Statlig program for forurensningsovervåking

Norwegian State Pollution Monitoring Programme
Long-term monitoring of environmental quality in
Norwegian coastal waters

NATIONAL COMMENTS REGARDING THE NORWEGIAN DATA FOR 2008

1017
2008

SFT NIVA

Norwegian State Pollution Monitoring Programme
Long-term monitoring of environmental quality in Norwegian coastal waters

Report: 1017/2008
TA-number: 2371/2008
ISBN-number: 978-82-577-5299-6

Client: Norwegian Pollution Control Authority (SFT)
Executor: Norwegian Institute for Water Research (NIVA)

National Comments regarding the Norwegian data for 2006

Rapport 1017/2008

NIVA report no. 5564-2008

Norwegian Institute for Water Research

REPORT

Main Office	Regional Office, Sørlandet	Regional Office, Østlandet	Regional Office, Vestlandet	Akvaplan-NIVA A/S
Gaustadalléen 21	Televeien 1	Sandvikaveien 41	Nordnesboder 5	Søndre Tollbugate 3
NO-0349 Oslo	N-4890 Grimstad	N-2312 Ottestad	N-5008 Bergen	N-9000 Tromsø
Norway	Norway	Norway	Norway	Norway
Phone (47) 22 18 51 00	Phone (47) 37 29 50 55	Phone (47) 62 57 64 00	Phone (47) 55 30 22 50	Phone (47) 77 68 52 80
Telefax (47) 22 18 52 00	Telefax (47) 37 04 45 13	Telefax (47) 62 57 66 53	Telefax (47) 55 30 22 51	Telefax (47) 77 68 05 09

Title	Serial No.	Date
Joint Assessment and Monitoring Programme (JAMP). National Comments regarding the Norwegian Data for 2006 (Norwegian State Pollution Monitoring Programme Report no. 1017/2008. TA-no. 2369/2008)	5564-2008	25.02.2008
	Report No. Sub-No. O-26106 O-27106	Pages 227 Price

Author(s)		Topic group	Distribution
Norman W. Green Ander Ruus Birger Bjerkeng Jarle Håvardstun Åse G. Rogne	Merete Schøyen Ling Shi Lise Tveiten Sigurd Øxnevad	Marine ecology	
		Geographical area Oslofjord to Varangerfjord	Printed NIVA

Client(s)	Client ref.
Norwegian Pollution Control Authority (SFT)	

Abstract

This report is part of the Norwegian contribution to OSPAR's Joint Assessment and Monitoring Programme (JAMP) of which of which OSPAR's Coordinated Environmental Monitoring Programme (CEMP) is based. JAMP 2006 included the monitoring of contaminants in sediment (10), blue mussel (52), dogwhelk (21), cod (10) and flatfish (10) along the coast of Norway from Oslo to Varangerfjord. The results showed elevated, in a few cases up to severely contaminated, levels of contaminants in the inner Oslofjord (PCBs, mercury and lead in cod; PCBs in blue mussel), and Sørfjord and Hardangerfjord (DDT, lead, cadmium and mercury in blue mussel; mercury and DDT in cod). The results from the remaining stations showed low or moderate levels of contamination in 2006. Considering the whole monitoring period (1984-2006), a significant upward trend was found for mercury in cod from the inner Oslofjord. A significant downward trend was found for lead in blue mussel from Sørfjord/Hardangerfjord. The "Pollution" index was between "moderate" and "marked", a level less polluted than in 2005. The "Reference" index was between "insignificant" and "moderate" as before. Contamination of organotin in blue mussel and imposex in dogwhelk were still apparent, however, there is some indication of downward trends. The results from studies using biological effects methods in cod are also discussed.

4 keywords, Norwegian	4 keywords, English
1. Miljøgifter	1. Contaminants
2. Organismer	2. Organisms
3. Marin	3. Marine
4. Norge	4. Norway

Norman W. Green	*Kristoffer Næs*	*Jarle Nygard*
Project manager	Research manager	Project director

ISBN 978-82-577-5299-6

OSPAR CONVENTION FOR THE PROTECTION OF THE MARINE ENVIRONMENT OF THE NORTHEAST ATLANTIC

WORKING GROUP ON CONCENTRATIONS, TRENDS AND EFFECTS OF SUBSTANCES IN THE MARINE ENVIRONMENT (SIME)

Edinburgh 11-13 March 2008

O-26106 / O-27106

JOINT ASSESSMENT AND MONITORING PROGRAMME (JAMP)

NATIONAL COMMENTS REGARDING

THE NORWEGIAN DATA FOR 2006

Oslo, 25. December 2007

Submitted by: NORWAY
Norman W. Green
Norwegian Institute for Water Research (NIVA)
Gaustadalléen 21
N-0349 Oslo

Submitted to: Oslo and Paris Commissions (OSPAR)
att. Richard Emmerson
New Court
48 Carey Street
London WC2A 2JQ

Copy to: Norwegian Pollution Control Authority (SFT)
att. Jon L. Fuglestad
PB 8100 Dep.
N-0032 Oslo
International Council for the Exploration of the Seas (ICES)
att. Marilynn Sørensen
H.C.Andersens Boulevard 44-46
DK-1553 Copenhagen

Foreword

This report presents the Norwegian national comments on the 2006 investigations for the Joint Assessment and Monitoring Programme (JAMP). JAMP is administered by the Oslo and Paris Commissions (OSPAR) and their Environmental Assessment and Monitoring Committee (ASMO). JAMP receives guidance from the International Council for the Exploration of the Sea (ICES). ASMO has delegated implementation of part of the programme to the Working Group on Concentrations, Trends and Effects of Substances in the Marine Environment (SIME). The Norwegian 2006 investigations are directed to particular JAMP issues relating to contaminants and implemented by SIME. JAMP replaced Joint Monitoring Programme (JMP) in 1995 and has been an integral part of OSPAR's Coordinated Environmental Monitoring Programme (CEMP) since 1998.

The Norwegian JAMP for 2005 was carried out by the Norwegian Institute for Water Research (NIVA) by contract from the Norwegian Pollution Control Authority (SFT), (NIVA contractO-6, O-26106, O-27106).

The Norwegian contribution to the JMP/JAMP was initiated by SFT in 1981 as part of the national monitoring programme. It now comprises three areas: the Oslofjord and adjacent areas (Hvaler-Singlefjord area and Langesundsfjord, 1981-), Sørfjord/Hardangerfjord (1983-84, 1987-) and Orkdalsfjord area (1984-89, 1991-93, 1995-96, 2004-05).

Since the North Sea Task Force Monitoring Master Plan was implemented in 1990, additional areas have also been monitored. These include: Arendal, Lista and Bømlo-Sotra areas. On the initiative of SFT and NIVA "reference" or merely diffusely contaminated areas from Bergen to Lofoten have been monitored since 1992 and from Lofoten to the Norwegian-Russian border from 1994.
+

***Reader's guide**. There is currently no OSPAR agreement as to the format for comments, however, to maintain consistency and completeness the Norwegian contribution is presented in accordance with the earlier agreed standardised format (ASMO 1997, Annex 12). Following the SIME meeting in Edinburgh, 11-13 February, 2008, the full report in PDF-format can be downloaded from either of two websites: the SFT's website and using SFT's TA-number at http://www.sft.no/publikasjonerforside____10990.aspx or from NIVA's website at http://www.niva.no/symfoni/infoportal/portenglish.nsf and doing a search on the "løpenr", which is the NIVA-report number for this report.*

***Acknowledgments.** Thanks are due to many colleagues at NIVA, especially: Lise Tveiten, Merete Schøyen, Åse Kristine Rogne, Sigurd Øxnevad, Jarle Håvardstun, for field work, sample preparations and data entry; Alfhild Kringstad,Olav Bøyum, Torgunn Sætre, and their colleagues for organic analyses; Bente Hiort Lauritzen and her colleagues for metal analyses; Randi Romstad and her colleagues for biological effects measurements, Gunnar Severinsen, Ling Shi and Tore Høgåsen for data programme management and operation; and to the authors Anders Ruus (biological effects methods), Mats Walday (organotin), and Eva Hagebø and her colleagues (analytical quality assurance). Thanks go also to the numerous fishermen and their boat crews for which we have had the pleasure of working with.*

Oslo, 25 December 2007.

Norman W. Green
Project co-ordinator

Contents

1. General Details

1.1. Executive Summary / Sammendrag

The Norwegian JAMP 2006 included the monitoring of micropollutants (contaminants) in sediment (10 stations), blue mussel (52 stations), dogwhelks (21 stations), cod (10 stations) and flatfish (10 stations) from Oslo in the south-east along the coast of Norway to the Varangerfjord in the north-east. The mussel sites include supplementary stations for the Norwegian Index programme, The results showed several cases of elevated levels of contaminants, i.e. higher than Class I (*insignificantly*[1] polluted) in the Norwegian Pollution Control Authority's (SFT's) classification system (or over provisional "high background"). The major cases were found in:

- Part of JAMP area 26 - Oslofjord was contaminated with PCBs and to a lesser extent mercury and lead. In particular cod liver from the inner Oslofjord was *markedly* polluted with PCB (Class III). A significant downward trend was found for PCBs in blue mussel from the inner Oslofjord. A significant upward trend was found for mercury in cod fillet from both "large" and "small" individuals and for cadmium in cod liver from the inner Oslofjord 1984-2006;
- JAMP areas 63 and 62 - Sørfjord and Hardangerfjord was contaminated with DDT, lead and cadmium. Blue mussel was up one class to *extremely* polluted (Class V) with DDT, and as before, *markedly* polluted with lead and cadmiumCod, was *moderately* polluted (Class II) with mercury and DDT, as before. A significant downward trend was found for lead in blue mussel at one station in Hardangerfjord 1987-2006, and also for cadmium at three stations in Sørfjord over the same period.
- Part of JAMP area 26 – Langesundsfjord has been an area of concern partly due to elevated concentrations of HCB in blue mussel. In 2002, 2003, 2004 and 2006 the blue mussel was *insignificantly* or *moderately* polluted (Class I and II). In 2005 the blue mussel were *markedly* polluted. A downward trend was found for the period 1990-2006.

Two environmental indices have been applied annually since 1995 to assess the levels of contamination in blue mussel from "polluted" and "reference" areas. In 2006 the Pollution Index result was between *moderate* and *marked* (class II-III). This was one level down compared to 2005. The Reference Index was between *insignificantly* and *moderately* polluted (Class I-II), as before.

The biological effect parameters OH-pyrene (pyrene metabolite; marker for PAH exposure), δ-aminolevulinic acid dehydrase (ALA-D; marker for lead exposure), and cytochrome P4501A (EROD-activity; marker for planar hydrocarbons, such as certain PCBs/PCNs, PAHs and dioxins) were determined in cod from four stationsalong the coast from the Oslofjord, Karihavet and Sørfjord. In 2006, the Oslofjord showed the highest levels of OH-pyrene and EROD-activity. With regard to EROD-activity, the same result has been obtained in some, but not all, of the preceding years. The amount of CYP1A protein was however consistently higher in the Oslofjord than the Sørfjord and the Karihavet, 2003-2006. Results for ALA-D indicated exposure of cod to lead in the inner Oslofjord and inner Sørfjord.

The presence of organotin (TBT) in Norwegian waters was still a problem in 2006, most evident close to harbours, but also at stations remote from known point-sources. Concentrations of organotin were elevated in blue mussel and dogwhelk, and biological effects from TBT were found in dogwhelk from all eight stations except for one. Eight of the twelve timeseries for TBT in blue mussel 1997-2006 showed significant downward trends. There was also a downward trend in effects of TBT in dogwhelk found at three stations. These results may be an indication that regulatory action has lead to an improvement in the investigated areas.

[1] Corresponds to Norwegian term *ubetydelig*, and has no statistical implications in this context.

Sammendrag

*JAMP (*Joint Assessment and Monitoring Programme*) er et internasjonalt program for miljøovervåking av kystfarvann. Norge er et av tolv land som gjennom Oslo-Pariskonvensjonen (OSPAR) har forpliktet seg til å delta i dette felles overvåkingsprogrammet. Programmet i Norge startet i 1981 og hovedmålsettingen er å overvåke miljøgifter i påvirkede områder og ellers langs hele norskekysten. Resultatene fra de minst påvirkede områdene benyttes for å angi "bakgrunnsnivåer". Resultatene rapporteres årlig.*

I 2006 omfattet JAMP undersøkelse av sediment (10 stasjoner), blåskjell (52, inkludert de til SFTs forurensningsindeks og til overvåking av TBT), purpursnegl (21 stasjoner), torsk (10 stasjoner) og flatfisk (10 stasjoner) langs kysten fra Oslofjorden til Varangerfjorden . Resultatene tydet på forhøyede konsentrasjoner av miljøgifter, dvs. mer enn Klasse I i SFTs klassifiseringssystem, eller over antatt "høyt bakgrunnsnivå". Disse tilfellene ble registrert i:

- *Oslofjorden med inntil Kl.III for PCB og mindre forurenset med hensyn til kvikksølv og bly. Torskelever fra indre Oslofjord var markert forurenset med PCB (Kl.III). Det ble også funnet signifikant økende trender for kvikksølv i torskefilet fra både "store" og "små" individer og for kadmium i torskelever fra indre Oslofjord 1984-2006;*
- *Sørfjorden og Hardangerfjorden med opp til Kl.V for DDE og Kl.III for bly og kadmium i blåskjell, og Kl.II for kvikksølv og DDE i torsk. Det ble funnet en signifikant avtagende trend for bly i blåskjell på en stasjon i Hardangerfjorden 1987-2006, og for kadmium på tre stasjoner i Sørfjorden.*
- *Langesundfjorden har vært et område med bl.a. høye konsentrasjoner av HCB i blåskjell. Forurensningsnivået fra 2002 til 2004 og 2006 har vært ubetydelig eller moderat (Kl.I eller II), men i 2005 var blåskjellene markert forurenset (Kl.III). En avtagende trend ble funnet for perioden 1990-2006.*

SFTs blåskjell-forurensningsindeks og blåskjell-referanseindeks har blitt brukt årlig siden 1995 på en gruppe "forurensede-" og "referanse-" fjordområder. Forurensningsindeksen for 2006 viste ”moderat” til ”markert” forurensning. Dette var en lavere klasse en som i 2005. Referanseindeksen har klassifisert sin gruppe mellom ”lite” og ”moderat” forurenset i hele perioden.

Følgende biologiske effekt-parametre ble undersøkt i torsk fra tre-fire stasjoner langs kysten fra indre Oslofjord til Hardanger: OH-pyren (pyren-metabolitt; markør for PAH-eksponering), δ-aminolevulinsyre dehydrase (ALA-D; markør for bly-eksponering), og aktivitet av cytokrom P4501A (EROD; markør for plane hydrokarboner, slik som spesifikke PCB/PCN, PAH og dioksiner). Oslofjorden viste de høyeste OH-pyren-nivåene. OH-pyren nivåene i indre Oslofjord var høyere en på de andre stasjonene. Resultatene for ALA-D indikerte bly-eksponering for torsk fra indre Oslofjord og indre Sørfjord. Høyest EROD-aktivitet ble observert i indre Oslofjord. Tidligere år har vist at EROD-aktivitet i fisk fra Oslofjorden og Sørfjorden ikke er konsistent høyere enn på andre, antatt mindre forurensede stasjoner, selv om dette er observert enkelte år. Derimot var mendgen CYP1A protein konsekvent høyere i Oslofjorden enn i Sørfjorden og Karihavet, 2003-2006.

Effekter av organotin (bl.a. TBT) kunne fortsatt registreres i 2006, tydeligst i havner eller i områder med mye skipstrafikk, men også på stasjoner som var antatt lite påvirket. Konsentrasjoner av TBT i blåskjell og purpursnegl var forhøyet, og virkning av TBT (imposex) ble registrert på samtlige stasjoner unntatt en. Åtte av tolv tidstrender for TBT i blåskjell perioden 1997-2006 var avtakende. Det ble funnet en signifikant nedadgående trend for imposex på tre stasjoner.Disse resultatene kan kanskje tyde på at forbud mot bruk av TBT som begroingshindrende middel på båter har ført til forbedring i de undersøkte områdene.

1.2. Introduction

The Norwegian contribution to the "Joint Assessment and Monitoring Programme (JAMP) was initiated by the Norwegian Pollution Control Authority (SFT) and is integrated with SFT's State Pollution Monitoring Programme. The procedures and practice of JAMP has also provided a basis for other investigations of interest to SFT but not necessarily requested by JAMP (e.g. SFT's Index Programme (Pollution and Reference Indices), chapter 1.3.8).

JAMP is administered by the Oslo and Paris Commissions (OSPAR) and since 1998, parts of JAMP have formed and integral part of OSPAR's Coordinated Environmental Monitoring Programme (CEMP).

Data are submitted to ICES using the integrated environmental reporting format 3.2.1 (www.ices.dk/env/repfor/), and screening using the their DATSU programme (www.ices.dk/datacentre/datsu/). The Norwegian JAMP data can be currently relevant to 4 purposes in the database: *temporal trends*, *spatial distribution*, *effects of hazardous substances*, and to a lesser degree the *risk to human health*. The former three are obligatory .

This report focuses on issues and situations in Norway concerning contaminants and considered of interest to the implementation of JAMP and CEMP (Table 1). It should be noted that these issues are being revised (cf., MON 2001).
The chapter structure of this report for the first and second level is according to an earlier agreed format (ASMO 1997, Annex 12) which *inter alia* presents results before methodology. No new format for reporting National Comments has been agreed by OSPAR, however, each country is obliged to ensure that their respective experts are as familiar as possible with the detail of their national submissions (ASMO 2007). In this regard, the format that of Norway has chosen for National Comments has served this purpose.

Table 1. CEMP-products relevant for the Norwegian JAMP (cf., OSPAR 2007, SIME 2004b).

Subject	CEMP products 6)	Recent Norwegian contribution
Mandatory		
Hg, Cd and Pb	AA-2, HA-5, HA-6	2006: Levels in sediment (cf., Green *et al.* 2000) 2006: Levels and trends in biota (annual investigations since 1981, Chapter **1.3**) 2006: INDEX for blue mussel from selected stations (annual investigations since 1995, cf. Chapter **1.3.8**)
PCBs	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 1995, Chapter 1.3.8) 2006: Levels in sediment and biota (Chapter 1.3)
PAHs	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 1995, Chapter 1.3.8) 2006: Levels in sediment and biota (Chapter 1.3)
TBT	AA-2, HA-5, HA-6	2006: Levels and trends in blue mussel and snails (annual investigations since 1997, cf. Chapter 1.5) 2006: Levels in sediment (Chapter 1.3)
TBT effects	AA-2, HA-4, HM-3	2006: IMPOSEX in snails (annual investigations since 1997, cf. Chapter 1.5)
Voluntary		
BFR 1)	AA-2, HA-5, HA-6	2006: in cod (annual investigations since 2005, cf. Chapter 1.6)
Planar PCBs	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 2002, Chapter 1.8)
Alkylated PAHs	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 1995, Chapter 1.3.8) 2006: Levels in sediment and biota (Chapter 1.3)
PFOS 2)	AA-2, HA-5, HA-6	2006: in cod (annual investigations since 2005, cf. Chapter 1.7)
Dioxins 3)	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 2002, Chapter 1.8)
Specific BEM 4)	AA-2, HA-4, HM-3	2006: OH-pyrene, ALA-D in cod (annual investigations since 1997, cf. Chapter 1.4) 2006: IMPOSEX in snails (annual investigations since 1997, cf. Chapter 1.5)
General BEM 5)	AA-2, HA-4, HM-3	2006: EROD-activity in cod (annual investigations since 1997, cf. Chapter 1.4)

1) Certain Brominated Flame Retardents
2) Perfluoroctylsulfonate
3) Polychlorinated dibenzodioxins and furans
4) PAH- and Metal-Specific Biological Effects
5) General Biological Effects
6) From SIME 2004b:

AA-2 An assessment in 2010 of the quality status of the OSPAR maritime area and of its sub-regions.

HA-4 A more elaborated assessment by 2009 of biological effects of hazardous substances in the maritime area;

HA-5 An assessment by 2009 of temporal trends and (where relevant/feasible) spatial distribution for the hazardous substances where periodic sampling and analysis is undertaken, in particular under CAMP, CEMP and RID;

HA-6 A general assessment by 2009 of the development in the quality status of the maritime area in relation to hazardous substances that should take into account the results of the assessments under HA-1 and HA-5, HA-2 and HA-4 and HA-3, and the results of any screening of levels of substances in the marine environment covered by HM-3;

HM-3 When appropriate, identification of the likely impacts on the marine environment of substances recorded, inter alia, in source inventories, or identified by screening methods.

1.3. Information on measurements

An overview of JAMP stations in Norway is shown in the tables in Appendix E and maps in Appendix G. The stations and sample counts relevant to the 2006 investigations are noted in the tables in Appendix E. Data reports have been published recently for sediment 1986-2006, biota 1981-2006, biological effects (Shi *et al.* 2008).

Blue mussel was sampled at 52 stations (including supplementary stations for Index and TBT), dogwhelk at 21, cod at 10 , flatfish at 10 and sediment at 10 stations from the border to Sweden in the south to the border to Russia in the north. Generally, blue mussel are not abundant on the exposed coastline from Lista (south Norway) to the North of Norway. A number of samples were collected from dock areas, buoys or anchor lines.

This chapter focuses on the principle cases where *median* concentrations exceeded provisional "high background" ("normal"). The median concentration can be derived from the tables in Appendix I or figures in Appendix J, taking into consideration the year and whether the concentration is on a wet weight or dry weight basis. Where possible, these medians are classified according to the Norwegian Pollution Control Authority's (SFT's) **environmental quality classification system** (cf. Molvær *et al.* 1997). An extract of the system that is applied in this report is shown in Table 6 and Table 5 and includes unofficial conversion to other bases. The system does not cover all of the analysed contaminants for for all of the analysed species-tissues, however provisional "high background" concentrations have been determined and these are listed in Table 7. "High background" concentrations set the upper limit for Class I in SFT's system. The factor by which concentrations exceeded “high background” is termed **overconcentration**. "High background" concentration corresponds to the upper limit to Class I; “slightly” or “insignificantly” polluted, which in this context has no statistical implications. Below, the median concentrations are assessed according to the SFT system, but where this is not possible, overconcentrations are used. The term "significant" refers to the results of a statistical analysis of linear trends shown in Appendix I. More details concerning these terms and methods can be found in chapter 2.1.2.

1.3.1. Oslofjord area

Blue mussel from the inner Oslofjord were moderately polluted with ΣPCB-7 (SFT's Class II, Figure 1A). Cod liver from the inner Oslofjord was markedly polluted with ΣPCB-7 (Class III, Figure 2A). The median concentration in cod liver was 3550 µg/kg w.w., about 15% lower than the 2005 value which was the highest recorded median concentration since JAMP-monitoring started in 1990. Nearly all the cod collected during this period have been collected in the Vestfjord area west of Steilene. The range found in 2006 was 219-7409 µg/kg w.w. The fillet from the same fish were moderately polluted with ΣPCB-7 as it has been since 2000 (Class II, Figure 2C). Cod liver and fillet from the outer Oslofjord was moderately polluted with regard to ΣPCB-7 (Færder, st.36B, Figure 2B).

In 1994, and renewed in 2005, the Norwegian Food Safety Authority (*Mattilsynet*, earlier referred to as SNT) advised not to consume liver of cod from the inner Oslofjord (north of Mølen - st.35A, see Map 1 in Appendix G) due to concerns about PCB contamination (cf. Table 3).

A significant linear *downward* trend was detected (see method description in chapter 2.1.3) for ΣPCB-7 in blue mussel from the inner Oslofjord (30A and 31A Figure 1A, B) for the period 1988 to 2006.

Power analyses (see chapter 2.1.3) indicated that a hypothetical trend of 10% change per year in ΣPCB-7 concentration in the blue mussel from the mid and inner Oslofjord would take 12 to 14 years to be detected with 90% significance (Appendix I).

The fillet of "small"[1] (42-48 cm) and “large” cod (50-78 cm) from the inner Oslofjord in 2006 were moderately polluted with mercury; second and third highest since monitoring started in 1984 (Class II, Figure 3A, B). A significant *upward* trend was detected for the period 1984-2006 for both size groups. No significant trend was found for the period 1998-2006. Considering the entire period, the power, indicated as number of years to detect a hypothetical 10% change per year for mercury in cod fillet from either station, was slightly better for “small” fish (11 years) than “large” fish (13 years) (cf. Appendix I). Concentrations of mercury were significantly higher in "large" cod compared to "small" cod.

Median concentration of lead in cod liver from the inner Oslofjord (30B) 2006 was 0.1 mg/kg w.w.. This was less than the concentration found in 2005 and a fifth of the 2002 value; the second highest found during the entire period (1990-2006). “High background” for this metal is 0.1 mg/kg w.w. Blue mussel from one station in the inner Oslofjord (st. 30A) were moderately polluted with respect to lead in 2006.

The SFT's environmental quality classification system does not include cadmium and lead in cod liver.

It should be noted that the Index programme indicated moderate concentrations of TBT in blue mussel from a station located in the inner Oslofjord (see chapter 1.3.8).

[1] The size of "small" and "large" cod depends on the station-year catch, and hence may vary (see section 2.1.3. The range given is the lower and upper quartile of the median lengths of the "small" or "large" fish.

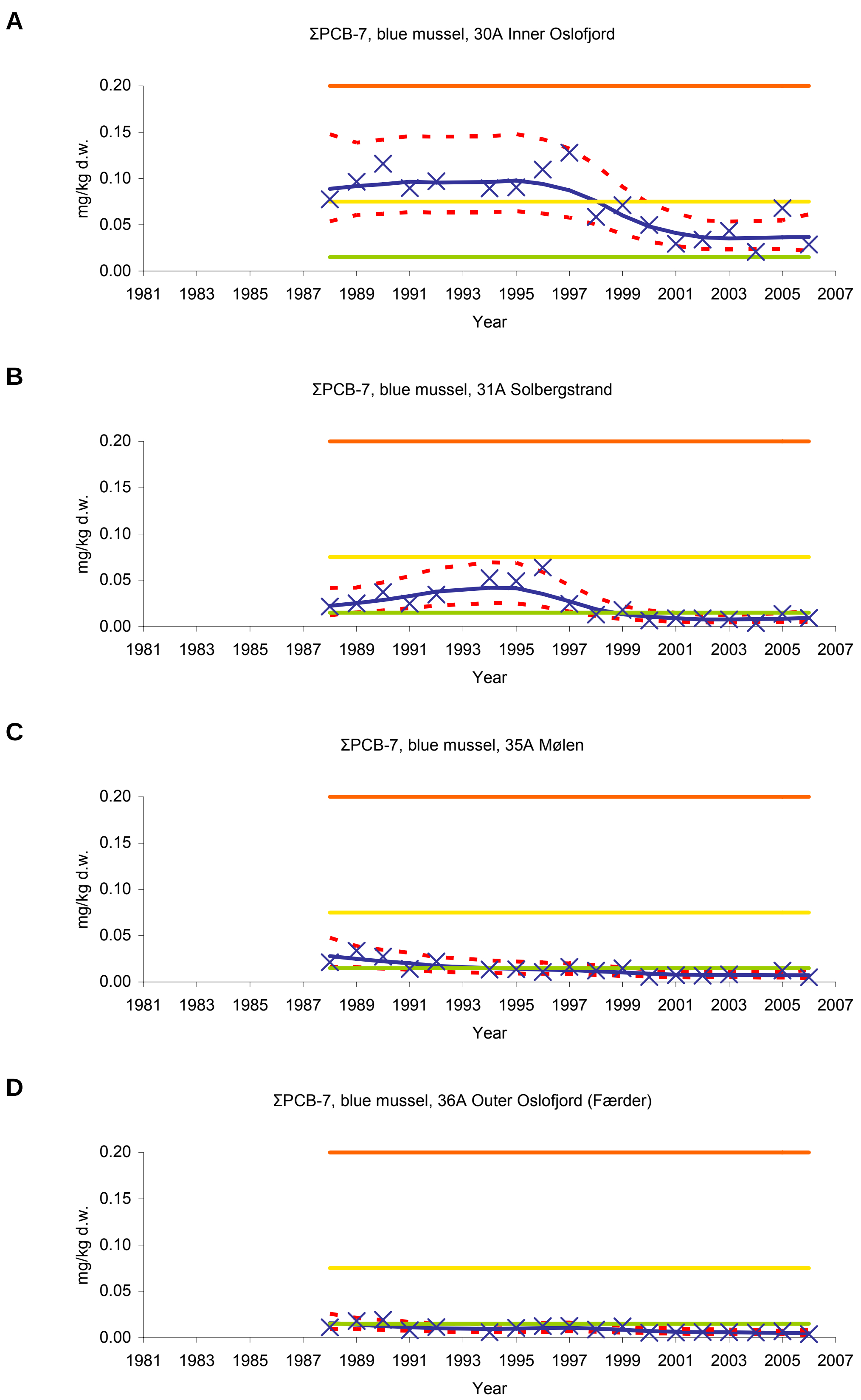


Figure 1. Median ΣPCB-7 (sum of PCB 28, 52, 101, 118, 138, 153 and 180) concentration in blue mussel (*Mytilus edulis*) from inner (st.30A) to outer (st.36A) Oslofjord. (cf. Appendix G and Appendix I, and and key in Figure 21).

