3,000	40,000	0,040	0,090	0,004	0,200	0,100	2,000
Maximum				120,000	0,007	12 030,000	90,000	34 820,000	3,000	40,000	0,312	0,700	0,013	0,900	0,100	61,000
> 70 % > dL ?			yes/no	YES	no	YES	no	YES	no	no	no	YES	no	YES	no	YES
n				4	3	4	4	4	3	3	4	4	4	4	4	4
TINTO (Guadiana)	NI	178,00														
Lower estimate				160,000	0,016	27 030,000	202,500	39 487,500	0,000	0,000	0,919	0,875	0,009	1,604	0,150	43,750
Upper estimate				165,000	0,016	27 030,000	202,500	39 487,500	3,000	40,000	0,919	0,875	0,012	1,604	0,225	43,750
Minimum				20,000	0,005	2 960,000	60,000	2 840,000	3,000	40,000	0,117	0,655	0,004	0,800	0,100	7,000
Maximum				450,000	0,033	71 500,000	450,000	111 800,000	3,000	40,000	2,987	1,130	0,036	2,417	0,600	94,000
> 70 % > dL ?			yes/no	YES	YES	YES	YES	YES	no	no	YES	YES	no	YES	no	YES
n				4	3	4	4	4	3	3	4	4	4	4	4	4
GUADALQUIVIR (Guadalquivir)	5 534,00	19 808,00														
Lower estimate			median	0,000	0,000	0,000	0,000	0,000	0,000	3,000	0,347	5,720	0,089	6,143	0,124	33,600
Upper estimate			median	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI

Table 7a. Contaminant concentrations of Spanish main rivers discharging to the maritime area. 2003

[illegible]

Table 7b. Contaminant concentrations of Spanish tributary rivers discharging to the maritime area, 2003

Tributary river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d]		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]
	annual	LTA														
ASUA (País Vasco)	109,53															
Lower estimate			Mean	0,000	0,000	2,667	0,000	12,333	NI	NI	0,148	1,436	0,000	4,985	0,042	26,125
Upper estimate			Mean	0,001	0,001	6,000	0,010	14,000	NI	NI	0,155	1,444	0,261	4,985	0,045	26,125
Minimum				0,001	0,001	5,000	0,010	5,000	NI	NI	0,039	0,023	0,261	2,040	0,010	4,600
Maximum				0,001	0,001	9,000	0,010	31,000	NI	NI	0,366	3,794	0,261	13,320	0,097	63,500
> 70 % > d.L. ?			yes/no	no	no	yes	no	yes			yes	no	yes	yes	no	no
n				6,000	6,000	6,000	6,000	6,000			6,000	6,000	6,000	4,000	4,000	4,000
CADAGUA (País Vasco)	999,60															
Lower estimate			Mean	0,000	0,000	0,000	0,000	8,200	NI	0,000	0,058	1,983	0,000	3,064	0,023	7,060
Upper estimate			Mean	0,001	0,001	5,000	0,010	10,200	NI	10,000	0,065	1,983	0,261	3,064	0,025	7,060
Minimum				0,001	0,001	5,000	0,010	5,000	NI	10,000	0,039	0,987	0,261	1,010	0,010	4,200
Maximum				0,001	0,001	5,000	0,010	15,000	NI	10,000	0,078	3,477	0,261	4,980	0,044	14,200
> 70 % > d.L. ?			yes/no	no	no	yes	no	yes		no	yes	yes	yes	yss	no	yes
n				5,000	5,000	5,000	5,000	5,000		1,000	5,000	5,000	5,000	5,000	5,000	5,000
GALINDO (País Vasco)	81,22															
Lower estimate			Mean	0,000	0,000	1,500	0,003	8,500	NI	NI	0,210	1,220	0,000	1,718	0,017	19,000
Upper estimate			Mean	0,001	0,001	5,250	0,011	12,250	NI	NI	0,210	1,220	0,261	1,718	0,019	19,000
Minimum				0,001	0,001	5,000	0,010	5,000	NI	NI	0,101	0,732	0,261	0,780	0,010	3,600
Maximum				0,001	0,001	6,000	0,012	34,000	NI	NI	0,443	1,734	0,261	3,480	0,029	49,400
> 70 % > d.L. ?			yes/no	no	no	yes	no	yes			yes	yes	yes	yes	no	yes
n				4,000	4,000	4,000	4,000	4,000			4,000	4,000	4,000	4,000	4,000	4,000
LOURO (Norte I)	1 127,13	1 127,13														
Lower estimate			Mean	0,000	0,000	1,000	0,500	9,083	4,167	0,000	0,890	0,839	0,088	3,278	0,179	33,167
Upper estimate			Mean	0,250	0,500	5,167	2,167	9,250	4,250	7,000	0,890	0,848	0,090	3,278	0,181	33,167
Minimum				0,250	0,500	5,000	2,000	1,000	1,000	0,000	0,070	0,100	0,020	1,500	0,020	9,000
Maximum				0,250	0,500	7,000	3,000	22,000	9,000	7,000	2,700	1,300	0,200	3,300	0,480	105,000
> 70 % > d.L. ?			yes/no	NO	NO	NO	NO	SI	SI	NO	SI	SI	SI	SI	SI	SI
n				12,000	12,000	12,000	12,000	12,000	12,000	4,000	12,000	12,000	12,000	12,000	12,000	12,000
GUADAIRA (Guadalquivir)	605,00	1 515,00														
Lower estimate			median	0,000	0,000	2,000	0,000	0,000	0,000	5,000	19,838	1,249	1,029	25,119	1,286	71,100
Upper estimate				NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Minimum				0,000	0,000	0,000	0,000	0,000	0,000	0,000	1,840	0,069	0,587	6,505	0,810	19,000
Maximum				0,000	0,000	20,000	0,000	0,000	0,000	34,000	30,360	4,508	1,578	36,437	1,670	342,000
> 70 % > d.L. ?			yes/no	NO	NO	NO	NO	NO	NO	NO	yes	yes	yes	yes	yes	yes
n				12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000
GUADIAMAR (Guadalquivir)	622,00	611,00														
Lower estimate			median	2,600	0,000	24,000	0,000	977,000	0,000	0,000	0,126	5,952	0,053	6,112	0,084	43,100
Upper estimate				NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Minimum				0,000	0,000	10,000	0,000	180,000	0,000	0,000	0,000	0,690	0,016	0,690	0,020	11,000
Maximum				10,000	0,000	50,000	0,000	3 480,000	0,000	0,000	0,288	17,480	0,114	17,480	0,240	92,000
> 70 % > d.L. ?			yes/no	yes	NO	yes	NO	yes	NO	NO	yes	yes	yes	yes	yes	yes
n				12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000	12,000

Table 8. Detection limits for contaminant concentrations of Spanish inputs to the maritime area 2003

			Detection limits for contaminant concentrations -->												
Sampling point	Type		Cd	Hg	Cu	Pb	Zn	g-HCH	PCB's	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
			[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	NI	NI	0,3	0,1	0,02	1	1	5
País Vasco	I	-	50	10	50	100	50	NI	NI	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)	0,25	0,5	5	2	1	1	7	0,04	0,1	0,02	0,2	0,02	2
Norte II (Asturias)	S	-	0,002	0,005	0,005	0,005	0,05	10	70	S.D.	0,1	0,02	0,8	0,02	2
Norte II (Asturias)	I	-	0,002	0,005	0,005	0,005	0,05	10	70	S.D.	0,1	0,02	0,8	0,02	2
Norte II (Cantabria)	I	-			0,1										
Norte II (all sampling points)	R	(all sampling points)	0,25	0,5	5	2	1	1	7	0,04	0,1	0,02	0,2	0,02	2
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)	0,25	0,5	5	2	1	1	7	0,04	0,1	0,02	0,2	0,02	2
Guadiana & Guadalquivir (Andalucía)	S & I (lab. 1)	-	0,005 / 0,003	0,0002	0,01 / 0,008	0,05 / 0,012	0,03 / 0,005	-	-	0,1	1,55	0,2	-	0,2	2,5
Guadiana & Guadalquivir (Andalucía)	S & I (lab. 2)	-	0,04	-	0,05	0,1	0,05	50 / 100	50	0,1	25	0,3	5	0,3	2,5
Guadiana (all sampling points)	R	(all sampling points)	20	0,005	20	20	50	3	40	0,01	0,5	0,01	0,2	0,1	1
Guadalquivir (all sampling points)	R	(all sampling points)	0,3	0,08	3	10	33	0,7	1,0	0,03	0,04	0,02	0,03	0,02	1,7

SWEDEN

Annual report on riverine inputs and direct discharges to Convention waters during the year 2003 by Sweden

Table 5a	Sewage Effluents. Reported Maritime Area of the OSPAR Convention in 2003 by Sweden
Table 5b	Industrial effluents. Reported Maritime Area of the OSPAR Convention in 2003 by Sweden
Table 5c	Direct discharges to the Maritime area in 2003 by Sweden
Table 6a	Main riverine inputs. Reported Maritime Area of the OSPAR Convention in 2003 by Sweden
Table 6b	Tributary riverine inputs. Reported Maritime Area of the OSPAR Convention in 2003 by Sweden
Table 6c	Riverine inputs to the maritime area in 2003 by Sweden
Table 7a	Contaminant concentrations
Table 8	Detection limits

Annual report on riverine inputs and direct discharges by Sweden to Convention waters during the year 2003

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

Swedish National Protection Agency
SE 106 48 Stockholm
Sweden
Contact person: Catarina Johansson
Tel: + 46 8 698 1000 (Agency) +46 8 698 1245 (Catarina Johansson)
Email: catarina.johansson@naturvardsverket.se

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

This overview can be found in Appendix 1 “Statistical Information on River Catchment Areas” which has not been changed since last year.

