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# Report
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# Survey of existing measured concentration data for 1,1-dichloroethene, 2,4-dichlorophenol and monochloromethane in water, sediment and aquatic biota

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# Foreword

This study was performed for Euro Chlor to obtain information on the data of 1,1-dichloroethene, 2,4-dichlorphenol and monochloromethane in the European aquatic environment. The project was guided by D. van Wijk from Euro Chlor and coordinated at RIVO by P. Leonards. We are very grateful to dr. T. Huybrechts (Ghent University, Belgium), dr. J. Staeb (RIZA, Netherlands), P. Roose (MUMM, Belgium), and A. Wills/ L. Hutt (Environment Agency, UK) for providing data.

# Summary

This study focussed on the data collection of 1,1-dichloroethene, 2,4-dichlorphenol and monochloromethane in the European aquatic environment. Limited data for 1,1-dichloroethene in water and biota was found for the Scheldt Estuary and for water from the North Sea and River Elbe. Concentrations for 1,1-dichloroethene in water indicate relatively low concentrations (ng/L range) in water, and this compound has been observed to bioaccumulate in eel.

For 2,4-dichlorophenol data was available for the Scheldt Estuary, North Sea, 26 freshwater/ marine sites in The Netherlands, 6 marine/estuarine locations from the UK, Gulf of Bothnia, and the Gulf of Gdansk. Relatively low concentrations in surface waters in both marine (Sweden) and river environments (The Netherlands) have been found. Old data (early ‘80) showed, however, much higher levels at certain point sources (e.g. pulp mills).

Data for monochloromethane in water was very limited and found for the ocean only.
For all compounds no data was found for sediment.

# 1. Introduction

Risk assessments in the aquatic environment require reliable exposure concentration data of chemicals for comparison with ecotoxicological effect levels. Measured field concentrations of chemicals reflect the balance between emissions and degradation processes, and can be employed for estimating real exposure concentrations for biota. Various monitoring programmes, surveys and other publications report environmental concentration data, which can be acquired through a variety of sources, both published and unpublished.

In order to complete aquatic risk assessments for chlorinated organic chemicals in Europe, Euro Chlor has commissioned a report from the Netherlands Institute for Fisheries Research concerning existing measured concentrations of 1,1-dichloroethene (CAS No. 75-35-4), 2,4-dichlorophenol (CAS No. 120-83-2) and monochloromethane (CAS No. 74-87-3) in water, sediment and biota. The project consisted of two phases: i) determining data availability in the aquatic environment for the target compounds in the published and gray literature and ii) evaluating, summarizing and reporting data collected from the sources identified in the first phase. The results of this project are presented in this report.

# 2. Objective

The objective of the project is to determine data availability, collect, evaluate and summarise data for 1,1-dichloroethene, 2,4-dichlorophenol and monochloromethane in the European aquatic environment (water, sediment and biota).

# 3. Search

Information on 1,1-dichloroethene, 2,4-dichlorophenol and monochloromethane was obtained by means of an on-line literature search, databases and personal contacts. The literature search was performed using the Web of Science database, which contains references from on peer-reviewed scientific journals dating back to 1988. In Annex 1 the search criteria are provided. Several synonyms of the chemicals names of 1,1-dichloroethene, 2,4-dichlorophenol and monochloromethane combined with matrix names were used.
A number of databases were consulted to seek data for the target (Annex 2). Mr. P. Roose from the MUMM[1] in Belgium was asked if there was unpublished data available on the target compounds in water, sediment and biota. dr. T. Huybrechts (Ghent University, Research group

[1] Management Unit of the North Sea Mathematical Models and the Scheldt Estuary

Environment organic chemistry and technology, ENVOC) was asked for raw data of 1,1-dichloroethene in North Sea and Scheldt estuaria. RIZA (Netherlands) was contacted for additional information on the target compounds that was not presented on the Waterstat/Waterbase site. CEFAS, WrC, and the Environment Agency were asked to provide data on the target compounds for the UK. IFREMER was asked to provide data for France, and Instituto Español de Oceanografia for Spain.

# 4. Results and discussion

## 4.1 Literature, databases and personal contacts

*Literature*

A number of publications have been found on isomers of dichlorophenols and dichloroethene, however, a minor number on the specific target compounds; 2,4-dichlorophenol and 1,1-dichloroethene. The literature search reveals data for the Scheldt Estuary and the North Sea for 2,4-dichlorophenol and 1,1-dichloroethene in biota (Roose and Brinkman, 1998; Huybrechts et al., 2003). Data for 2,4-dichlorophenol in the Gulf of Gdansk has been reported (Kot-Wasik *et al*.). Data for 1,1-dichloroethene in water was found for the River Elbe for 1992 (Gotz *et al*., 1998) and for chloroethenes in groundwater of Germany. Articles reporting on monochloromethane articles generally focus on fluxes or levels in air, and no concentrations for water, sediment and biota in Europe were reported.

*Databases*

The Waterstat/Waterbase database of The Netherlands provides data of the sum of 2,4- and 2,5-dichlorophenol in surface water for 26 sites (fresh and marine waters). Data is available for most locations from 1995 to 2000. All other databases contained no information on the target compounds.

*Personal contacts*

Raw data for 1,1-dichloroethene in water for the North Sea and Scheldt estuary for different time periods (1998, 1999, 2000) was provided by Dr. T. Huybrechts (Ghent University). For five locations in The Netherlands from the Dutch National Water Monitoring Programme (MWTL) data was provided by RIZA (dr. J. Staeb) for 1,1-dichloroethene (2002, 2003). Data for 2,4-dichlorophenol for the marine environment of the UK were provided by the Environment Agency (A. Wills/ L. Hutt). No data on the target compounds was available for Spain (Dr. dr. A. Rodríguez de León). For France no feedback was provided on the requests of information, and therefore, availability of data is unknown (IFREMER, J. Tronczynski).

## 4.2 Data overview and comments

### *4.2.1 1,1-dichloroethene*

RIZA monitoring data (Annex 3) shows that 1,1-dichloroethene was not detected except at sampling stations on the River Meuse at Eijsden (at Dutch-Belgian border) and further downstream at Belfeld, where concentrations of 0.01 and 0.02 ug/L were measured in winter and early spring. In the Scheldt Estuary, the compound was detected sporadically at relatively low levels at most sampling sites in the years 1998 – 2000 (Annex 4, and sample location Annex 5). At three of the sites (S22, S26, S27) it was detected in all samples taken at levels between 1 and 8 ng/L, which is a slightly higher range than at most other sites in the estuary. In samples from the North Sea concentrations ranged from below the detection limit (<1.7 ng/L) to 13 ng/L (Annex 6). At one location (NS2), in all samples taken (1998 to 2000) 1,1-dichloroethene was detected; levels were between 0.9 and 2.2 ng/L).
Götz *et al.* (2002) reported somewhat higher water concentrations in the River Elbe near Hamburg in 1992 of 27 ng/L at Zollenspieker and 29 ng/L at Seemannshöft sampling stations. These concentrations are low compared to German drinking water quality criteria for other chlorinated ethenes (1000 ng/L) reported in the same paper.
In a paper presenting an improved analytical method for body residue analysis, Roose and Brinkman (1998) reported a concentration of 15 ng/g wet weight 1,1-dichloroethene in eel collected near Antwerp in the Scheldt Estuary. It has been suggested that some body residues of volatile halogenated organic chemicals may be higher than expected based on compound lipophilicity and water concentrations. However, if exposed to concentrations in water of the estuary up to 8 ng/L, as at the three above-mentioned sites, such body residues of 1,1-dichloroethene seem reasonable.