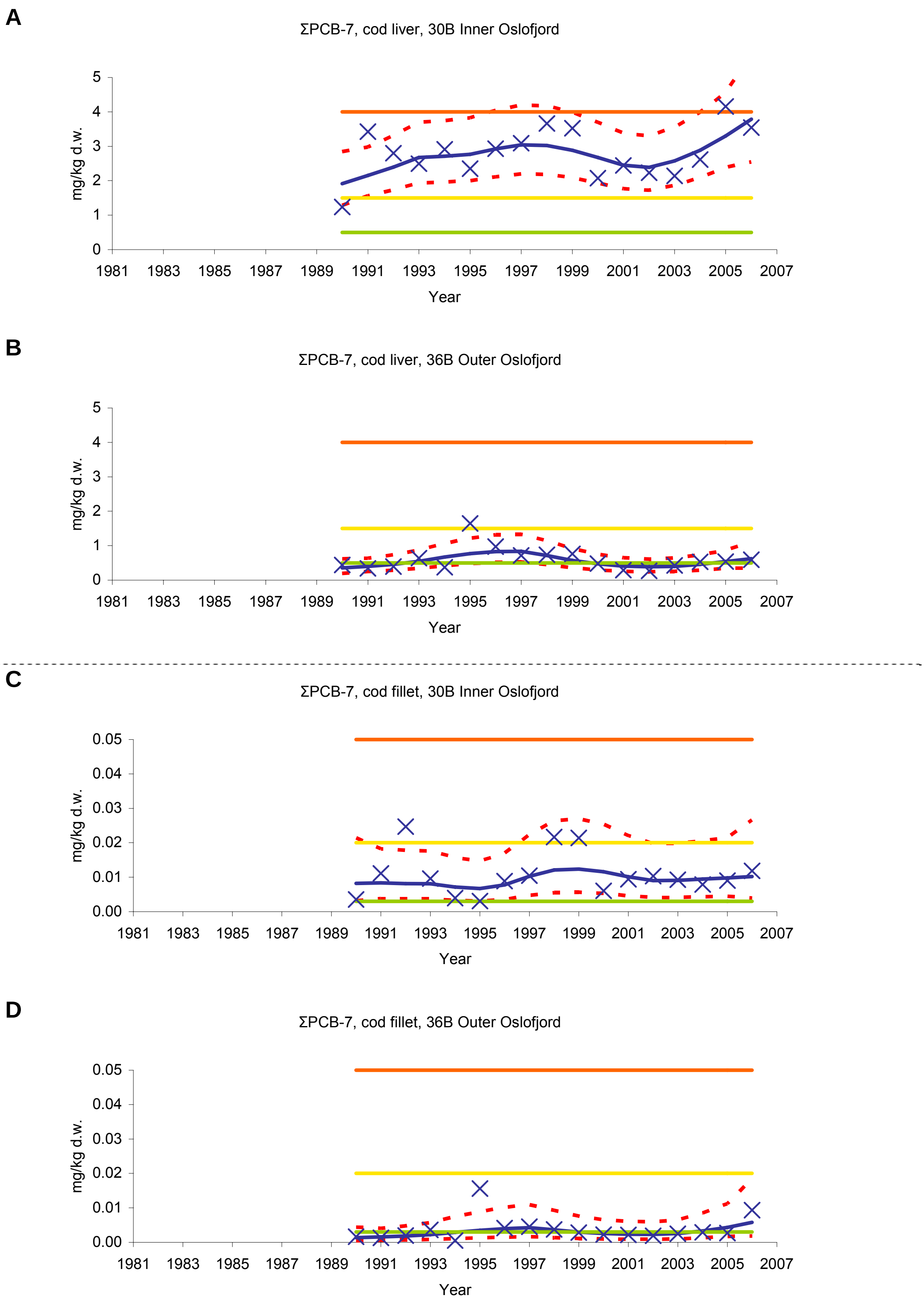


Figure 2. Median ΣPCB-7 (sum of PCB 28, 52, 101, 118, 138, 153 and 180) concentration in liver and fillet of cod (*Gadus morhua*) from the inner (st.30B) to outer (st.36B) Oslofjord. (cf. Appendix G and Appendix I, and key in Figure 21).

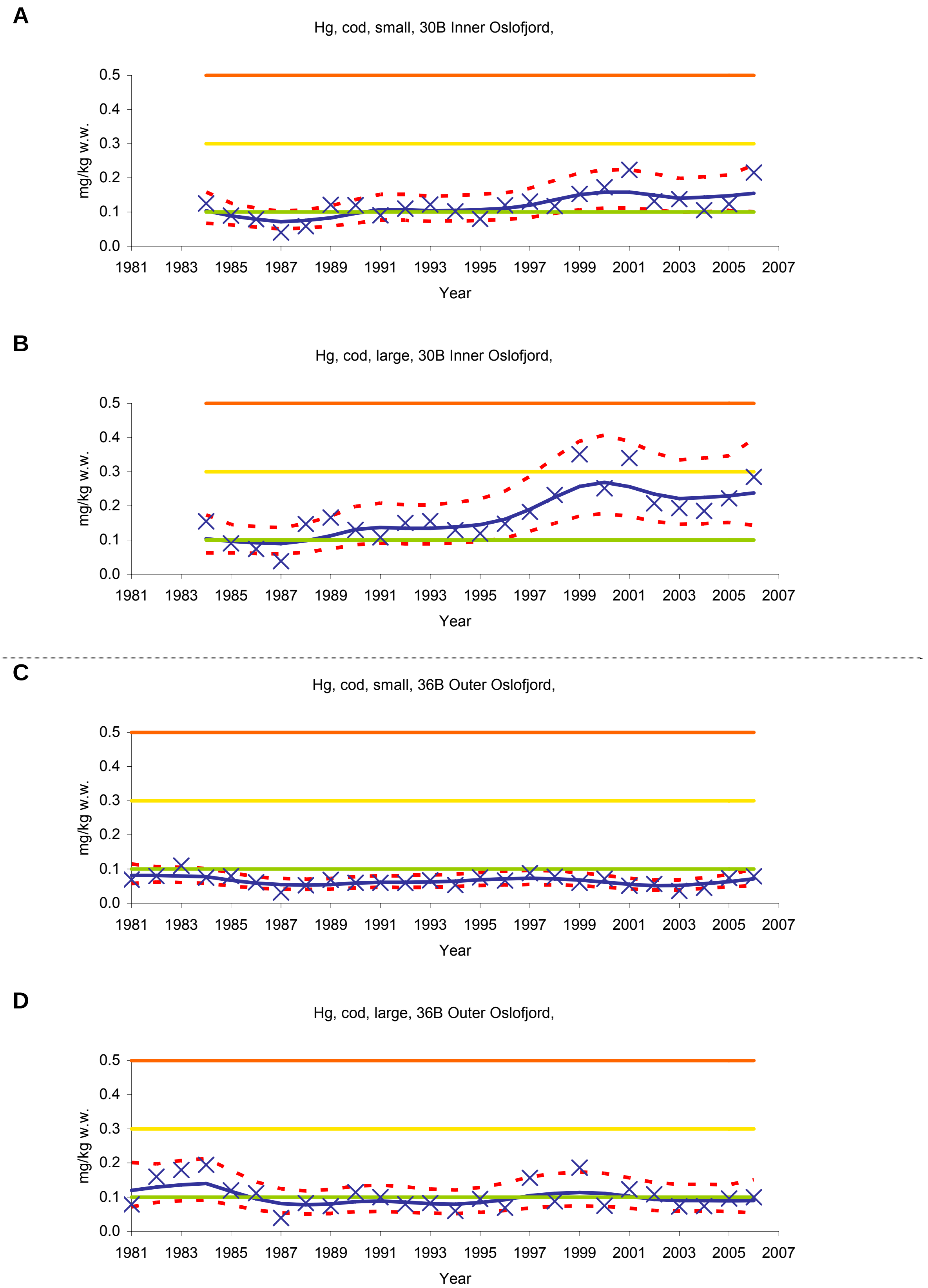


Figure 3. Median mercury (Hg) concentration in fillet of cod (*Gadus morhua*): for the inner Oslofjord (st.30B) “small” (**A**) and “large” (**B**) fish, and for the outer Oslofjord (st.36B) “small” (**C**) and “large” (**D**) fish. (cf. Appendix G and Appendix I, and key in Figure 21).

Blue mussel from Langesundsfjord (st.71A) in 2006 were moderately polluted with HCB (Class II, Figure 4A). The median concentration for 2006 was 1.27 mg/kg dry weight, about a third of the relatively high median found in 2005 which was the highest since 1991. Median values found at two nearby Index stations (I712 and I713) were markedly polluted (Class III), but also lower i 2006 compared to 2005 (Figure 4B and C). Concentrations have varied greatly since 1983 but median values have decreased distinctly since 1989 (Figure 4) due to about 99% reduction in discharge of HCB and other organochlorines from a magnesium factory (cf. Knutzen *et al.* 2001).

The power of the monitoring programme was 19 years for the period 1990-2006 and more than 25 years for the entire period (cf. Appendix I). The 1983-2006 data series had a significant *downward* trends and also a significant *downward* trend was found for the recent period (1990-2006).

It should be noted that dioxin is one of the contaminants monitored to establish the Pollution Index (see section 1.3.8). Dioxin toxicity equivalents based on the Nordic model (TCDDN) showed that the blue mussel was severely polluted (SFT Class IV) at Langesund (st. 71A) and extremely polluted at one nearby Index station (I712), whereas the other Index station, and closest to Frierfjord, (I713) was markedly polluted (Figure 35).

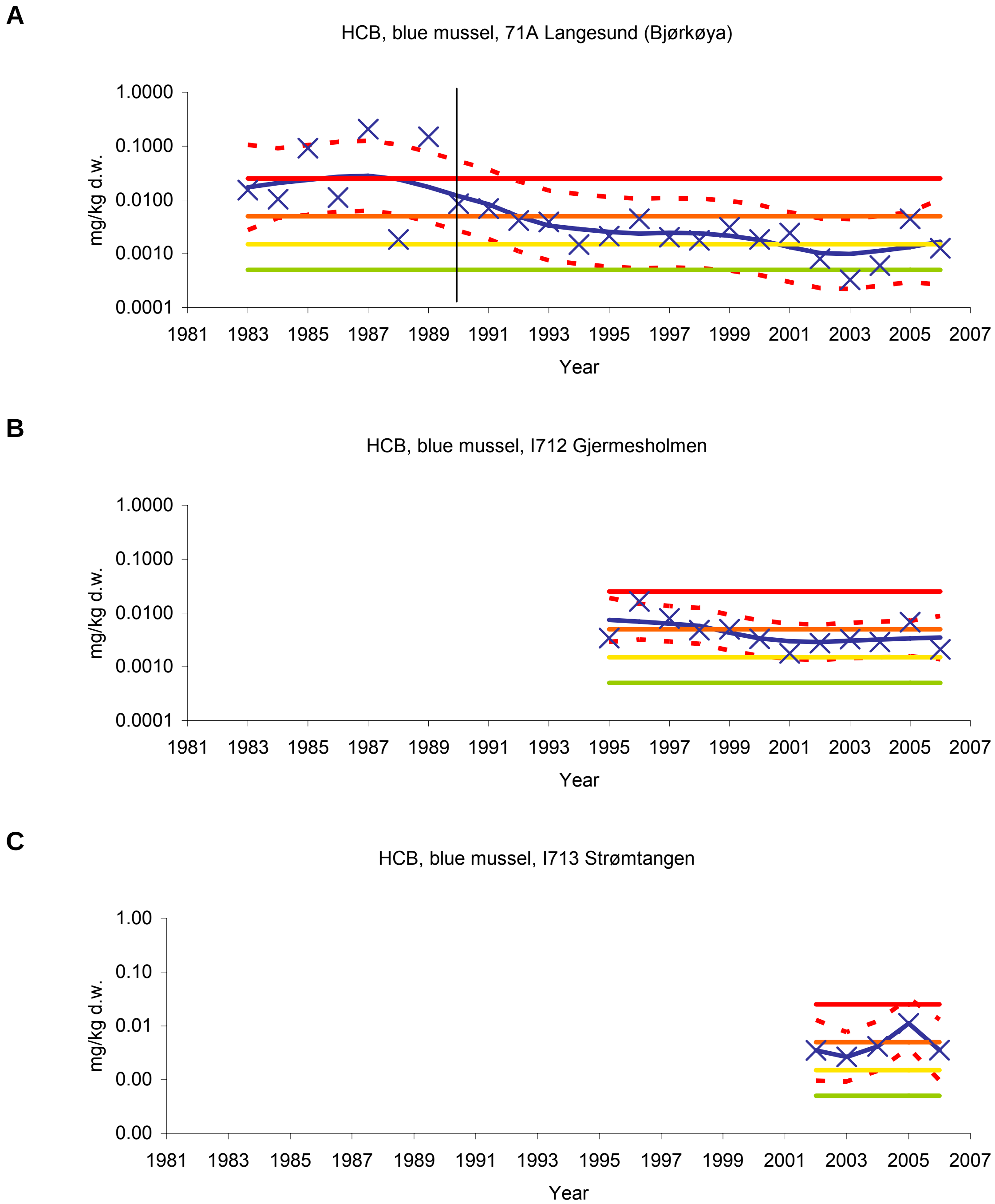


Figure 4. Median HCB concentration in blue mussel (*Mytilus edulis*) from Langesundsfjord (west of Oslofjord **A**) and two "Index" stations in the vicinity; Gjemesholmen (**B**) and Strømtangen (**C**) (cf. Appendix G and Appendix I, and key in Figure 21). Vertical line indicates when a magnesium factory reduced it's discharge by 99%. **NB: log-scale.**

1.3.2. Sørfjord and Hardangerfjord

The development of the contaminant conditions in these connected fjords and the main remedial actions that have been taken, have been outlined in the JAMP National comments for 1989 (Green 1991) and in recent reports concerning Sørfjord in particular (Skei 2000, 2001, Skei & Knutzen 2000, Skei *et al.* 1998). The results from JAMP 2006 are coupled to other studies in this area (cf. Knutzen & Green 2001a, Ruus & Green 2002, 2003, 2004, 2005, 2006, 2007) and confirm that the Sørfjord, and in some cases also Hardangerfjord, continue to be contaminated especially with cadmium (Figure 5), lead (Figure 6), mercury (Figure 7 and Figure 8), ppDDE (Figure 9, Figure 10 and Figure 11), and to a lesser extent PCB (Figure 11).

In 2002 the Norwegian Food Safety Authority (*Mattilsynet*, earlier referred to as SNT) extended their advice against the consumption of blue mussel to include all seafood in the Sørfjord including deep-water fish due to concerns about metal and PCB contamination (Table 3).

Results for blue mussel collected from the Sørfjord indicated that these were moderately (Class II) or markedly polluted (Class III) with cadmium in respect to SFT's classification system (Figure 5, Appendix I). Blue mussel as far as Vikingneset (st.65A. ca.84 km from Odda at the head of the Sørfjord) were moderately polluted with cadmium (Figure 5). A significant *downward* trend was found for cadmium at three stations in Sørfjord (st.52A, 56A and 57A) and two in Hardangerfjord (st.63A and 65A) (Appendix I). Also, the median lead concentration at the station nearest Odda (st.51A) and at Kvalnes (st.56A), about 15 km distant, were markedly polluted (Class III), whereas the other two stations in the Sørfjord (st.52A and 57A) and the two nearest stations in the Hardangerfjord (st.63A and 65A) were moderately polluted. A *downward* trend was found for lead at Ranaskjær (st.63A), 1990-2006. Three stations in Sørfjord were moderately polluted with respect to mercury.

Cod fillet from “small” (35-41 cm) and "large" individuals (42-55 cm) from the inner Sørfjord (st.53B) were moderately polluted with mercury (Class II). Overconcentrations were found for cadmium in cod liver from inner Sørfjord (2 times). It was not feasible to collect flounder from the inner Sørfjord, however, flounder caught in the adjacent Hardangerfjord had no overconcentrations.

The power of the sampling strategies for blue mussel was relatively poor for samples collected from Odda; the innermost part of Sørfjord (st.51A or 52A). For example for lead in blue mussel from these stations, it is estimated that it would take 19-22 years to detect a hypothetical trend of 10% per year with 90% significance (Appendix I). This reflects the large variability found in the data series from this area. The variability is mostly due to the irregular/accidental input of contaminated discharges. The power improved with distance from Odda, and at Ranaskjær (st.63A) and Vikingneset (st.65A) it was only 13 years.

Blue mussel at Kvalnes (st.56A) in the mid Sørfjord region were extremely polluted with ppDDE (Class V); with a median concentration of 186 µg/kg d.w.. The lower limit to Class V is 150 µg/kg d.w.. Blue mussel at the mouth of the Sørfjord, Krossanes (st.57A) about 20 km to the north, was moderately polluted (Class II, Figure 9 and Figure 10). Cod liver from the Sørfjord was moderately polluted with ppDDE (Figure 11A, Appendix I).

The liver of cod from Hardangerfjord for 2006 were insignificantly polluted (Class I) with respect to ΣPCB-7. Since JAMP monitoring started in the Sørfjord and Hardangerfjord the median values have varied between 100 and 2400 µg/kg w.w. (Appendix I). This indicated that cod is subject to a variable exposure from PCB, but the cause of this variation is not clear.

No trends were evident for ppDDE and ΣPCB-7 in blue mussel and cod.from inner Sørfjord where 2006 median were in Class II or higher.

A

B

C

D

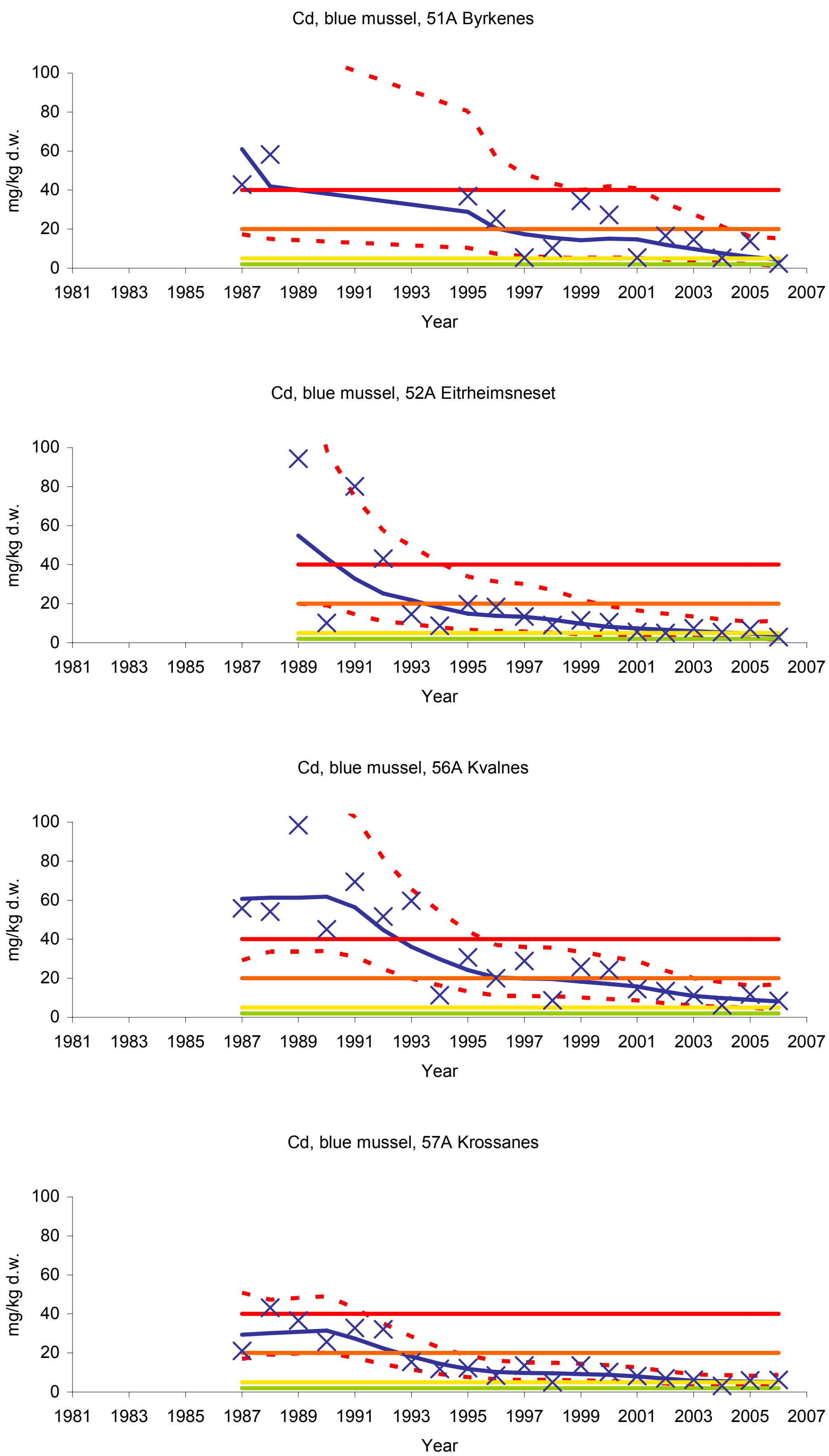


Figure 5. Median cadmium (Cd) concentration in blue mussel (*Mytilus edulis*) from inner (st.51A) to outer (st.57A) Sørfjord. NB: (cf. Appendix G and Appendix I, and key in Figure 21). **Note: for some years the upper confidence interval line is off-scale in figures A-C. Note: horizontal lines for Classes I and II are near x-axis.**

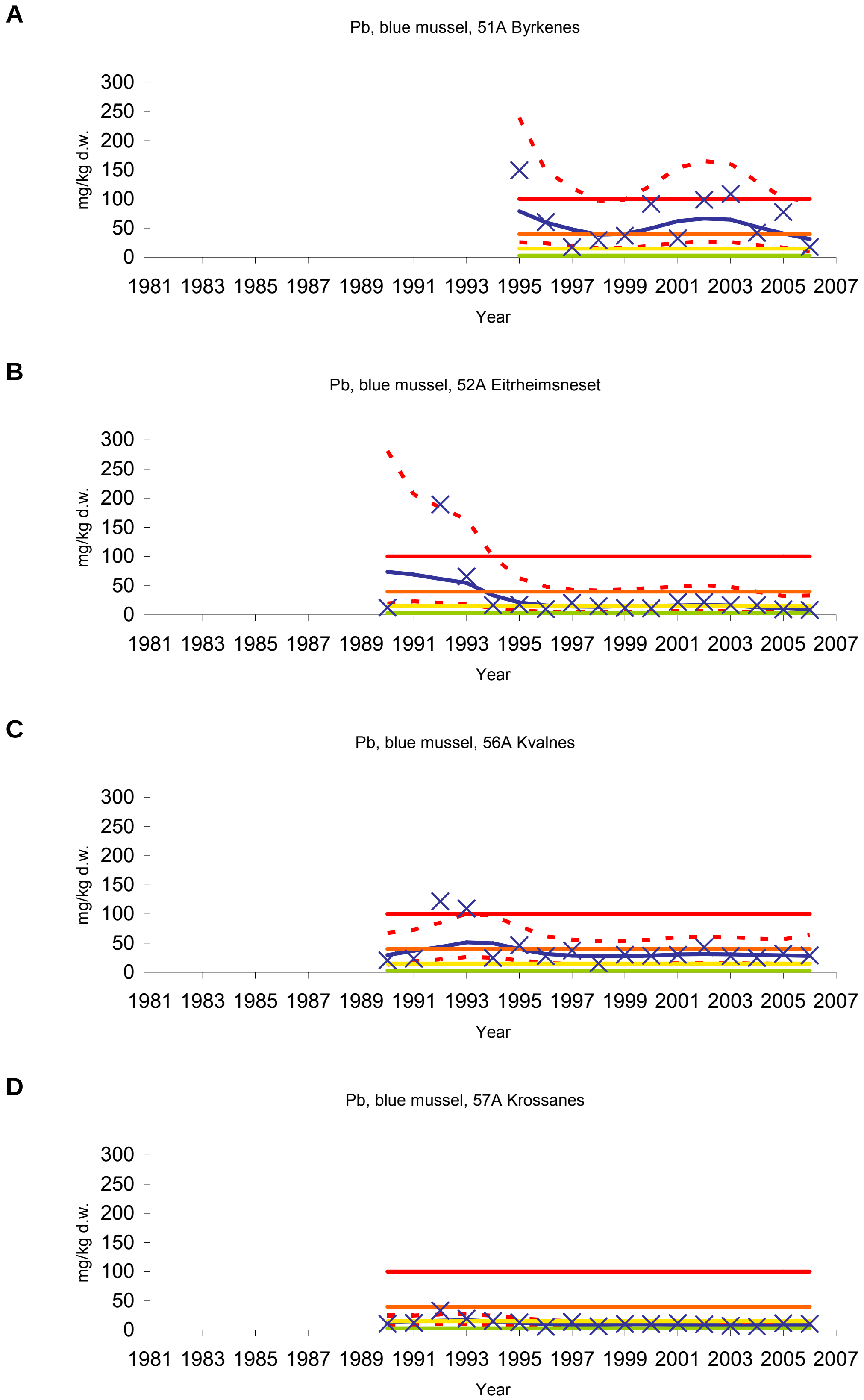


Figure 6. Median lead (Pb) concentration in blue mussel (*Mytilus edulis*) from inner (st.51A) to outer (st.57A) Sørfjord. (cf. Appendix G and Appendix I, and key in Figure 21). **Note: horizontal lines for Classes I and II are near x-axis.**

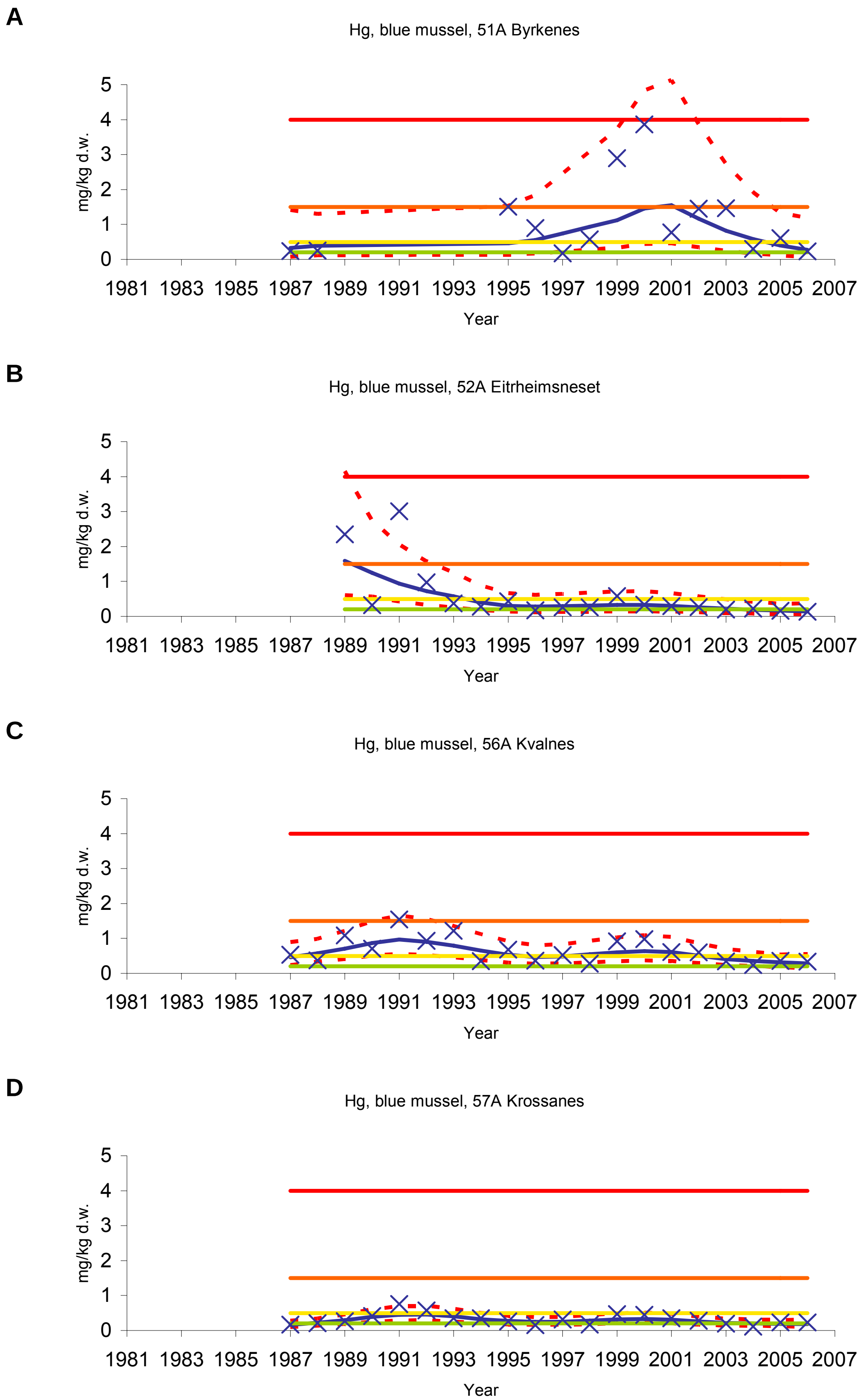
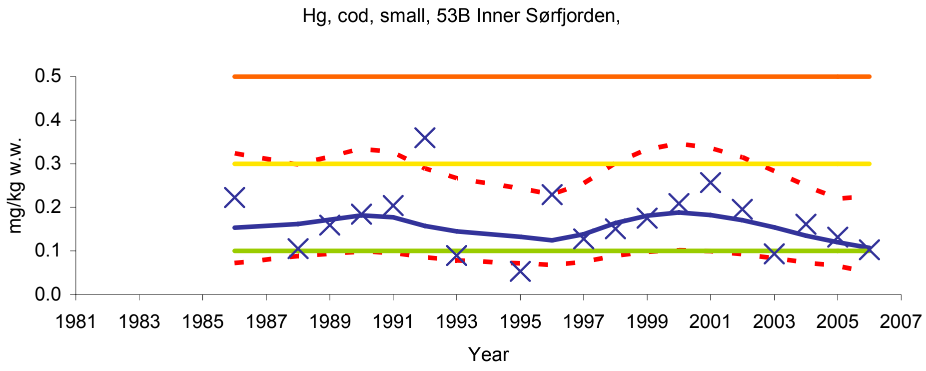
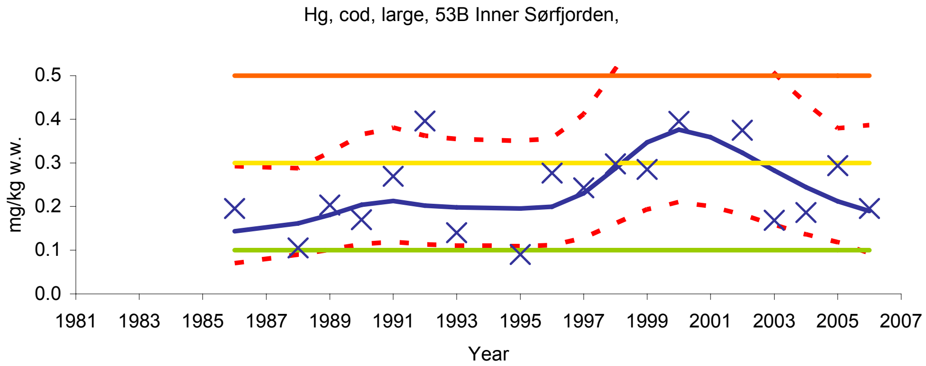