Country: _____			
Name of river, subarea and discharge area ¹	Nature of the receiving water ²	optional: national reference number	optional: map reference number

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 for the year 2003

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

None

C. Direct discharges for the year 2003

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:

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.

In computing annual emissions, concentrations are weighted by relevant water amounts. Estimated stormwater overflows at the plant have been added.

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:

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.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 stormwater overflows - that are not covered by the data in tables 5a. and 5b.:

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.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 2003

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 Principles), including for those under voluntary reporting:

In table 6a, concentrations have been linearly interpolated and multiplied by daily flow values obtained from models. (This is thought to reflect flow variations somewhat better than the procedure proposed in Section 5.11 of the Principles.)

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

Tributary Rivers (Tables 6b.)

D.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 5 of the Principles):

Area losses are calculated for representative small rivers and applied to other small rivers and coastal areas.

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

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

None

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):

None

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.:

None

E. Limits of detection

E.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.

None

F. National Comments

F.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.

None

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

None

F.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 the change
- incomplete or distorted data

None

Table 5a. Direct discharges to the maritime area in 2003 by Sweden

Sewage 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]	NH ₄ -N [10 ⁶ kg]	NO ₃ -N [10 ⁶ kg]	PO ₄ -P [10 ⁶ kg]	Total N [10 ⁶ kg]	Total P [10 ⁶ kg]	SPM(2) [10 ⁶ kg]
Kattegat	14	395	0,0081	0,0079	1,215	0,052	2,3	NI	NI	0,97828	NI	NI	1,414	0,056	NI
Skagerrak	19	51	0,0003	0,0043	0,131	0,026	0,2	NI	NI	0,13706	NI	NI	0,284	0,007	NI
Total:	33	446	0,008	0,012	1,345	0,079	2,507	NI	NI	1,115	NI	NI	1,698	0,064	NI

Table 5b. Direct discharges to the maritime area in 2003 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]	NH ₄ -N [10 ⁶ kg]	NO ₃ -N [10 ⁶ kg]	PO ₄ -P [10 ⁶ kg]	Total N [10 ⁶ kg]	Total P [10 ⁶ kg]	SPM(2) [10 ⁶ kg]
Kattegat	4	110	0,0161	0,0010	0,184	0,128	2,0	NI	NI	0,0188	NI	NI	0,152	0,011	NI
Skagerrak	5	9	0,0001	0,0008	0,157	0,007	0,5	NI	NI	0,0666	NI	NI	0,076	0,002	NI
Total:	9	119	0,016	0,001	0,341	0,135	2,501	NI	NI	NI	NI	NI	0,228	0,013	NI

Table 5c. Direct discharges to the maritime area in 2003 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]	NH ₄ -N [10 ⁶ kg]	NO ₃ -N [10 ⁶ kg]	PO ₄ -P [10 ⁶ kg]	Total N [10 ⁶ kg]	Total P [10 ⁶ kg]	SPM(2) [10 ⁶ kg]
Kattegat	18	505	0,0242	0,0089	1,399	0,180	4,3	NI	NI	0,99708	NI	NI	1,566	0,068	NI
Skagerrak	24	60	0,0004	0,0051	0,287	0,033	0,7	NI	NI	0,20366	NI	NI	0,361	0,009	NI
Overall total:	42	565	0,025	0,014	1,686	0,213	5,008	NI	NI	1,201	NI	NI	1,927	0,077	NI

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

(2) Suspended particulate matter

(#) alternatively: Nature of receiving water

Table 6a. Riverine inputs to the maritime area in 2003 by Sweden

Main riverine inputs			Quantities --->												
Discharge area	Flow rate [1000 m³/d]		Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
Kattegat, Skagerrak	2002	LTA 1961-90	[10 ³ kg]	[10 ³ kg]	[10 ³ kg]	[10 ³ kg]	[10 ³ kg]	[kg]	[kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]
Rönne å	864	2030	0,009	0,0011	0,5	0,16	2	NI	NI	0,027	0,69	0,011	1	0,022	NI
Lagan	4234	7410	0,018	0,0031	1,6	0,57	4,5	NI	NI	0,065	0,73	0,009	1,6	0,037	NI
Nissan	2246	3690	0,016	0,0025	0,8	0,41	12,2	NI	NI	0,106	0,38	0,005	0,8	0,019	NI
Ätran	2765	5070	0,017	0,0024	1,2	0,3	3,4	NI	NI	0,098	0,74	0,008	1,3	0,02	NI
Viskan	2074	3450	0,006	0,0008	0,8	0,15	2	NI	NI	0,107	0,58	0,011	1	0,023	NI
Göta älv	33091	50530	0,082	0,0148	15	2,81	37,6	NI	NI	0,284	6,4	0,052	10,8	0,191	NI
Bäveån	354	350	0,002	0,0005	0,2	0,07	0,7	NI	NI	0,006	0,07	0,002	0,1	0,004	NI
Örekilsälven	1434	2050	0,008	0,0015	0,7	0,2	2	NI	NI	0,034	0,25	0,007	0,5	0,018	NI
Strömsån	276	390	0,002	0,0003	0,1	0,04	0,4	NI	NI	0,007	0,05	0,001	0,1	0,003	NI
Enningdalsälven	942	1360	0,005	0,0007	0,2	0,05	0,9	NI	NI	0,004	0,12	0,001	0,2	0,005	NI
Total:	48280	76330	0,165	0,0277	21,1	4,76	65,7	NI	NI	0,7	10	0,1	17	0,3	NI

Table 6b. Riverine inputs to the maritime area in 2003 by Sweden (smaller rivers and coastal areas)

Tributary riverine inputs			Quantities --->												
Discharge area	Flow rate [1000 m³/d]		Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM(2)
Kattegat, Skagerrak	2002	LTA 1961-90	[10 ³ kg]	[10 ³ kg]	[10 ³ kg]	[10 ³ kg]	[10 ³ kg]	[kg]	[kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]	[10 ⁶ kg]
smaller rivers and coastal areas in Kattegat	4864		0,023	0,0038	1,8	0,5	4,7	NI	NI	0,141	2,64	0,032	3,9	0,068	NI
smaller rivers and coastal areas in Skagerrak	2851		0,017	0,003	1,4	0,39	4	NI	NI	0,069	0,49	0,014	1,1	0,035	NI
Total:			0,04	0,0068	3,2	0,89	8,7	NI	NI	0,2	3,1	0,05	5,0	0,1	NI

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

(2) Suspended particulate matter

LTA: Long-term average flow: specify period

Table 6c. Riverine inputs to the maritime area in 2003 by Sweden

Total Riverine Inputs			Quantities --->												
Discharge area	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]	NH ₄ -N [10 ⁶ kg]	NO ₃ -N [10 ⁶ kg]	PO ₄ -P [10 ⁶ kg]	Total N [10 ⁶ kg]	Total P [10 ⁶ kg]	SPM(2) [10 ⁶ kg]
	2002	LTA 1961-90													
Kattegat	50138		0,159	0,0266	21,1	4,7	65,5	NI	NI	0,828	12,15	0,127	20,5	0,379	NI
Skagerrak	5858		0,034	0,0059	2,7	0,75	7,9	NI	NI	0,12	0,97	0,026	2,1	0,065	NI
Overall total: 55996			0,195	0,0328	23,9	5,49	73	NI	NI	0,9	13	0,153	23	0,444	NI

