Assessment and Monitoring Series

Data Report on the Comprehensive Study of Riverine Inputs and Direct Discharges (RID) in 2000

OSPAR Commission
2002

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 2000

This data report complements the report containing the overview of the results of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID) in 2000.

Previous data reports include the results of the Comprehensive Study in 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997, 1998 and 1999. A RID Summary Report 1990 – 1995 was published at the end of 1998, and a set of summary tables updated until 1998 is also available.

Introduction

Background

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

Due to the considerable information which would be available within a relatively short time (*inter alia*, the revised JAMP and the EC Water Framework Directive) requirements, arrangements for the review of the RID Principles are that an intersessional working group will elaborate in 2002/2003 proposals for how to handle RID data in the future that should optimise the reporting requirements of Contracting Parties in a European context and work related to the handling and use of the data.

Substances

Contracting Parties agreed to monitor the following parameters on a mandatory basis:

- mercury (Hg)
- cadmium (Cd)
- copper (Cu)
- zinc (Zn)
- lead (Pb)
- γ-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)

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 parameters were recommended to be monitored on a voluntary basis:

- PCBs (the following congeners: IUPAC Nos 28, 52, 101, 118, 153, 138, 180)
- hydrocarbons (strongly recommended)
- other stable organohalogen compounds (in order to find out which organohalogen compounds should be included in future input studies).

In March 1996, the Environmental Assessment and Monitoring Committee (ASMO 1996) revised the RID Principles, including the list of determinands, as follows:

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

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

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

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

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

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

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

2000 Report on input data

For the 2000 study, data sets on riverine inputs and direct discharges were provided by Denmark, Germany, Ireland, the Netherlands, Norway, Portugal, Sweden, Spain and the United Kingdom of Great Britain and Northern Ireland (UK). Only riverine inputs were reported by Belgium[5] and France (nutrients and suspended matter only). Iceland[6] did not provide input data for 2000.

The geographical coverage for 2000 has improved compared to the coverage in previous years. Spain had increased the number of RID catchments for which data is reported. The additional input information produces an apparent increase in total inputs. This is, of course, not a "real" increase and should be discounted in assessing the data. Significant gaps still, however, 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 2000 was improved in comparison with 1999. However, several Contracting Parties did not report data for all mandatory parameters. All reporting Contracting Parties provided data on inputs of heavy metals with the exception of Denmark and France. There are a number of gaps as regards the reporting of data for inputs of γ-HCH and/or PCBs (Denmark, France, Ireland, Norway, Portugal and Sweden for all inputs, and the Netherlands for direct

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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.

5 Previously existing direct discharges no longer exist.

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 calculation of riverine inputs.

inputs) and suspended particulate matter (Denmark, Sweden for rivers). A number of additional parameters, not obligatory under the RID programme, and consequently not summarised in the overview Tables 3 and 4, were reported by Norway (cf. Table 1b). Norway had reported on inputs from fish-farming because in Norway this activity contributed a significant part of the inputs of nitrogen and phosphorus.

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

Presentation of the 2000 data

Table 1a gives an overview of the information provided by Contracting Parties for 2000 and shows how the information was categorised:

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

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

The data from Contracting Parties have in many cases[7] been rounded to one significant number for data reported less than the unit in which they appear and to two significant numbers for data reported greater than one unit; the following examples illustrate this rounding convention:

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

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

Overviews of the input information by country and sea area are given in **Tables 2 to 4 a and b**. Table 2 gives an overview of direct inputs to OSPAR Convention Waters in 1998 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 1999 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 4 a and b.

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

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

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

Tables 8 give information concerning the analytical detection limits of determinands.

Tables 9 give, 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 2000.

List of the overview tables

List of the Annexes by Contracting Party

Table 1a. Information Received on Inputs to the Maritime Area of the OSPAR Convention in 2000

Country	Direct Discharges			Riverine Inputs	
	Sewage Effluents	Industrial Effluents	Coastal Areas (1)	Main Rivers	Tributary Rivers (2)
Belgium	NA	NA	(3)	+	+
Denmark					
- Kattegat	+	+	(4)	+	(5)
- Skagerrak	+	+	(4)	+	(5)
- North Sea	+	+	(4)	+	(5)
France					
- Channel/North Sea	NI	NI	NI	+	NI
- Atlantic	NI	NI	NI	+	NI
Germany	+	+	(6)	+	+
Iceland	No 2000 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	Limited 2000 input data submitted				
Spain	+	+	+	+	+
Sweden					
- Kattegat	+	+	(3)	+	+
- Skagerrak	+	+	(3)	+	+
United Kingdom					
- East Coast	+	+	NI	+	NI
- Channel	+	+	NI	+	NI
- Celtic Sea	+	+	NI	+	NI
- Irish Sea	+	+	NI	+	NI
- Atlantic	+	+	NI	+	NI

\+ = Information available
NI = No information
NA = Not applicable

(1) Coastal areas: - 'downstream areas' of main and tributary rivers and rivers not monitore
- 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
(9) cf. category "run-off" (i.e. estimated values for diffuse contributions) in Table 6b. for Norway

Table 1b. Determinands Reported by Contracting Parties in 2000

Country	Determinands													
	Cd	Hg	Cu	Pb	Zn	g-HCH	PCBs (1) (voluntary)	NH4-N	NO3-N	PO4-P	Total N	Total P	SPM (2)	Others
Belgium														
- direct inputs	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
- riverine inputs	R (4)	R (3)	R (3)	R (4)	R (3)	R (3)	R (4)	R (3)	R (3)	R (3)	R (3)	R (3)	R (3)	
Denmark														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	+	+	NI	
- riverine inputs	NI	NI	NI	NI	NI	NI	NI	+	+	+	+	+	NI	
France														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
- riverine inputs	NI	NI	NI	NI	NI	NI	NI	+	+	+	+	+	+	
Germany														
- direct inputs	R	R	R	R	R	R	R	+	+	+	+	+	+	
- riverine inputs*	+ (4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (4)	+ (4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	
- riverine inputs**	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)(4)	+ (4)	+ (3)(4)	+ (3)	+ (3)(4)	+ (3)	+ (3)	+ (3)(4)	
*) Elbe **) Other main rivers														
Iceland	No 2000 input data submitted (6)													
Ireland														
- direct inputs	+(9)	NI	+(9)	+(9)	+(9)	NI	NI	NI	NI	NI	+(9)(10)	+(9)	+(9)	
- main riv. inputs	R (3)(4)	NI	+ (3)	R (3)(4)	+ (3)	NI	NI	R (3)(4)	+ (3)	+ (3)	NI	+ (3)	+ (3)	
- tributary rivers	R	NI	R	R	+	NI	NI	+	+	+	NI	+	+	
Netherlands														
- direct inputs	+	+	+	+	+	NI	NI	NI	+	NI	+	+	+	
- main riv. inputs	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	+ (3)	
- tributary rivers	+	+	+	+	+	+	+	+	+	+	+	+	+	
Norway														
- direct inputs	+	+	+	+	+	NI	NI	+	+	+	+	+	+	Cr, Ni
- main riv. inputs	+ (3)(4)	+ (3)(4)	+ (3)	+ (3)	+ (3)	+ (3)(4)	NI	+ (3)(4)	+ (3)	+ (3)(4)	+ (3)	+ (3)(4)	+ (3)(4)	As, Cr, Ni, TOC
- tributary rivers	R	R	+	+	+	+	NI	+(5)	+ (5)	+ (5)	+ (5)	+ (5)	+ (5)	As, Cr, Ni, TOC
Portugal														
- direct inputs	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	
- main riv. Inputs (7)	+	+	+	+	+	NI	NI	+	+	+	+	+	+	
- tributary rivers	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)	R(4)	R(4)	R(3)(4)	R(3)	+ (3)(4)	R(3)	R(3)	R(3)	
Sweden														
- sewage effluents	+	+	+	+	+	NI	NI	+	+	+	+	+	NI	
- industrial effluents	+	+	+	+	+	NI	NI	NI	NI	NI	+	+	NI	
- main riv. inputs	+	+	+	+	+	NI	NI	+	+	+	+	+	NI	
United Kingdom														
- direct inputs	R	R	R	R	R	R	R	R	R	R	R	R(8)	R	
- riverine inputs	R	R	R	R	R	R	R	R	R	R	R	R(8)	R	

+ : Data provided

R: Estimate given as a range

NI: No information

NA: Not applicable; riverine inputs > 90% total inputs

DL: Detection limit

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

(2) Suspended particulate matter

(3) 70 % of measurements above detection limit

(4) Less than 70 % of measurements above detection limit

(5) Includes 'run-off', i.e. estimated values for diffuse contributions.

(6) Iceland stated in 1988 that it had no plans to monitor riverine inputs; however, Iceland announced in 1996 that it was setting up a monitoring plan which would also result in calculations of riverine inputs

(7) River Tejo only

(8) In England and Wales Total-P was not measured. To avoid anomalies, a value equal to the orthophosphate-P has been used.

(9) 1990 data since basis for calculation remained unchanged.

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

Table 2^. Direct Discharges to the Maritime Area of the OSPAR Convention in 2000 by Country

Country	Region		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Belgium	North Sea	(lower estimate)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
		(upper estimate)	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Denmark	North Sea		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.58	0.07	NI
	Skagerrak		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.18	0.01	NI
	Kattegat		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.79	0.08	NI
France	Channel/North Sea		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Atlantic		NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
Germany	North Sea		0.01	0.01	2.1	1.1	12	0.12	0.05	2.0	2.0	0.1	4.3	1.8	2.0
			0.06	0.06	2.9	1.8	17	0.3	2.9	2.0	2.0	0.1	4.3	1.8	2.0
Iceland	Atlantic		no data submitted for 2000												
Ireland	Irish Sea		0.06	NI	7.50	3.30	63.00	NI	NI	NI	NI	NI	6.83	1.58	38.10
	Celtic Sea		0.02	NI	3.20	4.40	21.50	NI	NI	NI	NI	NI	2.67	0.65	18.59
	Atlantic		0.01	NI	0.83	0.39	7.70	NI	NI	NI	NI	NI	0.70	0.21	4.32
Netherlands	North Sea		0.1	0.03	3.3	1.1	25	NI	NI	NI	1.5	NI	6.4	0.4	8
Norway	Skagerrak		0.07	0.02	13	0.7	16			3.572	0.02	0.08	5.7	0.2	3.1
	North Sea		1.4	0.03	9.7	3.7	60			2.46	0.02	0.20	4.8	0.4	1602
	Norwegian Sea		0.2	0.01	11.2	5.2	16			2.73	0.02	0.30	4.6	0.5	1151
	Barents Sea		0.002	0.001	0.5	0.03	0.8			0.25	0.00	0.03	0.3	0.04	227
Portugal	Atlantic		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		3.6	41.5	12	15	24	2.61	2.101	8.5	0.2	1.3	300	20.8	104
Sweden	Kattegat		0.05	0.02	2.0	0.4	3.5	NI	NI	1.3	0.7	0.02	2.4	0.1	NI
	Skagerrak		0.00	0.01	0.10	0.01	0.50	NI	NI	0.20	0.10	0.01	0.50	0.03	NI
United Kingdom	N Sea (East Coas	(lower estimate)	0.7	0.2	84	35	317	28	1	19	11	7.4	37	8.4	300
		(upper estimate)	0.9	0.2	84	35	317	37	92	19	11	7.4	37	8.4	301
	N Sea (Channel)	(lower estimate)	0.1	0.00	17	4.8	28	2.7	0.00	5.9	2.2	1.7	8.3	1.7	7.0
		(upper estimate)	0.1	0.00	17	4.9	28	3.8	5.1	5.9	2.2	1.7	8.3	1.7	7.0
	Total North Sea	*(lower estimate)*	*0.8*	*0.2*	*100.9*	*39.5*	*345.3*	*30.3*	*1.4*	*25.0*	*13.4*	*9.1*	*44.9*	*10.1*	*307.0*
		(upper estimate)	*1.0*	*0.2*	*100.9*	*39.9*	*345.4*	*40.9*	*96.6*	*25.0*	*13.4*	*9.1*	*44.9*	*10.1*	*308.0*
	Celtic Sea	(lower estimate)	1.3	0.01	6.3	10	124	0.8	6.5	6.5	1.8	1.3	8.5	1.3	30
		(upper estimate)	1.3	0.01	6.3	10	124	3.3	11.6	6.5	1.8	1.3	8.5	1.3	30
	Irish Sea	(lower estimate)	0.3	0.3	10	23	35	0.2	0.000	7.5	3.2	2.5	13	2.5	36
		(upper estimate)	0.6	0.4	10	24	35	6.3	0.6	7.5	3.2	2.5	13	2.5	36
	Atlantic	(lower estimate)	0.06	0.04	24	4.8	21	1.7	0	2.3	1.9	1.0	6.1	1.3	29
		(upper estimate)	0.5	0.07	25	6.5	21	10	16	2.3	2.0	1.0	6.1	1.3	29
	Total Non-North	*(lower estimate)*	*1.6*	*0.4*	*39.5*	*37.1*	*180.0*	*2.7*	*6.6*	*16.3*	*6.9*	*4.7*	*27.9*	*5.1*	*95.0*
	Sea	*(upper estimate)*	*2.4*	*0.5*	*41.5*	*40.2*	*180.3*	*19.2*	*28.2*	*16.3*	*7.0*	*4.7*	*27.9*	*5.1*	*95.0*

^ 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 3^. Riverine Inputs to the Maritime Area of the OSPAR Convention in 2000 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)	0.8	0.52	58	84	277	96	0.8	6.1	37	2.0	51	4.0	286
		(upper estimate)	8.3	0.7	67	113	316	107	108	6.8	42	2.3	57	5.3	324
Denmark	North Sea										15.8	0.20	21.0	0.5	
	Skagerrak										2.34	0.04	2.7	0.1	
	Kattegat										27.8	0.5	32.8	0.9	
France	Channel/North Sea		NI	NI	NI	NI	NI	NI	NI	20.3	123.6	6.7	178.6	11.9	989
	Atlantic		NI	NI	NI	NI	NI	NI	NI	9.1	223.7	7.6	292	18.5	3255
Germany	North Sea	(lower estimate)	5.2	2.6	201	168	1224	17	10.0	6.6	160	2.3	212	9.0	2005
		(upper estimate)	5.6	2.6	201	168	1224	147	26	6.6	160	2.4	212	9.0	2043
Iceland	Atlantic		no data submitted for 2000												
Ireland	Irish Sea		0.6	NI	27	18	177	NI	NI	0.8	20	0.4	NI	0.7	133
			0.9	NI	27	20	177	NI	NI	0.8	20	0.4	NI	0.7	133
	Celtic Sea		0.3	NI	50	15	253	NI	NI	2.0	53	1.4	NI	2.5	283
			2.1	NI	50	28	253	NI	NI	2.0	53	1.4	NI	2.5	283
	Atlantic		0.2	NI	32	3	157	NI	NI	0.4	13	0.6	NI	1.1	150
			1.6	NI	36	17	157	NI	NI	0.5	13	0.6	NI	1.1	150
Netherlands	North Sea		6.0	1.7	327	220	1173	166	121	15	267	10.0	357	20	2379
			7.1	1.7	327	220	1173	183	123	15	267	10.0	357	20	2379
Norway	Skagerrak		2.3	0.7	118	41	476	32.9		2.3	32	0.5	57	2.0	552
			2.4	0.8	118	41	476	32.9		2.3	32	0.5	57	2.0	555
	North Sea		0.6	0.3	24	11	134	1.1		1.1	7	0.0	12	0.6	217
			0.6	0.4	24	11	134	1.1		1.2	7	0.1	12	0.6	226
	Norwegian Sea		0.3	0.3	56	5.1	115	0.9		1.4	11	0.3	18	1.1	172
			0.4	0.5	56	5.1	116	1.3		1.4	11	0.3	18	1.1	182
	Barents Sea		0.1	0.3	12	1.1	9.2	0.3		0.6	2.0	0.1	7.0	0.4	119
			0.1	0.4	12	1.1	10.2	0.5		0.6	2.0	0.1	7.0	0.4	124
Portugal	Atlantic		0.0	0.8	20.7	0.3	123			1.0	9.4	1.7	44	2.2	176
			1.0	0.8	20.7	4.7	123			1.0	9.4	1.7	44	2.2	176
Spain	Atlantic		0.7	0.0	20	7.4	314	18	4	3.7	33	1.0	23	2.6	231
			5.7	9	96	39	324	31	5	4.1	33	1.1	23	2.7	231
Sweden	Kattegat		0.5	0.1	42	12	140	NI	NI	0.9	21	0.2	38	0.7	NI
	Skagerrak		0.1	0.02	8.0	2.2	27	NI	NI	0.2	1.9	0.07	4.7	0.1	NI
United Kingdom	N Sea (East Coast)	(lower estimate)	4.4	1.9	256	339	1190	70	46.7	5.8	180	13	204	14	1404
		(upper estimate)	12.0	2.2	262	344	1204	163	724	6.0	180	13	204	14	1418
	N Sea (Channel)	(lower estimate)	0.6	0.03	61	20	207	10.2	0.0	0.6	22	1.1	23	1.1	138
		(upper estimate)	0.8	0.06	61	22	207	21	45.6	0.6	22	1.1	23	1.1	140
	Total North Sea	*(lower estimate)*	*5.0*	*1.9*	*317.0*	*358.8*	*1397.0*	*80.4*	*46.7*	*6.4*	*201.6*	*14.2*	*226.9*	*15.1*	*1542.0*
		(upper estimate)	*12.8*	*2.2*	*322.1*	*365.0*	*1411.5*	*183.6*	*769.4*	*6.6*	*201.6*	*14.3*	*226.9*	*15.1*	*1558.0*
	Celtic Sea	(lower estimate)	1.0	0.1	61	40	456	10	0.0	1.4	60	2.6	62	2.6	839
		(upper estimate)	2.3	0.2	62	51	456	56	119	1.5	60	2.6	62	2.6	839
	Irish Sea	(lower estimate)	1.8	0.3	95	97	540	10.0	4	4	42	3.4	51	3.7	458
		(upper estimate)	2.6	0.5	96	100	546	81	425	5	42	3.6	51	3.9	464
	Atlantic	(lower estimate)	1.3	0.2	47	21	131	12	0.0	1.9	16	1.3	20	1.9	107
		(upper estimate)	4.3	1.4	50	23	140	74	206	2.0	16	1.3	20	1.9	117
	Total non-North Sea	*(lower estimate)*	*4.1*	*0.6*	*202.1*	*157.5*	*1125.9*	*31.6*	*4.4*	*7.7*	*117.5*	*7.3*	*132.2*	*8.2*	*1404.0*
		(upper estimate)	*9.3*	*2.1*	*207.2*	*173.3*	*1141.9*	*211.2*	*749.4*	*8.2*	*117.9*	*7.6*	*132.2*	*8.4*	*1420.0*

^ 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. Summary of Direct (Table 2) and Riverine (Table 3) Inputs to the Maritime Area of the OSPAR Convention in 2000 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)	0.8	0.52	58	84	277	96	0.8	6.1	37	2.0	51	4.0	286
		(upper estimate)	8.3	0.7	67	113	316	107	108	6.8	42	2.3	57	5.3	324
Denmark	North Sea		NI	NI	NI	NI	NI	NI	NI	0.0	15.8	0.2	21.6	0.57	NI
	Skagerrak		NI	NI	NI	NI	NI	NI	NI	0.0	2.3	0.0	2.9	0.13	NI
	Kattegat		NI	NI	NI	NI	NI	NI	NI	0.0	28	0.5	33.6	0.97	NI
France	Channel/North Sea		NI	NI	NI	NI	NI	NI	NI	20.3	124	6.7	178.6	11.89	989
	Atlantic		NI	NI	NI	NI	NI	NI	NI	9.1	224	7.6	292.0	18.49	3255
Germany	North Sea	(lower estimate)	5.2	2.6	203	169	1236	17	10.1	9	162	2.4	216	11	2007
		(upper estimate)	5.7	2.7	204	170	1241	147	29	9	162	2.5	216	11	2045
Iceland	Atlantic		no data submitted for 2000												
Ireland (2)	Irish Sea	(lower estimate)	0.7	NI	35	21	240	NI	NI	0.8	20	0.4	6.8	2.3	171
		(upper estimate)	0.9	NI	35	23	240	NI	NI	0.8	20	0.4	6.8	2.3	171
	Celtic Sea	(lower estimate)	0.3	NI	53	19	274	NI	NI	2.0	53	1.4	2.7	3.2	302
		(upper estimate)	2.1	NI	53	33	274	NI	NI	2.0	53	1.4	2.7	3.2	302
	Atlantic	(lower estimate)	0.3	NI	33	4	164	NI	NI	0.4	13	0.6	0.7	1.3	154
		(upper estimate)	1.7	NI	36	17	164	NI	NI	0.5	13	0.6	0.7	1.3	154
Netherlands(3)	North Sea		6.1	1.7	331	221	1198	166	121	15	269	10.0	363	20	2386
			7.2	1.7	331	221	1199	183	123	15	269	10.0	364	20	2386
Norway	Skagerrak	(lower estimate)	2.4	0.7	131	42	492	32.9	NI	4	32	0.6	63	2.2	555
		(upper estimate)	2.4	0.8	131	42	492	32.9	NI	5	32	0.6	63	2.2	558
	North Sea	(lower estimate)	2.0	0.4	34	15	194	1.1	NI	3.6	7	0.2	17	1.0	1819
		(upper estimate)	2.0	0.4	34	15	194	1.1	NI	3.6	7	0.3	17	1.0	1828
	Norwegian Sea	(lower estimate)	0.5	0.3	67	10	130	0.9	NI	4.1	11	0.6	22	1.6	1323
		(upper estimate)	0.5	0.5	67	10	132	1.3	NI	4.2	11	0.6	22	1.6	1333
	Barents Sea	(lower estimate)	0.1	0.3	12	1.2	10.0	0.3	NI	0.8	2.0	0.2	7.3	0.4	346
		(upper estimate)	0.1	0.4	12	1.2	11.0	0.5	NI	0.6	2.0	0.2	7.3	0.4	350
Portugal	Atlantic		0.0	0.8	20.7	0.3	123.0	NI	NI	1.0	9.4	1.7	44	2.2	176
			1.0	0.8	20.7	4.7	123	NI	NI	1.0	9.4	1.7	44	2.2	176

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		4.3	41.5	31	23	338	18	4	12	33	2.3	323	23.4	335
			9	51	108	54	348	31	5	13	33	2.4	323	23.5	335
Sweden	Kattegat		0.6	0.1	44	12	144	NI	NI	2.2	22	0.2	40	0.8	NI
	Skagerrak		0.1	0.03	8.1	2.2	28	NI	NI	0.4	2.0	0.08	5.2	0.1	NI
United Kingdom	N Sea (East Coast)	(lower estimate)	5.1	2.0	340	374	1507	98	48	25	191	21	241	22	1704
		(upper estimate)	12.9	2.4	346	379	1521	200	815	25	191	21	241	22	1719
	N Sea (Channel)	(lower estimate)	0.7	0.03	78	24	235	12.9	0.0	6.5	24	2.8	31	2.8	145
		(upper estimate)	0.9	0.06	78	26	236	24	51	6.5	24	2.8	31	2.8	147
	North Sea	*(lower estimate)*	*5.8*	*2.1*	*418*	*398*	*1742*	*111*	*48*	*31*	*215*	*23*	*272*	*25*	*1849*
		(upper estimate)	*13.8*	*2.4*	*423*	*405*	*1757*	*225*	*866*	*32*	*215*	*23*	*272*	*25*	*1866*
	Celtic Sea	(lower estimate)	2.2	0.1	67	50	579	11	6.5	7.9	61	3.9	70	3.9	869
		(upper estimate)	3.6	0.2	68	61	580	60	131	8.0	61	3.9	70	3.9	869
	Irish Sea	(lower estimate)	2.1	0.6	104	119	575	10	4.4	12	45	5.9	64	6.3	494
		(upper estimate)	3.2	0.8	106	123	581	88	426	12	46	6.1	64	6.5	500
	Atlantic	(lower estimate)	1.4	0.3	70	25	152	14	0.1	4.2	18	2.3	26	3.2	136
		(upper estimate)	4.8	1.5	75	29	162	83	222	4.3	18	2.3	26	3.2	146
	non-North Sea	*(lower estimate)*	*5.7*	*0.9*	*242*	*195*	*1306*	*34*	*11*	*24*	*124*	*12*	*160*	*13*	*1499*
		(upper estimate)	*12*	*2.5*	*249*	*214*	*1322*	*230*	*778*	*25*	*125*	*12*	*160*	*14*	*1515*
Total reported:		(lower estimate)	**35**	**51.8**	**1720**	**1217**	**7897**	**477**	**194**	**146**	**1403**	**73**	**2123**	**144**	**17452**
		(upper estimate)	**67**	**64**	**1822**	**1337**	**7984**	**958**	**1907**	**149**	**1409**	**74**	**2130**	**146**	**17588**

(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. Summary of Direct and Riverine Inputs to the Maritime Area of the OSPAR Convention in 2000 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	***Arctic Ocean***		0.1	0.27	12	1.2	10	0.3	NI	0.8	2.0	0.2	7.3	0.4	346
Atlantic Ocean	Barents Sea		0.1	0.36	12	1.2	11	0.5	NI	0.6	2.0	0.2	7.3	0.4	350
	Atlantic Ocean		1.6	0.3	103	29	316	14	0.1	4.6	30	2.8	27	4.5	290
	(main body)		6.5	1.5	111	46	326	83	222	4.8	31	2.9	27	4.5	300
	Bay of Biscay and Iberian Coast		4.3	42.3	52	23	461	17.6	3.6	22.3	266	11.5	659	44.1	3766
			10.3	51.3	128	59	471	31	4.9	22.8	266	11.6	659	44.2	3766
North Sea															
	Kattegat	(lower estimate)	0.6	0.12	44	12.4	144	NI	NI	2.2	50	0.7	74	1.8	0.0
		(upper estimate)	0.6	0.12	44	12.4	144	NI	NI	2.2	50	0.7	74	1.8	0.0
	Skagerrak	(lower estimate)	2.5	0.7	139	44	519	33	0	3.9	36	0.7	71	2.5	555
		(upper estimate)	2.5	0.8	139	44	519	33	0	5.1	36	0.7	71	2.5	558
	North Sea	(lower estimate)	19	7.2	966	863	4413	378	179	58	681	35	910	59	8202
	(main body)	(upper estimate)	36	7.9	981	897	4471	638	1074	59	687	36	916	60	8302
	Channel	(lower estimate)	0.7	0.03	78	24	235	13	0	26.8	148	9.4	210	14.7	1134
		(upper estimate)	0.9	0.06	78	26	236	24	50.7	26.8	148	9.4	210	14.7	1136
Norwegian Sea		(lower estimate)	0.5	0.3	67	10	130	1	NI	4.1	11	0.6	22	1.6	1323
		(upper estimate)	0.5	0.5	67	10	132	1	NI	4.2	11	0.6	22	1.6	1333
Irish Sea		(lower estimate)	2.8	0.6	139	141	815	10	4	13	65	6.3	71	9	665
		(upper estimate)	4.2	0.8	141	146	821	88	426	13	66	6.5	71	9	671
Celtic Sea		(lower estimate)	2.6	0.1	120	69	854	11	6.5	10	115	5.3	73	7.1	1171
		(upper estimate)	5.7	0.2	122	94	854	60	131	10	115	5.3	73	7.1	1171

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]	[a]
Statistical Information provided by Belgium								
Coastal Area	**2675**				**~0.497**		**2385**	NI
Western	1689	*Belgium*	>1082	NI	>305	NI	708	
		France	NI	NI	NI	NI		
Middle	499	*Belgium*			0.014		501	
Eastern	487	*Belgium*			0.177		1175	
Scheldt basin								
Scheldt	**22004**				**~10**		**9245**	1949-'97
		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**						NI	
		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

Statistical Information on River Catchment Areas

River	Catchment area [km2]	Countries	Share in catchment area [km2]	[%]	Population (1990) [10E6]	[%]	LTA* [1000 m3/d]	LTA-period [a]
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 - Seurdre - île d'Oléron (without Charente), Côtiers aquitains, Adour-Nivelle-Bidassoa (without Adour)
Population : from INSEE for each catchment area (RNDE)

River	Catchment area [km2]	Countries	Share in catchment area [km2]	[%]	Population (1990) [10E6]	[%]	LTA* [1000 m3/d]	LTA-period [a]
Statistical Information provided by Germany								
Ems	15552						7540	1941-1997
		Germany	13152	85.00	3.75	85		
		Netherlands	2400	15.00	0.6	15		
Weser	46306	*Germany*	-	-	9.0	-	30900	1901-1994
Elbe	148268		148268	100	25.11	-	74700	1926-1991
		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	-	2352	1974-2000
Statistical Information provided by Ireland								
Boyne	2695	Ireland	-	-	NI	-	3356	1975-1999
Liffey	1256	Ireland	-	-	NI	-	1557	1950-1999
Avoca	652	Ireland	-	0	NI	-	1749	1967-1999
Slaney	1762	Ireland	-	-	NI	-	3231	1980-1999
	6365	**=Total of main Irish rivers discharging to the Irish Sea**						
Barrow*	3067	Ireland	-	-	NI	-	3235	1946-1969
*New gauge recently installed. LTA still based on the period of reliable record for the old gauge.								
Nore	2530	Ireland	-	-	NI	-	3706	1972-1999
Suir	3610	Ireland	-	-	NI	-	6648	1954-1999
Blackwater	3324	Ireland	-	-	NI	-	7694	1956-1999
Lee	1253	Ireland	-	-	NI	-	3492	1957-1999
Bandon	608	Ireland	-	-	NI	-	1818	1975-1999
Deel	486	Ireland	-	-	NI	-	645	1983-1999
Maigue	1052	Ireland	-	-	NI	-	1423	1977-1999
Shannon Old Chan.	11700	Ireland	-	-	NI	-	4655	1932-1997
Shannon Tailrace		Ireland					13176	1932-1997
Fergus	1042	Ireland	-	-	NI	-	1618	1973-1999
	28672	**=Total of main Irish rivers discharging to the Celtic Sea**						
Corrib	3138	Ireland	-	-	NI	-	9055	1973-1999 (Excl. 86-90, 92-93)
Moy	2086	Ireland	-	-	NI	-	5312	1970-1999
Erne	4372	Ireland/UK	2572/1800	60/40	NI	-	8786	1951-1997
	9596	**=Total of main Irish rivers dischrging to the Atlantic**						
Statistical Information provided by The Netherlands (with assistance from Germany and Belgium								
Rhine	156500						166700	1911-1995
		Switzerland	9500	6	3.0	6		
		France	22000	14	3.7	7		
		Luxembourg	2500	2	0.3	1		
		Germany	100000	64	32.5	65		
		Netherlands	22500	14	10.9	21		
Meuse	34900						67800	1911-1995
		France	10000	29				
		Luxembourg	100	1				
		Belgium	13000	37				
		Germany	4000	11				
		Netherlands	7800	22	3.6			
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		

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
	7373	**=Total of Norwegian rivers discharging to the Barents Sea**						
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	
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	
Mero	345	Spain	345	100	0.046	100	572	1970-82
Tambre	1530	Spain	1530	100	0.060	100	3309	1943-82
Ulla	2803	Spain	2803	100	0.292	100	5573	
Umia	440	Spain	440	100	0.035	100	774	1970-82
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 provided by Sweden:					1995			
Vege å (95)	498	-	-	-	0.04300	100	440	1961-1990
Rönne å (96)	1890	-	-	-	0.08810	100	2030	1961-1990
Stensån (97)	284	-	-	-	0.00710	100	350	1961-1990
Lagan (98)	6444	-	-	-	0.11890	100	7410	1961-1990
Genevadsån (99)	225	-	-	-	0.00470	100	350	1961-1990
Fylleån (100)	359	-	-	-	0.00900	100	650	1961-1990
Nissan (101)	2682	-	-	-	0.08280	100	3690	1961-1990
Suseån (102)	441	-	-	-	0.00760	100	640	1961-1990
Ätrån (103)	3343	-	-	-	0.06560	100	5070	1961-1990
Himleån (104)	214	-	-	-	0.00820	100	330	1961-1990
Viskan (105)	2201	-	-	-	0.12120	100	2760	1961-1990
Rolfsån (106)	723	-	-	-	0.02710	100	1030	1961-1990

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]
Kungsbackaån (107)	310	-	-	-	0.03740	100	410	1961-1990
Göta älv (108)	50230	Norway	7450.00	14.80	0.82190	ni	50530	1961-1990
	69844	**=Total of Swedish rivers discharging to the Kattegat**						
Bäveån (109)	302	-	-	-	0.02130	100	350	1961-1990
Örekilsälven (110)	1327	-	-	-	0.01450	100	2050	1961-1990
Strömsån (111)	253	-	-	-	0.00490	100	390	1961-1990
Enningsdalsälven (112)	704	-	-	-	0.00319	100	1360	1961-1990
	2586	**=Total of Swedish rivers discharging to the Skagerrak**						
Statistical Information provided by the United Kingdom								
Dionard (SC2b)	NI	-	-	-	NI	-	NI	NI
Hope (SC2b)	NI	-	-	-	NI	-	NI	NI
Borgie (SC2b)	NI	-	-	-	NI	-	NI	NI
Naver (SC2b)	NI	-	-	-	NI	-	NI	NI
Strathy (SC2b)	NI	-	-	-	NI	-	NI	NI
Halladale (SC2b)	NI	-	-	-	NI	-	NI	NI
Thurso (SC2b)	NI	-	-	-	NI	-	NI	NI
Wick (SC2b)	NI	-	-	-	NI	-	NI	NI
Dunbeath (SC2b)	NI	-	-	-	NI	-	NI	NI
Berriedale (SC2b)	NI	-	-	-	NI	-	NI	NI
Langwell (SC2b)	NI	-	-	-	NI	-	NI	NI
Helmsdale (SC2b)	NI	-	-	-	NI	-	NI	NI
Brora (SC2b)	NI	-	-	-	NI	-	NI	NI
Oykle (K.S.; SC2b)	NI	-	-	-	NI	-	NI	NI
Cassley (K.S.; SC2b)	NI	-	-	-	NI	-	NI	NI
Shin (K.S.; SC2a)	NI	-	-	-	NI	-	NI	NI
Carron (K.S.; SC2a)	NI	-	-	-	NI	-	NI	NI
Alness (SC2b)	NI	-	-	-	NI	-	NI	NI
Cannon (SC2b)	NI	-	-	-	NI	-	NI	NI
Beauly (SC2b)	NI	-	-	-	NI	-	NI	NI
Ness (SC2b)	NI	-	-	-	NI	-	7600	NI
Nairn (SC2b)	NI	-	-	-	NI	-	NI	NI
Findhorn (SC2b)	NI	-	-	-	NI	-	NI	NI
Spey (SC3)	NI	-	-	-	NI	-	5600	NI
Deveron (SC3)	NI	-	-	-	NI	-	NI	NI
Ugie (SC3)	NI	-	-	-	NI	-	NI	NI
Ythan (SC3)	NI	-	-	-	NI	-	NI	NI
Lossie (SC3)	NI	-	-	-	NI	-	NI	NI
Don (SC3)	NI	-	-	-	NI	-	NI	NI
Dee (SC3)	NI	-	-	-	NI	-	NI	NI
Bervie (SC3)	NI	-	-	-	NI	-	NI	NI
Dighty (SC4)	NI	-	-	-	NI	-	NI	NI
Earn (SC4)	NI	-	-	-	NI	-	NI	NI
Eden (SC4)	NI	-	-	-	NI	-	NI	NI
North Esk (SC4)	NI	-	-	-	NI	-	NI	NI
South Esk (SC4)	NI	-	-	-	NI	-	NI	NI
Lunan (SC4)	NI	-	-	-	NI	-	NI	NI
Tay (SC4)	NI	-	-	-	NI	-	14000	NI
Leven (SC5)	NI	-	-	-	NI	-	NI	NI
Black Devon (SC5)	NI	-	-	-	NI	-	NI	NI
Devon (SC5)	NI	-	-	-	NI	-	NI	NI
Allan (SC5)	NI	-	-	-	NI	-	NI	NI
Teith (SC5)	NI	-	-	-	NI	-	NI	NI
Forth (SC5)	NI	-	-	-	NI	-	4300	NI
Avon (SC5)	NI	-	-	-	NI	-	NI	NI
Carron (SC5)	NI	-	-	-	NI	-	NI	NI
Almond (SC5)	NI	-	-	-	NI	-	NI	NI
Leith (SC5)	NI	-	-	-	NI	-	NI	NI
Esk (SC5)	NI	-	-	-	NI	-	NI	NI
Tyne (SC5)	NI	-	-	-	NI	-	3900	NI
Whiteadder (SC5)	NI	-	-	-	NI	-	NI	NI
Eye (SC5)	NI	-	-	-	NI	-	NI	NI
Tweed (E1)	NI	-	-	-	NI	-	NI	NI
Coquet (E1)	NI	-	-	-	NI	-	NI	NI
Wansbeck (E1)	NI	-	-	-	NI	-	NI	NI
Blyth (E1)	NI	-	-	-	NI	-	NI	NI
Tyne (E2)	NI	-	-	-	NI	-	NI	NI

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]
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
Aire (E7A)	NI	-	-	-	NI	-	NI	NI
Derwent (E7A)	NI	-	-	-	NI	-	NI	NI
Don (E7A)	NI	-	-	-	NI	-	NI	NI
Ouse (E7A)	NI	-	-	-	NI	-	NI	NI
Wharfe (E7A)	NI	-	-	-	NI	-	NI	NI
Ancholme (E7A)	NI	-	-	-	NI	-	NI	NI
Trent (E7A)	NI	-	-	-	NI	-	7800	NI
Idle (E7A)	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 catchm.	112000				121300			
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
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

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]
Plym (E18)	NI	-	-	-	NI	-	NI	NI
Porthleven (E18)	NI	-	-	-	NI	-	NI	NI
St Austel (E18)	NI	-	-	-	NI	-	NI	NI
Tavy (E18)	NI	-	-	-	NI	-	NI	NI
Tamar (E18)	NI	-	-	-	NI	-	1940	NI
Tot.Channel catch.	22000						16500	
Camel (E19)	NI	-	-	-	NI	-	NI	NI
Hayle (E19)	NI	-	-	-	NI	-	NI	NI
Menalhyl (E19)	NI	-	-	-	NI	-	NI	NI
Red River (E19)	NI	-	-	-	NI	-	NI	NI
Taw (Yeo) (E19)	NI	-	-	-	NI	-	NI	NI
Taw (2) (E20)	NI	-	-	-	NI	-	NI	NI
Torridge (E20)	NI	-	-	-	NI	-	NI	NI
Parrett (E21)	NI	-	-	-	NI	-	NI	NI
Tone (E21)	NI	-	-	-	NI	-	NI	NI
Bristol Avon (E22)	NI	-	-	-	NI	-	NI	NI
Severn (2) (E22)	NI	-	-	-	NI	-	9100	NI
Wye (E23)	NI	-	-	-	NI	-	6200	NI
Usk (E23)	NI	-	-	-	NI	-	NI	NI
Rhymney (E23)	NI	-	-	-	NI	-	NI	NI
Ely (E23)	NI	-	-	-	NI	-	NI	NI
Afon Lwyd (E23)	NI	-	-	-	NI	-	NI	NI
Ebbw Fawr (E23)	NI	-	-	-	NI	-	NI	NI
Taff (E23)	NI	-	-	-	NI	-	NI	NI
Cadoxton (E24)	NI	-	-	-	NI	-	NI	NI
Neath (E24)	NI	-	-	-	NI	-	NI	NI
Ogmore (E24)	NI	-	-	-	NI	-	NI	NI
Thaw (E24)	NI	-	-	-	NI	-	NI	NI
Tawe (E24)	NI	-	-	-	NI	-	NI	NI
Ewenny (E24)	NI	-	-	-	NI	-	NI	NI
Nant Y Fendrod (E24)	NI	-	-	-	NI	-	NI	NI
Thaw Kenson (E24)	NI	-	-	-	NI	-	NI	NI
Dafen (E25)	NI	-	-	-	NI	-	NI	NI
W Cleddau (E25)	NI	-	-	-	NI	-	NI	NI
Tywi (E25)	NI	-	-	-	NI	-	3700	NI
Taf (E25)	NI	-	-	-	NI	-	NI	NI
Loughor (E25)	NI	-	-	-	NI	-	NI	NI
Tot.Celtic S. catch.	32000						36400	
Teifi (E26)	NI	-	-	-	NI	-	NI	NI
Ystwyth (E26)	NI	-	-	-	NI	-	NI	NI
Rheidol (E26)	NI	-	-	-	NI	-	NI	NI
Mawddach (E26)	NI	-	-	-	NI	-	NI	NI
Dyfi (E26)	NI	-	-	-	NI	-	NI	NI
Glaslyn (E26)	NI	-	-	-	NI	-	NI	NI
Afon Goch (2) (E27)	NI	-	-	-	NI	-	NI	NI
Clwyd (E27)	NI	-	-	-	NI	-	NI	NI
Cefni (E27)	NI	-	-	-	NI	-	NI	NI
Conwy (E27)	NI	-	-	-	NI	-	NI	NI
Dee (E27)	NI	-	-	-	NI	-	3020	NI
Nant Glywdyr (E27)	NI	-	-	-	NI	-	NI	NI
Alt (E28)	NI	-	-	-	NI	-	NI	NI
Mersey (E28)	NI	-	-	-	NI	-	3540	NI
Weaver (E28)	NI	-	-	-	NI	-	NI	NI
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

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]
Urr (SC1)	NI	-	-	-	NI	-	NI	NI
Dee (SC1)	NI	-	-	-	NI	-	NI	NI
Cree (SC1)	NI	-	-	-	NI	-	NI	NI
Bladnoch (SC1)	NI	-	-	-	NI	-	NI	NI
Luce (SC1)	NI	-	-	-	NI	-	NI	NI
Piltanton (SC1)	NI	-	-	-	NI	-	NI	NI
Newry (NI2)	NI				NI	-	NI	NI
Quoile (NI2)	NI				NI	-	NI	NI
Lagan (NI2)	NI				NI	-	NI	NI
Tot.Irish Sea catch.	35000						48400	
Clyde (SC2)	NI	-	-	-	NI	-	4000	NI
Kelvin (SC2)	NI	-	-	-	NI	-	NI	NI
White Cart (SC2)	NI	-	-	-	NI	-	NI	NI
Black Cart (SC2)	NI	-	-	-	NI	-	NI	NI
Leven (SC2)	NI	-	-	-	NI	-	NI	NI
Garnock (SC2)	NI	-	-	-	NI	-	NI	NI
Lugton (SC2)	NI	-	-	-	NI	-	NI	NI
Annick (SC2)	NI	-	-	-	NI	-	NI	NI
Irvine (SC2)	NI	-	-	-	NI	-	NI	NI
Ayr (SC2)	NI	-	-	-	NI	-	NI	NI
Doon (SC2)	NI	-	-	-	NI	-	NI	NI
Girvan (SC2)	NI	-	-	-	NI	-	NI	NI
Stinchar (SC2)	NI	-	-	-	NI	-	NI	NI
Leven (SC2a)	NI	-	-	-	NI	-	NI	NI
Nevis (SC2a)	NI	-	-	-	NI	-	NI	NI
Lochy (SC2a)	NI	-	-	-	NI	-	5400	NI
Shiel (Sunart; SC2a)	NI	-	-	-	NI	-	NI	NI
Ailort (SC2a)	NI	-	-	-	NI	-	NI	NI
Morar (SC2a)	NI	-	-	-	NI	-	NI	NI
Shiel (G.S.; SC2a)	NI	-	-	-	NI	-	NI	NI
Elchaig (SC2a)	NI	-	-	-	NI	-	NI	NI
Ling (SC2a)	NI	-	-	-	NI	-	NI	NI
Carron (N.K.; SC2a)	NI	-	-	-	NI	-	NI	NI
Ewe (SC2a)	NI	-	-	-	NI	-	NI	NI
Little Gruinad (SC2a)	NI	-	-	-	NI	-	NI	NI
Gruinard (SC2a)	NI	-	-	-	NI	-	NI	NI
Broom (SC2a)	NI	-	-	-	NI	-	NI	NI
Ullapool (SC2a)	NI	-	-	-	NI	-	NI	NI
Inver (SC2a)	NI	-	-	-	NI	-	NI	NI
Laxford (SC2b)	NI	-	-	-	NI	-	NI	NI
Bush (NI1)	NI				NI		NI	NI
Bann (NI1)	NI				NI		7900	NI
Roe (NI1)	NI				NI		NI	NI
Faughan (NI1)	NI				NI		NI	NI
Burn Dennet NI1	NI				NI		NI	NI
Mourne (NI1)	NI				NI		NI	NI
Finn (NI1)	NI				NI		NI	NI
Tot.Atlantic catchm.	42000						49700	

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

Annex 1

BELGIUM

Annual report on riverine inputs and direct discharges to Convention waters during the year 2000 by Belgium

Annual report on riverine inputs and direct discharges by Belgium to convention waters during the year 2000

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, subarea 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 2000

B.1 Comments on the Total Riverine Inputs and Direct Discharges:

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

C. Direct discharges for the year 2000

Sewage Effluents

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

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

No urban run-off or stormwater 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 2000

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 7) upon which the measurement is based (ref.: Section 5 of the Principles), including for those under voluntary reporting:

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 all measurements were beneath the detection limit no calculation for this parameter was made and the value reported was "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)":

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

Where: Qr is an estimated LTA flow rate

Ci is the concentration measured in sample i

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

Ref. (2) table 7: all measurements were beneath the detection limit, a nominal maximum concentration could not be detected. Consequently, the fields in the rows labelled "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.