### *4.2.2 2,4-dichlorophenol*

Xie et al. (1986) reported concentrations of 2 to 123 ug/L 2,4-dichlorophenol, measured in seawater sampled in the Gulf of Bothnia (East Coast of Sweden) in the early 80's. In effluent water from a nearby sulphate pulp mill site, concentrations 3 orders of magnitude larger were measured (8 – 23 ?g/L), indicating a high dilution factor of 2,4-dichlorophenol as it is distributed from the point source to the surrounding waters. Marine sediment concentrations in the same study were reported between 11 and 55 ng/g (normalized for organic carbon content).
In monitioring studies, the compound was not detected in the UK's NMMP (Annex 7) but on occasion, has been detected in the RIZA monitoring programme (MWTL) in the Netherlands between 1995 and 2002 in water (Annex 8, which provide average concentrations). Concentrations are reported as the sum of 2,4- and 2,5-dichlorophenol. The concentrations seldom exceeded 0.03 ?g/L with the exception of the Schaar van Ouden Doel and Lobith

stations in the late 1990's ('95, '96, '97), where in a few samples concentrations as high as 0.2 ?g/L were measured. As an example levels found between 1995 and 2002 in Schaar van Ouden Doel are shown (Figure 1).

The highest concentrations of 2,4-dichlorophenol in water were observed by Polish researchers working in the Gulf of Gdansk, where at site Vistula Mouth and Kiezmark, levels of this compound reached between 3 and 6 ?g/L. (Kot-Wasik et al., poster).

### *4.2.3 Monochloromethane*

Although most measurements of $CH_3Cl$ are atmospheric, an important source of this compound is considered to be the oceans, and perhaps also salt marshes and coastal zones (Rhew et al. 2000 Nature, 403, 292; Yokouchi et al. 2000 Nature 403, 295). $CH_3Cl$ measured in ocean water is generally reported as a flux to the atmosphere (e.g. mol $m^{-2}d^{-1}$), which is a form that is not useful for extracting exposure concentrations for risk assessment purposes. Moore et al. (1996) reported that in the NW Atlantic, ocean water samples were at or below $CH_3Cl$ saturation, while in warmer waters S of the Gulf Stream and in the Pacific Ocean, all samples were supersaturated. Concentrations ranged from 3 to 5 ng/l water. Sediments may also be natural sources of $CH_3Cl$, being released as organic matter is degraded (Keppler et al., 2000, Nature 403, 298).

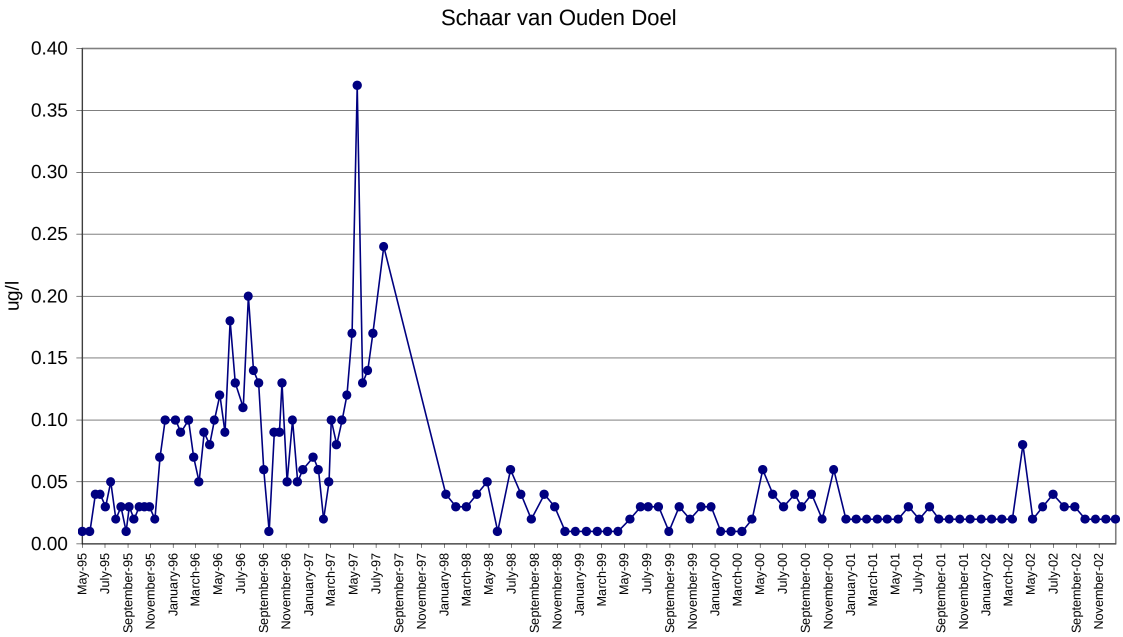


*Figure 1: Levels (µg/L) of 2,4/2,5-dichlorophenol in surface water from Schaar van Ouden Doel (Scheldt estuary). Samples were taken between 1995 and 2002.*

# 5. Conclusions

- ?? Limited data for 1,1-dichloroethene in water and biota is available for the Scheldt Estuary and for water in the North Sea and River Elbe.
- ?? Data for 2,4-dichlorophenol is available for the Scheldt Estuary, North Sea, 26 freshwater/marine sites in The Netherlands, 6 marine/estuarine locations from the UK, Gulf of Bothnia, and the Gulf of Gdansk.
- ?? Only very limited data could be found for monochloromethane in water.
- ?? No data was found for the target compounds in sediment.

The few environmental concentration data that are available for 1,1-dichloroethene in water indicate relatively low concentrations (ng/L range) in water. In the Scheldt Estuary, this compound has been observed to bioaccumulate in eel tissue.
2,4-Dichlorophenol has been detected at relatively low concentrations in surface waters in both marine (Sweden) and river environments (The Netherlands). However, much higher levels are measurable at certain point sources such as pulp mills or near highly industrialised areas.
Monochloromethane concentration data in ocean water, if measured, are often embedded in atmospheric flux data and difficult to apply for exposure assessment purposes. Marine surface water, particularly in warm ocean water and possibly near coastal zones, would seem to be not uncommonly saturated with this compound.

# 6. References

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Huybrechts, T., J. de Wulf, H. van Langenhove. 2003. State-of-the art of gas chromatography-based methods for analysis of antropogenic volatile organic compounds in estuarine waters, illustrated with the river Scheldt as an example. J. Chrom. A, 1000, 283-297.

Keppler, F., R. Eiden, V. Niedan, J. Pracht, H. F. Scholer. 2000. Halocarbons produced by natural oxidation processes during degradation of organic matter. Nature 403, 298

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Rhew, R.C., B.R. Miller, R.F. Weiss. 2000. Natural methyl bromide and methyl chloride emissions from coastal salt marshes. Nature, 403, 292.

Roose P. and Brinkman, U.A.Th.. 1998. Improved determination of VOCs in marine biota by using on-line purge and trap gas chromatography mass spectrometry. Analyst 123: 2167-2173.

Xie, T-M, K. Abrahamsson, E. Fogelqvist, B. Josefsson. 1986. Distribution of chlorophenolics in a marine environment. Environ. Sci. Technol. 20, 457-463.

Yokouchi Y., Y. Noijiri, L. A. Barrie, D. Toom-Sauntry, T. Machida, Y. Inuzuka, H. Akimoto, H.-J. Li, Y. Fujinuma, S. Aokia. 2000. Strong source of methyl chloride to the atmosphere from tropical coastal land, Nature 403, 295.