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

(2) Suspended particulate matter

LTA: Long-term average flow: specify period

Table 7a. Contaminant concentrations of Swedish rivers discharging to the maritime area 2003

Main river				Contaminant concentrations -->												
Discharge area Kattegat	Flow rate [1000 m³/d]		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]
	annual	LTA														
Rönne å	864	2 030	mean	0,025		1,35	0,488	5,69	ni	ni	0,076	0,94	0,0151	2,1	0,061	ni
Minimum				0,012		0,94	0,24	3,3			0,016	0,17	0,006	1,55	0,027	
Maximum				0,038		1,8	0,85	11			0,197	2,08	0,046	3,08	0,091	
> 70 % > d.l. ?			yes													
n			12		0											0
Lagan	4234	7 410	mean	0,012	0,002	1,06	0,359	2,94	ni	ni	0,042	0,33	0,0039	0,86	0,019	ni
Minimum				0,005	0,0012	0,92	0,24	1,4			0,011	0,14	0,002	0,66	0,014	
Maximum				0,024	0,0033	1,3	0,56	5,3			0,097	0,56	0,006	1,1	0,026	
> 70 % > d.l. ?			yes													
n			12													0
Nissan	2246	3 690	mean	0,019	0,0029	1,01	0,485	12,47	ni	ni	0,138	0,49	0,0066	1,08	0,023	ni
Minimum				0,006	0,002	0,83	0,36	4,8			0,019	0,23	0,003	0,71	0,014	
Maximum				0,034	0,004	1,1	0,67	73			0,45	0,65	0,011	1,28	0,037	
> 70 % > d.l. ?			yes													
n			12													0
Ätran	2765	5 070	mean	0,017	0,0022	1,22	0,285	3,27	ni	ni	0,101	0,73	0,0082	1,31	0,02	4,3
Minimum				0,006	0,001	0,74	0,09	0,9			0,013	0,42	0,002	0,91	0,01	1,8
Maximum				0,042	0,0042	3,3	0,47	4,6			0,281	1,39	0,044	1,98	0,029	6,3
> 70 % > d.l. ?			yes													
n			12													3
Viskan	2074	3 450	mean	calc	calc	calc	calc	calc	ni	ni	0,123	0,78	0,0123	1,39	0,028	ni
Minimum											0,019	0,24	0,003	0,68	0,018	
Maximum											0,548	1,18	0,055	1,78	0,064	
> 70 % > d.l. ?			yes													
n			12	0	0	0	0	0	0							0
Göta älv	33091	50 530	mean	0,007	0,0011	1,25	0,222	3,03	ni	ni	0,024	0,53	0,0039	0,88	0,015	5,2
Minimum				0,005	0,0004	1	0,1	2,2			0,009	0,42	0,002	0,74	0,008	2,3
Maximum				0,01	0,0018	1,6	0,46	3,8			0,045	0,86	0,01	1,23	0,024	9,8
> 70 % > d.l. ?			yes													
n			12													3

(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 7a, cont. Contaminant concentrations of Swedish rivers discharging to the maritime area 2003

Main rivers, cont.			Contaminant concentrations -->													
Discharge area Skagerrak	Flow rate [1000 m ³ /d]		Mean or median?	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1)	NH ₄ -N	NO ₃ -N	PO ₄ -P	Total N	Total P	SPM(2)
	annual	LTA		[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]
Bäveån	354	350	mean	0,015	0,0033	2,4	0,564	4,96	ni	ni	0,053	0,42	0,0122	1	0,032	ni
Minimum				0,006	0,0015	1,1	0,24	2,5			0,024	0,16	0,005	0,73	0,019	
Maximum				0,03	0,0074	7,3	1,11	10			0,086	0,83	0,022	1,43	0,044	
> 70 % > d.l. ?			yes													
n			12													0
Örekilsälven	1434	2 050	mean	0,015	0,0027	1,29	0,345	3,4	ni	ni	0,072	0,42	0,012	1	0,031	5,1
Minimum				0,008	0,0018	1,1	0,25	1,6			0,028	0,11	0,006	0,78	0,02	3,8
Maximum				0,023	0,0038	1,5	0,45	6,6			0,102	0,62	0,027	1,15	0,044	7,2
> 70 % > d.l. ?			yes													
n			11													3
Enningdalsälven	942	1 360	mean	0,014	0,0019	0,73	0,138	2,44	ni	ni	0,014	0,33	0,0033	0,66	0,013	ni
Minimum				0,01	0,0011	0,64	0,07	1,3			0,007	0,19	0,001	0,53	0,008	
Maximum				0,019	0,0033	0,84	0,19	4			0,022	0,47	0,009	0,81	0,046	
> 70 % > d.l. ?			yes													
n			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 2003 by the United Kingdom

Text report, including Tables A-E

Table 5a Sewage Effluents. Reported Maritime Area of the OSPAR Convention in 2003 by the United Kingdom

Table 5b Industrial effluents. Reported Maritime Area of the OSPAR Convention in 2003 by the United Kingdom

Table 6c Riverine inputs. Reported Maritime Area of the OSPAR Convention in 2003 by the United Kingdom

THE OSLO AND PARIS COMMISSIONS (OSPAR) RID 2003 INPUTS SURVEY

RESULTS FROM THE UNITED KINGDOM

1. Introduction

- 1.1 At its meeting in Lisbon on 15th-17th June 1988 the Paris Commission decided to initiate annual surveys of inputs of selected substances of interest/concern in the maritime area. The first survey in the UK was carried out during the calendar year 1990. The fourteenth survey, carried out in 2003, is covered by this report.
- 1.2 The objective of each survey was to monitor 90% of the riverine and direct inputs of each selected substance. As an aid to achieving this, the Commission published a document giving details of the methodology to be followed. This Document was updated in 1996 and has the title "Principles of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID)".
- 1.3 In order to supplement the 2003 inputs data report, summary data is also included for the period from 1990. In 2003, a scrutiny of all UK inputs data was made in order to check for significant errors and inconsistencies. Opportunity was taken at the same time to reorganize the various data sets into a consistent format. The outcome of this scrutiny and reorganization are detailed in a UK paper INPUT 04/03/Info.4-E.
- 1.4 Cautions. In making any comparisons in between years, it should be noted that there are significant variations year on year due to riverine flow rate variations. Also, sampling in the initial year, 1990, was limited. This factor, coupled with the lack of an ongoing time series of data to facilitate the checking the of 1990 data, means that less reliance should be placed on the 1990 input estimates than those for subsequent years. There is some evidence of under reporting in the earlier years which was not addressed in the 2003 scrutiny where it did not materially affect the overall picture on UK inputs. However, this may have an influence on the pattern of change for individual substances on the local scale and should be considered in any detailed assessment. In 2001, due to restrictions on access relating to the control of foot and mouth disease, it was not possible to take all samples called for. This, coupled with an uneven spread of sampling through the year, means that less reliance should be given to 2001 inputs in any assessment of trends.

2. Procedure

- 2.1 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.
- 2.2 Generally, all the main river systems are sampled approximately monthly at a sampling point close to but upstream of the tidal limit, (ie the point at which the unidirectional fresh water flow ceases).

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

3. **Parameters Monitored**

- 3.1 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 determinants 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).
- 3.2 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.

4. **Estimation of Annual Load**

- 4.1 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.
- 4.2 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, no significant error will have resulted from not specifically monitoring these inputs.
- 4.3 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).

5. **Format of the Results**

- 5.1 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. Inputs are separately recorded for sewage effluents, for industrial effluents and for rivers.
- 5.2 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).

- 5.3 Two sets of annual input estimates are supplied for each sampling region, the lower estimate and the upper estimate. The first set treats concentrations found to be less than the limit of detection as having a value of zero. The second set treats such concentrations as having a value equal to the limit of detection.
- 5.4 The OSPAR (RID) reporting format gives the annual totals for the lower and upper estimates of inputs for each determinand in each sampling region and sea area for:
- (1) Direct Sewage Inputs (Table 5a);
 - (2) Direct Industrial Inputs (Table 5b); and
 - (3) Riverine Inputs (Table 6c).
- 5.5 Additionally, Tables A, B and C give the overall UK inputs in each year since 1990 for:
- (1) Direct Inputs (Sewage plus Industrial);
 - (2) Riverine Inputs; and
 - (3) Total Inputs (Direct plus Riverine).
- NB. As a consequence of the review referred to section 1.3, there have been some minor changes to some of the estimates reported in earlier years.
- 5.6 Table D provides a summary of Total (Direct plus Riverine) inputs from the UK for 2003 to each of the six sea areas, and subtotals for inputs to the greater North Sea (QSR RTT II) and to the Celtic Seas (QSR RTT III).
- 5.7 Table E provides annual riverine flow rates since 1990 and the corresponding long term average (LTA) flow rates for individual UK sampling regions and for the six sea areas adjacent to the UK. These figures are the aggregates of the respective flow rates for all the rivers monitored within each particular sampling region or sea area.