Scheldt estuary

The fresh water flow rates for the Scheldt, determined at station 'Schelle', were multiplied by an empirically determined correction factor of 1.15 to include fresh water inputs between 'Schelle' and 'Doel'. ***Source of data: Flemish Region, Department of Environment & Infrastructure, Waterways and Maritime Affairs Administration, Maritime Section Scheldt****.*

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

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

Where: Qr is the mean flow rate for 2000

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

Ci is the concentration measured in sample i

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

Ref. (2) table 7: all measurements were beneath the detection limit, a nominal maximum concentration could not be detected. Consequently, the fields in the rows labelled "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 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:

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

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:*

EC 20, O2 , SPM, tHpCEpx, dHCH, MxyC, Dmetoat,Cumafos, Sebutylaz, cCdane, bHCH, 24DDE, 44DDD, Atraz, Linuron , mBthiaz, pH, COD, HpC, HCBz, PCNiBz , 44DDT , Telodrin, Terbutryn, AzinfosEy, Ethopfos, Malathion , Fenthion, tCdane, Methidat, Metaza, Aldrin , cHpCEpx, 44DDE, Deyatraz, Mevinfos, Triazofos , Tfluralin , PCB 101, PathionMy, 2356CniBz, BrfosMy, CpfosEy, Diuron, HCBdn, eHCH, 24DDT, TrByaz, PirfosMy, BrfosEy, TclofosMy, T, bEndo, Dcvos, Endrin, Endr.al, Isodrin, DiPyatraz, Dsulfoton, Sulfotep, Ethion, EndoS, aEndo, Propaz, Simaz, Fenithion, Desmetryn, Diazinon, Secchi , aHCH, 24DDD, Cyanaz, Iproturon, CpfosMy.

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

EC 20, O2 , SPM, tHpCEpx, dHCH, MxyC, Dmetoat,Cumafos, Sebutylaz, cCdane, As t, Cr t, Dieldrin , bHCH, 24DDE, 44DDD, Atraz, Linuron , AzinfosMy, Prometryn, mBthiaz, Fstrep, pH, COD, HpC, HCBz, PCNiBz , 44DDT , Telodrin, Terbutryn, AzinfosEy, Ethopfos, Malathion , Fenthion, tCdane, Methidat, Metaza, Ctoluron , Aldrin , cHpCEpx, 44DDE, Deyatraz, Metoxur , Mevinfos, Triazofos , Tfluralin , PCB 101, PathionMy, Cfvinfos, Salm, 2345CniBz, PCB 31, PathionEy, 2356CniBz, BrfosMy, CpfosEy, Diuron, HCBdn, eHCH, 24DDT, TrByaz, PirfosMy, BrfosEy, TclofosMy, T, bEndo, Heptfos, Ffamidon, Dcvos, Fcoli, Ni t, BOD5, Endrin, Endr.al, Isodrin, DiPyatraz, Dsulfoton, Sulfotep, Ethion, EndoS, aEndo, Propaz, Simaz, Fenithion, Desmetryn, Diazinon, Secchi , SO4=, aHCH, 24DDD, Cyanaz, Iproturon, CpfosMy, Demeton-S, Tcoli.

Tributary Rivers (Tables 6b and 7)

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 all measurements were beneath the detection limit no calculation for this parameter was made and the value reported was "NI" (No Information).

Coastal Area

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

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)":

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

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

Ci is the concentration measured in sample I

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

Ref. (2) table 7: all measurements were beneath the detection limit, a nominal maximum concentration could not be detected. Consequently, the fields in the rows labelled "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.

Ref. (4) tables 6b and 7: emissions only; no regular monitoring point available.

Ref. (5) tables 6b and 7: inputs calculated on the basis of total emission flow rate.

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)":

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

Where: Qr is the mean flow rate for 2000, evaluated on a daily basis

Qi is the flow rate on the sampling day i

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

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

Ref. (2) table 7: all measurements were beneath the detection limit, a nominal maximum concentration could not be detected. Consequently, the fields in the rows labelled "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.

Ref. (4) tables 6b and 7: emissions only; no regular monitoring point available.

Ref. (5) tables 6b and 7: inputs calculated on the basis of total emission flow rate.

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* ***Beverdijkvaart,*** *the* ***Gent-Oostende canal,*** *the* ***Leopold canal*** *and the same as for the* ***Yzer.***

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

EC 20, O2, Cr t, pH, COD, NO2-, T, Ni t, Cl-, KjN

For the ***Schipdonk*** *canal the same determinands are available, expept COD.*

For the Noordede, only O2, EC 20, pH and T are supplementally available.

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 that 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 beneath the detection limit, consequently 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). Consequently, very often more than 30% of the measurements are under those limits. When all measurements for a given determinand are beneath the limit of detection, there is no information about the lowest value measured, and the minimum values in table 7 are then reported as "ND" (not detected). The same reasoning was applied to the highest values when all measurements are under the limit of detection. In that case there is no information about a maximum concentration and this value is reported as "ND" (not detected). See also the references in sections D.1 and D.4.

Further, as a consequence of the higher limits of detection, there is sometimes a huge spread between the calculated upper and lower limits of the loads.

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.

No data were available for PCB28 in 2000.

Due to an increased detection limit for Cd, lower and upper input levels for this determinand are again very broad.

On the other hand, for Hg better estimates are available for some monitoring points due to decreased detection limits.

Occasionally, rather high concentrations for γ-HCH and some PCB-congeners have been observed in the coastal region.

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 by Belgium

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
243	Ijzer	lower	0.000	0.009	1.421	0.366	2.972	19.511	0.000	0.366	2.147	0.111	2.875	0.166	7.038
		upper	0.169	0.011	1.421	0.444	3.143	19.529	2.255	0.366	2.147	0.111	2.875	0.166	7.038
		comment													
238	Coastal Area	lower	0.000	0.009	1.421	0.366	2.972	19.511	0.000	0.366	2.147	0.111	2.875	0.166	7.038
		upper	0.169	0.011	1.421	0.444	3.143	19.529	2.255	0.366	2.147	0.111	2.875	0.166	7.038
		comment													
102	Schelde	lower	0.749	0.469	48.373	72.354	228.786	43.450	0.000	3.160	25.656	0.934	34.285	2.403	231.249
		upper	7.336	0.553	55.406	100.366	265.568	51.633	73.603	3.453	31.104	1.196	39.816	3.720	267.587
		comment													
245	Schelde Basin	lower	0.749	0.469	48.373	72.354	228.786	43.450	0.000	3.160	25.656	0.934	34.285	2.403	231.249
		upper	7.336	0.553	55.406	100.366	265.568	51.633	73.603	3.453	31.104	1.196	39.816	3.720	267.587
		comment													
79	North Sea (BE)	lower	0.749	0.479	49.794	72.719	231.758	62.961	0.000	3.526	27.803	1.045	37.161	2.569	238.287
		upper	7.505	0.565	56.827	100.811	268.711	71.162	75.858	3.819	33.251	1.308	42.691	3.886	274.625
		comment													

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 by Belgium

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
247	Beverdijk	lower	0.000		0.121	0.029	0.182	2.842	0.000	0.014	0.103	0.019	0.182	0.032	0.854
		upper	0.019		0.124	0.042	0.214	2.842	0.278	0.015	0.103	0.019	0.182	0.032	0.854
		comment													
243	Ijzer	lower													
		upper													
		comment													
246	Langeleed	lower	0.000		0.020	0.012	0.045			0.048	0.015	0.012	0.078	0.018	0.311
		upper	0.009		0.028	0.019	0.071			0.048	0.015	0.012	0.079	0.018	0.311
		comment													
248	Vladslovaart	lower	0.000		0.214	0.077	0.417			0.027	0.221	0.022	0.306	0.034	1.375
		upper	0.019		0.214	0.080	0.427			0.027	0.221	0.022	0.306	0.034	1.375
		comment													
239	Western Coastal Area	lower	**0.000**		**0.355**	**0.118**	**0.644**	**2.842**	**0.000**	**0.089**	**0.339**	**0.053**	**0.566**	**0.083**	**2.540**
		upper	**0.047**		**0.366**	**0.141**	**0.711**	**2.842**	**0.278**	**0.089**	**0.339**	**0.053**	**0.568**	**0.083**	**2.540**
		comment													

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 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]
255	Blankenbergse vaart	lower	0.000		0.149	0.019	0.170	1.811	0.000	0.005	0.024	0.010	0.055	0.016	14.294
		upper	0.011		0.149	0.023	0.170	1.913	2.255	0.006	0.024	0.010	0.055	0.016	14.294
		comment													
251	Boudewijn canal	lower	0.000	0.000	0.109	0.000	0.527				0.000		0.000	0.000	0.000
		upper	0.000	0.113	0.198	0.113	0.962				0.000		0.001	0.000	0.000
		comment	(4) (5)	(4) (5)	(4) (5)	(4) (5)	(4) (5)				(4) (5)		(4) (5)	(4) (5)	(4) (5)
252	Leopold canal	lower	0.000	0.008	0.843	0.147	1.712	1.554	0.000	0.141	0.460	0.082	0.811	0.133	2.410
		upper	0.096	0.008	0.873	0.201	1.758	1.600	1.214	0.141	0.460	0.082	0.811	0.133	2.410
		comment													
256	Lissewege vaart	lower	0.000	0.001	0.002	0.001	0.007			0.007	0.011	0.005	0.028	0.006	0.000
		upper	0.000	0.001	0.002	0.001	0.007			0.007	0.011	0.005	0.028	0.006	0.000
		comment	(4) (5)	(4) (5)	(4) (5)	(4) (5)	(4) (5)								
254	Schipdonk canal	lower	0.012	0.015	2.294	1.836	9.908	2.443	0.188	0.714	1.109	0.144	2.151	0.247	9.569
		upper	0.169	0.016	2.355	1.881	9.908	2.460	2.391	0.714	1.109	0.144	2.151	0.247	9.797
		comment													
242	Eastern Coastal Area	lower	**0.012**	**0.024**	**3.396**	**2.003**	**12.324**	**5.808**	**0.188**	**0.867**	**1.604**	**0.241**	**3.046**	**0.402**	**26.274**
		upper	**0.275**	**0.138**	**3.577**	**2.219**	**12.805**	**5.973**	**5.860**	**0.867**	**1.604**	**0.241**	**3.047**	**0.402**	**26.501**
		comment													

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 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 cana	lower	0.000	0.008	0.928	0.263	2.932	1.597	0.000	0.140	0.979	0.080	1.385	0.124	2.208
		upper	0.124	0.010	0.967	0.357	2.932	1.715	1.734	0.141	0.979	0.080	1.385	0.124	2.243
		comment													
250	Noordede	lower	0.003		0.441	0.032	0.451	0.315	0.589	0.056	0.075	0.028	0.229	0.103	4.206
		upper	0.023		0.441	0.045	0.451	0.341	0.875	0.056	0.075	0.028	0.229	0.103	4.206
		comment													
241	Middle Coastal Area	lower	**0.003**	**0.008**	**1.369**	**0.295**	**3.383**	**1.912**	**0.589**	**0.196**	**1.054**	**0.108**	**1.614**	**0.227**	**6.414**
		upper	**0.147**	**0.010**	**1.408**	**0.402**	**3.383**	**2.055**	**2.609**	**0.197**	**1.054**	**0.108**	**1.614**	**0.227**	**6.449**
		comment													
238	Coastal Area	lower	**0.015**	**0.033**	**5.120**	**2.416**	**16.351**	**10.562**	**0.777**	**1.152**	**2.997**	**0.402**	**5.226**	**0.712**	**35.227**
		upper	**0.469**	**0.148**	**5.351**	**2.762**	**16.899**	**10.871**	**8.747**	**1.154**	**2.997**	**0.402**	**5.229**	**0.712**	**35.490**
		comment													
244	Gent-Terneuzen Canal	lower	0.016	0.007	3.265	8.743	29.094	22.732	0.000	1.465	5.874	0.542	8.997	0.716	12.651
		upper	0.343	0.034	5.239	9.027	29.967	24.519	22.947	1.805	6.054	0.564	9.267	0.744	13.594
		comment													
102	Schelde	lower													
		upper													
		comment													
245	Schelde Basin	lower	**0.016**	**0.007**	**3.265**	**8.743**	**29.094**	**22.732**	**0.000**	**1.465**	**5.874**	**0.542**	**8.997**	**0.716**	**12.651**
		upper	**0.343**	**0.034**	**5.239**	**9.027**	**29.967**	**24.519**	**22.947**	**1.805**	**6.054**	**0.564**	**9.267**	**0.744**	**13.594**
		comment													
79	North Sea (BE)	lower	**0.031**	**0.039**	**8.385**	**11.159**	**45.445**	**33.294**	**0.777**	**2.617**	**8.871**	**0.944**	**14.224**	**1.428**	**47.878**
		upper	**0.812**	**0.182**	**10.590**	**11.789**	**46.866**	**35.390**	**31.694**	**2.959**	**9.051**	**0.966**	**14.496**	**1.457**	**49.084**
		comment													

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2000 by Belgium:

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
247	Beverdijk	lower													
		upper													
		minimum	ND		ND	ND	ND	12	ND	ND	ND	0.3	2.9	1	21
		maximum	ND		11.0	2.8	14	293	ND	2.00	9.60	1.7	12.61	2	52
		more than 70% > D.L.	no		yes	no	yes	yes	no	no	yes	yes	yes	yes	yes
		n	12		12	12	12	6	6	12	12	12	12	12	12
		info	(1) (2) (3)												
		st.Dev.	NI		3.04	0.98	3.91	133.19	NI	0.62	3.92	0.39	3.65	0.50	8.91
243	Ijzer	lower													
		upper													
		minimum	ND	ND	2.8	ND	ND	ND	ND	0.34	1.90	0.3	8.79	0.48	11
		maximum	ND	0.12	11.0	4.0	33	530	ND	5.10	16.00	1.6	18.8	2.30	74
		more than 70% > D.L.	no	no	yes	no	yes	yes	no	yes	yes	yes	yes	yes	yes
		n	12		12	12	12	11	11	12	12	11	12	11	12
		info													
		st.Dev.	NI	0.04	2.18	1.26	7.90	160.63	NI	1.23	4.44	0.38	3.29	0.52	17.46
246	Langeleed	lower													
		upper													
		minimum	ND		ND	ND	ND			ND	ND	0.3	ND	0	7
		maximum	ND		7.9	4.6	22			29.00	4.20	2.9	32	5	71
		more than 70% > D.L.	no		no	no	no			yes	no	yes	yes	yes	yes
		n	12		11	12	12			11	12	12	12	12	12
		info													
		st.Dev.	NI		2.72	1.43	6.58			9.94	1.72	0.85	9.47	1.37	22.02
248	Vladslovaart	lower													
		upper													
		minimum	ND		4.0	ND	ND			ND	0.46	0.3	2.86	0.4	27
		maximum	ND		16.0	8.6	45			1.90	15.00	2.0	19.76	2.9	150
		more than 70% > D.L.	no		yes	yes	yes			yes	yes	yes	yes	yes	yes
		n	12		12	12	12			12	11	12	12	12	12
		info													
		st.Dev.	NI		3.83	1.99	11.86			0.64	5.12	0.44	5.25	0.63	34.85
239	Western Coastal Area	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.3**	**ND**	**0.4**	**7**
		maximum	**ND**	**0.12**	**16.0**	**8.6**	**45**	**530**	**ND**	**29.00**	**16.00**	**2.9**	**32**	**4.9**	**150**
		more than 70% > D.L.	**no**	**no**	**yes**	**no**	**yes**	**yes**	**no**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**
		n	**48**	**10**	**47**	**48**	**48**	**17.00**	**17**	**47**	**47**	**47**	**48**	**47**	**48**
		info													
		st.Dev.	**NI**	**0.04**	**3.68**	**1.56**	**9.06**	**147.44**	**NI**	**4.86**	**5.28**	**0.59**	**6.39**	**0.90**	**23.89**

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Reported Maritime Area of the OSPAR Convention in 2000 by Belgium:

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
255	Blankenbergse vaart	lower													
		upper													
		minimum	ND		2.6	ND	6	ND	ND	ND	ND	0.3	1.4	0.6	23
		maximum	ND		39.0	2.6	26	21	ND	1.20	6.80	1.6	9.06	1.8	71
		more than 70% > D.L.	no		yes	no	yes	yes	no	no	no	yes	yes	yes	yes
		n	11		11	11	11	6	6	11	12	12	12	12	12
		info													
		st.Dev.	NI		11.03	0.76	5.94	8.58	NI	0.44	2.40	0.40	2.57	0.39	15.74
251	Boudewijn canal	lower													
		upper													
		minimum	NI	NI	NI	NI	NI			NI	NI	NI	NI	NI	NI
		maximum	NI	NI	NI	NI	NI			NI	NI	NI	NI	NI	NI
		more than 70% > D.L.	NI	NI	NI	NI	NI			NI	NI	NI	NI	NI	NI
		n	NI	NI	NI	NI	NI			NI	NI	NI	NI	NI	NI
		info													
		st.Dev.	NI	NI	NI	NI	NI			NI	NI	NI	NI	NI	NI
252	Leopold canal	lower													
		upper													
		minimum	ND	ND	ND	ND	ND	ND	ND	ND	0.66	0.2	1.71	0.6	8
		maximum	ND	0.17	0.17	3.1	34	60	ND	2.40	8.30	2.0	11.25	2.3	41
		more than 70% > D.L.	no	yes	yes	no	yes	yes	no	yes	yes	yes	yes	yes	yes
		n	12	11	11	12	12	12	12	12	12	11	12	11	12
		info													
		st.Dev.	NI	0.04	4.63	0.97	9.85	19.25	NI	0.59	2.82	0.57	2.89	0.54	10.47
256	Lissewege vaart	lower													
		upper													
		minimum	NI	NI	NI	NI	NI			ND	0.14	0.2	1.79	0.5	
		maximum	NI	NI	NI	NI	NI			3.23	4.80	1.4	7.97	1.5	
		more than 70% > D.L.	NI	NI	NI	NI	NI			yes	yes	yes	yes	yes	
		n	NI	NI	NI	NI	NI			10	11	11	11	11	
		info													
		st.Dev.	NI	NI	NI	NI	NI			1.17	1.26	0.45	1.70	0.38	
254	Schipdonk canal	lower													
		upper													
		minimum	ND	ND	ND	ND	23	ND	ND	1.50	1.30	0.3	7.72	0.6	ND
		maximum	0.7	0.13	43.0	62.0	230	41	11	6.20	9.80	1.4	13.96	1.7	320
		more than 70% > D.L.	no	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes
		n	12	10	10	12	12	12	12	12	12	11	12	11	12
		info													
		st.Dev.	NI	0.04	12.00	16.83	57.70	11.79	NI	1.57	2.90	0.35	2.28	0.36	89.73

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Reported Maritime Area of the OSPAR Convention in 2000 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]
242	Eastern Coastal Area	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.2**	**1.4**	**0.5**	**ND**
		maximum	**0.7**	**0.17**	**43.0**	**62.0**	**230**	**60**	**11**	**6.20**	**9.80**	**2**	**13.96**	**2.3**	**320**
		more than 70% > D.L.	**no**	**yes**	**yes**	**no**	**yes**	**yes**	**no**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**
		n	**35**	**21**	**32**	**35**	**35**	**30**	**30**	**45**	**47**	**45**	**47**	**45**	**36**
		info													
		st.Dev.	**NI**	**0.04**	**9.56**	**10.25**	**37.19**	**14.49**	**NI**	**1.56**	**2.84**	**0.44**	**3.46**	**0.42**	**52.65**
249	Gent-Oostende canal	lower													
		upper													
		minimum	ND	ND	ND	ND	5	ND	ND	ND	2.60	0.3	4.44	0.4	ND
		maximum	ND	0.12	12.0	4.7	31	24	ND	2.40	11.00	1.2	14.44	1.8	35
		more than 70% > D.L.	no	no	yes	no	yes	yes	no	yes	yes	yes	yes	yes	yes
		n	12	9	12	12	12	8	8	12	12	12	12	12	12
		info													
		st.Dev.	NI	0.04	3.21	1.74	9.08	7.98	NI	0.75	2.78	0.26	3.28	0.36	8.84
250	Noordende	lower													
		upper													
		minimum	ND		3.7	ND	6.7	ND	ND	ND	ND	0.2	5.3	1.0	13
		maximum	1.3		64.0	3.5	44.0	41	140	7.40	8.40	1.7	12.93	2.5	110
		more than 70% > D.L.	no		yes	no	yes	no	no	yes	no	yes	yes	yes	yes
		n	12		12	12	12	6	6	12	12	11	12	11	11
		info													
		st.Dev.	NI		18.54	1.19	9.81	15.55	NI	2.05	3.18	0.43	2.48	0.57	28.32
241	Middle Coastal Area	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**5.0**	**ND**	**ND**	**ND**	**ND**	**0.2**	**4.44**	**0.4**	**ND**
		maximum	**1.3**	**0.12**	**64.0**	**4.7**	**44.0**	**41**	**140**	**7.40**	**11.00**	**1.7**	**14.44**	**2.5**	**110**
		more than 70% > D.L.	**no**	**no**	**yes**	**no**	**yes**	**yes**	**no**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**
		n	**24**	**9**	**24**	**24**	**24**	**14**	**14**	**24**	**24**	**23**	**24**	**23**	**23**
		info													
		st.Dev.	**NI**	**0.04**	**14.2733**	**1.48**	**9.25**	**11.356**	**NI**	**1.66**	**3.36**	**0.46**	**2.85**	**0.70**	**26.40**
238	Coastal Area	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**0.2**	**ND**	**0.4**	**ND**
		maximum	**1.3**	**0.17**	**64.0**	**62.0**	**230**	**530**	**140**	**29.00**	**16.00**	**2.9**	**32.00**	**4.9**	**320**
		more than 70% > D.L.	**no**	**yes**	**yes**	**no**	**yes**	**yes**	**no**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**
		n	**107**	**40**	**103**	**107**	**107**	**61**	**61**	**116**	**118**	**115**	**117**	**115**	**107**
		info													
		st.Dev.	**NI**	**0.04**	**9.31**	**6.03**	**23.33**	**86.93**	**NI**	**3.31**	**4.24**	**0.46**	**2.85**	**0.70**	**36.40**

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2000 by Belgium:

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
244	Gent-Terneuzen Canal	lower													
		upper													
		minimum	ND	ND	ND	ND	10.0	5	ND	ND	4.90	0.5	7.59	0.5	ND
		maximum	1.2	0.10	10.0	50.0	53.0	35	ND	2.90	9.57	1.1	14.15	1.4	50
		more than 70% > D.L.	no	no	no	no	yes	yes	no	yes	yes	yes	yes	yes	yes
		n	17	11	17	17	17	12	12	18	18	18	18	17	18
		info													
		st.Dev.	0.15	0.03	2.60	16.57	8.25	9.98	NI	0.72	1.53	0.20	1.90	0.25	11.63
102	Schelde	lower													
		upper													
		minimum	ND	ND	3.2	ND	9.2	3	ND	ND	0.80	ND	2.5	ND	22
		maximum	1.3	0.19	28.0	99.0	96.0	21	ND	1.86	6.20	0.2	7.89	1.1	76
		more than 70% > D.L.	no	yes	yes	no	yes	yes	no	yes	yes	yes	yes	no	yes
		n	18	18	18	18	18	6	6	18	18	18	18	18	17
		info													
		st.Dev.	0.25	0.05	6.46	24.20	21.07	6.77	NI	0.52	1.19	0.05	1.45	0.26	13.53
245	Schelde Basin	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**9.2**	**3**	**ND**	**ND**	**0.80**	**ND**	**2.5**	**ND**	**ND**
		maximum	**1.3**	**0.19**	**28.0**	**99.0**	**96.0**	**35**	**ND**	**2.90**	**9.57**	**1.1**	**14.15**	**1.4**	**76**
		more than 70% > D.L.	**no**	**no**	**yes**	**no**	**yes**	**yes**	**no**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**
		n	**18**	**29**	**35**	**35**	**35**	**18**	**18**	**36**	**36**	**36**	**36**	**35**	**35**
		info													
		st.Dev.	**0.29**	**0.05**	**5.22**	**20.28**	**16.64**	**9.32**	**NI**	**1.02**	**1.76**	**0.30**	**2.85**	**0.36**	**18.97**
79	North Sea (BE)	lower													
		upper													
		minimum	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**	**ND**
		maximum	**1.3**	**0.19**	**64.0**	**99.0**	**230**	**530**	**140**	**29.00**	**16.00**	**2.9**	**32.00**	**4.9**	**320**
		more than 70% > D.L.	**no**	**yes**	**yes**	**no**	**yes**	**yes**	**no**	**yes**	**yes**	**yes**	**yes**	**yes**	**yes**
		n	**125**	**NI**	**138**	**142**	**142**	**79**	**79**	**152**	**154**	**151**	**153**	**150**	**142**
		info													
		st.Dev.	**NI**	**0.04**	**8.50**	**12.08**	**23.55**	**77.09**	**NI**	**2.93**	**3.82**	**0.49**	**4.61**	**0.68**	**33.08**

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2000 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	0,7 - 1,2		1.5	0,7 - 1,3	5	NI	1 - 11	0.03	0.02	0.1	NI	1	NI
243	Ijzer	Sewage													
		Industrial													
		Riverine	0,7 - 1,2	0,01 - 0,03	0.6	0,7 - 1,3	5	1	1 - 11	0.5	0.1	0.1	NI	1	NI
246	Langeleed	Sewage													
		Industrial													
		Riverine	0,7 - 1,2		0,8 - 1,5	1.3	2,5 - 5			0.03	0.02	0.1	NI	1	NI
248	Vladslovaart	Sewage													
		Industrial													
		Riverine	0,7 - 1,2		0.6	1.3	5			0.03	0.1	0.1	NI	1	NI
239	Western Coastal Area	Sewage													
		Industrial													
		Riverine	**0,7 - 1,2**	**0,01 - 0,03**	**0,6 - 1,5**	**0,7 - 1,3**	**2,5 - 5**	**NI**	**1 - 11**	**0.03**	**0,02 - 0,1**	**0.1**	**NI**	**1**	**NI**

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2000 by Belgium

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
255	Blankenbergse vaart	Sewage													
		Industrial													
		Riverine	0,7 - 1,2		0.6	0,7 - 1,3	5	3	1 - 11	0.03	0.02	0.1	NI	1	NI
251	Boudewijn canal	Sewage													
		Industrial													
		Riverine													
252	Leopold canal	Sewage													
		Industrial													
		Riverine	0,7 - 1,2	0.03	1.5	0,7 - 1,3	5	1	1 - 11	0,03	0.1	0.1	NI	1	NI
256	Lissewege vaart	Sewage													
		Industrial													
		Riverine								0.03	0.1	0.1	NI	1	
254	Schipdonk canal	Sewage													
		Industrial													
		Riverine	0,7 - 1,2	0.03	1.5	1.3	5	1	1 - 11	0.5	0.1	0.1	NI	1	2,7 - 5,3
242	Eastern Coastal Area	Sewage													
		Industrial													
		Riverine	**0,7 - 1,2**	**0.03**	**0,6 - 1,5**	**0,7 - 1,3**	**5**	**NI**	**1 - 11**	**0,03 - 0,5**	**0,02 - 0,1**	**0.1**	**NI**	**1**	**NI**

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2000 by Belgium

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
249	Gent-Oostende canal	Sewage													
		Industrial													
		Riverine	0,7 - 1,2	0,01 - 0,03	1.5	0,7 - 1,3	5	3	1 - 11	0.03	0.1	0.1	NI	1	2.7
250	Noordende	Sewage													
		Industrial													
		Riverine	0,7 - 1,2		0.6	0,7 - 1,30	5	3	1 - 11	0.03	0.02	0.1	NI	1	NI
241	Middle Coastal Area	Sewage													
		Industrial													
		Riverine	**0,7 - 1,2**	**0,01 - 0,03**	**0,6 - 1,5**	**0,7 - 1,3**	**5**	**3**	**1 - 11**	**0.03**	**0,02 - 0,1**	**0.1**	**NI**	**1**	**NI**
238	Coastal Area	Sewage													
		Industrial													
		Riverine	**0,7 - 1,2**	**0,01 - 0,03**	**0,6 - 1,5**	**0,7 - 1,3**	**2,5 - 5**	**NI**	**1 - 11**	**0,03 - 0,5**	**0,02 - 0,1**	**0.1**	**NI**	**1**	**NI**
244	Gent-Terneuzen Canal	Sewage													
		Industrial													
		Riverine	0,2 - 1,2	0,01 - 0,1	5	5	5	NI	1 - 11	0.4	0.1	0.1	NI	1	2,7 - 5,3
102	Schelde	Sewage													
		Industrial													
		Riverine	0,7 - 1,2	0,01 - 0,03	0.6	6	5	NI	1 - 11	0,03 - 0,04	0.1	0.15	NI	0,3 - 0,5	NI
245	Schelde Basin	Sewage													
		Industrial													
		Riverine	**0,2 - 1,2**	**0,01 - 0,1**	**0,6 - 5**	**5 - 6**	**5**	**NI**	**1 - 11**	**0,03 - 0,4**	**0.1**	**0,1 - 0,15**	**NI**	**0,3 - 1**	**NI**
79	North Sea (BE)	Sewage													
		Industrial													
		Riverine	**0,2 - 1,2**	**0,01 - 0,1**	**0,6 - 5**	**0,7 - 6**	**2,5 - 5**	**NI**	**1 - 11**	**0,03 - 0,5**	**0,02 - 0,1**	**0,1 - 0,15**	**NI**	**0,3 - 1**	**NI**

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2000 by Belgium

		Flow Rate [1000m³/d]	LTA [1000m³/d]	Minimum FR [1000m³/d]	Maximum FR [1000m³/d]	LTA info (years)	Number of sites	Mean or Median
247	Beverdijk	NI	69.1	NI	NI	NI	1	Mean
243	Ijzer	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	1	Mean
252	Leopold canal	NI	302.4	NI	NI	NI	1	Mean
256	Lissewege vaart	NI	17.3	NI	NI	NI	2	Mean
254	Schipdonk canal	NI	820.8	NI	NI	1987-1992	1	Mean
242	Eastern Coastal Area	NI	1175.1	NI	NI	NI	6	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	12	Mean
244	Gent-Terneuzen Canal	2370	NI	346	8381	NI	1	Mean
102	Schelde	13651	9245	5270	24710	1949-1997	1	Mean
245	Schelde Basin	16022	NI	5616	33091	NI	2	Mean
79	North Sea (BE)	NI	NI	NI	NI	NI	14	Mean

Annex 2

DENMARK

Annual report on riverine inputs and direct discharges to Convention waters during the year 2000 by Denmark

Annual report on riverine inputs and direct discharges from Denmark to Convention waters during the year 2000

Comments for table 5, 6, 7, 8 and 9

The reported figures are based on the Aquatic Environment Nationwide Monitoring Programme for streams and point sources. This programme was revised as from 1 January 1998, and since then, some riverine monitoring stations in the following RID rivers were not available (catchment area at the monitoring site given in parenthesis):

- Sneum Å (513 km^2)
- Hover Å (92 km^2)
- Flynder Å (not been monitored for several years)
- Ribe Å (962 km^2)
- Varde Å (1033 km^2)
- Hvidbjerg Å (238 km^2)

Therefore, no figures are given for the above mentioned six river monitoring stations in 1998 and 1999. They have been replaced with the following riverine monitoring stations to provide the same degree of coverage of the Danish part of the convention area:

Denmark will therefore in future report on the following list of riverine monitoring stations:

- Brede Å (290 km^2) – new river included
- Omme Å (612 km^2) – new river included
- Ribe Å (675 km^2) – monitoring station moved upstream in the river
- Sneum Å (223 km^2) – monitoring station moved upstream in the river
- Varde Å (815 km^2) – monitoring station moved upstream in the river
- Grøn Å (563 km^2) – new river included
- Ry Å (285 km^2)) – new river included

We have asked for new RID-numbers for the aboved mentioned seven moved or new Danish RID-monitoring stations in rivers, but have not yet received any response from OSPAR.

As Denmark have been monitoring on the seven moved or new Danish RID-monitoring stations in rivers since 1989, Denmark in 2002 will forward spreadsheets with RID-data from the years 1989, 1990, 1991, 1992, 1993, 1994, 1995, 1996, 1997 and 1998.

It should be stressed that the total load figures from Denmark to the North Sea, the Kattegat and the Skagerrak remain unchanged during 1989 to 1998. The compilation of the total loads is based on many more riverine stations than the Danish RID stations and the new RID stations have been a part of the Danish Aquatic Environment Monitoring Program since 1989.

In future the following stations will be assigned as Danish RID stations:

North Sea

110. Brøns Å

xxx Brede Å

xxx Omme Å

112 Kongeåen

xxx Ribe Å

104 Skjern Å

xxx Sneum Å

115 Stor Å

xxx Varde Å

109 Vid Å

xxx Grøn Å

Kattegat:

125 Elling Å

127 Ger Å

103 Gudenå

129 Haslevgårds Å

xxx Ry Å

120 Jordbro Å

118 Karup å

130 Kastbjerg Å

128 Lindenborg Å

122 Simested Å

121 Skals Å

126 Voer Å

Skagerrak

123 Liver Å

124 Uggerby Å

In table 5a and b the total figures cover the respective point source load in major and small rivers and in coastal areas, but not the direct point source load to the sea.

The figures given in tables 6a, 7 and 9 are measured figures in the streams at the monitoring stations with the catchment size mentioned in table 9. They are listed under "lower", as it is unclear where else to list measured values in the spreadsheet. The figures are the best available estimate of concentration/transport based on the above-mentioned monitoring programme.

In tables 6 and 9 the rows "North Sea", "Kattegat" and "Skagerrak" give the figures for the total load from the catchment including coastal areas and the direct load from point sources (otherwise there is not any possibility to give the total load (riverine + direct loads). In table 7 the rows "North Sea", "Kattegat" and "Skagerrak" give the corresponding flow weighted concentrations by dividing the figures in table 5 with the figures in table 9.

All monitored RID rivers are reported as main rivers (table 6a), therefore we do not use table 6b. 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 discharge (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.

All measured substances are given in the tables, but from 1999/2000 an onwards suspended matter and some heavy metals and hazardous substances will be measured at some selected monitoring stations including few of the RID stations.

The total load via streams and rivers, including load from coastal areas and direct loads, is calculated as:
Total load to the sea = monitored riverine load + calculated load from unmonitored areas and coastal zones + direct point source load.

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 discharge are selected from catchments with similar soil types, land-use, geology and climate, and with small inputs from point sources. Further, 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.

The total load of diffuse nitrogen and phosphorus was higher than the average in 2000, as the recorded precipitation was 8% higher than normal (1961-1990) in Denmark. Further 2000 followed 1999 with record high precipitation. The discharge was 16% higher than normal (1971-2000).

The overall reduction in phosphorus load since 1989 can only be assigned to a large reduction in the load from point sources (more than 80 % from the mid-1980s). A reduction in the nitrogen load can be identified if the load is adjusted for discharge variation, and it is possible for the first time ever to detect a significant reduction in the diffuse nitrogen load (approx. 20%). The reduction in nitrogen load can also be assigned to a reduction in the load from point sources (nearly 70 % since the mid-1980s)

Natural background concentrations:

The natural background losses was a little higher than normal in 2000.

Nitrogen: 1.4 mg N/l (flow-weighted) or 2.4 kg/ha

Phosphorus: 0.04 mg P/l (flow-weighted) or 0.08 kg P/ha.