# Annex 1: Literature search criteria

Dichlorophenol and water
Dichlorophenol and sediment
Dichlorophenol and biota
Dichlorophenol and fish
Dichlorophenol and mussel
Dichlorophenol and monitoring

DCP and water
DCP and sediment
DCP and biota
DCP and fish
DCP and mussel
DCP and monitoring

1,1-Dichloroethene and water
1,1-Dichloroethene and sediment
1,1-Dichloroethene and biota
1,1-Dichloroethene and fish
1,1-Dichloroethene and mussel

1,1-dichloroethylene and water
1,1-dichloroethylene and sediment
1,1-dichloroethylene and biota
1,1-dichloroethylene and fish
1,1-dichloroethylene and mussel

Vinylidene Chloride and water
Vinylidene Chloride and sediment
Vinylidene Chloride and biota
Vinylidene Chloride and fish
Vinylidene Chloride and mussel

1,1-DCE and water
1,1-DCE and sediment
1,1-DCE and biota
1,1-DCE and fish
1,1-DCE and mussel

Methyl Chloride and water
Methyl Chloride and sediment
Methyl Chloride and biota
Methyl Chloride and fish
Methyl Chloride and mussel

Chloromethane and water
Chloromethane and sediment
Chloromethane and biota
Chloromethane and fish
Chloromethane and mussel

Monochloromethane and water
Monochloromethane and sediment
Monochloromethane and biota
Monochloromethane and fish
Monochloromethane and mussel

VOC and water
VOC and sediment
VOC and biota
VOC and fish
VOC and mussel

Annex 2: Consulted databases.

| Country | Institute/ Organisation | Database | Compound and matrix | Number of sites | Year of sampling |
|---|---|---|---|---|---|
| Netherlands | RIKZ/RIZA | www.waterstat.nl and www. waterbase.nl | 2,4-dichlorophenol in surface water | 26 | 1995-2000 |
| Norway | Norwegian Pollution Control Authority | site www.environment.no | no data available | | |
| Scotland | Scotische Environmental Protection Agency | ww.sepa.org.uk | no data available | | |
| Germany | Umwelt Bundes Ambt | umweltprobenbank.de | no data available | | |
| Sweden | Swedish Environmental Research Institute | www.ivl.se/miljo/db/intro.asp | no data available | | |
| France | IFREMER | ifremer.fr | no data available | | |
| | Laboratoire de Géologie Appliquée, Université Pierre et Marie Curie | | ? | | |
| Polar region | AMAP | www.syncon.uaf.edu/ | no data available | | |
| UK | CEFAS | CEFASdirect.co.uk | no data available | | |
| | WRC | | | | |
| Spain | Spanish Institute of Oceanography (IEO) | | no data available | | |

## Annex 3: Summary data of 2,4/2,5-dichlorophenol in surface water from The Netherlands.

Location, date of sampling, number of samples (Ntot), number of samples were target compound has been found (Ndet), concentration range (range), median, average concentration (µg/L), standard deviation (SD), and relative standard deviation (RSD) are given. Median and average concentrations were calculated if the number of detected samples was higher than two. For the levels below the detection limit, half the concentration was used. Raw data is provided as Excel sheet.

| Location | year | Ntot | Ndet/Ntot | Range | Median | Average (ug/L) | SD | RSD (%) |
|---|---|---|---|---|---|---|---|---|
| Amsterdam (kilometer 25, IJtunnel) | 1995 | 8 | | <0.01 | | | | |
| Amsterdam (kilometer 25, IJtunnel) | 1996 | 5 | | <0.01 | | | | |
| Amsterdam (kilometer 25, IJtunnel) | 1997 | 6 | | <0.01-0.04 | 0.0075 | 0.014 | 0.014 | 98 |
| Amsterdam (kilometer 25, IJtunnel) | 1998 | 6 | | <0.01-0.04 | 0.020 | 0.020 | 0.014 | 69 |
| Amsterdam (kilometer 25, IJtunnel) | 1999 | 7 | | <0.01-0.01 | | | | |
| Amsterdam (kilometer 25, IJtunnel) | 2000 | 8 | | <0.01-0.04 | 0.010 | 0.013 | 0.011 | 91 |
| Amsterdam (kilometer 25, IJtunnel) | 2001 | 7 | | <0.02 | | | | |
| Amsterdam (kilometer 25, IJtunnel) | 2002 | 7 | | <0.02 | | | | |
| Belfeld boven | 1995 | 7 | | <0.01 | | | | |
| Belfeld boven | 1996 | 5 | | <0.01 | | | | |
| Belfeld boven | 1997 | 8 | | <0.01-0.01 | 0.0050 | 0.018 | 0.033 | 183 |
| Belfeld boven | 1998 | 6 | | <0.01 | | | | |
| Belfeld boven | 1999 | 4 | | <0.01 | | | | |
| Belfeld boven | 2000 | 7 | | <0.01-<0.02 | | | | |
| Belfeld boven | 2001 | 5 | | <0.02 | | | | |
| Belfeld boven | 2002 | 7 | | <0.02 | | | | |
| Bovensluis | 1995 | 11 | 3/11 | <0.01-0.02 | 0.0050 | 0.0082 | 0.006030227 | 74 |
| Bovensluis | 1996 | 5 | 2/5 | <0.01-0.02 | 0.0050 | 0.011 | 0.0082 | 75 |
| Bovensluis | 1997 | 6 | 1/7 | <0.01-0.02 | | | | |
| Bovensluis | 1998 | 6 | 0/6 | <0.01 | | | | |
| Bovensluis | 1999 | 7 | 1/7 | <0.01-0.02 | | | | |
| Bovensluis | 2000 | 6 | 0/6 | <0.02 | | | | |
| Bovensluis | 2001 | 7 | 0/7 | <0.02 | | | | |
| Bovensluis | 2002 | 6 | 0/6 | <0.02 | | | | |
| Brienenoord (kilometer 996.5) | 1995 | 12 | 6/12 | <0.01-0.02 | 0.0075 | 0.0092 | 0.0056 | 61 |
| Brienenoord (kilometer 996.5) | 1996 | 13 | 4/13 | <0.01-0.03 | 0.005 | 0.0096 | 0.0083 | 86 |
| Brienenoord (kilometer 996.5) | 1997 | 8 | 3/8 | <0.01-0.04 | 0.005 | 0.012 | 0.013 | 105 |
| Brienenoord (kilometer 996.5) | 1998 | 7 | 1/7 | <0.01-0.03 | | | | |
| Brienenoord (kilometer 996.5) | 1999 | 6 | 2/6 | <0.01-0.02 | 2.51 | 0.008 | 0.006 | 73 |
| Brienenoord (kilometer 996.5) | 2000 | 7 | 1/7 | <0.02-0.02 | | | | |
| Brienenoord (kilometer 996.5) | 2001 | 6 | 0/6 | <0.02 | | | | |
| Brienenoord (kilometer 996.5) | 2002 | 6 | 0/6 | <0.02 | | | | |
| Eemmeerdijk, kilometer 23 | 1995 | 4 | 0/4 | <0.01 | | | | |
| Eemmeerdijk, kilometer 24 | 1996 | 4 | 0/4 | <0.01 | | | | |
| Eemmeerdijk, kilometer 25 | 1997 | 4 | 0/4 | <0.01 | | | | |
| Eemmeerdijk, kilometer 26 | 1998 | 6 | 1/6 | <0.01-0.02 | | | | |
| Eemmeerdijk, kilometer 27 | 1999 | 6 | 1/6 | <0.01-0.02 | | | | |
| Eemmeerdijk, kilometer 28 | 2000 | 6 | 3/6 | <0.01-0.02 | 0.010 | 0.012 | 0.0041 | 35 |
| Eemmeerdijk, kilometer 29 | 2001 | 7 | 0/7 | <0.02 | | | | |
| Eemmeerdijk, kilometer 30 | 2002 | 6 | 0/6 | <0.02 | | | | |