6. **Discussion of Results**

- 6.1 Inspection of Table A shows that there are good downward trends for most Direct inputs over the period since 1990, but with a leveling out in the inputs of metals and nutrients over more recent years. The lack of significant change in nitrate-N over the period may reflect the higher rate of conversion from the $\text{NH}_4\text{-N}$ form as a result of improved effluent treatment standards. Consequently, neither form of nitrogen should be assessed in isolation.
- 6.2 Direct inputs of gamma-HCH (lindane) and PCBs are extremely low and, given the limited number of positive measurements, it is not sensible to try and draw any conclusions with regard to national trends. (Also, see section 3.2).
- 6.3 Generally, riverine inputs (Table B) do not show the same distinct trends as the corresponding Direct inputs. This reflects the significant influence of differing annual flows (discussed further below) and the related variations in background and diffuse source loads. It should be noted that the background load is an uncertain quantity; also that diffuse sources are by their nature difficult to control and that there will be a delayed response to any control measures.
- 6.4 Riverine inputs in 2003 were the lowest observed over the period since 1990 and as such are consistent with those expected for a year that was much dryer than average.

NB Due to this, direct comparison of 2003 inputs with estimates for any of the preceding years will be misleading unless properly qualified - see section 6.5 below.

- 6.5 In 2003, riverine flows were the lowest reported over the period of the RID surveys. Overall, they were the order of 15-20% lower than the long term average and marginally lower than the next driest year, 1996. In contrast, riverine flows in 2000 were some 30-35% above long term average flows. See Table E for details. This indicates the need to consider riverine inputs in conjunction with flows, quantitatively or qualitatively, in any evaluation of the patterns of change in riverine or total inputs.
- 6.6 The data on Total (Direct plus Riverine) inputs for the period since 1990 (Table C) shows that while the (flow related) higher riverine inputs in the five reporting years 1998-2002 tended to counter the decreases in direct inputs, the (flow related) lower inputs of 2003 have tended to exaggerate the decrease. This further highlights that care is needed in drawing any conclusions on patterns of change without taking into account the influence of the skewed pattern of flows over the period.
- 6.7 A large proportion of the overall UK inputs enter the maritime area via a few key sampling regions (ICES Zones). For instance, some 70% of nutrient inputs entered via 30% of the sampling regions.
- 6.8 For a number of sampling regions, the lower estimates of input for some determinands are significantly lower than the corresponding upper estimates, thus indicating that most concentrations were below the level of detection (LOD).
- 6.9 Generally, the large number of results used in the overall estimates provides an averaging effect. However, there may be some large annual variations in the inputs from some of the 40 sampling regions into which the UK coastline is divided. This would indicate that care should be taken before drawing any firm conclusions from the data from any one sampling region.

7. Conclusions.

- 7.1 There are good downward trends for all UK Direct inputs over the period 1990-2003, but the diminishing rate of reduction in some inputs possibly reflects a base load below which further reduction may be difficult or slow to achieve.
- 7.2 Although UK riverine inputs in 1998, 1999, 2000, 2001 and 2002 were relatively high when compared to those for 1996, 1997 and 2003, this reflects the pattern in annual flow that has occurred over the eight-year period. Flow adjustment could reduce the variation in the input estimates and, thus, may make it easier to establish the underlying trends.
- 7.3 Overall, for the period since 1990 during which RID input reporting has taken place, there has been a substantial reduction in the total UK inputs of mercury and cadmium and a reduction in the inputs of other hazardous substances. For total UK inputs of nitrogen, there are wide annual variations. However, these are a consequence of the variability in riverine flows over the period, and it is likely that there is little or no underlying change over the period.

ajo 20.12.04

(also showing boundaries of inputs' sampling regions NI 1 & 2, E 1 - E 30 and SC 1 - SC 5)

(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

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Sewage plus Industrial to All Sea Areas	Quantity:																										
		Cd		Hg		Cu		Pb		Zn		g-HCH		PCB		NH4-N		NO3-N		PO4-P		Total N		Total P		SPM	
		[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[kg]	[kg]	[kg]	[kg]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[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
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																											
2005																											
2006																											
Ave UK Direct		8,13	9,74	1,14	1,37	176,1	181,5	92,8	103,7	860	861	92	124	73	222	46,7	46,8	20,1	20,3	15,2	15,3	87,0	87,4	17,2	17,2	681	681

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Table 1: Annual Estimates of Environmental Inputs to the UK from Riverine Flow																											
Riverine	Flow	Quantity:																									
Total to	Rate	Cd		Hg		Cu		Pb		Zn		g-HCH		PCB		NH4-N		NO3-N		PO4-P		Total N		Total P		SPM	
All Sea Areas	ml/d	[t]		[t]		[t]		[t]		[t]		[kg]		[kg]		[kt]		[kt]		[kt]		[kt]		[kt]		[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
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	223734	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																											
2005																											
2006																											
Ave UK Riverine	280190	8,39	21,69	1,93	4,87	419,4	441,8	366,4	409,5	1931	1985	179	401	37	1384	13,4	13,8	236,9	238,7	16,7	17,2	277,5	279,7	18,2	18,5	2096	2124
LTA Flow Rate	273080																										

Table C: Annual Estimates of Total UK (Direct plus Riverine) Inputs to the OSPAR Maritime Area from 1990

AJO 20.12.04

Riverine plus Direct to All Sea Areas		Quantity:																									
		Cd		Hg		Cu		Pb		Zn		g-HCH		PCB		NH4-N		NO3-N		PO4-P		Total N		Total P		SPM	
		[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[kg]	[kg]	[kg]	[kg]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[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
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																											
2005																											
2006																											
Ave UK Total Inputs		16,52	31,43	3,07	6,24	596	623	459	513	2791	2847	271	525	110	1606	60,1	60,6	257	259	32,0	32,5	365	367	35,4	35,7	2777	2806

Table D: Total UK (Direct plus Riverine) Inputs to the OSPAR Maritime Area in 2003 by Sea Area

AJO 20.12.04

Riverine plus Direct to Sea Area:		Quantity:																									
		Cd		Hg		Cu		Pb		Zn		g-HCH		PCB		NH4-N		NO3-N		PO4-P		Total N		Total P		SPM	
		[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[t]	[kg]	[kg]	[kg]	[kg]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	[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)		1,41	2,37	0,64	0,71	88,8	90,2	41,3	42,0	281	289	14	34	0	50	12,4	12,5	30,6	30,8	3,0	3,8	58,5	58,6	4,2	5,0	213	226
North Sea (S)		1,51	1,97	0,32	0,36	83,1	83,4	84,4	87,9	356	358	1	42	0	102	9,6	9,7	86,6	86,6	8,2	8,2	101,8	101,9	8,2	8,2	466	467
Channel		0,32	0,47	0,05	0,06	39,7	42,3	6,5	11,0	117	121	1	13	0	29	9,3	9,3	19,3	19,3	2,2	2,2	29,0	29,1	2,2	2,2	91	92
RTT II Total		3,24	4,80	1,01	1,13	212	216	132	141	754	768	16	89	0	181	31,3	31,5	136	137	13,3	14,2	189	190	14,6	15,4	770	785
Celtic Sea		2,17	2,84	0,05	0,11	27,7	29,8	17,0	25,7	222	223	2	18	8	40	7,1	7,2	36,2	36,3	2,7	2,7	45,4	45,6	2,7	2,7	161	162
Irish Sea		0,95	1,38	0,29	0,45	50,2	52,0	31,8	36,2	313	318	1	29	2	33	8,5	8,7	25,2	25,2	2,7	2,8	37,1	37,1	2,9	3,0	126	135
Atlantic		0,46	1,16	0,18	0,42	37,7	37,9	6,8	8,3	103	106	1	16	0	4	4,8	5,0	8,8	9,0	1,6	1,6	21,2	21,2	2,4	2,4	104	113
RTT III Total		3,58	5,39	0,53	0,97	116	120	56	70	638	647	4	63	10	78	20,4	20,8	70	71	7,0	7,1	104	104	7,9	8,1	391	410
All Sea Areas		6,8	10,2	1,5	2,1	327	336	188	211	1392	1414	20	152	10	259	51,7	52,4	207	207	20,3	21,3	293	293	22,5	23,5	1161	1195