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2000 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 [kt]	12 PO4-P [kt]	13 Total N [tonnes]	14 Total P [tonnes]	3 SPM [kt]
110	Brøns å	lower													
		upper													
		comment											1.935	0.371	
	Brede å	lower													
		upper													
		comment											10.004	1.99	
	Omme å	lower													
		upper													
		comment											10.612	0.854	
112	Kongeåen	lower													
		upper													
		comment											35.048	6.278	
	Ribe å	lower													
		upper													
		comment											62.022	7.561	
104	Skjern å	lower													
		upper													
		comment											45.221	4.526	
	Sneum å	lower													
		upper													
		comment											43.832	9.346	
115	Stor å	lower													
		upper													
		comment											131.93	9.193	
	Varde å	lower													
		upper													
		comment											51.938	7.298	
109	Vid å	lower													
		upper													
		comment											8.953	0.666	

			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 [tonnes]	14 Total P [tonnes]	3 SPM [kt]
	Grøn å	lower													
		upper													
		comment											13.03	0.615	
80	North Sea (DK)	lower													
		upper													
		comment											561.74	63.872	
125	Elling å	lower													
		upper													
		comment											0	0	
127	Ger å	lower													
		upper													
		comment											2.853	0.557	
103	Gudenå	lower													
		upper													
		comment											246.8	16.593	
129	Haslevgårds å	lower													
		upper													
		comment											7.545	0.685	
	Ry å	lower													
		upper													
		comment											27.105	2.828	
120	Jordbro å	lower													
		upper													
		comment											3.521	0.515	
118	Karup å	lower													
		upper													
		comment											7.451	1.744	
130	Kastbjerg å	lower													
		upper													
		comment											0	0	

			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 [tonnes]	14 Total P [tonnes]	3 SPM [kt]
128	Lindenborg å	lower													
		upper													
		comment											1.753	0.303	
122	Simested å	lower													
		upper													
		comment											6.685	0.751	
121	Skals å	lower													
		upper													
		comment											12.428	0.991	
126	Voer å	lower													
		upper													
		comment											8.863	1.559	
77	Kattegat (DK)	lower													
		upper													
		comment											786.55	82.344	
123	Liver å	lower													
		upper													
		comment											30.752	3.049	
124	Uggerby å	lower													
		upper													
		comment											9.146	0.922	
74	Skagerrak (DK)	lower													
		upper													
		comment											175.32	11.406	

Table 5b. Industrial Effluents

Reported Maritime Area of the OSPAR Convention in 2000 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 [kt]	12 PO4-P [kt]	13 Total N [tonnes]	14 Total P [tonnes]	3 SPM [kt]
110	Brøns å	lower													
		upper													
		comment											0	0	
	Brede å	lower													
		upper													
		comment											0.903	0.325	
	Omme å	lower													
		upper													
		comment											0	0	
112	Kongeåen	lower													
		upper													
		comment											0	0	
	Ribe å	lower													
		upper													
		comment											0	0	
104	Skjern å	lower													
		upper													
		comment											6.399	1.472	
	Sneum å	lower													
		upper													
		comment											0	0	
115	Stor å	lower													
		upper													
		comment											0	0	
	Varde å	lower													
		upper													
		comment											7.473	0.797	
109	Vid å	lower													
		upper													
		comment											0	0	

			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 [tonnes]	14 Total P [tonnes]	3 SPM [kt]
	Grøn å	lower													
		upper													
		comment											0	0	
80	North Sea (DK)	lower													
		upper													
		comment											17.832	2.82	
125	Elling å	lower													
		upper													
		comment											0	0	
127	Ger å	lower													
		upper													
		comment											0	0	
103	Gudenå	lower													
		upper													
		comment											0	0	
129	Haslevgårds å	lower													
		upper													
		comment											0	0	
	Ry å	lower													
		upper													
		comment											0	0	
120	Jordbro å	lower													
		upper													
		comment											0	0	
118	Karup å	lower													
		upper													
		comment											0	0	
130	Kastbjerg å	lower													
		upper													
		comment											0	0	

			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 [tonnes]	14 Total P [tonnes]	3 SPM [kt]
128	Lindenborg å	lower													
		upper													
		comment											0	0	
122	Simested å	lower													
		upper													
		comment											0	0	
121	Skals å	lower													
		upper													
		comment											0	0	
126	Voer å	lower													
		upper													
		comment											0	0	
77	Kattegat (DK)	lower													
		upper													
		comment											4.433	0.231	
123	Liver å	lower													
		upper													
		comment											0	0	
124	Uggerby å	lower													
		upper													
		comment											0.125	0	
74	Skagerrak (DK)	lower													
		upper													
		comment											0.125	0	

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 by Denmark

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
110	Brøns å	lower								0.006	0.148	0.0005	0.187	0.003	
		upper													
		comment													
	Brede å	lower								0.02	0.354	0.0026	0.472	0.012	
		upper													
		comment													
	Omme å	lower								0.037	1.008	0.009	1.234	0.026	1.384
		upper													
		comment													
112	Kongeåen	lower								0.024	1.106	0.014	1.326	0.035	1.942
		upper													
		comment													
	Ribe å	lower								0.034	1.346	0.012	1.585	0.034	1.823
		upper													
		comment													
104	Skjern å	lower	0.713	0.0001	1.38	0.202	13.33	0	0	0.144	2.395	0.017	2.935	0.067	6.144
		upper	0.744	0.0171	1.488	0.35	13.33	9.03	72.2						
		comment													
	Sneum å	lower										0.0051	0.543	0.016	0.93
		upper													
		comment													
115	Stor å	lower								0.076	2.062	0.025	2.383	0.07	5.582
		upper													
		comment													
	Varde å	lower								0.067	1.339	0.013	1.644	0.043	3.135
		upper													
		comment													
109	Vid å	lower								0.012	0.245	0.0014	0.316	0.011	
		upper													
		comment													

			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]
	Grøn å	lower								0.024	0.411	0.005	0.59	0.027	
		upper													
		comment													
80	North Sea (DK)	lower									15.8	0.198	21.5	0.569	
		upper													
		comment													
125	Elling å	lower								0.013	0.182	0.0043	0.234	0.011	1.134
		upper													
		comment													
127	Ger å	lower								0.013	0.215	0.0028	0.281	0.0093	1.331
		upper													
		comment													
103	Gudenå	lower	0.024	0.0044	6.768	0.781	7.809	0	0.114	0.085	2.599	0.052	3.387	0.123	9.322
		upper	0.0242	0.0044	6.768	0.781	7.809	11.12	101.6						
		comment													
129	Haslevgårds å	lower								0.0078	0.147	0.0048	0.188	0.084	0.518
		upper													
		comment													
	Ry å	lower								0.024	0.485	0.0097	0.615	0.027	
		upper													
		comment													
120	Jordbr å	lower									0.096	0.0027	0.129	0.006	
		upper													
		comment													
118	Karup å	lower									0.692	0.0096	0.837	0.026	
		upper													
		comment													
130	Kastbjerg å	lower								0.0024	0.211	0.0022	0.248	0.0038	0.334
		upper													
		comment													

			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]
128	Lindenborg å	lower								0.012	0.698	0.017	0.8	0.026	
		upper													
		comment													
122	Simested å	lower									0.849	0.012	0.897	0.017	
		upper													
		comment													
121	Skals å	lower									0.66	0.011	0.836	0.023	
		upper													
		comment													
126	Voer å	lower								0.018	0.477	0.0071	0.57	0.024	4.553
		upper													
		comment													
77	Kattegat (DK)	lower									27.8	0.48	33.7	0.965	
		upper													
		comment													
123	Liver å	lower								0.037	0.567	0.0069	0.676	0.026	2.882
		upper													
		comment													
124	Uggerby å	lower								0.033	0.633	0.011	0.794	0.037	5.681
		upper													
		comment													
74	Skagerrak (DK)	lower									2.34	0.043	2.9	0.125	
		upper													
		comment													

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2000 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								0.116	3.429	0.012	4.343	0.077	10.33
		upper													
		minimum								0.04	2.2	0.003	2.8	0.03	9
		maximum								0.19	5	0.035	6.1	0.26	12
		more than 70% > D.L.													
		n								21	21	21	21	21	3
		info													
		st.Dev.								0.048	0.849	0.009	0.994	0.05	1.528
	Brede å	lower								0.127	2.41	0.016	3.248	0.085	
		upper													
		minimum								0.02	1.5	0.003	2	0.04	
		maximum								0.26	4.4	0.03	5.5	0.17	
		more than 70% > D.L.													
		n								21	21	21	21	21	
		info													
		st.Dev.								0.072	0.81	0.007	0.994	0.033	
	Omme å	lower								0.108	2.87	0.023	3.48	0.074	3.74
		upper													
		minimum								0.049	2.2	0.014	2.76	0.054	0.2
		maximum								0.15	3.4	0.044	4.04	0.11	8.2
		more than 70% > D.L.													
		n								17	17	17	17	17	16
		info													
		st.Dev.								0.032	0.39	0.009	0.456	0.018	2.43

			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]
112	Kongeåen	lower								0.097	4.32	0.054	5.06	0.138	7.59
		upper													
		minimum								0.007	3.1	0.018	3.6	0.056	0.9
		maximum								0.26	5.5	0.19	6.6	0.29	27
		more than 70% > D.L.													
		n								19	19	19	20	20	19
		info													
		st.Dev.								0.06	0.805	0.039	1.077	0.062	6.04
	Ribe å	lower								0.102	3.7	0.033	4.33	0.093	4.71
		upper													
		minimum								0.047	2.6	0.012	2.8	0.052	0.25
		maximum								0.22	6.3	0.12	7.8	0.21	14
		more than 70% > D.L.													
		n								20	20	20	20	20	20
		info													
		st.Dev.								0.041	0.925	0.024	1.21	0.035	3.65
104	Skjern å	lower	0.0166	0.0035	3.642	0.913	7.909	0	0	0.141	2.618	0.017	3.19	0.073	6.55
		upper	0.0622	0.0003	1.43	0.156	11.53	10	80						
		minimum	0	0	0	0	8.72		0	0.058	2	0.009	2.38	0.039	1.8
		maximum	0.101	0.0026	3.31	0.842	18.9		80	0.35	3.1	0.041	3.7	0.11	12
		more than 70% > D.L.													
		n	9	9	9	9	10	12	12	17	17	17	17	17	27
		info													
		st.Dev.	0.0288	0.0009	1.149	0.29	3.267			0.067	0.373	0.009	0.47	0.017	2.38
	Sneum å	lower										0.038	4.337	0.128	7.16
		upper													
		minimum										0.019	3.4	0.066	0.25
		maximum										0.15	5.4	0.2	13
		more than 70% > D.L.													
		n										20	19	20	20
		info													
		st.Dev.										0.028	0.63	0.038	3.7

			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]
115	Stor å	lower								0.11	2.69	0.027	3.22	0.097	8.18
		upper													
		minimum								0.032	2	0.013	2.36	0.05	2.7
		maximum								0.025	4.7	0.1	4.76	0.29	56
		more than 70% > D.L.													
		n								17	17	17	17	17	17
		info													
		st.Dev.								0.06	0.739	0.02	0.689	0.057	12.76
	Varde å	lower								0.142	2.905	0.026	3.53	0.092	6.94
		upper													
		minimum								0.013	2.5	0.01	2.8	0.057	3.6
		maximum								0.24	3.3	0.086	4.3	0.18	32
		more than 70% > D.L.													
		n								20	20	20	20	20	20
		info													
		st.Dev.								0.056	0.275	0.019	0.435	0.023	6.11
109	Vid å	lower								0.095	2.16	0.013	2.8	0.097	
		upper													
		minimum								0.02	1.6	0.008	2.1	0.04	
		maximum								0.18	3.2	0.026	4.4	0.16	
		more than 70% > D.L.													
		n								21	21	21	21	21	
		info													
		st.Dev.								0.047	0.409	0.005	0.569	0.034	
	Grøn å	lower								0.098	1.757	0.025	2.55	0.118	
		upper													
		minimum								0.03	1.2	0.015	1.7	0.05	
		maximum								0.16	2.5	0.035	3.6	0.2	
		more than 70% > D.L.													
		n								21	21	21	21	21	
		info													
		st.Dev.								0.043	0.448	0.006	0.578	0.039	

			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]
80	North Sea (DK)	lower									2.77	0.035	3.69	0.100	
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													
125	Elling å	lower								0.203	2.965	0.075	3.76	0.179	16.9
		upper													
		minimum								0.07	2.49	0.05	3.12	0.133	2.6
		maximum								0.323	3.49	0.098	4.55	0.333	70
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0.073	0.292	0.013	0.486	0.05	19.03
127	Ger å	lower								0.174	2.87	0.041	3.79	0.135	16.48
		upper													
		minimum								0.018	1.686	0.028	2.17	0.063	1.3
		maximum								0.338	4.86	0.057	6.08	0.188	40
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0.092	1.088	0.008	1.32	0.039	12.14
103	Gudenå	lower	0.0166	0.0035	3.642	0.913	7.909	0	1.91	0.07	2.084	0.048	2.66	0.104	6.3
		upper	0.0171	0.0035	3.642	0.913	7.909	10	91						
		minimum	0	0.0013	0.78	0.32	0.079		0	0.042	0.74	0.016	1.1	0.068	0.5
		maximum	0.042	0.008	21	1.5	37		100	0.14	6.7	0.16	7.6	0.19	18
		more than 70% > D.L.													
		n	11	11	9	3	10	11	11	23	23	23	23	23	34
		info													
		st.Dev.	0.0121	0.0025	6.521	0.59	10.54			0.027	1.34	0.027	1.49	0.029	5.05

			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]
129	Haslevgårds å	lower								0.232	4.52	0.162	5.75	0.268	12.68
		upper													
		minimum								0.09	2.93	0.103	4.16	0.199	1.2
		maximum								0.535	6.37	0.21	8.39	0.36	31
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0.125	1.04	0.029	1.32	0.047	9.33
	Ry å	lower								0.162	3.7	0.073	4.61	0.199	18.43
		upper													
		minimum								0.023	2.92	0.048	3.32	0.129	3.4
		maximum								0.311	4.73	0.123	6.02	0.373	39
		more than 70% > D.L.													
		n								18	18	18	18	18	7
		info													
		st.Dev.								0.101	0.633	0.02	0.952	0.071	14.15
120	Jordbro å	lower									2.17	0.058	2.88	0.13	
		upper													
		minimum									1.1	0.004	2.08	0.074	
		maximum									2.7	0.12	3.3	0.3	
		more than 70% > D.L.													
		n									18	18	18	18	
		info													
		st.Dev.									0.422	0.03	0.396	0.048	
118	Karup å	lower									2.570	0.036	3.11	0.096	
		upper													
		minimum									2	0.025	12.34	0.067	
		maximum									3.1	0.08	3.7	0.12	
		more than 70% > D.L.													
		n									18	18	18	18	
		info													
		st.Dev.									0.323	0.016	0.423	0.016	

			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]
130	Kastbjerg å	lower								0.085	6.58	0.078	7.8	0.134	11.77
		upper													
		minimum								0.023	2.8	0.034	4.3	0.056	1.2
		maximum								0.21	8	0.17	8.9	0.32	20
		more than 70% > D.L.													
		n								18	18	18	18	18	16
		info													
		st.Dev.								0.042	1.44	0.031	1.076	0.058	5.68
128	Lindenborg å	lower								0.086	5.28	0.125	6.02	0.189	7.6
		upper													
		minimum								0.024	3.35	0.047	4.3	0.087	1.7
		maximum								0.14	6.11	0.265	6.86	0.371	14
		more than 70% > D.L.													
		n								12	12	12	12	12	4
		info													
		st.Dev.								0.04	0.718	0.058	0.756	0.079	6.3
122	Simested å	lower									9.74	0.136	10.33	0.202	
		upper													
		minimum									6.8	0.1	8.28	0.13	
		maximum									11	0.27	12	0.34	
		more than 70% > D.L.													
		n									17	18	17	18	
		info													
		st.Dev.									1.08	0.039	0.828	0.052	
121	Skals å	lower									3.12	0.065	4.85	0.133	
		upper													
		minimum									2.9	0.028	3.99	0.087	
		maximum									4.5	0.27	5.5	0.29	
		more than 70% > D.L.													
		n									17	18	17	18	
		info													
		st.Dev.									0.481	0.058	0.47	0.051	

			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]
126	Voer å	lower								0.144	4.16	0.065	4.94	0.201	37.8
		upper													
		minimum								0.048	3.38	0.047	3.91	0.147	8.9
		maximum								0.319	5.06	0.088	6.07	0.301	100
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0.083	0.548	0.013	0.792	0.045	27.9
77	Kattegat (DK)	lower									4.40	0.076	5.34	0.153	
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													
123	Liver å	lower								0.234	4.2	0.057	4.99	0.188	16.2
		upper													
		minimum								0.036	2.88	0.036	3.73	0.123	1.9
		maximum								1.11	4.05	0.127	7	0.379	43
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0.251	0.91	0.025	1.07	0.061	12.2
124	Uggerby å	lower								0.175	3.58	0.068	4.45	0.202	27.3
		upper													
		minimum								0.0025	2.76	0.052	3.25	0.136	4.2
		maximum								0.375	4.83	0.107	6	0.35	90
		more than 70% > D.L.													
		n								18	18	18	18	18	18
		info													
		st.Dev.								0.087	0.65	0.017	0.83	0.067	22.2

		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]
74 Skagerrak (DK)	lower									4.34	0.080	5.38	0.232	
	upper													
	minimum													
	maximum													
	more than 70% > D.L.													
	n													
	info								flow weighted	flow weighted	flow weighted	flow weighted	flow weighted	flow weighted
	st.Dev.													

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2000 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
	Brede å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
	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
	Ribe å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
104	Skjern 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
	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
	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

			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]
	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						>10	>10						
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
129	Haslevgårds å	Sewage													
		Industrial													
		Riverine								>0,01	>0,02	>0,005	>0,06	>0,01	> 2,0
	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

			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]
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 2000 by Denmark

		Flow Rate [1000m^3/d]	LTA [1000m^3/d	inimum F [1000m^3/d	aximum F [1000m^3/d	LTA info (years)	Number of sites	Mean or Median	Catchment area km2
110	Brøns å	109.5	106.6	52.4	163.1	74-99	1	Mean	94.1
	Brede å	362.2	327.5	172.3	461.5	94-99	1	Mean	290
	Omme å	958.4	728.9	408.1	968.9	83-99	1	Mean	612
112	Kongeåen	673	612.3	364.9	861.8	90-99	1	Mean	426.6
	Ribe å	940.7	743.1	295.7	1363.6	33-99	1	Mean	675
	Skjern å	2505.1	2079.7	1345.6	2717.5	74-99	1	Mean	1550
	Sneum å	328	280.8	160.2	404.8	66-99	1	Mean	223
115	Stor å	1810	1399.4	856.4	1884.4	71-99	1	Mean	1096.7
	Varde å	1261.5	1042.7	686	1558.1	69-99	1	Mean	815
109	Vid å	297.5	304	144.8	444	78-99	1	Mean	248.3
	Grøn å	586.1	605.3	197.8	904.1	59-99	1	Mean	563
80	North Sea (DK)	**15540**	**13452**			**1971-2000**		**Mean**	**10809**
125	Elling å	165	110.9	87.7	173.4	89-99	1	Mean	132.2
127	Ger å	173.2	143.1	79.9	211.6	85-99	1	Mean	153.8
103	Gudenå	3212.4	2820.1	1997.7	3665.3	78-99	1	Mean	2602.9
129	Haslevgårds å	79.5	57.5	37.9	97.5	89-99	1	Mean	75
	Ry å	347.5	250.5	154.5	385.8	72-99	1	Mean	285
120	Jordbro å	123.7	111.8	80.8	141.3	80-99	1	Mean	110.9
118	Karup å	745.2	621.4	472.1	749.3	86-99	1	Mean	626.8
130	Kastbjerg å	84.6	67.8	48.1	90.1	76-99	1	Mean	96.3
128	Lindenborg å	354.1	297.4	227.4	392.2	83-99	1	Mean	317.8
122	Simested å	239.1	199	168.2	246.8	92-99	1	Mean	214.9
121	Skals å	466.9	380.2	234.2	539.6	73-99	1	Mean	556.4
126	Voer å	305.5	224.3	163.6	333.6	89-99	1	Mean	238.7
77	Kattegat (DK)	**17251**	**13668**			**1971-20**		**Mean**	**15828**
123	Liver å	340.5	223.3	129	344.9	95-99	1	Mean	249.8
124	Uggerby å	458.1	316.6	232.6	497.5	89-99	1	Mean	347.5
74	Skagerrak (DK)	**1473**	**934**			**1971-20**		**Mean**	**1098**

Annex 3

FRANCE

Annual report on riverine inputs and direct discharges to Convention waters during the year 2000 by France

Table 6a Main riverine inputs to the maritime area of the OSPAR Convention in 2000 by France.

Annual report on riverine inputs and direct discharges by France to Convention waters during the year 2000

Name, address and contact number of reporting authority to which any further enquiry should be addresed:
Philippe MAIRE Ministère de l'Aménagement du Territoire et de l'Environnement - Direction de l'Eau 20; avenue de Ségur - 75302 PARIS 07 SP Tél : +33(0)1 42 19 12 65 Fax : +33(0)1 42 19 12 22 E-mail: philippe.maire@environnement.gouv.fr

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: ______FRANCE___(**See list of river catchments at annex 1**)____________			
Name of subarea	Nature of the receiving water[1]	optional: national reference number	optional: map reference number
Bay of Biscay and Iberian coast (FR)	Coastal water		
Channel and North Sea (FR)	Coastal water		

[1] 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 2000

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

See comments on riverine inputs (no reporting on direct discharges)

C. Direct discharges for the year 2000

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:

Reporting on direct discharges not yet available. Planned for 2004.

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:

Reporting on Industrial effluents not yet available. Planned for 2004.

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 2000

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 data on riverine inputs reported by France are issued from a specific calculation tool (NOPOLU System2) that takes into account all available data on French rivers, including flows and quality data. RID type data from 1989 up to 2000 are now available for N, P and SPM and have been transmitted to the OSPAR secretariat, but in a non-official format. The report for the year 2000 is the first delivery issued from this data set, using the normal OSPAR format. It is expected that the previous years will be reported under this format on the short term, before the INPUT 2003 meeting.

The algorithm on the raw data used by NOPOLU is rather complex, involving correlation between stations, modelisation with the water flow or interpolation in order to compensate for lacking data. Then measured concentrations seasonality is tested in order to get daily flow-concentration couples. The results are then aggregated monthly or annually. In certain cases, only averages can be calculated over periods where flux/flow correlation are available. Finally, data are inter-annually normalised along the OSPAR guidelines recommendations.

Contaminants other than N and P are not included, neither direct discharges, but it is expected to develop the tool in order to do so, probably within two years time.

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):

[none]

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

It is important to note that for the year 2000 some data on river flow were missing, and in particular those from the Seine river and of the Gironde (Garonne and Dordogne estuary). It was then decided not to provide separate results for the three main French riverine inputs (Seine, Loire, Gironde), and to use average data for the calculation of riverine inputs into the two reported OSPAR regions.

In addition to that, as results are not upper and lower estimations but averages, data have been repeated on both rows in table 6a.

ANNEX 1 : List of River catchments by OSPAR Region

OSPAR Region	Catchment Grouping	River catchment
Manche et Mer du Nord	Côtiers picards et boulonnais	SLACK
Manche et Mer du Nord	Côtiers picards et boulonnais	WIMEREUX
Manche et Mer du Nord	Côtiers picards et boulonnais	LIANE
Manche et Mer du Nord	Côtiers picards et boulonnais	CANCHE
Manche et Mer du Nord	Côtiers picards et boulonnais	AUTHIE
Manche et Mer du Nord	Côtiers picards et boulonnais	SOMME
Manche et Mer du Nord	Côtiers haut-normands	YERES
Manche et Mer du Nord	Côtiers haut-normands	ARQUES
Manche et Mer du Nord	Côtiers haut-normands	SAANE
Manche et Mer du Nord	Côtiers haut-normands	DURDENT
Manche et Mer du Nord	Côtiers haut-normands	VALMONT
Manche et Mer du Nord	Seine à l'aval de Paris et Risle	Seine Amont Pose
Manche et Mer du Nord	Seine à l'aval de Paris et Risle	ANDELLE
Manche et Mer du Nord	Seine à l'aval de Paris et Risle	Eure
Manche et Mer du Nord	Basse-Normandie	TOUQUES
Manche et Mer du Nord	Basse-Normandie	DIVES
Manche et Mer du Nord	Basse-Normandie	ORNE
Manche et Mer du Nord	Basse-Normandie	SEULLES amont confluence Mue
Manche et Mer du Nord	Cotentin	VIRE amont confluence Aure
Manche et Mer du Nord	Cotentin	AURE
Manche et Mer du Nord	Cotentin	SAIRE
Manche et Mer du Nord	Cotentin	DIVETTE
Manche et Mer du Nord	Cotentin	AY
Manche et Mer du Nord	Cotentin	SIENNE
Manche et Mer du Nord	Cotentin	THAR
Manche et Mer du Nord	Cotentin	SEE
Manche et Mer du Nord	Cotentin	SELUNE
Manche et Mer du Nord	Bretagne Nord	Couesnon
Manche et Mer du Nord	Bretagne Nord	Rance
Manche et Mer du Nord	Bretagne Nord	Frémur
Manche et Mer du Nord	Bretagne Nord	Arguenon
Manche et Mer du Nord	Bretagne Nord	Gouessant
Manche et Mer du Nord	Bretagne Nord	Urme
Manche et Mer du Nord	Bretagne Nord	Gouet

Manche et Mer du Nord	Bretagne Nord	Trieux
Manche et Mer du Nord	Bretagne Nord	GUINDY
Manche et Mer du Nord	Bretagne Nord	Jaudy
Manche et Mer du Nord	Bretagne Nord	Leguer
Manche et Mer du Nord	Bretagne Nord	Le Roscoat & le Yar de leur source à la mer
Manche et Mer du Nord	Bretagne Nord	Dossen
Manche et Mer du Nord	Bretagne Nord	Le Horn de sa source a la mer
Manche et Mer du Nord	Bretagne Nord	Aber Vra'ch
Manche et Mer du Nord	Versants mer du Nord et transfrontaliers	Mons
Manche et Mer du Nord	Versants mer du Nord et transfrontaliers	LYS
Manche et Mer du Nord	Versants mer du Nord et transfrontaliers	AA
Manche et Mer du Nord	Versants mer du Nord et transfrontaliers	YSER
Golfe de Gascogne	Bretagne Nord	Elorn
Golfe de Gascogne	Bretagne Nord	Aulne
Golfe de Gascogne	Bretagne Sud	Odet
Golfe de Gascogne	Bretagne Sud	Aven
Golfe de Gascogne	Bretagne Sud	Laïta
Golfe de Gascogne	Bretagne Sud	Scorff
Golfe de Gascogne	Bretagne Sud	Blavet
Golfe de Gascogne	Bretagne Sud	Loch (rivière Auray)
Golfe de Gascogne	Vilaine	Vilaine
Golfe de Gascogne	Loire aval	Loire
Golfe de Gascogne	Loire aval	Falleron
Golfe de Gascogne	Côtiers vendéens	Vie
Golfe de Gascogne	Côtiers vendéens	Le Jaunay de sa source au Guy Gorand (exclue)
Golfe de Gascogne	Côtiers vendéens	Auzance
Golfe de Gascogne	Côtiers vendéens	Lay
Golfe de Gascogne	Côtiers vendéens	Sèvre Niortaise
Golfe de Gascogne	Garonne aquitaine à l'aval du Lot	Garonne
Golfe de Gascogne	Dordogne (sauf Isle)	Dordogne Amont confluence Isle
Golfe de Gascogne	Isle et Dronne	Isle
Golfe de Gascogne	Adour et Nivelle	Adour
Golfe de Gascogne	Charente, Seudre et île dOléron	Charente
Golfe de Gascogne	Charente, Seudre et île dOléron	Seudre
Golfe de Gascogne	Côtiers aquitains	Leyre

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 by France

			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]
277	Gironde**(*)**	lower													
		upper													
		comment													
276	Loire**(*)**	lower													
		upper													
		comment													
99	Bay of Biscay and Iberian Coast (FR)	lower								9.088	223.7	7.557	292	18.49	3255
		upper								9.088	223.7	7.557	292	18.49	3255
		comment								**(*)**	**(*)**	**(*)**	**(*)**	**(*)**	**(*)**
275	Seine**(*)**	lower													
		upper													
		comment													
85	Channel (FR)	lower								20.25	123.6	6.652	178.6	11.89	989
		upper								20.25	123.6	6.652	178.6	11.89	989
		comment								**(*)**	**(*)**	**(*)**	**(*)**	**(*)**	**(*)**

(*): See comments in the main report, paragraph F.3

Annex 4

GERMANY

Annual report on riverine inputs and direct discharges to Convention waters during the year 2000 by Germany

Annual report on riverine inputs and direct discharges to Convention waters during the year 2000

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

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A. General information

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

Country: Federal Republic of Germany			
Name of river, subarea 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 2000

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

[none]

C. Direct discharges for the year 2000

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 2000

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 SPM (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: 13 measurements per year.*

Sampling site

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

Estimation of annual load

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

Elbe:

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

Where: ci is the concentration measured in sample i;

Qi is the corresponding mean daily flow for sample i;

Qr is the mean daily flow rate for each sampling period (year); and

n is the number of samples taken in the sampling period (year).

Weser, Ems, Eider:

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

Measurements in tidal areas

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

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

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

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

[none]

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

[none]

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 13 measurements per year were carried out 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 13 measurements per year 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.

See table 8 in the reporting formats.

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 2000 the flows of all of the German rivers discharging to the North Sea on the whole were close to the long-term average flows. Only in the river Weser the flow exceeded the long-term average flow. In all other German rivers the annual flow was less than the long-term average flow.

Although in the Weser the river flow in 2000 is only slightly higher than in 1999, the load of suspended matter in 2000 is double as high as in 1999 and the load figures for Copper, Lead, Zinc and γ-HCH in 2000 are also higher than in 1999.

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 there are no significant changes in the inputs during the year 2000.

In the River Eider there is a significant reduction 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 γ-HCH measurements in water in the Elbe tributaries.

Table 5a. Direct discharges to the maritime area in 2000 by Germany

Sewage effluents — Quantities --->

Discharge area	Nature of receiving water		Flow rate [1000 m³/d]	Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Ems Estuary	Estuary	(lower estimate)	75	0	0	0.5	0.3	2.7	0	0.01	0.4	0.3	0.02	0.7	0.1	0.4
(downstream of Herbrum)		(upper estimate)		0.01	0.01	0.5	0.3	2.7	0.01	0.01	0.4	0.3	0.02	0.7	0.1	0.4
Jade	Estuary	(lower estimate)	25	0.01	0.01	0.2	0.1	1.0	0.01	0.01	NI	0.1	0.005	0.2	0.04	NI
		(upper estimate)		0.01	0.01	0.2	0.1	1.0	0.01	0.01	NI	0.1	0.005	0.2	0.04	NI
Weser Estuary	Estuary	(lower estimate)	229	0	0	1.4	0.7	7.8	0.11	0.03	1.6	0.9	0.04	2.1	0.3	1.1
(downstream of Farge)		(upper estimate)		0.01	0.01	1.4	0.7	7.8	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	NI	NI	NI	0.2	0.02	0.4	0.02	0.4
		(upper estimate)		0.01	0.01	0.5	0.1	5	NI	NI	NI	0.2	0.02	0.4	0.02	0.4
	Total:		**404**	**0.01**	**0.01**	**2.1**	**1.1**	**11**	**0.12**	**0.05**	**2.0**	**1.5**	**0.1**	**3.4**	**0.5**	**1.9**
				0.04	**0.04**	**2.6**	**1.2**	**16**	**0.3**	**1.9**	**2.0**	**1.5**	**0.1**	**3.4**	**0.5**	**1.9**

Table 5b. Direct discharges to the maritime area in 2000 by Germany

Industrial effluents — Quantities --->

Discharge area	Nature of receiving water		Flow rate [1000 m³/d]	Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Ems Estuary	Estuary	(lower estimate)	10	0	0	0.02	0	0.03	NI	NI	0.03	0.02	0.0003	0.04	0.0008	0.05
(downstream of Herbrum)		(upper estimate)		0.01	0.01	0.02	0.01	0.03	NI	NI	0.03	0.02	0.0003	0.04	0.0008	0.05
Jade	Estuary	(lower estimate)	6.7	0	0.001	0	0.004	0.04	NI	NI	0.0002	0.001	NI	NI	0.0009	NI
(area Wilhelmshaven)		(upper estimate)		0.001	0.002	0.07	0.005	0.04	NI	NI	0.0002	0.001	NI	NI	0.0009	NI
Weser Estuary	Estuary	(lower estimate)	37	NI	0	0	0.003	0.004	NI	NI	0.0016	0.0013	NI	NI	0.0013	NI
(area Nordenham)		(upper estimate)		NI	0.002	0.1	0.003	0.005	NI	NI	0.0017	0.0013	NI	NI	0.0013	NI
Elbe Estuary	Estuary	(lower estimate)	70	0	0	0	0	NI	NI	0	NI	0.5	0.01	0.8	0.04	NI
		(upper estimate)		0.01	0.01	0.1	0.5	NI	NI	1	NI	0.5	0.01	0.8	0.04	NI
	Total:		**124**	**0**	**0.001**	**0.02**	**0.007**	**0.1**	**NI**	**0**	**0.0**	**0.5**	**0.01**	**0.8**	**0.0**	**0.05**
				0.02	**0.02**	**0.3**	**0.5**	**0.1**	**NI**	**1.0**	**0.0**	**0.5**	**0.01**	**0.8**	**0.0**	**0.05**

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

UBA: II 2.6, HERATA, 13/12/02

Table 5c. Direct discharges to the maritime area in 2000 by Germany

Total direct discharges		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]
Ems Estuary	(lower estimate)	85	0	0	0.5	0.3	2.7	0	0.01	0.4	0.3	0.02	0.8	0.1	0.5
	(upper estimate)		0.02	0.02	0.5	0.3	2.7	0.01	0.01	0.4	0.3	0.02	0.8	0.1	0.5
Jade	(lower estimate)	32	0.01	0.01	0.2	0.1	1.0	0.01	0.01	0.0002	0.1	0.005	0.2	0.04	NI
	(upper estimate)		0.01	0.01	0.3	0.1	1.0	0.01	0.01	0.0002	0.1	0.005	0.2	0.04	NI
Weser Estuary	(lower estimate)	266	0.0	0	1.4	0.7	7.8	0.11	0.03	1.6	0.9	0.04	2.1	0.3	1.1
	(upper estimate)		0.01	0.01	1.5	0.7	7.8	0.3	1.8	1.6	0.9	0.04	2.1	0.3	1.1
Elbe Estuary	(lower estimate)	145	0	0	0	0	0	NI	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	NI	0.7	0.03	1.2	0.06	0.4
	Total:	**528**	**0.01**	**0.01**	**2.1**	**1.1**	**12**	**0.12**	**0.05**	**2.0**	**2.0**	**0.1**	**4.3**	**0.5**	**2.0**
			0.06	**0.06**	**2.9**	**1.8**	**17**	**0.3**	**2.9**	**2.0**	**2.0**	**0.1**	**4.3**	**0.5**	**2.0**

(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 2000 by Germany

Main riverine inputs			Quantities --->												
Discharge area	Flow rate [1000 m³/d] 2000	Flow rate [1000 m³/d] LTA	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	7970	7540 (5)	0.2	0.04	9.7	2.8	52	2.4	1.7	0.7	15	0.07	19	0.6	38
(Herbrum: 70 %)			0.2	0.04	9.7	3.1	52	2.4	6.6	0.7	15	0.09	19	0.6	76
Weser	35042	30900 (6)	1.9	0.3	55	65	346	15	8.5	1.5	44	0.7	62	2.6	658
(Farge: 90%)			1.9	0.3	55	65	346	15	20	1.5	44	0.7	62	2.6	658
Elbe Estuary	67800	74700 (7)	2.5	2.1	120	81	720	0	NI	3.4	86	1.3	110	4.5	1100
			2.9	2.1	120	81	720	130	NI	3.4	86	1.3	110	4.5	1100
Elbe tributaries (3)	2100	2300 (8)	0.2	0.06	6.4	11	40	NI	NI	0.4	4.4	0.09	7.1	0.5	120
			0.2	0.06	6.4	11	40	NI	NI	0.4	4.4	0.09	7.1	0.5	120
Elbe tributaries (4)	2200	2600 (9)	0.3	0.03	8.5	7.6	61	NI	NI	0.4	7.7	0.10	10	0.5	80
			0.3	0.03	8.5	7.6	61	NI	NI	0.4	7.7	0.10	10	0.5	80
Eider	2367	2352 (10)	0.02	0.008	1.6	0.5	5.5	0.5	NI	0.2	2.6	0.08	3.8	0.2	8.8
			0.03	0.008	1.6	0.5	5.5	0.5	NI	0.2	2.6	0.08	3.8	0.2	8.8
Total	**117479**	**120392**	**5.2**	**2.6**	**201**	**168**	**1224**	**17**	**10**	**6.6**	**160**	**2.3**	**212**	**9.0**	**2005**
			5.6	**2.6**	**201**	**168**	**1224**	**147**	**26**	**6.6**	**160**	**2.4**	**212**	**9.0**	**2043**

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180; Elbe, Weser and Ems also No 31
(2) Suspended particulate matte
(3) Left side tributaries: Este, Lühe, Schwinge, Ost
(4) Right side tributaries: Pinnau, Krückau, Stö
ND: Not detected
LTA: Long-term average flow
(5) 1942 - 1997
(6) 1901 - 1994
(7) 1926 - 1991
(8) 1961 - 1989
(9) 1971 - 1989
(10) 1987 - 2000

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

Main river Ems				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m^3/d] annual	Flow rate [1000 m^3/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Ems 2000	7970	7540	Mean	0.05	0.010	2.6	0.7	15	0.97	0.5	0.18	4.2	0.02	5.3	0.14	16
(Herbrum: 70 %)			upper	0.07	0.010	2.6	0.8	15	0.97	2.1	0.19	4.2	0.03	5.3	0.14	28
Minimum	2880			< 0.05	0.005	1.4	< 0.5	8.1	0.4	< 1.8	< 0.05	2.4	< 0.02	3.4	0.09	< 20
Maximum	28600			0.15	0.02	4.7	1.4	31	2.0	3.9	0.4	7.7	0.05	9.2	0.3	70
> 70 % > d.l. ?			yes/no	no	yes	yes	yes	yes	yes	no	yes	yes	no	yes	yes	no
n				***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow Ems: 1942 - 1997
(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)

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

Main river Weser				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m^3/d] annual	Flow rate [1000 m^3/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Weser 2000	35042	30900	Mean	0.2	0.03	4.4	4.9	25	1.58	1.3	0.1	3.4	0.06	4.3	0.2	55
(Farge: 90%)			upper	0.2	0.03	4.4	4.9	25	1.58	2.1	0.1	3.4	0.06	4.3	0.2	55
Minimum	15180			0.07	0.00	3	2.7	10	0.6	0	0.05	2.3	0	3.5	0.1	21
Maximum	127285			0.3	0.06	5.4	6.8	60	4.0	11.6	0.2	4.9	0.11	5.9	0.3	130
> 70 % > d.l. ?			yes/no	yes	yes	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes
n				***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***	***12***

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow Weser: 1901 - 1994
(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)

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

Main river Eider				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m^3/d] annual	Flow rate [1000 m^3/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Eider 2000	2367	2352	Mean	0.013	0.007	1.66	0.62	4.9	0.71	NI	0.15	2.2	0.074	3.4	0.18	12
			upper	0.026	0.007	1.66	0.65	4.9	0.93	NI	0.15	2.2	0.074	3.4	0.18	12
Minimum	713			< 0.02	0.002	0.6	< 0.2	2.0	< 0.7		0.01	0.3	< 0.005	1.2	0.09	4.0
Maximum	7245			0.05	0.03	2.7	1.7	12	1.7		0.5	6.8	0.2	8.7	0.3	33
> 70 % > d.l. ?			yes/no	no	yes	yes	yes	yes	no		yes	yes	yes	yes	yes	yes
n				***26***	***26***	***26***	***26***	***26***	***26***		***26***	***26***	***26***	***26***	***26***	***26***

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 LTA: Long-term average flow Eider: 1974 - 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)

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

Main river Elbe				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Elbe Estuary	67800	74700	Median	0.12	0.084	6	4.3	33	< 6	NI	0.2	3.1	0.065	4.4	0.23	57
2000			upper	0.13	0.084	6	4.3	33	< 6	NI	0.2	3.1	0.065	4.4	0.23	57
Minimum	29300			< 0.082	0.043	4	2.2	19	< 6.0		< 0.06	1.7	0.02	3.2	0.13	26
Maximum	294000			0.22	0.34	8.6	7.3	54	6		0.53	5.1	0.14	6.5	0.32	88
> 70 % > d.l. ?			yes/no	no	yes	yes	yes	yes	no		yes	yes	yes	yes	yes	yes
n			*n*	*26*	*26*	*26*	*26*	*26*	*26*		*26*	*26*	*26*	*26*	*26*	*25*

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 — LTA: Long-term average flow Elbe: 1926 - 1991
(2) Suspended particulate matter
NI: No information — > 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table 8)

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

Left side tributaries of the Elbe				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Elbe tributary (3)	2100	2300	Median	0.2	0.06	3.6	8.1	28	NI	NI	0.3	3.2	0.056	4.8	0.3	58
2000			upper	0.2	0.06	3.6	8.1	28	NI	NI	0.3	3.2	0.056	4.8	0.3	58
Minimum	500			< 0.05	< 0.01	1.2	1.8	< 10			< 0.06	1.9	0.023	3.1	0.1	12
Maximum	6600			0.1	0.2	10	30	97			1.8	10.2	0.1	12.1	0.62	250
> 70 % > d.l. ?			yes/no	yes	yes	yes	yes	yes			yes	yes	yes	yes	yes	yes
n				*13*	*13*	*13*	*13*	*13*			*24*	*24*	*24*	*24*	*24*	*24*

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 — LTA: Long-term average flow Oste only: 1961 - 1987
(2) Suspended particulate matter — Este, Lühe, Schwinge, Oste: 1961 - 1989
(3) Left side tributaries: Este, Lühe, Schwinge, Oste
NI: No information — > 70 % > d.l. ?: yes if more than 70 % of concentration measurements were above the detection limit (cf. Table 8)

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

Right side tributaries of the Elbe				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d] annual	Flow rate [1000 m³/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Elbe tributary (3)	2200	2600	Median	0.1	0.01	3.9	1.7	20	NI	NI	0.16	2.4	0.019	3.3	0.12	14
2000			upper	0.1	0.01	3.9	1.7	20	NI	NI	0.16	2.4	0.019	3.3	0.12	14
Minimum	690			0.03	0.0029	0.9	0.6	11			< 0.10	0.6	0.006	1.4	0.05	2.0
Maximum	4700			0.4	0.11	11	20	94			0.46	7.7	0.06	7.9	0.46	270
> 70 % > d.l. ?			yes/no	yes	yes	yes	yes	yes			yes	yes	yes	yes	yes	yes
n				*7*	*7*	*7*	*7*	*12*			*13*	*13*	*13*	*13*	*13*	*13*

(1) IUPAC Nos 28, 52, 101, 118, 153, 138, 180 — LTA: Long-term average flow Stör only: 1971 - 1987
(2) Suspended particulate matter — Pinnau, Krückau, Stör: 1971 - 1989
(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

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]
		Detection limits for contaminant concentrations -->												
Ems	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
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	ND
	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	0.5	0.2	1.0	6	1	0.06	0.5	0.01	0.5	0.05	1
Eider	R	0.02	0.001	0.5	0.2	1.0	0.7	ND	0.01	0.05	0.005	0.05	0.01	1.0
Jade	S	NL	NL	NL	NL	NL	NL	NL	ND	NL	NL	NL	NL	NL
	I	0.5	0.5	30	1.0	10	ND	ND	ND	ND	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

Annex 5

IRELAND

Appendix 2

Annual report on riverine inputs and direct discharges by Ireland to Convention waters during the year 2000

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 – P. Toner) p.toner@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: ______			
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

<u>IRISH SEA DISCHARGE AREA:</u>

From border with N. Ireland (54^0 7’ N, 6^0 18’ W) to Hook Head (52^0 7’ N, 6^0 56’ W)

<u>CELTIC SEA DISCHARGE AREA:</u>

From Hook Head to Loop Head (52^0 33’ N, 9^0 56’ W)

<u>ATLANTIC DISCHARGE AREA:</u>
From Loop Head to border with N. Ireland (55^0 4’ N, 7^0 16’ W)

B. Total riverine inputs and direct discharges for the year 2000

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

[none]

C. Direct discharges for the year 2000

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 2000

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 2000 nine (9) sampling runs were made for each river in the January to May and October to December periods. Nutrients were measured on an automated analyzer system (LACHAT) (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 (NO_2 + 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

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.:

[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.

Higher detection limits applied for the metals in 2000 due to a switch from AA to ICP-MS

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. Pollutant concentrations and loads in the individual rivers in 2000 were generally within the ranges recorded over the previous ten years. The national load estimates for 2000 are of the same order of magnitude as those for 1998 and 1999 with the exception of lead which was around 50 per cent lower in 2000 than in the previous years. This is unlikely to reflect the real situation and may be due to differences in analytical sensitivity in the change over from AA to ICP-MS.