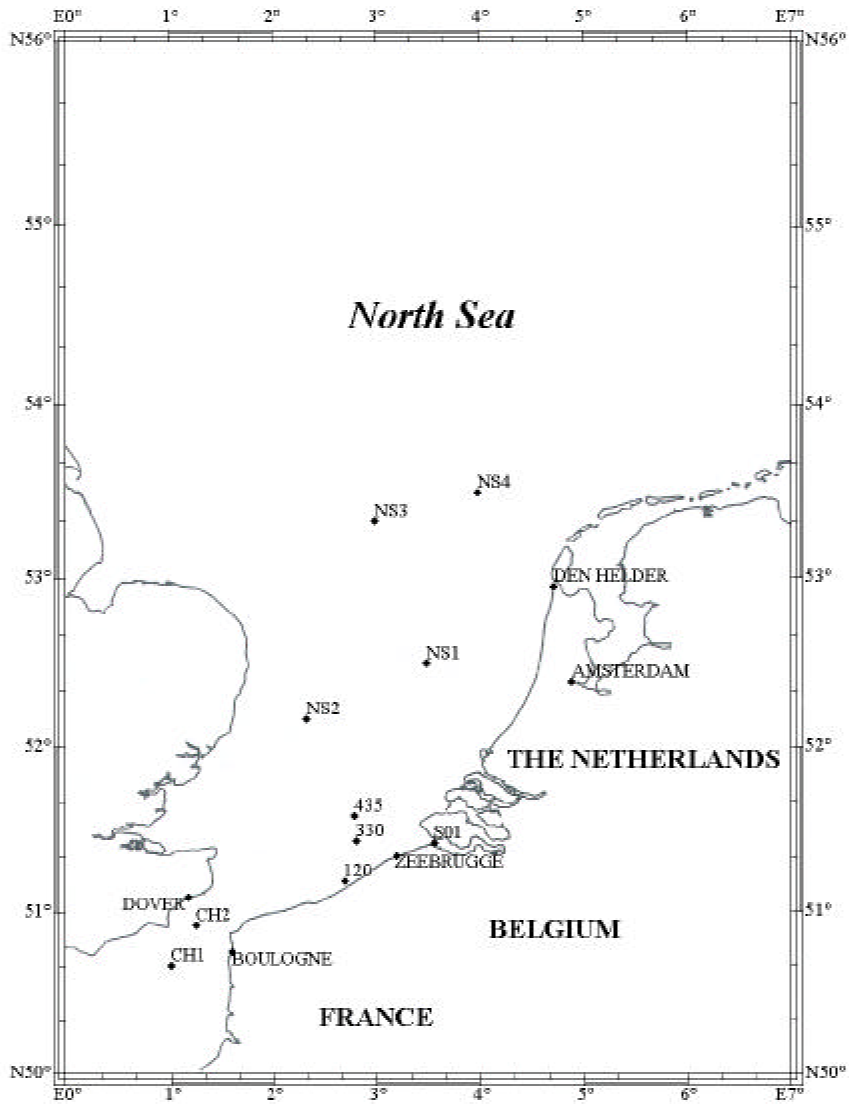
| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Genemuiden | 1995 | 7 | 0/7 | <0.01 | | | | |
| Genemuiden | 1996 | 5 | 0/5 | <0.01 | | | | |
| Genemuiden | 1997 | 5 | 1/5 | <0.01 | | | | |
| Genemuiden | 1998 | 5 | 0/5 | <0.01 | | | | |
| Genemuiden | 1999 | 6 | 0/6 | <0.01 | | | | |
| Genemuiden | 2000 | 7 | 0/7 | <0.01-<0.02 | | | | |
| Genemuiden | 2001 | 5 | 0/5 | <0.02 | | | | |
| Genemuiden | 2002 | 7 | 0/7 | <0.02 | | | | |
| Gouda voorhaven | 1995 | na | | | | | | |
| Gouda voorhaven | 1996 | na | | | | | | |
| Gouda voorhaven | 1997 | 5 | 1/5 | <0.01-0.02 | | | | |
| Gouda voorhaven | 1998 | 7 | 1/7 | <0.01-0.01 | | | | |
| Gouda voorhaven | 1999 | 6 | 0/6 | <0.01 | | | | |
| Gouda voorhaven | 2000 | 7 | 0/7 | <0.01-<0.02 | | | | |
| Gouda voorhaven | 2001 | 6 | 0/6 | <0.02 | | | | |
| Gouda voorhaven | 2002 | 7 | 0/7 | <0.02 | | | | |
| Haringvlietsluis | 1995 | 12 | 1/12 | <0.01-0.02 | | | | |
| Haringvlietsluis | 1996 | 12 | 2/12 | <0.01-0.03 | 0.005 | 0.007 | 0.0044 | 67 |
| Haringvlietsluis | 1997 | 9 | 1/9 | <0.01-0.02 | | | | |
| Haringvlietsluis | 1998 | 6 | 0/6 | <0.01 | | | | |
| Haringvlietsluis | 1999 | 7 | 1/7 | <0.01-0.01 | | | | |
| Haringvlietsluis | 2000 | 6 | 1/6 | <0.01-0.03 | | | | |
| Haringvlietsluis | 2001 | 7 | 0/7 | <0.02 | | | | |
| Haringvlietsluis | 2002 | 7 | 0/7 | <0.02 | | | | |
| IJmuiden (kilometer 2) | 1995 | 12 | 0/12 | | | | | |
| IJmuiden (kilometer 2) | 1996 | 13 | 1/13 | <0.01-0.02 | | | | |
| IJmuiden (kilometer 2) | 1997 | 12 | 6/12 | <0.01-0.09 | 0.008 | 0.015 | 0.014 | 93 |
| IJmuiden (kilometer 2) | 1998 | 6 | 5/12 | <0.01-0.15 | 0.045 | 0.061 | 0.058 | 95 |
| IJmuiden (kilometer 2) | 1999 | 7 | 0/7 | <0.01 | | | | |
| IJmuiden (kilometer 2) | 2000 | 7 | 3/7 | <0.01-0.07 | 0.010 | 0.026 | 0.025 | 97 |
| IJmuiden (kilometer 2) | 2001 | 7 | 1/7 | <0.01-0.03 | | | | |
| IJmuiden (kilometer 2) | 2002 | 7 | 1/7 | <0.01-01 | | | | |
| Kampen | 1995 | 7 | 2/7 | <0.01-0.04 | 0.0050 | 0.012 | 0.013 | 111 |
| Kampen | 1996 | 7 | 3/7 | <0.01-0.03 | 0.0050 | 0.013 | 0.010 | 81 |
| Kampen | 1997 | 6 | 3/6 | <0.01-0.2 | 0.0050 | 0.038 | 0.079 | 207 |
| Kampen | 1998 | 7 | 1/7 | <0.01-0.02 | | | | |
| Kampen | 1999 | 6 | 2/6 | <0.01-0.01 | 0.0050 | 0.0067 | 0.0026 | 39 |
| Kampen | 2000 | 7 | 0/7 | <0.01-<0.02 | | | | |
| Kampen | 2001 | 6 | 0/6 | <0.02 | | | | |
| Kampen | 2002 | 7 | 0/7 | <0.02 | | | | |
| Keizersveer | 1995 | na | | | | | | |
| Keizersveer | 1996 | na | | | | | | |
| Keizersveer | 1997 | na | | | | | | |
| Keizersveer | 1998 | na | | | | | | |
| Keizersveer | 1999 | na | | | | | | |
| Keizersveer | 2000 | na | | | | | | |
| Keizersveer | 2001 | na | | | | | | |
| Keizersveer | 2002 | 7 | 0/7 | <0.02 | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Ketelmeer west | 1995 | 7 | 2/7 | <0.01-0.02 | 0.0050 | 0.011 | 0.010 | 95 |
| Ketelmeer west | 1996 | 5 | 3/5 | <0.01-0.03 | 0.010 | 0.014 | 0.011 | 77 |
| Ketelmeer west | 1997 | 5 | 2/5 | <0.01-0.03 | 0.0050 | 0.011 | 0.011 | 99 |
| Ketelmeer west | 1998 | 6 | 1/6 | <0.01-0.01 | | | | |
| Ketelmeer west | 1999 | 6 | 0/6 | <0.01 | | | | |
| Ketelmeer west | 2000 | 6 | 1/6 | <0.01-0.01 | | | | |
| Ketelmeer west | 2001 | 6 | 0/6 | <0.02 | | | | |
| Ketelmeer west | 2002 | 6 | 0/6 | <0.02 | | | | |
| Lobith ponton | 1995 | 18 | 6/18 | <0.01-0.02 | 0.0050 | 0.0083 | 0.0057 | 68 |
| Lobith ponton | 1996 | 20 | 7/20 | <0.01-0.1 | 0.0050 | 0.0188 | 0.0275 | 147 |
| Lobith ponton | 1997 | 12 | 5/12 | <0.01-0.02 | 0.0050 | 0.0096 | 0.0066 | 68 |
| Lobith ponton | 1998 | 13 | 3/12 | <0.01-0.06 | 0.0050 | 0.013 | 0.016 | 125 |
| Lobith ponton | 1999 | 11 | 0/11 | <0.01 | | | | |
| Lobith ponton | 2000 | 9 | 2/11 | <0.01-0.02 | 0.010 | 0.010 | 0.0048 | 46 |
| Lobith ponton | 2001 | 13 | 0/13 | <0.02 | | | | |
| Lobith ponton | 2002 | 13 | 0/13 | <0.02 | | | | |
| Maassluis | 1995 | 26 | 8/26 | <0.01-0.03 | 0.010 | 0.009 | 0.0054 | 58 |
| Maassluis | 1996 | 26 | 9/26 | <0.01-0.04 | 0.005 | 0.011 | 0.010 | 91 |
| Maassluis | 1997 | 17 | 6/17 | <0.01-0.04 | 0.005 | 0.012 | 0.011 | 95 |
| Maassluis | 1998 | 13 | 4/13 | <0.01-0.02 | 0.005 | 0.007 | 0.004 | 60 |
| Maassluis | 1999 | 13 | 3/13 | <0.01-0.02 | 0.005 | 0.008 | 0.006 | 73 |
| Maassluis | 2000 | 12 | 6/12 | <0.01-0.03 | 0.010 | 0.013 | 0.007 | 51 |
| Maassluis | 2001 | 12 | 1/12 | <0.01-0.02 | 0.010 | 0.011 | 0.003 | 27 |
| Maassluis | 2002 | 13 | 0/13 | <0.02 | | | | |
| Markermeer midden (zwaartepunt Markermeer) | 1995 | 7 | 0/7 | <0.01 | | | | |
| Markermeer midden (zwaartepunt Markermeer) | 1996 | 6 | 1/6 | <0.01-0.02 | | | | |
| Markermeer midden (zwaartepunt Markermeer) | 1997 | 5 | 0/5 | <0.01 | | | | |
| Markermeer midden (zwaartepunt Markermeer) | 1998 | 7 | 0/7 | <0.01 | | | | |
| Markermeer midden (zwaartepunt Markermeer) | 1999 | 6 | 0/6 | <0.01 | | | | |
| Markermeer midden (zwaartepunt Markermeer) | 2000 | 6 | 0/6 | <0.01-<0.02 | | | | |
| Markermeer midden (zwaartepunt Markermeer) | 2001 | 6 | 0/6 | <0.02 | | | | |
| Markermeer midden (zwaartepunt Markermeer) | 2002 | 5 | 0/5 | <0.02 | | | | |
| Nederweert | 1995 | 7 | 1/7 | <0.01-0.01 | | | | |
| Nederweert | 1996 | 6 | 3/6 | <0.01-0.01 | 0.008 | 0.008 | 0.003 | 37 |
| Nederweert | 1997 | 5 | 4/5 | <0.01-0.02 | 0.010 | 0.011 | 0.005 | 50 |
| Nederweert | 1998 | 7 | 1/7 | <0.01-0.01 | | | | |
| Nederweert | 1999 | 6 | 0/6 | <0.01 | | | | |
| Nederweert | 2000 | 6 | 0/6 | <0.01 | | | | |
| Nederweert | 2001 | 7 | 1/7 | <0.02-0.02 | | | | |
| Nederweert | 2002 | 7 | 0/7 | <0.02 | | | | |
| Nieuwegein | 1995 | na | | | | | | |
| Nieuwegein | 1996 | 7 | 0/7 | <0.01 | | | | |
| Nieuwegein | 1997 | 4 | 0/4 | <0.01 | | | | |
| Nieuwegein | 1998 | 7 | 1/7 | <0.01-0.02 | | | | |