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2003 by United Kingdom

AJO 20 Dec 2004

OSPAR RID data 2003 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 upper comment	0,00 0,01	0,03 0,03	0,93 0,93	0,12 0,12	2,18 2,18	0,18 0,18		0,83 0,83	0,07 0,07	0,14 0,14	1,34 1,34	0,24 0,24	2,28 2,28
182	SC3	lower upper comment	0,03 0,04	0,07 0,07	2,05 2,05	0,85 0,85	8,34 8,34	0,61 0,62		2,13 2,13	0,21 0,21	0,25 0,25	2,88 2,88	0,30 0,30	3,82 3,82
183	SC4	lower upper comment	0,00 0,00	0,00 0,00	0,34 0,34	0,12 0,13	1,70 1,70	0,58 0,58		0,81 0,81	0,14 0,14	0,12 0,12	1,42 1,42	0,15 0,15	0,85 0,85
184	SC5	lower upper comment	0,01 0,01	0,00 0,00	1,81 1,81	1,03 1,05	6,76 6,76	1,09 1,09		1,47 1,47	0,81 0,81	0,32 0,32	3,89 3,89	0,47 0,47	4,17 4,17
185	E1	lower upper comment	0,00 0,00	0,00 0,00	0,03 0,03	0,01 0,01	0,36 0,36	0,00 0,09	0,00 0,80	0,06 0,06	0,08 0,08	0,03 0,03	0,15 0,15	0,03 0,03	0,06 0,06
186	E2	lower upper comment	0,00 0,01	0,00 0,00	0,62 0,62	0,16 0,16	2,92 2,92	0,00 0,83	0,00 7,80	1,67 1,68	0,06 0,07	0,17 0,17	1,75 1,76	0,17 0,17	1,92 1,92
187	E3	lower upper comment	0,00 0,00	0,00 0,00	0,04 0,04	0,01 0,01	0,21 0,21	0,00 0,07	0,00 0,58	0,18 0,18	0,00 0,00	0,03 0,03	0,18 0,18	0,03 0,03	0,14 0,14
188	E4	lower upper comment	0,00 0,00	0,00 0,00	0,49 0,49	0,15 0,15	1,90 1,90	0,01 0,28	0,00 2,42	0,59 0,59	0,21 0,21	0,08 0,08	0,80 0,81	0,08 0,08	1,19 1,19
189	E5	lower upper comment	0,00 0,01	0,00 0,00	0,79 0,79	0,12 0,15	3,19 3,19	0,00 0,65	0,00 6,10	1,49 1,49	0,96 0,96	0,19 0,19	2,48 2,48	0,19 0,19	5,10 5,10
84a	North Sea North (UK)		0,05	0,11	7,10	2,58	27,56	2,46	0,00	9,22	2,53	1,34	14,90	1,65	19,54
			0,08	0,11	7,10	2,63	27,56	4,37	17,70	9,22	2,55	1,35	14,91	1,66	19,54

OSPAR RID data 2003 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 upper comment	0,00 0,01	0,00 0,00	0,20 0,20	0,09 0,09	1,17 1,17	0,00 0,07	0,00 0,60	0,69 0,69	0,06 0,07	0,16 0,16	0,74 0,76	0,16 0,16	0,92 0,93
191	E7	lower upper comment	0,00 0,00		0,09 0,09	0,02 0,02	0,23 0,23	0,00 0,05	0,00 0,42	0,28 0,28	0,02 0,02		0,30 0,30		0,22 0,22
192	E8	lower upper comment	0,12 0,12	0,00 0,00	1,59 1,59	2,12 2,13	6,88 6,88	0,00 0,70	0,00 6,06	1,56 1,56	0,18 0,19	0,15 0,18	1,78 1,79	0,15 0,18	5,83 5,83
193	E9	lower upper comment	0,00 0,00	0,00 0,00	0,35 0,36	0,03 0,07	1,38 1,38			0,12 0,13	0,43 0,43	0,21 0,21	0,66 0,66	0,21 0,21	0,69 0,69
194	E10	lower upper comment	0,00 0,00	0,00 0,00	0,47 0,47	0,26 0,27	2,02 2,02			0,71 0,72	0,40 0,41	0,19 0,19	1,15 1,15	0,19 0,19	1,02 1,02
195	E11	lower upper comment	0,00 0,00	0,00 0,00	0,55 0,55	0,15 0,16	1,37 1,37			0,34 0,34	0,36 0,36	0,18 0,18	0,74 0,74	0,18 0,18	1,18 1,18
196	E12	lower upper comment	0,06 0,10	0,03 0,03	9,75 9,77	4,66 4,75	36,27 36,27	1,30 9,37		3,32 3,34	9,03 9,03	2,11 2,11	14,60 14,62	2,11 2,11	30,52 30,55
84b	North Sea South (UK)	lower upper comment	0,18 0,24	0,03 0,04	12,99 13,03	7,34 7,48	49,32 49,32	1,30 10,19	0,00 7,08	7,02 7,06	10,48 10,50	3,00 3,03	19,98 20,02	3,00 3,03	40,38 40,41

OSPAR RID data 2003		1,00	5,00	6,00	2,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	3,00	
UK Sewage Inputs		Cd	Hg	Cu	Pb	Zn	g-HCH	PCB	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM	
Table 5a		[t]	[t]	[t]	[t]	[t]	[kg]	[kg]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]	
197	E13	lower	0,00	0,00	3,66	0,28	6,63	0,21	0,00	1,18	0,63	0,25	1,88	0,25	2,96
	upper	0,00	0,00	3,66	0,31	6,63	0,73	1,31	1,19	0,64	0,26	1,90	0,26	2,97	
	comment														
198	E14	lower	0,02	0,01	7,41	2,40	13,58	0,15	0,00	4,85	0,28	0,73	5,29	0,73	26,99
	upper	0,02	0,01	7,41	2,40	13,58	4,05	17,50	4,85	0,31	0,73	5,34	0,73	26,99	
	comment								above norm						
199	E15	lower	0,00	0,00	0,72	0,17	1,64	0,08	0,00	1,98	0,06	0,23	2,05	0,23	1,62
	upper	0,00	0,00	0,72	0,22	1,64	0,40	1,52	1,98	0,10	0,23	2,11	0,23	1,63	
	comment														
200	E16	lower	0,00		0,16	0,06	0,49			0,26	0,53	0,12	0,82	0,12	1,33
	upper	0,00		0,16	0,06	0,49			0,27	0,54	0,12	0,83	0,12	1,33	
	comment														
201	E17	lower	0,00	0,00	0,05	0,02	0,19	0,00		0,42	0,26	0,12	0,70	0,12	0,96
	upper	0,00	0,00	0,05	0,02	0,19	0,20		0,43	0,27	0,12	0,71	0,12	0,96	
	comment														
202	E18	lower	0,00	0,00	0,14	0,11	0,86	0,00		0,31	0,34	0,08	0,66	0,08	1,18
	upper	0,00	0,00	0,14	0,11	0,86	0,30		0,31	0,34	0,09	0,67	0,09	1,18	
	comment														
86 Channel (UK)	lower	0,03	0,02	12,13	3,04	23,39	0,44	0,00	9,01	2,10	1,53	11,40	1,53	35,03	
	upper	0,04	0,02	12,13	3,11	23,39	5,69	20,32	9,03	2,20	1,54	11,54	1,54	35,06	
	comment														

OSPAR RID data 2003 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 upper comment	0,00 0,00	0,00 0,00	0,01 0,01	0,00 0,00	0,11 0,11		0,11 0,11	0,00 0,00	0,00 0,00	0,11 0,11	0,00 0,00	0,04 0,04	
204	E20	lower upper comment					0,00 0,01		0,03 0,03			0,03 0,03		0,03 0,03	
205	E21	lower upper comment	0,00 0,00	0,00 0,00	0,00 0,05	0,00 0,04	0,19 0,19	0,00 0,03	0,48 0,48	0,05 0,05	0,04 0,04	0,55 0,55	0,04 0,04	0,40 0,40	
206	E22	lower upper comment	0,01 0,01	0,01 0,01	0,64 0,64	0,41 0,41	5,93 5,93	0,71 1,51	0,00 1,35	3,51 3,51 above norm	0,55 0,59	0,60 0,60	4,20 4,25	0,60 0,60	3,53 3,53
207	E23	lower upper comment	0,00 0,01	0,00 0,00	0,31 0,31	0,10 0,14	2,09 2,09		0,02 0,04		0,11 0,11	0,02 0,04	0,11 0,11		
208	E24	lower upper comment	0,00 0,00	0,00 0,00	0,51 0,51	0,15 0,17	4,26 4,26		0,69 0,70	0,12 0,13	0,07 0,08	0,82 0,83	0,07 0,08	0,80 0,80	
209	E25	lower upper comment	0,00 0,00		0,01 0,01				1,44 1,44	0,77 0,77	0,21 0,21	2,29 2,29	0,21 0,21	0,05 0,05	
90	Celtic Sea (UK)	lower upper comment	0,02 0,02	0,01 0,01	1,48 1,53	0,66 0,76	12,59 12,59	0,71 1,55	0,00 1,35	6,28 6,31	1,49 1,55	1,04 1,05	8,02 8,12	1,04 1,05	4,86 4,86