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

See comment above regarding lead

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 2000 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		0.00	NI	0.35	0.17	3.1	NI	NI	NI	NI	NI	0.414	0.12	2.579
Total:			0.03		4.85	2.17	41.30						5.44	1.37	32.6

Table 5b. Direct inputs to the maritime area in 2000 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:			0.06		6.68	5.92	50.9						4.76	1.06	28.5

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 2000 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	7.50	3.30	63.0	NI	NI	NI	NI	NI	6.83	1.58	38.1
Celtic Sea	Estuarine and coastal waters		0.02	NI	3.20	4.40	21.50	NI	NI	NI	NI	NI	2.67	0.65	18.59
Atlantic	Estuarine and coastal waters		0.01	NI	0.83	0.39	7.70	NI	NI	NI	NI	NI	0.70	0.21	4.32
Total:			0.09		11.5	8.09	92.2						10.2	2.44	61.0

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 2000 by Ireland

Main riverine inputs				Quantities --->													
Discharge area	Flow rate [1000 m3/d] 2000		LTA	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: Boyne	4167		3356	0.125 0.039	NM	3.49	2.33 2.03	19.35	NM	NM	0.064 0.06	4.52	NM	0.078	NM	0.128	14.4
Irish Sea: Liffey	1211		1556	0.039 0.012	NM	0.743 0.631	0.633 0.349	5.78	NM	NM	0.052	0.882	NM	0.04	NM	0.05	3.59
Irish Sea: Avoca	2093		1738	0.276	NM	11.8	7.41	96	NM	NM	0.26	1.25	NM	0.013	NM	0.047	16.3
Irish Sea: Slaney	3460		3231	0.113 0.083	NM	3.13	1.79 1.45	14.9	NM	NM	0.123 0.122	4.95	NM	0.072	NM	0.185	39.3
Total Irish Sea:	**10931**			**0.55** **0.4**		**19.16** **19.05**	**12.16** **11.24**	**136**			**0.499** **0.495**	**11.6**		**0.203**		**0.41**	**73.59**
Celtic Sea: Barrow	4352		3235	0.132 0.013	NM	3.217	1.4 0.21	15.33	NM	NM	0.113 0.111	6.33	NM	0.11	NM	0.2	21.79
Celtic Sea: Nore	4146		3706	0.14 0.026	NM	3.61	1.62 0.636	14.46	NM	NM	0.175 0.174	4.25	NM	0.09	NM	0.152	14.56
Celtic Sea: Suir	6751		6648	0.209 0.04	NM	3.76	2.18 0.487	20.8	NM	NM	0.298	6.33	NM	0.148	NM	0.301	43.2
Celtic Sea: Blackwater	7868		7694	0.236 0.011	NM	6.48	4.06 3.1	36	NM	NM	0.24 0.239	6.83	NM	0.178	NM	0.326	35.1
Celtic Sea: Lee	3019		3411	0.082 0	NM	1.64	0.84 0.077	6.47	NM	NM	0.056 0.055	2.31	NM	0.038	NM	0.063	3.93
Celtic Sea: Bandon	1797		1818	0.054 0.041	NM	1.19	0.949 0.544	6.39	NM	NM	0.028 0.027	1.78	NM	0.023	NM	0.044	5.71
Celtic Sea: Deel	760		636	0.036 0.031	NM	1.03	0.55 0.51	3.46	NM	NM	0.063	0.395	NM	0.058	NM	0.095	12.3
Celtic Sea: Maigue	1646		1423	0.045 0.004	NM	1.52 1.47	0.55 0.34	6.44	NM	NM	0.114	0.94	NM	0.097	NM	0.171	17.6
Celtic Sea: Shannon (old channel)	3503	 (combined	NA 19179	0.093 0.008	NM	2.99	1.84	21.8	NM	NM	0.11	1.35	NM	0.067	NM	0.139	30.5
Celtic Sea: Shannon (tailrace)	15676		NA	0.43 0.022	NM	9.73	5.41 1.31	47.0	NM	NM	0.165 0.141	6.51	NM	0.121	NM	0.195	11.8
Celtic Sea: Fergus	1955		1618	0.053 0	NM	1.27 1.17	0.528 0.02	5.73	NM	NM	0.05	0.41	NM	0.02	NM	0.037	2.88
Total Celtic Sea:	**51473**			**1.51** **0.196**		**36.44** **36.29**	**19.93** **9.074**	**183.9**			**1.412** **1.382**	**37.44**		**0.95**		**1.723**	**199.37**

Table 6a. Continued

Main riverine inputs				Quantities --->													
Discharge area	Flow rate [1000 m3/d] 2000		LTA	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]
Atlantic: Corrib	9789		9055	0.277 0.031	NM	3.74 2.53	2.64 0.19	21.4	NM	NM	0.05 0.031	2.63	NM	0.045	NM	0.106	12.41
Atlantic: Moy	6439		5312	0.19 0.048	NM	4.17 3.81	1.99 0.614	19.4	NM	NM	0.071 0.069	1.11	NM	0.053	NM	0.134	34.8
Atlantic : Erne	10565		8786	0.29 0.02	NM	8.38	3.03 0.56	29	NM	NM	0.035 0.017	2.38	NM	0.18	NM	0.25	6
Total Atlantic:	**26793**			**0.757 0.099**		**16.29 14.72**	**7.66 1.364**	**69.8**			**0.156 0.117**	**6.12**		**0.278**		**0.49**	**53.21**
Grand total:				**2.82 0.705**		**71.89 70.06**	**39.75 21.68**	**389.7**			**2.067 1.994**	**55.16**		**1.431**		**2.623**	**326.17**

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 2000 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	0.321 0.204	NI	8.26	7.48 6.91	41.27	NI	NI	0.32 0.31	8.32	NI	0.19	NI	0.33	59.28
Celtic Sea	100 minor catchment areas: 9800 km2	0.67 0.13	NI	16.54 16.46	9.96 5.9	82.8	NI	NI	0.643 0.638	17.9	NI	0.459	NI	0.826	89.1
Atlantic	180 minor catchment areas: 11498 km2	0.891 0.143	NI	19.36 17.42	9.15 1.88	86.9	NI	NI	0.317 0.29	6.54	NI	0.293	NI	0.59	96.8
Total:		**1.882 0.477**		**44.16 42.14**	**26.59 14.69**	**211**			**1.28 1.238**	**32.76**		**0.942**		**1.746**	**245.2**

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 2000 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 [t]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM(2) [kt]
Irish Sea	(upper estimate)	**0.87**		**27.42**	**19.64**	**177.3**			**0.819**	**19.92**		**0.393**		**0.74**	**132.87**
	(lower estimate)	**0.614**		**27.31**	**18.15**	**177.3**			**0.805**	**19.92**		**0.393**		**0.74**	**132.87**
Celtic Sea	(upper estimate)	**2.18**		**52.98**	**29.89**	**266.7**			**2.055**	**55.34**		**1.409**		**2.549**	**288.47**
	(lower estimate)	**0.326**		**52.75**	**14.97**	**266.7**			**2.02**	**55.34**		**1.409**		**2.549**	**288.47**
Atlantic	(upper estimate)	**1.648**		**35.65**	**16.81**	**156.7**			**0.473**	**12.66**		**0.571**		**1.08**	**150.01**
	(lower estimate)	**0.242**		**32.14**	**3.244**	**156.7**			**0.407**	**12.66**		**0.571**		**1.08**	**150.01**
Total:	(upr est)	**4.70**		**116.1**	**66.34**	**600.7**			**3.347**	**87.92**		**2.373**		**4.369**	**571.35**
	(lr est)	**1.182**		**112.2**	**36.37**	**600.7**			**3.232**	**87.92**		**2.373**		**4.369**	**571.35**

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

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 - 2000	4167	3356	Median	<0.1	NI	2.1	<1.0	0.012			0.039	2.94	***NI***	0.049	***NI***	0.065	6.6
Minimum				<0.1		1.3	<1.0	0.008			<0.01	1.12		0.014		0.033	1.6
Maximum				0.11		3.7	9.7	0.021			0.07	3.67		0.089		0.177	23.6
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			no	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Irish Sea: Liffey - 2000	1211	1556	Median	<0.1	NI	1.6	<1.0	0.011	NI	NI	0.12	2.14	NI	0.104	NI	0.149	3.6
Minimum				<0.1		<1.0	<1.0	0.005			0.011	1.34		0.042		0.057	1
Maximum				0.12		3.3	4.8	0.042			0.24	3.2		0.243		0.26	21.6
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Irish Sea: Avoca - 2000	2093	1748	Median	0.41	NI	14.5	6.6	0.16	NI	NI	0.23	1.96	NI	0.011	NI	0.023	4
Minimum				0.23		8.9	5	0.062			0.07	0.85		0.008		0.011	<1
Maximum				0.87		34.3	11.9	0.284			2.35	3.28		0.022		0.095	38
> 70 % > d.l. ?			***yes/no***	yes		yes	yes	yes				yes		yes		yes	yes
n				9		9	9	9				9		9		9	9
Irish Sea: Slaney - 2000	3460	3231	Median	<0.1	NI	1.6	<1.0	0.009	NI	NI	0.06	4.6	NI	0.034		0.053	8.4
Minimum				<0.1		1	<1.0	0.004			<0.01	2.06		0.009	NI	0.02	0.8
Maximum				0.11		4	2.1	0.015			0.15	5.7		0.179		0.34	59.6
> 70 % > d.l. ?				no		yes	no	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Barrow - 2000	4352	3235	Median	<0.1	NI	1.7	<1.0	0.009	NI	NI	0.057	4.44	NI	0.064	NI	0.077	5.7
Minimum				<0.1		1.1	<1.0	0.005			<0.01	2.99		0.044		0.053	1.6
Maximum				0.08		4.1	1.5	0.014			0.11	5.5		0.189		0.236	27.4
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Nore - 2000	4146	3706	Median	<0.1	NI	1.4	<1.0	0.009	NI	NI	0.04	3.46	NI	0.045	NI	0.061	4.6
Minimum				<0.1		<1	<1	0.003			<0.01	2.06		0.008		0.015	<1
Maximum				0.27		5	2.1	0.134			0.4	4.33		0.177		0.32	17.4
> 70 % > d.l. ?			***yes/no***	no		yes	yes	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Suir - 2000	6751	6648	Median	<0.1	NI	1.5	<1.0	0.008	NI	NI	0.05	2.86	NI	0.041	NI	0.064	6.8
Minimum				<0.1		<1.0	<1.0	0.001			<0.01	1.49		0.007		0.013	<1
Maximum				0.28		2.2	1.9	0.128			0.47	4.09		0.145		0.274	43.4
> 70 % > d.l. ?			***yes/no***	no		no	no	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Blackwater -2000	7868	7694	Median	<0.1	NI	1.8	<1	0.012	NI	NI	0.03	2.46	NI	0.054	NI	0.099	8.2
Minimum				<0.1		<1	<1	0.006			<0.01	1.8		0.008		0.021	1.8
Maximum				0.13		4.9	15.1	0.025			0.19	3.72		0.086		0.183	20
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Lee - 2000	3019	3492	Median	<0.01	NI	1.5	<1	0.006	NI	NI	0.05	2.36	NI	0.03	NI	0.059	3
Minimum				<0.01		<1	<1	0.001			<0.01	0.91		0.015		0.028	<1
Maximum				<0.01		2	<1	0.013			0.15	3.14		0.057		0.08	7
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Bandon - 2000	1797	1818	Median	<0.1	NI	1.5	<1	0.006	NI	NI	0.025	3.3	NI	0.036	NI	0.059	4
Minimum				<0.1		1	<1	0.003			<0.01	1.45		0.007		0.027	<1
Maximum				0.13		3	8.9	0.027			0.08	4.05		0.046		0.13	26
> 70 % > d.l. ?			***yes/no***	no		yes	yes	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Deel - 2000	760	645	Median	<0.1	NI	2.7	<1	0.007	NI	NI	0.13	1.95	NI	0.148	NI	0.2	10.4
Minimum				<0.1		1.5	<1	0.003			<0.01	0.7		0.057		0.082	2.2
Maximum				0.28		5.1	4.1	0.025			0.51	2.68		0.294		0.611	94.7
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9

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

Main riverine inputs				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	TKN	PO4-P	Total N	Total P	SPM(2)
	annual	LTA		[µg/l]	[µg/l]	[µg/l]	[µg/l]	[mg/l]	[ng/l]	[ng/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]	[mg/l]
Celtic Sea: Maigue - 2000	1646	1423	Median	<0.1	NI	1.9	<1	0.007	NI	NI	0.07	1.62	NI	0.11	NI	0.189	10.3
Minimum				<0.1		<1	<1	0.003			<0.01	1.03		0.073		0.087	3.4
Maximum				0.28		4	1.5	0.019			0.44	2.4		0.217		0.523	69.6
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Shannon** -2000 (old channel)	3503	NA	Median	<0.1	NI	2.1	1.3	0.015	NI	NI	0.07	1.13	NI	0.049	NI	0.083	9.2
Minimum				<0.1		1.4	<1	0.006			<0.01	0.71		0.026		0.045	3.6
Maximum				<0.1		3.8	3.4	0.029			0.13	1.53		0.066		0.157	49
> 70 % > d.l. ?			***yes/no***	no		yes	yes	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Shannon** -2000 (tailrace)			Median	<0.1	NI	1.6	<1.0	0.007	NI	NI	0.02	1.19	NI	0.018	NI	0.032	2
Minimum				<0.1		1.1	<1.0	0.002			<0.01	0.54		0.011		0.012	<1
Maximum				0.1		6.4	10.6	0.022			0.15	1.44		0.031		0.046	3.8
> 70 % > d.l. ?			***yes/no***	no		yes	yes	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Celtic Sea: Fergus - 2000	1955	1618	Median	<0.1	NI	1.7	<1.0	0.007	NI	NI	0.06	0.54	*NI*	0.032	*NI*	0.054	3.2
Minimum				<0.1		<1.0	<1.0	0.003			0.03	0.38		0.008		0.026	<1
Maximum				<0.1		5.2	<1.0	0.015			0.25	0.76		0.053		0.075	9.6
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			yes	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
Atlantic: Corrib - 2000	9789	9055	Median	<0.1	NI	<1	<1	0.005	NI	NI	<0.01	0.7	NI	0.009	NI	0.016	3.4
Minimum				<0.1		<1	<1	0.002			<0.01	0.09		0.006		0.009	1.2
Maximum				0.11		1.8	<1	0.014			0.03	1.05		0.029		0.276	5.2
> 70 % > d.l. ?			***yes/no***	no		no	no	yes			no	yes		yes		yes	yes
n				9		9	9	9			9	9				9	9
			Median	<0.05		0.6	0.9	0.005			0.01	0.9		0.008		0.04	3.5
Minimum				<0.05		<0.5	<0.5	<0.5			<0.01	0.69		0.006		0.02	0.8
Maximum				<0.05		10.1	8.5	15.70			0.06	1.3		0.01		0.226	7
> 70 % > d.l. ?			***yes/no***	no		no	yes	yes			no	yes		yes		yes	yes
n				***4***		***4***	***4***	***4***			***4***	***4***		***4***		***4***	***4***
Atlantic: Moy - 2000	6439	5312	Median	<0.1	NI	1.7	<1	0.007	NI	NI	0.03	0.45	NI	0.021	NI	0.049	12.8
Minimum				<0.1		<1	<1	0.004			<0.01	0.26		0.008		0.014	4.8
Maximum				0.11		4.7	1.1	0.015			0.05	0.59		0.038		0.192	33.8
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			no	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
				7		7	7	7			7	7		7		7	7
Atlantic : Erne - 2000			Median	<0.1	NI	2.1	<1	0.007	NI	NI	<0.01	0.64	NI	0.042	NI	0.06	1.8
Minimum				<0.1		1.7	<1	0.003			<0.01	0.51		0.031		0.045	<0.1
Maximum				0.1		2.9	1.1	0.016			0.04	0.71		0.067		0.126	3
> 70 % > d.l. ?			***yes/no***	no		yes	no	yes			no	yes		yes		yes	yes
n				9		9	9	9			9	9		9		9	9
							4										

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.
Loads were estimated separately for each branch and combined to give the total load for the river.

Table 8. Detection limits for contaminant concentrations of Irish 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]
	R			0.1	0.15	1	1	1			0.01	0.01	0.005	0.02	0.005	1

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

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

Annex 6

THE NETHERLANDS

Annual report on riverine inputs and direct discharges to Convention waters during the year 2000 by the Netherlands

Annual report on riverine inputs and direct discharges to Convention waters during the year 2000 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 poldereffluents/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 2000

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

** Riverine Input data: including loads from countries upstream*

C. Direct discharges for the year 2000

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*

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 1999 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 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 2000

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):

[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):

** Method: see paragraph 5.11 of the principles.*

** Information on tributary riverine inputs in Ems Dollard Estuary and Wadden Coast is not yet available. This information will be submitted as soon as possible.*

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.

[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 change
- incomplete or distorted data

* *Industrial effluents partly concern 1999 figures.*

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2000 by 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	0.004	0.004	0.6	0.2	3.4				0.5		3.8	0.1	2
		upper													
		comment													
226	Ems Dollard Estuary	lower	4.00E-04	2.00E-04	0.02	0.01	0.1				0.008		0.01	0.003	0.09
		upper													
		comment													
222	Western Schelde	lower	0.009	0.006	0.4	0.2	3.2				0.8		1.5	0.1	4.3
		upper													
		comment													
223	Southern Delta Coast	lower	3.00E-04	2.00E-04	0.03	0.006	0.1				0.02		0.03	0.007	0.05
		upper													
		comment													
82	North Sea (NL)	lower	0.01	0.01	1.1	0.4	6.8				1.3		5.3	0.2	6.4
		upper													
		comment													

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2000 by 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	0.03	0.02	0.3	0.6	2.6	0	0		0.1		0.6	0.02	0.7
		upper													
		comment													
226	Ems Dollard Estuary	lower	4.00E-04	4.00E-04	1.3	0.02	13.5	0	0				0.2	0.01	0.1
		upper													
		comment													
225	Wadden Coast	lower	0	0	0.01	0	0	0	0		0		0.03	0.02	0
		upper													
		comment													
222	Western Schelde	lower	0.1	0.004	0.6	0.04	2.3	0	0		0.05		0.3	0.1	0.6
		upper													
		comment													
82	North Sea (NL)	lower	0.1	0.02	2.2	0.7	18.4	0	0		*0.2*		1.1	0.2	1.4
		upper													
		comment													

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 by Netherlands

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
282	Noordzeekanaal	lower	0.02	0.01	10.2	3.4	17.5	6.5	1	0.8	6.9	0.5	10.3	0.7	25.5
		upper	0.1				17.6	7.3	1						
		comment													
224	Closed Holland Coast	lower	0.02	0.01	10.2	3.4	17.5	6.5	1	0.8	6.9	0.5	10.3	0.7	25.5
		upper	0.1				17.6	7.3	1						
		comment													
157	Ijsselmeer	lower	0.8	0.3	49.5	41.5	161.9	23.4	30.7	1	35.1	0.4	61	2.6	839.6
		upper	1.3				162.1	28.4	31.2						
		comment													
225	Wadden Coast	lower	0.8	0.3	49.5	41.5	161.9	23.4	30.7	1	35.1	0.4	61	2.6	839.6
		upper	1.3				162.1	28.4	31.2						
		comment													
154	Haringvlietsluizen	lower	1.2	0.3	81.9	48.7	261.1	41.4	24.4	2.5	74.5	2.4	89.8	3.7	286.7
		upper	1.7				261.2	45.2							
		comment													
155	Maasluis	lower	3.4	1	168.9	114.9	536.5	80.5	64.1	5.6	131.1	5.2	156.4	8.7	1133
		upper	3.4				536.6	87.2					157		
		comment													
153	Northern Delta Coast	lower	4.6	1.3	250.8	163.6	797.6	121.9	88.5	8.1	205.6	7.62	246.2	12.4	1420
		upper	5.1				797.8	132.4					246.8		
		comment													
82	North Sea (NL)	lower	5.4	1.6	310.5	208.5	977	151.8	120.2	9.9	247.6	8.52	317.5	15.7	2285
		upper	6.5				977.5	168.1	120.7				318.1		
		comment													

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 by 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	0	0.007	0.9	0.5	4.3	1		0.2	0.5	0.1	1	0.2	2.7
		upper	0.05												
		comment													
258	Scheveningen	lower	0	0.0006	0.08	0.09	0.4	0	0	0.005	0.003	0.008	0.06	0.01	0.2
		upper	0.004					0.2	0.8						
		comment													
257	Vlotwatering	lower						0	0	0.001	0.03	0.003	0.04	0.004	0.1
		upper						0.2	0.8						
		comment													
224	Closed Holland Coast	lower	*0*	*0.008*	*1*	*0.6*	*4.7*	1	*0*	0.2	0.5	0.1	1.1	0.2	3
		upper	*0.05*					1.4	*1.6*						
		comment													
280	Damsterdiep	lower	0.002	0.0007	0.1	0.05	3.3	0.1		0.02	0.1	0.02	0.2	0.02	0.8
		upper													
		comment													
266	Duurswold	lower	0.003	0.002	0.2	0.09	0.6	0.3		0.03	0.3	0.003	0.4	0.01	1.9
		upper													
		comment													
267	Eemskanaal	lower	0.01	0.01	0.7	0.4	5	0.9		0.3	1.3	0.03	2.1	0.07	4.5
		upper													
		comment													
268	Nieuwe Statenzijl	lower	0.01	0.006	0.5	0.3	11.6	1.3		0.2	0.8	0.01	1.4	0.04	3.3
		upper													
		comment													
281	Termunsterzijl	lower	0.003	0.003	0.2	0.2	1.6	0.3		0.04	0.3	0.003	0.4	0.02	4.7
		upper													
		comment													
226	Ems Dollard Estuary	lower	0.03	0.02	1.7	1	22.1	2.9		0.6	2.8	0.07	4.5	0.2	15.2
		upper													
		comment													
261	De Helsdeur	lower	0.1	0.004	0.8	0.7	5.2	1.9		0.2			1.5	0.3	10.5
		upper													
		comment													
265	Harlingen/Van Harinxmakanaal	lower	0.04	0.002	1.1	1.8	1.7	0.2	0.2	0.06	0.5	0.08	0.9	0.1	6.5
		upper													
		comment													
263	Krassekreet/Texel	lower	0.004	0.001	0.2	0.08	1	0.4		0.05	0.08	0.02	0.4	0.08	2.1
		upper													
		comment													
264	Lauwersmeer	lower	0.07	0.05	4.4	2.6	103.1	5.9		0.5	2.8	0.3	6.9	0.6	20.4
		upper													
		comment													
287	Roptazijl	lower	0.003	0.0003	0.1	0.07	0.3	0.01	0.02	0.01	0.04	0.02	0.1	0.02	1.3
		upper													
		comment													
262	Spuisluis Oostoever	lower	0.01	0.002	0.2	0.2	2.8	1		0.03			0.6	0.08	4.1
		upper													
		comment													
285	Wieringermeer	lower	0.07	0.002	0.2	0.2	2.8	0.8		0.2			0.8	0.05	3.5
		upper													
		comment													
286	Zwarte Haan	lower	0.01	0.0004	0.1	0.09	0.1	0.03	0.03	0.01	0.06	0.02	0.1	0.02	1.3
		upper													
		comment													
225	Wadden Coast	lower	0.3	0.06	7.1	5.7	117	10.2	*0.3*	1.1	*3.5*	*0.4*	11.3	1.3	49.7
		upper													
		comment													
290	Polder Effluents Westerschelde	lower	0.1	0.02	1.7	1.3	25.1			1.1	3	0.3	5.5	1.4	10.1
		upper													
		comment													
289	Kanaal Gent - Terneuzen	lower	0.06	0.009	2.7	2.3	16.2			1.7	5.9	0.5	10.4	0.6	6.8
		upper													
		comment													
288	Spuikanaal Bath	lower	0.02	0.003	1.1	0.3	1.3			0.1	2.1	0.03	2.7	0.06	2.3
		upper													
		comment													
222	Western Schelde	lower	0.2	0.03	5.5	3.9	42.6			2.9	11	0.83	18.6	2.1	19.2
		upper													
		comment													
153	Northern Delta Coast	lower													
		upper													
		comment													
260	Oosterschelde	lower	0.01	0.002	0.9	0.2	0.8			0.05	1.1	0.02	1.6	0.04	2.7
		upper													
		comment													
283	Polder Effluents Oosterschelde	lower	0.05	0.006	0.6	0.4	8.6			0.4	0.9	0.09	2	0.1	3.8
		upper													
		comment													
223	Southern Delta Coast	lower	0.06	0.008	1.5	0.6	9.4			0.45	2	0.1	3.6	0.1	6.5
		upper													
		comment													
82	North Sea (NL)	lower	0.6	0.1	16.8	11.8	195.8	*14.1*	*0.3*	5.3	19.8	1.5	39.1	3.9	93.6
		upper	0.6					*14.5*	*1.9*						
		comment													

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2000 by 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	0.05	0.005	3.3	0.8	1.9	2	37.3	0.2	2.2	0.2	3	0.2	7
		upper													
		minimum	<0,01	<0,001	2.3	0.6	<0,05	<1	<6,5	0.04	1.4	0.001	2.2	0.1	4.5
		maximum	0.06	0.008	4.2	2.3	27	3	52.6	0.8	3.9	0.3	5.3	0.3	14
		more than 70% > D.L.	no	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes	yes
		n	12	12	12	12	12	11	13	13	13	13	13	13	12
		info							2)						
		st.Dev.			0.5	0.6				0.2	0.7	0.08	1.1	0.06	3.2
157	Ijsselmeer	lower	0.05	0.009	2.2	2.2	9.8	1	17.6	0.05	2.4	0.01	3.2	0.01	43
		upper													
		minimum	<0,05	0.004	1.4	0.5	<0,05	<1	<10,4	0.01	0.05	0.007	1.3	0.007	6
		maximum	0.1	0.04	4.7	4.9	24	3	139	0.2	3.5	0.06	4.9	0.06	103
		more than 70% > D.L.	no	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
		n	11	11	11	11	11	11	13	14	14	14	14	14	14
		info							2)						
		st.Dev.		0.01	1.1	1.7				0.04	1.2	0.02	1.2	0.02	27
154	Haringvlietsluizen	lower	0.06	0.01	3.1	1.6	11	1	85	0.09	2.9	0.1	3.6	0.2	8.5
		upper													
		minimum	<0,05	0.002	2.4	0.7	<0,1	<1	65	0.03	2	0.02	<2,3	0.07	4.0
		maximum	0.1	0.04	4.2	4.9	19	4	105	0.2	3.8	0.1	4.4	0.2	27
		more than 70% > D.L.	no	yes	yes	yes	yes	no	yes	yes	yes	yes	yes	yes	yes
		n	13	13	13	13	13	13	13	16	16	16	16	16	16
		info							2)						
		st.Dev.		0.009	0.5	1.2			12	0.05	0.7	0.03		0.03	6.5
155	Maasluis	lower	0.07	0.02	3.5	2	11	2	57.6	0.1	2.6	0.1	3.3	0.2	18
		upper													
		minimum	0.05	0.009	0.9	1.1	<0,05	<1	28.7	0.01	1.4	0.07	<2,1	0.1	10
		maximum	0.1	0.05	5.9	5.7	28	3	92.9	0.2	4.2	0.2	4.8	0.3	68
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
		n	26	26	26	26	26	13	26	26	26	26	26	26	26
		info							2)						
		st.Dev.	0.02	0.01	0.9	1			16.4	0.05	0.7	0.03		0.04	14

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 2000 by Netherlands

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
259	Katwijk	Sewage													
		Industrial													
		Riverine	0.2	0.02	2	2	5	1		0.2	0.05	0.01	0.1	0.02	1
282	Noordzeekanaal	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	0.05	10	3)	0.01	0.01	0.005	0.1	0.01	5
258	Scheveningen	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.2	0.001	0.1	0.1	1	10	3)	0.01	0.01	0.005	0.1	0.01	5
257	Vlotwatering	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.2	0.001	0.1	0.1	1	10	3)	0.01	0.01	0.005	0.1	0.01	5
224	Closed Holland Coast	Sewage													
		Industrial													
		Riverine													
280	Damsterdiep	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
266	Duurswold	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
267	Eemskanaal	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
268	Nieuwe Statenzijl	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
281	Termunsterzijl	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
226	Ems Dollard Estuary	Sewage													
		Industrial													
		Riverine													
261	De Helsdeur	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
265	Harlingen/Van Harinxmakanaal	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
284	Ijsselmeer	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.05	0.001	0.1	0.1	0.05	10	3)	0.01	0.01	0.005	0.1	0.01	5
263	Krassekreet/Texel	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
264	Lauwersmeer	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
287	Roptazijl	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
262	Spuisluis Oostoever	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
285	Wieringermeer	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
286	Zwarte Haan	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
225	Wadden Coast	Sewage													
		Industrial													
		Riverine													
290	Polder Effluents Westerschelde	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
289	Kanaal Gent - Terneuzen	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
288	Spuikanaal Bath	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
222	Western Schelde	Sewage													
		Industrial													
		Riverine													
154	Haringvlietsluizen	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.05	0.001	0.1	0.1	0.1	10	3)	0.01	0.01	0.005	0.1	0.01	5
155	Maasluis	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	0.05	10	3)	0.01	0.01	0.005	0.1	0.01	5
153	Northern Delta Coast	Sewage													
		Industrial													
		Riverine													
260	Oosterschelde	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
283	Polder Effluents Oosterschelde	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
223	Southern Delta Coast	Sewage	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Industrial	1	0.1	1	30	1	50	3)	0.1	0.01	0.01	0.1	0.2	10
		Riverine	0.01	0.001	0.1	0.1	1	50	3)	0.01	0.01	0.005	0.1	0.01	5
82	North Sea (NL)	Sewage													
		Industrial													
		Riverine													

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

Table 9. Catchment-dependent information

Reported Maritime Area of the OSPAR Convention in 2000 by 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	652		0	4465			
282		Noordzeekanaal	8467						
258		Scheveningen	53						
257		Vlotwatering	14						
224	Closed Holland Coast								
280		Damsterdiep							
266		Duurswold							
267		Eemskanaal							
268		Nieuwe Statenzijl							
281		Termunsterzijl							
226	Ems Dollard Estuary								
261		De Helsdeur							
265		Harlingen/Van Harinxmakanaal							
157		Ijsselmeer	50372						
263		Krassekreet/Texel							
264		Lauwersmeer							
287		Roptazijl							
262		Spuisluis Oostoever							
285		Wieringermeer							
286		Zwarte Haan							
225	Wadden Coast								
290		Polder Effluents Westerschelde	1250						
289		Kanaal Gent - Terneuzen	2394						
288		Spuikanaal Bath	1024						
222	Western Schelde								
154		Haringvlietsluizen	69984						
155		Maasluis	128304						
153	Northern Delta Coast								
260		Oosterschelde	780						
283		Polder Effluents Oosterschelde	401						
223	Southern Delta Coast								
82	North Sea (NL)								

Annex 7

NORWAY

Annual report on riverine inputs and direct discharges by Norway to Convention waters during the year 2000

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]	Nature of the receiving water[2]	optional: national reference number	optional: map reference number
Skagerrak:			
(1) Glomma	Coastal water	002.Z	M711: 1913-1
(2) Drammenselva	"	012.Z	1914-4
(3) Numedalslågen	"	015.Z	1813-3
(4) Skienselva	"	016.Z	1713-3
(5) Otra	"	021.Z	1511-3
The remaining North Sea:			
(6) Orreelva	Coastal water	028.4Z	M711: 1212-3
(7) Suldalslågen	"	036.Z	1313-4
The Norwegian Sea:			
(8) Orkla	Coastal water	121.Z	M711: 1521-2
(9) Vefsna	"	151.Z	1926-3
The Barents Sea:			
(10) Alta	Coastal water	212.Z	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

B. Total riverine inputs and direct discharges for the year 2000

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

In this report the results from 2000 are given for riverine inputs of 10 main rivers and 145 tributaries. Thus the active monitoring programme covers drainage from approximately 75 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. Area runoff of Total phosphorus, Total nitrogen, phosphates, nitrates and ammonia from these coastal zones 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 considered the most susceptible part of the North Sea. The Skagerrak reception of Norway's total loads are 20 per cent of the phosphorus and 40 per cent of the nitrogen yield. In this region where 94 per cent of the area is river-monitored, about 84 per cent of both the P- and N- loads are found in the riverine inputs.

According to the results of the 2000 investigation total annual nutrient loads to coastal waters from landbased sources in Norway are found to be 9842 tonnes of phosphorus and 131.410 tonnes of nitrogen. Respectively 34 and 53 per cent of the grand total inputs of phosphorus and nitrogen are monitored in the main and tributary rivers. The loading from fish farming contributes to about 46 per cent of the total phosphorous loading and 16 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 PARCOM. 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 5.0 and 5.1 tonnes, mercury between 1.6 and 2.2 tonnes, arsenic 30-31 tonnes, total chromium 73-75 tonnes, lead 68 tonnes and nickel 175 tonnes. Copper and zinc comprised the largest inputs of heavy metals which in 2000 amounted to 243 and 827-829 respectively. The pesticide lindane was found in most samples, but in very small concentrations. The reported concentrations of mercury were in the same range as in 1999. This was, however, higher than the concentrations reported for 1990-97. This is probably due to different analytical methods. Lindane has been banned in Norway for the last decade. Presumably, lindane contamination in Norwegian rivers is due to long range air pollution. Total load is estimated to about 55 kg.

Retention of nutrients and micropollutants in the many threshold 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 2000

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 SESAM has been installed at all county governors' environmental agencies, which are responsible for collecting effluent data from the municipalities. The county environmental agencies then send the data to SSB. Since 1994, the reporting system SESAM has been extended also to include data on smaller settlements. Discharge figures from SESAM are used in the model "TEOTIL" to calculate the total discharges of total phosphorus ammonia, nitrates, orthophosphates and total nitrogen to Norwegian coastal waters. NIVA has performed this modelling (Hopen, 2001). The figures take into account retention in water courses.

In 2000, 2882 wastewater treatment plants with a hydraulic capacity of at least 50 p.e. were registered in Norway (SSB, 2001). There were also 570 sewerage systems (serving more than 50 p.e.) with direct discharges of untreated wastewater (SSB, 2001). The major part (57%) of the treatment plants have only primary treatment, 9% chemical treatment, 4% biological treatment, 11 % chemical and biological treatment and 19% 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 6.26 million p.e., chemical plants account for 35 %, primary treatment for 28%, chemical/biological for 25%, direct discharges for 9%, biological for 1% and others for 2%. In the North Sea area of Norway, most of the wastewater are 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 pollution 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*	*0.046*
COD (kg O/person/day)		*0.094*
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*

The metal loads were estimated on the basis of data from 1999. Only small changes have occurred in 2000 from 1999 (Nedland, 2001). For metals in municipal wastewater discharges, calculated loads were based on measured concentrations in effluents from 14 treatment plants in Norway in 1999 (Nedland, 2000) and measured or calculated flows from the wastewater effluents in 1999 (from SESAM). For effluents without any measured flow, the 1999-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 is performed at least twice a year. Measured and estimated loads from industrial activities in the different areas are shown in Appendix III, Report B. NIVA has performed the TEOTIL modelling for total nitrogen and total phosphorus (Holtan and Hopen, 2001). The calculations of the other discharges were performed by Aquateam. The metal data were collected from SFT's data base INKOSYS (SFT, 2001).

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 2000 has been estimated by use of the computer model TEOTIL (Borgvang and Tjomsland, 2001). Equations and factors described in OSPAR's HARP Guidelines (Harmonised Quantifications and Reporting Procedures for Nutrients) (SFT, 2000b) are used. The results are presented in Table XII (Appendix XII, Report B).

In 2000, the loading 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 2000

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 of 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 river Vefsna where the load to the sea shows large seasonal and annual variations due to differences in water drainage. The original programme of 1990-1992 was reduced in 1993. Small changes in the programme were undertaken from 1999 to 2000. 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 all main rivers, except Suldalslågen, 12 grab samples or more have been taken at regular monthly intervals during the sampling period from January to December 2000, as described in PARCOM 10/3/2. Three of the main rivers (Glomma, Drammenselva and Vefsna) were sampled weekly in the period with the highest anticipated flow (May – June). Suldalslågen was sampled 11 times in 2000. In all the main rivers the parameter lindane have been sampled and analysed 4 times in 2000. The sampling frequency for the main rivers is shown in Table 3.

River/Location	***J***	***F***	***M***	***A***	***M***	***J***	***J***	***A***	***S***	***O***	***N***	***D***
Glomma at Sarpsfoss	*x*	*x*	*x*	*x*	*xxxx*	*xxxx*	*x*	*x*	*x*	*x*	*x*	*x*
Drammenselva upstream the town bridge	*x*	*x*	*x*	*x*	*xxxxx*	*xxxx*	*x*	*x*	*x*	*x*	*x*	*x*
Numedalslågen at Bommestad	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Skienselva at Klosterfoss	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Otra at Skråstad	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Orre near the outlet	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Orkla at Vormstad	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*
Vefsna at Kvalfors	*x*	*x*	*x*	*x*	*xxxxx*	*xxxx*	*x*	*x*	*x*	*x*	*x*	*x*
Suldalslågen near the outlet	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	
Alta just upstream Alta	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*	*x*

The tributary rivers were all sampled once in 2000. 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.

In 2000 the water samples from the main rivers were taken by local personnel and by the company BUVA (see Chapter 5). Aquateam personnel took most of the samples from the tributary rivers. The persons were carefully instructed in advance. The samples were sent to the laboratory used by Aquateam (KM–Lab, Grimstad/ AnalyCen, Grimstad) 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 2000 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.

Parameter	***Detection limit***	***Analytical Methods*** *(NS: Norwegian Standard)*
Conductivity (mS/m)	-	*ISO 7888*
Suspended particulate matter (S.P.M.) (mg/L)	*0.5-2*	*NS 4733*
Total Organic Carbon (TOC) (mg C/L)	*0.5-1.0*	*ISO 8245*
Total Phosphorus (µg P/L)	*1.0-3.0*	*NS 4725 – Peroxidisulphate oxidation method*
Orthophosphate (PO_4-P) (µg P/L)	*0.5-1.8*	*NS 4724 – Automated molybdate method*
Total Nitrogen (µg N/L)	*10*	*NS 4743 – Peroxidisulphate oxidation method*
Nitrate and nitrite (NO_3 + NO_2) (µgN/L)	*5*	*NS 4745 – Automated cadmium reduction method*
Ammonia (NH_4) (µg N/L)	*2-10*	*NS 4746*
Silicate (SiO_2) (mg/L)	*0.09*	*Std.Met 3120 A-B*
Lead (Pb) (µg Pb/L)	*0.01*	*EPA2008M – ICP/MS*
Cadmium (Cd) (µg Cd/L)	*0.001-0.02*	*EPA2008M – ICP/MS*
Copper (Cu) (µg Cu/L)	*0.02*	*EPA2008M – ICP/MS*
Zinc (Zn) (µg Zn/L)	*0.1*	*EPA2008M – ICP/MS*
Chromium (Cr-tot) (µg Cr/L)	*0.01-0.2*	*EPA2008M – ICP/MS*
Nickel (Ni) (µg Ni/L)	*0.03*	*EPA2008M – ICP/MS*
Arsenic (As) (µg As/L)	*0.02-0.2*	*EPA2008M – ICP/MS*
Mercury (Hg) (ng Hg/L)	*5*	*Atomic fluorescence*
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, 1990-2000 are shown in Figure 2. Mean annual and annual precipitation for the same stations and periods are presented in Figure 3. As for precipitation, normals 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):

[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):

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 2000 investigation show that total annual loads to coastal waters from land-based sources in Norway include approximately 9 842 tonnes of total phosphorus (Tot-P) and 131 410 tonnes of total nitrogen (Tot-N). These loads were much higher than in 1999, since loads from fish farming was included in year 2000 for the first year. These loads contribute to approximately 46% of the total loading of Tot-P and 16% of the total loading of Tot-N from mainland Norway. Respectively, 34 and 53 % of the grand total inputs of Tot-P and Tot-N are monitored in the main and tributary rivers.

The loads when fish farming effluents are not included, were 109 953 tonnes for Tot-N and 5299 tonnes for Tot-P. This is an increase of 5% for Tot-N and 16% for Tot-P compared with 1999. In main rivers in the Skagerrak area, the calculated loads increased 40 % for Tot-N and 55 % for Tot-P. The increase in water flow for these rivers was approximately 32%.

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

Due to high precipitation in eastern Norway autumn 2000 the inputs from Norwegian rivers were higher in 2000 than in 1999. All of the rivers with outlets to the Skagerrak area, which also are the main rivers, have their catchments in the regions with high precipitation October-November 2000.