Figure 7. Median mercury (Hg) concentration in blue mussel (*Mytilus edulis*) from inner (st.51A) to outer (st.57A) Sørfjord. (cf. Appendix G and Appendix I, and key in Figure 21). **Note: for some years the upper confidence interval line is off-scale in figure A. Note: horizontal lines for Classes I and II are near x-axis.**

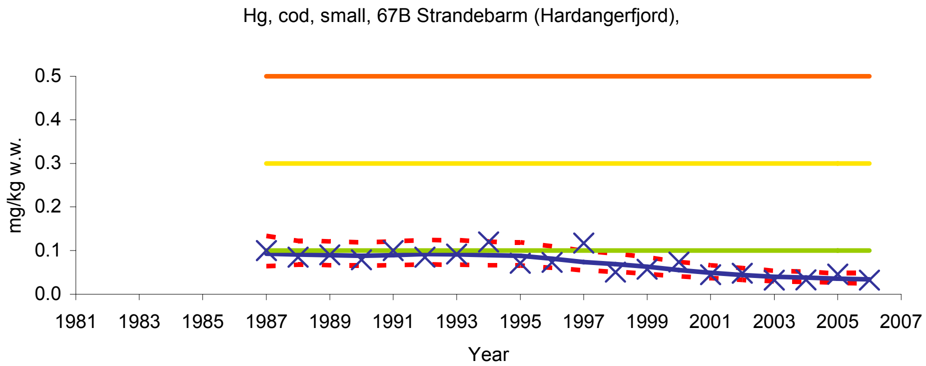
A



B



C



D

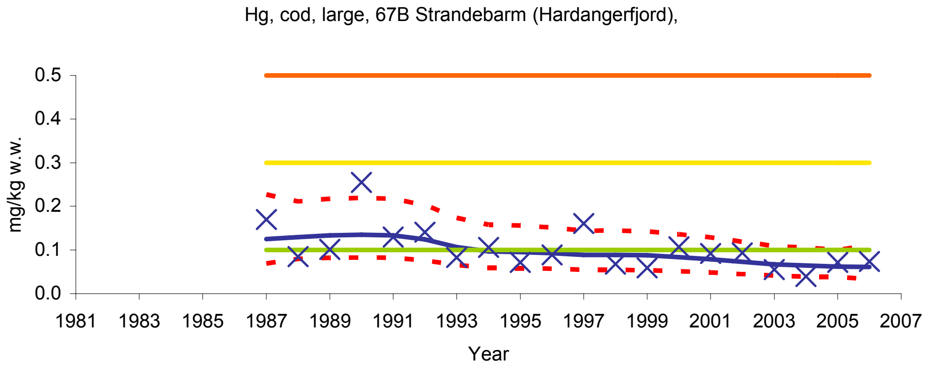


Figure 8. Median mercury (Hg) concentration in fillet of cod (*Gadus morhua*): from Sørfjord (st.53B) for "small" (**A**) and "large" (**B**) fish and Hardangerfjord (st.67B) for "small" (**C**) and "large" (**D**) fish (cf. Appendix G and Appendix I, and key in Figure 21). **Note: for some years the upper confidence interval line is off-scale in Figure B.**

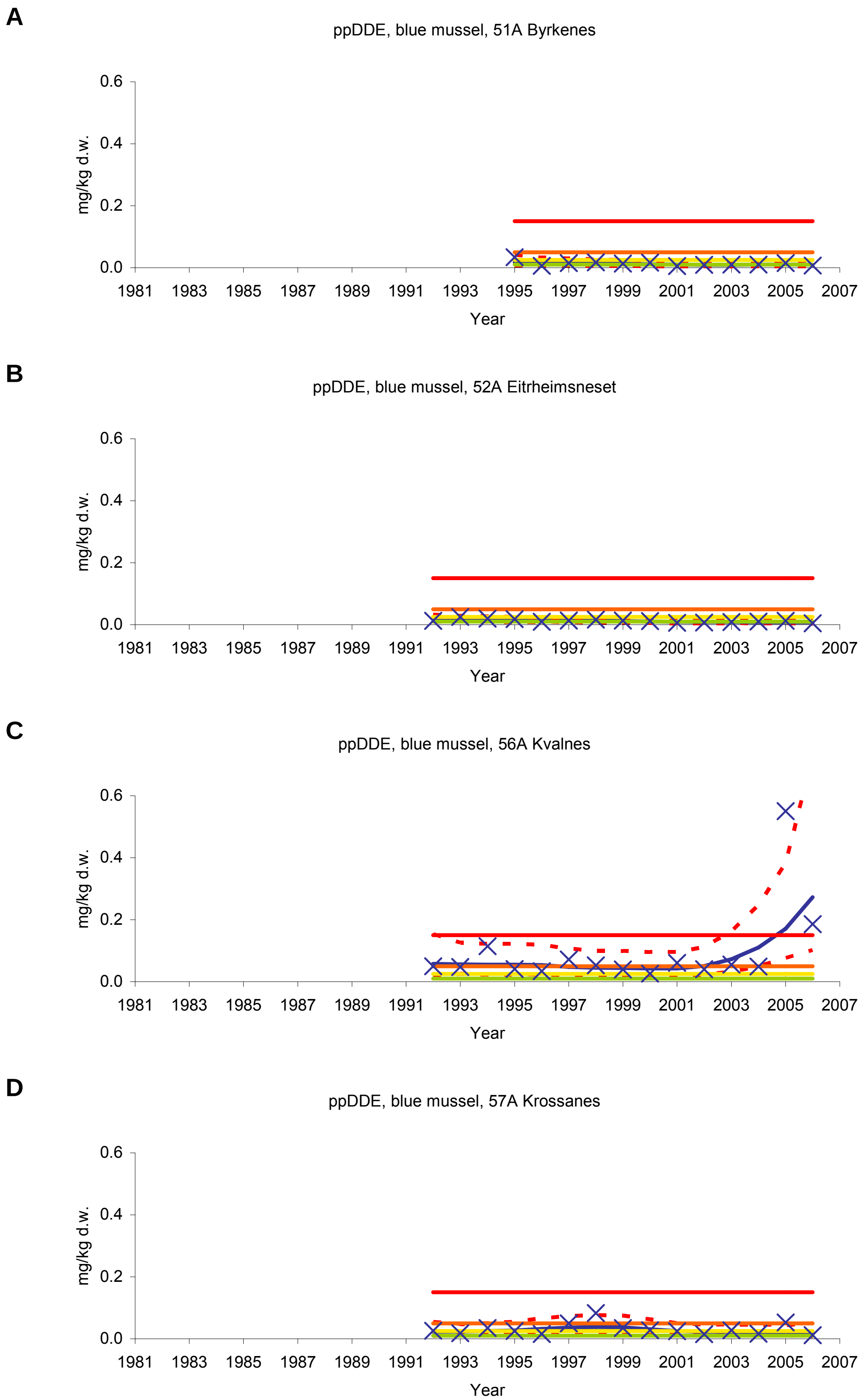


Figure 9. Median ppDDE concentration in blue mussel (*Mytilus edulis*) from inner (st.51A) to outer (st.57A) Sørfjord. (cf. Appendix G and Appendix I, and key in Figure 21). **Note: Class limits for ΣDDT used. Horizontal line for Class I is near x-axis.**

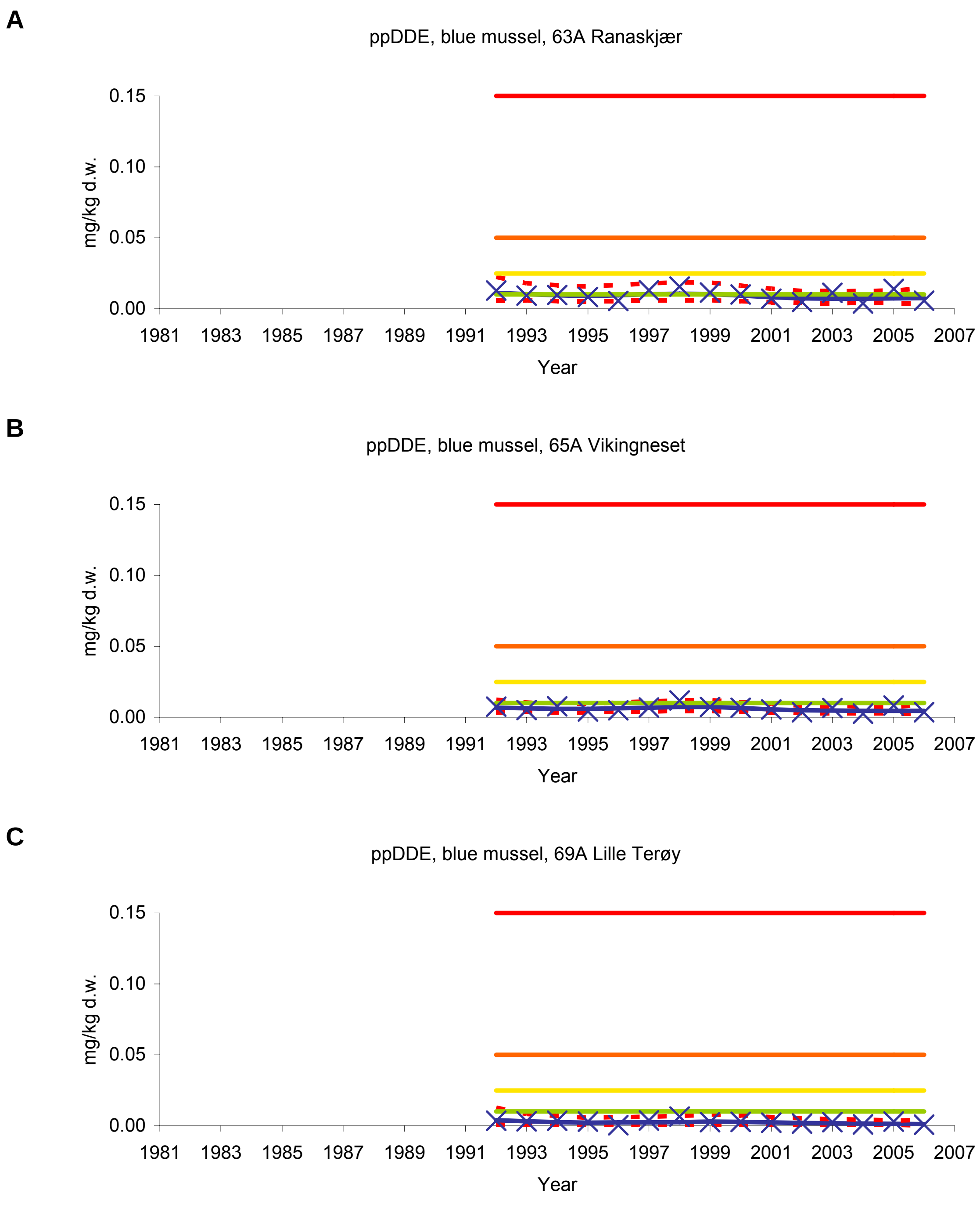


Figure 10. Median ppDDE concentrations in blue mussel (*Mytilus edulis*) from Hardangerfjord (st. 63A, 65A and 69A). (cf. Appendix G and Appendix I, and key in Figure 21). **Note: Class limits for ΣDDT used. Horizontal line for Class I is near x-axis.**

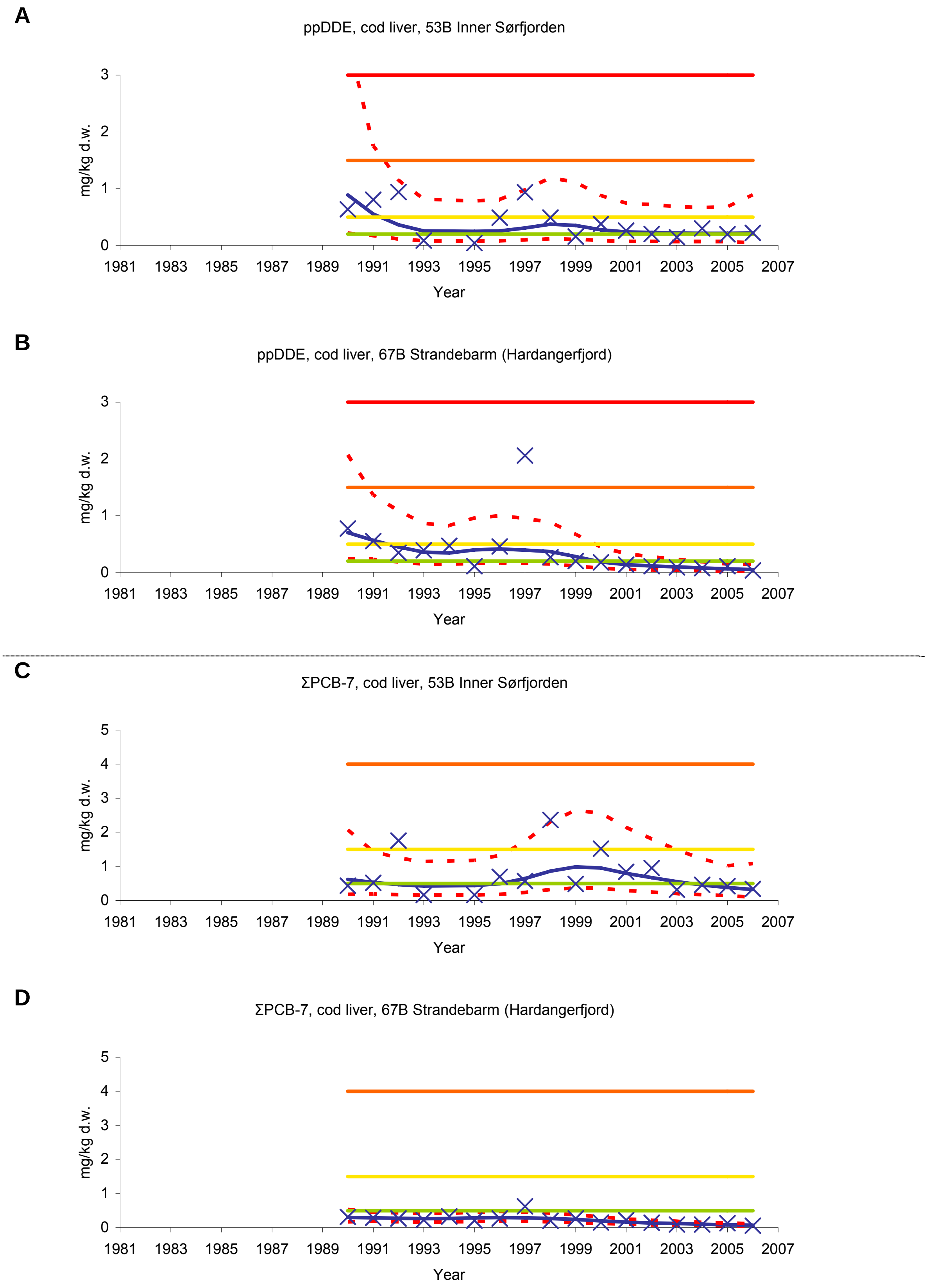


Figure 11. Median ppDDE and ΣPCB-7 concentrations in liver of cod (*Gadus morhua*) from Sørfjord (st.53B) and Hardangerfjord (st.67B) (cf. Appendix G and Appendix I, and key in Figure 21). **Note: Class limits for ΣDDT used for ppDDE. Note also that for 1989 the upper confidence interval line is off-scale in Figure A.**

1.3.3. Lista area

Blue mussel, cod and dab were insignificantly polluted (Class I or below provisional high background), with the exceptions of cadmium in dab liver and mercury in “large” dab which were moderately polluted in 2006. No upward trends were found (st.15, Appendix I and Appendix J).

1.3.4. Bømlo-Sotra area

It was impractical to continue sampling for flatfish at Borøyfjorden (st.22F). Thus, a new station in Åkrafjorden, Kyrping (st.21F), was initiated in 2000. This station is located about 82km south-east of Borøyfjorden, but like this fjord, Kypring is located in a reference area.

Blue mussel, cod and flounder from this area (22A, 23B, 21F) generally were only insignificantly polluted (Class I) or showed no overcentrations with respect to metals or organochlorines with the exception of cod fillet which was moderately polluted with mercury (Class II, Appendix I and Appendix J).

1.3.5. Orkdalsfjord area

Blue mussel from this area were monitored for the period 1984-1996, and then not again until 2004-2005 when bulk samples from four stations were investigated (Trossavika – st.84A, Flakk – 82A or Ingdalsbukt – 87A).

1.3.6. Open coast areas from Bergen to Lofoten

This stretch of coastline covers 7° of latitude to 68°N (Appendix G). Sixteen mussel stations were investigated in 2005, of which fourteen also in 2004. These fourteen were investigated prior to 2004-2005 in 1990-1993. The longest times series, from 1997 to 2006, is with blue mussel from the Husvågen area in Lofoten (st. 98A2). Blue mussel have been collected from two sites in the Lofoten area. In 1992-1993 samples were collected from Litj Skarvsundet (98A1) in the Skrova area of Lofoten, however, during the period 1994-1996 blue mussel were not found here, but nearby in the Skrova harbour (98X). In 1997 st.98A2 was established at Husvågen, roughly 18 km north of Skrova, in a small fjord remote from any apparent point source of contamination, and hence considered comparable. However, the statistical trend-analyse is based only on the Husvågen data.

In 2006, the blue mussel were only insignificantly contaminated (SFT's Class I), which has been generally the case since 1997 (Appendix I and Appendix J). Plaice from Husholmen (98F2) in the Lofoten area had overconcentrations of cadmium, 3 times “background”.

1.3.7. Exposed area of Varangerfjord near the Russian border

The remaining and northern area of JAMP in Norway stretches north of 68°N and east from a longitude of 17 to 29°E (Appendix G). Twelve mussel stations were investigated in 2006, ten of which were also investigated during the period 1994-1995. Only two mussel stations, one cod station and one plaice station were investigated in the Varangerfjord (at approximately 70°N).

In 2006, the mussels were only insignificantly contaminated (Class I) except for the moderate concentrations (Class II) found at six stations remote from point sources (stations 41A, 43A, 46A, 47A and 49A). This could indicate a natural regional difference (Appendix I and Appendix J).

Sediment was sampled at 10 stations in remote from point sources from Vågsfjorden (st.41S, near Harstad) to Varangerfjorden (10S). All were investigated previously in 1994. Surficial sediment was moderately polluted with TBT at all stations, nickel at all but Syltefjord (st.49S), and chromium at all but Tanafjord (st.48S) and Syltefjorden; benzo[*a*]pyrene at Tanafjord and Syltefjord (Appendix K).

1.3.8. Norwegian Pollution and Reference Indices (The Index Programme)

The Norwegian Pollution Control Authority (SFT) has requested a specific and small group of indices to assess the quality of the environment with respect to contaminants - The Index Programme. One index is based on the levels and trends of contaminant concentrations in blue mussel collected annually from a selection of the more contaminated fjords in Norway (Appendix L). SFT has also requested the testing of this index against "reference" stations from selected areas and fjords.

The Index scale varies from 1 to 5. Index 1 means that all areas or fjords are insignificantly polluted (Class I in SFT's environmental quality classification system (Molvær *et al.* 1997)), Index 5 means that at least one sample from each area or fjord is extremely polluted or Class V in SFT's system.

Nine fjord areas were used to calculate the Pollution Index. Taking the supplementary stations (Strømtangen, Flåøya, Moholmen and Toraneskaien) and analyses of TBT and dioxins into consideration, the Index was 2.9 for 2006 compared to 3.1 for 2005 (cf. Appendix L). A value between 3 and 4 would be between "Marked" and "Severe" Classes in the SFT system. A value bewteen 2 and 3 would be between the "Moderate" and "Marked" Classes. Indices calculated with and without supplementary stations and analyses have been presented earlier (cf. Green *et al.* 2004a, b).

Five areas were included in the Reference Index for 2006 compared to the same five for 1998-2005, and seven or eight fjords used in previous years. With the new calculation where supplementary analyses of TBT are included, the Reference Index was 1.4 for 2006, unchanged from 2005. Comparison between the old and new calculations has been done for 2002 and 2003 (cf. Green *et al.* 2004a, b). A value between 1 and 2 would be between "Slight" and "Moderate" Classes. Four of the five fjords/areas included TBT analyses.

The use of the indices to assess the general level of pollution in contaminated or reference areas of coastal water for the period 1995 to 1999 has been reviewed (Green & Knutzen, 2001). The conclusions were mainly that the sample and analytical strategies lacked adequate coverage of the relevant contaminants and geographical areas. Furthermore, the report suggested supplementing the assessment of this type with relevant analyses of sediment. In 2002 the programme was improved by including more stations and parameters relevant to the blue mussel Pollution Index.

It is not the intent of the application of the indices to give a station by station account. However, time trend analyses for the entire period (1995-2006) have been calculated and show both significant upward and downward trends in blue mussel (cf. Appendix I). Some cases are worth noting (2006 median Class / trend):

- Inner Oslofjord, Gressholmen (st.30A, Map 1, Appendix G) – TBT, ΣPCB-7, Class II / *downward*,
- Inner Oslofjord, Gressholmen (st.30A, Map 1, Appendix G) – benzo[*a*]pyrene, Class II / *upward*,
- Frierfjord area, Bjørkøya (Risøyodden) (st.71A, Map 3, Appendix G) - HCB, Class III / *downward*,
- Frierfjord area, Gjemesholmen (st.I712) and Strømtangen (st.I713) (Map 3, Appendix G) - TBT, Class II / *downward*,
- Sørfjord, Eitrheimsneset (st.52A, Map 6, Appendix G) – Cd, Class II / *downward*,
- Byfjorden (Bergen), Nordnes (st.I241) in Bergen harbour (Map 7, Appendix G) – HCB, Class III / *upward,*
- Byfjorden (Bergen), Gravdalsneset (st.I242) in Bergen harbour (Map 7, Appendix G) – HCB, Class II / *downward*.

1.4. Biological effects methods for cod

The rationale to use biological effects methods within monitoring programmes is to evaluate whether marine organisms are affected by contaminant inputs. Such knowledge can not be derived from tissue levels of contaminants only. In addition to enable conclusions on the health of marine organisms, some biomarkers assist in the interpretation of contaminant exposure and bioaccumulation. The biological effects component of the Norwegian JAMP is possibly the most extensive of its type in Europe and includes imposex in gastropods as well as biomarkers in fish. The four chosen methods for fish were selected for specificity, for robustness and because they are among a limited set of methods proposed by international organisations, including OSPAR and ICES.

The JAMP-programme for 2006 included five biological effects methods (BEM): OH-pyrene, ALA-D, EROD-activity, CYP1A and TBT (Table 2). The first four are discussed in this chapter (Figure 12 to Figure 14) and TBT is discussed separately (cf., section 1.5). Results for OH-pyrene, ALA-D, EROD and metallothionein (MT) in cod and flatfish, 1997-2001, have been reported earlier (Ruus *et al.* 2003). For the 2006 investigations OH-pyrene, ALA-D, EROD-activity and CYP1A were measured in Atlantic cod from the inner Oslofjord (30B), Sørfjord (st.53B), and Sotra-Bømlo area (23B). OH-pyrene was also measured in cod outside Lista (15B). It has become clear that cod caught in the open coastal area outside Lista are more strongly affected by PAHs than cod at the other stations, despite the large water exchange in that area (Ruus *et al.* 2003). Furthermore, stations from the inner Oslofjord and Sørfjord are considered to be more contaminated with metals and organochlorines than the other stations.

Table 2. Summary of biological methods employed by the JAMP-2006.

Code	Name	tissue sampled	Specificity
OH-pyrene	Pyrene metabolite	fish bile	PAH
ALA-D	δ-aminolevulinic acid dehydrase inhibition	fish red blood cells	Pb
EROD-activity	Cytochrome P4501A-activity (CYP1A/P4501A1, EROD)	fish liver	planar PCB/PCNs, PAHs, dioxins
CYP1A	Relative amount of cytochrome P450 1A-protein	fish liver	Supporting parameter for EROD-activity
TBT	Imposex/Intersex	snail soft tissue	organotin

Under controlled conditions the measures derived from OH-pyrene, EROD-activity and CYP1A increase with increased exposure to their respective inducing contaminants. The activity of ALA-D on the other hand is inhibited by contamination (i.e., lead), thus lower activity means higher exposure.

As in most previous years, 25 individual cod were sampled for biological effects measurements at each station. However, since 2002 only three stations (four for OH-pyrene) were sampled, instead of eight stations as in previous years. Furthermore, no samples for BEM were taken from flatfish. All fish were collected by local fishermen and kept alive until sampling by NIVA staff within 5 days. There is a continuous process to train and inform the fishermen that collect fish for JAMP to ensure the quality of the material.

1.4.1. OH-pyrene metabolites in bile

Detection methods for OH-pyrene have been changed (improved) two times since the initiation of these analyses in the JAMP programme. In 1998 the support/normalisation parameter biliverdin was changed to measurement of light absorbance at 380 nm. Furthermore, in 2000, the use of single-wavelength fluorescence for quantification of OH-pyrene was discontinued and the use of HPLC separation with fluorescence detection was implemented. All data shown in Figure 12 were obtained by the latter method. Although there is a good correlation between results from the two methods they can not be compared directly. The single wavelength fluorescence method is naturally more unspecific and will include fluorescence from more components than the HPLC method, which has extremely high specificity towards individual metabolites. The interpretation of OH-pyrene data is therefore primarily focused on the differences between the stations within each year.

As in 2005, the median concentrations of OH-pyrene metabolites in bile from cod ranged between stations in the following order in 2006: Oslofjord (st. 30B) > Sørfjord (st. 53B) > Sotra-Bømlo area (reference; st. 23 B) > Lista (st. 25B). However, variability was high, and the highest at Lista (st. 15) as previous years. More specifically, in 2006 the median concentration of OH-pyrene metabolites in cod from the inner Oslofjord (st.30B), was a factor >6 higher than that of cod from Lista (st.15B). (Figure 12, Appendix I). This result differ from previous years (before 2000, and in 2001).