OSPAR RID data 2003 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 upper comment					0,17 0,17			0,00 0,01	0,04 0,04	0,01 0,01	0,06 0,06	0,01 0,01	0,03 0,03
211 E27	lower upper comment				0,01 0,01			0,00 0,33	0,06 0,06	0,26 0,26	0,04 0,04	0,32 0,33	0,04 0,04	
212 E28	lower upper comment	0,01 0,03	0,00 0,00	1,42 1,42	0,74 0,74	13,27 13,27	0,00 3,00		4,05 4,06	0,80 0,80	0,38 0,41	5,00 5,00	0,38 0,41	6,20 6,21
213 E29	lower upper comment	0,00 0,01	0,00 0,00	0,10 0,10	0,06 0,06	0,96 0,96			0,01 0,02	0,40 0,40	0,11 0,11	0,42 0,42	0,11 0,11	0,16 0,19
219 E30	lower upper comment													
215 NI2	lower upper comment	0,07 0,17	0,00 0,10	1,76 3,33	0,06 0,43	5,93 6,28	0,58 0,72	0,00 0,00	0,74 0,74	0,14 0,14	0,17 0,17	0,89 0,89	0,22 0,22	2,50 2,50
214 SC1	lower upper comment	0,00 0,00	0,00 0,00	0,10 0,10	0,03 0,03	0,37 0,37	0,00 0,21		0,20 0,20	0,04 0,04	0,03 0,03	0,43 0,43	0,05 0,05	0,35 0,35
88 Irish Sea (UK)	lower upper comment	0,08 0,21	0,00 0,10	3,38 4,95	0,90 1,27	20,71 21,06	0,58 3,93	0,00 0,33	5,05 5,08	1,68 1,69	0,74 0,77	7,11 7,12	0,81 0,84	9,24 9,28

OSPAR RID data 2003 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	0,29	0,03	5,61	0,07	0,00	0,26	0,01	0,03	0,27	0,08	0,96
	upper	0,01	0,01	0,40	0,06	5,62	0,09	0,00	0,26	0,01	0,03	0,27	0,08	0,96
	comment													
216 SC2	lower	0,02	0,00	4,04	0,46	9,33	0,10		2,76	0,30	0,83	4,83	1,24	7,48
	upper	0,04	0,00	4,04	0,46	9,33	1,55		2,76	0,30	0,83	4,83	1,24	7,54
	comment													
217 SC2a	lower	0,00	0,00	0,04	0,00	0,05	0,01		0,07	0,00	0,01	0,11	0,02	0,26
	upper	0,00	0,00	0,04	0,00	0,05	0,01		0,07	0,00	0,01	0,11	0,02	0,26
	comment													
92 Atlantic (UK)	lower	0,02	0,00	4,38	0,49	14,99	0,17	0,00	3,08	0,30	0,88	5,20	1,33	8,70
	upper	0,05	0,02	4,48	0,53	15,00	1,65	0,00	3,08	0,31	0,88	5,20	1,33	8,76
	comment													

UK Totals SEWAGE	lower	0,38	0,17	41,5	15,0	148,6	5,7	0,0	39,7	18,6	8,52	66,6	9,36	118
	upper	0,64	0,29	43,2	15,8	148,9	27,4	46,8	39,8	18,8	8,61	66,9	9,46	118

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2003 by United Kingdom

AJO 20 Dec 2004

OSPAR RID data 2003 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 upper comment	0,01 0,01	0,02 0,02	15,10 15,10	0,05 0,05	2,66 2,66	0,00 0,00		0,11 0,11	0,00 0,00	0,23 0,23	0,24 0,24	0,46 0,46	4,06 4,06
182	SC3	lower upper comment													
183	SC4	lower upper comment	0,00 0,00	0,00 0,00	0,02 0,02	0,00 0,00	0,02 0,02	0,00 0,00		0,00 0,00	0,02 0,02	0,04 0,04	0,04 0,04	0,05 0,05	0,03 0,03
184	SC5	lower upper comment	0,01 0,01	0,01 0,01	1,44 1,54	0,10 0,12	5,88 5,88	0,00 0,01		0,18 0,18	0,00 0,01	0,42 0,42	0,92 0,92	0,71 0,71	10,30 10,30
185	E1	lower upper comment	0,00 0,00	0,00 0,00	0,80 0,80	0,91 0,91	1,26 1,26	0,00 0,11	0,00 0,97	0,01 0,01	0,00 0,00	0,00 0,01	0,01 0,01	0,00 0,01	27,42 27,42
186	E2	lower upper comment													
187	E3	lower upper comment													
188	E4	lower upper comment													
189	E5	lower upper comment	0,05 0,06	0,00 0,00	0,73 0,73	0,63 0,63	7,20 7,20			1,82 1,82	0,34 0,34	0,21 0,22	2,19 2,20	0,21 0,22	2,29 2,29
North Sea North (UK)			0,07	0,03	18,09	1,69	17,01	0,00	0,00	2,12	0,37	0,90	3,40	1,43	44,10
			0,07	0,03	18,19	1,71	17,01	0,12	0,97	2,12	0,37	0,92	3,41	1,45	44,10

OSPAR RID data 2003 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 upper comment	0,03 0,03	0,09 0,09	8,33 8,33	1,34 1,34	4,01 4,01							131,71 131,71	
191	E7	lower upper comment													
192	E8	lower upper comment	0,02 0,03	0,01 0,01	1,77 1,89	1,33 1,46	16,68 16,73	0,00 0,04	0,00 0,36	0,31 0,31	0,02 0,02	0,00 0,01	0,41 0,41	0,00 0,01	12,84 12,84
193	E9	lower upper comment	0,04 0,04	0,00 0,00	0,01 0,01	0,25 0,25	7,25 7,25			0,02 0,02		0,00 0,00	0,04 0,04	0,00 0,00	0,06 0,06
194	E10	lower upper comment													
195	E11	lower upper comment													
196	E12	lower upper comment													
84	North Sea South (UK)	lower upper comment	0,09 0,10	0,10 0,10	10,11 10,22	2,92 3,04	27,93 27,99	0,00 0,04	0,00 0,36	0,33 0,33	0,02 0,02	0,00 0,01	0,45 0,45	0,00 0,01	144,60 144,60

OSPAR RID data 2003 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 upper comment	0,00 0,00	0,00 0,00	0,04 0,04	0,01 0,01	0,26 0,26	0,01 0,08	0,00 0,10	0,00 0,00	0,05 0,05	0,00 0,01	0,05 0,06	0,00 0,01	0,11 0,12
198	E14	lower upper comment													
199	E15	lower upper comment	0,00 0,00	0,00 0,00	0,00 0,00	0,00 0,00	0,01 0,02	0,00 0,00							
200	E16	lower upper comment													
201	E17	lower upper comment													
202	E18	lower upper comment													
86	Channel (UK)	lower upper comment	0,00 0,00	0,00 0,00	0,05 0,05	0,01 0,01	0,27 0,27	0,01 0,08	0,00 0,10	0,00 0,00	0,05 0,05	0,00 0,01	0,05 0,06	0,00 0,01	0,11 0,12

OSPAR RID data 2003 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 upper comment	1,96 1,96	0,01 0,01	0,35 0,35	2,12 2,12	36,63 36,63	0,00 0,04	0,03 0,03	0,02 0,02	0,00 0,00	0,05 0,05	0,00 0,00	2,78 2,78
2003 flow data not available. Inputs based on measured concentrations in 2003 and an average of the measured flow rates over previous three years.														
207	E23	lower upper comment	0,00 0,00		0,14 0,15	0,13 0,13	0,91 0,91	8,33 9,18						2,66 2,66
208	E24	lower upper comment	0,01 0,01	0,00 0,00	0,12 0,12	0,41 0,42	21,46 21,46		0,13 0,13		0,00 0,00	0,13 0,14	0,00 0,00	
209	E25	lower upper comment												
90	Celtic Sea (UK)	lower upper comment	1,97 1,97	0,01 0,01	0,62 0,63	2,65 2,66	59,00 59,00	0,00 0,04	8,33 9,18	0,16 0,16	0,02 0,02	0,00 0,01	0,18 0,19	5,44 5,44