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

[none]

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2000 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	0.002	0.001	0.494	0.033	0.76			0.248	0.002	0.025	0.3	0.042			0.06	0.06		
		upper	0.002	0.001	0.494	0.033	0.76			0.248	0.002	0.025	0.3	0.042			0.06	0.06		
		comment						NI	NI						NI	NI			NI	NI
73	Barents Sea (NO)	lower	0.002	0.001	0.494	0.033	0.76			0.248	0.002	0.025	0.3	0.042			0.06	0.06		
		upper	0.002	0.001	0.494	0.033	0.76			0.248	0.002	0.025	0.3	0.042			0.06	0.06		
		comment																		
160	Drammenselva	lower	0.003	0.001	0.413	0.035	0.88			0.284	0.002	0.004	0.4	0.006			0.07	0.11		
		upper	0.003	0.001	0.413	0.035	0.88			0.284	0.002	0.004	0.4	0.006			0.07	0.11		
		comment						NI	NI						NI	NI			NI	NI
159	Glomma	lower	0.036	0.013	4.360	0.373	9.33			2.144	0.013	0.038	2.6	0.064			0.77	1.18		
		upper	0.036	0.013	4.360	0.373	9.33			2.144	0.013	0.038	2.6	0.064			0.77	1.18		
		comment						NI	NI						NI	NI			NI	NI
170	Inner Oslofjord	lower																		
		upper																		
		comment	Summarized with Glomma					NI	NI	Summarized with Glomma					NI	NI	zed with Glom		NI	NI
161	Numedalslågen	lower	0.009	0.003	1.174	0.096	2.38			0.475	0.003	0.013	0.6	0.021			0.19	0.29		
		upper	0.009	0.003	1.174	0.096	2.38			0.475	0.003	0.013	0.6	0.021			0.19	0.29		
		comment						NI	NI						NI	NI			NI	NI
163	Otra	lower	0.006	0.002	0.818	0.064	1.56			0.452	0.003	0.02	0.6	0.033			0.13	0.18		
		upper	0.006	0.002	0.818	0.064	1.56			0.452	0.003	0.02	0.6	0.033			0.13	0.18		
		comment						NI	NI						NI	NI			NI	NI
162	Skienselva	lower	0.004	0.001	0.501	0.043	1.06			0.217	0.001	0.003	0.3	0.004			0.09	0.13		
		upper	0.004	0.001	0.501	0.043	1.06			0.217	0.001	0.003	0.3	0.004			0.09	0.13		
		comment						NI	NI						NI	NI			NI	NI
75	Skagerrak (NO)	lower	0.058	0.021	7.3	0.612	15.2			3.572	0.023	0.08	4.5	0.128			1.25	1.89		
		upper	0.058	0.021	7.3	0.612	15.2			3.572	0.023	0.08	4.5	0.128			1.25	1.89		
		comment																		

Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2000 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	0.058	0.021	7.226	0.612	15.2			0.660	0.004	0.036	0.9	0.060			1.25	1.89		
	upper	0.058	0.021	7.226	0.612	15.2			0.660	0.004	0.036	0.9	0.060			1.25	1.89		
	comment						NI	NI						NI	NI			NI	NI
165 Suldalslågen	lower	0.011	0.005	1.651	0.130	3.16			1.804	0.012	0.17	2.4	0.283			0.26	0.36		
	upper	0.011	0.005	1.651	0.130	3.16			1.804	0.012	0.17	2.4	0.283			0.26	0.36		
	comment						NI	NI						NI	NI			NI	NI
83 North Sea (NO)	lower	0.070	0.026	8.877	0.742	18.4			2.464	0.016	0.2	3.3	0.343			1.50	2.24		
	upper	0.070	0.026	8.877	0.742	18.4			2.464	0.016	0.2	3.3	0.343			1.50	2.24		
	comment																		
166 Orkla	lower	0.019	0.008	3.797	0.268	6.23			1.624	0.011	0.144	2.2	0.239			0.49	0.58		
	upper	0.019	0.008	3.797	0.268	6.23			1.624	0.011	0.144	2.2	0.239			0.49	0.58		
	comment						NI	NI						NI	NI			NI	NI
167 Vefsna	lower	0.012	0.005	2.405	0.167	3.85			1.106	0.007	0.112	1.5	0.187			0.30	0.34		
	upper	0.012	0.005	2.405	0.167	3.85			1.106	0.007	0.112	1.5	0.187			0.30	0.34		
	comment						NI	NI						NI	NI			NI	NI
72 Norwegian Sea (NO)	lower	0.031	0.013	6.202	0.435	10.1			2.730	0.018	0.3	3.6	0.426			0.80	0.92		
	upper	0.031	0.013	6.202	0.435	10.1			2.730	0.018	0.3	3.6	0.426			0.80	0.92		
	comment																		

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2000 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											0.002	0.001	226.5					
		upper											0.002	0.001	226.5					
		comment	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI				NI	NI	NI	NI	NI
73	Barents Sea (NO)	lower											0.002	0.001	226.5					
		upper											0.002	0.001	226.5					
		comment																		
160	Drammenselva	lower	0.000	0.000	0.000	0.000	0.001						0.089	0.021	0.14	0.000	0.001	0.000	0.000	
		upper	0.000	0.000	0.000	0.000	0.001						0.089	0.021	0.14	0.000	0.001	0.000	0.000	
		comment						NI	NI	NI	NI	NI								NI
159	Glomma	lower	0.002	0.002	4.853	0.056	0.575						0.204	0.029	0.80	0.000	0.002	0.271	0.600	
		upper	0.002	0.002	4.853	0.056	0.575						0.204	0.029	0.80	0.000	0.002	0.271	0.600	
		comment						NI	NI	NI	NI	NI								NI
170	Inner Oslofjord	lower																		
		upper																		
		comment			Summed with Glomma			NI	NI	NI	NI	NI		Summed with Glomma			Summed with Glomma			NI
161	Numedalslågen	lower	0.005	0.000	0.003	0.029	0.039						0.096	0.018	1.51	0.000	0.003	0.243	16.060	
		upper	0.005	0.000	0.003	0.029	0.039						0.096	0.018	1.51	0.000	0.003	0.243	16.060	
		comment						NI	NI	NI	NI	NI								NI
163	Otra	lower	0.000	0.000	0.904	0.028	0.112						0.004	0.002	0.19	0.270	0.007	0.961	0.000	
		upper	0.000	0.000	0.904	0.028	0.112						0.004	0.002	0.19	0.270	0.007	0.961	0.000	
		comment						NI	NI	NI	NI	NI								NI
162	Skienselva	lower	0.002	0.000	0.054	0.000	0.003						0.841	0.013	0.44	0.050	0.000	0.064	12.235	
		upper	0.002	0.000	0.054	0.000	0.003						0.841	0.013	0.44	0.050	0.000	0.064	12.235	
		comment						NI	NI	NI	NI	NI								NI
75	Skagerrak (NO)	lower	0.009	0.002	5.815	0.113	0.729						1.235	0.082	3.08	0.321	0.013	1.540	28.895	
		upper	0.009	0.002	5.815	0.113	0.729						1.235	0.082	3.08	0.321	0.013	1.540	28.895	
		comment																		

Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2000 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	0.001	0.000	0.115	0.001	0.633						0.054	0.005	2	0.001	0.008	7.240	47.150	
		upper	0.001	0.000	0.115	0.001	0.633						0.054	0.005	2	0.001	0.008	7.240	47.150	
		comment						NI	NI	NI	NI	NI								NI
165	Suldalslågen	lower	1.363	0.035	0.665	2.924	41.07						1.425	0.079	63.1	0.356	0.563	3.316	89.220	
		upper	1.363	0.035	0.665	2.924	41.07						1.425	0.079	63.1	0.356	0.563	3.316	89.220	
		comment						NI	NI	NI	NI	NI								NI
83	North Sea (NO)	lower	1.364	0.035	0.780	2.925	41.70						1.480	0.084	65	0.357	0.570	10.56	136.370	
		upper	1.364	0.035	0.780	2.925	41.70						1.480	0.084	65	0.357	0.570	10.56	136.370	
		comment																		
166	Orkla	lower	0.088	0.000	0.369	1.367	0.430						0.428	0.051	559.6	0.000	0.003	0.042	39.800	
		upper	0.088	0.000	0.369	1.367	0.430						0.428	0.051	559.6	0.000	0.003	0.042	39.800	
		comment						NI	NI	NI	NI	NI								NI
167	Vefsna	lower	0.054	0.000	4.609	3.433	4.998						0.586	0.035	592	0.573	0.163	0.849	0.450	
		upper	0.054	0.000	4.609	3.433	4.998						0.586	0.035	592	0.573	0.163	0.849	0.450	
		comment						NI	NI	NI	NI	NI								NI
72	Norwegian Sea (NO)	lower	0.142	0.000	4.978	4.800	5.427						1.014	0.086	1151	0.573	0.166	0.891	40.250	
		upper	0.142	0.000	4.978	4.800	5.427						1.014	0.086	1151	0.573	0.166	0.891	40.250	
		comment																		

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 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	0.03	0.0279	2.38	0.73	4.2	0.268		0.106	0.177	0.062	0.762	0.105	99.16	0.77	8.3826	5.66	14827	
		upper	0.03	0.0299	2.38	0.73	4.22	0.535		0.106	0.177	0.062	0.762	0.105	99.44	0.77	8.3861	5.66	14827	
		comment																		
73	Barents Sea (NO)	lower	0.03	0.0279	2.38	0.73	4.2	0.268		0.106	0.177	0.062	0.762	0.105	99.16	0.77	8.3826	5.66	14827	
		upper	0.03	0.0299	2.38	0.73	4.22	0.535		0.106	0.177	0.062	0.762	0.105	99.44	0.77	8.3861	5.66	14827	
		comment																		
160	Drammenselva	lower	0.29	0.0993	14.7	4	52.8	4.934		0.316	3.348	0.033	6.212	0.187	78.31	1.8	2.3276	8.39	50460	
		upper	0.29	0.1153	14.7	4.01	52.8	4.934		0.32	3.348	0.04	6.212	0.187	79.59	1.89	2.4106	8.39	50460	
		comment																		
159	Glomma	lower	0.54	0.1998	53.5	12.2	138	11.42		0.929	9.374	0.196	17.73	0.835	264.5	5.38	9.8127	28.7	153936	
		upper	0.6	0.2351	53.5	12.2	138	11.42		0.929	9.374	0.196	17.73	0.835	264.5	5.41	10.05	28.7	153936	
		comment																		
170	Inner Oslofjord	lower																		
		upper																		
		comment																		
161	Numedalslågen	lower	0.2	0.0777	8.88	8.1	50.6	5.206		0.144	1.488	0.027	2.805	0.256	104.7	1.83	2.6162	4.21	29242	
		upper	0.2	0.0786	8.88	8.1	50.6	5.258		0.144	1.488	0.027	2.805	0.256	104.9	1.84	2.6188	4.21	29242	
		comment																		
163	Otra	lower	0.16	0.0307	3.79	3.28	31.4	4.3		0.145	1.001	0.024	2.017	0.109	23.38	0.76	3.4512	5.24	19450	
		upper	0.17	0.0452	3.8	3.28	31.4	4.3		0.145	1.001	0.028	2.017	0.115	23.52	0.88	3.5632	5.24	19450	
		comment																		
162	Skienselva	lower	0.2	0.1082	9.54	2.2	57.2	7.02		0.154	2.37	0.03	4.027	0.084	42.23	1.5	1.962	3.45	33696	
		upper	0.2	0.1255	9.56	2.21	57.2	7.02		0.158	2.37	0.035	4.027	0.09	44.01	1.55	2.0141	3.45	33696	
		comment																		

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 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]
75 Skagerrak (NO)	lower	1.39	0.5157	90.4	29.8	330	32.88		1.689	17.58	0.31	32.79	1.471	513.1	11.3	20.17	50	286783	
	upper	1.46	0.5997	90.4	29.8	330	32.93		1.695	17.58	0.328	32.79	1.482	516.6	11.6	20.657	50	286783	
	comment																		
164 Orreelva	lower	0	0.0016	0.23	0.07	0.53	0.094		0.005	0.172	0.002	0.321	0.014	1.741	0.05	0.0519	0.21	964.44	
	upper	0	0.0016	0.23	0.07	0.53	0.094		0.005	0.172	0.002	0.321	0.014	1.741	0.05	0.0522	0.21	964.44	
	comment																		
165 Suldalslågen	lower	0.02	0.0128	0.33	0.06	2.77	0.967		0.008	0.274	0.003	0.399	0.007	1.244	0.08	0.0389	0.2	786.8	
	upper	0.02	0.0135	0.34	0.06	2.77	0.981		0.008	0.274	0.004	0.399	0.007	1.704	0.09	0.0585	0.2	1263.4	
	comment																		
83 North Sea (NO)	lower	0.02	0.0144	0.56	0.12	3.3	1.061		0.013	0.446	0.005	0.72	0.021	2.985	0.13	0.0907	0.42	1751.2	
	upper	0.02	0.0152	0.57	0.13	3.3	1.075		0.013	0.446	0.006	0.72	0.022	3.445	0.14	0.1107	0.42	2227.8	
	comment																		
166 Orkla	lower	0.11	0.0143	17.9	0.42	41.1	0.467		0.024	0.274	0.02	0.648	0.034	19.85	0.38	1.6782	3.33	7123	
	upper	0.11	0.0158	17.9	0.42	41.1	0.467		0.024	0.274	0.021	0.648	0.035	19.92	0.39	1.6804	3.33	7123	
	comment																		
167 Vefsna	lower	0.03	0.0386	2.22	0.47	6.78	0.457		0.063	0.273	0.012	0.657	0.023	15.93	0.59	1.0045	1.49	7690.9	
	upper	0.03	0.0413	2.23	0.48	6.92	0.865		0.067	0.273	0.015	0.657	0.031	24.64	0.6	1.0208	1.52	7690.9	
	comment																		
72 Norwegian Sea (NO)	lower	0.14	0.0529	20.1	0.89	47.9	0.924		0.087	0.547	0.032	1.305	0.057	35.78	0.97	2.6827	4.82	14814	
	upper	0.14	0.0571	20.2	0.91	48.1	1.332		0.091	0.547	0.036	1.305	0.066	44.56	0.99	2.7012	4.85	14814	
	comment																		

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 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	0.04	0.237	9.3	0.3	5			0.38	0.84	0.05	4.54	0.17	20.0	1.2	2.6	32.2	50310	
		upper	0.04	0.331	9.5	0.4	6			0.38	0.84	0.06	4.54	0.17	24.2	1.2	2.9	32.3	51419	
		runoff								0.09	1.01	0.02	1.68	0.09						
		comment																		
73	Barents Sea (NO)	lower	0.04	0.237	9.3	0.3	5			0.38	0.84	0.05	4.54	0.17	20.0	1.2	2.6	32.2	50310.1	
		upper	0.04	0.331	9.5	0.4	6			0.38	0.84	0.06	4.54	0.17	24.2	1.2	2.9	32.3	51419	
		runoff								0.09	1.01	0.02	1.68	0.09						
		comment																		
160	Drammenselva	lower	0.01	0.002	0.4	0.1	1			0.01	0.15	0.01	0.21	0.01	1.1	0.1	0.0	0.2	851	
		upper	0.01	0.002	0.4	0.1	1			0.01	0.15	0.01	0.21	0.01	1.1	0.1	0.0	0.2	851	
		runoff								0.01	0.11	0.00	0.16	0.00						
		comment																		
159	Glomma	lower	0.03	0.012	2.4	0.4	5			0.04	1.09	0.00	1.76	0.03	6.6	0.5	0.1	2.2	11989	
		upper	0.03	0.012	2.4	0.4	5			0.04	1.09	0.00	1.76	0.03	6.6	0.5	0.1	2.2	11989	
		runoff								0.06	0.64	0.01	0.98	0.04						
		comment																		
170	Suldalslågen	lower	0.03	0.005	2.0	0.5	6			0.05	0.78	0.01	1.03	0.02	2.8	0.3	0.3	1.1	4286	
		upper	0.03	0.006	2.0	0.5	6			0.05	0.78	0.01	1.03	0.02	2.8	0.3	0.3	1.1	4286	
		runoff								0.01	0.12	0.00	0.18	0.01						
		comment																		
161	Numedalslågen	lower	0.05	0.008	7.8	0.3	9			0.03	0.35	0.01	0.67	0.02	5.2	0.4	2.1	3.8	3809	
		upper	0.05	0.008	7.8	0.3	9			0.03	0.35	0.01	0.67	0.02	5.2	0.9	2.1	3.8	3809	
		runoff								0.05	0.52	0.01	0.77	0.02						
		comment																		
163	Otra	lower	0.75	0.115	13.6	9.5	115			0.33	3.73	0.09	8.38	0.17	20.9	4.5	0.0	8.2	81672	
		upper	0.75	0.158	13.6	9.5	115			0.34	3.73	0.09	8.38	0.17	20.9	4.5	0.5	8.2	81672	
		runoff								0.03	0.33	0.00	0.52	0.01						
		comment																		
162	Skienselva	lower	0.05	0.000	0.9	0.4	10			0.00	0.32	0.00	0.45	0.00	2.1	0.3	0.0	1.5	7630	
		upper	0.05	0.008	0.9	0.4	10			0.00	0.32	0.00	0.45	0.00	2.1	0.3	0.0	1.5	7630	
		runoff								0.02	0.27	0.00	0.43	0.01						
		comment																		

Table 6b. Tributary Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 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]
75 Skagerrak (NO)	lower	0.92	0.141	27.2	11.1	146			0.46	6.42	0.12	12.51	0.26	38.7	6.2	2.4	16.9	110237	
	upper	0.92	0.193	27.2	11.1	146			0.47	6.42	0.12	12.51	0.26	38.7	6.7	3.0	16.9	110237	
	runoff								0.16	1.79	0.02	2.78	0.07						
	comment																		
164 Orreelva	lower	0.18	0.069	3.7	2.2	30			0.22	2.68	0.04	4.48	0.13	5.0	1.7	1.5	6.6	14707	
	upper	0.18	0.082	3.7	2.2	30			0.22	2.68	0.04	4.48	0.13	8.6	1.7	1.6	6.6	14707	
	runoff								0.17	1.85	0.02	2.86	0.07						
	comment																		
165 Suldalslågen	lower	0.40	0.241	19.6	8.7	101			0.39	3.48	0.05	6.77	0.46	208.7	4.8	20.3	14.2	23950	
	upper	0.40	0.294	19.6	8.7	101			0.41	3.48	0.06	6.77	0.47	213.7	4.8	20.3	14.3	30059	
	runoff								0.35	4.04	0.03	6.51	0.13						
	comment																		
83 North Sea (NO)	lower	0.58	0.310	23.4	10.9	131			0.61	6.15	0.09	11.26	0.59	213.7	6.6	21.7	20.9	38657	
	upper	0.58	0.376	23.4	10.9	131			0.63	6.16	0.10	11.26	0.59	222.2	6.6	21.9	20.9	44766	
	runoff								0.52	5.84	0.05	9.28	0.20						
	comment																		
166 Orkla	lower	0.08	0.196	20.6	1.7	38			0.26	2.29	0.02	4.42	0.27	52.6	0.7	9.3	13.2	68440	
	runoff	0.08	0.262	20.6	1.7	38			0.29	2.29	0.04	4.42	0.27	53.2	1.0	9.3	13.2	69209	
	runoff								0.45	4.85	0.07	7.48	0.30						
	comment																		
167 Vefsna	lower	0.12	0.009	14.8	2.5	29			0.39	1.08	0.16	1.71	0.36	84.0	0.8	1.2	12.9	23459	
	upper	0.15	0.189	14.8	2.5	30			0.44	1.09	0.16	1.74	0.36	84.6	1.0	1.8	12.9	26659	
	runoff								0.16	1.80	0.03	2.85	0.12						
	comment																		
72 Norwegian Sea (NO)	lower	0.20	0.206	35.4	4.2	67			0.66	3.38	0.18	6.13	0.63	136.6	1.4	10.5	26.1	91899	
	upper	0.23	0.451	35.4	4.2	68			0.73	3.39	0.20	6.16	0.63	137.7	2.1	11.0	26.1	95869	
	runoff								0.61	6.65	0.10	10.33	0.42						
	comment																		

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2000 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	0.013	0.008	0.52	0.04	0.58	0.155		0.009	0.091	0.007	0.211	0.013	4.15	0.2055	0.5264	0.78	3049.09	
		upper	0.015	0.009	0.52	0.07	0.69	0.32		0.009	0.091	0.007	0.211	0.013	8.54	0.224	0.7188	0.78	3049.09	
		minimum	0.001	<0.005	0.3	0.01	0.04	<0.1		0.002	0.031	0.001	0.155	0.0048	0.4	<0.02	<0.01	0.02	2420	
		maximum	0.085	0.011	0.76	0.29	2.1	0.32		0.04	0.138	0.023	0.346	0.038	40.4	0.42	3.32	4.67	4800	
		more than 70% > D.L.	yes	yes	yes	no	yes	no		yes	yes	yes	yes	yes	no	yes	yes	yes	yes	
		n	11	11	11	11	11	4		10	11	11	11	11	11	11	11	11	11	
		info																		
		st.Dev.	0.025	0.002	0.13	0.08	0.67	0.11		0.0117	0.0313	0.0066	0.05332	0.00978	12	0.097	0.95	1.41	747.76	
73	Barents Sea (NO)	lower	0.013	0.008	0.52	0.04	0.58	0.155		0.009	0.091	0.007	0.211	0.013	4.15	0.2055	0.5264	0.78	3049.09	
		upper	0.015	0.009	0.52	0.07	0.69	0.32		0.009	0.091	0.007	0.211	0.013	8.54	0.224	0.7188	0.78	3049.09	
		minimum	0.001	<0.005	0.3	0.01	0.04	<0.1		0.002	0.031	0.001	0.155	0.0048	0.4	<0.02	<0.01	0.02	2420	
		maximum	0.085	0.011	0.76	0.29	2.1	0.32		0.04	0.138	0.023	0.346	0.038	40.4	0.42	3.32	4.67	4800	
		more than 70% > D.L.	yes	yes	yes	no	yes	no		yes	yes	yes	yes	yes	no	yes	yes	yes	yes	
		n	11	11	11	11	11	4		10	11	11	11	11	11	11	11	11	11	
		info																		
		st.Dev.	0.025	0.002	0.13	0.08	0.67	0.11		0.0117	0.0313	0.0066	0.05332	0.00978	12	0.097	0.95	1.41	747.76	
160	Drammenselva	lower	0.022	0.009	1	0.19	4.36	0.413		0.026	0.244	0.003	0.468	0.012	3.45	0.1405	0.1889	0.542	3359.47	
		upper	0.023	0.010	1	0.2	4.36	0.413		0.027	0.244	0.003	0.468	0.012	3.71	0.1607	0.2371	0.542	3359.47	
		minimum	<0.001	0.005	0.15	<0.01	1.59	0.32		<0.002	0.058	0.001	0.351	0.004	<0.5	<0.02	<0.01	0.27	2330	
		maximum	0.160	0.025	2.41	1.32	28	0.58		0.041	0.361	0.008	0.677	0.050	28.5	0.33	0.46	1.26	6400	
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
		n	19	19	19	19	19	3		18	19	19	19	18	19	19	19	19	19	
		info																		
		st.Dev.	0.035	0.005	0.44	0.28	5.90	0.14		0.011	0.065	0.002	0.085	0.011	6.36	0.085	0.14	0.23	920.78	
159	Glomma	lower	0.017	0.008	1.85	0.35	4.11	0.353		0.032	0.326	0.007	0.619	0.024	9.48	0.1594	0.2622	0.898	4675.56	
		upper	0.017	0.008	1.85	0.37	4.11	0.353		0.032	0.326	0.007	0.619	0.024	9.48	0.1676	0.4173	0.898	4675.56	
		minimum	0.004	0.005	0.2	<0.01	1.2	0.27		0.013	0.162	0.001	0.326	0.008	1.5	<0.02	<0.01	0.32	2690	
		maximum	0.041	0.011	3.6	1.48	8.8	0.47		0.085	0.661	0.019	1.310	0.114	64.9	0.29	1.1	2.47	7600	
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes	no	yes	yes	
		n	18	18	18	18	18	4		18	18	18	18	18	17	18	18	18	18	
		info	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes	no	yes	yes	
		st.Dev.	0.009	0.002	0.79	0.35	2.11	0.08		0.019	0.118	0.005	0.204	0.026	14.8	0.073	0.29	0.50	1589.91	
170	Inner Oslofjord	lower																		
		upper																		
		minimum																		
		maximum																		
		more than 70% > D.L.																		
		n																		
		info																		
		st.Dev.																		

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2000 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]
161	Numedalslågen	lower	0.021	0.012	0.97	0.58	5.47	0.545		0.027	0.235	0.005	0.443	0.023	9.11	0.2183	0.2992	0.503	4303.33	
		upper	0.021	0.013	0.97	0.63	5.47	0.693		0.027	0.235	0.005	0.443	0.023	9.75	0.2364	0.3255	0.503	4303.33	
		minimum	0.002	<0.005	0.22	<0.01	2.28	<0.1		0.014	0.077	<0.0018	0.080	0.005	1.4	<0.02	<0.01	0.18	2090	
		maximum	0.087	0.023	3.8	4.65	22.1	1.32		0.042	0.655	0.014	0.918	0.131	53.4	0.81	1.1	1.63	8600	
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes		yes	yes	yes	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.	0.022	0.005	0.97	1.29	5.47	0.54		0.008	0.153	0.004	0.252	0.035	14.7	0.205	0.28	0.40	1933.41	
163	Otra	lower	0.024	0.007	0.45	0.3	3.97	0.54		0.018	0.160	0.003	0.321	0.014	1.94	0.1217	0.245	0.635	2837.5	
		upper	0.024	0.008	0.48	0.3	3.97	0.54		0.018	0.160	0.004	0.321	0.019	2.07	0.124	0.3363	0.635	2837.5	
		minimum	0.017	0.005	<0.02	0.08	2.9	0.12		0.007	0.066	0.001	0.159	<0.0027	<0.5	<0.02	<0.01	0.36	1700	
		maximum	0.030	0.011	1.04	1.32	7.4	0.79		0.049	0.544	0.011	1.405	0.075	10.9	0.21	1.84	1.35	8000	
		more than 70% > D.L.	yes	no	yes	yes	yes	yes		yes	yes	no	yes	no	yes	yes	no	yes	yes	
		n	12	12	12	12	12	4		12	12	12	12	12	12	12	12	12	12	
		info																		
		st.Dev.	0.004	0.002	0.24	0.33	1.31	0.30		0.013	0.125	0.003	0.344	0.022	3	0.057	0.51	0.28	1716	
162	Skienselva	lower	0.014	0.010	0.63	0.11	4.38	0.588		0.013	0.184	0.003	0.318	0.007	2.18	0.1225	0.16	0.261	2460	
		upper	0.014	0.012	0.68	0.13	4.38	0.588		0.015	0.184	0.003	0.318	0.008	2.36	0.143	0.189	0.261	2460	
		minimum	0.002	<0.005	<0.02	<0.01	1.53	0.13		<0.002	0.099	0.001	0.244	<0.0027	<0.5	<0.02	<0.01	0.12	1800	
		maximum	0.022	0.024	1.8	0.51	19	0.99		0.029	0.216	0.005	0.529	0.016	9.3	0.23	0.52	0.4	3600	
		more than 70% > D.L.	yes	yes	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.	0.006	0.005	0.51	0.15	4.75	0.37		0.010	0.034	0.001	0.076	0.004	2.91	0.074	0.15	0.08	530.47	
75	Skagerrak (NO)	lower	0.019	0.009	0.98	0.31	4.46	0.488		0.023	0.230	0.004	0.434	0.016	5.23	0.1525	0.2311	0.568	3527.17	
		upper	0.020	0.010	1	0.33	4.46	0.517		0.024	0.230	0.004	0.434	0.017	5.48	0.1663	0.301	0.568	3527.17	
		minimum	<0.001	<0.005	<0.02	<0.01	1.2	<0.1		<0.002	0.058	0.001	0.080	<0.0027	<0.5	<0.02	<0.01	0.12	1700	
		maximum	0.160	0.025	3.8	4.65	28	1.32		0.085	0.661	0.019	1.405	0.131	64.9	0.81	1.84	2.47	8600	
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	yes	yes	yes	yes	yes	
		n	73	73	73	73	73	19		72	73	73	73	72	72	73	73	73	73	
		info																		
		st.Dev.	0.168	0.005	0.86	0.58	4.48	3.59		0.0717	0.1359	0.00363	0.24748	0.02105	10.3	1.15	0.24	0.44	1959.53	
164	Orreelva	lower	0.013	0.009	1.47	0.35	3.05	0.705		0.023	0.862	0.009	1.753	0.080	10.5	0.31	0.3517	1.346	6174.17	
		upper	0.013	0.010	1.47	0.39	3.05	0.705		0.023	0.862	0.009	1.753	0.080	10.5	0.31	0.4633	1.346	6174.17	
		minimum	0.007	<0.005	0.49	<0.01	1.4	0.27		0.002	0.007	0.002	0.174	0.006	3.9	0.06	<0.01	0.82	2700	
		maximum	0.029	0.033	2.28	1.45	5.82	1.34		0.074	2.130	0.025	3.350	0.190	23.8	0.6	0.85	1.74	8100	
		more than 70% > D.L.	yes	yes	yes	yes	yes	yes		yes	yes	yes	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.	0.006	0.008	0.47	0.42	1.43	0.45		0.020	0.740	0.008	1.135	0.051	5.81	0.149	0.26	0.30	1648.11	

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2000 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]
165 Suldalslågen	lower	0.011	0.008	0.19	0.03	1.69	0.465		0.005	0.191	0.002	0.254	0.005	0.88	0.05	0.0373	0.14	815.455	
	upper	0.012	0.009	0.22	0.04	1.69	0.587		0.005	0.191	0.003	0.254	0.005	1.55	0.0671	0.07	0.151	828.333	
	minimum	<0.001	0.005	0.01	<0.01	0.65	<0.1		0.002	0.123	0.001	0.143	0.002	0.3	<0.02	0.01	0.02	500	
	maximum	0.020	0.013	0.4	0.07	2.5	0.76		0.009	0.313	0.005	0.475	0.013	4.8	0.13	0.11	0.27	1160	
	more than 70% > D.L.	yes	yes	yes	no	yes	yes		yes	yes	no	yes	yes	no	no	no	yes	no	
	n	11	11	11	11	11	4		10	11	11	11	11	11	11	11	11	11	
	info																		
	st.Dev.	0.005	0.003	0.14	0.02	0.49	0.33		0.003	0.062	0.001	0.096	0.003	1.3	0.033	0.03	0.08	245.66	
83 North Sea (NO)	lower	0.012	0.009	0.83	0.19	2.37	0.585		0.014	0.526	0.006	1.004	0.042	5.67	0.18	0.1945	0.743	3494.81	
	upper	0.008	0.006	0.57	0.14	1.58	0.431		0.009	0.351	0.004	0.669	0.028	4	0.1257	0.1778	0.499	2334.17	
	minimum	<0.001	0.005	0.01	<0.01	0.65	<0.1		0.002	0.007	0.001	0.143	0.002	0.3	<0.02	<0.01	0.02	500	
	maximum	0.029	0.033	2.28	1.45	5.82	1.34		0.074	2.130	0.025	3.350	0.190	23.8	0.6	0.85	1.74	8100	
	more than 70% > D.L.	yes	yes	yes	yes	yes	yes		yes	yes	yes	yes	yes	no	yes	no	yes	yes	
	n	23	23	23	23	23	8		22	23	23	23	23	23	23	23	23	23	
	info																		
	st.Dev.	0.006	0.006	0.74	0.34	1.27	0.39		0.0176	0.6266	0.00661	1.11103	0.05289	6.45	0.17	0.24	0.65	2979.37	
166 Orkla	lower	0.045	0.007	6.89	0.09	18.7	0.23		0.016	0.157	0.004	0.316	0.007	2.9	0.1367	0.3632	0.996	2391.67	
	upper	0.045	0.007	6.89	0.13	18.7	0.23		0.016	0.157	0.005	0.316	0.009	3.12	0.161	0.4318	0.996	2391.67	
	minimum	0.013	<0.005	1.32	0.01	4.1	0.13		0.004	0.036	0.001	0.188	0.002	0.4	<0.01	0.008	0.41	1500	
	maximum	0.102	0.011	15	0.45	47.7	0.39		0.059	0.307	0.022	0.472	0.036	22.5	0.26	1.56	2.8	5150	
	more than 70% > D.L.	yes	yes	yes	no	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.	0.025	0.002	4.19	0.16	11.97	0.12		0.015	0.087	0.006	0.096	0.009	6.2	0.0909	0.42	0.64	1003	
167 Vefsna	lower	0.007	0.008	0.6	0.13	2.29	0.183		0.013	0.065	0.003	0.151	0.006	3.46	0.0974	0.2274	0.337	1692.11	
	upper	0.007	0.009	0.67	0.16	2.87	0.265		0.013	0.065	0.003	0.151	0.006	4.01	0.1065	0.2874	0.374	1692.11	
	minimum	0.001	<0.002	<0.02	<0.01	<0.1	<0.1		0.002	0.021	0.001	0.080	0.001	0.3	0.02	<0.01	<0.03	800	
	maximum	0.031	0.017	2.08	0.77	15.4	0.42		0.036	0.140	0.011	0.663	0.014	27	0.27	0.593	0.96	3330	
	more than 70% > D.L.	yes	yes	yes	yes	yes	no		yes	yes	no	yes	yes	yes	yes	yes	yes	yes	
	n	19	19	19	19	19	4		19	19	19	19	19	19	19	18	19	19	
	info																		
	st.Dev.	0.008	0.004	0.51	0.19	4.42	0.16		0.009	0.037	0.002	0.130	0.004	6.25	0.066	0.17	0.22	590.58	
72 Norwegian Sea (NO)	lower	0.026	0.008	3.75	0.11	10.5	0.206		0.014	0.111	0.003	0.234	0.006	3.18	0.117	0.2953	0.667	2041.89	
	upper	0.017	0.005	2.52	0.1	7.18	0.165		0.010	0.074	0.003	0.156	0.005	2.38	0.0892	0.2397	0.456	1361.26	
	minimum	0.001	<0.002	<0.02	<0.01	<0.1	<0.1		0.002	0.021	0.001	0.080	0.001	0.3	<0.01	0.008	<0.03	800	
	maximum	0.102	0.017	15	0.77	47.7	0.42		0.059	0.307	0.022	0.663	0.036	27	0.27	1.56	2.8	5150	
	more than 70% > D.L.	yes	yes	yes	no	yes	no		yes	yes	no	yes	yes	yes	yes	yes	yes	yes	
	n	31	31	31	31	31	8		31	31	31	31	31	31	31	30	31	31	
	info																		
	st.Dev.	0.025	0.003	4.04	0.18	11.40	0.13		0.0113	0.075	0.00403	0.14196	0.00631	6.13	0.08	0.30	0.53	835.552	

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2000 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	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0018	0.01	0.003	0.5	0.02	0.02	0.03	1000	
73	Barents Sea (NO)	Sewage																		
		Industrial																		
		Riverine																		
160	Drammenselva	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0018	0.01	0.003	0.5	0.02	0.02	0.03	1000	
159	Glomma	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0005	0.01	0.003	0.5	0.02	0.02	0.03	1000	
170	Inner Oslofjord	Sewage																		
		Industrial																		
		Riverine																		
161	Numedalslågen	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0018	0.01	0.003	0.5	0.02	0.01	0.03	1000	
163	Otra	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0018	0.01	0.003	0.5	0.02	0.02	0.03	1000	
162	Skienselva	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0018	0.01	0.003	0.5	0.02	0.01	0.03	1000	
75	Skagerrak (NO)	Sewage																		
		Industrial																		
		Riverine																		

Table 8. Detection Limits
Reported Maritime Area of the OSPAR Convention in 2000 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]
164	Orreelva	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0018	0.01	0.003	0.5	0.02	0.02	0.03	1000	
165	Suldalslågen	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0018	0.01	0.003	0.5	0.02	0.02	0.03	1000	
83	North Sea (NO)	Sewage																		
		Industrial																		
		Riverine																		
166	Orkla	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0018	0.01	0.003	0.5	0.02	0.02	0.03	1000	
167	Vefsna	Sewage																		
		Industrial																		
		Riverine	0.001	0.005	0.02	0.01	0.1	0.1		0.002	0.01	0.0018	0.01	0.003	0.5	0.02	0.02	0.03	1000	
72	Norwegian Sea (NO)	Sewage																		
		Industrial																		
		Riverine																		

S.P.M.	The detection limit has varied between	0.5	and	2	[mg/l]
TOC	The detection limit has varied between	500	and	1000	[µg/l]
NH4-N	The detection limit has varied between	0.002	and	0.005	[mg/l]
PO4-P	The detection limit has varied between	0.0005	and	0.0018	[mg/l]
Total P	The detection limit has varied between	0.001	and	0.0027	[mg/l]
Total Cr	The detection limit has varied between	0.01	and	0.2	[µg/l]

Table 9. Catchment-dependent information
Reported Maritime Area of the OSPAR Convention in 2000 by Norway

		Flow Rate [1000m³/d]	LTA [1000m³/d]	Minimum FR [1000m³/d]	Maximum FR [1000m³/d]	LTA info (years)	Number of sites	Mean or Median
168	Alta	9600	7487	2573	86073	1961-90	1	mean
73	Barents Sea (NO)							
160	Drammenselva	37565	26743	14510	110203	1961-90	1	mean
159	Glomma	85576	60324	24336	198048	1961-90	1	mean
170	Inner Oslofjord							
161	Numedalslågen	14428	10082	5035	69378	1961-90	1	mean
163	Otra	18543	12841	4348	58971	1961-90	1	mean
162	Skienselva	34847	22611	13140	95558	1961-90	1	mean
75	Skagerrak (NO)							
164	Orreelva	413	333	54	1263	1961-90	1	mean
165	Suldalslågen	4552	7422	1211	14662	1961-90	1	mean
83	North Sea (NO)							
166	Orkla	5773	5374	1564	45680	1961-90	1	mean
167	Vefsna	16476	15620	3198	89160	1961-90	1	mean
72	Norwegian Sea (NO)							

Table 10. Fish Farming Effluents

Reported Maritime Area of the OSPAR Convention in 2000 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								0.208		0.0247	0.6	0.137						
		upper								0.208		0.0247	0.6	0.137						
		comment																		
73	Barents Sea (NO)	lower								0.208		0.0247	0.6	0.137						
		upper								0.208		0.0247	0.6	0.137						
		comment																		
160	Drammenselva	lower								0.000		0	0.0	0.000						
		upper								0.000		0	0.0	0.000						
		comment																		
159	Glomma	lower								0.000		0	0.0	0.000						
		upper								0.000		0	0.0	0.000						
		comment																		
170	Inner Oslofjord	lower								0.000		0	0.0	0.000						
		upper								0.000		0	0.0	0.000						
		comment																		
161	Numedalslågen	lower								0.000		0	0.0	0.000						
		upper								0.000		0	0.0	0.000						
		comment																		
163	Otra	lower								0.023		0.0027	0.1	0.015						
		upper								0.023		0.0027	0.1	0.015						
		comment																		
162	Skienselva	lower								0.000		0	0.0	0.000						
		upper								0.000		0	0.0	0.000						
		comment																		
75	Skagerrak (NO)	lower								0.023		0.0027	0.1	0.015						
		upper								0.023		0.0027	0.1	0.015						
		comment																		
164	Orreelva	lower								0.544		0.0649	1.7	0.361						
		upper								0.544		0.0649	1.7	0.361						
		comment																		
165	Suldalslågen	lower								2.340		0.2777	7.3	1.543						
		upper								2.340		0.2777	7.3	1.543						
		comment																		
83	North Sea (NO)	lower								2.883		0.3	9.0	1.904						
		upper								2.883		0.3	9.0	1.904						
		comment																		
166	Orkla	lower								2.103		0.25	6.6	1.389						
		upper								2.103		0.25	6.6	1.389						
		comment																		
167	Vefsna	lower								1.649		0.1978	5.2	1.099						
		upper								1.649		0.1978	5.2	1.099						
		comment																		
72	Norwegian Sea (NO)	lower								3.752		0.4	11.7	2.488						
		upper								3.752		0.4	11.7	2.488						
		comment																		

Annex 8

PORTUGAL

Annual report on riverine inputs and direct discharges to Convention waters during the year 2000 by Portugal.	
Table 6a.	Main riverine inputs. Reported Maritime Area of the OSPAR Convention in 2000 by Portugal.
Table 7.	Contaminant Concentration. Reported Maritime Area of the OSPAR Convention in 2000 by Portugal.

Table 6a. Main Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 by Portugal

			1 Cd [t]	5 Hg [t]	6 Cu [t]	2 Pb [t]	7 Zn [t]	8 g-HCH [kg]	9 PCB [kg]	10 NH4-N [kt]	11 NO3-N [kt]	12 PO4-P [kt]	13 Total N [kt]	14 Total P [kt]	3 SPM [kt]
229	Douro	lower													
		upper													
		comment													
230	Minho	lower													
		upper													
		comment													
228	Tejo	lower	0.02	0.75	20.7	0.3	123			1.03	9.4	1.7	43.9	2.2	176
		upper	1.00	0.75	20.7	4.7	123			1.03	9.4	1.7	43.9	2.2	176
		comment		Average	Average		Average	NI	NI	Average	Average	Average	Average	Average	Average
93	**Bay of Biscay and Iberian Coast (PO)**	lower													
		upper													
		comment													

Table 7. Contaminant Concentration
Reported Maritime Area of the OSPAR Convention in 2000 by Portugal

			1 Cd [µg/l]	5 Hg [µg/l]	6 Cu [µg/l]	2 Pb [µg/l]	7 Zn [µg/l]	8 g-HCH [ng/l]	9 PCB [ng/l]	10 NH4-N [mg/l]	11 NO3-N [mg/l]	12 PO4-P [mg/l]	13 Total N [mg/l]	14 Total P [mg/l]	3 SPM [mg/l]
229	Douro	lower													
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													
230	Minho	lower													
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													
228	Tejo	lower													
		upper													
		minimum	<0,1	0.1	0.81	<0,4	0.1			0.03	0.58	0.09	3.76	0.18	3.5
		maximum	0.18	0.1	4.63	1.56	20.5			0.94	2.32	0.49	10.83	0.59	51.0
		more than 70% > D.L.													
		n	12	9	12	12	12			12	12	12	12	12	12
		info						NI	NI						
		st.Dev.													
93	**Bay of Biscay and Iberian Coast (PO)**	lower													
		upper													
		minimum													
		maximum													
		more than 70% > D.L.													
		n													
		info													
		st.Dev.													