For 1998, 1999, 2001 the median concentrations of OH-pyrene in cod from Lista (st.15B) were higher than at stations 30B, 53B and 23B (no samples from st.15B in 2000). In 2002, the OH-pyrene levels at Lista were above those at the reference locality, Karihavet (23B), but lower than in the inner Oslofjord (st.30B) and in the inner Sørfjord (st.53B). In 2003 and 2004 concentrations were below those from the inner Oslofjord (st. 30B) but above the reference (st.23B) and those found in the inner Sørfjord (st.53B). It is worth mentioning again that the variability in the OH-pyrene bile concentrations in cod from Lista (st.15B) are relatively large (compared to at the other stations), all years (Figure 12). A significant *downward* trend in OH-pyrene in bile from cod at Lista is visible for the period 1998-2006 Figure 12, Appendix I). Lista is located in an area with a large discharge of PAH to water from an aluminium-smelter. The fish were collected on the open coast and the discharge from the smelter occurred in a small bay about 2-3 km away.

In 2006, as in most years, concentrations of OH-pyrene in cod from Sørfjorden (53B) were higher than the concentrations in cod from Sotra Bømlo (23B) This also confirm the generally assumed contamination of this area.

Bile metabolites of PAH can be detected within a short period (hours) following exposure, and holding conditions prior to sampling may affect results. However, measures were taken in 1998 and 1999 to minimise or remove the problem. Given the precautions taken, it is unlikely that the observed levels have been caused by storage of fish prior to tissue sampling.

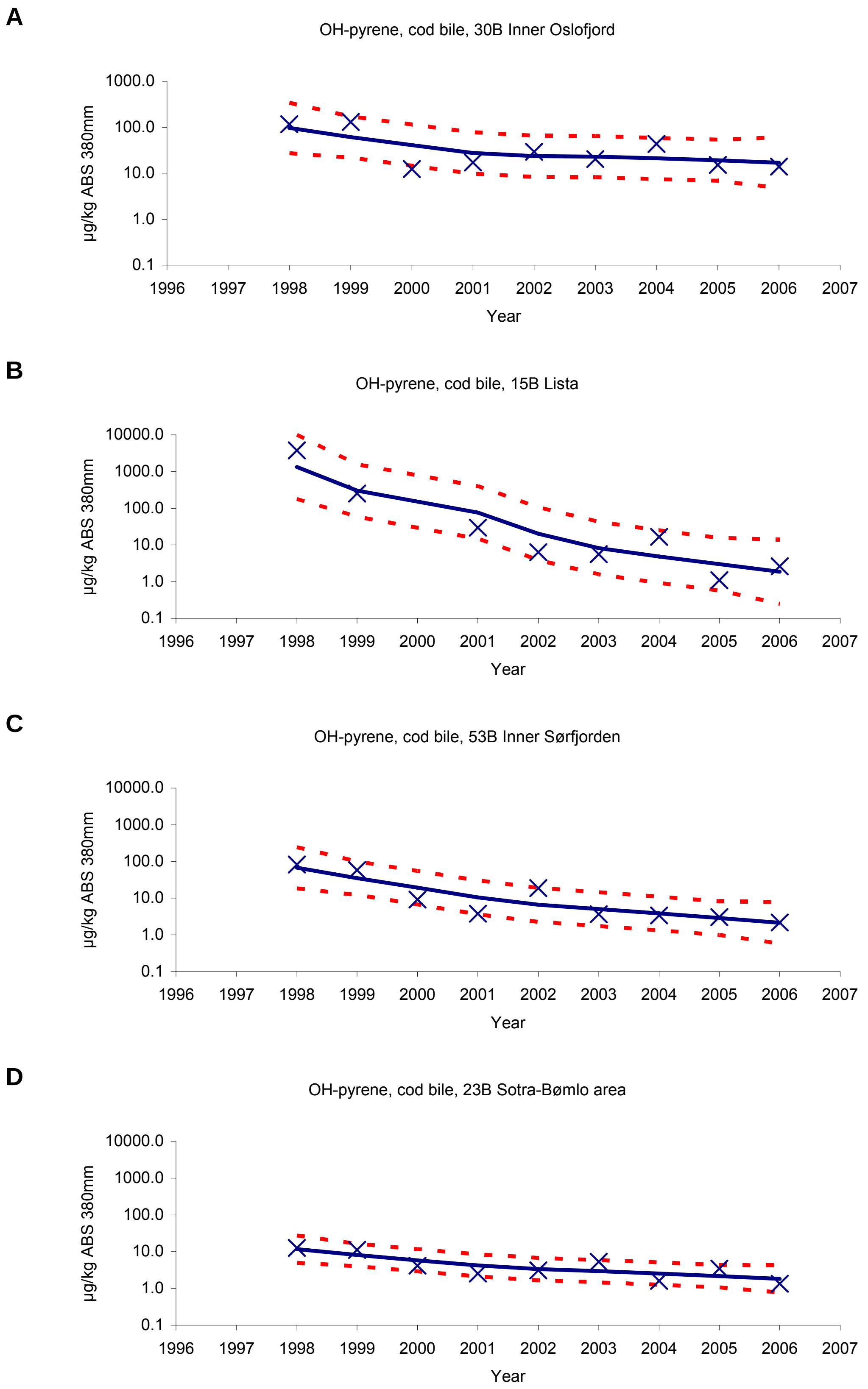


Figure 12. Concentration of OH-pyrene (µg/kg ABS 380nm) in bile from Atlantic cod collected at the inner Olsofjord (st.30B), Lista (st.15B), inner Sørfjorden (st.53B) and Sotra-Bømlo (st.23B). (cf. Appendix G and Appendix I, and key in Figure 21). **NB: log-scale.**

1.4.2. ALA-D in blood cells

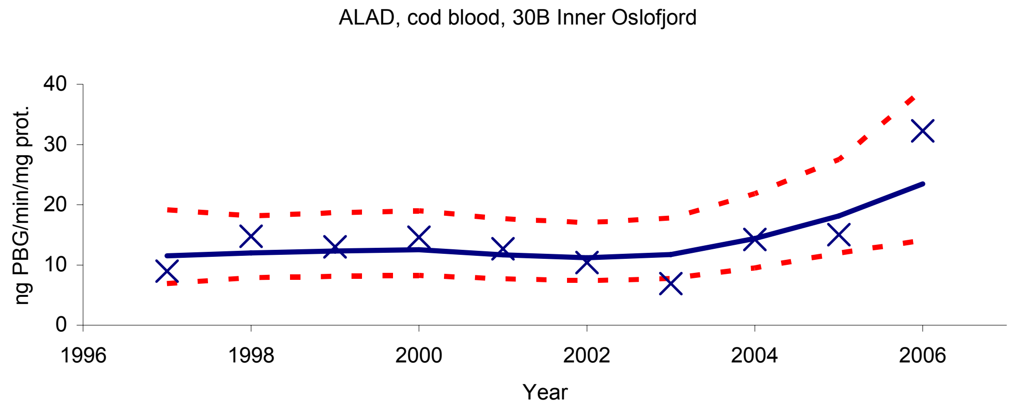
Inhibited activity of ALA-D indicates the influence of lead contamination. Although ALA-D inhibition is lead-specific, it is not possible to rule out interference by other metals or organic contaminants. Previous studies indicate that only zinc may ameliorate the effect of lead to some extent, but the effect is variable and weak. Other studies have also shown ALA-D to be a remarkably robust biomarker and factors such as sex, age or season do not appear to affect the response.

Most years the activity of ALA-D in cod was generally inhibited in the inner Oslofjord (st.30B) and inner Sørfjord (st.53B), compared to reference stations, i.e. outer Oslofjord (st.36B), Karihavet in the Sotra-Bømlo area (st.23B), and Varangerfjord (st.10B). This was the case for 1997, 1998, and 2000-2006 (Figure 13 and Appendix I,). For all years 1997-2006 the median activity of the enzyme in cod from inner Sørfjord (st.53B) was generally lower than on the open coast (Karihavet - st. 23B), about 130 km to the west.

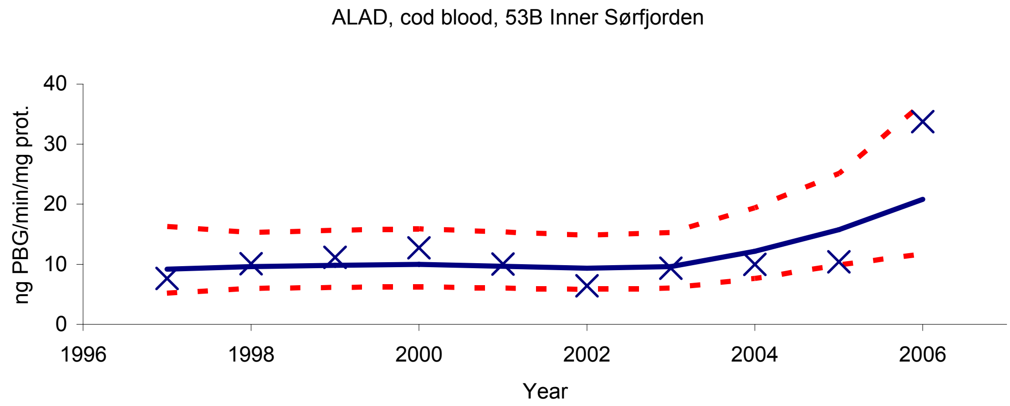
Since 2002, ALA-D has been measured only in cod from Karihavet (st. 23B), inner Oslofjord (st.30B) and inner Sørfjord (st.53B). In 2006 as in previous years, the inibition was largest in the inner Sørfjord and the inner Oslofjord, although the trend was less evident than in 2005 (Figure 13, Appendix I). This indicates pollution of lead (and possibly other metals) in these two fjords. An increase in median ALA-D activity could be seen over the years from 2002 to 2006 indicating less exposure. In the Oslofjord (st. 30B), this is consistent with a decrease in hepatic lead concentrations since 2002 (Appendix I). .

No significant temporal trends in ALA-D activity were found neither in Sotra-Bømlo (23B), Oslofjord (st.30B) or Sørfjord(st.53B).

A



B



C

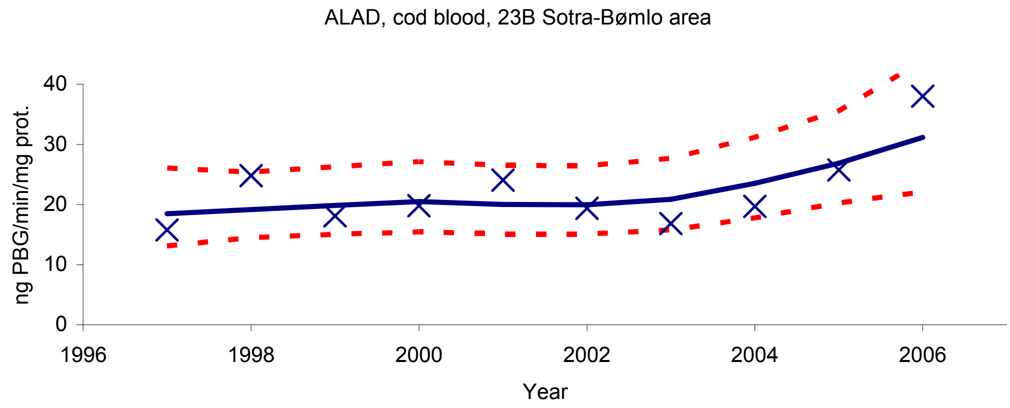


Figure 13. Activity of δ-aminolevulinic acid dehydrase (ALA-D, ng PBG/min/mg protein) in red blood cells from Atlantic cod collected at the inner Olsofjord (st.30B), inner Sørfjorden (st.53B) and Sotra-Bømlo (st.23B). (cf. Appendix G and Appendix I, and key in Figure 21). OBS: lower activity means higher exposure and vice versa.

1.4.3. EROD-activity and amount of CYP1A protein in liver

EROD-activity

High activity of hepatic cytochrome P4501A activity (EROD-activity) normally occurs as a response to the contaminants indicated in Table 2. It was expected that higher activity would be found at the stations that were presumed to be most impacted by planar PCBs, PCNs, PAHs or dioxins, i.e. inner Oslofjord (st.30B) and inner Sørfjord (st.53B/F). In 2005, no such differences were evident. In 2006 median EROD-activity was highest in the Oslofjord (st. 30B), allthough variability was high, There were no differences between the cod from the inner Sørfjord and Karihavet in 2005 (Figure 14, Appendix I). Previous years have also shown that EROD-activity in both fish from the inner Oslofjord and from the inner Sørfjord are not consistently higher than at the reference station on the west coast (st.23B). No significant temporal trends were found at these three stations.

No adjustment for water temperature has been made. Fish are sampled at the same time of year (September-November) when differences between the sexes should be at a minimum. Statistical analyses indicate no clear difference in activity between the sexes (Ruus *et al.* 2003). It has been shown that generally higher activity occurs at more contaminated stations (Ruus *et al.* 2003). However, the response is inconsistent (cf. Appendix I), perhaps due to sampling of populations with variable exposure history. Besides, there is evidence from other fish species that continuous exposure to e.g. PCBs may cause adaptation, i.e. decreased EROD-activity response.

In 2006, there was a significant correlation between the EROD-activity and the amount of CYP1A protein measured, corresponding to earlier results (Green *et al.* 2004b). The goodness of fit for the linear model was, however, poor (R^2=0.32). Furthermore, more evidently than the EROD-activity, CYP1A was in 2006 consistently higher in the inner Oslofjord (st.30B) than in the inner Sørfjord (st.53B) and at the reference station on the west coast (st.23B) (Figure 15, Appendix I).

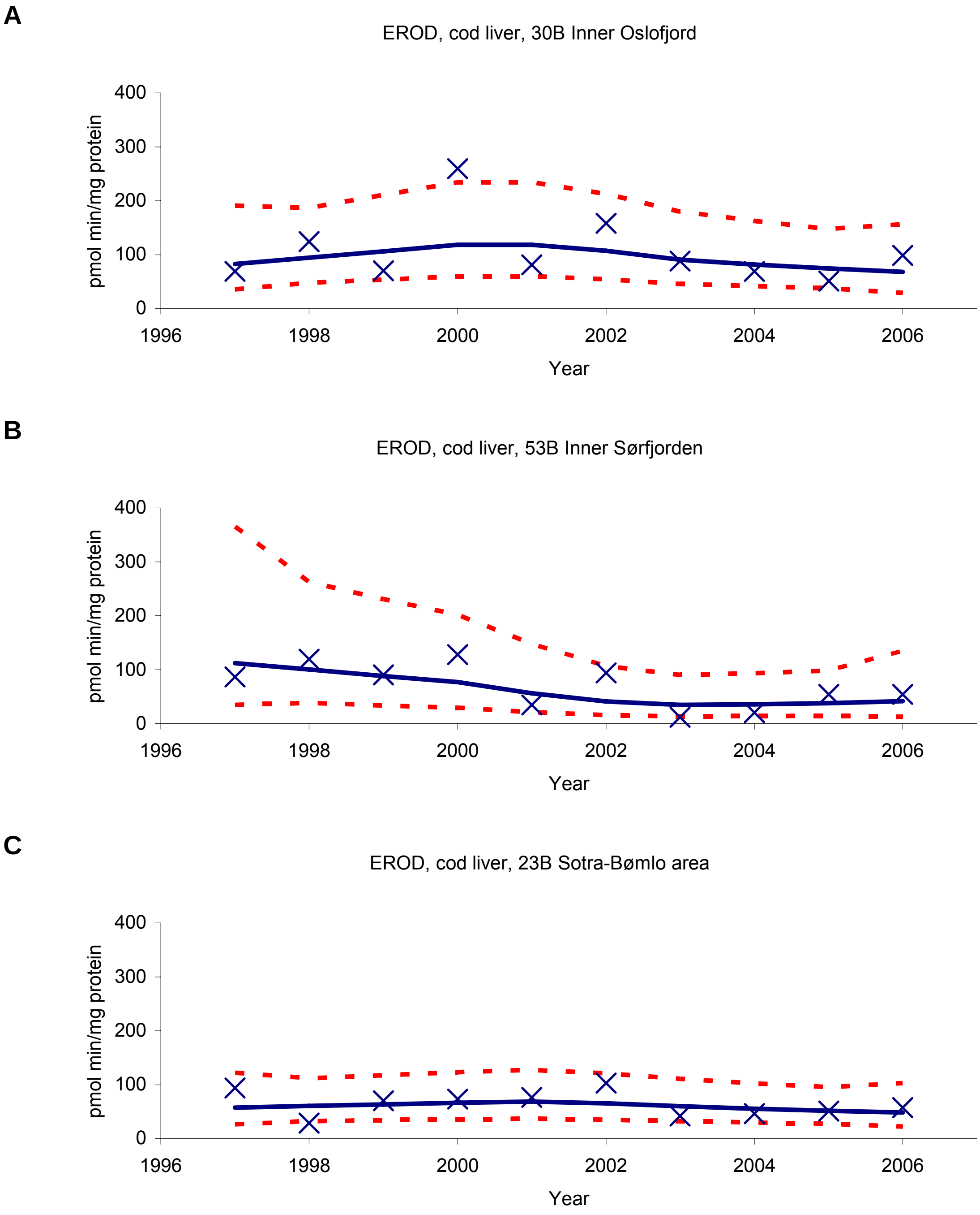


Figure 14. Activity of cytochrome P4501A (EROD-activity, pmol/min/mg protein) in liver from Atlantic cod collected at the inner Olsofjord (st.30B), inner Sørfjorden (st.53B) and Sotra-Bømlo (st.23B). (cf. Appendix G and Appendix I, and key in Figure 21).

A

B

C

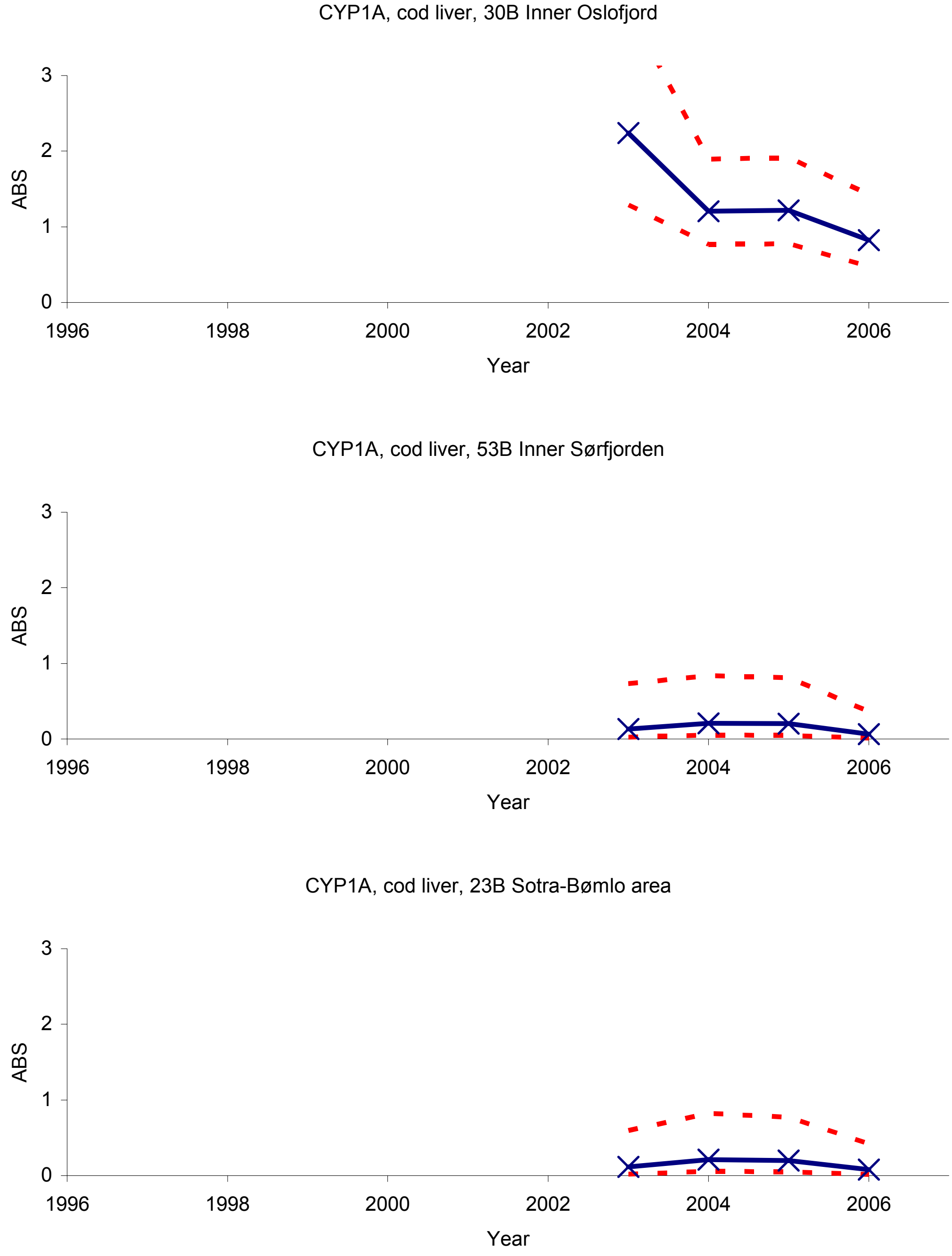


Figure 15. Activity of cytochrome CYP1A (relative amount of Cytochrome P4501A-protein) in liver from Atlantic cod collected at the inner Olsofjord (st.30B), inner Sørfjorden (st.53B) and Sotra-Bømlo (st.23B). (cf. Appendix G and Appendix I, and key in Figure 21). **Note: for some years the upper confidence interval line is off-scale in Figure A.**

1.4.4. Concluding remarks

The application of BEM methods within JAMP through the years 1997-2001 (and 2004) indicated that the location Lista (st. 15B), which was previously regarded as only diffusely polluted, had an input of PAH which was sufficient to clearly affect fish in the area. However, in 2002 and 2003 the median concentrations of OH-pyrene in cod from Lista were lower than those from the inner Oslofjord (st.30B) and inner Sørfjord (st.53B) and in 2005, OH-pyrene concentrations in cod from Lista were the lowest ever recorded within JAMP. In 2006, the lowest median OH-pyrene concentration was found at Lista, as in 2005. As in some previous years, relatively large variability was observed between individuals from Lista.

Results for the period 1997-2005 indicated that there are lead effects, shown by decreased activity of the enzyme ALA-D in the two most strongly polluted areas, i.e. cod from the inner Oslofjord (st.30B) and cod from the inner Sørfjord (st.53B). This indication was less evident in 2006.

The highest median EROD-activity was found in the inner Oslofjord (st.30B). Median EROD-activity in the inner Sørfjord was no higher than in the less contaminated Sotra-Bømlo area. Previous years have also shown that EROD-activity in fish from the inner Oslofjord and Sørfjord stations are not consistently higher than at other, presumed cleaner stations. The amount of CYP1A protein was higher in the Osloford (st.30B) than in the Sørfjord (st.53B), and the Sotra-Bømlo area (st.23B).

1.5. Effects and concentrations of organotin

Effects from organotin in dogwhelk (*Nucella lapillus*) were investigated at 8 JAMP and Index stations in 2005. Concentrations of organotin in dogwhelk and blue mussel (*Mytilus edulis*) were quantified at 8 and 12 stations, respectively, and including both the JAMP and Index stations. The stations are located along the coast of Norway and samples were collected August-November 2005 (Appendix E and maps in Appendix G).

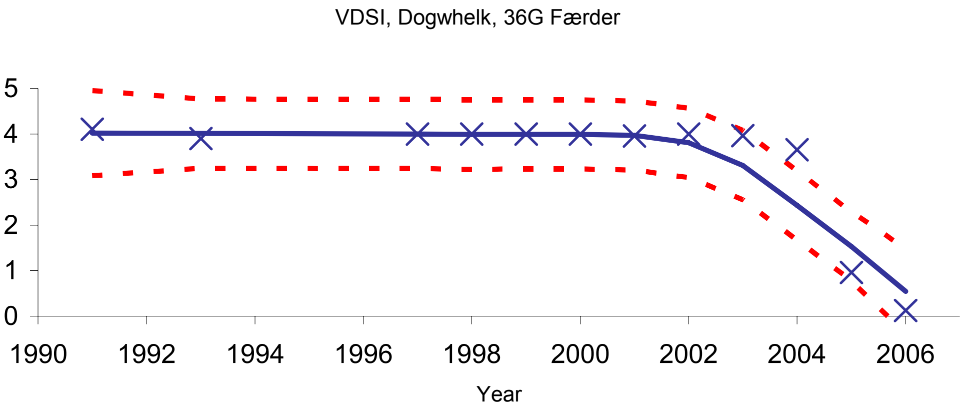
TBT-induced development of male sex-characters in females, known as imposex (Vas Deferens Sequence Index - VDSI), was analysed according to OSPAR-JAMP guidelines. Detailed information about the chemical analyses of the animals is given in Følsvik *et al*. (1999).

1.5.1. Dogwhelk

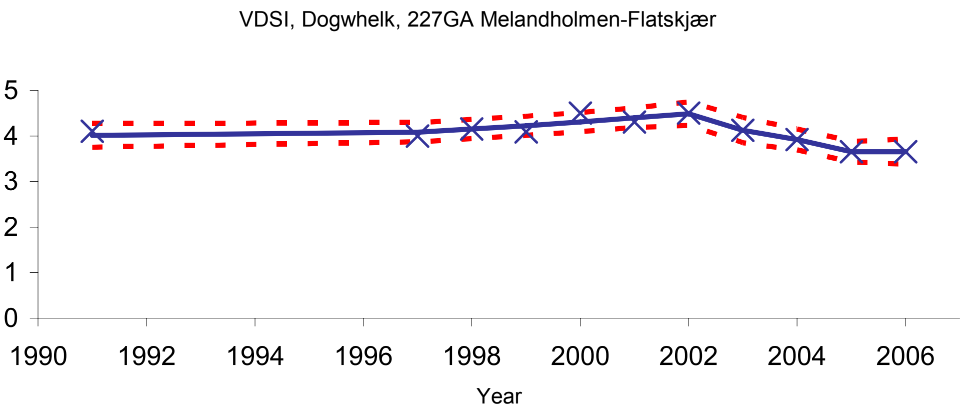
The effects from organotin were generally low. Espevær (st. 22G) on the West coast had a VDSI of 4, (Appendix J). The remaining 7 stations had low VDSI (<2). No effects were found at Brashavn (st. 11G). A significant *downward* trend was found at Færder (st. 36G) (Appendix I, Figure 16).

Concentrations of organotin from the eight stations measured were relatively low (<0.24 mg/kg d.w.). As in 2003 and 2004 the highest organotin levels were found at Haugesund (st. 227G2, Appendix I, Appendix J, Figure 17). Concentrations had decreased compared to 2003 and 2004, however, no statistically significant temporal trends for the period 1997-2005 were found.

A



B



C

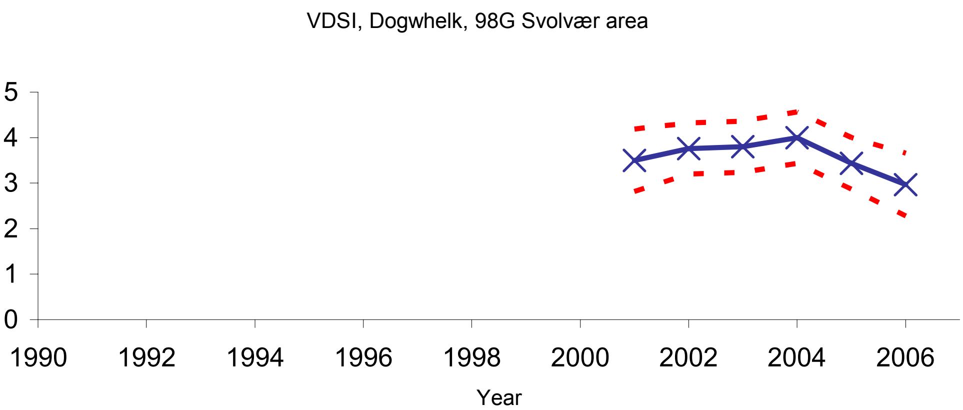


Figure 16. Imposex (VDSI) in dogwhelk (*Nucella lapillus*) at 2 stations in southern Norway; Færder (36G) and Melandholmen-Flatskjær of the Haugesund area(227G1 and 227G2) and one at Lofoten (98G). Data from 1991 (Harding *et al*. 1992) and 1993 (Walday *et al*. 1997). (cf. Appendix G and Appendix I, and key in Figure 21).