| Nieuwegein | 1999 | 5 | 0/5 | <0.01 | | | | |
| Nieuwegein | 2000 | 7 | 0/7 | <0.02 | | | | |
| Nieuwegein | 2001 | 6 | 0/6 | <0.02 | | | | |
| Nieuwegein | 2002 | 7 | 0/7 | <0.02 | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Puttershoek | 1995 | 11 | 5/11 | <0.01-0.06 | 0.005 | 0.014 | 0.016 | 121 |
| Puttershoek | 1996 | 13 | 3/13 | <0.01-0.02 | 0.005 | 0.007 | 0.004 | 63 |
| Puttershoek | 1997 | 7 | 1/7 | <0.01-0.01 | | | | |
| Puttershoek | 1998 | 7 | 1/7 | <0.01-0.02 | | | | |
| Puttershoek | 1999 | 6 | 2/6 | <0.01-0.04 | 0.005 | 0.013 | 0.014 | 108 |
| Puttershoek | 2000 | 7 | 1/7 | <0.01-0.01 | | | | |
| Puttershoek | 2001 | 6 | 1/6 | <0.02-0.02 | | | | |
| Puttershoek | 2002 | 7 | 0/7 | <0.02 | | | | |
| Sas van Gent | 1995 | 6 | 6/6 | 0.01-0.04 | 0.025 | 0.023 | 0.012 | 52 |
| Sas van Gent | 1996 | 7 | 6/7 | <0.01-0.12 | 0.040 | 0.046 | 0.036 | 77 |
| Sas van Gent | 1997 | 8 | 8/8 | 0.02-0.09 | 0.045 | 0.049 | 0.022 | 46 |
| Sas van Gent | 1998 | 7 | 4/7 | <0.01-0.07 | 0.020 | 0.031 | 0.028 | 93 |
| Sas van Gent | 1999 | 6 | 4/6 | <0.01-0.02 | 0.015 | 0.013 | 0.008 | 56 |
| Sas van Gent | 2000 | 7 | 5/7 | <0.01-0.06 | 0.020 | 0.029 | 0.020 | 68 |
| Sas van Gent | 2001 | 6 | 3/6 | <0.02-0.03 | 0.015 | 0.018 | 0.010 | 54 |
| Sas van Gent | 2002 | 7 | 3/7 | <0.02-0.02 | 0.010 | 0.014 | 0.005 | 37 |
| Schaar van Ouden Doel | 1995 | 24 | 18/24 | <0.01-0.1 | 0.025 | 0.027 | 0.023 | 85 |
| Schaar van Ouden Doel | 1996 | 25 | 24/25 | <0.01-0.2 | 0.090 | 0.097 | 0.042 | 44 |
| Schaar van Ouden Doel | 1997 | 14 | 14/14 | 0.02-0.37 | 0.110 | 0.130 | 0.090 | 69 |
| Schaar van Ouden Doel | 1998 | 13 | 10/13 | <0.01-0.06 | 0.030 | 0.030 | 0.017 | 58 |
| Schaar van Ouden Doel | 1999 | 13 | 9/13 | <0.01-0.03 | 0.020 | 0.019 | 0.012 | 60 |
| Schaar van Ouden Doel | 2000 | 13 | 10/13 | <0.01-0.06 | 0.030 | 0.028 | 0.019 | 69 |
| Schaar van Ouden Doel | 2001 | 13 | 3/13 | <0.02-0.03 | 0.010 | 0.013 | 0.006 | 46 |
| Schaar van Ouden Doel | 2002 | 13 | 6/13 | <0.02-0.08 | 0.010 | 0.023 | 0.020 | 87 |
| Steenbergen (Roosendaalsevliet) | 1995 | 10 | 0/10 | <0.01 | | | | |
| Steenbergen (Roosendaalsevliet) | 1996 | 4 | 1/4 | <0.01-0.02 | | | | |
| Steenbergen (Roosendaalsevliet) | 1997 | 5 | 0/5 | <0.01 | | | | |
| Steenbergen (Roosendaalsevliet) | 1998 | 6 | 0/6 | <0.01 | | | | |
| Steenbergen (Roosendaalsevliet) | 1999 | 6 | 0/6 | <0.01 | | | | |
| Steenbergen (Roosendaalsevliet) | 2000 | 7 | 0/7 | <0.01-<0.02 | | | | |
| Steenbergen (Roosendaalsevliet) | 2001 | 6 | 0/6 | <0.02 | | | | |
| Steenbergen (Roosendaalsevliet) | 2002 | 7 | 0/7 | <0.02 | | | | |
| Veluwemeer midden (zwaartepunt Veluwemeer) | 1995 | 6 | 0/6 | <0.01 | | | | |
| Veluwemeer midden (zwaartepunt Veluwemeer) | 1996 | 6 | 0/6 | <0.01 | | | | |
| Veluwemeer midden (zwaartepunt Veluwemeer) | 1997 | 4 | 0/4 | <0.01 | | | | |
| Veluwemeer midden (zwaartepunt Veluwemeer) | 1998 | 5 | 0/5 | <0.01 | | | | |
| Veluwemeer midden (zwaartepunt Veluwemeer) | 1999 | 6 | 0/6 | <0.01 | | | | |
| Veluwemeer midden (zwaartepunt Veluwemeer) | 2000 | 6 | 0/6 | <0.01-<0.02 | | | | |
| Veluwemeer midden (zwaartepunt Veluwemeer) | 2001 | 7 | 0/7 | <0.02 | | | | |
| Veluwemeer midden (zwaartepunt Veluwemeer) | 2002 | 6 | 0/6 | <0.02 | | | | |
| Vrouwezand | 1995 | 5 | 0/5 | <0.01 | | | | |
| Vrouwezand | 1996 | 11 | 0/11 | <0.01 | | | | |
| Vrouwezand | 1997 | 6 | 0/6 | <0.01 | | | | |
| Vrouwezand | 1998 | 7 | 1/7 | <0.01-0.02 | | | | |
| Vrouwezand | 1999 | 6 | 1/6 | <0.01-0.02 | | | | |
| Vrouwezand | 2000 | 7 | 0/7 | <0.01-<0.02 | | | | |
| Vrouwezand | 2001 | 6 | 0/6 | <0.02 | | | | |
| Vrouwezand | 2002 | 11 | 1/11 | <0.02-1.3 | | | | |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Wiene | 1995 | 6 | 0/6 | <0.01 | | | | |
| Wiene | 1996 | 7 | 0/7 | <0.01 | | | | |
| Wiene | 1997 | 5 | 1/5 | <0.01-0.01 | | | | |
| Wiene | 1998 | 7 | 0/7 | <0.01 | | | | |
| Wiene | 1999 | 6 | 0/6 | <0.01 | | | | |
| Wiene | 2000 | 7 | 0/7 | <0.01-<0.02 | | | | |
| Wiene | 2001 | 6 | 0/6 | <0.02 | | | | |
| Wiene | 2002 | 7 | 0/7 | <0.02 | | | | |
| Wolderwijd midden (zwaartepunt Wolderwijd) | 1995 | 6 | 0/6 | <0.01 | | | | |
| Wolderwijd midden (zwaartepunt Wolderwijd) | 1996 | 5 | 1/5 | <0.01-0.04 | | | | |
| Wolderwijd midden (zwaartepunt Wolderwijd) | 1997 | 5 | 0/5 | <0.01 | | | | |
| Wolderwijd midden (zwaartepunt Wolderwijd) | 1998 | 6 | 0/6 | <0.01 | | | | |
| Wolderwijd midden (zwaartepunt Wolderwijd) | 1999 | 6 | 0/6 | <0.01 | | | | |
| Wolderwijd midden (zwaartepunt Wolderwijd) | 2000 | 5 | 1/5 | <0.01-0.03 | | | | |
| Wolderwijd midden (zwaartepunt Wolderwijd) | 2001 | 7 | 0/7 | <0.02 | | | | |
| Wolderwijd midden (zwaartepunt Wolderwijd) | 2002 | 5 | 0/5 | <0.02 | | | | |
| Eijsden ponton | 1995 | 47 | 8/47 | <0.01-0.02 | 0.005 | 0.007 | 0.004 | 60 |
| Eijsden ponton | 1996 | 54 | 20/54 | <0.01-0.06 | 0.005 | 0.011 | 0.011 | 102 |
| Eijsden ponton | 1997 | 39 | 18/39 | <0.01-0.03 | 0.005 | 0.013 | 0.016 | 129 |
| Eijsden ponton | 1998 | 25 | 4/25 | <0.01-0.02 | 0.005 | 0.007 | 0.005 | 70 |
| Eijsden ponton | 1999 | 26 | 6/26 | <0.01-0.04 | 0.005 | 0.007 | 0.007 | 95 |
| Eijsden ponton | 2000 | 26 | 0/26 | <0.01-<0.02 | | | | |
| Eijsden ponton | 2001 | 25 | 1/25 | <0.02-0.02 | | | | |
| Eijsden ponton | 2002 | 25 | 1/25 | <0.02-0.03 | | | | |
| Stevensweert | 1995 | 7 | 0/7 | <0.01 | | | | |
| Stevensweert | 1996 | 6 | 2/6 | <0.01-0.02 | 0.005 | 0.008 | 0.006 | 73 |
| Stevensweert | 1997 | 6 | 3/6 | <0.01-0.03 | 0.020 | 0.030 | 0.036 | 119 |
| Stevensweert | 1998 | 7 | 0/7 | <0.01 | | | | |
| Stevensweert | 1999 | 7 | 0/7 | <0.01 | | | | |
| Stevensweert | 2000 | 6 | 0/6 | <0.01-<0.02 | | | | |
| Stevensweert | 2001 | 7 | 0/7 | <0.02 | | | | |
| Stevensweert | 2002 | 6 | 0/6 | <0.02 | | | | |