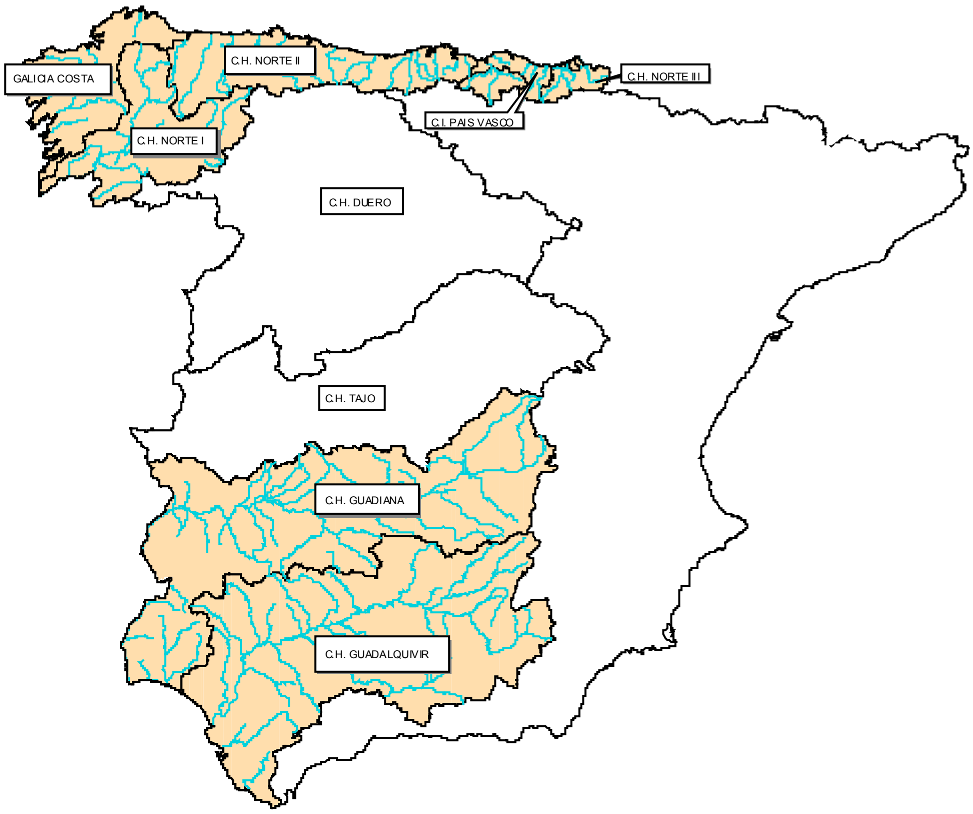
Annex 9

SPAIN

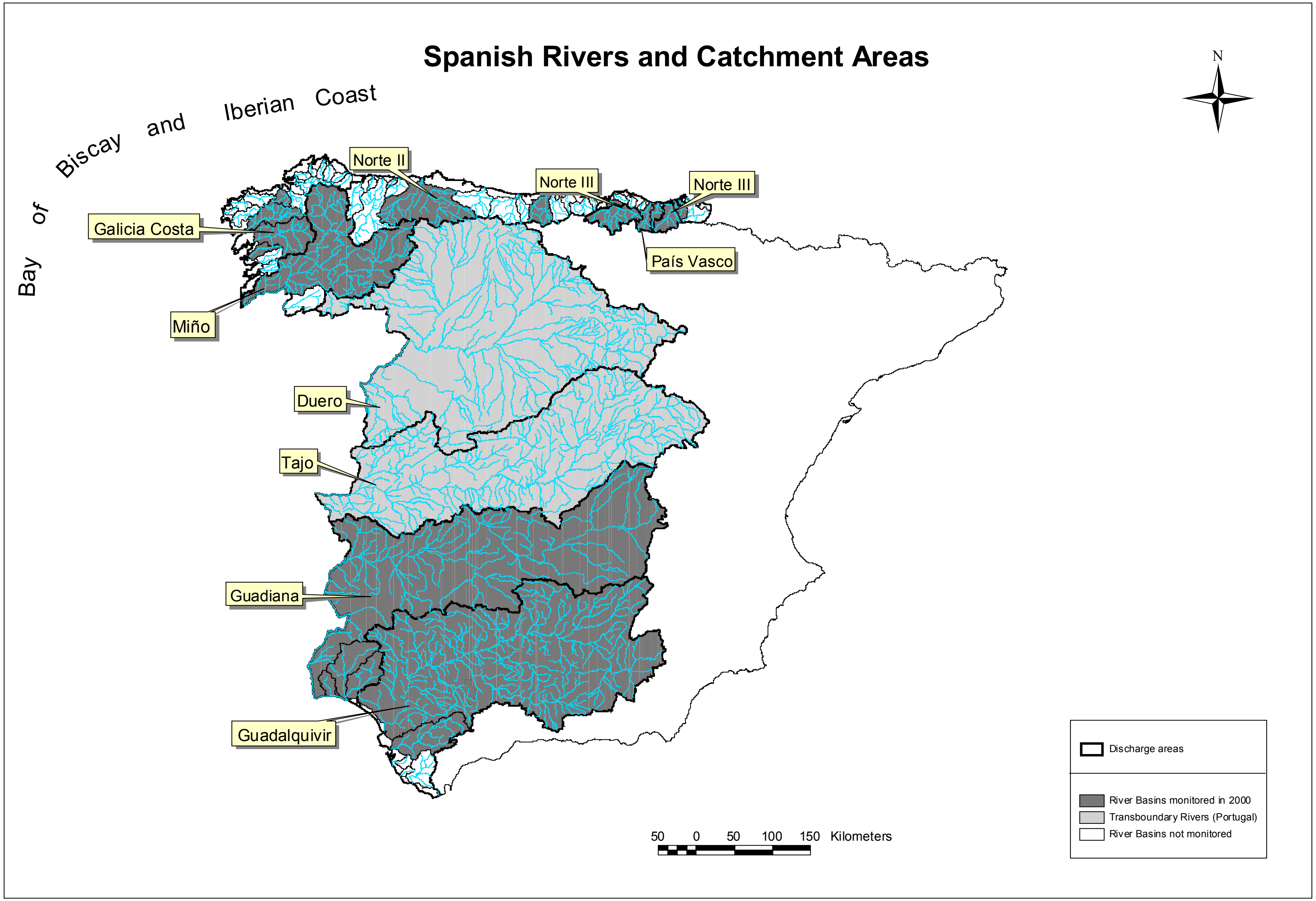
Annual report on riverine inputs and direct discharges to Convention waters during the year 2000 by Spain.

Table 4a	Total Direct discharges and Riverine inputs to the maritime area in 2000 by Spain.
Table 5a	Direct discharges to the maritime area in 2000 by Spain (sewage effluents)
Table 5b	Direct discharges to the maritime area in 2000 by Spain (industrial effluents)
Table 5c	Direct discharges to the maritime area in 2000 by Spain (total direct discharges)
Table 6a	Riverine inputs to the maritime area in 2000 by Spain (main riverine inputs)
Table 6b	Riverine inputs to the maritime area in 2000 by Spain (tributary riverine inputs)
Table 6c	Riverine inputs to the maritime area in 2000 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 2000



SPAIN FEBRUARY 2002


Spanish Rivers and Catchment Areas
N
Bay of Biscay and Iberian Coast
Norte II
Norte III
Norte III
Galicia Costa
País Vasco
Miño
Duero
Tajo
Guadiana
Guadalquivir
50 0 50 100 150 Kilometers
Discharge areas
River Basins monitored in 2000
Transboundary Rivers (Portugal)
River Basins not monitored

Annual report on riverine inputs and direct discharges by Spain to Convention waters during the year 2000

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

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

Contact Person: Mr Javier Ruza
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Fax: + 34 91 597 59 47
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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	optional: map reference number
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	
	Cadagua	estuary	011003	
	Galindo	estuary	011005	
	Asúa	estuary	011008	
Norte III	Nervión	coastal water	0110	
Norte II	Saja	coastal water	0115	
	Nalón	coastal water	0119	
Galicia Costa	Mero	coastal water	0134	
	Tambre	coastal water	0139	
	Ulla	coastal water	0140	
	Umia	coastal water	0141	
Norte I	Miño	coastal water	0144	
	Louro	Miño tributary	014428	
Guadiana	Guadiana	coastal water	0401	
	Piedras	coastal water	0402	
	Odiel	coastal water	0403	
	Tinto	coastal water	0404	
Guadalquivir	Guadalquivir	coastal water	0501	
	Guadaira	Guadalquivir tributary	050151	
	Guadiamar	Guadalquivir tributary	050140	
	Guadalete	coastal water	0502	

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

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

B. Total riverine inputs and direct discharges for the year 2000

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

C. Direct discharges for the year 2000

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 discharge areas Pais Vasco and Norte III, loads have been calculated by direct measurement.

For the discharge area Norte II, loads have been calculated using an estimated flow for each discharge, and the quality data expressed in the table of paragraph 6.3 of the principles. The results are the same as for year 1999.

For the discharge area Galicia Costa, loads have been calculated based on daily mean flow treated in each sewage treatment plant and the mean concentration of the parameters measured.

For the discharge areas Guadiana and Guadalquivir, the flow used is either the permitted or an estimation based on population (resident and seasonal). For the concentrations of SPM, total nitrogen and total phosphorus, the approach of the table of paragraph 6.3 of the principles has been used. The estimated concentration of ammonium is 1,09 mgN/l or 0,38 mgN/l depending on the treatment received. The estimated concentration of phosphate 2,48 mgP/l, 2,21 mgP/l or 0,48 mgP/l depending on the treatment received.

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):

For Guadiana and Guadalquivir PCBs have been measured

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 discharge areas Pais Vasco and Norte III, the annual load has been calculated depending on the productive process of each factory.

For the discharge areas Guadiana and Guadalquivir, the flow used is the expressed in each industrial discharge permit. For the concentrations data from self-monitoring is used, after verification with official inspections. The sampling frequency varies from 12 samples a year to 365.

For the rest of the discharge areas there is no data available.

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

No other relevant information

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.:

No urban run-off or stormwater overflows were sampled.

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):

For Guadiana and Guadalquivir PCBs have been measured

D. Riverine inputs for the year 2000

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 discharge area Galicia Costa, the method used for rivers Mero and Tambre is the one described in paragraph 5.11 of the principles. For the rivers Ulla and Umia, the load has been calculated as the product of the best estimation of the annual flow and the annual mean concentration.

The basic sampling frequency is12 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

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

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 discharge area Guadalquivir PCBs 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.

[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 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

There are new measurements for direct discharges from sewage and industrial effluents from the following discharge areas:

· *Galicia Costa*

· *Guadiana*

· *Guadalquivir*

New rivers are included in the following discharge areas

· *Norte II: Saja and Nalon*

· *Galicia Costa: Mero tambre, Ulla and Umia*

· *Guadiana: Piedras*

Table 4a. Total Direct discharges and Riverine inputs to the maritime area in 2000 by Spain.

Total inputs		Quantities --->	(lower estimate, upper estimate)												
Discharge area		Flow rate (1000 m3/d)	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
PAÍS VASCO	lower	3590.758	0.01602	0.01712	12.15557	1.87228	130.34667	NI	NI	4.43089	6.10054	0.73203	8.58782	1.76	76.29935
	upper		1.10702	1.10812	12.19657	2.73328	130.45567	NI	NI	4.43689	6.11054	0.77103	8.58782	1.80	76.55235
NORTE III	lower	1104.696	0	0.02162	0.14665	1.29984	9.56679	2.19347	NI	0.34954	0.49176	0.06806	1.30429	0.14	24.91728
	upper		0.1008	0.20161	2.03408	1.59328	9.56679	2.19347	NI	0.34954	0.49176	0.06806	1.30429	0.14	24.91728
NORTE II	lower	8142.696	41.153	0	7.14346	5.00731	62.41038	2.36907	NI	0.30904	2.35721	0.12252	3.80201	1.20673	9.75335
	upper		41.89602	1.48604	18.12521	9.46619	62.41038	4.31116	NI	0.32216	2.35721	0.12804	3.80501	1.20673	9.85024
GALICIA COSTA	lower	10488.267	2.904	41.308	4.419	9.187	9.0617	NI	NI	0.0099	15.5965	NI	NI	0.02	48.8918
	upper		2.904	41.3117	4.4393	9.187	9.0617	NI	NI	0.046	15.5965	NI	285.792	17.51	57.9843
NORTE I (Miño)	lower	26322.264	0	0	0	0.02064	55.13838	13.03667	NI	0.37651	5.76299	0.04305	6.63824	1.06	7.35843
	upper		2.40191	4.80382	48.03814	19.21713	55.13838	19.46005	NI	0.68732	5.76357	0.16769	6.63824	1.06	7.38216
GUADIANA	lower	2983.836	0.300	0.014	3.500	1.340	13.212	2.160	0.526	1.469	0.567	0.123	1.710	0.492	57.464
	upper		0.368	0.082	4.178	1.475	13.232	5.452	0.526	1.473	0.567	0.123	1.710	0.493	57.464
GUADALQUIVIR	lower	4416.214	1.092	0.145	4.052	3.855	57.728	0.750	5.201	5.279	2.132	1.149	13.783	1.892	93.109
	upper		1.699	1.626	18.560	10.797	68.330	2.231	6.441	5.291	2.138	1.149	14.230	1.893	93.121
Total	**lower**	**57048.731**	**45.465**	**41.505**	**31.417**	**22.582**	**337.464**	**20.509**	**5.727**	**12.224**	**33.008**	**2.238**	**35.825**	**6.568**	**317.793**
	upper		**50.477**	**50.619**	**107.571**	**54.469**	**348.195**	**33.648**	**6.441**	**12.606**	**33.025**	**2.407**	**322.067**	**23.605**	**327.271**

Table 5a. Direct discharges to the maritime area in 2000 by Spain.

Sewage discharges			Quantities --->		(lower estimate, upper estimate)										
Discharge area	Number of sites (#)	Flow rate (1000 m3/d)	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
PAÍS VASCO & NORTE III	Estuary	290.162	NI	NI	NI	NI	NI	NI	NI	2.4887	NI	0.36948	4.34679	1.08	13.6135
	Coastal area	190.994	0.01602	0.01712	2.10647	1.45628	7.64537	NI	NI	0.64276	0.01251	0.01155	1.47903	0.18	40.9003
NORTE II	Estuary	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Coastal area	41.153	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.795	0.197	5.335
GALICIA COSTA	Estuary	108.940	1.247	13.691	1.933	2.559	2.409	NI	NI	NI	NI	NI	NI	NI	3.173
	Coastal area	151.327	1.657	27.617	2.486	6.628	6.628	NI	NI	NI	NI	NI	285.792	17.47	12.096
NORTE I (Miño)	Estuary														
	Coastal area														
GUADIANA	Estuary	67.391	0.077	0.003	0.190	0.646	0.840	0.430	0.267	0.859	0.023	0.039	1.053	0.232	5.039
	Coastal area	19.666	0.023	0.001	0.055	0.189	0.245	0.125	0.078	0.251	0.007	0.011	0.307	0.068	1.471
GUADALQUIVIR	Estuary	249.274	0.270	0.140	1.360	2.270	2.570	0.560	1.385	2.110	0.018	0.730	3.620	0.960	11.200
	Coastal area	102.460	0.095	0.005	0.190	0.940	0.565	0.190	0.190	1.500	0.045	0.080	1.770	0.470	8.180
Total	**Estuary**	**715.767**	**1.594**	**13.834**	**3.483**	**5.475**	**5.819**	**0.990**	**1.652**	**5.458**	**0.041**	**1.138**	**9.020**	**2.272**	**33.026**
	Coastal area	**505.600**	**1.791**	**27.640**	**4.838**	**9.213**	**15.083**	**0.315**	**0.268**	**2.394**	**0.064**	**0.103**	**290.143**	**18.385**	**67.982**
Overall total:		**1221.367**	**3.385**	**41.474**	**8.320**	**14.688**	**20.902**	**1.305**	**1.920**	**7.851**	**0.106**	**1.241**	**299.163**	**20.657**	**101.008**

Table 5b. Direct discharges to the maritime area in 2000 by Spain.

Industrial discharges		Quantities --->			(lower estimate, upper estimate)										
Discharge area	Number of sites (#)	Flow rate (1000 m3/d)	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
PAÍS VASCO & NORTE III	Estuary	120.769	NI	NI	0.0001	NI	0.5203	NI	NI	0.31243	0.02703	NI	NI	0.01	0.88655
	Coastal area	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
NORTE II	Estuary														
	Coastal area														
GALICIA COSTA	Estuary														
	Coastal area														
NORTE I (Miño)	Estuary														
	Coastal area														
GUADIANA	Estuary	1,037.882	0.200	0.010	3.255	0.505	2.510	1.305	0.181	0.340	0.030	0.030	0.350	0.150	2.270
	Coastal area	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
GUADALQUIVIR	Estuary	6.203	NI	NI	NI	NI	NI	NI	NI	0.040	0.050	NI	NI	0.010	0.070
	Coastal area	0.277	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.01
Total	**Estuary**	**1164.854**	**0.200**	**0.010**	**3.255**	**0.505**	**3.030**	**1.305**	**0.181**	**0.692**	**0.107**	**0.030**	**0.350**	**0.172**	**3.227**
	Coastal area	**0.277**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**	**NI**
Overall total:		**1165.131**	**0.200**	**0.010**	**3.255**	**0.505**	**3.030**	**1.305**	**0.181**	**0.692**	**0.107**	**0.030**	**0.350**	**0.172**	**3.227**

Table 5c. Direct discharges to the maritime area in 2000 by Spain.

Total direct discharges		Quantities ---> (lower estimate, upper estimate)													
Discharge area	Number of sites (#)	Flow rate (1000 m3/d)	Cd $[10^3$ kg]	Hg $[10^3$ kg]	Cu $[10^3$ kg]	Pb $[10^3$ kg]	Zn $[10^3$ kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N $[10^6$ kg]	NO3-N $[10^6$ kg]	PO4-P $[10^6$ kg]	Total N $[10^6$ kg]	Total P $[10^6$ kg]	SPM(2) $[10^6$ kg]
PAÍS VASCO & NORTE III	Estuary	410.9306	NI	NI	0.0001	NI	0.5203	NI	NI	2.80113	0.02703	0.36948	4.34679	1.0923	14.50005
	Coastal area	190.9935	0.01602	0.01712	2.10647	1.45628	7.64537	NI	NI	0.64276	0.01251	0.01155	1.47903	0.17996	40.9003
NORTE II	Estuary	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI
	Coastal area	41.153	NI	NI	NI	NI	NI	NI	NI	NI	NI	NI	0.795	0.197	5.335
GALICIA COSTA	Estuary	108.94	1.247	13.691	1.933	2.559	2.409	NI	NI	NI	NI	NI	NI	NI	3.173
	Coastal area	151.327	1.657	27.617	2.486	6.628	6.628	NI	NI	NI	NI	NI	285.792	17.47	12.096
NORTE I (Miño)	Estuary														
	Coastal area														
GUADIANA	Estuary	1105.273	0.277	0.013	3.445	1.151	3.350	1.735	0.448	1.199	0.053	0.069	1.403	0.382	7.309
	Coastal area	19.666	0.023	0.001	0.055	0.189	0.245	0.125	0.078	0.251	0.007	0.011	0.307	0.068	1.471
GUADALQUIVIR	Estuary	255.477	0.270	0.140	1.360	2.270	2.570	0.560	1.385	2.150	0.068	0.730	3.620	0.970	11.270
	Coastal area	102.737	0.095	0.005	0.190	0.940	0.565	0.190	0.190	1.500	0.045	0.080	1.770	0.470	8.190
Total	**Estuary**	**1880.621**	**1.794**	**13.844**	**6.738**	**5.980**	**8.849**	**2.295**	**1.833**	**6.150**	**0.148**	**1.168**	**9.370**	**2.445**	**36.252**
	Coastal area	**505.877**	**1.791**	**27.640**	**4.838**	**9.213**	**15.083**	**0.315**	**0.268**	**2.394**	**0.064**	**0.103**	**290.143**	**18.385**	**67.992**
Overall total:		**2386.498**	**3.585**	**41.484**	**11.576**	**15.193**	**23.933**	**2.610**	**2.101**	**8.544**	**0.213**	**1.271**	**299.513**	**20.829**	**104.244**

Table 6a. Riverine inputs to the maritime area in 2000 by Spain

Main riverine inputs			Quantities --->	(lower estimate (aa)/upper estimate (bb))											
Discharge area (or name of river)	Flow rate [1000 m³/d] 2000	 LTA	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Oyarzun	165.888		0 0.061	0 0.061	0.434 0.434	0.014 0.067	11.724 11.724	NI NI	NI NI	0.026 0.026	0.307 0.307	0.005 0.008	0.095 0.095	0.015 0.018	0.306 0.336
Urumea	632.707		0 0.231	0 0.231	1.865 1.865	0 0.231	22.69 22.69	NI NI	NI NI	0.092 0.092	0.57 0.573	0.013 0.03	0.244 0.244	0.028 0.04	2.194 2.309
Oria	740.275		0 0.27	0 0.27	2.469 2.469	0 0.27	24.453 24.453	NI NI	NI NI	0.164 0.166	1.651 1.654	0.073 0.077	0.638 0.638	0.087 0.094	2.79 2.857
Urola	446.602		0 0.163	0 0.163	0.839 0.88	0.031 0.173	6.969 7.05	NI NI	NI NI	0.031 0.033	0.981 0.981	0.018 0.026	0.276 0.276	0.034 0.042	3.733 3.774
Deva	694.483		0 0.253	0 0.253	3.657 3.657	0.279 0.374	47.529 47.529	NI NI	NI NI	0.635 0.635	1.773 1.776	0.233 0.233	1.267 1.267	0.302 0.302	10.545 10.545
PAÍS VASCO	**SUBTOTAL**		**0 0.978**	**0 0.978**	**9.264 9.305**	**0.324 1.115**	**113.365 113.446**	**NI NI**	**NI NI**	**0.948 0.952**	**5.282 5.291**	**0.342 0.374**	**2.52 2.52**	**0.466 0.496**	**19.568 19.821**
Nervión	1,104.696	1,104.696	0 0.1008	0.02162 0.20161	0.14665 2.03408	1.29984 1.59328	9.56679 9.56679	2.19347 2.19347	NI NI	0.34954 0.34954	0.49176 0.49176	0.06806 0.06806	1.30429 1.30429	0.13799 0.13799	24.91728 24.91728
NORTE III	**SUBTOTAL**		**0 0.1008**	**0.02162 0.20161**	**0.14665 2.03408**	**1.29984 1.59328**	**9.56679 9.56679**	**2.19347 2.19347**	**NI NI**	**0.34954 0.34954**	**0.49176 0.49176**	**0.06806 0.06806**	**1.30429 1.30429**	**0.13799 0.13799**	**24.91728 24.91728**
Saja	1,166.184	1,166.184	0 0.10641	0 0.21283	0.08013 2.14771	4.15144 4.15144	45.08818 45.08818	0.45719 0.70482	NI NI	0.09471 0.09471	0.32116 0.32116	0.0179 0.01867	0.64615 0.64615	0.0661 0.0661	4.04405 4.04405
Nalón	6,976.512	6,976.512	0 0.63661	0 1.27321	7.06333 15.9775	0.85587 5.31475	17.3222 17.3222	1.91188 3.60634	NI NI	0.21433 0.22745	2.03605 2.03605	0.10462 0.10937	3.15586 3.15886	0.34563 0.34563	5.5123 5.60919
NORTE II	**SUBTOTAL**		**0 0.74302**	**0 1.48604**	**7.14346 18.12521**	**5.00731 9.46619**	**62.41038 62.41038**	**2.36907 4.31116**	**NI NI**	**0.30904 0.32216**	**2.35721 2.35721**	**0.12252 0.12804**	**3.80201 3.80501**	**0.41173 0.41173**	**9.55635 9.65324**
Mero	572.000	572.000	NI NI	0 0.0002	NI NI	NI NI	0.001 0.001	NI NI	NI NI	0.0002 0.0022	0.595 0.595	NI NI	NI NI	0 0.0042	5.0783 5.0783
Tambre	3,309.000	3,309.000	NI NI	0 0.0012	NI NI	NI NI	0.006 0.006	NI NI	NI NI	0.0097 0.0207	5.345 5.345	NI NI	NI NI	0 0.021	27.3526 27.3526
Ulla	5,573.000	5,573.000	NI NI	0 0.002	0 0.0203	NI NI	0.0163 0.0163	NI NI	NI NI	0 0.0203	8.9502 8.9502	NI NI	NI NI	NI NI	12.2049 12.3744
Umia	774.000	774.000	NI NI	0 0.0003	NI NI	NI NI	0.0014 0.0014	NI NI	NI NI	0 0.0028	0.7063 0.7063	NI NI	NI NI	0.017 0.017	1.083 1.083
GALICIA COSTA	**SUBTOTAL**		**NI NI**	**0 0.0037**	**0 0.0203**	**NI NI**	**0.0247 0.0247**	**NI NI**	**NI NI**	**0.0099 0.046**	**15.5965 15.5965**	**NI NI**	**NI NI**	**0.017 0.0422**	**45.7188 45.8883**
Miño	25,715.592	25,715.592	0 2.34655	0 4.6931	0 46.93096	0 18.77238	51.09923 51.09923	9.58582 15.964	NI NI	0.2638 0.57461	5.40052 5.40052	0.03192 0.15656	6.16293 6.16293	0.98689 0.98689	4.0019 4.02563
NORTE I	**SUBTOTAL**		**0 2.34655**	**0 4.6931**	**0 46.93096**	**0 18.77238**	**51.09923 51.09923**	**9.58582 15.964**	**NI NI**	**0.2638 0.57461**	**5.40052 5.40052**	**0.03192 0.15656**	**6.16293 6.16293**	**0.98689 0.98689**	**4.0019 4.02563**
Guadiana	1,798.07		0 0.066	0 0.066	0 0.656	0 0.131	9.253 9.253	0.3 3.481	NI NI	0.019 0.023	0.505 0.505	0.04301 0.04301	NI NI	0.04242 0.04242	48.205 48.205
Piedras	60.825		0 0.002	0 0.002	0 0.022	0 0.004	0.364 0.384	0 0.111	NI NI	0 0	0.002 0.002	0.00018 0.00018	NI NI	0 0.00089	0.479 0.479
GUADIANA	**SUBTOTAL**		**0 0.068**	**0 0.068**	**0 0.678**	**0 0.135**	**9.617 9.637**	**0.3 3.592**	**NI NI**	**0.019 0.023**	**0.507 0.507**	**0.04319 0.04319**	**NI NI**	**0.04242 0.04331**	**48.684 48.684**
Guadalquivir	3,423.000	19,808.000	0.41600 0.93700	0 1.24900	0 12.49400	0 5.99700	10.41200 20.82400	0 1.24900	0.62500 1.66600	0.25600 0.26700	1.87000 1.87500	0.09990 0.10019	2.91100 3.34900	0.14889 0.14889	51.22600 51.22600
Guadalete	413.000	1,515.000	0.13800 0.18800	0 0.15100	1.88400 3.14000	0.47700 1.08000	10.55200 10.67800	0 0.15100	0.40200 0.52800	0.56200 0.56300	0.14100 0.14200	0.09174 0.09179	3.20900 3.21700	0.11607 0.11620	16.49400 16.50600
GUADALQUIVIR	**SUBTOTAL**		**0.55400 1.125**	**0 1.4**	**1.884 15.634**	**0.477 7.077**	**20.964 31.502**	**0 1.4**	**1.027 2.194**	**0.818 0.83**	**2.011 2.017**	**0.19164 0.19198**	**6.12 6.566**	**0.26496 0.26509**	**67.72 67.732**
TOTAL	**53,565.835**	**66,513.984**	**0.55400 5.36137**	**0.02162 8.83045**	**18.43811 92.72755**	**7.10815 38.15885**	**267.0471 277.6861**	**14.44836 27.46063**	**1.027 2.194**	**2.71728 3.09731**	**31.64599 31.66099**	**0.79933 0.96183**	**19.90923 20.35823**	**2.32699 2.38321**	**220.16633 220.72145**

Table 6b. Riverine inputs to the maritime area in 2000 by Spain

Tributary riverine inputs			Quantities ---> (lower estimate (aa)/upper estimate (bb))												
Discharge area (or name of river)	Flow rate [1000 m³/d] 2000	LTA	Cd [10 3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Asón	2.246	2.246	0 0.001	0 0.001	0.008 0.008	0.001 0.001	0.065 0.065	NI NI	NI NI	0 0	0.006 0.006	0 0	0.002 0.002	0 0	0.057 0.057
Cadagua	305.510	305.510	0 0.112	0 0.112	0.774 0.774	0.091 0.16	8.712 8.74	NI NI	NI NI	0.039 0.041	0.771 0.772	0.009 0.016	0.239 0.239	0.026 0.03	1.271 1.271
Galindo	1.123	1.123	0 0	0 0	0.003 0.003	0 0.001	0.039 0.039	NI NI	NI NI	0 0	0.002 0.002	0 0	0.001 0.001	0 0	0.003 0.003
PAÍS VASCO	**SUBTOTAL**		**0 0.113**	**0 0.113**	**0.785 0.785**	**0.092 0.162**	**8.816 8.844**	**NI NI**	**NI NI**	**0.039 0.041**	**0.779 0.78**	**0.009 0.016**	**0.242 0.242**	**0.026 0.03**	**1.331 1.331**
NORTE III	**SUBTOTAL**														
NORTE II	**SUBTOTAL**														
GALICIA COSTA	**SUBTOTAL**														
Louro	606.672	606.672	0 0.05536	0 0.11072	0 1.10718	0.02064 0.44475	4.03915 4.03915	3.45085 3.49605	NI NI	0.11271 0.11271	0.36247 0.36305	0.01113 0.01113	0.47531 0.47531	0.07026 0.07026	3.35653 3.35653
NORTE I	**SUBTOTAL**		**0 0.05536**	**0 0.11072**	**0 1.10718**	**0.02064 0.44475**	**4.03915 4.03915**	**3.45085 3.49605**	**NI NI**	**0.11271 0.11271**	**0.36247 0.36305**	**0.01113 0.01113**	**0.47531 0.47531**	**0.07026 0.07026**	**3.35653 3.35653**
GUADIANA	**SUBTOTAL**														
Guadaira	208.000	1,515.000	0.11400 0.14900	0 0.07600	0 0.75800	0.10100 0.43500	7.90000 7.96400	0 0.07600	2.59800 2.66700	0.81000 0.81000	0.00700 0.00700	0.14731 0.14731	2.26900 2.26900	0.18721 0.18721	5.77000 5.77000
Guadiamar	14.000	611.000	0.05900 0.06000	0 0.00500	0.61800 0.61800	0.06700 0.07500	25.72900 25.72900	0 0.00500	0.00100 0.00500	0.00100 0.00100	0.00100 0.00100	0.00012 0.00012	0.00400 0.00500	0.00027 0.00028	0.15900 0.15900
GUADALQUIVIR	**SUBTOTAL**		**0.173 0.209**	**0 0.081**	**0.618 1.376**	**0.168 0.51**	**33.629 33.693**	**0 0.081**	**2.599 2.672**	**0.811 0.811**	**0.008 0.008**	**0.14743 0.14743**	**2.273 2.274**	**0.18748 0.18749**	**5.929 5.929**
TOTAL	**1,137.551**	**3,041.551**	**0.173 0.37736**	**0 0.30472**	**1.403 3.26818**	**0.28064 1.11675**	**46.48415 46.57615**	**3.45085 3.57705**	**2.599 2.672**	**0.96271 0.96471**	**1.14947 1.15105**	**0.16756 0.17456**	**2.99031 2.99131**	**0.28374 0.28775**	**10.61653 10.61653**

Table 6c. Riverine inputs to the maritime area in 2000 by Spain

Total riverine inputs			Quantities ---> (lower estimate (aa)/upper estimate (bb))												
Discharge area (or name of river)	Flow rate [1000 m³/d] 2000	LTA	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
PAÍS VASCO	SUBTOTAL		0	0	10.049	0.416	122.181	NI	NI	0.987	6.061	0.351	2.762	0.492	20.899
			1.091	1.091	10.09	1.277	122.29	NI	NI	0.993	6.071	0.39	2.762	0.526	21.152
NORTE III	SUBTOTAL		0	0.02162	0.14665	1.29984	9.56679	2.19347	NI	0.34954	0.49176	0.06806	1.30429	0.13799	24.91728
			0.1008	0.20161	2.03408	1.59328	9.56679	2.19347	NI	0.34954	0.49176	0.06806	1.30429	0.13799	24.91728
NORTE II	SUBTOTAL		0	0	7.14346	5.00731	62.41038	2.36907	NI	0.30904	2.35721	0.12252	3.80201	0.41173	9.55635
			0.74302	1.48604	18.12521	9.46619	62.41038	4.31116	NI	0.32216	2.35721	0.12804	3.80501	0.41173	9.65324
GALICIA COSTA	SUBTOTAL		NI	0	0	NI	0.0247	NI	NI	0.0099	15.5965	NI	NI	0.017	45.7188
			NI	0.0037	0.0203	NI	0.0247	NI	NI	0.046	15.5965	NI	NI	0.0422	45.8883
NORTE I	SUBTOTAL		0	0	0	0.02064	55.13838	13.03667	NI	0.37651	5.76299	0.04305	6.63824	1.05715	7.35843
			2.40191	4.80382	48.03814	19.21713	55.13838	19.46005	NI	0.68732	5.76357	0.16769	6.63824	1.05715	7.38216
GUADIANA	SUBTOTAL		0	0	0	0	9.617	0.3	NI	0.019	0.507	0.04319	NI	0.04242	48.684
			0.068	0.068	0.678	0.135	9.637	3.592	NI	0.023	0.507	0.04319	NI	0.04331	48.684
GUADALQUIVIR	SUBTOTAL		0.727	0	2.502	0.645	54.593	0	3.626	1.629	2.019	0.33907	8.393	0.45244	73.649
			1.334	1.481	17.01	7.587	65.195	1.481	4.866	1.641	2.025	0.33941	8.84	0.45258	73.661
TOTAL	**54,177**	**59,018.66**	**0.727**	**0.02162**	**19.84111**	**7.38879**	**313.53125**	**17.89921**	**3.626**	**3.67999**	**32.79546**	**0.96689**	**22.89954**	**2.61073**	**230.78286**
			5.73873	**9.13517**	**95.99573**	**39.2756**	**324.26225**	**31.03768**	**4.866**	**4.06202**	**32.81204**	**1.13639**	**23.34954**	**2.67096**	**231.33798**

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

Main river	Contaminant concentrations -->															
Discharge area	Flow rate [1000 m³/d] annual	LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
OYARZUN (País Vasco)	165.888															
Lower estimate			Mean	0	0	7.175	0.238	193.625	NI	NI	0.428	5.063	0.076	1.574	0.241	5.05
Upper estimate			Mean	1	1	7.175	1.113	193.625	NI	NI	0.428	5.063	0.139	1.574	0.304	5.55
Minimum				1	1	3.6	1	100	NI	NI	0.08	1.6	0.1	0.97	0.1	1
Maximum				1	1	10	1.9	340	NI	NI	0.85	8.36	0.3	2.31	1.6	32.6
> 70 % > d.l. ?			*yes/no*	no	no	yes	no	yes	NI	NI	yes	yes	no	yes	no	no
n				*8*	*8*	*8*	*8*	*8*	NI	NI	8	*8*	*8*	*8*	*8*	*8*
URUMEA (País Vasco)	632.707															
Lower estimate			Mean	0	0	8.075	0	98.25	NI	NI	0.398	2.47	0.056	1.055	0.123	9.5
Upper estimate			Mean	1	1	8.075	1	98.25	NI	NI	0.398	2.483	0.131	1.055	0.173	10
Minimum				1	1	3	1	40	NI	NI	0.09	0.1	0.1	0.55	0.1	1
Maximum				1	1	16	1	141	NI	NI	0.78	3.69	0.26	1.34	0.36	31.2
> 70 % > d.l. ?			*yes/no*	no	no	yes	no	yes	NI	NI	yes	yes	no	yes	no	no
n				*8*	*8*	*8*	*8*	*8*	NI	NI	8	*8*	*8*	*8*	*8*	*8*
ORIA (País Vasco)	740.275															
Lower estimate			Mean	0	0	9.138	0	90.5	NI	NI	0.609	6.11	0.271	2.363	0.324	10.325
Upper estimate			Mean	1	1	9.138	1	90.5	NI	NI	0.615	6.123	0.284	2.363	0.349	10.575
Minimum				1	1	4.6	1	30	NI	NI	0.05	0.1	0.1	0.54	0.1	1
Maximum				1	1	22	1	138	NI	NI	1.15	12.76	0.47	4.15	0.73	27
> 70 % > d.l. ?			*yes/no*	no	no	yes	no	yes	NI	NI	yes	yes	yes	yes	yes	yes
n				*8*	*8*	*8*	*8*	*8*	NI	NI	8	*8*	*8*	*8*	*8*	*8*
UROLA (País Vasco)	446.602															
Lower estimate			Mean	0	0	5.15	0.188	42.75	NI	NI	0.19	6.018	0.113	1.693	0.209	22.9
Upper estimate			Mean	1	1	5.4	1.063	43.25	NI	NI	0.203	6.018	0.163	1.693	0.259	23.15
Minimum				1	1	2	1	2	NI	NI	0.05	3.1	0.1	1.25	0.1	1
Maximum				1	1	10	1.5	107	NI	NI	0.49	10.44	0.52	2.65	0.74	163
> 70 % > d.l. ?			*yes/no*	no	no	yes	no	yes	NI	NI	yes	yes	no	yes	no	no
n				*8*	*8*	*8*	*8*	*8*	NI	NI	8	*8*	*8*	*8*	*8*	*8*
DEVA (País Vasco)	694.483															
Lower estimate			Mean	0	0	14.425	1.1	187.5	NI	NI	2.506	6.994	0.92	5	1.193	41.6
Upper estimate			Mean	1	1	14.425	1.475	187.5	NI	NI	2.506	7.006	0.92	5	1.193	41.6
Minimum				1	1	8	1	100	NI	NI	0.75	0.1	0.2	1.24	0.36	2.6
Maximum				1	1	20.8	2.3	303	NI	NI	5.38	16.1	1.56	10.46	2.19	177
> 70 % > d.l. ?			*yes/no*	no	no	yes	no	yes	NI	NI	yes	yes	yes	yes	yes	yes
n				*8*	*8*	*8*	*8*	*8*	NI	NI	8	*8*	*8*	*8*	*8*	*8*
NERVION (Norte III)	1104.696	1104.696														
Lower estimate			Mean	0	0.08	0.48	2.84	17.03	5.35	NI	1.9	1.06	0.31	4.33	0.49	25.75
Upper estimate			Mean	0.25	0.5	5.06	4.01	17.03	5.35	NI	1.9	1.06	0.31	4.33	0.49	25.75
Minimum				0.25	0.5	5	2	4.8	2.5	NI	0.16	0.13	0.03	1.8	0.07	3
Maximum				0.25	0.5	5.7	21	44	12	NI	5.9	2.1	0.77	8.3	0.94	136
> 70 % > d.l. ?			*yes/no*	no	no	no	no	yes	yes	NI	yes	yes	yes	yes	yes	yes
n				*12*	*12*	*12*	*12*	*12*	*12*	NI	*12*	*12*	*12*	*12*	*12*	*12*
SAJA (Norte II)	1166.184	1166.184														
Lower estimate			Mean	0	0	0.55	11.87	133.33	1.78	NI	0.43	0.75	0.07	1.78	0.23	9.58
Upper estimate			Mean	0.25	0.5	5.13	11.87	133.3	2.2	NI	0.43	0.75	0.07	1.78	0.23	9.58
Minimum				0.25	0.5	5	4.3	39	1	NI	0.05	0.48	0.02	0.9	0.05	3
Maximum				0.25	0.5	6.6	22	362	6.3	NI	2.4	1	0.28	4.9	0.7	27
> 70 % > d.l. ?			*yes/no*	no	no	no	yes	yes	no	NI	yes	yes	yes	yes	yes	yes
n				*12*	*12*	*12*	*12*	*12*	*12*	NI	*12*	*12*	*12*	*12*	*12*	*12*

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

Main river	Contaminant concentrations -->															
Discharge area	Flow rate [1000 m^3/d] annual	LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
NALÓN (Norte II)	6976.512	6976.512														
Lower estimate			Mean	0	0	1.33	0.23	8.57	1.14	NI	0.08	0.75	0.07	1.31	0.19	17.08
Upper estimate			Mean	0.25	0.5	5.5	2.06	8.57	1.64	NI	0.09	0.75	0.07	1.31	0.19	17.75
Minimum				0.25	0.5	5	2	5	1	NI	0.04	0.52	0.02	0.66	0.05	2
Maximum				0.25	0.5	9.8	2.7	9.8	4.1	NI	0.26	1	0.19	3.4	0.72	121
> 70 % > d.l. ?			*yes/no*	no	no	no	no	no	no	NI	yes	yes	yes	yes	yes	no
n				*12*	*12*	*12*	*12*	*12*	*12*	NI	*12*	*12*	*12*	*12*	*12*	*12*
MERO (Galicia Costa)	572															
Lower estimate			Mean	NI	0	NI	NI	5	NI	NI	0.004	5.7	NI	NI	0	14.08
Upper estimate			Mean	NI	1	NI	NI	10	NI	NI	0.013	5.7	NI	NI	0.02	14.08
Minimum				NI	1	NI	NI	5	NI	NI	0.01	5.7	NI	NI	0.02	2
Maximum				NI	1	NI	NI	5	NI	NI	0.05	5.7	NI	NI	0.02	70
> 70 % > d.l. ?			*yes/no*	NI	no	NI	NI	yes	NI	NI	no	yes	NI	NI	no	yes
n				NI	*1*	NI	NI	*1*	NI	NI	12	*1*	NI	NI	*1*	*12*
TAMBRE (Galicia Costa)	3,309															
Lower estimate			Mean	NI	0	NI	NI	5	NI	NI	0.008	5.1	NI	NI	0	11.67
Upper estimate			Mean	NI	1	NI	NI	5	NI	NI	0.017	5.1	NI	NI	0.02	11.75
Minimum				NI	1	NI	NI	5	NI	NI	0.01	5.1	NI	NI	0.02	1
Maximum				NI	1	NI	NI	5	NI	NI	0.09	5.1	NI	NI	0.02	56
> 70 % > d.l. ?			*yes/no*	NI	no	NI	NI	yes	NI	NI	no	yes	NI	NI	no	yes
n				NI	*1*	NI	NI	*1*	NI	NI	12	*1*	NI	NI	*1*	*12*
ULLA (Galicia Costa)	5,573															
Lower estimate			Mean	NI	0	0	NI	8	NI	NI	0	4.4	NI	NI	NI	6
Upper estimate			Mean	NI	1	10	NI	8	NI	NI	0.01	4.4	NI	NI	NI	6.08
Minimum				NI	1	10	NI	8	NI	NI	0.01	2.5	NI	NI	NI	1
Maximum				NI	1	10	NI	8	NI	NI	0.01	4.4	NI	NI	NI	18
> 70 % > d.l. ?			*yes/no*	NI	no	no	NI	yes	NI	NI	no	yes	NI	NI	NI	yes
n				NI	*1*	*1*	NI	*1*	NI	NI	12	*1*	NI	NI	NI	*12*
UMIA (Galicia Costa)	774															
Lower estimate			Mean	NI	0	NI	NI	5	NI	NI	0	2.5	NI	NI	0.06	3.83
Upper estimate			Mean	NI	1	NI	NI	5	NI	NI	0.01	2.5	NI	NI	0.06	3.83
Minimum				NI	1	NI	NI	5	NI	NI	0	2.4	NI	NI	0.06	3.83
Maximum				NI	1	NI	NI	5	NI	NI	0.01	2.5	NI	NI	0.06	3.83
> 70 % > d.l. ?			*yes/no*	NI	no	NI	NI	yes	NI	NI	no	yes	NI	NI	yes	yes
n				NI	*1*	NI	NI	*1*	NI	NI	12	*1*	NI	NI	*1*	*12*
MIÑO (Norte I)	25715.592	25715.592														
Lower estimate			Mean	0	0	0	0	8.27	3.63	NI	0.05	0.68	0.01	1.44	0.08	3.83
Upper estimate			Mean	0.25	0.5	5	2	8.27	4.29	NI	0.07	0.68	0.02	1.44	0.08	4.33
Minimum				0.25	0.5	5	2	3.2	1	NI	0.04	0.43	0.02	0.77	0.02	2
Maximum				0.25	0.5	5	2	15	38	NI	0.27	1.5	0.02	4.5	0.19	15
> 70 % > d.l. ?			*yes/no*	no	no	no	no	yes	no	NI	no	yes	no	no	yes	yes
n				*12*	*12*	*12*	*12*	*12*	*12*	NI	*12*	*12*	*12*	*7*	*12*	*12*
GUADIANA (Guadiana)	1,798.07															
Lower estimate			Mean	0	0	0	0	12.72	1.49	NI	0.03	0.883	0.083	NI	0.065	83.08
Upper estimate			Mean	0.1	0.1	1	0.2	12.72	1.49	NI	0.0336	0.083	0.083	NI	0.065	83.08
Minimum				0.1	0.1	1	0.2	10	14.9	NI	0.02	0.006	0.006	NI	0.06	23
Maximum				0.1	0.1	1	0.2	20	14.9	NI	0.08	0.303	0.303	NI	0.07	166
> 70 % > d.l. ?			*yes/no*	no	no	no	no	yes	no	NI	yes	yes	yes	no	yes	yes
n				*12*	*2*	*11*	*12*	*11*	*10*	NI	11	*12*	*12*	*0*	*2*	*12*