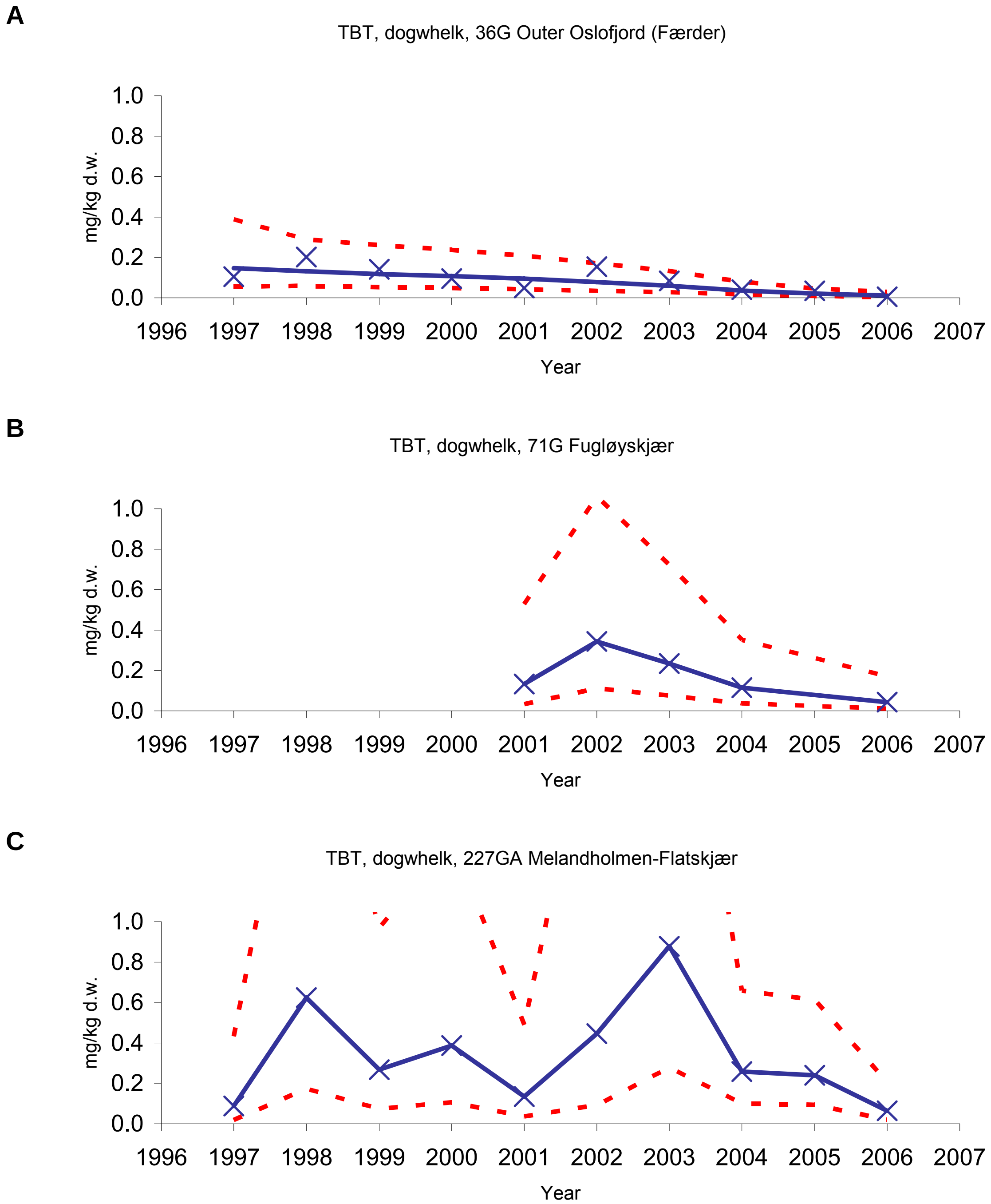


Figure 17. Median concentration of TBT (on a formulation basis) in dogwhelks (*Nucella lapillus*) from outer Oslofjord (36G), Langesundsfjord (west of Oslofjord) (st.71G) and Melandholmen-Flatskjær of the Haugesund area (227G1 and 227G2), mg/kg (mg TBT/kg) dry weight. NB: (cf. Appendix G and Appendix I, and key in Figure 21). Note: for some years the upper confidence interval line is off-scale in Figures B and C.

1.5.2. Blue mussel

Blue mussel was severely contaminated with organotin at one station in the inner Oslofjord (Index st. 301); Class IV in SFTs environmental classification system (Appendix J, Figure 18). Moderately (Class II) or markedly (Class III) polluted blue mussel were not only found in other harbour areas (e.g. the Frierfjord (st.712, and 713) and Haugesund (st.227A)) but also in an area in Espevær (st. 22A) on the West coast presumably remote from point sources. Low median concentrations (Class I) were found at the northern stations (st.11X) and at Farsund (st.15A) as well as some stations in western Norway. Significant *downward* trends were found in the inner Oslofjord (st.30A) and the Langesund area (st. 71A).

1.5.3. Concluding remarks

The presence of organotin (as TBT) in Norwegian waters exceeded acceptable levels at 7 of the 13 blue mussel stations monitored in 2006, not only in harbour areas but also one station presumably remote from known point sources. Concentrations of organotin in blue mussel and dogwhelk were elevated, and biological effects from TBT were found in dogwhelk from all but one of the fourteen stations investigated. eight of the twelve timeseries for TBT in blue mussel showed significant *downward* trends. This may be an indication that the ban on the use of TBT in antifouling on boats <25 m of length, in effect since 1.January 2003, has had an effect.

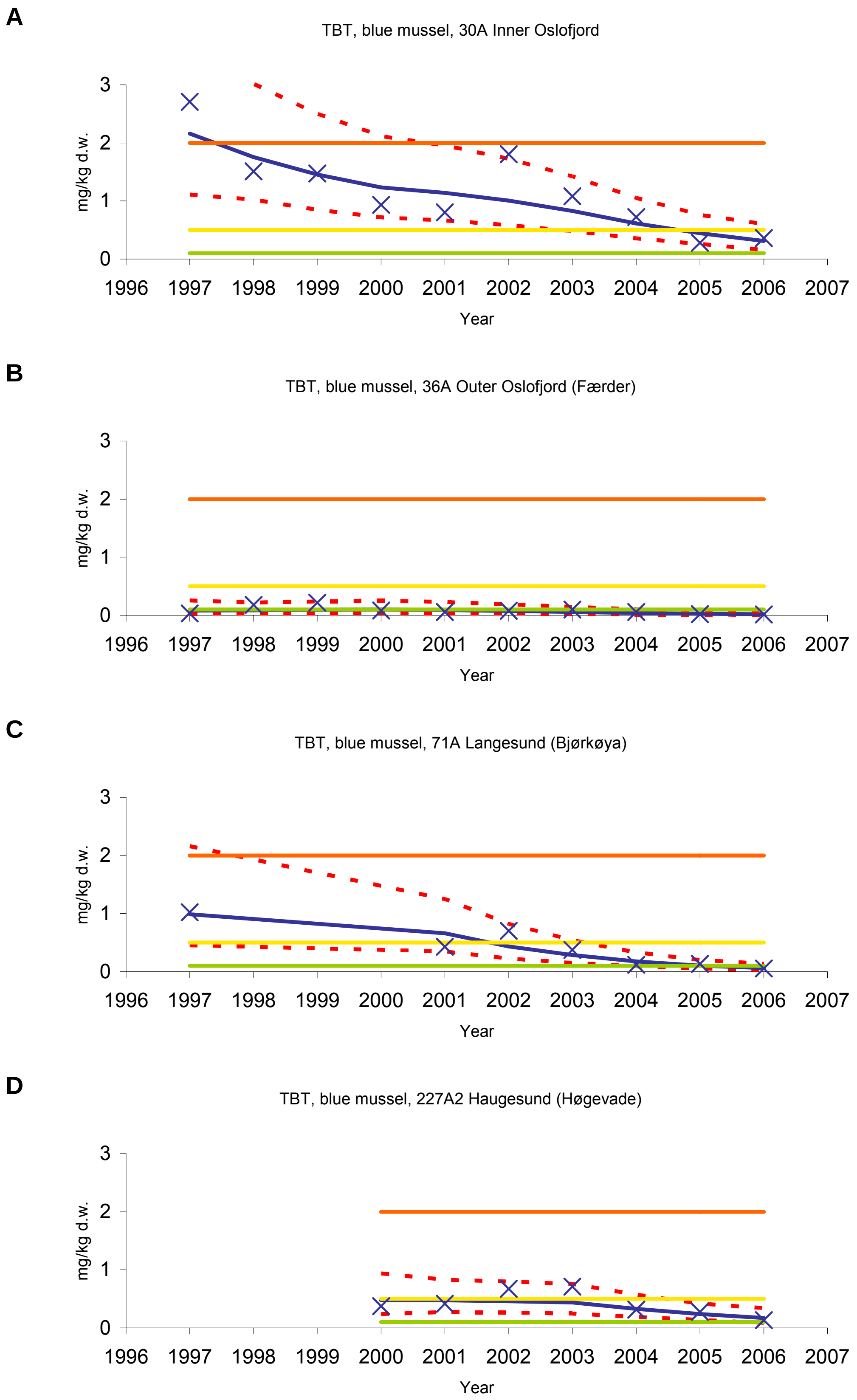


Figure 18. Median concentration of TBT (on a formulation basis) in blue mussel (*Mytilus edulis*) from inner (st.30A) and outer (st.36A) Oslofjord, Langesundsfjord (west of Oslofjord) (st.71A) and Haugesund (St.227X), mg/kg (mg TBT/kg) dry weight. (cf. Appendix G and Appendix I, and key in Figure 21). Note: for 1997 in Figure A the upper confidence interval line is off-scale. Note: horizontal line for Class I is near x-axis

1.6. Polybrominated diphenyl ethers

For the second year, polybrominated diphenyl ethers (PBDs) were investigated. Three cod stations were selected: inner Oslofjord (st.30B), inner Sørfjord (st.53B) and Karihavet (st.23B) (Figure 19). The median concentration of sum BDE was highest in the inner Oslofjord and lowest at the reference area in Karihavet. Median concentrations found at presumed reference stations of Svolvær, Færder, Utsira and Bømlo-Sotra indicated that a high background in these diffusely contaminated areas might be 30 µg/kg w.w. (Fjeld *et al.* 2005) which was higher than the median found in inner Sørfjord and Karihavet. The median found in the inner Osloford was 60 µg/kg w.w. and in the interval of 37-112 µg/kg w.w. found in other contaminated areas (Fjeld *et al.* 2005; Berge *et al.* 2006).

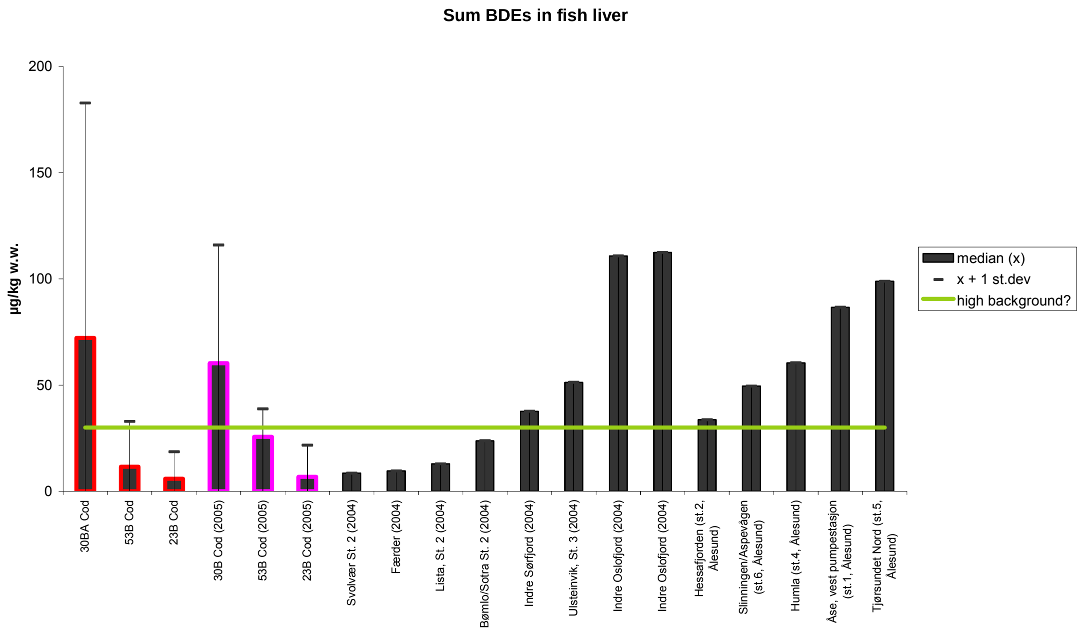


Figure 19. Polybrominated diphenyl ethers (PBDE) in liver of cod (*Gadus morhua*) at 3 JAMP-stations in southern Norway (inner Oslofjord - 30B, inner Søfjord - 53B, and Karihavet - 23B) bar shown with red (2006) and purple (2005) borders, and results from two other investigations (Fjeld *et al.* 2005 – marked as 2004, Berge *et al.* 2006), see text.

1.7. PFOS

For the first time under JAMP, perfluroalkyl compounds (PFAS) were investigated. Three cod stations were selected: inner Oslofjord (st.30B), inner Sørfjord (st.53B) and Karihavet (st.23B) and monitored in 2005 and 2006 (Figure 19). The median concentration of the indicator PFAS compound perfluoroktylsulfonate (PFOS) was highest in the inner Oslofjord. Median concentrations found at presumed reference stations of Svolvær, Frakfjord, Varangerfjord indicated that a high background in these diffusely contaminated areas might be 30 µg/kg w.w. (Bakke *et al.* 2007a) which was higher than the median found in inner Sørfjord and Karihavet. The median found in the inner Osloford was 60 µg/kg w.w. and in the interval of 37-112 µg/kg w.w. found in other contaminated areas (Fjeld *et al.* 2005), Berge *et al.* 2006).

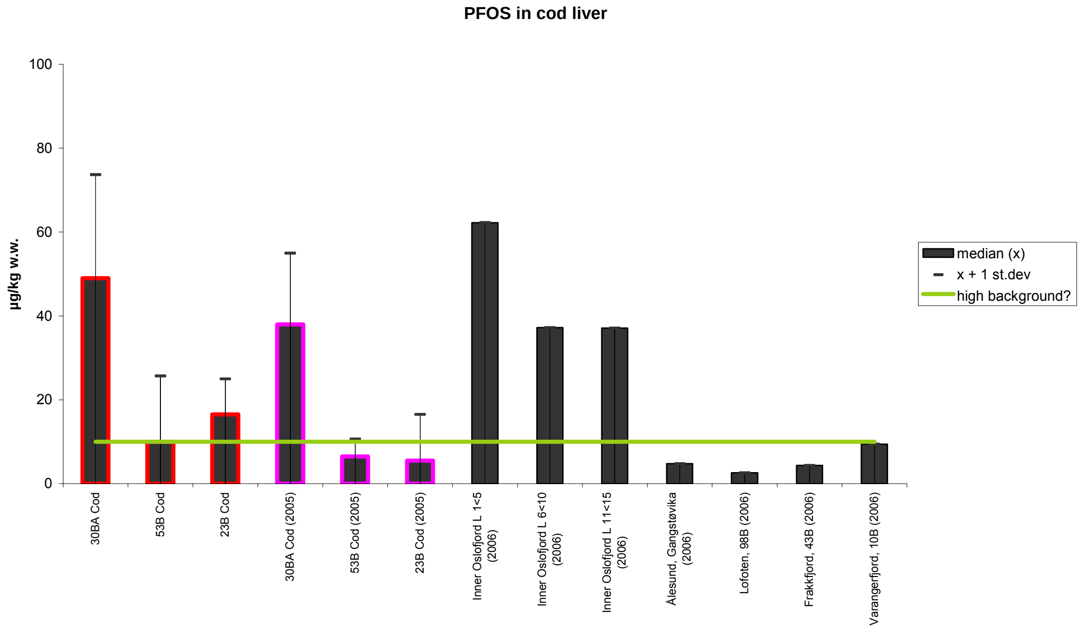


Figure 20. Perfluoroktylsulfonate (PFOS) in liver of cod (*Gadus morhua*) at 3 JAMP-stations in southern Norway (inner Oslofjord - 30B, inner Søfjord - 53B, and Karihavet - 23B) bar shown with red (2006) and purple (2005) borders , and results from one other investigation (Bakke *et al.* 2007a – marked as 2006), see tex

1.8. Comment on dioxins

Recent assessment of dioxin data from the regional Grenland monitoring in cod liver (Bakke *et al.* 2007b) has indicated that an apparent downward trend in wet-weight concentrations over the last 16 years in the most polluted fjord area may be a spurious effect of a major long-term reduction in fat content; the concentrations on fat basis are constant over the years, apart from a few deviations in some years. The decrease in fat content may be due e.g. to (unknown) changes in general life conditions in the fjord. Cod liver samples from the other fjord areas do not show a similar long-term decrease in fat content, and therre is not a clear connection between lipid content and wet weight based dioxin levels for these fjords. This emphasizes the need to investigate the relations between contaminant levels and biological characteristics to interpret observed time series of contaminant levels in biota as signs of changes in the external environment.

1.9. Overall conclusions

In regards to *temporal trend* assessment, 807 timeseries were analysed (Appendix I). There were 137 significant trends detected, of which 116 were downward and 21 upward.The following cases should be noted:

- ΣPCB-7 in blue mussel from the inner Oslofjord has *decreased* since 1988;
- Mercury in cod fillet from the inner Oslofjord has *increased* since 1984;
- Cadmium in blue mussel from the inner Oslofjord (1 st.) has *increased* since 1984;
- HCB in mussel from Langesundsfjorden has *decreased* since 1983;
- Cadmium in blue mussel in the Hardangerfjord/Sørfjorden (3 st.) has *decreased* since 1987;
- Mercury in flounder fillet from the inner Sørfjorden has *increased* since 1988;
- ΣPCB-7 and ppDDE in flounder fillet from the inner Sørfjorden has *decreased* since 1990;
- Lead in blue mussel in the Hardangerfjorden (2 st.) has *decreased* since 1990;
- TBT has *decreased* in blue mussel at 7 of the 12 stations monitored (Gressholmen - st.30A, Bjørkøy in the Langesund area – st.71A, Strømtangen at the mouth of the Frierfjord – st.I713, Risøy – st.76A, Ullerø area – st.15A, Husvågen, Lofoten – st.98A2, Varangerfjord area– st. 11X);
- ΣPCB-7 in blue mussel from Gjemesholmen also in the Langesund area has *decreased* since 1995
- ΣPAH has *decreased* in blue mussel from Odderø in the Kristiansand harbour (st. I133) since 1995.

Study of the power of temporal trend monitoring was useful in assessing existing sampling strategies, however, modifications might be needed to account for local conditions (see Appendix O in Green *et al.* 2000).

The 2006 investigation also includes results on Norwegian Pollution Control Authority Pollution Indices (Appendix L), and discussion of the results of biological effects methods including imposex and intersex (chapters 1.4 and 1.5).The pollution index dropped from “Marked”-“Severe” to “Moderate”-“Marked”. The Reference index remained unchanged from 2005. The results from the biological effects methods indicate the effects of contamination. The a large number of significant downward trends were found in TBT indicate that regulatory action has lead to improvement in the investigated areas.

In regards to *spatial distribution* assessment, the concentrations found in 2006 are indicated in the bar graphs shown in Appendix J. Provisional “high background" levels were used to identify elevated concentrations. This assessment revealed no new areas of concern that are not currently under surveillance.

In regards to *effects of hazardous substances*, 40 timeseries were analysed (Appendix I). There were 7 significant trends detected, all of which were downward. Levels found in 2006 are indicated in the bar graphs shown in Appendix J. No criteria for classification have been proposed.

In regards to *risk to human health*, attention should be called to the list from Norwegian Food Safety Authority (*Mattilsynet*) which names the restrictions and recommendations concerning the sale and consumption in Norway for seafood taken from 32 Norwegian fjord areas (Table 3). Furthermore, *Mattilsynet* has issued general advice to avoid consumption of seafood taken in or in close proximity to harbours (see www.miljostatus.no > *vannforurensning* > *miljøgifter, vann* > *miljøgifter, marint* > *kostholdsråd* and review by Økland 2005).

Table 3. Summary of action taken by the Norwegian Food Safety Authority (*Mattilsynet*) concerning the consumption and sale of fish products along the Norwegian Coast (see www.miljostatus.no > *vannforurensning > miljøgifter, vann > miljøgifter, marint > kostholdsråd* and review by Økland 2005). Restrictions on sale vary and may concern the whole or part of fish product.

Area of concern (km^2)	Main parameters of concern	Last year of issue/ adjustment	Main fish/shellfish product of concerned	Recommendations or restrictions of concern:
Mid [1] and Inner Oslofjord (498.9) (includes Drammensfj.)	PCB	2002	fish liver, eel	Consumption and sale
Tønsberg area (23.7) (includes (Vrengen)	PCB	2003	fish liver, eel, mussels	Consumption
Inner Sandefjordfjord (1.5)	PCB	1999	fish liver	Consumption and sale
Grenlandsfjords, Langesundsfjord (90.3)	Chl.org [2]/ Dioxins	2004	fish, shellfish	Consumption and sale
Kragerø (3.2)	PAH Dioxins	2002	eel, mussels	Consumption
Tvedestrand (2.3)	PCB	2002	fish liver	Consumption and sale
Arendal (8.0)	PCB	2002	fish liver	Consumption and sale
Inner Kristiansandsfjord (33.3)	Chl.org [2]/ Dioxins/PCB	2002	fish, shellfish	Consumption and sale
Farsund area (42.0)	PCB PAH	2002	fish liver, mussels	Consumption and sale
Fedafjord (11.2)	PAH	2002	mussels	Consumption and sale
Flekkefjord (4.2)	PCB	2002	fish liver	Consumption and sale
Stavanger (4.0)	PCB PAH	2001	fish liver, mussels	Consumption
Sandnes (1.7)	PAH	2001	Mussels	Consumption
Karmsund-Eidsbotn, Vedavågen (24.1 [6])	PCB, PAH	2005	fish liver [3], shellfish	Consumption and sale
Saudafjord ()	PAH	2007	fish liver, mussels	Consumption and sale
Sørfjord (62.2)	Cd Pb Hg PCB	2005	fish, shellfish	Consumption and sale
Bergen area (169.9)	PCB	2002	fish, shellfish	Consumption and sale
Høyangerfjorden ()	Cd Pb	2007	fish, shellfish	Consumption
Årdalsfjord (30.4)	PAH	2002	mussels	Consumption and sale
Ålesund, Åsefjorden ()	HBCDD [4]	2007	fish, shellfish	Consumption
Sunndalsfjord (100.1)	PAH	2005	fish liver, mussels	Consumption and sale
Hommelvik (2.6)	PAH	2002	mussels	Consumption and sale
Inner Trondheimfjorden (1.2)	PAH PCB	2002	fish liver, mussels	Consumption
Brønnøysund (7.0)	PAH	2003	mussels	Consumption
Vefsnfjord (76.4) [5]				
Sandnessjøen (0.4)	PAH	2005	mussels	Consumption
Inner Ranfjord (16.6)	PAH	2005	mussels	Consumption and sale
Ramsund (5.4)	PCB	2002	fish, shellfish	Consumption and sale
Harstad (2.9)	PCB Pb Cd	2003	fish liver, mussels	Consumption and sale
Narvik (11.6)	PCB PAH	2005	fish, mussels	Consumption
Tromsø (17.7)	PAH	2003	mussels	Consumption and sale
Hammerfest (4.1)	PAH	2003	mussels	Consumption and sale
Honningsvåg (3.3)	PAH	2002	mussels	Consumption and sale

[1] Includes, Hvitsten, Moss, Horten og Holmenstrand
[2] Organochlorine compounds
[3] Concerns only Eidsbotn
[4] A brominated flame retardant
[5] Grounds for concern were cleared in 2005
[6] Exclusive Vedavågen

Until 2004 JAMP issues posed questions to which monitoring should provide answers, but since 2004 JAMP has been geared towards OSPAR strategy themes with specific products to be addressed (cf SIME 2004a). The relevant products and related parts of Norwegian JAMP relevant to some of these products are shown in Table 4. viz (from SIME 2004b):

Table 4. Component of the CEMP, JAMP products and related Norwegian JAMP work (cf., OSPAR 2007, SIME 2004b).

Subject	JAMP products [6)]	Recent Norwegian contribution
Mandatory		
Hg, Cd and Pb	AA-2, HA-5, HA-6	2006: Levels in sediment (cf., Green *et al.* 2000) 2006: Levels and trends in biota (annual investigations since 1981, Chapter 1.3) 2006: INDEX for blue mussel from selected stations (annual investigations since 1995, cf. Chapter 1.3.8)
PCBs	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 1995, Chapter 1.3.8) 2006: Levels in sediment and biota (Chapter 1.3)
PAHs	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 1995, Chapter 1.3.8) 2006: Levels in sediment and biota (Chapter 1.3)
TBT	AA-2, HA-5, HA-6	2006: Levels and trends in blue mussel and snails (annual investigations since 1997, cf. Chapter 1.5) 2006: Levels in sediment (Chapter 1.3)
TBT effects	AA-2, HA-4, HM-3	2006: IMPOSEX in snails (annual investigations since 1997, cf. Chapter 1.5)
Voluntary		
BFR [1)]	AA-2, HA-5, HA-6	2006: in cod (annual investigations since 2005, cf. Chapter 1.6)
Planar PCBs	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 2002, Chapter 1.8)
Alkylated PAHs	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 1995, Chapter 1.3.8) 2006: Levels in sediment and biota (Chapter 1.3)
PFOS [2)]	AA-2, HA-5, HA-6	2006: in cod (annual investigations since 2005, cf. Chapter 1.7)
Dioxins [3)]	AA-2, HA-5, HA-6	2006: INDEX for blue mussel from selected stations (annual investigations since 2002, Chapter 1.8)
Specific BEM [4)]	AA-2, HA-4, HM-3	2006: OH-pyrene, ALA-D in cod (annual investigations since 1997, cf. Chapter 1.4) 2006: IMPOSEX in snails (annual investigations since 1997, cf. Chapter 1.5)
General BEM [5)]	AA-2, HA-4, HM-3	2006: EROD-activity in cod (annual investigations since 1997, cf. Chapter 1.4)

[1]) Certain Brominated Flame Retardents
[2]) Perfluoroktylsulfonate
[3]) Polychlorinated dibenzodioxins and furans
[4]) PAH- and Metal-Specific Biological Effects
[5]) General Biological Effects
[6]) From SIME 2004b:

AA-2 An assessment in 2010 of the quality status of the OSPAR maritime area and of its sub-regions.

HA-4 A more elaborated assessment by 2009 of biological effects of hazardous substances in the maritime area;

HA-5 An assessment by 2009 of temporal trends and (where relevant/feasible) spatial distribution for the hazardous substances where periodic sampling and analysis is undertaken, in particular under CAMP, CEMP and RID;

HA-6 A general assessment by 2009 of the development in the quality status of the maritime area in relation to hazardous substances that should take into account the results of the assessments under HA-1 and HA-5, HA-2 and HA-4 and HA-3, and the results of any screening of levels of substances in the marine environment covered by HM-3;

HM-3 When appropriate, identification of the likely impacts on the marine environment of substances recorded, inter alia, in source inventories, or identified by screening methods.

2. Technical Details

2.1. Compliance with guidelines/procedures

2.1.1. JAMP programme

Samples were collected and analysed, where practical, according to OSPAR guidelines (OSPAR 1990, 1997, see also www.ospar.org/eng/ > *measures* > *list of other agreements*) and screened and submitted to ICES by agreed procedures (ICES 1996). The most important point of concern are those stations where insufficient number of fish were collected (cf. Appendix H).

2.1.2. Overconcentrations and classification of environmental quality

Classification used in this report is primarily based on the Norwegian Pollution Control Authority environmental classification system (Molvær *et al.* 1997). Focus is on the principle cases where *median* concentrations exceeded the upper limit to Class I in the Norwegian Pollution Control Authority's (SFT's) environmental quality classification system (cf. Molvær *et al.* 1997). The relevant extract from the system is shown in Table 5 and Table 6, and show five classes from Class I, “insignificantly polluted”, to Class V, “extremely polluted”. However, the system does not cover all the contaminants in indicator species-tissues used in JAMP. To assess concentrations not included in the system provisional "high background" values were used (Table 7). The factor by which concentrations exceeded “high background” is termed **overconcentration**. It should be noted that there is in general a need for periodic review and supplement of this list of limits in the light of results from reference localities and introduction of new analytical methods, and/or units. Because of changes in the limits, assessments of overconcentrations for years prior to 1997 made in this report may not correspond to figures and assessments made in previous national comments. The median concentration can be found in the tables in Appendix I or figures in Appendix J.

A review by Knutzen and Green (2001b) of provisional "high background" concentrations based on recent JAMP-data generally confirmed that the reference concentrations (i.e., upper limit for Class I) in SFT's classification system, but recommended the following revisions (concentrations in µg/kg wet weight):

Cod liver - ΣDDT: Either increase limit from 200 to 300 or preferably replace ΣDDT with p,p-DDE and keep the limit at 200,
Cod liver - ΣHCH: Decrease limit from 50 to 30,
Cod liver - TEPCDD/PCDF: Decrease limit from 0.015 to 0.0,
Cod fillet - ΣPCB7: Decrease limit from 5 to 3,
Cod fillet - ΣHCH: Decrease limit from 0.5 to 0.3,
Blue mussel - ΣPCB7: Decrease limit from 4 to 3.

Furthermore, the review, supplemented by other studies (cf. Green & Knutzen 2003), also suggested the following decreases for Class I in fillet of flounder (µg/kg w.w.):

ΣPCB7: from 5 to 3,
ΣDDT: from 2 to 1 for p,p-DDE only.