Annex 5: Sample locations of the Scheldt esturarium (Huybrechts, et al., 2003).



Annex 5: Raw data of 1,1-dichloroethene in surface water from the Scheldt estuary. Location, date of sampling, and concentration (ng/l or µg/L) are given. Data were provided by T. Huybrechts (Ghent University).

| Location | Date of sampling | Concentration | Unit |
|---|---|---|---|
| S01 | 20.5.98 | 8.08 | ng/l |
| S01 | 15.10.98 | < 1,69 | ng/l |
| S01 | 12.5.99 | 2.28 | ng/l |
| S01 | 3.11.99 | 1.00 | ng/l |
| S01 | 4.4.00 | < 1,69 | ng/l |
| S01 | 13.11.00 | < 1,69 | ng/l |
| | | | |
| S04 | 20.5.98 | 10.51 | ng/l |
| S04 | 15.10.98 | < 1,69 | ng/l |
| S04 | 12.5.99 | 1.23 | ng/l |
| S04 | 3.11.99 | < 1,69 | ng/l |
| S04 | 4.4.00 | 1.11 | ng/l |
| S04 | 14.11.00 | < 1,69 | ng/l |
| | | | |
| S07 | 20.5.98 | 3.78 | ng/l |
| S07 | 15.10.98 | < 1,69 | ng/l |
| S07 | 12.5.99 | 1.13 | ng/l |
| S07 | 3.11.99 | < 1,69 | ng/l |
| S07 | 4.4.00 | < 1,69 | ng/l |
| S07 | 14.11.00 | < 1,69 | ng/l |
| | | | |
| S07b | 19.5.98 | 3.71 | ng/l |
| S07b | 14.10.98 | < 1,69 | ng/l |
| S07b | 11.5.99 | 1.44 | ng/l |
| S07b | 2.11.99 | < 1,69 | ng/l |
| S07b | 3.4.00 | < 1,69 | ng/l |
| S07b | 13.11.00 | < 1,69 | ng/l |
| | | | |
| S09 | 19.5.98 | 2.27 | ng/l |
| S09 | 14.10.98 | < 1,69 | ng/l |
| S09 | 11.5.99 | 1.40 | ng/l |
| S09 | 2.11.99 | < 1,69 | ng/l |
| S09 | 3.4.00 | < 1,69 | ng/l |
| S09 | 13.11.00 | < 1,69 | ng/l |
| | | | |
| S10 | 19.5.98 | < 1,69 | ng/l |
| S10 | 14.10.98 | < 1,69 | ng/l |
| S10 | 11.5.99 | 1.92 | ng/l |
| S10 | 2.11.99 | 2.29 | ng/l |
| S10 | 3.4.00 | < 1,69 | ng/l |