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

Main river	Contaminant concentrations -->															
Discharge area	Flow rate [1000 m³/d] annual	LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
PIEDRAS (Guadiana)	60.825															
Lower estimate			Mean	0	0	0	0	11.66	ND	NI	0.0283	0.121	0.00375	NI	0	11.16
Upper estimate			Mean	0.1	0.1	1	0.2	13.33	ND	NI	0.0316	0.121	0.0045	NI	40	11.16
Minimum				0.1	0.1	1	0.2	10	ND	NI	0.02	0.03	0.003	NI	40	4
Maximum				0.1	0.1	1	0.2	20	ND	NI	0.09	0.23	0.01	NI	40	26
> 70 % > d.l. ?			yes/no	no	no	no	no	yes	no	NI	yes	yes	no	no	no	yes
n				12	2	12	12	12	12	NI	12	12	12	0	2	12
ODIEL (Guadiana)	1193.96															
Lower estimate			Mean	50.7	0	7125.5	65.5	20866	ND	NI	0.846	0.644	0.0076	NI	0	7.3
Upper estimate			Mean	50.7	0.1	7125.5	65.5	20866	ND	NI	0.846	0.644	0.0088	NI	0.04	7.3
Minimum				31	0.1	4690	31	9190	ND	NI	0.29	0.11	0.003	NI	0.04	3
Maximum				73	0.1	9300	104	33060	ND	NI	1.92	2.89	0.026	NI	0.04	12
> 70 % > d.l. ?			yes/no	yes	no	yes	yes	yes	no	NI	yes	yes	no	no	no	yes
n				10	2	9	10	9	8	NI	6	10	10	0	2	10
TINTO (Guadiana)	177.466															
Lower estimate			Mean	224.4	0.05	64170	103.75	147429	19.16	NI	1.073	1.212	0.427	NI	1.42	32.5
Upper estimate			Mean	224.4	0.1	64170	103.75	147429	19.16	NI	1.073	1.212	0.427	NI	1.42	32.5
Minimum				29	0.1	9000	32	13670	13.4	NI	0.05	0.11	0.02	NI	0.55	5
Maximum				531	0.1	296300	220	443410	53	NI	4.4	3.95	1.383	NI	2.29	102
> 70 % > d.l. ?			yes/no	yes	no	yes	yes	yes	no	NI	yes	yes	yes	no	yes	yes
n				12	2	11	12	11	10	NI	8	10	11	0	2	12
GUADALQUIVIR (Guadalquivir)	3423	19808														
			mean	0.3333	0	0	0	8.3333	0	0.2727	0.2047	1.4969	0.08	2.3303	0.1192	41
Minimum				0	0	0	0	0	0	0	0	0	0	0	0.06	10
Maximum				2	0	0	0	70	0	3	0.624	4.807	0.1683	9.773	0.23	128.7
> 70 % > d.l. ?			yes/no	no	no	no	no	no	no	no	yes	yes	yes	yes	yes	yes
n				12	12	12	12	12	12	12	12	12	12	12	12	12
GUADALETE (Guadalquivir)	413	1515														
			mean	0.9167	0	12.5	3.1667	70	0	2.6667	3.73	0.94	0.61	21.29	0.77	109.42
Minimum				0	0	0	0	0	0	0	0	0	0	0	0	0
Maximum				4	0	120	23	120	0	16	14.34	5.61	1.5	51.6	1.85	936
> 70 % > d.l. ?			yes/no	no	no	no	no	si	no	no	yes	yes	yes	yes	yes	yes
n				12	12	12	12	12	12	12	12	12	12	12	12	12

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

Tributary river				Contaminant concentrations -->												
Discharge area	Flow rate [1000 m³/d] annual	LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
ASON (País Vasco)	2.246															
Lower estimate			Mean	0	0	9.938	0.625	79.25	NI	NI	0.544	7.576	0.136	2.415	0.271	70.1
Upper estimate			Mean	1	1	9.938	1.375	79.25	NI	NI	0.55	7.576	0.174	2.415	0.296	70.1
Minimum				1	1	5	1	30	NI	NI	0.05	3.79	0.1	1.15	0.1	2.2
Maximum				1	1	20	2.6	137	NI	NI	1.21	12.28	0.38	3.83	0.76	284.2
> 70 % > d.l. ?			*yes/no*	no	no	yes	no	yes			yes	yes	no	yes	no	yes
n				*8*	*8*	*8*	*8*	*8*			*8*	*8*	*8*	*8*	*8*	*8*
CADAGUA (País Vasco)	305.51															
Lower estimate			Mean	0	0	6.938	0.813	78.125	NI	NI	0.354	6.914	0.083	2.144	0.233	11.4
Upper estimate			Mean	1	1	6.938	1.438	78.325	NI	NI	0.366	6.926	0.145	2.206	0.27	11.4
Minimum				1	1	4.2	1	2	NI	NI	0.05	0.1	0.1	0.5	0.1	5.2
Maximum				1	1	11	3.6	151	NI	NI	1.05	14.24	0.3	4.42	1.11	20.8
> 70 % > d.l. ?			*yes/no*	no	no	yes	no	yes			yes	yes	no	yes	no	yes
n				*8*	*8*	*8*	*8*	*8*			*8*	*8*	*8*	*8*	*8*	*8*
GALINDO (País Vasco)	1.123															
Lower estimate			Mean	0	0	7.7	0.563	94.375	NI	NI	0.473	4.64	0.09	1.721	0.185	8.15
Upper estimate			Mean	1	1	7.7	1.313	94.375	NI	NI	0.473	4.64	0.153	1.721	0.223	8.275
Minimum				1	1	5	1	50	NI	NI	0.16	1.91	0.1	0.72	0.1	1
Maximum				1	1	11	3.4	140	NI	NI	0.81	10.02	0.31	2.58	0.59	25.6
> 70 % > d.l. ?			*yes/no*	no	no	yes	no	yes			yes	yes	no	yes	no	yes
n				*8*	*8*	*8*	*8*	*8*			*8*	*8*	*8*	*8*	*8*	*8*
LOURO (Norte I)	606.672	606.672														
Lower estimate			Mean	0	0	0	0.18	17.57	21.06	NI	2.28	1.02	0.15	5.88	0.36	34.08
Upper estimate			Mean	0.25	0.5	5	2.02	17.57	21.31	NI	2.28	1.04	0.15	5.88	0.36	34.08
Minimum				0.25	0.5	5	2	2.7	1	NI	0.06	0.1	0.01	1.8	0.04	3
Maximum				0.25	0.5	5	2.2	74	167	NI	16	2.1	0.7	25	1	172
> 70 % > d.l. ?			*yes/no*	no	no	no	no	yes	yes	NI	yes	yes	yes	yes	yes	yes
n				*12*	*12*	*12*	*12*	*0.02*	*12*	NI	*12*	*12*	*12*	*9*	*12*	*12*
GUADAIRA (Guadalquivir)	208	1515														
			mean	1.5	0	0	1.3333	104.17	0	34.25	10.677	0.0917	1.9423	29.917	2.4683	76.083
Minimum				0	0	0	0	0	0	0	0	0	1.089	13.5	1.23	35
Maximum				18	0	0	16	220	0	411	36.64	1	2.8446	81.9	2.93	159
> 70 % > d.l. ?			*yes/no*	no	no	yes	no	yes	no	no	yes	no	yes	yes	yes	yes
n				*12*	*12*	*12*	*12*	*12*	*12*	12	*12*	*12*	*12*	*12*	*12*	*12*
GUADIAMAR (Guadalquivir)	14	611														
			mean	11.667	0	121.67	13.25	5067.5	0	0	0.2813	0.2128	0.0231	0.7544	0.0533	31.363
Minimum				0	0	40	0	870	0	0	0	0	0	0	0	6.25
Maximum				54	0	300	28	18650	0	0	2.344	1.449	0.0693	2.399	0.08	90
> 70 % > d.l. ?			*yes/no*	yes	no	yes	yes	yes	no	no	yes	yes	yes	yes	yes	yes
n				*12*	*12*	*12*	*12*	*12*	*12*	12	*12*	*12*	*12*	*9*	*12*	*12*

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

#			Detection limits for contaminant concentrations -->												
Sampling point	Type (3)		Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
País Vasco	S		10	200	10	100	10	NI	NI	0.01	2	0.02	0.5	0.1	NI
País Vasco	I		10	200	10	100	10	NI	NI	0.01	2	0.02	0.5	0.1	NI
País Vasco	R		1	1	2	1	2	NI	NI	0.05	0.1	0.1	0.2	0.1	1
Nervión (Norte III)	R	Main	0.25	0.5	5	2	0.1	1	NI	0.039	0.1	0.016	0.2	0.016	2
Nalón (Norte II)	R	Main	0.25	0.5	5	2	0.1	1	NI	0.039	0.1	0.016	0.2	0.016	2
Saja (Norte II)	R	Main	0.25	0.5	5	2	0.1	1	NI	0.039	0.1	0.016	0.2	0.016	2
Tambre (Galicia Costa)	R	Main	NI	1	10	NI	5	NI	NI	0.01	2.5	NI	NI	0.02	1
Mero (Galicia Costa)	R	Main	NI	1	10	NI	5	NI	NI	0.01	2.5	NI	NI	0.02	1
Umia (Galicia Costa)	R	Main	NI	1	10	NI	5	NI	NI	0.01	2.5	NI	NI	0.02	1
Ulla (Galicia Costa)	R	Main	NI	1	10	NI	5	NI	NI	0.01	2.5	NI	NI	0.02	1
Miño (Norte I)	R	Main	0.25	0.5	5	2	0.1	1	NI	0.039	0.1	0.016	0.2	0.016	2
Louro (Norte I)	R	Tributary	0.25	0.5	5	2	0.1	1	NI	0.039	0.1	0.016	0.2	0.016	2
Guadiana.Sanlucar del Guadiana (Guadiana)	R	Main	0.1	0.1	1	0.2	10	5	NI	0.02	0.02	0.003	0.08	0.04	1
Guadiana.Río Piedras (Guadiana)	R	Tributary	0.1	0.1	1	0.2	10	5	NI	0.02	0.02	0.003	0.08	0.04	1
Guadiana. Río Odiel (Guadiana)	R	Tributary	0.1	0.1	1	0.2	10	5	NI	0.02	0.02	0.003	0.08	0.04	1
Guadiana. Río Tinto (Guadiana)	R	Tributary	0.1	0.1	1	0.2	10	5	NI	0.02	0.02	0.003	0.08	0.04	1
Guadalquivir.Alcalá del Río (Guadalquivir)	R	Main	0.5	1	10	4.8	10	1	1	0.016	0.007	0.002	0.7	0.01	1
Guadalquivir.El Guijo (Guadalquivir)	R	Tributary	0.5	1	10	4.8	10	1	1	0.016	0.007	0.002	0.7	0.01	1
Guadalquivir.Pte. El Copero (Guadalquivir)	R	Tributary	0.5	1	10	4.8	10	1	1	0.016	0.007	0.002	0.7	0.01	1
Guadalete.El Portal (Guadalquivir)	R	Main	0.5	1	10	4.8	10	1	1	0.016	0.007	0.002	0.7	0.01	1

Annex 10

SWEDEN

Annual report on riverine inputs and direct discharges to Convention waters during the year 2000 by Sweden

Table 5a	Sewage Effluents. Reported Maritime Area of the OSPAR Convention in 2000 by Sweden
Table 5b	Industrial effluents. Reported Maritime Area of the OSPAR Convention in 2000 by Sweden
Table 5c	Direct discharges to the maritime area in 2000 by Sweden
Table 6a	Main riverine inputs. Reported Maritime Area of the OSPAR Convention in 2000 by Sweden
Table 6b	Tributary riverine inputs. Reported Maritime Area of the OSPAR Convention in 2000 by Sweden
Table 6c	Riverine inputs to the maritime area in 2000 by Sweden
Table 7a	Contaminant concentrations.
Table 8	Detection limits.

Comments to the annual report on Direct and riverine inputs 2000 to OSPAR Convention waters from Sweden

Discharge Area I: Kattegat

Nature of the receiving water
Mostly open coastal water. In the northern part of the area there are some fiords and some archipelago. In the southern part of the area there are two larger bays.

Drainage area, km^2	71 600
Drainage area of rivers, km^2	67 681
Drainage area with measured runoff, km^2	64 417
Drainage area with calculated runoff, km^2	3 264
Coastal zones, km^2	3 919

The drainage area consists of:

urban area	1,8 %
forested area	45,2 %
agricultural area	11,6 %
wetlands (mires)	7,3 %
lake surface	14,2 %
other	19,9 %

Discharge area II: Skagerrak

Nature of the receiving water:
Mostly archipelago with some deep fiords in-between.

Drainage area, km^2	5 300
Drainage area of rivers, km^2	2 333
Drainage area with measured runoff, km^2	2 244
Drainage area with calculated runoff, km^2	89
Coastal zones, km^2	2 967

The drainage area consists of:

urban area	5,6 %
forested area	36,5 %
agricultural area	14,1 %
wetlands (mires)	2,9 %
lake surface	3,4 %
other	37,5 %

DIRECT DISCHARGES
Methods of measurement and calculation used:

Municipal sewage water

The municipal sewage treatment plants in Sweden have different levels of sampling procedures depending on their sizes, as shown in the following table:

Table 1.

Size of treatment plant (pe)	**Parameter**	**Frequency of analyses**
201 - 2 000	Tot-P, Tot-N	8 dp/year
201 - 2 000	BOD_7 and COD_{Cr}	8 and 4 dp/year
2 001- 10 000	Tot-P, Tot-N	2 dp/month
2 001- 10 000	BOD_7, COD_{Cr}	2 dp/month
10 001- 20 000	Tot-P	2 dp/month
10 001- 20 000	NH_4-N, Tot-N	2 dp/month
10 001- 20 000	BOD_7, COD_{Cr}	2 dp/month
> 20 000	Tot-P	1 wp/week
> 20 000	NH_4-N, Tot-N	1 dp/week
> 20 000	BOD_7	1 dp/week
> 20 000	COD_{Cr}	2 wp/month
> 20 000	Hg, Cd, Pb, Cu, Zn, Cr and Ni	1 wp/month

dp = daily, continuous sampling proportional to the flow during 24 hrs.
wp = weekly, continuous sampling proportional to the flow

The calculation of the pollution load from the larger cities (>20 000 pe) is based upon at least 25 samples/year. The water flow through the treatment plants is measured continously. The pollution load is calculated as the product of annual flow and flow weighted concentration. Thus the reported pollution load from the municipal treatment plants is considered to be a fairly correct assumption of the true discharges.

The overflows of the larger municipalities are usually included in the figures given above.

The chemical analyses were performed in accordance to Nordic standard.

Tot-N and tot-P:	Potassium peroxodisulphate digestion, autoanalyzer.
Zn and Cu:	Graphite oven AAS.
Pb, Cd and Hg:	Graphite oven AAS.

Industrial effluents

Methods of measurement and calculation used, including information on the concentration upon which the measurement is based:

pulp- and paper:	Tot P and tot-N, once a week. Metals, once a month.
refinery :	Metals, sampling four times a year for 5 days/week.
chemical plants:	P and N, random samples weekly.

The analyses were performed in accordance to Swedish and Nordic standards and have been described above.

RIVERINE INPUTS

MAIN RIVERS AND SOME MINOR RIVERS

Methods of measurement and calculation used:

Monthly sampling for water chemistry analysis. Daily measurement of flow. Transport was calculated as daily Q x linear interpolation of concentrations.

N and P analysis as described above.
Cu and Zn graphite oven AAS.
Cd and Pb freeze drying (concentrating), graphite oven AAS.

Instead of tributary rivers the discharges from minor rivers and the coastal areas between the rivers are presented.

MINOR RIVERS NOT MEASURED AND COASTAL AREAS

Methods of measurement and estimation used:

The estimations are based upon the monitoring results of the "neighbourhood" rivers. Weighted coefficients has been calculated for the different minor rivers and coastal areas reported.

Table 5a. Direct discharges to the maritime area in 2000 by Sweden

Sewage effluents			Quantities --->												
Discharge area	Number of sites (#)	Flow rate [1000 m3/d]	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Kattegat	15	473210	0.02	0.02	2.0	0.3	3.7	NI	NI	0.5	0.3	0.03	1.7	0.08	NI
Skagerrak	19	62170	0.003	0.00	0.2	0.05	0.5	NI	NI	0.1	0.1	0.003	0.3	0.01	NI
Total:	34	535380	0.02	0.02	2.2	0.4	4.2	NI	NI	0.6	0.4	0.03	2.0	0.1	NI

Table 5b. Direct discharges to the maritime area in 2000 by Sweden

Industrial effluents			Quantities --->												
Discharge area	Number of sites (#)	Flow rate [1000 m^3/d]	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Kattegat	1	99	0.02	0.001	0.38	0.071	1.94	NI	NI	NI	NI	NI	0.10	0.02	NI
Kattegat	3	5	0.005	0.001	0.02	0.007	0.1	NI	NI	NI	NI	NI	0.02	0.004	NI
Skagerrak	5	18	0.0003	0.00095	0.005	0.067	0.10	NI	NI	NI	NI	NI	0.1	0.0015	NI
Total:	9	122	0.03	0.002	0.4	0.15	2.1	NI	NI	NI	NI	NI	0.2	0.02	NI

Table 5c. Direct discharges to the maritime area in 2000 by Sweden

Total direct discharges			Quantities ---> (lower estimate (aa)/upper estimate (bb)); alternatively: (estimate (aa), precision in % (bb))												
Discharge area	Number of sites (#)	Flow rate [1000 m^3/d]	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Kattegat	19	611	0.05	0.02	2.0	0.4	3.5	NI	NI	1.3	0.7	0.02	2.4	0.1	NI
Skagerrak	24	67	0.0011	0.01	0.1	0.01	0.5	NI	NI	0.2	0.1	0.007	0.5	0.03	NI
Overall total:	43	679	0.05	0.03	2.1	0.4	4.0	NI	NI	1.5	0.8	0.03	2.8	0.1	NI

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

Table 6a. Riverine inputs to the maritime area in 2000 by Sweden

Main riverine inputs			Quantities ---> (lower estimate (aa)/upper estimate (bb)); alternatively: (estimate (aa), precision in % (bb))												
Discharge area Kattegat, Skagerrak	Flow rate [1000 m³/d] 2000	LTA 1961-90	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Rönne å	1987	2030	0.03	0.002	1.5	0.4	6.1	NI	NI	0.03	0.2	0.02	2.7	0.05	NI
Lagan	8208	7410	0.06	0.01	3.3	1.2	11	NI	NI	0.1	1.3	0.01	3.1	0.06	NI
Nissan	4666	3690	0.06	0.01	2.2	1.1	14	NI	NI	0.1	0.6	0.01	1.6	0.04	NI
Ätran	6134	5070	0.05	0.010	2.3	0.8	10	NI	NI	0.1	1.2	0.01	2.4	0.05	NI
Viskan	4493	3450	0.03	0.005	1.4	0.5	6.2	NI	NI	0.1	0.9	0.02	1.8	0.06	NI
Göta älv	65644	50530	0.2	0.05	29	7.2	80	NI	NI	0.4	12.5	0.1	20	0.4	NI
Bäveån	691	350	0.007	0.001	0.9	0.2	2.0	NI	NI	0.009	0.09	0.003	0.3	0.011	NI
Örekilsälven	3283	2050	0.03	0.006	2.1	0.6	7.0	NI	NI	0.05	0.5	0.019	1.2	0.05	NI
Strömsån	622	390	0.005	0.001	0.4	0.11	1.3	NI	NI	0.009	0.10	0.004	0.2	0.010	NI
Enningdalsälven	1987	1360	0.014	0.002	0.6	0.15	2.9	NI	NI	0.007	0.2	0.002	0.5	0.009	NI
Total:			0.5	0.10	43.6	12.2	141	NI	NI	0.8	18	0.2	34	0.8	NI

Table 6b. Riverine inputs to the maritime area in 2000 by Sweden (smaller rivers and coastal areas)

Tributary riverine inputs			Quantities --->												
Discharge area Kattegat, Skagerrak	Flow rate [1000 m³/d] [year]	LTA 1961-90	Cd [10^3 kg]	Hg [10^3 kg]	Cu [10^3 kg]	Pb [10^3 kg]	Zn [10^3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
smaller rivers and coastal areas in Kattegat	7534		0.05	0.009	2.7	1.1	12	NI	NI	0.13	4.6	0.04	6.3	0.08	NI
smaller rivers and coastal areas in Skagerrak	6566		0.05	0.011	4.1	1.2	14	NI	NI	0.10	1.0	0.04	2.5	0.01	NI
Total:			0.10	0.02	6.8	2.3	26	NI	NI	0.2	5.6	0.08	8.8	0.1	NI

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

Table 6c. Riverine inputs to the maritime area in 2000 by Sweden

Total Riverine Inputs			Quantities --->												
Discharge area	Flow rate [1000 m³/d] [year]	LTA (period)	Cd [10 3 kg]	Hg [10 3 kg]	Cu [10 3 kg]	Pb [10 3 kg]	Zn [10 3 kg]	g-HCH [kg]	PCBs (1) [kg]	NH4-N [10^6 kg]	NO3-N [10^6 kg]	PO4-P [10^6 kg]	Total N [10^6 kg]	Total P [10^6 kg]	SPM(2) [10^6 kg]
Kattegat			0.5	0.10	42	12	140	NI	NI	0.9	21	0.2	38	0.7	NI
Skagerrak			0.10	0.02	8.0	2.2	27	NI	NI	0.17	1.9	0.07	4.7	0.1	NI
Overall total:			0.6	0.12	50	14	167	NI	NI	1.1	23	0.3	43	0.8	NI

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

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

Main river				Contaminant concentrations -->												
Discharge area Kattegat	Flow rate [1000 m^3/d] annual	Flow rate [1000 m^3/d] LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Rönne å	1,987	2,030	mean	0.04	load est	1.71	0.435	8.72	ni	ni	0.0438	8.283	0.0610	9.044	0.099	ni
Minimum																
Maximum																
> 70 % > d.l. ?			*yes*													
n			12													
Lagan	8,208	7,410	mean	0.019	0.0032	1.02	0.430	4.06	ni	ni	0.0291	0.369	0.0030	0.992	0.021	ni
Minimum																
Maximum																
> 70 % > d.l. ?			*yes*													
n			12													
Nissan	4,666	3,690	mean	0.034	0.0054	1.38	0.695	11.2	ni	ni	0.0629	0.400	0.0051	1.128	0.025	ni
Minimum																
Maximum																
> 70 % > d.l. ?			*yes*													
n			12													
Ätran	6,134	5,070	mean	0.027	0.0033	1.14	0.394	5.18	ni	ni	0.0709	0.680	0.0054	1.311	0.024	ni
Minimum																
Maximum																
> 70 % > d.l. ?			*yes*													
n			12													
Viskan	4,493	3,450	mean	load est	load est	load est	load set	load est	ni	ni	0.0657	0.680	0.0095	1.278	0.041	ni
Minimum																
Maximum																
> 70 % > d.l. ?			*yes*													
n			12													
Göta älv	65,664	50,530	mean	0.008	0.0028	1.29	0.380	3.99	ni	ni	0.0282	0.515	0.0058	0.875	0.024	ni
Minimum																
Maximum																
> 70 % > d.l. ?			*yes*													
n			12													

(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

Main rivers, cont.				Contaminant concentrations -->												
Discharge area Skagerrak	Flow rate [1000 m³/d] annual	LTA	Mean or median?	Cd [µg/l]	Hg [µg/l]	Cu [µg/l]	Pb [µg/l]	Zn [µg/l]	g-HCH [ng/l]	PCBs (1) [ng/l]	NH4-N [mg/l]	NO3-N [mg/l]	PO4-P [mg/l]	Total N [mg/l]	Total P [mg/l]	SPM(2) [mg/l]
Bäveån	691	350	mean	0.026	0.0052	2.90	0.842	8.85	ni	ni	0.0424	0.453	0.0114	1.088	0.043	ni
Minimum																
Maximum																
> 70 % > d.l. ?			*yes*													
n			12													
Örekilsälven	3,283	2,050	mean	0.015	0.0038	1.39	0.383	4.62	ni	ni	0.0278	0.537	0.0084	1.106	0.035	ni
Minimum																
Maximum																
> 70 % > d.l. ?			*yes*													
n			12													
Enningdalsälven	1,987	1,360	mean	0.018	0.0022	0.92	0.144	4.33	ni	ni	0.0072	0.329	0.0015	0.673	0.011	ni
Minimum																
Maximum																
> 70 % > d.l. ?			*yes*													
n			12													

(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 2000 by the United Kingdom

Text report, including Tables A-G

Table 5a	Sewage Effluents. Reported Maritime Area of the OSPAR Convention in 2000 by the United Kingdom
Table 5b	Industrial effluents. Reported Maritime Area of the OSPAR Convention in 2000 by the United Kingdom
Table 6c	Riverine inputs. Reported Maritime Area of the OSPAR Convention in 2000 by the United Kingdom

THE OSLO AND PARIS COMMISSIONS (OSPAR) RID 2000 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 eleventh survey, carried out in 2000, 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)".

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 All the main river systems were 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). In addition, all significant "Direct" discharges of industrial or sewage effluent entering downstream of that sampling point (to estuaries and to coastal waters) were also sampled. (NB Sampling in the initial year, 1990, was limited. This factor, coupled with the lack of an ongoing time series of data to facilitate checking the 1990 data, means that less reliance should be placed on the 1990 input estimates than those for subsequent years).

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 is taken as orthophosphate phosphorous. (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 consistent year on year).

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, 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 Scotland where continuous flow records were available. In England and Wales 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 as part of the survey. It is considered that the contribution of storm water to the total 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, 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 is met).

5. Format of the Results

5.1 The results are presented as summary statistics for each of five principal sea areas adjacent to the UK, namely Atlantic, Celtic Sea North Sea (Channel), North Sea (UK East Coast), and Irish Sea. (This order reflects the OSPAR reporting format). Inputs are separately recorded for sewage effluents, for industrial effluents and for rivers.

5.2 Each of the five 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 five 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 6a).

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).

5.6 Table D provides a summary of Total (Direct plus Riverine) inputs (for this reporting year) for each sea area.

5.7 Table E provides annual riverine flow rates since 1991 and the corresponding long term average (LTA) flow rates for individual UK sampling regions and for the five 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.

5.8 Table F provides flow normalised annual riverine inputs for the period since 1991. The normalisation used is that given by dividing the estimates of annual input for each determinand in a given year by a factor given by dividing the flow for that year by the LTA flow.

5.9 Table G shows the corresponding (non-normalised) riverine inputs used in deriving Table F to facilitate comparison. They are as reported in Table B except that a correction has been made in respect of Cd inputs for 1991 to allow for the inconsistency in reporting noted in the footnote to Table B. (The correction was a best estimate made following consideration of the direct and riverine inputs reported for the five years 1990-94).

6. <u>Discussion of Results</u>

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.

6.2 Direct inputs of 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 Riverine inputs (Table B) do not show the same distinct trends as the corresponding Direct inputs. This, to some extent, reflects the 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 of lead, zinc, nitrogen and suspended particulate matter (SPM) were significantly higher in 2000 than the corresponding inputs in recent years (except that for SPM in 1999, when an exceptionally large SPM inputs was reported for sampling zone E 1). These high inputs correlate with the extremely high flows experienced in 2000 – see 6.5 and 6.9 below.

6.5 In 2000, riverine flows were the highest reported over the period of the RID surveys. Riverine inputs were some 30-35% above long term average flows and typical flows for the 1990s and were significantly higher (order of 50%) than those in the years 1995-97 (for which below average flows were reported) – see Table E for details. This indicates the need for care in considering the riverine inputs for any individual years.

6.6 The data on Total (Direct plus Riverine) inputs for the period since 1990 (Table C) shows that the flow related increases in riverine inputs in 2000 out-weigh the corresponding decrease in direct inputs, and this is reflected in an apparent increase in overall inputs. This highlights that inputs data for 2000 is atypical and should not be considered in isolation.

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. For a number of sampling regions, the lower estimates of input for some determinands are very low, thus indicating that most concentrations were below the level of detection (LOD).

6.8 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.

6.9 The average total UK flow for the period since 1991 is some 4% above the LTA and the annual figure has ranged between +34% and –18% of the LTA (see Table E). Within a particular sampling region (ICES Zone) the variation in flow is much more marked. In the key region 7a (Humber Estuary) the variation in annual flow has ranged between +75% and –50% of LTA.

6.10 Inspection of flow normalised riverine inputs (see Table F) over the period 1991-2000 indicates that the underlying pattern of change continues to be downwards. The simple flow normalisation technique used reduces the annual variation considerably.

7. Conclusions.

7.1 There are good downward trends for all UK Direct inputs (except PCBs – but see sections 3.2 and 6.2) over the period 1990-2000, but the diminishing rate of reduction in 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 and 2000 were relatively high compared to the preceding two years, this reflects the pattern in annual flow that has occurred over the five-year period. Flow normalisation can reduce the variation in the input estimates and may make it possible to establish any underlying trend. The simple flow normalisation employed on the UK riverine inputs for the period since 1991 indicates a downward trend in the inputs of hazardous substances, but no change in the inputs of nitrogen and phosphorus.

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 nutrients, there are wide annual variations and increases in recent years, but flow adjustment of the inputs suggests that there is no underlying pattern of change.

UK Rivers and Catchment Areas in Relation to PARCOM Sea Areas

(also showing boundaries of 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.

Year		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
1990	lower	29.6	3.7	290	120	1700	191	79		21	21.0	115		1260
	upper	33.8	4.3	310	170	1700	224	310		22	22.0	115		1260
1991		13.3	3.3	270	134	1670	140	223		20	22.0	95		1210
		15.3	3.5	279	148	1680	186	424		20	22.0	96		1220
1992		12.8	2.0	246	125	1350	144	138	73	24	20.7	104	23.1	960
		14.9	2.3	252	141	1360	179	459	73	24	20.8	105	23.2	960
1993		9.4	1.1	208	129	1150	142	27	64	20	14.1	92	15.8	640
		11.6	1.3	215	144	1150	156	162	64	20	14.2	93	15.8	640
1994		6.1	0.9	213	113	1150	108	11	61	19	15.3	84	17.1	630
		7.9	1.1	220	128	1150	150	185	61	19	15.3	84	17.2	630
1995		6.1	0.6	229	106	997	121	8	56	19	14.5	82	16.3	662
		7.8	0.8	235	115	1000	154	168	56	19	14.6	82	16.4	663
1996		7.3	0.5	157	101	755	82	34	52	16	14.8	76	16.5	546
		8.3	0.7	161	106	756	95	277	52	16	14.8	76	16.5	547
1997		5.8	0.5	156	93	634	176	3	52	17	15.5	79	17.9	570
		7.0	0.6	163	98	635	197	177	52	17	15.5	79	17.9	570
1998		3.9	0.6	150	109	543	64	379	56	18	14.0	82	17.0	560
		4.9	0.8	152	113	544	131	489	56	18	14.0	82	17.0	561
1999		4.4	0.6	153	86	584	51	78	50	18	14.4	75	16.0	618
		5.3	0.7	155	90	585	80	162	50	19	14.5	76	16.0	618
2000		2.4	0.5	140	77	525	33	8	41	20	13.8	73	15.2	402
		3.4	0.7	143	80	526	60	125	41	20	13.8	73	15.2	402

TABLE B: Annual Estimates of UK Riverine Inputs to the OSPAR Maritime Area from 1990.

Year		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
1990	lower	9.4	2.2	470	400	2100	210	72		170	16.0	200		1600
	upper	29.4	7.6	530	496	2200	560	3900		170	16.0	200		1600
1991		21.6	2.0	342	376	1920	465	13		180	14.0	231		1360
		48.1	7.1	432	507	2120	724	1720		180	14.0	231		1410
1992		11.3	1.7	455	340	2490	229	34	19	184	15.9	280	17.3	2120
		30.4	6.1	477	398	2510	510	970	19	193	16.2	287	17.5	2130
1993		9.5	3.1	454	466	2020	332	110	17	217	15.6	270	18.5	2220
		28.1	7.6	489	524	2050	572	2540	17	225	15.9	280	18.7	2230
1994		8.7	1.5	466	383	2190	254	11	18	252	16.6	298	18.0	2625
		28.8	6.2	500	430	2310	486	1930	18	252	17.1	298	18.5	2635
1995		6.2	1.4	390	266	1730	241	0	19	241	16.8	283	19.5	1800
		22.9	5.3	411	304	1810	454	1700	20	241	17.1	284	19.7	1820
1996		4.2	1.4	292	187	1337	173	39	16	204	15.4	229	17.0	1205
		18.3	3.9	308	224	1354	275	1131	16	204	15.7	230	17.1	1244
1997		6.0	2.5	332	275	1523	116	100	16	190	15.2	217	17.9	1732
		12.6	4.2	334	291	1543	222	527	16	190	16.2	218	17.9	1772
1998		9.1	2.9	506	483	2105	149	34	15	303	24.0	336	26.3	2654
		17.5	5.2	508	493	2117	460	1275	16	308	24.3	340	26.6	2706
1999		8.8	1.7	503	448	1999	102	4	14	284	21.2	315	22.8	3268
		17.5	3.6	509	468	2024	414	1426	14	285	21.9	316	23.4	3292
2000		9.1	2.5	519	516	2523	112	51	14	319	21.6	359	23.3	2947
		22.1	4.3	529	538	2553	395	1519	15	320	21.9	359	23.5	2978

Note: Part of the input of Cd was inconsistently attributed between direct and riverine in 1991. Consequently, for Cd, the best indication of any trend is given by the total inputs (Table C).

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

Year		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
1990	lower	39.0	5.9	760	520	3800	410	150		191	37.0	315		2900
	upper	63.6	11.8	850	667	3920	780	4200		192	38.0	315		2900
1991		34.9	5.3	612	510	3590	605	236		200	36.0	326		2570
		63.4	10.6	711	655	3800	910	2140		200	36.0	327		2630
1992		24.1	3.7	701	465	3840	373	172	92	208	36.6	384	40.4	3080
		45.3	8.4	729	539	3870	689	1420	92	217	37.0	393	40.7	3090
1993		18.9	4.2	662	595	3166	475	137	82	237	29.7	362	34.2	2860
		39.7	8.9	704	667	3203	729	2700	82	245	30.0	374	34.5	2870
1994		14.8	2.3	679	496	3338	362	22	78	270	31.8	382	35.2	3250
		36.7	7.3	720	558	3462	636	2110	79	271	32.4	382	35.7	3260
1995		12.2	2.0	619	372	2730	362	8	76	259	31.2	364	35.7	2470
		30.7	6.1	645	419	2805	608	1870	76	260	31.7	366	36.1	2480
1996		11.5	2.0	449	288	2090	255	73	67	220	30.3	304	33.5	1750
		26.6	4.6	469	330	2110	370	1408	68	220	30.5	306	33.6	1790
1997		11.7	3.0	488	368	2157	292	103	68	206	30.6	296	35.7	2302
		19.6	4.8	497	389	2178	419	705	68	207	31.7	297	35.8	2342
1998		12.9	3.5	656	593	2649	213	413	71	321	37.9	418	43.3	3214
		22.5	6.0	660	606	2660	591	1764	73	326	38.2	422	43.6	3267
1999		13.2	2.3	656	534	2583	153	82	64	302	35.6	391	38.8	3886
		22.8	4.3	664	558	2609	494	1588	65	304	36.4	392	39.4	3910
2000		11.5	3.0	660	593	3048	145	59	55	339	35.3	432	38.5	3349
		25.4	5.0	672	618	3079	455	1644	56	340	35.7	432	38.8	3380

TABLE D: **Total UK Inputs (Direct plus Riverine) to the OSPAR Maritime Area in 2000 by Sea Area).**

Sea Area		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
North Sea	lower	5.1	2.0	340	374	1507	98	48	25	191	20.6	241	22.4	1705
UK E Coast	upper	12.9	2.4	346	378	1521	200	815	25	191	20.6	241	22.4	1719
North Sea		0.7	0.0	77	24	235	13	0	7	24	2.8	31	2.8	145
UK Channel		0.9	0.1	78	26	236	24	51	7	24	2.8	31	2.8	146
North Sea		**5.8**	**2.1**	**418**	**398**	**1742**	**111**	**48**	**31**	**215**	**23.3**	**272**	**25.2**	**1850**
Total		**13.8**	**2.4**	**423**	**405**	**1757**	**224**	**866**	**32**	**215**	**23.4**	**272**	**25.2**	**1866**
Celtic Sea		2.2	0.1	67	50	579	11	6	8	61	3.9	70	3.9	868
		3.6	0.2	68	61	580	60	131	8	61	3.9	70	3.9	869
Irish Sea		2.1	0.6	104	119	575	10	4	12	45	5.9	64	6.3	495
		3.2	0.8	106	123	581	88	426	12	46	6.1	64	6.5	500
Atlantic		1.4	0.3	70	25	152	13	0	4	18	2.2	26	3.2	135
		4.8	1.5	75	29	161	83	222	4	18	2.3	26	3.2	145
Non North Sea		**5.7**	**0.9**	**242**	**195**	**1306**	**34**	**11**	**24**	**124**	**12.0**	**160**	**13.3**	**1498**
Total		**11.6**	**2.6**	**249**	**214**	**1322**	**230**	**778**	**24**	**125**	**12.3**	**160**	**13.6**	**1514**
All Sea Areas		**11.5**	**3.0**	**660**	**593**	**3048**	**145**	**59**	**55**	**339**	**35.3**	**432**	**38.5**	**3348**
Total (UK)		**25.4**	**5.0**	**672**	**618**	**3079**	**455**	**1644**	**56**	**340**	**35.7**	**432**	**38.8**	**3380**

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Table E. Riverine flow information

OSPAR	Region	No. of	Annual Riverine Flow Rate (Ml/day)										
Code	**Sea Area**	sites	**LTA**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**Ave 91-00**
218	NI1	7	16710	16710	16710	14170	16710	16782	16539	15566	22126	20530	18547	**17439**
216	SC2	13	14640	16313	18343	16632	15439	15818	13170	14420	16183	13738	18019	**15808**
217	SC2a	11	18317	18317	18317	16967	18317	15772	18317	18317	18317	18317	18203	**17916**
92	**Atlantic**	**31**	**49667**	**51340**	**53370**	**47769**	**50466**	**48372**	**48026**	**48303**	**56626**	**52585**	**54769**	**51163**
203	E19	3	650	829	999	917	786	582	784	534	819	652	1234	**814**
204	E20	3	2890	3055	2803	3460	4372	3161	1848	2273	4556	2775	4955	**3326**
205	E21	3	865	1006	729	863	544	1182	194	851	1526	1383	1970	**1025**
206	E22	2	11450	9652	10003	10913	11533	12848	6920	6748	13731	13402	15961	**11171**
207	E23	7	12370	11570	12502	9741	17221	10760	9238	9370	17190	14439	15827	**12786**
208	E24	6	2610	2228	3182	3329	3137	1859	2359	2869	2878	2726	4787	**2935**
209	E25	7	5630	4198	4934	7153	4849	3137	4855	5096	7576	5662	8016	**5548**
90	**Celtic Sea**	**31**	**36465**	**32538**	**35152**	**36376**	**42442**	**33529**	**26198**	**27742**	**48276**	**41039**	**52750**	**37604**
197	E13	3	1410	756	1125	1172	2386	2287	782	610	1370	745	2349	**1358**
198	E14	4	970	718	837	1502	1030	1751	760	914	829	1695	2350	**1239**
199	E15	2	1510	681	770	1993	1561	1282	944	718	1207	1162	1504	**1182**
200	E16	4	3020	2654	2554	3253	4112	3866	2916	2538	3967	3354	2842	**3206**
201	E17	4	4450	3608	5380	4227	6400	4066	3025	2786	4929	3487	5024	**4293**
202	E18	9	5098	3970	5098	5698	5193	3520	3459	3280	4420	5708	6364	**4671**
86	**Channel**	**26**	**16458**	**12387**	**15764**	**17845**	**20682**	**16772**	**11886**	**10845**	**16723**	**16150**	**20433**	**15949**
185	E1	3	8052	5576	8052	7170	10024	6588	4496	8549	9716	12925	12655	**8575**
194	E10	6	1210	959	1185	3034	2415	2187	1286	976	2088	2198	3119	**1945**
195	E11	3	350	286	420	611	474	459	233	95	318	639	543	**408**
196	E12	10	7750	2658	4097	6464	5960	8195	3339	2013	6995	7730	10425	**5788**
186	E2	3	3833	3166	3833	4840	3480	3162	2927	3731	4233	3771	7186	**4033**
187	E3	1	908	1314	908	1237	1984	919	1259	1126	1281	995	4183	**1521**
188	E4	0												
189	E5	1	1490	2217	1490	2762	2170	3834	904	954	1743	3069	2184	**2133**
190	E6	1										150	592	**371**
191	E7	0												
192	E7a	8	20040	15785	17351	21326	20723	14586	9843	15164	20210	25742	35228	**19596**
193	E9	7	2870	1741	4464	4627	5624	4547	2711	1192	3761	6714	7574	**4295**
181	SC2b	24	31547	31547	31547	31142	31547	31547	31547	31547	31547	31574	30048	**31359**
182	SC3	8	14050	17107	12503	12061	14647	15114	14050	14171	15311	14263	19616	**14884**
183	SC4	7	20766	21081	20176	23820	24752	21809	18732	19954	24151	20665	26229	**22137**
184	SC5	14	8691	8000	10212	11319	10434	7982	7626	7772	10254	8460	9288	**9135**
84	**North Sea**	**96**	**121557**	**111437**	**116238**	**130413**	**134234**	**120929**	**98953**	**107244**	**131608**	**138896**	**168870**	**125882**
210	E26	7	6190	5613	5926	10300	8591	4321	5812	5564	10648	7733	9912	**7442**
211	E27	6	5500	4422	5037	4220	7269	3785	3880	3952	5874	7630	8386	**5445**
212	E28	4	4840	3045	5636	3633	5589	3910	3750	4062	5943	5436	7413	**4842**
213	E29	7	9920	8162	8865	6950	9168	6139	4682	7387	13097	11059	10435	**8594**
219	E30	2	6580	5953	7734	6113	7494	5310	4536	5552	6596	7865	10000	**6715**
215	NI2	3	1490	1490	1490	1120	1490	1320	1441	2479	2033	1819	1814	**1650**
214	SC1	11	13880	15088	34290	13880	18040	16851	14107	13880	17054	18593	20295	**18208**
88	**Irish Sea**	**40**	**48400**	**43773**	**68978**	**46216**	**57641**	**41636**	**38208**	**42875**	**61245**	**60135**	**68255**	**52896**
	Total UK	**224**	**272547**	**251475**	**289502**	**278619**	**305465**	**261238**	**223271**	**237009**	**314478**	**308806**	**365077**	**283494**

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TABLE F: Flow Normalised Annual Estimates of UK Riverine Inputs to the OSPAR Maritime Area from 1990 (see note 2).