OSPAR RID data 2003			1,00	5,00	6,00	2,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	3,00
UK Industrial Inputs			Cd	Hg	Cu	Pb	Zn	g-HCH	PCB	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
Table 5b			[t]	[t]	[t]	[t]	[t]	[kg]	[kg]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]
210	E26	lower upper comment													
211	E27	lower upper comment							0,00 0,11	0,00 0,01	0,00 0,01	0,00 0,01	0,00 0,01	0,00 0,01	
212	E28	lower upper comment	0,03 0,03	0,17 0,17	0,03 0,03	8,65 8,65	0,84 0,84						0,34 0,34		
213	E29	lower upper comment		0,00 0,00											
219	E30	lower upper comment	0,02 0,02	0,00 0,00	0,52 0,52	0,02 0,02	2,65 2,65			0,00 0,00	0,00 0,00	0,08 0,08		0,08 0,08	0,46 0,46
215	NI2	lower upper comment	0,00 0,00	0,00 0,00	0,07 0,07	0,00 0,00	0,04 0,04	0,00 0,00	0,00 0,00	0,00 0,00	0,00 0,00	0,00 0,00	0,00 0,00	0,00 0,00	0,03 0,03
214	SC1	lower upper comment													
88 Irish Sea (UK)		lower upper comment	0,05 0,05	0,17 0,17	0,64 0,64	8,68 8,68	3,60 3,60	0,00 0,00	0,00 0,11	0,01 0,01	0,01 0,01	0,10 0,11	0,36 0,37	0,12 0,12	1,03 1,03

OSPAR RID data 2003 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	0,04	0,02	0,21	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03
	upper comment	0,01	0,00	0,04	0,08	0,21	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03
216 SC2	lower	0,00	0,00	0,33	0,12	2,21	0,00		0,52	1,28	0,01	3,95	0,02	12,31
	upper comment	0,00	0,00	0,33	0,12	2,21	0,00		0,52	1,28	0,01	3,95	0,02	12,31
217 SC2a	lower	0,00	0,02	0,10	0,01	0,14	0,00		0,00	0,00	0,00	0,05	0,00	0,99
	upper comment	0,00	0,02	0,10	0,01	0,14	0,00		0,00	0,00	0,00	0,05	0,00	0,99
92 Atlantic (UK)	lower	0,00	0,02	0,47	0,14	2,56	0,00	0,00	0,53	1,28	0,02	4,00	0,02	13,33
	upper comment	0,02	0,02	0,47	0,21	2,56	0,00	0,00	0,53	1,28	0,02	4,00	0,02	13,33

UK Totals INDUSTRIAL	lower	2,18	0,32	30,0	16,1	110,4	0,01	8,33	3,14	1,75	1,03	8,44	1,58	209
	upper	2,22	0,33	30,2	16,3	110,4	0,28	10,72	3,16	1,76	1,07	8,47	1,62	209

UK Totals DIRECT (Sew + Ind)	lower	2,57	0,49	71,4	31,1	258,9	5,7	8,3	42,8	20,3	9,6	75,0	10,9	326
	upper	2,86	0,62	73,4	32,1	259,4	27,7	57,5	43,0	20,5	9,7	75,4	11,1	327

Table 6c. Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2003 by United Kingdom

AJO 20 Dec 2004

OSPAR RID data 2003 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 upper comment	0,40 0,77	0,30 0,30	4,50 4,59	1,33 1,57	21,65 21,79	4,49 5,86		0,03 0,15	0,89 1,04	0,04 0,08	3,61 3,62	0,10 0,11	16,79 22,40
182	SC3	lower upper comment	0,39 0,71	0,16 0,16	30,77 30,77	14,30 14,33	81,27 81,27	2,86 3,77		0,34 0,34	9,07 9,07	0,16 0,16	11,57 11,57	0,27 0,27	41,19 42,63
183	SC4	lower upper comment	0,18 0,30	0,01 0,04	14,70 15,61	4,50 4,60	35,48 40,02	2,86 3,00		0,20 0,20	7,11 7,11	0,08 0,09	11,87 11,87	0,21 0,21	21,02 26,09
184	SC5	lower upper comment	0,07 0,11	0,01 0,02	6,27 6,39	3,25 3,26	28,74 28,90	1,19 1,33		0,18 0,18	4,16 4,16	0,14 0,14	6,36 6,36	0,29 0,29	32,07 32,76
185	E1	lower upper comment	0,01 0,09	0,01 0,02	2,98 3,17	1,14 1,44	8,20 11,33	0,00 7,36	0,00 12,41	0,04 0,05	3,20 3,20	0,04 0,75	3,26 3,28	0,04 0,75	16,23 16,35
186	E2	lower upper comment	0,17 0,17	0,02 0,02	1,78 1,78	4,53 4,53	39,41 39,41	0,00 4,72	0,00 12,68	0,10 0,10	1,00 1,00	0,05 0,06	1,12 1,12	0,05 0,06	6,99 7,14
187	E3	lower upper comment	0,04 0,05	0,00 0,00	1,72 1,72	5,41 5,41	14,97 14,97	0,00 1,92	0,00 2,77	0,11 0,11	1,32 1,32	0,14 0,14	1,46 1,46	0,14 0,14	11,88 11,88
188	E4	lower upper comment													
189	E5	lower upper comment	0,02 0,02	0,00 0,00	0,90 0,90	2,54 2,54	6,72 6,72	0,00 1,78	0,00 3,93	0,04 0,05	0,92 0,92	0,07 0,09	0,97 0,98	0,07 0,09	3,21 3,29
84a	North Sea North (UK)		1,28 2,22	0,51 0,57	63,61 64,91	37,00 37,66	236,45 244,42	11,39 29,74	0,00 31,78	1,03 1,19	27,68 27,83	0,72 1,50	40,22 40,26	1,16 1,91	149,37 162,55

OSPAR RID data 2003 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 upper comment	0,00 0,01	0,00 0,00	0,16 0,16	0,10 0,11	1,38 1,44	0,00 0,45	0,00 0,64	0,00 0,01	0,11 0,11	0,00 0,00	0,11 0,11	0,00 0,00	1,45 1,45
191	E7	lower upper comment													
192	E8	lower upper comment	1,12 1,20	0,09 0,11	35,85 35,85	63,14 63,27	207,83 209,31	0,00 22,95	0,00 58,89	1,34 1,36	37,36 37,36	3,16 3,17	41,34 41,34	3,16 3,17	150,50 151,07
193	E9	lower upper comment	0,03 0,08	0,03 0,04	5,84 5,98	1,47 2,03	17,84 17,97	0,00 1,43	0,00 11,58	0,26 0,26	13,37 13,37	0,43 0,43	13,73 13,73	0,43 0,43	29,55 29,77
194	E10	lower upper comment	0,01 0,02	0,00 0,01	1,74 1,75	0,71 0,82	3,46 3,81	0,00 0,71	0,00 4,03	0,05 0,05	4,73 4,73	0,17 0,17	4,81 4,81	0,17 0,17	6,17 6,31
195	E11	lower upper comment	0,00 0,01	0,00 0,00	0,77 0,77	0,31 0,32	1,59 1,59	0,00 0,15	0,00 0,70	0,02 0,02	1,60 1,60	0,05 0,05	1,63 1,63	0,05 0,05	3,12 3,13
196	E12	lower upper comment	0,06 0,31	0,05 0,06	15,63 15,63	8,40 10,87	46,72 46,73	0,09 6,15	0,00 18,66	0,58 0,58	18,94 18,94	1,38 1,38	19,75 19,76	1,38 1,38	89,97 89,98
84b	North Sea South (UK)	lower upper comment	1,23 1,63	0,19 0,22	59,99 60,15	74,13 77,42	278,82 280,85	0,09 31,84	0,00 94,51	2,24 2,28	76,12 76,12	5,19 5,19	81,38 81,39	5,19 5,19	280,76 281,72