| | | | |
|---|---|---|---|
| S10 | 13.11.00 | < 1,69 | ng/l |
| | | | |
| S12 | 19.5.98 | 1.61 | ng/l |
| S12 | 14.10.98 | < 1,69 | ng/l |
| S12 | 11.5.99 | 1.90 | ng/l |
| S12 | 2.11.99 | 3.54 | ng/l |
| S12 | 3.4.00 | < 1,69 | ng/l |
| S12 | 13.11.00 | < 1,69 | ng/l |
| | | | |
| S15 | 19.5.98 | 2.28 | ng/l |
| S15 | 14.10.98 | < 1,69 | ng/l |
| S15 | 11.5.99 | 1.84 | ng/l |
| S15 | 2.11.99 | 3.16 | ng/l |
| S15 | 3.4.00 | < 1,69 | ng/l |
| S15 | 13.11.00 | < 1,69 | ng/l |
| | | | |
| S15b | 19.5.98 | 2.72 | ng/l |
| S15b | 14.10.98 | < 1,69 | ng/l |
| S15b | 11.5.99 | 3.14 | ng/l |
| S15b | 2.11.99 | 3.85 | ng/l |
| S15b | 3.4.00 | < 1,69 | ng/l |
| S15b | 13.11.00 | < 1,69 | ng/l |
| | | | ng/l |
| S18b | 19.5.98 | 2.38 | ng/l |
| S18b | 14.10.98 | < 1,69 | ng/l |
| S18b | 11.5.99 | 3.88 | ng/l |
| S18b | 2.11.99 | 1.00 | ng/l |
| S18b | 3.4.00 | < 1,69 | ng/l |
| S18b | 13.11.00 | 1.29 | ng/l |
| | | | |
| S22 | 19.5.98 | 3.40 | ng/l |
| S22 | 14.10.98 | 1.33 | ng/l |
| S22 | 11.5.99 | 4.55 | ng/l |
| S22 | 2.11.99 | 1.05 | ng/l |
| S22 | 3.4.00 | 2.03 | ng/l |
| S22 | 13.11.00 | 1.55 | ng/l |
| | | | |
| S24 | 19.5.98 | 3.58 | ng/l |
| S24 | 14.10.98 | 1.09 | ng/l |
| S24 | 11.5.99 | < 1,69 | ng/l |
| S24 | 2.11.99 | 2.07 | ng/l |
| S24 | 3.4.00 | 3.35 | ng/l |
| S24 | 13.11.00 | 2.49 | ng/l |
| | | | |
| S26 | 19.5.98 | 3.47 | ng/l |
| S26 | 14.10.98 | 2.02 | ng/l |

| | | | |
|---|---|---|---|
| S26 | 11.5.99 | 7.78 | ng/l |
| S26 | 2.11.99 | 2.35 | ng/l |
| S26 | 3.4.00 | 3.21 | ng/l |
| S26 | 13.11.00 | 3.17 | ng/l |
| | | | |
| S27 | 19.5.98 | 5.69 | ng/l |
| S27 | 14.10.98 | 2.47 | ng/l |
| S27 | 11.5.99 | 5.96 | ng/l |
| S27 | 2.11.99 | 2.53 | ng/l |
| S27 | 3.4.00 | 1.89 | ng/l |
| S27 | 13.11.00 | 2.28 | ng/l |

Annex 6: Raw data of 1,1-dichloroethene in surface water from the North Sea. Location, date of sampling, and concentration (ng/l or µg/L) are given. Data were provided by T. Huybrechts (Ghent University).

| Location | Sampling date | Concentration | Unit |
|---|---|---|---|
| NS1 | 20.4.98 | < 1,69 | ng/l |
| NS1 | 28.9.98 | 2.23 | ng/l |
| NS1 | 1.7.99 | 0.94 | ng/l |
| NS1 | 18.10.99 | 3.17 | ng/l |
| NS1 | 27.3.00 | < 1,69 | ng/l |
| NS1 | 5.10.00 | < 1,69 | ng/l |
| | | | |
| NS2 | 21.4.98 | 0.86 | ng/l |
| NS2 | 29.9.98 | 2.16 | ng/l |
| NS2 | 30.6.99 | 1.32 | ng/l |
| NS2 | 4.10.00 | 1.11 | ng/l |
| | | | |
| NS3 | 21.4.98 | < 1,69 | ng/l |
| NS3 | 29.9.98 | < 1,69 | ng/l |
| NS3 | 1.7.99 | 1.27 | ng/l |
| NS3 | 4.10.00 | < 1,69 | ng/l |
| | | | |
| NS4 | 21.4.98 | < 1,69 | ng/l |
| NS4 | 29.9.98 | < 1,69 | ng/l |
| NS4 | 6.7.99 | 1.16 | ng/l |
| NS4 | 5.10.00 | < 1,69 | ng/l |
| | | | |
| CH1 | 23.4.98 | 0.89 | ng/l |
| CH1 | 1.10.98 | 1.94 | ng/l |
| CH1 | 30.6.99 | 0.99 | ng/l |
| | | | |
| CH2 | 22.4.98 | < 1,69 | ng/l |
| CH2 | 30.9.98 | 1.70 | ng/l |
| CH2 | 30.6.99 | 2.16 | ng/l |
| | | | |
| 330 | 22.4.98 | < 1,69 | ng/l |
| 330 | 30.9.98 | 12.56 | ng/l |

| | | | |
|---|---|---|---|
| 330 | 8.7.99 | 0.96 | ng/l |
| 330 | 19.10.99 | < 1,69 | ng/l |
| 330 | 28.3.00 | < 1,69 | ng/l |
| 330 | 4.10.00 | < 1,69 | ng/l |
| | | | |
| 120 | 23.4.98 | < 1,69 | ng/l |
| 120 | 30.9.98 | < 1,69 | ng/l |
| 120 | 8.7.88 | 1.25 | ng/l |
| 120 | 19.10.99 | < 1,69 | ng/l |
| 120 | 28.3.00 | < 1,69 | ng/l |
| 120 | 3.10.00 | < 1,69 | ng/l |
| | | | |
| 435 | 22.4.98 | 1.81 | ng/l |
| 435 | 30.9.98 | < 1,69 | ng/l |
| 435 | 7.7.99 | 1.45 | ng/l |
| 435 | 19.10.99 | < 1,69 | ng/l |
| 435 | 28.3.00 | < 1,69 | ng/l |
| 435 | 3.10.00 | < 1,69 | ng/l |
| | | | |
| S01 | 24.4.98 | < 1,69 | ng/l |
| S01 | 1.10.98 | < 1,69 | ng/l |
| S01 | 19.10.99 | 1.03 | ng/l |
| S01 | 28.3.00 | 2.41 | ng/l |
| S01 | 4.10.00 | < 1,69 | ng/l |

Annex 7: Raw data of 2,4-dichlorophenol in water from UK. Location, estuary name, date of sampling, and concentration (ng/l or µg/L) are given. Data were provided by the Environment Agency (UK, A. Wills).