Year	Flow/LTA LTA=272306	Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
1991	0.924	17.5	2.2	370	407	2078	503	14		195	15	250	16	1472
		44.9	7.7	468	549	2294	784	1861		195	15	250	16	1526
1992	1.063	10.6	1.6	428	320	2342	215	32	18	173	15	263	16	1994
		28.6	5.7	449	374	2361	480	913	18	182	15	270	16	2004
1993	1.023	9.3	3.0	444	456	1975	325	108	17	212	15	264	18	2170
		27.5	7.4	478	512	2004	559	2483	17	220	16	274	18	2180
1994	1.122	7.8	1.3	415	341	1952	226	10	16	225	15	266	16	2340
		25.7	5.5	446	383	2059	433	1720	16	225	15	266	16	2348
1995	0.959	6.5	1.5	407	277	1804	251	0	20	251	18	295	20	1877
		23.9	5.5	429	317	1887	473	1773	20	251	18	296	21	1898
1996	0.820	5.1	1.7	356	229	1630	211	48	19	249	19	279	21	1469
		22.3	4.8	376	273	1651	336	1379	19	249	19	281	21	1517
1997	0.870	6.9	2.9	381	316	1750	133	115	18	218	17	250	21	1991
		14.5	4.8	384	334	1773	255	606	18	218	19	250	21	2037
1998	1.155	7.8	2.5	438	419	1823	129	29	13	263	21	291	23	2298
		15.2	4.5	440	427	1833	398	1104	14	267	21	294	23	2343
1999	1.134	7.8	1.5	444	395	1763	90	4	12	251	19	278	20	2882
		15.5	3.1	449	413	1785	366	1257	13	252	19	279	21	2903
2000	1.341	6.8	1.8	387	385	1881	84	38	11	238	16	268	17	2198
		16.4	3.2	395	401	1904	295	1133	11	238	16	268	18	2221

TABLE G: Annual Estimates of UK Riverine Inputs to the OSPAR Maritime Area from 1990 (adjusted - see Note 1).

Year	Flow [Ml/d]	Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCBs [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
1991	251475	16.2	2.0	342	376	1920	465	13		180	14	231	15	1360
		41.5	7.1	432	507	2120	724	1720		180	14	231	15	1410
1992	289502	11.3	1.7	455	340	2490	229	34	19	184	16	280	17	2120
		30.4	6.1	477	398	2510	510	970	19	193	16	287	18	2130
1993	278619	9.5	3.1	454	466	2020	332	110	17	217	16	270	19	2220
		28.1	7.6	489	524	2050	572	2540	17	225	16	280	19	2230
1994	305465	8.7	1.5	466	383	2190	254	11	18	252	17	298	18	2625
		28.8	6.2	500	430	2310	486	1930	18	252	17	298	19	2635
1995	261238	6.2	1.4	390	266	1730	241	0	19	241	17	283	20	1800
		22.9	5.3	411	304	1810	454	1700	20	241	17	284	20	1820
1996	223271	4.2	1.4	292	187	1337	173	39	16	204	15	229	17	1205
		18.3	3.9	308	224	1354	275	1131	16	204	16	230	17	1244
1997	237009	6.0	2.5	332	275	1523	116	100	16	190	15	217	18	1732
		12.6	4.2	334	291	1543	222	527	16	190	16	218	18	1772
1998	314478	9.1	2.9	506	483	2105	149	34	15	303	24	336	26	2654
		17.5	5.2	508	493	2117	460	1275	16	308	24	340	27	2706
1999	308806	8.8	1.7	503	448	1999	102	4	14	284	21	315	23	3268
		17.5	3.6	509	468	2024	414	1426	14	285	22	316	23	3292
2000	365077	9.1	2.5	519	516	2523	112	51	14	319	22	359	23	2947
		22.1	4.3	529	538	2553	395	1519	15	320	22	359	24	2978

Note 1: As indicated with Table B, part of the input of Cd was inconsistently attributed between direct and riverine in 1991.
Allowance has been made in Tables F and G by reducing the 1991 lower and upper riverine inputs of Cd by 5.4t and 6.6t respectively.
Note 2: Simple normalisation achieved by means of dividing measured loads by ratio of actual flow/LTA flow.

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Table 5a. Sewage Effluents
Reported Maritime Area of the OSPAR Convention in 2000 by United Kingdom

			1.00 Cd [t]	5.00 Hg [t]	6.0 Cu [t]	2.0 Pb [t]	7.0 Zn [t]	8.0 g-HCH [kg]	9.0 PCB [kg]	10.0 NH4-N [kt]	11.0 NO3-N [kt]	12.00 PO4-P [kt]	13.0 Total N [kt]	14.00 Total P [kt]	3 SPM [kt]
218	NI1	lower	0.00	0.00	0.3	0.0	1.2	0.0	0.0	0.2	0.0	0.04	0.2	0.07	1
		upper	0.02	0.02	0.4	0.1	1.2	0.0	0.0	0.2	0.0	0.04	0.2	0.07	1
		comment										1999 data	NH4 + NO3	1999 data	
216	SC2	lower	0.06	0.01	22.7	4.7	15.8	1.5	0.1	1.4	0.2	0.90	2.2	1.20	16
		upper	0.08	0.01	22.7	4.7	15.9	9.3	15.9	1.4	0.3	0.90	2.2	1.20	16
		comment													
217	SC2a	lower	0.00	0.00	0.1	0.0	0.2	0.1		0.0	0.0	0.01	0.0	0.01	0
		upper	0.00	0.00	0.1	0.0	0.2	0.1		0.0	0.0	0.01	0.0	0.01	0
		comment													
92	Atlantic (UK)	lower	**0.06**	**0.01**	**23.0**	**4.7**	**17.1**	**1.6**	**0.1**	**1.7**	**0.2**	**0.95**	**2.5**	**1.28**	**17**
		upper	**0.10**	**0.02**	**23.2**	**4.8**	**17.3**	**9.4**	**15.9**	**1.7**	**0.3**	**0.95**	**2.5**	**1.28**	**17**
		comment													
203	E19	lower	0.00	0.00	0.1	0.0	0.3	0.0		0.2	0.0	0.03	0.2	0.03	1
		upper	0.00	0.00	0.1	0.0	0.3	0.0		0.2	0.0	0.03	0.2	0.03	1
		comment													
204	E20	lower						0.0		0.0					0
		upper						0.0		0.0					0
		comment													
205	E21	lower	0.00	0.00	0.3	0.1	1.0	0.2		0.5	0.1	0.09	0.6	0.09	1
		upper	0.00	0.00	0.3	0.1	1.0	0.3		0.5	0.1	0.09	0.6	0.09	1
		comment													
206	E22	lower	0.08	0.01	2.3	1.9	15.0	0.4	0.0	1.8	0.6	0.49	2.4	0.49	8
		upper	0.08	0.01	2.3	1.9	15.0	2.1	3.8	1.8	0.6	0.49	2.4	0.49	8
		comment													
207	E23	lower	0.01	0.00	1.5	2.0	27.8	0.2		1.0		0.24	1.1	0.24	10
		upper	0.02	0.00	1.5	2.1	27.8	0.8		1.0		0.24	1.1	0.24	10
		comment													
208	E24	lower	0.00	0.00	0.2	0.0	3.2			1.8	0.1	0.26	1.9	0.26	1
		upper	0.01	0.00	0.2	0.1	3.2			1.8	0.1	0.26	1.9	0.26	1
		comment													
209	E25	lower	0.00		0.3	0.1	1.5			0.3	0.4	0.18	0.7	0.18	3
		upper	0.00		0.3	0.1	1.5			0.4	0.4	0.18	0.7	0.18	3
		comment													

			1.00 Cd [t]	5.00 Hg [t]	6.0 Cu [t]	2.0 Pb [t]	7.0 Zn [t]	8.0 g-HCH [kg]	9.0 PCB [kg]	10.0 NH4-N [kt]	11.0 NO3-N [kt]	12.00 PO4-P [kt]	13.0 Total N [kt]	14.00 Total P [kt]	3 SPM [kt]
90	Celtic Sea (UK)	lower	**0.09**	**0.01**	**4.7**	**4.2**	**48.8**	**0.8**	**0.0**	**5.6**	**1.1**	**1.28**	**6.9**	**1.28**	**23**
		upper	**0.11**	**0.01**	**4.7**	**4.4**	**48.8**	**3.3**	**3.8**	**5.6**	**1.1**	**1.29**	**6.9**	**1.29**	**23**
		comment													
197	E13	lower	0.00		4.6	0.6	9.5	0.6	0.0	0.5	0.4	0.40	1.0	0.40	
		upper	0.01		4.6	0.6	9.5	0.8	1.0	0.5	0.4	0.40	1.0	0.40	
		comment													
198	E14	lower	0.02		7.6	3.0	9.2	0.4	0.0	2.2	0.2	0.36	2.5	0.36	
		upper	0.02		7.6	3.0	9.2	0.7	2.1	2.2	0.2	0.36	2.5	0.36	
		comment													
199	E15	lower	0.07		1.8	0.6	3.4	0.8	0.0	1.8	0.3	0.44	2.2	0.44	
		upper	0.07		1.8	0.6	3.4	0.9	2.1	1.8	0.3	0.44	2.2	0.44	
		comment													
200	E16	lower	0.00		1.7	0.4	2.0	0.2		0.5	0.8	0.21	1.3	0.21	4
		upper	0.00		1.7	0.4	2.0	0.3		0.5	0.8	0.21	1.3	0.21	4
		comment													
201	E17	lower	0.00	0.00	0.7	0.2	2.4	0.3		0.6	0.3	0.19	0.9	0.19	2
		upper	0.01	0.00	0.7	0.2	2.4	0.6		0.6	0.3	0.19	0.9	0.19	2
		comment													
202	E18	lower	0.00		0.1	0.1	0.4	0.2		0.3	0.1	0.10	0.4	0.10	1
		upper	0.00		0.1	0.1	0.4	0.4		0.3	0.1	0.10	0.4	0.10	1
		comment													
86	Channel (UK)	lower	**0.11**	**0.00**	**16.3**	**4.8**	**27.0**	**2.6**	**0.0**	**5.9**	**2.2**	**1.69**	**8.3**	**1.69**	**7**
		upper	**0.11**	**0.00**	**16.3**	**4.9**	**27.0**	**3.6**	**5.1**	**5.9**	**2.2**	**1.69**	**8.3**	**1.69**	**7**
		comment													
185	E1	lower	0.01	0.00	0.4	0.1	2.5	0.0	0.0	0.2	0.0	0.03	0.2	0.03	1
		upper	0.01	0.00	0.4	0.1	2.5	0.1	3.7	0.2	0.0	0.03	0.2	0.03	1
		comment													
194	E10	lower	0.01	0.00	0.9	0.0	3.6	0.5		0.6	0.4	0.26	0.9	0.26	4
		upper	0.01	0.00	0.9	0.0	3.6	0.5		0.6	0.4	0.26	0.9	0.26	4
		comment													
195	E11	lower	0.00	0.00	1.0	0.1	1.6	0.2		0.2	0.6	0.20	0.7	0.20	1
		upper	0.00	0.00	1.0	0.1	1.6	0.2		0.2	0.6	0.20	0.7	0.20	1
		comment													
196	E12	lower	0.14	0.02	15.8	8.9	55.4	20.9	1.3	2.4	8.0	3.17	12.8	3.17	34
		upper	0.21	0.02	15.8	8.9	55.4	21.2	43.9	2.4	8.0	3.17	12.8	3.17	34
		comment													

			1.00 Cd [t]	5.00 Hg [t]	6.0 Cu [t]	2.0 Pb [t]	7.0 Zn [t]	8.0 g-HCH [kg]	9.0 PCB [kg]	10.0 NH4-N [kt]	11.0 NO3-N [kt]	12.00 PO4-P [kt]	13.0 Total N [kt]	14.00 Total P [kt]	3 SPM [kt]
186	E2	lower	0.02	0.01	18.7	2.6	14.5	0.5		3.0	0.2	0.39	3.0	0.39	15
		upper	0.02	0.01	18.7	2.6	14.5	4.0		3.0	0.2	0.39	3.0	0.39	15
		comment										1996 loads		1996 loads	
187	E3	lower	0.00	0.00	0.1	0.0	0.4	0.0	0.0	0.2	0.0	0.04	0.2	0.04	0
		upper	0.00	0.00	0.1	0.0	0.4	0.1	1.0	0.2	0.0	0.04	0.2	0.04	0
		comment													
188	E4	lower	0.00	0.00	1.8	0.4	3.4	0.0		0.9	0.0	0.24	0.9	0.24	9
		upper	0.01	0.00	1.8	0.4	3.4	1.0		0.9	0.0	0.24	0.9	0.24	9
		comment											NH4 + NO3		
189	E5	lower	0.01	0.00	1.3	0.4	4.3	0.0	0.0	1.9	0.1	0.26	2.1	0.26	6
		upper	0.01	0.00	1.3	0.4	4.3	1.7	17.7	1.9	0.1	0.26	2.1	0.26	6
		comment													
190	E6	lower	0.00	0.00	0.3	0.3	1.1	0.2	0.0	0.6	0.0	0.12	0.6	0.12	1
		upper	0.00	0.00	0.3	0.3	1.1	0.4	2.4	0.6	0.0	0.12	0.6	0.12	1
		comment											NH4 + NO3		
191	E7	lower	0.00	0.00	0.1	0.0	0.3	0.1	0.0	0.0	0.0	0.03	0.1	0.03	0
		upper	0.00	0.00	0.1	0.0	0.3	0.1	0.7	0.0	0.0	0.03	0.1	0.03	0
		comment													
192	E7a	lower	0.01	0.00	2.1	1.7	12.4	0.6	0.0	1.2	0.1	0.29	1.3	0.29	11
		upper	0.02	0.00	2.1	1.7	12.4	2.0	15.0	1.2	0.1	0.29	1.3	0.29	11
		comment													
193	E9	lower	0.00	0.00	0.5	0.1	1.8	0.3		0.2	0.5	0.27	0.6	0.27	1
		upper	0.00	0.00	0.5	0.1	1.8	0.3		0.2	0.5	0.27	0.6	0.27	1
		comment													
181	SC2b	lower	0.00	0.01	1.3	0.1	1.1	0.3		0.4	0.1	0.11	0.5	0.12	2
		upper	0.01	0.02	1.3	0.1	1.1	0.3		0.4	0.1	0.11	0.5	0.12	2
		comment													
182	SC3	lower	0.03	0.02	6.3	1.4	9.2	0.6		1.1	0.0	0.26	2.0	0.32	14
		upper	0.04	0.02	6.3	1.4	9.2	0.6		1.1	0.0	0.26	2.0	0.32	14
		comment													
183	SC4	lower	0.02	0.01	2.3	1.2	9.6	0.7		0.9	0.1	0.19	1.4	0.34	9
		upper	0.06	0.01	2.3	1.2	9.6	1.1		0.9	0.1	0.19	1.4	0.34	9
		comment													
184	SC5	lower	0.02	0.02	7.8	4.4	27.2	2.9		2.9	0.3	0.57	5.2	1.04	39
		upper	0.03	0.02	7.8	4.4	27.2	2.9		2.9	0.3	0.57	5.2	1.04	39
		comment													
84	North Sea (UK)	lower	**0.28**	**0.09**	**60.8**	**21.7**	**148.4**	**27.6**	**1.3**	**16.4**	**10.4**	**6.44**	**32.4**	**7.13**	**147**
		upper	**0.43**	**0.11**	**60.8**	**21.8**	**148.4**	**36.6**	**84.4**	**16.4**	**10.4**	**6.44**	**32.4**	**7.13**	**148**
		comment													

			1.00 Cd [t]	5.00 Hg [t]	6.0 Cu [t]	2.0 Pb [t]	7.0 Zn [t]	8.0 g-HCH [kg]	9.0 PCB [kg]	10.0 NH4-N [kt]	11.0 NO3-N [kt]	12.00 PO4-P [kt]	13.0 Total N [kt]	14.00 Total P [kt]	3 SPM [kt]
210	E26	lower					0.3			0.0	0.1	0.09	0.1	0.09	1
		upper					0.3			0.0	0.1	0.09	0.1	0.09	1
		comment													
211	E27	lower				0.0			0.0	0.1	0.2	0.11	0.3	0.11	
		upper				0.0			0.4	0.1	0.2	0.11	0.3	0.11	
		comment													
212	E28	lower	0.04	0.01	3.9	6.2	22.8	0.0		4.6	0.8	1.03	7.4	1.03	10
		upper	0.04	0.01	3.9	6.2	22.8	5.3		4.6	0.8	1.03	7.4	1.03	10
		comment													
213	E29	lower	0.00	0.00	0.2	0.2	3.0	0.2		0.0	0.5	0.24	1.3	0.24	1
		upper	0.01	0.00	0.2	0.2	3.0	0.8		0.1	0.5	0.24	1.3	0.24	1
		comment													
219	E30	lower													
		upper													
		comment													
215	NI2	lower	0.00	0.00	2.1	0.1	4.8	0.0	0.0	0.6	0.3	0.29	0.9	0.29	5
		upper	0.06	0.06	2.4	0.3	4.8	0.0	0.0	0.6	0.3	0.29	0.9	0.29	5
		comment										Total-P	NH4 + NO3		
214	SC1	lower	0.00	0.00	0.1	0.0	0.3	0.1	0.0	0.3	0.0	0.03	0.1	0.04	0
		upper	0.00	0.00	0.1	0.2	0.3	0.2	0.2	0.3	0.0	0.03	0.1	0.04	0
		comment													
88	Irish Sea (UK)	lower	**0.04**	**0.01**	**6.3**	**6.5**	**31.2**	**0.2**	**0.0**	**5.6**	**1.9**	**1.80**	**10.1**	**1.81**	**17**
		upper	**0.11**	**0.06**	**6.6**	**6.9**	**31.2**	**6.2**	**0.5**	**5.7**	**1.9**	**1.80**	**10.1**	**1.81**	**17**
		comment													

Total UK: Sewage	lower	**0.58**	**0.11**	**111.2**	**42.0**	**272.5**	**32.8**	**1.4**	**35.1**	**15.8**	**12.16**	**60.0**	**13.19**	**211**
	upper	**0.86**	**0.20**	**111.7**	**42.8**	**272.6**	**59.1**	**109.8**	**35.3**	**15.8**	**12.17**	**60.0**	**13.20**	**211**

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Table 5b. Industrial Effluents
Reported Maritime Area of the OSPAR Convention in 2000 by United Kingdom

			1.00 Cd [t]	5.00 Hg [t]	6.0 Cu [t]	2.0 Pb [t]	7.0 Zn [t]	8.0 g-HCH [kg]	9.0 PCB [kg]	10.0 NH4-N [kt]	11.0 NO3-N [kt]	12.00 PO4-P [kt]	13.0 Total N [kt]	14.00 Total P [kt]	3 SPM [kt]
218	NI1	lower	0.00	0.00	0.0	0.0	1.5	0.0	0.0	0.0	0.0	0.00	0.0	0.00	0
		upper	0.39	0.02	1.4	1.5	1.5	0.1	0.1	0.0	0.0	0.00	0.0	0.00	0
		comment													
216	SC2	lower	0.00	0.01	0.5	0.1	2.0	0.0		0.5	1.7	0.00	3.4	0.00	7
		upper	0.00	0.01	0.5	0.1	2.0	0.0		0.5	1.7	0.00	3.4	0.00	7
		comment													
217	SC2a	lower	0.00	0.02	0.2	0.0	0.5	0.0		0.0	0.0	0.00	0.2	0.01	4
		upper	0.01	0.03	0.2	0.0	0.5	0.1		0.0	0.0	0.00	0.2	0.01	4
		comment													
92	Atlantic (UK)	lower	**0.00**	**0.03**	**0.7**	**0.1**	**3.9**	**0.1**	**0.0**	**0.6**	**1.7**	**0.00**	**3.6**	**0.01**	**12**
		upper	**0.40**	**0.05**	**2.1**	**1.7**	**4.0**	**0.2**	**0.1**	**0.6**	**1.7**	**0.00**	**3.6**	**0.01**	**12**
		comment													
203	E19	lower													
		upper													
		comment													
204	E20	lower													
		upper													
		comment													
205	E21	lower													
		upper													
		comment													
206	E22	lower	1.14	0.00	0.7	4.4	51.6	0.0		0.7	0.7	0.00	1.4	0.00	0
		upper	1.14	0.00	0.7	4.4	51.6	0.0		0.7	0.7	0.00	1.4	0.00	0
		comment													
207	E23	lower	0.01		0.5	0.2	1.8		6.5				0.0		6
		upper	0.01		0.5	0.2	1.8		7.8				0.0		6
		comment													
208	E24	lower	0.01	0.00	0.4	0.9	21.5			0.2		0.02	0.2	0.02	0
		upper	0.01	0.00	0.4	1.0	21.5			0.2		0.02	0.2	0.02	0
		comment													
209	E25	lower													
		upper													
		comment													

			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
90	Celtic Sea (UK)	lower	**1.16**	**0.00**	**1.6**	**5.6**	**74.9**	**0.0**	**6.5**	**0.9**	**0.7**	**0.02**	**1.6**	**0.02**	**7**
		upper	**1.16**	**0.00**	**1.6**	**5.6**	**74.9**	**0.0**	**7.8**	**0.9**	**0.7**	**0.02**	**1.6**	**0.02**	**7**
		comment													
197	E13	lower	0.00		0.2	0.0	0.9	0.1	0.0	0.0	0.0	0.01	0.0	0.01	
		upper	0.00		0.2	0.0	0.9	0.2	0.0	0.0	0.0	0.01	0.0	0.01	
		comment													
198	E14	lower													
		upper													
		comment													
199	E15	lower	0.00		0.0	0.0	0.0	0.0							
		upper	0.00		0.0	0.0	0.0	0.0							
		comment													
200	E16	lower													
		upper													
		comment													
201	E17	lower													
		upper													
		comment													
202	E18	lower			0.4		0.3								
		upper			0.4		0.3								
		comment													
86	Channel (UK)	lower	**0.00**	**0.00**	**0.6**	**0.0**	**1.2**	**0.1**	**0.0**	**0.0**	**0.0**	**0.01**	**0.0**	**0.01**	**0**
		upper	**0.00**	**0.00**	**0.6**	**0.0**	**1.2**	**0.2**	**0.0**	**0.0**	**0.0**	**0.01**	**0.0**	**0.01**	**0**
		comment													
185	E1	lower	0.00	0.00	1.8	1.7	2.0	0.0		0.0	0.0	0.00	0.0	0.00	54
		upper	0.01	0.00	1.8	1.7	2.0	0.0		0.0	0.0	0.00	0.0	0.00	54
		comment													
194	E10	lower													
		upper													
		comment													
195	E11	lower													
		upper													
		comment													
196	E12	lower													
		upper													
		comment													
186	E2	lower	0.09	0.00	0.1	6.5	1.7			0.0	0.0	0.00	0.0	0.00	0
		upper	0.09	0.00	0.1	6.5	1.7			0.0	0.0	0.00	0.0	0.00	0
		comment													

			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
187	E3	lower													
		upper													
		comment													
188	E4	lower													
		upper													
		comment													
189	E5	lower	0.04	0.00	1.4	1.8	8.4	0.0	0.0	1.8	0.6	0.19	2.5	0.19	6
		upper	0.05	0.00	1.4	1.8	8.5	0.0	4.6	1.8	0.6	0.19	2.5	0.19	6
		comment													
190	E6	lower	0.02	0.07	2.8	1.2	3.3	0.0	0.0		0.0	0.00	0.0	0.00	66
		upper	0.02	0.07	2.8	1.2	3.3	0.1	0.9		0.0	0.00	0.0	0.00	66
		comment													
191	E7	lower													
		upper													
		comment													
192	E7a	lower	0.02	0.00	3.8	1.3	118.8	0.0	0.1	0.5	0.1	0.01	0.7	0.01	14
		upper	0.06	0.00	3.8	1.4	118.8	0.2	1.5	0.5	0.1	0.01	0.7	0.01	14
		comment													
193	E9	lower	0.05	0.00	0.0	0.1	21.5	0.0		0.1	0.0	0.00	0.1	0.00	0
		upper	0.05	0.00	0.0	0.1	21.5	0.0		0.1	0.0	0.00	0.1	0.00	0
		comment													
181	SC2b	lower	0.17	0.00	3.6	0.1	0.8	0.0		0.0	0.0	0.14	0.2	0.23	3
		upper	0.17	0.01	3.6	0.2	0.8	0.0		0.0	0.0	0.14	0.2	0.23	3
		comment													
182	SC3	lower	0.00	0.00	0.0	0.0	0.0	0.0		0.0	0.0	0.00	0.0	0.00	0
		upper	0.00	0.00	0.0	0.0	0.0	0.0		0.0	0.0	0.00	0.0	0.00	0
		comment													
183	SC4	lower	0.00	0.00	0.0	0.0	0.0	0.0		0.0	0.0	0.06	0.1	0.07	0
		upper	0.00	0.00	0.0	0.0	0.1	0.0		0.0	0.0	0.06	0.1	0.07	0
		comment													
184	SC5	lower	0.01	0.01	9.7	0.3	12.2	0.0		0.3	0.0	0.54	0.6	0.77	10
		upper	0.01	0.01	9.7	0.4	12.2	0.0		0.3	0.0	0.54	0.6	0.77	10
		comment													
84	North Sea (UK)	lower	**0.40**	**0.08**	**23.2**	**13.0**	**168.7**	**0.0**	**0.1**	**2.7**	**0.8**	**0.95**	**4.2**	**1.28**	**153**
		upper	**0.46**	**0.09**	**23.2**	**13.2**	**168.8**	**0.5**	**7.1**	**2.7**	**0.8**	**0.95**	**4.2**	**1.28**	**153**
		comment													
210	E26	lower													
		upper													
		comment													

			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
211	E27	lower							0.0	0.0			0.0		
		upper							0.1	0.0			0.0		
		comment													
212	E28	lower	0.05	0.30	0.1	16.0	0.8			0.1			0.1		0
		upper	0.05	0.30	0.1	16.0	0.8			0.1			0.1		0
		comment													
213	E29	lower		0.00	0.0	0.0	0.0								
		upper		0.00	0.0	0.0	0.0								
		comment													
219	E30	lower	0.23	0.00	2.3	0.0	2.2			0.1	0.0	0.55		0.55	18
		upper	0.23	0.01	2.3	0.0	2.2			0.1	0.0	0.55		0.55	18
		comment													
215	NI2	lower	0.00	0.00	0.7	0.0	0.9	0.0	0.0	1.8	1.3	0.09	3.1	0.16	0
		upper	0.21	0.01	0.9	0.8	0.9	0.1	0.1	1.8	1.3	0.09	3.1	0.16	0
		comment													
214	SC1	lower	0.01	0.00	0.0	0.0	0.1	0.0		0.0	0.0	0.01	0.0	0.02	0
		upper	0.01	0.00	0.0	0.0	0.1	0.0		0.0	0.0	0.01	0.0	0.02	0
		comment													
88	Irish Sea (UK)	lower	**0.28**	**0.30**	**3.2**	**16.0**	**4.1**	**0.0**	**0.0**	**1.9**	**1.3**	**0.65**	**3.2**	**0.72**	**19**
		upper	**0.49**	**0.32**	**3.4**	**16.8**	**4.1**	**0.1**	**0.1**	**1.9**	**1.3**	**0.65**	**3.2**	**0.72**	**19**
		comment													

		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
Total UK: Industrial	lower	**1.85**	**0.42**	**29.2**	**34.7**	**252.7**	**0.2**	**6.6**	**6.1**	**4.6**	**1.63**	**12.6**	**2.04**	**191**
	upper	**2.51**	**0.46**	**30.9**	**37.3**	**252.9**	**0.9**	**15.1**	**6.1**	**4.6**	**1.64**	**12.6**	**2.05**	**191**
Total UK: Direct Sewage + Industrial	lower	**2.43**	**0.53**	**140.5**	**76.7**	**525.2**	**33.0**	**8.0**	**41.2**	**20.3**	**13.79**	**72.6**	**15.23**	**402**
	upper	**3.37**	**0.67**	**142.6**	**80.1**	**525.5**	**60.0**	**124.9**	**41.4**	**20.4**	**13.80**	**72.6**	**15.25**	**402**

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Table 6c. Riverine Inputs
Reported Maritime Area of the OSPAR Convention in 2000 by United Kingdom

			1.00	5.00	6.0	2.0	7.0	8.0	9.0	10.0	11.0	12.00	13.0	14.00	3
			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
218	NI1	lower	0.05	0.00	23.0	3.4	21.8	1.7	0.0	0.5	7.5	0.47	8.1	0.85	64
		upper	0.70	1.09	23.0	4.3	29.5	6.7	6.6	0.5	7.5	0.47	8.1	0.85	65
		comment													
216	SC2	lower	0.22	0.02	19.5	13.7	71.5	0.0	0.0	1.2	7.0	0.80	9.8	0.95	33
		upper	0.27	0.03	19.5	13.7	71.5	43.8	199.0	1.3	7.0	0.80	9.8	0.95	35
		comment													
217	SC2a	lower	1.06	0.20	4.0	3.3	37.2	10.2		0.2	1.4	0.02	2.1	0.10	10
		upper	3.33	0.29	7.0	4.6	39.2	23.2		0.2	1.4	0.06	2.1	0.10	16
		comment													
92	Atlantic (UK)	lower	**1.33**	**0.22**	**46.5**	**20.5**	**130.6**	**11.8**	**0.0**	**1.9**	**15.9**	**1.30**	**20.0**	**1.90**	**107**
		upper	**4.30**	**1.41**	**49.5**	**22.6**	**140.2**	**73.7**	**205.6**	**2.0**	**15.9**	**1.33**	**20.0**	**1.90**	**117**
		comment													
203	E19	lower	0.09	0.00	5.4	1.2	35.0	0.0		0.0	1.5	0.02	1.6	0.02	19
		upper	0.09	0.00	5.4	1.2	35.0	0.1		0.0	1.5	0.02	1.6	0.02	19
		comment													
204	E20	lower	0.09	0.00	6.0	3.2	25.7	0.9		0.1	5.1	0.08	5.3	0.08	49
		upper	0.09	0.02	6.0	3.2	25.7	4.7		0.1	5.1	0.08	5.3	0.08	49
		comment													
205	E21	lower	0.04	0.00	2.8	1.3	11.8	4.2		0.2	3.2	0.24	3.4	0.24	12
		upper	0.04	0.01	2.8	1.3	11.8	5.2		0.2	3.2	0.24	3.4	0.24	12
		comment													
206	E22	lower	0.12	0.06	23.8	21.8	116.1	4.5	0.0	0.7	32.3	1.94	33.3	1.94	239
		upper	0.57	0.09	23.8	21.8	116.1	19.1	118.9	0.7	32.3	1.94	33.3	1.94	239
		comment													
207	E23	lower	0.05	0.02	11.6	7.0	68.8	0.3		0.2	11.8	0.22	12.1	0.22	380
		upper	0.59	0.06	12.2	15.0	68.9	16.9		0.3	11.8	0.22	12.1	0.22	380
		comment													
208	E24	lower	0.59	0.00	6.5	3.4	168.9	0.0		0.1	1.3	0.02	1.3	0.02	57
		upper	0.67	0.01	6.6	4.1	168.9	4.0		0.1	1.3	0.02	1.3	0.02	57
		comment													

			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
209	E25	lower	0.01	0.01	4.8	2.5	29.4	0.0		0.2	4.4	0.06	4.6	0.06	83
		upper	0.27	0.03	5.2	4.5	29.4	6.2		0.2	4.4	0.06	4.6	0.06	83
		comment													
90	Celtic Sea (UK)	lower	**0.99**	**0.09**	**60.9**	**40.3**	**455.7**	**9.8**	**0.0**	**1.4**	**59.6**	**2.59**	**61.6**	**2.59**	**839**
		upper	**2.32**	**0.22**	**62.0**	**51.0**	**455.9**	**56.2**	**118.9**	**1.5**	**59.6**	**2.59**	**61.6**	**2.59**	**839**
		comment													
197	E13	lower	0.03	0.00	4.7	3.7	13.3	2.6	0.0	0.1	3.3	0.21	3.4	0.21	0
		upper	0.08	0.00	4.7	3.9	13.3	3.5	16.3	0.1	3.3	0.21	3.4	0.21	0
		comment													
198	E14	lower	0.05	0.00	4.9	3.8	15.9	4.9	0.0	0.1	3.1	0.29	3.3	0.29	0
		upper	0.08	0.00	4.9	3.8	15.9	5.6	17.2	0.1	3.1	0.29	3.3	0.29	0
		comment													
199	E15	lower	0.00	0.00	1.3	0.6	5.3	0.6	0.0	0.0	3.4	0.26	3.4	0.26	0
		upper	0.05	0.00	1.3	1.4	5.3	0.9	12.1	0.0	3.4	0.26	3.4	0.26	0
		comment													
200	E16	lower	0.02	0.01	0.2	0.1	0.8	0.3		0.0	0.4	0.01	0.4	0.01	1
		upper	0.02	0.01	0.2	0.1	0.8	2.3		0.0	0.4	0.01	0.4	0.01	1
		comment													
201	E17	lower	0.14	0.01	6.0	6.3	33.6	0.7		0.2	5.7	0.18	5.9	0.18	65
		upper	0.14	0.01	6.0	6.6	33.7	3.8		0.2	5.7	0.18	5.9	0.18	66
		comment													
202	E18	lower	0.38	0.02	43.5	5.2	138.3	1.0		0.2	6.0	0.11	6.2	0.11	72
		upper	0.38	0.03	43.5	5.7	138.3	4.4		0.2	6.0	0.11	6.2	0.11	73
		comment													
86	Channel (UK)	lower	**0.63**	**0.03**	**60.6**	**19.6**	**207.2**	**10.2**	**0.0**	**0.6**	**21.9**	**1.07**	**22.7**	**1.07**	**138**
		upper	**0.77**	**0.06**	**60.6**	**21.5**	**207.4**	**20.5**	**45.6**	**0.6**	**21.9**	**1.07**	**22.7**	**1.07**	**140**
		comment													
185	E1	lower	0.06	1.00	12.1	7.0	33.8	0.1	0.0	0.2	9.6	0.43	9.8	0.43	110
		upper	0.37	1.01	12.1	7.3	43.3	5.0	97.4	0.2	9.6	0.43	9.8	0.43	111
		comment													
194	E10	lower	0.03	0.01	4.1	1.4	13.9	3.0	18.3	0.1	8.6	0.41	8.9	0.41	18
		upper	0.04	0.02	4.1	1.4	13.9	6.9	18.3	0.1	8.6	0.41	8.9	0.41	18
		comment													

			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
195	E11	lower	0.01	0.00	1.3	0.4	2.6	0.8	6.8	0.0	1.7	0.10	2.3	0.10	5
		upper	0.01	0.00	1.3	0.4	2.6	1.6	6.8	0.0	1.7	0.10	2.3	0.10	5
		comment													
196	E12	lower	0.07	0.05	25.6	15.9	83.3	14.6	0.1	0.6	24.0	2.85	27.0	2.85	87
		upper	0.40	0.07	25.6	16.0	83.3	24.9	113.8	0.6	24.0	2.85	27.0	2.85	87
		comment													
186	E2a	lower	0.31	0.09	8.0	30.2	159.2	0.1	0.0	0.2	2.8	0.20	3.1	0.20	59
		upper	0.39	0.10	8.0	30.2	159.2	3.0	89.6	0.2	2.8	0.20	3.1	0.20	59
		comment													
187	E3	lower	0.29	0.06	13.3	75.4	118.7	0.3	0.0	0.3	2.6	0.17	3.0	0.17	180
		upper	0.31	0.06	13.3	75.4	118.7	1.4	56.6	0.3	2.6	0.17	3.0	0.17	180
		comment													
188	E4	lower													
		upper													
		comment													
189	E5	lower	0.02	0.00	2.3	12.3	14.3	0.3	0.0	0.1	2.1	0.12	2.2	0.12	31
		upper	0.08	0.01	2.3	12.3	14.3	1.0	7.8	0.1	2.1	0.12	2.2	0.12	31
		comment													
190	E6	lower	0.00	0.00	0.9	1.5	6.1	0.3	0.0	0.0	0.2	0.01	0.3	0.01	27
		upper	0.02	0.00	0.9	1.5	6.1	0.3	5.2	0.0	0.2	0.01	0.3	0.01	27
		comment													
191	E7	lower													
		upper													
		comment													
192	E7a	lower	2.30	0.17	86.3	153.7	407.2	19.3	0.1	2.8	64.7	6.46	72.5	6.46	402
		upper	2.66	0.21	86.3	153.7	408.8	40.8	281.4	2.8	64.7	6.46	72.5	6.46	402
		comment													
193	E9	lower	0.19	0.06	16.2	2.3	63.2	19.0	21.3	0.4	32.3	1.63	32.3	1.63	119
		upper	0.19	0.08	16.2	2.3	63.2	29.3	46.8	0.4	32.3	1.63	32.3	1.63	120
		comment													
181	SC2b	lower	0.13	0.21	11.1	4.8	58.1	2.2		0.1	2.8	0.02	3.7	0.20	53
		upper	3.72	0.34	15.2	6.7	61.1	22.9		0.2	2.9	0.06	3.7	0.20	59
		comment													
182	SC3	lower	0.76	0.17	31.0	14.9	122.7	0.6		0.3	13.6	0.22	14.8	0.37	150
		upper	2.80	0.22	31.9	15.5	122.9	11.3		0.3	13.6	0.22	14.8	0.37	150
		comment													

			Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
183	SC4	lower	0.10	0.03	33.9	10.3	54.5	5.9		0.3	9.7	0.36	16.8	0.61	76
		upper	0.85	0.05	33.9	11.6	54.5	9.2		0.4	9.7	0.38	16.8	0.61	80
		comment													
184	SC5	lower	0.11	0.01	10.5	9.2	52.3	3.7		0.3	4.9	0.20	7.5	0.47	88
		upper	0.18	0.02	10.6	9.2	52.3	5.5		0.3	4.9	0.20	7.5	0.47	88
		comment													
84	North Sea (UK)	lower	**4.38**	**1.87**	**256.4**	**339.2**	**1189.8**	**70.2**	**46.7**	**5.8**	**179.7**	**13.17**	**204.2**	**14.02**	**1404**
		upper	**12.03**	**2.18**	**261.5**	**343.5**	**1204.1**	**163.1**	**723.8**	**6.0**	**179.7**	**13.24**	**204.2**	**14.03**	**1418**
		comment													
210	E26	lower	0.22	0.00	6.4	11.3	144.2	0.0		0.2	3.9	0.03	3.9	0.03	53
		upper	0.44	0.03	6.8	11.3	144.2	8.1		0.2	3.9	0.03	3.9	0.03	53
		comment													
211	E27	lower	0.22	0.00	19.6	9.7	127.0	0.0		0.2	5.2	0.19	5.5	0.19	71
		upper	0.48	0.02	20.2	12.5	127.0	7.8		0.2	5.2	0.19	5.5	0.19	71
		comment													
212	E28	lower	0.41	0.16	25.9	24.1	90.1	9.3	0.0	3.2	13.0	1.72	17.0	1.72	108
		upper	0.49	0.16	25.9	24.1	90.1	17.9	64.7	3.2	13.0	1.93	17.0	1.93	108
		comment													
213	E29	lower	0.42	0.07	20.3	16.1	60.6	0.0	0.4	0.5	7.2	0.95	8.1	0.95	139
		upper	0.51	0.08	20.3	16.3	64.7	11.0	77.7	0.6	7.4	0.95	8.1	0.95	141
		comment													
219	E30	lower	0.07	0.03	5.6	7.9	35.5	0.0	4.0	0.2	5.5	0.19	6.0	0.19	45
		upper	0.22	0.05	5.6	8.0	37.5	10.4	73.8	0.2	5.7	0.19	6.0	0.19	46
		comment													
215	NI2	lower	0.03	0.00	4.6	0.6	5.8	0.7	0.0	0.1	2.1	0.19	2.3	0.26	5
		upper	0.07	0.10	4.6	0.6	6.0	1.0	0.7	0.1	2.1	0.19	2.3	0.26	5
		comment													
214	SC1	lower	0.40	0.00	12.3	26.9	76.4	0.0	0.0	0.1	5.0	0.16	7.9	0.40	38
		upper	0.42	0.02	12.3	26.9	76.4	25.0	208.0	0.3	5.0	0.16	7.9	0.40	40
		comment													
88	Irish Sea (UK)	lower	**1.76**	**0.26**	**94.7**	**96.7**	**539.6**	**10.0**	**4.4**	**4.4**	**42.0**	**3.42**	**50.6**	**3.73**	**458**
		upper	**2.63**	**0.45**	**95.7**	**99.7**	**545.8**	**81.3**	**424.9**	**4.7**	**42.4**	**3.64**	**50.6**	**3.94**	**464**
		comment													

		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
Total UK: Riverine	lower	**9.08**	**2.48**	**519.1**	**516.2**	**2522.8**	**112.0**	**51.0**	**14.2**	**319.0**	**21.55**	**359.1**	**23.31**	**2947**
	upper	**22.05**	**4.32**	**529.2**	**538.4**	**2553.4**	**394.9**	**1518.9**	**14.8**	**319.5**	**21.86**	**359.1**	**23.53**	**2978**

		Cd [t]	Hg [t]	Cu [t]	Pb [t]	Zn [t]	g-HCH [kg]	PCB [kg]	NH4-N [kt]	NO3-N [kt]	PO4-P [kt]	Total N [kt]	Total P [kt]	SPM [kt]
Total UK:	lower	**11.51**	**3.01**	**659.5**	**592.9**	**3048.0**	**145.0**	**59.0**	**55.4**	**339.3**	**35.33**	**431.7**	**38.53**	**3348**
Direct + Riverine	upper	**25.42**	**4.99**	**671.8**	**618.4**	**3078.9**	**454.9**	**1643.8**	**56.2**	**339.9**	**35.66**	**431.8**	**38.77**	**3380**

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