OSPAR RID data 2003 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	0,00	1,82	0,62	4,31	0,05	0,00	0,03	1,74	0,12	1,79	0,12	7,54
	upper comment	0,03	0,01	1,84	0,91	4,35	0,71	2,18	0,04	1,74	0,12	1,79	0,12	7,56
198 E14	lower	0,00	0,00	1,76	0,62	4,46	0,14	0,00	0,03	1,72	0,15	1,76	0,15	12,90
	upper comment	0,04	0,01	1,85	1,02	4,71	0,94	2,54	0,03	1,72	0,15	1,76	0,15	12,96
199 E15	lower	0,00	0,01	0,11	0,06	0,89	0,00	0,00	0,05	4,08	0,07	4,15	0,07	5,82
	upper comment	0,06	0,01	1,39	1,11	3,00	1,19	3,86	0,05	4,08	0,07	4,15	0,07	5,98
200 E16	lower	0,01	0,01	1,21	0,35	8,40	0,00	0,00	0,04	3,79	0,13	3,86	0,13	6,72
	upper comment	0,03	0,01	1,72	1,24	8,41	1,05	0,00	0,04	3,79	0,13	3,86	0,13	6,87
201 E17	lower	0,04	0,00	1,75	0,47	5,93	0,13	0,00	0,07	3,08	0,12	3,19	0,12	12,89
	upper comment	0,04	0,01	2,31	1,33	7,14	1,53	0,00	0,08	3,08	0,12	3,19	0,12	13,06
202 E18	lower	0,23	0,01	20,89	1,31	69,08	0,05	0,00	0,06	2,69	0,06	2,76	0,06	10,27
	upper comment	0,23	0,01	20,98	2,28	69,32	1,51	0,00	0,07	2,69	0,06	2,77	0,06	10,85
86 Channel (UK)	lower	0,29	0,03	27,55	3,43	93,07	0,37	0,00	0,29	17,10	0,63	17,51	0,63	56,13
	upper comment	0,43	0,05	30,09	7,89	96,94	6,94	8,58	0,31	17,10	0,64	17,53	0,64	57,28

OSPAR RID data 2003		1,00	5,00	6,00	2,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	3,00
UK Riverine Inputs		Cd	Hg	Cu	Pb	Zn	g-HCH	PCB	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
Table 6c		[t]	[t]	[t]	[t]	[t]	[kg]	[kg]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]
203 E19	lower upper comment	0,04 0,04	0,00 0,00	1,31 1,31	0,06 0,09	20,08 20,08	0,00 0,04	0,00 0,00	0,00 0,01	0,58 0,58	0,01 0,01	0,59 0,59	0,01 0,01	0,37 0,58
204 E20	lower upper comment	0,02 0,02	0,00 0,01	1,43 2,13	0,00 1,26	5,88 7,18	0,01 1,47	0,00 0,00	0,03 0,03	2,12 2,12	0,04 0,04	2,16 2,17	0,04 0,04	8,17 8,29
205 E21	lower upper comment	0,00 0,02	0,00 0,01	1,27 1,27	0,22 0,55	5,31 5,31	0,67 1,12	0,00 0,00	0,10 0,10	2,27 2,27	0,18 0,18	2,41 2,41	0,18 0,18	5,30 5,41
206 E22	lower upper comment	0,02 0,26	0,03 0,04	11,50 11,96	7,60 8,35	41,74 41,74	0,00 9,03	0,00 29,73	0,28 0,29	19,59 19,59	1,21 1,21	21,53 21,53	1,21 1,21	71,89 71,92
207 E23	lower upper comment	0,04 0,26	0,00 0,02	6,13 6,48	4,38 7,12	28,52 28,64	0,66 3,05	0,00 0,00	0,10 0,11	6,87 6,87	0,14 0,14	7,02 7,03	0,14 0,14	45,75 46,03
208 E24	lower upper comment	0,05 0,10	0,00 0,01	2,20 2,20	0,65 1,58	30,33 30,33	0,00 0,59	0,00 0,00	0,09 0,09	0,60 0,60	0,03 0,03	0,75 0,75	0,03 0,03	4,70 4,89
209 E25	lower upper comment	0,00 0,15	0,00 0,01	1,73 2,31	0,78 3,32	18,59 18,61	0,00 1,51	0,00 0,00	0,06 0,06	2,71 2,71	0,02 0,02	2,80 2,80	0,02 0,02	14,45 14,58
90 Celtic Sea (UK)	lower upper comment	0,18 0,85	0,04 0,09	25,57 27,65	13,69 22,29	150,46 151,90	1,33 16,80	0,00 29,73	0,67 0,71	34,74 34,74	1,62 1,63	37,25 37,27	1,62 1,63	150,64 151,71

OSPAR RID data 2003			1,00	5,00	6,00	2,00	7,00	8,00	9,00	10,00	11,00	12,00	13,00	14,00	3,00
UK Riverine Inputs			Cd	Hg	Cu	Pb	Zn	g-HCH	PCB	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM
Table 6c			[t]	[t]	[t]	[t]	[t]	[kg]	[kg]	[kt]	[kt]	[kt]	[kt]	[kt]	[kt]
210	E26	lower upper comment	0,09 0,22	0,00 0,01	3,23 3,33	3,21 5,38	69,29 69,29	0,00 1,75	0,00 0,00	0,05 0,06	1,91 1,91	0,02 0,02	1,97 1,97	0,00 0,00	7,12 8,41
211	E27	lower upper comment	0,18 0,29	0,00 0,01	14,44 14,60	2,74 4,39	100,72 100,72	0,00 1,31	0,00 0,00	0,07 0,07	2,52 2,52	0,06 0,06	2,61 2,61	0,06 0,06	16,95 17,24
212	E28	lower upper comment	0,21 0,21	0,06 0,06	8,37 8,37	6,08 6,08	43,10 43,10	0,00 1,43	1,60 10,34	2,85 2,85	9,04 9,04	1,11 1,18	12,06 12,06	1,11 1,18	19,02 19,14
213	E29	lower upper comment	0,11 0,11	0,06 0,07	6,60 6,60	2,87 3,08	17,31 21,51	0,00 2,39	0,00 17,25	0,24 0,26	4,75 4,75	0,49 0,49	5,06 5,06	0,49 0,49	13,58 16,76
219	E30	lower upper comment	0,02 0,02	0,00 0,01	0,68 0,68	0,59 0,60	8,62 8,77	0,00 0,63	0,00 4,84	0,00 0,02	0,44 0,44	0,01 0,01	0,46 0,46	0,01 0,01	1,91 2,30
215	NI2	lower upper comment	0,00 0,03	0,00 0,02	2,88 2,88	0,19 0,21	2,73 2,76	0,19 0,44	0,00 0,35	0,06 0,06	1,03 1,03	0,09 0,09	1,11 1,11	0,12 0,12	2,40 2,42
214	SC1	lower upper comment	0,21 0,23	0,00 0,00	9,97 9,98	6,55 6,56	46,83 46,83	0,00 16,77		0,13 0,26	3,80 3,84	0,11 0,11	6,33 6,33	0,17 0,17	54,62 58,56
88 Irish Sea (UK)		lower upper comment	0,82 1,13	0,12 0,18	46,17 46,44	22,22 26,30	288,60 292,99	0,19 24,70	1,60 32,79	3,41 3,58	23,49 23,52	1,88 1,96	29,60 29,61	1,95 2,02	115,59 124,83

OSPAR RID data 2003 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	0,00	20,83	0,62	16,99	0,00	0,00	0,27	3,89	0,23	4,20	0,43	34,73
		upper comment	0,42	0,21	20,85	1,82	19,62	4,18	4,23	0,29	3,89	0,23	4,22	0,43	35,51
216	SC2	lower	0,11	0,01	10,45	5,00	57,18	0,00		0,93	3,16	0,44	6,20	0,56	43,95
		upper comment	0,15	0,02	10,45	5,00	57,18	8,41		0,98	3,19	0,44	6,20	0,56	46,30
217	SC2a	lower	0,33	0,15	1,59	0,55	11,19	1,20		0,01	0,21	0,02	1,58	0,04	3,26
		upper comment	0,53	0,15	1,67	0,71	11,24	1,50		0,08	0,33	0,04	1,58	0,05	8,66
92 Atlantic (UK)		lower	0,44	0,16	32,86	6,17	85,36	1,21	0,00	1,21	7,26	0,68	11,97	1,03	81,94
		upper comment	1,09	0,38	32,97	7,53	88,04	14,08	4,23	1,36	7,40	0,71	12,00	1,04	90,47

UK Totals RIVERINE	lower	4,25	1,05	255,7	156,6	1133	14,6	1,6	8,9	186,4	10,74	217,9	11,59	834
	upper	7,33	1,49	262,2	179,1	1155	124,1	201,6	9,4	186,7	11,63	218,1	12,43	869

UK Totals (Direct + Riverine)	lower	6,82	1,54	327,2	187,7	1392	20,3	9,9	51,7	206,7	20,29	293,0	22,53	1161
	upper	10,19	2,11	335,7	211,2	1414	151,7	259,1	52,4	207,3	21,31	293,4	23,51	1195