| Location | Estuary_name | Sampling date | Concentration | Unit |
|---|---|---|---|---|
| BURHAM | MEDWAY | 04-Feb-00 | <100 | ng/L |
| BURHAM | MEDWAY | 03-May-00 | <100 | ng/L |
| BURHAM | MEDWAY | 15-Aug-00 | <100 | ng/L |
| BURHAM | MEDWAY | 14-Nov-00 | <100 | ng/L |
| BURHAM | MEDWAY | 08-Feb-01 | <0.1 | ug/l |
| BURHAM | MEDWAY | 06-Aug-01 | <0.1 | ug/l |
| BURHAM | MEDWAY | 14-Nov-01 | <0.04 | ug/l |
| DOCK HEAD | SO'TON WATER | 24-Feb-00 | <100 | ng/L |
| DOCK HEAD | SO'TON WATER | 25-May-00 | <100 | ng/L |
| DOCK HEAD | SO'TON WATER | 03-Aug-00 | <100 | ng/L |
| DOCK HEAD | SO'TON WATER | 25-Jan-01 | <0.1 | ug/l |
| DOCK HEAD | SO'TON WATER | 16-May-01 | <0.5 | ug/l |
| DOCK HEAD | SO'TON WATER | 13-Aug-01 | <0.1 | ug/l |
| DOCK HEAD | SO'TON WATER | 07-Nov-01 | <0.04 | ug/l |
| E BRAMBLES BUOY | SO'TON WATER | 24-Feb-00 | <100 | ng/L |
| E BRAMBLES BUOY | SO'TON WATER | 25-May-00 | <100 | ng/L |
| E BRAMBLES BUOY | SO'TON WATER | 03-Aug-00 | <100 | ng/L |
| MUCKING | THAMES | 25-Jan-01 | <0.1 | ug/l |
| MUCKING | THAMES | 07-Feb-01 | <0.1 | ug/l |
| MUCKING | THAMES | 07-Mar-01 | <0.1 | ug/l |
| MUCKING | THAMES | 04-Apr-01 | <0.1 | ug/l |
| MUCKING | THAMES | 30-May-01 | <0.1 | ug/l |
| MUCKING | THAMES | 18-Jul-01 | <0.1 | ug/l |
| MUCKING | THAMES | 08-Aug-01 | <0.1 | ug/l |
| MUCKING | THAMES | 26-Sep-01 | <0.1 | ug/l |
| MUCKING | THAMES | 04-Oct-01 | <0.1 | ug/l |
| MUCKING | THAMES | 30-Oct-01 | <0.04 | ug/l |
| MUCKING | THAMES | 06-Dec-01 | <0.04 | ug/l |
| SANDY POINT | WEAR | 26-Oct-99 | <0.1 | ug/l |
| SANDY POINT | WEAR | 03-Feb-00 | <0.1 | ug/l |
| SANDY POINT | WEAR | 17-May-00 | <0.1 | ug/l |
| SANDY POINT | WEAR | 19-May-00 | <0.1 | ug/l |
| SANDY POINT | WEAR | 21-Jul-00 | <0.1 | ug/l |
| SANDY POINT | WEAR | 10-Aug-00 | <0.04 | ug/l |
| SANDY POINT | WEAR | 22-Nov-00 | <0.1 | ug/l |
| SANDY POINT | WEAR | 21-Feb-01 | <0.1 | ug/l |
| SANDY POINT | WEAR | 26-Jul-01 | <0.1 | ug/l |
| SANDY POINT | WEAR | 16-Aug-01 | <0.1 | ug/l |
| SANDY POINT | WEAR | 23-Aug-01 | <0.1 | ug/l |
| SANDY POINT | WEAR | 22-Oct-01 | <0.1 | ug/l |

| | | | | |
|---|---|---|---|---|
| SANDY POINT | WEAR | 04-Dec-01 | <0.1 | ug/l |
| SANDY POINT | WEAR | 17-Dec-01 | <0.1 | ug/l |
| SUN PIER | MEDWAY | 04-Feb-00 | <100 | ng/L |
| SUN PIER | MEDWAY | 03-May-00 | <100 | ng/L |
| SUN PIER | MEDWAY | 15-Aug-00 | <100 | ng/L |
| SUN PIER | MEDWAY | 14-Nov-00 | <100 | ng/L |
| SUN PIER | MEDWAY | 08-Feb-01 | <0.1 | ug/l |
| SUN PIER | MEDWAY | 22-May-01 | <0.5 | ug/l |
| SUN PIER | MEDWAY | 06-Aug-01 | <0.1 | ug/l |
| SUN PIER | MEDWAY | 14-Nov-01 | <0.04 | ug/l |

Annex 8: Raw data of 1,1-dichloroethene in surface water from The Netherlands. Location, date of sampling, and concentration (ng/l or µg/L) are given. Data were provided by RIZA (Netherlands, J. Staeb).

| Location | Sampling date | Concentration | Unit |
|---|---|---|---|
| Belfeld | 26-Nov-02 | dl | ug/l |
| Belfeld | 23-Dec-02 | 0.02 | ug/l |
| Belfeld | 22-Jan-03 | 0.01 | ug/l |
| Belfeld | 18-Feb-03 | dl | ug/l |
| Belfeld | 18-Mar-03 | dl | ug/l |
| Belfeld | 15-Apr-03 | dl | ug/l |
| Belfeld | 13-May-03 | dl | ug/l |
| Belfeld | 10-Jun-03 | dl | ug/l |
| Eijsden | 26-Nov-02 | dl | ug/l |
| Eijsden | 23-Dec-02 | 0.01 | ug/l |
| Eijsden | 21-Jan-03 | 0.01 | ug/l |
| Eijsden | 18-Feb-03 | dl | ug/l |
| Eijsden | 18-Mar-03 | 0.01 | ug/l |
| Eijsden | 15-Apr-03 | 0.01 | ug/l |
| Eijsden | 13-May-03 | 0.01 | ug/l |
| Eijsden | 10-Jun-03 | dl | ug/l |
| Haringvliet | 11-Dec-02 | dl | ug/l |
| Haringvliet | 09-Jan-03 | dl | ug/l |
| Haringvliet | 05-Feb-03 | dl | ug/l |
| Haringvliet | 05-Mar-03 | dl | ug/l |
| Haringvliet | 03-Apr-03 | dl | ug/l |
| Haringvliet | 01-May-03 | dl | ug/l |
| Haringvliet | 27-May-03 | dl | ug/l |
| Haringvliet | 23-Jun-03 | dl | ug/l |
| Lobith | 27-Nov-02 | dl | ug/l |
| Lobith | 23-Dec-02 | dl | ug/l |
| Lobith | 22-Jan-03 | dl | ug/l |
| Lobith | 19-Feb-03 | dl | ug/l |
| Lobith | 19-Mar-03 | dl | ug/l |
| Lobith | 16-Apr-03 | dl | ug/l |
| Lobith | 14-May-03 | dl | ug/l |
| Lobith | 11-Jun-03 | dl | ug/l |
| Maassluis | 04-Dec-02 | dl | ug/l |
| Maassluis | 29-Jan-03 | dl | ug/l |
| Maassluis | 26-Feb-03 | dl | ug/l |
| Maassluis | 26-Mar-03 | dl | ug/l |
| Maassluis | 24-Apr-03 | dl | ug/l |
| Maassluis | 20-May-03 | dl | ug/l |
| Maassluis | 17-Jun-03 | dl | ug/l |
| Schaar van Ouden Doel | 20-Nov-02 | dl | ug/l |
| Schaar van Ouden Doel | 16-Dec-02 | dl | ug/l |

| | | | |
|---|---|---|---|
| Schaar van Ouden Doel | 14-Jan-03 | dl | ug/l |
| Schaar van Ouden Doel | 11-Feb-03 | dl | ug/l |
| Schaar van Ouden Doel | 10-Mar-03 | dl | ug/l |
| Schaar van Ouden Doel | 07-Apr-03 | dl | ug/l |
| Schaar van Ouden Doel | 06-May-03 | dl | ug/l |
| Schaar van Ouden Doel | 03-Jun-03 | dl | ug/l |
| Schaar van Ouden Doel | 01-Jul-03 | dl | ug/l |