The review did not recommend changes in the Class I limits for mercury in fish fillet (1 mg/kg w.w.) or mercury, cadmium, lead, zinc and copper in blue mussel (in the same order 0.2; 2; 3; 200 and 10 mg/kg d.w.). However, for chromium and nickel in blue mussel limits should be decreased from 3 to 2 and from 5 to 3 mg/kg d.w., respectively. Further, reference values for organochlorines were indicated for fillet and liver of fish species that are not included in the classification system (dab, plaice, lemon sole) and for lead and cadmium in liver of cod.

These recommendations for changes have been taken into account in this report. However, corresponding adjustment of Classes II-V has not been done, but should be considered once the above mentioned Class I revisions have been accepted by SFT. SFT is considering these recommendations in a current review of their classification system.

No attempt has been made to compensate for differences in size groups or number of individuals of blue mussel or fish. The exception was with mercury in fish fillet where six data sets in both cod and flatfish in this study showed significant differences between “small” and “large” fish (Appendix I). With respect to blue mussel, there is some evidence that concentrations do not vary significantly among the three size groups employed for this study (i.e. 2-3, 3-4 and 4-5 cm) (WGSAEM 1993).

With respect to Purpose A (health risk assessment), the Norwegian Food Safety Authority (SNT) is responsible for official commentary as to possible health risk due to consumption of seafood. Hence, the results of the JAMP pertaining to this purpose are presented only as a partial basis for evaluation.

Table 5. Norwegian Pollution Control Authority environmental classification system of contaminants in sediment (Molvær *et al.* 1997) used in this report.

Contaminant			**Classification (upper limit for Classes I-IV)** *Degree of pollution*				
			I ***Insignificant***	**II** ***Moderate***	**III** ***Marked***	**IV** ***Severe***	**V** ***Extreme***
SEDIMENT							
Arsenic	mg/kg	d.w.	20	80	400	1000	>1000
Lead	mg/kg	d.w.	30	120	600	1500	>1500
Cadmium	mg/kg	d.w.	0.25	1	5	10	>10
Chromium	mg/kg	d.w.	70	300	1500	5000	>5000
Copper	mg/kg	d.w.	35	150	700	1500	>1500
Mercury	mg/kg	d.w.	0.15	0.6	3	5	>5
Nickel	mg/kg	d.w.	30	130	600	1500	>1500
Zinc	mg/kg	d.w.	150	700	3000	10000	>10000
TBT [1)]	µg/kg	d.w.	1	5	20	100	>100
∑PCB-7	µg/kg	d.w.	5	25	100	300	>300
∑DDT	µg/kg	d.w.	0.5	2.5	10	50	>50
HCB	µg/kg	d.w.	0.5	2.5	10	50	>50
∑PAH	µg/kg	d.w.	300	2000	6000	20000	>20000
B[*a*]P	µg/kg	d.w.	10	50	200	500	>500
$TE_{PCDF/D}$ [2)]	µg/kg [3)]	d.w.	0.01	0.03	0.1	0.5	>0.5

[1]) Tributyltin on a formula basis

[2]) TCDDN (Appendix B)

[3]) Units as noted in cf. Knutzen, 1995.

Table 6. Norwegian Pollution Control Authority environmental classification system of contaminants in blue mussel and fish (Molvær *et al.* 1997) and proposed revisions (shaded) for Class I concentrations (Knutzen & Green 2001b) used in this report.

Contaminant			**Classification (upper limit for Classes I-IV)**				
			Degree of pollution				
			I	**II**	**III**	**IV**	**V**
			Insignificant	***Moderate***	***Marked***	***Severe***	***Extreme***
BLUE MUSSEL							
Lead	mg/kg	w.w. [2)]	*0.6*	*3*	*8*	*20*	*>20*
	mg/kg	d.w.	3	15	40	100	>100
Cadmium	mg/kg	w.w. [2)]	*0.4*	*1*	*4*	*8*	*>8*
	mg/kg	d.w.	2	5	20	40	>40
Copper	mg/kg	w.w. [2)]	*2*	*6*	*20*	*40*	*>40*
	mg/kg	d.w.	10	30	100	200	>200
Mercury	mg/kg	w.w. [2)]	*0.04*	*0.1*	*0.3*	*0.8*	*>0.8*
	mg/kg	d.w.	0.2	0.5	1.5	4	>4
Zinc	mg/kg	w.w. [2)]	*40*	*80*	*200*	*500*	*>500*
	Mg/kg	d.w.	200	400	1000	2500	>2500
TBT [1)]	mg/kg	d.w.	0.1	0.5	2	5	>5
∑PCB-7	µg/kg	w.w.	3	15	40	100	>100
		d.w.[2)]	*15*	*75*	*200*	*500*	*>500*
∑DDT	µg/kg	w.w.	2	5	10	30	>30
		d.w.[2)]	*10*	*25*	*50*	*150*	*>150*
∑HCH	µg/kg	w.w.	1	3	10	30	>30
		d.w.[2)]	*5*	*15*	*50*	*150*	*>150*
HCB	µg/kg	w.w.	0.1	0.3	1	5	>5
		d.w.[2)]	*0.5*	*1.5*	*5*	*25*	*>25*
∑PAH	µg/kg	w.w.	50	200	2000	5000	>5000
		d.w.[2)]	*250*	*1000*	*10000*	*25000*	*>25000*
∑KPAH	µg/kg	w.w.	10	30	100	300	>300
		d.w.[2)]	*50*	*150*	*500*	*1500*	*>1500*
B[*a*]P	µg/kg	w.w.	1	3	10	30	>30
		d.w.[2)]	*5*	*15*	*50*	*150*	*>150*
$TE_{PCDF/D}$ [3)]	µg/t [4)]	w.w.	0.2	0.5	1.5	3	>3
COD, fillet							
Mercury	mg/kg	w.w.	0.1	0.3	0.5	1	>1
∑PCB-7	µg/kg	w.w.	3	20	50	150	>150
∑DDT	µg/kg	w.w.	1	3	10	25	>25
∑HCH	µg/kg	w.w.	0.3	2	5	15	>15
HCB	µg/kg	w.w.	0.2	0.5	2	5	>5
COD, liver							
∑PCB-7	µg/kg	w.w.	500	1500	4000	10000	>10000
∑DDT	µg/kg	w.w.	200	500	1500	3000	>3000
∑HCH	µg/kg	w.w.	30	200	500	1000	>1000
HCB	µg/kg	w.w.	20	50	200	400	>400
$TE_{PCDF/D}$ [3)]	µg/t [4)]	w.w.	10	40	100	300	>300

[1]) Tributyltin on a formula basis

[2]) Conversion assuming 20% dry weight

[3]) TCDDN (Appendix B)

[4]) µg/1000 kg (Appendix B)

Table 7. Provisional "high background levels" of selected contaminants, in **mg/kg dry weight** (blue mussel) and **mg/kg wet weight** (blue mussel and fish) used in this report. The respective "high background" limits are from Knutzen & Skei (1990) with mostly minor adjustments (Knutzen & Green 1995, 2001b; Molvær *et al.* 1997), except for dab where the suggested limit is based on JAMP-data (Knutzen & Green 1995). Especially uncertain values are marked with "?".

Cont.	**Blue mussel** [1]		**Cod** [1]		**Flounder** [1]		**Dab** [1]		**Plaice** [1]	
			liver	**fillet**	**liver**	**fillet**	**liver**	**fillet**	**liver**	**fillet**
	mg/kg d.w.	mg/kg w.w.	mg/kg w.w.	mg/kg w.w.	mg/kg w.w.	mg/kg w.w.	mg/kg w.w.	mg/kg w.w.	mg/kg w.w.	mg/kg w.w.
Lead	3.0 [2)]	0.6 [3)]	0.1		0.3 ?		0.3 ?		0.2 ?	
Cadmium	2.0 [2)]	0.4 [3)]	0.3		0.3 ?		0.3 ?		0.2 ?	
Copper	10 [2)]	2 [3)]	20		10 ?		30 ?		10 ?	
Mercury	0.2 [2)]	0.04 [3)]		0.1 [2)]		0.1		0.1		0.1
Zinc	200 [2)]	40 [3)]	30		50 ?		60 ?		50 ?	
ΣPCB-7 [8)]	0.015[3,9)]	0.003[2 9)]	0.50 [2)]	0.003[9)]	0.1	0.003 [9)]	0.5	0.005 [9)]	0.05 ?	0.004 [9)]
ppDDE	0.010 [3)]	0.002 [6)]	0.2 [9)]		0.03	0.001 [9)]	0.1	0.002 [9)]	0.01 ? [6)]	0.001 [9)]
γ HCH	0.005 [3)]	0.001 [6)]	0.03 [9)]	0.0003[9)]	0.01	0.0003[9)]	0.03	0.0005 [9)]	0.005 ?[6)]	0.0003[9)]
HCB	0.0005 [3)]	0.0001 [2)]	0.02 [2)]		0.005	0.0001[9)]	0.01	0.0002 [9)]	0.005 ?	0.0002[9)]
TCDDN	0.000001 [3)]	0.0000002 [2)]	0.00001 [9)]							

1) Respectively: *Mytilus edulis, Gadus morhua, Platichthys flesus* and *Limanda limanda*.
2) From the Norwegian Pollution Control Authority Environmental Class I ("good") (Molvær *et al.* 1997).
3) Conversion assuming 20% dry weight.
4) Approximately 25% of ΣPCB-7 (Knutzen & Green 1995)
5) 1.5-2 times 75% quartile (cf. Annex B in Knutzen & Green 1995)
6) Assumed equal to limit for ΣDDT or ΣHCH, respectively, from the Norwegian Pollution Control Authority Environmental Class I ("good") (Molvær *et al.* 1997). Hence, limits for ppDDE and γHCH are probably too high (lacking sufficient and reliable reference values)
7) Mean plus 2 times standard deviation (cf. Annex B in Knutzen & Green 1995)
8) Estimated as sum of 7 individual PCB compounds (CB-28, -52, -101, -118, -138, -153 and -180) and assumed to be ca. 50% and 70% of total PCB for blue mussel and cod/flatfish, respectively.
9) With respect to revisions suggested by Knutzen & Green (2001b) and Green & Knutzen (2003), see text.

2.1.3. Comparison with previous data

A simple 3-model approach has been developed to study time trends for contaminants in biota based on *median* concentrations (ASMO 1994). A variation of this method was applied to mercury in fish fillet to distinguish trends in "small" and "large" individuals, the size of which may vary from year to year, station to station, depending on the catch. To determine the "small" fish, the sample is sorted by length and split into two groups of one or even numbers. The fish with median length in the smaller group is the "small" fish, and the median length in the larger group is the "large" fish. The concentration in these two size groups (one per group) determine the concentrations in the two groups. The method was first used on a large-scale basis by the Ad Hoc Working Group on Monitoring that met in Copenhagen 8-12. November 1993 (MON 1993). At this meeting it was agreed to apply the method on contaminants in fish muscle and liver on a wet weight basis and contaminants in soft tissue of blue mussel on a dry weight basis. The results for this assessment are presented earlier (cf. ASMO 1994). The method has been applied to Norwegian data and results are shown in Appendix H. The results can be presented as in Figure 21.

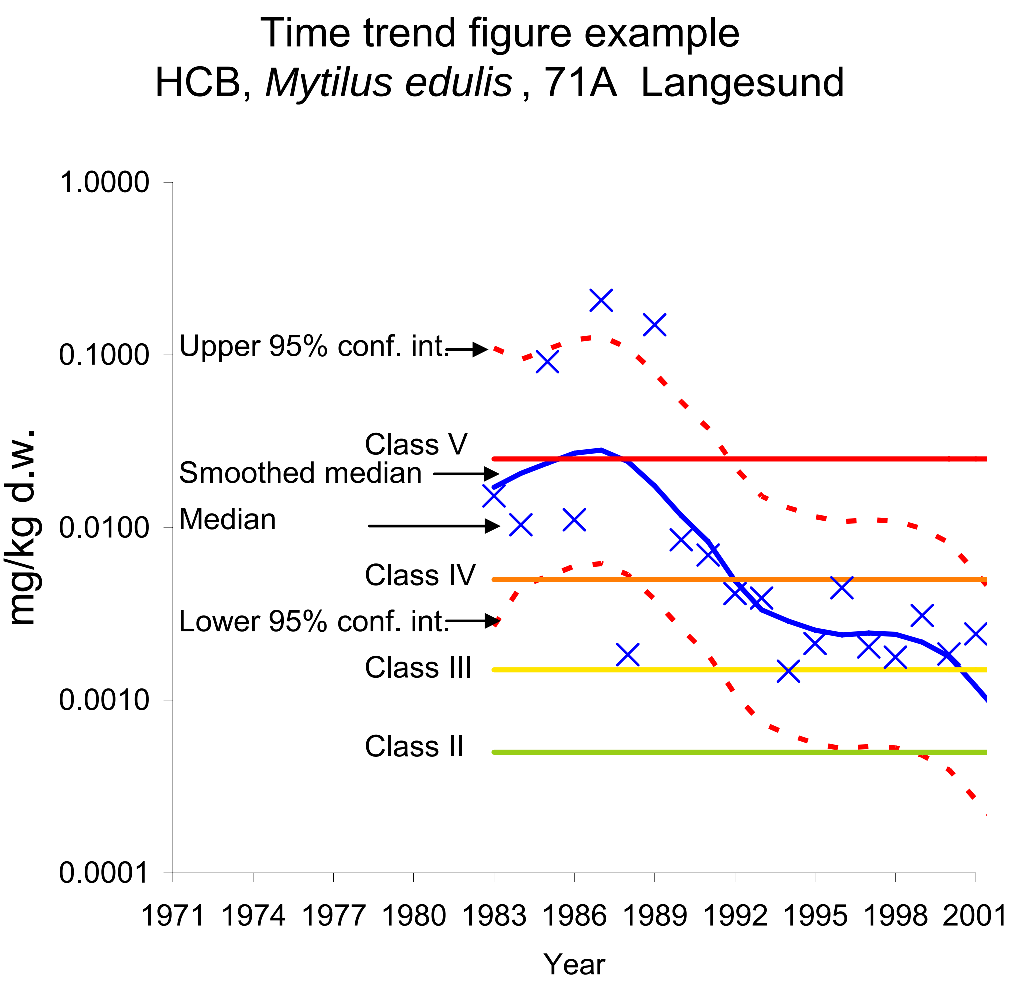


Figure 21. Example presentation and variation in contaminant concentration with time, indicating median concentrations, running mean of median values (Loess smoother), 95% confidence intervals. The horizontal lines indicate the lower boundaries to SFT classes of pollution: Class II (moderate=upper boundary to Class I (insignificant)), III (marked), IV (severe) and V (extreme), or alternatively the Class II boundary is replaced by the upper boundary to provisional "high background level" as in which case no class-boundaries are shown. (see text and refer to Table 7).

The method of calculating the smoother is in accordance to the methods employed at Ad Hoc Working Group on Monitoring that met in Copenhagen 23-27. February 1998 (MON 1998). A Loess smoother is based on a running seven-year interval, a non-parametric curve fitted to median log-concentrations (Nicholson *et al.*1997). For statistical tests based on a fitted smoother to be valid the contaminants indices should be independent to a constant level of variance and the residuals for the fitted model should be lognormally distributed (cf. Nicholson *et al.* 1998). No transformation was applied to the imposex (VSDI) data.

The National Comments since 1994 have included two additional analyses. The first is that the smoothed median for the last three sampling years is linearly projected for the next three years. This deviates from previous reports where the upper 95 confidence interval was used to assess the likelihood of overconcentrations (Nicholson, *et al.* 1994). The projected estimate is based on the results for the temporal trend analyses of at least 6 years of data.

The second is an estimate of the power of the temporal trend series expressed as the number of years to detect a 10% change per year with a 90% power (cf. Nicholson *et al.* 1997). The fewer the years the easier it is to detect a trend. The power is based on the percentage relative standard deviation (RLSD) estimated using the robust method described by ASMO (1994) and Nicholson *et al.* (1998). The estimate was made for series with at least 3 years of data and covers the *entire* period monitored. This fixed means of treating all the datasets may give misleading results especially where non-linear temporal changes are known to occur, such as for HCB in blue mussel from Langesundsfjord (Figure 4).

The statistical analysis was carried out on temporal trend data series for cadmium, mercury, lead, ΣPCB-7 (sum of congeners: 28, 52, 101, 118, 138, 153, 180), ppDDE (ICES code DDEPP), HCB, non-dicyclic PAHs, sum carcinogenic PAHs, B[*a*]P, TBT, and the biological effects parameters imposex (VSDI), PYR10, ALA-D and EROD-activity.

2.1.4. The effect of depuration and freezing on blue mussel

Based on samples collected in the Sørfjord and Hardangerfjord, the JAMP-method of pre-treatment of blue mussel (i.e., depuration and then cleaning) contrasted significantly to the Index-method (freezing then cleaning) (Green *et al.* 2001a). Using the JAMP-method, cadmium concentrations were significantly higher (24%), whereas significant lower concentrations were found for lead (45%), zinc (14%), PCBs (CB101, -118, -138, -153 27-52%) and DDTs (50-64%). Lower concentrations indicated that these contaminants are lost by depuration and gut emptying.

The results from a previous study from this region indicated no significant difference between the methods for mercury, cadmium, copper, lead and zinc (Green 1989). A study on blue mussel from the mouth of the Glomma River in Southern Norway showed that lead and copper were significantly lower in depurated samples (Green *et al.* 1996); however, no differences were found for PCBs or DDTs (on a lipid basis). The PCB concentrations found in the Glomma study were 3-4 times higher than Sørfjord/Hardangerfjord.

Mercury was the only contaminant common to all three studies that had consistent results; that there is no significant difference between the two methods.

The difference in methods has indicated an effect on the concentration of contaminants in blue mussel. However, with the exception of mercury, the results for Sørfjord/Hardangerfjord 2003 are inconsistent with two other studies in Norway. Revision of JAMP guidelines and assessment of data should take these results into consideration.

2.2. Information on Quality Assurance

NIVA has participated in all the QUASIMEME international intercalibration exercises, including Round 48. These exercises have included nearly all the contaminants analysed for JAMP. Quality assurance programme for NIVA is similar to the 2005 programme (cf. Green *et al.* 2007). In addition, NIVA was accredited in 1993 and since 2001 accredited in accordance with the NS-EN ISO/IEC 17025 standard by the Norwegian Accreditation (reference P009). A summary of the quality assurance programme at NIVA is given in Appendix A.

A recent investigation of measurements of certified references materiale from 1999-2006 for PCB indicated a systematic change in the analytical methods (Bakke *et al.* 2007b, Appendix A). This should be taken into consideration in the trend analyses.

2.3. Description of the Programme

The sampling for 2005 involved blue mussel at 61 stations, dogwhelk at 8, cod at 9 and flatfish at 11 stations (cf. Appendix E). The Norwegian JAMP has been expanded since 1989 to include monitoring in more diffusely polluted areas. Though new stations are initially intended for annual monitoring (temporal trends), there has not always been sufficient funds to do this for every station. Sample/station reduction measures have been taken to reduce costs. Furthermore, sufficient samples have not always been practical to obtain. When this applies to blue mussel, a new site in the vicinity is often chosen. As for fish, the quota of 25 individuals (±10%), indicated in Appendix E, as either 25 individuals or 5 bulked samples consisting of 5 fish per bulked sample, was met for all stations in 2005.

Concentrations of metals, organochlorines (including pesticides) and polycyclic aromatic hydrocarbons in blue mussel and fish were determined at the Norwegian Institute for Water Research (JAMP code NIVA).

Analytical methods have been described previously (Green *et al*. (2001b, Shi *et al.* 2008). An overview of the samples collected from 1981 to 2005 is given in Appendix E. An overview of analyses applied from 1981 to 2005 for biological material is given in Appendix C. Parameter abbreviations are given in Appendix B.

The data is stored at NIVA in MS ACCESS 1997. The tables are generated using MS ACCESS 97 and MS EXCEL 97.

3. References

Titles translated to English in square brackets [ ] are not official.

Ahlborg, U.G., 1989. Nordic risk assessment of PCDDs and PCDFs. Chemosphere 19:603-608.

Ahlborg, U.G., Becking G.B., Birnbaum, L.S., Brouwer, A, Derks, H.J.G.M., Feely, M., Golor, G., Hanberg, A., Larsen, J.C., J.C., Liem, A.K.G., Safe, S.H., Schlatter, C., Wärn, F., Younes, M., Yrjänheikki, E., 1994. Toxic equivalency factors for dioxin-like PCBs. Report on a WHO-ECEH and IPSC consultation , December 1993. Chemosphere 28:1049-1067.

ASMO, 1994. Draft assessment of temporal trends monitoring data for 1983-91: Trace metals and organic contaminants in biota. Environmental Assessment and Monitoring Committee (ASMO). Document ASMO(2) 94/6/1.

ASMO, 1997. Summary Record. Environmental Assessment and Monitoring Committee (ASMO). Document ASMO 97/9/1.

ASMO, 2007. Summary Record. Environmental Assessment and Monitoring Committee (ASMO). Document ASMO 07/13/1.

Bakke, T., Fjeld, E., Skaare, B.B., Berge, J.A:, Green, N., Ruus, A., Schlabach, M., Botnen, H., , 2007a. *Kartlegging av metaller og utvalgte ny organiske miljøgifter 2006. Krom, arsen, perfluoralkylstoffer, dikoretan, klorbenzener, pentaklorfenol, HCBD og DEHP.* [Mapping of metals and selected new organic contaminants 2006. Chromium, Arsenic, Perfluorated substances, Dichloroethane, Chlorinated benzenes, Pentachlorophenol, HCBD and DEHP. Norwegian Pollution Control Authority (SFT) report no. 990/2007 (TA-2284/2007). NIVA report no. 5464-2007. 105pp. + annexes.

Bakke, T., Ruus, A., Bjerkeng, B., Knutzen, J.A:, Schlabach, M., 2007b. *Overvåking av miljøgifter i fisk og skalldyr fra Grenlandsfjordene 2006* [Monitoring of contaminants in fish and shellfish from Grenlandsfjordene 2006]. Norwegian Pollution Control Authority (SFT) report no. 998/2007 (TA-2319/2007). NIVA project no. O-24177, report no. 5504-2007. 93pp. ISBN no. 978-82-577-5239-2.

Berge, J., Schlabach, M., Fagerhaug, A., Rønneberg, J.E., 2006. *Kartlegging av utvalgte miljøgifter i Åsefjorden og omkringliggende områder. Bromerte flammehemmere, klororganiske forbindelser, kvikksølv og tribromanisol.* [Screening of selected contaminants in Åsefjord and vicinity. Brominated flame retardants2004. Brominated flame retardants, organic compounds, mercury and tribromanisol. Norwegian Pollution Control Authority (SFT) report no. 946/2006 (TA-2146/2006). NIVA report no. 5132-2006. 73pp. + annexes.

Fjeld, E., Schlabach, M., Berge, J.A., Green, N., Egge, T., Snilsberg, P., Vogelsang, C., Rognerud, S., Kãllberg, G., Enge, E.K., Borge, A., Gundersen, H., 2005. *Kartlegging av utvalgte nye organiske miljøgifter 2004. Bromerte flammehemmere, perfluorerte forbindelser, irgarol, diuron, BHT og dicofol.* Screening of selected new organic contaminants 2004. Brominated flame retardants, perfluorinated compounds, irgarol, diuron, BHT and dicofol. Norwegian Pollution Control Authority (SFT) report no. 927/2005 (TA-2096/2005). NIVA report no. 5011-2005. 97pp.

Følsvik N., Berge J.A., Brevik E. M. & M. Walday. 1999. Quantification of organotin compounds and determination of imposex in populations of dogwhelk (*Nucella lapillus*) from Norway. *Chemosphere*. 38 (3): 681-691.

Green, N.W., 1987. "Joint Monitoring Group" (JMG). Felles monitoring program i Norge: Oslofjord-området, Sørfjorden og Hardangerfjorden, og Orkdalsfjorden. Programforslag for 1988. 4.Dec.1987. NIVA-project 80106, 12 pp..

Green, N.W., 1989. The effect of depuration on mussels analyses. Report of the 1989 meeting of the working group on statistical aspects of trend monitoring. The Hague, 24-27 April 1989. ICES-report C.M.1989/E:13 Annex 6:52-58.

Green, N.W., 1991. Joint Monitoring Programme. National Comments to the Norwegian Data for 1989. Norwegian Institute for Water Research (NIVA) memo 27pp.. JMG 16/info 13-E.

Green, N.W., Knutzen, J., 2001. Joint Assessment and Monitoring Programme (JAMP). Forurensnings- og referanseindeks basert på observasjoner av miljøgifter i blåskjell fra utvalgte områder 1995-1999.[Joint Assessment and Monitoring Programme (JAMP). Pollution and reference indicies based on contaminants in blue mussel 1995-1999]. Norwegian Pollution Control Authority, Monitoring report no. 821/01 TA no. 1799/2001. NIVA project O-80106, (report number 4342-2001) 35 pp.. ISBN number 82-577-3977-4.

Green, N.W., Knutzen, J., 2003. Organohalogens and metals in marine fish and mussels and some relationships to biological variables at reference localities in Norway. *Marine Pollution Bulletin* 46(3):362-374.

Green, N.W., Bjerkeng B., Berge J.A., 1996. Depuration (12h) of metals, PCB and PAH concentrations by blue mussel (Mytilus edulis). Report of the Working Group on the Statistical Aspects of Environmental Monitoring. Stockholm 18-22 March 1996. ICES C.M.1996/D:1 Annex 13:108-117.

Green, N.W., Berge, J.A, Helland, A., Hylland, K., Knutzen, J., Walday, M., 1999. Joint Assessment and Monitoring Programme (JAMP) National Comments regarding the Norwegian Data for 1997. Norwegian Pollution Control Authority, Monitoring report no. 752/99 TA no. 1611/1999. Norwegian Institute for Water Research project 80106, report number 3980-99, 129 pp.. ISBN number 82-577-3576-0. (Also presented as SIME document (1999)).

Green, N.W., Bjerkeng, B, Helland, A., Hylland, K., Knutzen, J., Walday, M., 2000. Joint Assessment and Monitoring Programme (JAMP) National Comments regarding the Norwegian Data for 1998 and supplementary investigations on cod (1996) and sediment (1996-1997). Norwegian Pollution Control Authority, Monitoring report no. 788/00 TA no. 1702/2000. Norwegian Institute for Water Research project 80106, report number 4171-2000, 206 pp.. ISBN number 82-577-3787-9. (Also presented as SIME 2000 document 00/3/6).

Green, N.W., Hylland, K., Walday, M., 2001a. Joint Assessment and Monitoring Programme (JAMP). National Comments regarding the Norwegian Data for 1999. SFT Statlig overvåkingsprogram 812/01 TA no. 1780/2001. NIVA, rapport nr. 4335-2001, 181 s. ISBN nr. 82-577-3969-3.

Green, N.W., Følsvik, N., Oredalen, T.J., Prestbakmo, G., 2001b. Joint Assessment and Monitoring Programme (JAMP). Overview of analytical methods 1981-2000. SFT Statlig overvåkingsprogram rapport nr. 822/01, TA nr. 1800/2001. NIVA, rapport nr. 4353-2001, 68 s. ISBN nr. 82-577-3989-8.

Green, N.W., Hylland, K., Ruus, A., Walday, M., 2003. Joint Assessment and Monitoring Programme (JAMP). National Comments regarding the Norwegian Data for 2001. Norwegian Pollution Control Authority, Monitoring report no. 867/02 TA no. 1926/2002. Norwegian Institute for Water Research project 80106, report number 4618-2002, 217 pp.. ISBN number 82-577-4279-1.

Green, N.W., Hylland, K., Ruus, A., Walday, M., 2004a. Joint Assessment and Monitoring Programme (JAMP). National Comments regarding the Norwegian Data for 2002. Norwegian Pollution Control Authority, Monitoring report no. 894/2003 TA no. 2003/2003. Norwegian Institute for Water Research project 80106, report number 4778-2004, 223 pp.. ISBN number 82-577-4454-9. Also as Trends and Effects of Substances in the Marine Environment (SIME) London (Secretariat) 24-26 Febraury 2004. SIME 04/02/info. 4 -E

Green, N.W., Ruus, A., Walday, M., 2004b. Joint Assessment and Monitoring Programme (JAMP). National Comments regarding the Norwegian Data for 2003. Norwegian Pollution Control Authority, Monitoring report no. 921/2004 TA no. 2072/2004. Norwegian Institute for Water Research project 80106, report number 4927-2004, 219 pp.. ISBN number 82-577-4618-5. Also as Trends and Effects of Substances in the Marine Environment (SIME) Vigo (Spain) 15-17 Mars 2005. SIME 05/02/info. 7 -E

Green, N.W., Ruus, A., Bakketun, Å., Håvardstun, J., Rogne, Å.G., Schøyen, M., Tveiten, L., Øxenvad, S., 2007. Joint Assessment and Monitoring Programme (JAMP). National Comments regarding the Norwegian Data for 2005. Norwegian Pollution Control Authority, Monitoring report no. 974/2006 TA no. 2214/2006. Norwegian Institute for Water Research projects 80106, 25106, and 26106 and report number 5315-2006, 191 pp.. ISBN number 82-577-5047-6. Also as Trends and Effects of Substances in the Marine Environment (SIME), Hamburg 6-8 March 2007. SIME 07/02/Info.3-E

Green, N.W., Dahl, I.., Kringstad, A., og Schlabach, 2008. Joint Assessment and Monitoring Programme (JAMP). Overview of analytical methods 1981-2007. Norwegian Pollution Control Authority, Monitoring report no.1016/2008 TA no. 2370/2007. NIVA-rapport 5563-2008, 96 pp. ISBN number 978-82-577-5298-9.

Harding M.J.C., Bailey S.K. & I..M. Davies. 1992. TBT imposex survey of the North Sea. Annex 7:Norway. Scottish Fisheries working paper No 10/92 (1992).

ICES, 1996. ICES Environmental Data Reporting Formats. Version 2.2, revision 2 - July 1996.

IARC, 1987. IARC [International Agency for Research on Cancer] monographs on the evaluation of the carcinogenic risk of chemicals to humans. Overall evaluations of carcinogenicity: an updating of IARC monographs. Vol., 1-42. Suppl. 7. Lyon.

Knutzen, J., 1995. Summary report on levels of polychlorinated dibenzofurans/dibenzo-p-dioxins andnon-ortho polychlorinated biphenyls in marine organisms and sediments in Norway. Norwegian State Pollution Monitoring Programme. Report no. 618/95. NIVA report no. 3317. 19 pp.

Knutzen, J., Green, N.W., 1995. Bakgrunnsnivåer av en del miljøgifter i fisk, blåskjell og reker. Data fra utvalgte norske prøvesteder innen den felles overvåking under Oslo-/Paris-kommisjonene 1990-1993. [Background levels of some micropollutants in fish, the blue mussel and shrimps. Data from selected Norwegian sampling sites within the joint monitoring of the Oslo-/Paris Commissions 1990-1993]. Norwegian Pollution Control Authority, Monitoring report no. 594/94 TA no. 1173/1994. NIVA project O-80106/E-91412, (report number 3302) 105 pp.. ISBN number 82-577-2678-8.

Knutzen, J., Green, N.W., 2001a. Tiltaksorienterte miljøundersøkelser i Sørfjorden og Hardangerfjord 2000. Delrapport 2. Miljøgifter i organismer. [Investigation of micropollutants in the Sørfjord and Hardangerfjord 2000. Report 2. Contaminants in organisms.] Norwegian Pollution Control Authority, Monitoring report no. 836/01. TA no. 1833/2001. NIVA project O-800309, (report number 4445-2001) 51 pp.. ISBN number 82-577-4091-8.

Knutzen, J., Green, N.W., 2001b. Joint Assessment and Monitoring Programme (JAMP). "Bakgrunnsnivåer" av miljøgifter i fisk og blåskjell basert på datamateriale fra 1990-1998.[Joint Assessment and Monitoring Programme (JAMP). Background levels of some contaminants in fish and blue mussel based on data from 1990-1998]. Norwegian Pollution Control Authority, Monitoring report no. 820/01 TA no. 1798/2001. NIVA project O-80106, (report number 4339) 145 pp.. ISBN number 82-577-3973-1.

Knutzen, J., Bjerkeng, B., Green, N.W., Kringstad, M., Schlaback, M., Skåre J.U., 2001. Overvåking av miljøgifter i fisk og skalldyr fra Grenlandsfjordene 2000. [Monitoring of micorpollutants in fish and shellfish from the Grenland fjords (S. Norway) 2000] Norwegian Pollution Control Authority, Monitoring report no. 835/01. TA no. 1832/2001. NIVA project O-800309, (report number 4452-2001) 230 pp.. ISBN number 82-577-4098-5.

Molvær, J., Knutzen, J., Magnusson, J., Rygg, B., Skei J., Sørensen, J., 1997. Klassifisering av miljøkvalitet i fjorder og kystfarvann. Veiledning. *Classification of environmental quality in fjords and coastal waters. A guide.* Norwegian Pollution Control Authority. TA no. TA-1467/1997. 36 pp.

MON, 1993. Draft Summary record. Eleventh meeting of the Ad Hoc Working Group on Monitoring, Copenhagen: 8-12 November 1993. MON 11/1/7-E.

MON, 1998. Summary record. Ad Hoc Working Group on Monitoring, Copenhagen: 23-27 February 1998. MON 98/6/1-E.

MON, 2001. The first draft of a new OSPAR Strategy for a Joint Assessment and Monitoring Programme (JAMP). Working Group on Monitoring (MON), Belfast: 4-7 December 2001. MON 01/7/1-E.

Nicholson, M., Fryer, R.J., Green, N.W., 1994. Focusing on key aspects of contaminant trend assessments. Nineteenth meeting of the Joint Monitoring Group 24-29 . January, 1994. Document JMG 19/3/3.

Nicholson, M., Fryer, R.J., Maxwell, D.M., 1997. A study of the power of various methods for detecting trends. ICES CM 1997/Env.11.

Nicholson, M., Fryer, R.J., Larsen, J.R., 1998. Temporal trend monitoring: A robust method for analysing trend monitoring data, ICES Techniques in Marine Envrionmental Sciences, No.20 September 1998.

OSPAR, 1990. Oslo and Paris Conventions. Principles and methodology of the Joint Monitoring Programme. [Monitoring manual for participants of the Joint Monitoring Programme (JMP) and North Sea Monitoring Master Plan (NSMMP)]. March 1990.

OSPAR, 1997. JAMP Guidelines. Oslo and Paris Commissions, Joint Assessment and Monitoring Programme (including chapter updates 1998-1999).

OSPAR, 2007. OSPAR Coordinated Environmental Monitoring Programme (CEMP). OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic. OSPAR Commission. Reference number: 2007-1. 25pp..

Ruus, A., Green, N.W., 2002. Tiltaksorienterte miljøundersøkelser i Sørfjorden og Hardangerfjorden 2001. Delrapport 2. Miljøgifter i organismer. *Measure oriented environmental monitoring of Sørfjord and Hardangerfjord 2002. Report component 2. Contaminants in organisms.* Norwegian Pollution Control Authority, Monitoring report no. 865/02 TA no. 1922/2002. NIVA project 800309 (report number 4612-2002), 41 pp.. ISBN number 82-577-4273-2.

Ruus, A., Green, N.W., 2003. Miljøforholdene i Sørfjorden i 2002. Delrapport 2. Overvåking av miljøforholdene i Sørfjørden. Miljøgifter i organismer i 2002. *Monitoring of environmental quality in the Sørfjord. Report component 2 Contaminants in organisms 2002.* Norwegian Pollution Control Authority, Monitoring report no. 885/03 TA no. 1983/2003. NIVA project 800309 (report number 4724-2003), 45 pp.. ISBN number 82-577-4394-1.

Ruus, A., Green, N.W., 2004. Overvåking av miljøfoholdene i Sørfjorden. Miljøgifter i organismer 2003. Delrapport 3. Miljøgifter i organismer. *Monitoring of environmental quality in the Sørfjord. Contaminants in organisms 2003. Report component 3. Contaminants in organisms.* Norwegian Pollution Control Authority, Monitoring report no. 908/04 TA no. 2045/2004. NIVA project 800309 (report number 4880-2004), 54 pp.. ISBN number 82-577-4566-9.

Ruus, A., Green, N.W., 2005. Overvåking av miljøfoholdene i Sørfjorden. Miljøgifter i organismer 2004. Delrapport 3. Miljøgifter i organismer. *Monitoring of environmental quality in the Sørfjord. Contaminants in organisms 2004. Report component 3. Contaminants in organisms.* Norwegian Pollution Control Authority, Monitoring report no. 938/05 TA no. 2123/2005. NIVA project 800309 (report number 5069-2005), 61 pp.. ISBN number 82-577-4774-2.

Ruus, A., Green, N.W., 2006. Overvåking av miljøfoholdene i Sørfjorden. Miljøgifter i organismer 2005. Miljøgifter i organismer. *Monitoring of environmental quality in the Sørfjord. Contaminants in organisms 2005. Contaminants in organisms.* Norwegian Pollution Control Authority, Monitoring report no. 959/2006 TA no. 2190/2006. NIVA project 800309 (report number 5268-2006), 58 pp.. ISBN number 82-577-4995-8.

Ruus, A., Green, N.W., 2007. Overvåking av miljøfoholdene i Sørfjorden. Miljøgifter i organismer 2006. Miljøgifter i organismer. *Monitoring of environmental quality in the Sørfjord. Contaminants in organisms 2006. Contaminants in organisms.* Norwegian Pollution Control Authority, Monitoring report no. 995/2007 TA no. 2299/2007. NIVA project 26461-2 (report number 5495-2007), 65 pp.. ISBN number 978-82-577-5230-9.

Ruus, A., Hylland, K., Green, N., 2003. Joint Assessment and Monitoring Programme (JAMP). Biological Effects Methods, Norwegian Monitoring 1997-2001. Norwegian Pollution Control Authority, Monitoring report no. 869/03 TA no. 1948/2003. Norwegian Institute for Water Research project 80106, report number 4649-2003, 139 pp.. ISBN number 82-577-4313-5.

SIME, 2004a. OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic. Working Group on Concentrations, Trends and Effects of Substances in the Marine Environment (SIME) London (Secretariat) 24-26 February 2004. SIME 04/10/1-E [Summary record], 16 pp. + 11 annexes.

SIME, 2004b. OSPAR Convention for the Protection of the Marine Environment of the North East Atlantic. Working Group on Concentrations, Trends and Effects of Substances in the Marine Environment (SIME) London (Secretariat) 24-26 February 2004. SIME 04/6/1-E [JAMP implementation], 9 pp..

Shi, L., Green, N., Rogne, Å., 2008. Joint Assessment and Monitoring Programme (JAMP). Contaminant and effects data for sediments, shellfish and fish 1981-2006. Norwegian Pollution Control Authority, Monitoring report no. 1015/2008 TA no. 2369/2008. Norwegian Institute for Water Research projects 80106, 25106, 26106, 27106, report number 5562-2008), 96 pp.. ISBN number 978-82-577-5297-2.

Skei, J., Rygg, B., Moy, F., Molvær, J., Knutzen, J., Hylland, K., Næs, K., Green, N. Johansen, T., 1998. Forurensningsutviklingen i Sørfjorden og Hardangerfjorden i perioden 1980-1997. Sammenstilling av resultater fra overvåking av vann, sedimenter og organismer. [The development of pollution in the Sørfjord and Hardangerfjord during the period 1980-1997. Summary of results from monitoring of water, sediment and organisms.] Norwegian Pollution Control Authority, Monitoring report no. 742/98 TA no. 1581/1998. NIVA project O-800310, (report number 3922-98) 95 pp.. ISBN number 82-577-3507-8.

Skei, J., 2000. Tiltaksorienterte miljøundersøkelser i Sørfjorden og Harangerjforden 1999. Delrapport 1 Vannkjemi. [Investigation of Sørfjord and Hardangerfjord 1999. Report 1. Water Chemistry] Norwegian Pollution Control Authority, Monitoring report no. 796/00 TA no. 1724/2000. NIVA project O-800309, (report number 4236-2000) 23 pp.. ISBN number 82-577-3858-1.

Skei, J., 2001. Tiltaksorienterte miljøundersøkelser i Sørfjorden og Harangerjforden 2000. Delrapport 1 Vannkjemi. [Investigation of Sørfjord and Hardangerfjord 2000. Report 1. Water Chemistry] Norwegian Pollution Control Authority, Monitoring report no. 830/01 TA no. 1818/2001. NIVA project O-800309, (report number 4406-2001) 22 pp.. ISBN number 82-577-4048-9.

Skei, J., Knutzen, J., 2000. Utslipp av kvikksølv til Sørfjorden som følge av uhell ved Norzink AS vinteren 1999-2000. Miljømessige konsekvenser. [Accidental mercury discharge by Norzink AS to the Sørfjord, winter 1999-2000. Environmental consequences.] NIVA project O-89083 (report number 4234-2000) 12pp.. ISBN number 82-577-3856-5.

Van den Berg, Birnbaum, L, Bosveld, A. T. C. and co-workers, 1998. Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environ Hlth. Perspect. 106:775-792.

Walday, M., Green, N., Hylland, K., 1995. Kostholds- og tilstandsindikatorer for miljøgifter i marine områder. Norwegian Institute for Water Research project 93254, report number 3280, 39 pp.. ISBN number 82-577-2691-5.

Walday M., Berge J.A. & N. Følsvik. 1997. Imposex and levels of organotin in populations of *Nucella lapillus* in Norway (English summary). Norwegian Institute for Water Research, report no. 3665-97. 28pp.

WGSAEM, 1993. The length effect on contaminant concentrations in mussels. Section 13.2. in the Report of the Working Group on Statistical Aspects of Environmental Monitoring, Copenhagen 27-30, April 1993. International Council for the Exploration of the Sea. C-M- 1993/ENV:6 Ref.: D and E, 61 pp.

Økland, T.E., 2005. Kostholdsråd i norske havner og fjorder. En gjennomgang av kostholdsråd i norske havner og fjorder fra 1960-tallet til i dag. Bergfald & Co. ISBN 82-92650-01-6. 269pp.

Appendix A
Quality assurance programme

Accreditation

The laboratories at NIVA, both the chemical, microbiological and the ecotoxicological laboratories, were accredited in 1993 for quality assurance system by the National Measurement Service - Norwegian Accreditation and based on European Standard EN45000/ISO71EC Guide 25. NIVA has reference number P009. The chemical laboratoruim has satisfied the requirements in NS-EN ISO/IEC 17025 since 2001.

Summary of quality control results
Standard reference materials were analysed regularly (**Table 8** og **Table 9**). Dogfish muscle (DORM-2) or dogfish liver (DOLT-3) was used as SRM for the control of the determination of metals. Cod liver oil (1588) and mussel tissue (2977) was used as SRM for controls of PCBs and PAHs, respectively. NIES 11 was used for tin organic compounds. Cyprinid fish (EDF2525) at NILU was used as SRM for control of determination of dioxins. For sediments, MESS-3 was used as SRM for trace metals, and the SRM 1944 for the determination of selected polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, and chlorinated pesticides.

Following results for round Quasimeme –Round 48 were used. This round would apply to the 2006 samples:

- QTM073BT (no.1) and QTM074BT (no.2) for metals in biota.
  The results were acceptable (z-scores between -2 and 2), except for one result which was classified as questionable (z-scores between -3 and 3), and this was Selenium in sample no.1.
- QOR090BT (no.1) and QOR091BT (no.2) for organochlorines in biota.
  The results were acceptable except for four results which were classified as questionable, and these were CB101, CB118 and HCB from sample no.1 and CB52, from sample no.2. It can be noted that several samples had generally very low concentrations of PCBs.
- QPH045BT and QPH046BT for PAH in biota.
  The results were acceptable except for questionable results for benzo[b]fluoranthene .This is likely due to that results submitted included benzo[j]fluoranthene which, by the methods currently in use, can not be distinguished from the former PAH-compound.

- QTM078MS (no.1) and QTM079MS (no.2) for metals in sediments.
  All results were acceptable (z-scores between -2 and 2).
- QOR088MS (no.1) and QOR089MS (no.2) for organochlorines in sediments.
  The results were acceptable (z-scores between -2 and 2), except for two results which was classified as questionable and these were CB180 and pp`DDD in sample no.2.
- QPH052MS (no.1) and QPH053MS (no.2) for PAH in sediments.
  Ten of the results were not acceptable and the samples were reanalysed. Four of the reanalysed results were not satisfactory. One of these were benzo[b]fluoranthene .This is likely due to that results submitted included benzo[j]fluoranthene which, by the methods currently in use, can not be distinguished from the former PAH-compound. The other three were benzo[e]pyrene, indeno[1,2,3-cd]pyrene and dibenz[a,c+a,h] anthracene which were classified as questionable (z-scores between -3 and 3).

Table 8. Summary of the quality control of results for the 2006 biota samples analysed in 2006-2007. The Standard Reference Materials (SRM) were DORM-2* (dogfish muscle) for blue mussel and fish fillet, DOLT-3* (dogfish liver) for fish liver, 1588** (cod liver oil) for blue mussel and fish liver and 2977** (mussel tissue) for blue mussel. SRM was analysed in series with the JAMP-samples for analyses of metals (mg/kg d.w.), NIES 11 for organochlorines or PAH (μg/kg d.w.) and EDF2525**** for fish (cyprinid) was analysed for dioxin(ng/kg) by NILU (Norwegian Institute for Air Research – results for 2005 material are shown here; cf. Green *et al.*2005). Tissue types were: mussel softbody (SB), fish liver (LI) and fish fillet (MU). SRMs were measured several times (N) over a number of weeks (W).

Code	Contaminant	Tissue type	SRM type	SRM value ± confidence interval	N	W	Mean value	Standard deviation
Cd	**cadmium**	SB	DORM	0.043 ± 0.008	15	24	0.047	0.003
		LI	DOLT	19.4 ± 0.6	18	21	19.8	0.93
Cu	**copper**	SB	DORM	2.34 ± 0.16	15	24	2.14	0.06
		LI	DOLT	31.2 ± 1.0	18	21	31.7	1.4
Pb	**lead**	SB	DORM	0.065 ± 0.007	15	24	0.064	0.005
		LI	DOLT	0.319 ± 0.045	18	21	0.325	0.024
Hg	**mercury**	SB	DORM	4.64 ± 0.26	29	24	4.7	0.14
Zn	**zinc**	SB	DORM	25.6 ± 2.3	14	24	25.1	0.98
		LI	DOLT	86.6 ± 2.4	18	21	93.7	4.7
TBTIN	**Tributyl-tin**	SB	NIES	1159 ± 88	10	23	872	133
TPTIN	**Triphenyl-tin**	SB	NIES	5109 ±363	10	23	3970	903
CB-28	**PCB congener CB-28**	(all)	1588	28.32 ± 0.55	7	20	22.6	1.9
CB-52	**PCB congener CB-52**	(all)	1588	83.3 ± 2.3	7	20	68.6	10.3
CB-101	**PCB congener CB-101**	(all)	1588	126.5 ± 4.3	5	18	160	12
CB-118	**PCB congener CB-118**	(all)	1588	176.3 ± 3.8	7	20	218.6	12.15
CB-153	**PCB congener CB-153**	(all)	1588	273.8 ± 7.7	7	20	282.9	37.7
CB-180	**PCB congener CB-180**	(all)	1588	105.0 ± 5.2	7	20	103.7	11.6
ACNLE	**acenaphthylene**	SB	2977		10	18	2.73	4.67
BAA	**benzo[a]anthracene[1)]**	SB	2977	20.34 ± 0.78	14	18	20.57	7.42
BAP	**benzo[a]pyrene[1)]**	SB	2977	8.35 ± 0.72	14	18	6.24	2.99
BBF	**benzo[b]fluoranthene[1,2)]**	SB	2977	11.01 ± 0.28	14	18	17.36	5.99
BEP	**benzo[e]pyrene**	SB	2977	13.1 ± 1.1	14	18	19.8	4.1
BGHIP	**benzo[ghi]perylene**	SB	2977	9.53 ± 0.43	14	18	9.7	1.5
BKF	**benzo[k]fluoranthene**	SB	2977	4 ± 1	14	18	6.81	3.0
FLU	**Fluoranthene**	SB	2977	38.7 ± 1.0	14	18	32.8	8.8
ICDP	**indeno[1,2,3-cd]pyrene**	SB	2977	4.84 ± 0.81	14	18	4.16	1.7
PER	**Perylene**	SB	2977	3.50 ± 0.76	13	18	2.66	1.44
PYR	**Pyrene**	SB	2977	78.9 ± 3.5	14	18	68.8	5.0
CB77	**3,3,4,4-TeCB**	SB	2525	1945 ± 354	2	26	1839	6
CB 126	**3,3,4,4,5-PeCB**	SB	2525	647 ± 148	2	26	633	2.2
CB 169	**3,3,4,4,5,5-HxCB**	SB	2525	50 ± 12	2	26	46	7.0
CDD1N	**1,2,3,7,8-HxCDD**	SB	2525	4.0 ± 0.57	2	26	3.9	2
CDD4X	**1,2,3,4,7,8-HxCDD**	SB	2525	0.77 ± 0.27	2	26	0.29	69
CDD6X	**1,2,3,6,7,8- HxCDF**	SB	2525	2.7 ± 1.2	2	26	1.77	41
CDD9X	**1,2,3,7,8,9-HpCDF**	SB	2525	0.63 ± 0.23	2	26	0.05	91
CDDO	**OCDD**	SB	2525	7.2 ± 3.7	2	26	0.14	95
CDF2N	**2,3,4,7,8-PeCDF**	SB	2525	14 ± 1.3	2	26	13.9	1
CDF2T	**2,3,7,8 TCDF**	SB	2525	22 ± 1.6	2	26	23	5
CDF4X	**2,3,4,6,7,8 HxCDF**	SB	2525	2.3 ± 1.9	2	26	0.93	60
CDF6P	**1,2,3,4,6,7,8,-HxCDF**	SB	2525	4.4 ± 6.0	2	26	0.19	96
CDF6X	**1,2,3,6,7,8-HxCDF**	SB	2525	2.7 ± 1.2	2	26	1.68	38
CDF9P	**1,2,3,4,7,8,9-HpCDF**	SB	2525	0.63 ± 0.23	2	26	0.05	91
CDFDN	**1,2,3,7,8/1,2,3,4,8-PeCDF**	SB	2525	4.9 ± 0.56	2	26	3.76	23
CDFDX	**1,2,3,4,7,8/1,2,3,4,7,9-HxCDF**	SB	2525	8.2 ± 3.7	2	26	5.96	27
CDFO	**OCDF**	SB	2525	2.6 ± 1.3	2	26	0.14	95
TCDD	**2,3,7,8-Tetra-DiBpD(TCDD)**	SB	2525	17 ± 1.4	2	26	17.2	1

*) National Research Council Canada, Division of Chemistry, Marine Analytical Chemistry Standards
**) BCR, Community Bureau of Reference, Commission of the European Communities
***) National Institute of Standards & Technology (NIST)
****) CIL, US.
1) Not certified (see NIST certificate)
2) Calculated includes benzo[f]fluoranthene

Table 9. Summary of the quality control of results for the 2006-2007 sediment samples analysed in 2006-2007. The Standard Reference Materials (SRM) were MESS-3 for trace metals in marine sediment (mg/kg d.w) and 1944 for the determination of selected polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyl (PCB) congeners, chlorinated pesticides, and trace elements (µg/kg d.w) in marine sediment. These SRM were analysed in series with the JAMP-samples for analyses of metals and the organic compounds.

Code	Contaminant	Tissue type	SRM type	SRM value confidence interval	N	W	Mean value	Standard deviation
AL	Aluminium	SM	MESS-3	8.59 ± 0.23	3	10	8.2230	0.1334
AS	Arsenic	SM	MESS-3	21.2 ± 1.1	2	7	20.6	10.8
CD	Cadmium	SM	MESS-3	0.24 ± 0.01	3	13	0.259	0.014
CR	Chromium	SM	MESS-3	105 ± 4	3	10	94.8	2.8
CU	Copper	SM	MESS-3	33.9 ± 1.6	3	10	33.0	1.9
HG	Mercury	SM	MESS-3	0.091± 0.009	10	25	0.088	0.009
LI	Lithium	SM	MESS-3	73.6 ± 5.2	3	10	69.9	1.0
MN	Magnesium	SM	MESS-3	324 ± 12	3	10	303	3.9
NI	Nickel	SM	MESS-3	46.9 ± 2.2	3	10	45.3	0.82
PB	Lead	SM	MESS-3	21.1 ± 0.7	3	10	18.6	3.7
ZN	Zinc	SM	MESS-3	159 ± 8	3	10	144	1.9
ACNE	Acenaphthene	SM	1944	570 ± 30	11	20	304	26
ANT	Anthracene	SM	1944	1770 ± 330	12	20	1250	145
BAP	Benzo(a)pyrene	SM	1944	4300 ± 130	13	21	3592	1082
BBJF	Benzo(b+j)fluoranthene	SM	1944	5960 ± 608*	13	21	5492	1499
BGHIP	Benzo(ghi)perylene	SM	1944	2780 ± 100	13	21	2639	837
BAA	Benzo(a)anthracene	SM	1944	4720 ± 110	12	20	4517	406
CB101	CB101(IUPAC)	SM	1944	73.4 ± 2.5	6	19	68.7	9.9
CB105	CB105(IUPAC)	SM	1944	24.5 ± 1.1	6	19	24.8	4.4
CB118	CB118(IUPAC)	SM	1944	58.0 ± 4.3	6	19	57.8	9.3
CB138	CB138(IUPAC)	SM	1944	62.1 ± 3.0	6	19	65.7	10.1
CB153	CB153(IUPAC)	SM	1944	74.0 ± 2.9	6	19	69	9.9
CB156	CB156(IUPAC)	SM	1944	6.52 ± 0.66	5	16	7.8	0.9
CB180	CB180(IUPAC)	SM	1944	44.3 ± 1.2	6	19	42.0	2.7
CB209	CB209(IUPAC)	SM	1944	6.81 ± 0.33	6	19	7.48	1.42
CB28	CB28(IUPAC)	SM	1944	80.8 ± 2.7	6	19	78.7	6.4
CB52	CB52(IUPAC)	SM	1944	79.4 ± 2.0	6	19	74.2	7.4
CHR	Chrysene	SM	1944	4860 ± 100	13	21	4961	1281
DBA3A	Dibenz(a,c/a,h)anthracene	SM	1944	759 ± 70**	13	21	658	195
DDEPP	p,p'-DDE	SM	1944	86 ± 12	6	19	63	5.1
FLE	Fluorene	SM	1944	850 ± 30	11	20	363	38
FLU	Fluoranthene	SM	1944	8920 ± 320	12	20	8800	730
HCB	Hexaclorobenzene	SM	1944	6.03 ± 0.35	6	19	6.00	0.60
HCHA	alpha-HCH	SM	1944	2.0 ± 0.3	6	19	1.67	0.55
ICDP	Indeno(1,2,3-cd)pyrene	SM	1944	2780 ± 100	13	21	2354	789
NAP	Naphthalene	SM	1944	1650 ± 310	10	20	1173	118
PA	Phenanthrene	SM	1944	5270 ± 220	12	20	5125	355
PYR	Pyrene	SM	1944	9700±420	12	20	8692	737
TDEPP	p,p'-TDE = p,p'-DDD	SM	1944	108 ± 16	6	19	106	20

*) Calculated from separate values for **Benzo(b)fluoranthene** and **Benzo(j)fluoranthene**; respectively, $(3870 + 2090) \pm \sqrt{(420^2 + 440^2)}$

) Calculated from separate values for **Dibenz(a,c)anthracene and Dibenz(a,h)anthracene, $(335 + 424) \pm \sqrt{(13^2 + 69^2)}$

Comment on quality control results

In connection with a reanalysis of stored samples, a 7 year time series of PCB values for control sample analyses have been statistically analysed (**Figure 22**, Bakke *et al.* 2007b). The results show that the short term (within-day) fluctuations of values relative to the certified values has a standard deviation of about 7 % as RMS average over 6 components. In addition, there is a long-term variation; the variation between yearly averages have a standard deviation of about 9 %, and there is also a medium-term variation (within-year, between-days) of about the same size. The combined standard deviation is about 14 %. The between-year variation is not merely random fluctuations, but has a systematic pattern, with the first 1-2 years having generally larger values than the rest of the period, this indicates systematic changes in analysis procedures that might need to be taken into consideration in time trend analysis.

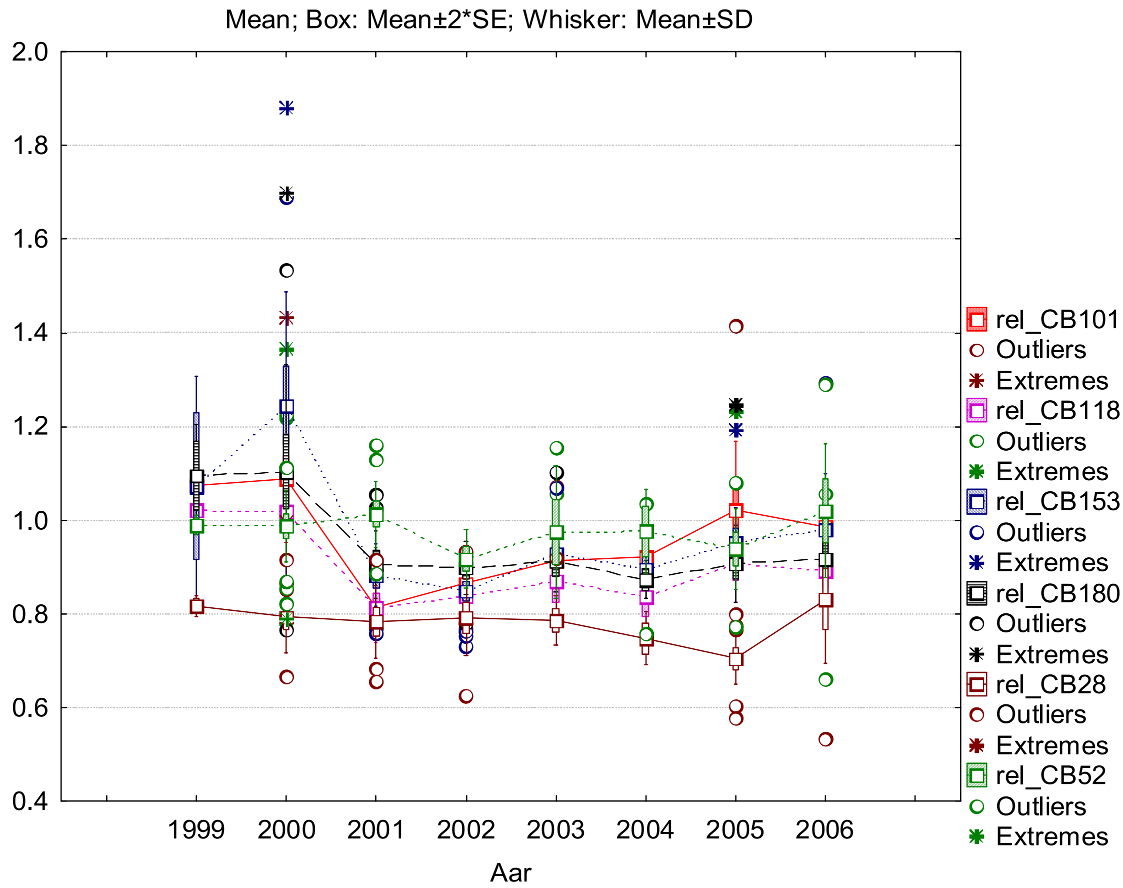


Figure 22. Measurements of CRM relative to certified values for 7 PCB congeners 1999-2006. Outliers are value >mean+8*SE or <mean-8*SE; and Extremes are values >mean+14*SE or <Mean-14*SE; where SE is Standard error of the mean. Analysis done using data analysis software system STATISTICA (version 7.1, StatSoft, Inc. (2006), www.statsoft.com).

Appendix B
Abbreviations

Abbreviation[1]	English	*Norwegian*	Param. group
ELEMENTS			
Al	aluminium	*aluminium*	I-MET
As	arsenic	*arsen*	I-MET
Cd	cadmium	*kadmium*	I-MET
Co	cobalt	*kobolt*	I-MET
Cr	chromium	*krom*	I-MET
Cu	copper	*kobber*	I-MET
Fe	iron	*jern*	I-MET
Hg	mercury	*kvikksølv*	I-MET
Li	lithium	*litium*	I-MET
Mn	manganese	*mangan*	I-MET
Ni	nickel	*nikkel*	I-MET
Pb	lead	*bly*	I-MET
Pb210	lead-210	*bly-210*	I-RNC
Se	selenium	*selen*	I-MET
Ti	titanium	*titan*	I-MET
Zn	zinc	*sink*	I-MET
METAL COMPOUNDS			
TBT	tributyltin	*tributyltinn*	O-MET
MBTIN	monobutyltin	*monobutyltinn*	O-MET
DBTIN	dibutyltin	*dibutyltinn*	O-MET
TBTIN	tributyltin	*tributyltinn*	O-MET
MPTIN	monophenyltin	*monofenyltinn*	O-MET
DPTIN	diphenyltin	*difenyltinn*	O-MET
TPTIN	triphenyltin	*trifenyltinn*	O-MET
PAHs			
PAH	polycyclic aromatic hydrocarbons	*polysykliske aromatiske hydrokarboner*	
ACNE [3]	acenaphthene	*acenaften*	PAH
ACNLE [3]	acenaphthylene	*acenaftylen*	PAH
ANT [3]	anthracene	*antracen*	PAH
BAA [3, 4]	benzo[*a*]anthracene	*benzo[a]antracen*	PAH
BAP [3, 4]	benzo[*a*]pyrene	*benzo[a]pyren*	PAH
BBF [3, 4]	benzo[*b*]fluoranthene	*benzo[b]fluoranten*	PAH
BBJKF [3, 4]	benzo[*b,j,k*]fluoranthene	*benzo[b,j,k]fluoranten*	PAH
BBJKF [3, 4]	benzo[b+j,k]fluoranthene	*benzo[b+j,k]fluoranten*	PAH
BBKF [3, 4]	benzo[*b+k*]fluoranthene	*benzo[b+k]fluoranten*	PAH
BEP	benzo[*e*]pyrene	*benzo[e]pyren*	PAH
BGHIP [3]	benzo[*ghi*]perylene	*benzo[ghi]perylen*	PAH
BIPN [2]	biphenyl	*bifenyl*	PAH
BJKF [3, 4]	benzo[*j,k*]fluoranthene	*benzo[j,k]fluorantren*	PAH
BKF [3, 4]	benzo[*k*]fluoranthene	*benzo[k]fluorantren*	PAH
CHR [3, 4]	chrysene	*chrysen*	PAH
CHRTR [3, 4]	chrysene+triphenylene	*chrysen+trifenylen*	PAH
COR	coronene	*coronen*	PAH
DBAHA [3, 4]	dibenz[*a,h*]anthracene	*dibenz[a,h]anthracen*	PAH
DBA3A [3, 4]	dibenz[*a,c/a,h*]anthracene	*dibenz[a,c/a,h]antracen*	PAH
DBP [4]	dibenzopyrenes	*dibenzopyren*	PAH
DBT	dibenzothiophene	*dibenzothiofen*	PAH
DBTC1	C_1-dibenzothiophenes	*C_1-dibenzotiofen*	PAH
DBTC2	C_2-dibenzothiophenes	*C_2-dibenzotiofen*	PAH
DBTC3	C_3-dibenzothiophenes	*C_3-dibenzotiofen*	PAH
FLE [3]	fluorene	*fluoren*	PAH
FLU [3]	fluoranthene	*fluoranten*	PAH
ICDP [3, 4]	indeno[*1,2,3-cd*]pyrene	*indeno[1,2,3-cd]pyren*	PAH
NAP [2]	naphthalene	*naftalen*	PAH
NAPC1 [2]	C_1-naphthalenes	*C_1-naftalen*	PAH
NAPC2 [2]	C_2-naphthalenes	*C_2-naftalen*	PAH
NAPC3 [2]	C_3-naphthalenes	*C_3-naftalen*	PAH
NAP1M [2]	1-methylnaphthalene	*1-metylnaftalen*	PAH
NAP2M [2]	2-methylnaphthalene	*2-metylnaftalen*	PAH
NAPD2 [2]	1,6-dimethylnaphthalene	*1,6-dimetylnaftalen*	PAH
NAPD3 [2]	1,5-dimethylnaphthalene	*1,5-dimetylnaftalen*	PAH
NAPDI [2]	2,6-dimethylnaphthalene	*2,6-dimetylnaftalen*	PAH

NAPT2 [2]	2,3,6-trimethylnaphthalene	*2,3,6-trimetylnaftalen*	PAH
NAPT3 [2]	1,2,4-trimethylnaphthalene	*1,2,4-trimetylnaftalen*	PAH
NAPT4 [2]	1,2,3-trimethylnaphthalene	*1,2,3-trimetylnaftalen*	PAH
NAPTM [2]	2,3,5-trimethylnaphthalene	*2,3,5-trimetylnaftalen*	PAH
NPD	Collective term for naphthalenes, phenanthrenes and dibenzothiophenes	*Sammebetegnelse for naftalen, fenantren og dibenzotiofens*	PAH
PA [3]	phenanthrene	*fenantren*	PAH
PAC1	C_1-phenanthrenes	*C_1-fenantren*	PAH
PAC2	C_2-phenanthrenes	*C_2-fenantren*	PAH
PAC3	C_3-phenanthrenes	*C_3-fenantren*	PAH
PAM1	1-methylphenanthrene	*1-metylfenantren*	PAH
PAM2	2-methylphenanthrene	*2-metylfenantren*	PAH
PADM1	3,6-dimethylphenanthrene	*3,6-dimetylfenantren*	PAH
PADM2	9,10-dimethylphenanthrene	*9,10-dimetylfenantren*	PAH
PER	perylene	*perylen*	PAH
PYR [3]	pyrene	*pyren*	PAH
DI-Σn	sum of "n" dicyclic "PAH"s (footnote 2)	*sum "n" disykliske "PAH" (fotnote 2)*	
P-Σn / P_S	sum "n" PAH (DI-Σn not included, footnote 3)	*sum "n" PAH (DI-Σn ikke inkludert, fotnot 3)*	
PK-Σn / PK_S	sum carcinogen PAHs (footnote 4)	*sum kreftfremkallende PAH (fotnote 4)*	
PAHΣΣ	DI-Σn + P-Σn etc.	*DI-Σn + P-Σn mm..*	
SPAH	"total" PAH, specific compounds not quantified (outdated analytical method)	*"total" PAH, spesifikk forbindelser ikke kvantifisert (foreldret metode)*	
BAP_P	% BAP of PAHΣΣ	*% BAP av PAHΣΣ*	
BAPPP	% BAP of P-Σn	*% BAP av P-Σn*	
BPK_P	% BAP of PK-Σn	*% BAP av PK-Σn*	
PKn_P	% PK-Σn of PAHΣΣ	*% PK-Σn av PAHΣΣ*	
PKnPP	% PK-Σn of P-Σn	*% PK-Σn av P-Σn*	
PCBs			
PCB	polychlorinated biphenyls	*polyklorerte bifenyler*	
CB	individual chlorobiphenyls (CB)	*enkelte klorobifenyl*	
CB28	CB28 (IUPAC)	*CB28 (IUPAC)*	OC-CB
CB31	CB31 (IUPAC)	*CB31 (IUPAC)*	OC-CB
CB44	CB44 (IUPAC)	*CB44 (IUPAC)*	OC-CB
CB52	CB52 (IUPAC)	*CB52 (IUPAC)*	OC-CB
CB77 [5]	CB77 (IUPAC)	*CB77 (IUPAC)*	OC-CB
CB81 [5]	CB81 (IUPAC)	*CB81 (IUPAC)*	OC-CB
CB95	CB95 (IUPAC)	*CB95 (IUPAC)*	OC-CB
CB101	CB101 (IUPAC)	*CB101 (IUPAC)*	OC-CB
CB105	CB105 (IUPAC)	*CB105 (IUPAC)*	OC-CB
CB110	CB110 (IUPAC)	*CB110 (IUPAC)*	OC-CB
CB118	CB118 (IUPAC)	*CB118 (IUPAC)*	OC-CB
CB126 [5]	CB126 (IUPAC)	*CB126 (IUPAC)*	OC-CB
CB128	CB128 (IUPAC)	*CB128 (IUPAC)*	OC-CB
CB138	CB138 (IUPAC)	*CB138 (IUPAC)*	OC-CB
CB149	CB149 (IUPAC)	*CB149 (IUPAC)*	OC-CB
CB153	CB153 (IUPAC)	*CB153 (IUPAC)*	OC-CB
CB156	CB156 (IUPAC)	*CB156 (IUPAC)*	OC-CB
CB169 [5]	CB169 (IUPAC)	*CB169 (IUPAC)*	OC-CB
CB170	CB170 (IUPAC)	*CB170 (IUPAC)*	OC-CB
CB180	CB180 (IUPAC)	*CB180 (IUPAC)*	OC-CB
CB194	CB194 (IUPAC)	*CB194 (IUPAC)*	OC-CB
CB209	CB209 (IUPAC)	*CB209 (IUPAC)*	OC-CB
CB-Σ7	CB: 28+52+101+118+138+153+180	*CB: 28+52+101+118+138+153+180*	
CB-ΣΣ	sum of CBs, includes CB-Σ7	*sum CBer, inkluderer CB-Σ7*	
TECBW	Sum of CB-toxicity equivalents after WHO model, see **TEQ**	*Sum CB- toksitets ekvivalenter etter WHO modell, se **TEQ***	
TECBS	Sum of CB-toxicity equivalents after SAFE model, see **TEQ**	*Sum CB-toksitets ekvivalenter etter SAFE modell, se **TEQ***	
DIOXINs			
TCDD	2, 3, 7, 8-tetrachloro-dibenzo dioxin	*2, 3, 7, 8-tetrakloro-dibenzo dioksin*	OC-DX

CDDST	Sum of tetrachloro-dibenzo dioxins	*Sum tetrakloro-dibenzo dioksiner*	
CDD1N	1, 2, 3, 7, 8-pentachloro-dibenzo dioxin	*1, 2, 3, 7, 8-pentakloro-dibenzo dioksin*	OC-DX
CDDSN	Sum of pentachloro-dibenzo dioxins	*Sum pentakloro-dibenzo dioksiner*	
CDD4X	1, 2, 3, 4, 7, 8-hexachloro-dibenzo dioxin	*1, 2, 3, 4, 7, 8-heksakloro-dibenzo dioksin*	OC-DX
CDD6X	1, 2, 3, 6, 7, 8-hexachloro-dibenzo dioxin	*1, 2, 3, 6, 7, 8-heksakloro-dibenzo dioksin*	OC-DX
CDD9X	1, 2, 3, 7, 8, 9-hexachloro-dibenzo dioxin	*1, 2, 3, 7, 8, 9-heksakloro-dibenzo dioksin*	OC-DX
CDDSX	Sum of hexachloro-dibenzo dioxins	*Sum heksakloro-dibenzo dioksiner*	
CDD6P	1, 2, 3, 4, 6, 7, 8-heptachloro-dibenzo dioxin	*1, 2, 3, 4, 6, 7, 8-heptakloro-dibenzo dioksin*	OC-DX
CDDSP	Sum of heptachloro-dibenzo dioxins	*Sum heptakloro-dibenzo dioksiner*	
CDDO	Octachloro-dibenzo dioxin	*Oktakloro-dibenzo dioksin*	OC-DX
PCDD	Sum of polychlorinated dibenzo-p-dioxins	*Sum polyklorinaterte-dibenzo-p-dioksiner*	
CDF2T	2, 3, 7, 8-tetrachloro-dibenzofuran	*2, 3, 7, 8-tetrakloro-dibenzofuran*	OC-DX
CDFST	Sum of tetrachloro-dibenzofurans	*Sum tetrakloro-dibenzofuraner*	
CDFDN	1, 2, 3, 7, 8/1, 2, 3, 4, 8-pentachloro-dibenzofuran	*1, 2, 3, 7, 8/1, 2, 3, 4, 8-pentakloro-dibenzofuran*	OC-DX
CDF2N	2, 3, 4, 7, 8-pentachloro-dibenzofuran	*2, 3, 4, 7, 8-pentakloro-dibenzofuran*	OC-DX
CDFSN	Sum of pentachloro-dibenzofurans	*Sum pentakloro-dibenzofuraner*	
CDFDX	1, 2, 3, 4, 7, 8/1, 2, 3, 4, 7, 9-hexachloro-dibenzofuran	*1, 2, 3, 4, 7, 8/1, 2, 3, 4, 7, 9-heksakloro-dibenzofuran*	OC-DX
CDF6X	1, 2, 3, 6, 7, 8-hexachloro-dibenzofuran	*1, 2, 3, 6, 7, 8-heksakloro-dibenzofuran*	OC-DX
CDF9X	1, 2, 3, 7, 8, 9-hexachloro-dibenzofuran	*1, 2, 3, 7, 8, 9-heksakloro-dibenzofuran*	OC-DX
CDF4X	2, 3, 4, 6, 7, 8-hexachloro-dibenzofuran	*2, 3, 4, 6, 7, 8-heksakloro-dibenzofuran*	OC-DX
CDFSX	Sum of hexachloro-dibenzofurans	*Sum heksakloro-dibenzofuraner*	
CDF6P	1, 2, 3, 4, 6, 7, 8-heptachloro-dibenzofuran	*1, 2, 3, 4, 6, 7, 8-heptakloro-dibenzofuran*	OC-DX
CDF9P	1, 2, 3, 4, 7, 8, 9-heptachloro-dibenzofuran	*1, 2, 3, 4, 7, 8, 9-heptakloro-dibenzofuran*	OC-DX
CDFSP	Sum of heptachloro-dibenzofurans	*Sum heptakloro-dibenzofuraner*	OC-DX
CDFO	Octachloro-dibenzofurans	*Octakloro-dibenzofuran*	OC-DX
PCDF	Sum of polychlorinated dibenzo-furans	*Sum polyklorinated dibenzo-furaner*	
CDDFS	Sum of PCDD and PCDF	*Sum PCDD og PCDF*	
TCDNN	Sum of TCDD-toxicity equivalents after Nordic model, see **TEQ**	*Sum TCDD- toksitets ekvivalenter etter Nordisk modell, se **TEQ***	
TCDDI	Sum of TCDD-toxicity equivalents after international model, see **TEQ**	*Sum TCDD-toksitets ekvivalenter etter internasjonale modell, se **TEQ***	
PESTICIDES			
ALD	aldrin	*aldrin*	OC-DN
DIELD	dieldrin	*dieldrin*	OC-DN
ENDA	endrin	*endrin*	OC-DN
CCDAN	cis-chlordane (=α-chlordane)	*cis-klordan (=α-klordan)*	OC-DN
TCDAN	trans-chlordane (=γ-chlordane)	*trans-klordan (=γ-klordan)*	OC-DN
OCDAN	oxy-chlordane	*oksy-klordan*	OC-DN
TNONC	trans-nonachlor	*trans-nonaklor*	OC-DN
TCDAN	trans-chlordane	*trans-klordan*	OC-DN
OCS	octachlorostyrene	*oktaklorstyren*	OC-CL
QCB	pentachlorobenzene	*pentaklorbenzen*	OC-CL
DDD	dichlorodiphenyldichloroethane 1,1-dichloro-2,2-bis-(4-chlorophenyl)ethane	*diklordifenyldikloretan 1,1-dikloro-2,2-bis-(4-klorofenyl)etan*	OC-DD
DDE	dichlorodiphenyldichloroethylene (principle metabolite of DDT) 1,1-dichloro-2,2-bis-(4-chlorophenyl)ethylene*	*diklordifenyldikloretylen (hovedmetabolitt av DDT) 1,1-dikloro-2,2-bis-(4-klorofenyl)etylen*	OC-DD

DDT	dichlorodiphenyltrichloroethane 1,1,1-trichloro-2,2-bis-(4-chlorophenyl)ethane	*diklordifenyltrikloretan 1,1,1-trikloro-2,2-bis-(4-klorofenyl)etan*	OC-DD
DDEOP	o,p'-DDE	*o,p'-DDE*	OC-DD
DDEPP	p,p'-DDE	*p,p'-DDE*	OC-DD
DDTOP	o,p'-DDT	*o,p'-DDT*	OC-DD
DDTPP	p,p'-DDT	*p,p'-DDT*	OC-DD
TDEPP	p,p'-DDD	*p,p'-DDD*	OC-DD
DDTEP	p,p'-DDE + p,p'-DDT	*p,p'-DDE + p,p'-DDT*	OC-DD
DD-nΣ	sum of DDT and metabolites, n = number of compounds	*sum DDT og metabolitter, n = antall forbindelser*	OC-DD
HCB	hexachlorobenzene	*heksaklorbenzen*	OC-CL
HCHG	Lindane γ HCH = gamma hexachlorocyclohexane (γ BHC = gamma benzenehexachloride, outdated synonym)	*Lindan γ HCH = gamma heksaklorsykloheksan (γ BHC = gamma benzenheksaklorid, foreldret betegnelse)*	OC-HC
HCHA	α HCH = alpha HCH	*α HCH = alpha HCH*	OC-HC
HCHB	β HCH = beta HCH	*β HCH = beta HCH*	OC-HC
HC-nΣ	sum of HCHs, n = count	*sum av HCHs, n = antall*	
EOCl	extractable organically bound chlorine	*ekstraherbart organisk bundet klor*	OC-CL
EPOCl	extractable persistent organically bound chlorine	*ekstraherbart persistent organisk bundet klor*	OC-CL
PBDEs			
PBDE	polybrominated diphenyl ethers	*polybromerte difenyletere*	OC-BB
BDE	brominated diphenyl ethers		OC-BB
BDE-28	2,4,4'-tribromodiphenyl ether	*2,4,4'-tribromdifenyleter*	OC-BB
BDE-47	2,2',4,4'-tetrabromodiphenyl ether	*2,2',4,4'-tetrabromdifenyleter*	OC-BB
BDE-49*	2,2',4,5'- tetrabromodiphenyl ether	*2,2',4,5'- tetrabromdifenyleter*	OC-BB
BDE-66*	2,3',4',6- tetrabromodiphenyl ether	*2,3',4',6- tetrabromdifenyleter*	OC-BB
BDE-71*	2,3',4',6- tetrabromodiphenyl ether	*2,3',4',6- tetrabromdifenyleter*	OC-BB
BDE-77	3,3',4,4'-tetrabromodiphenyl ether	*3,3',4,4'-tetrabromdifenyleter*	OC-BB
BDE-85	2,2',3,4,4'-pentabromodiphenyl ether	2,2',3,4,4'-pentabromdifenyleter	OC-BB
BDE-99	2,2',4,4',5-pentabromodiphenyl ether	*2,2',4,4',5-pentabromdifenyleter*	OC-BB
BDE-100	2,2',4,4',6-pentabromodiphenyl ether	*2,2',4,4',6-pentabromdifenyleter*	OC-BB
BDE-119	2,3',4,4',6-pentabromodiphenyl ether	*2,3',4,4',6-pentabromdifenyleter*	OC-BB
BDE-138	2,2',3,4,4',5'-hexabromodiphenyl ether	*2,2',3,4,4',5'-heksabromdifenyleter*	OC-BB
BDE-153	2,2',4,4',5,5'-hexabromodiphenyl ether	*2,2',4,4',5,5'-heksabromdifenyleter*	OC-BB
BDE-154	2,2',4,4',5,6'-hexabromodiphenyl ether	*2,2',4,4',5,6'-heksabromdifenyleter*	OC-BB
BDE-183	2,2',3,4,4',5',6-heptabromodiphenyl ether	*2,2',3,4,4',5',6-heptabromdifenyleter*	OC-BB
BDE-205	2,2',3,3',4,4',5,5',6'-nonabromodiphenyl ether	*2,2',3,3',4,4',5,5',6'-nonabromdifenyleter*	OC-BB
BDE-209	Decabromodiphenyl ether	*Dekabromdifenyleter*	OC-BB
PFAS	perfluorinated alkylated aubstances	perfluoralkylertestoffer	
PFBS	perfluorobutane sulfonate	perfluorbutan sulfonat	PFAS
PFHxA	perfluorohexanoic acid	perfluorhexansyre	PFAS
PFHpA	perfluoroheptanoic acid	perfluorheptansyre	PFAS
PFOA	perfluorooctanoic acid	perfluoroktansyre	PFAS
PFNA	perfluorononanoic acid	perfluornonansyre	PFAS
PFOS	perfluoroctanoic sulfonate	perfluoroktansulfonat	PFAS
NTOT	total organic nitrogen	*total organisk nitrogen*	I-NUT
CTOT	total organic carbon	*total organisk karbon*	O-MAJ
CORG	organic carbon	*organisk karbon*	O-MAJ
GSAMT	grain size	*kornfordeling*	P-PHY
MOCON	moisture content	*vanninnhold*	P-PHY

INSTITUTES		
EFDH	Eurofins [DK]	*Eurofins [DK]*
FIER	Institute for Nutrition, Fisheries Directorate	*Fiskeridirektoratets Ernæringsinstitutt*
FORC	FORCE Institutes, Div. for Isotope Technique and Analysis [DK]	*FORCE Institutterne, Div. for Isotopteknik og Analyse [DK]*
GALG	GALAB Laboratories Gmbh [D]	*GALAB Laboratories Gmbh [D]*
IFEN	Institute for Energy Technology	*Institutt for energiteknikk*
IMRN	Institute of Marine Research (IMR)	*Havforskningsinstituttet*
NACE	Nordic Analytical Center	*Nordisk Analyse Center*
NILU	Norwegian Institute for Air Research	*Norsk institutt forluftforskning*
NIVA	Norwegian Institute for Water Research	*Norsk institutt for vannforskning*
SERI	Swedish Environmental Research Institute	*Institutionen för vatten- och luftvårdsforskning*
SIIF	Fondation for Scientific and Industrial Research at the Norwegian Institute of Technology - SINTEF (a division, previously: Center for Industrial Research SI)	*Stiftelsen for industriell og teknisk forskning ved Norges tekniske høgskole- SINTEF (en avdeling, tidligere: Senter for industriforskning SI)*
SINT		
VETN	Norwegian Veterinary Institute	*Veterinærinstituttet*
VKID	Water Quality Institute [DK]	*Vannkvalitetsintitutt [DK]*

[1]) After: ICES Environmental Data Reporting Formats. International Council for the Exploration of the Sea. July 1996 and supplementary codes related to non-ortho and mono-ortho PCBs and “dioxins” (ICES pers. comm.)

[2]) Indicates "PAH" compounds that are dicyclic and not truly PAHs typically identified during the analyses of PAH, include naphthalenes and "biphenyls".

[3]) Indicates the sum of tri- to hexacyclic PAH compounds named in EPA protocol 8310 minus naphthalene (dicyclic), so that the SFT classification system can be applied

[4]) Indicates PAH compounds potentially cancerogenic for humans according to IARC (1987, updated 14.August 2007 at http://monographs.iarc.fr/ENG/Classification/crthgr01.php), i.e., categories 1, 2A, and 2B (are, possibly and probably carcinogenic). NB.: the update inlcludes Chrysene as cancerogenic and hence, KPAH with Chrysene should not be used in SFT’s classification system for this sum-variable (Molvær *et al.* 1997).

[5]) Indicates non ortho- co-planer PCB compounds i.e., those that lack Cl in positions 1, 1', 5, and 5'

*) The Pesticide Index, second edition. The Royal Society of Chemistry, 1991.

Other abbreviations *andre forkortelser*

	English	*Norwegian*
TEQ	"Toxicity equivalency factors" for the most toxic compounds within the following groups: • polychlorinated dibenzo-p-dioxins and dibenzofurans (**PCDD/PCDFs**). Equivalents calculated after Nordic model (Ahlborg 1989) [1] or international model (Int./EPA, cf. Van den Berg *et al.*, 1998) [2] • non-ortho and mono-ortho substituted chlorobiphenyls after WHO model (Ahlborg *et al.*, 1994) [3] or Safe (1994, cf. NILU pers. comm.)	*"Toxisitetsekvivalentfaktorer" for de giftigste forbindelsene innen følgende grupper.* • *polyklorerte dibenzo-p-dioksiner og dibenzofuraner (**PCDD/PCDF**). Ekvivalentberegning etter nordisk modell (Ahlborg 1989) [1] eller etter internasjonal modell (Int./EPA, cf. Van den Berg et al. 1998) [2]* • *non-orto og mono-orto substituerte klorobifenyler etter WHO modell (Ahlborg et al., 1994) [3] eller Safe (1994, cf. NILU pers. medd.)*
ppm	parts per million, mg/kg	*deler pr. milliondeler, mg/kg*
ppb	parts per billion, μg/kg	*deler pr. milliarddeler, μg/kg*
ppp	parts per trillion, ng/kg	*deler pr. tusen-milliarddeler, ng/kg*
d.w.	dry weight basis	*tørrvekt basis*
w.w.	wet weight or fresh weight basis	*våtvekt eller friskvekt basis*

[1]) Ahlborg, U.G., 1989. Nordic risk assessment of PCDDs and PCDFs. Chemosphere 19:603-608.

[2]) Van den Berg, Birnbaum, L, Bosveld, A. T. C. and co-workers, 1998. Toxic equivalency factors (TEFs) for PCBs, PCDDs, PCDFs for humans and wildlife. Environ Hlth. Perspect. 106:775-792.

[3]) Ahlborg, U.G., Becking G.B., Birnbaum, L.S., Brouwer, A, Derks, H.J.G.M., Feely, M., Golor, G., Hanberg, A., Larsen, J.C., J.C., Liem, A.K.G., Safe, S.H., Schlatter, C., Wärn, F., Younes, M., Yrjänheikki, E., 1994. Toxic equivalency factors for dioxin-like PCBs. Report on a WHO-ECEH and IPSC consultation , December 1993. Chemosphere 28:1049-1067.

Appendix C
Analytical overview, sediment and biota

Sorted by:
Contaminant, year, laboratory, intercalibration

Abbreviations are defined in Appendix B and Appendix D

Contamin.	**Contaminant defined in Appendix B**
Mon. Year	**Monitoring year**
Lab.	**Analytical laboratory (cf. Appendix B)**
Intercalibr. +basis	**Intercalibration exercise (cf. Appendix D) and basis where W = wet weight and D = dry weight .**
Detect limit	**"Normal" detection limit**
Count below d.lim	**Number of analyses below normal detection limit**
N (<) above d.lim	**Number of analyses where detection limit was higher than normal.**

Analytical overview – sediment

Contamin.	Mon. Year-Lab.	Inter-calibr.	+basis	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	N (<) below d.lim
ACNE	1992-NIVA		D	369	1	23			
	1994-NIVA		D	369	1	24	23		21
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
ACNE	2004-NIVA	QW	D	369	1	156	1	44	
	2006-NIVA	R44_Ex701_MS-3	D	369	1	20		19	
ACNLE	1992-NIVA		D	369	1	23			
	1994-NIVA		D	369	1	24	23		20
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
	2004-NIVA	QW	D	369	1	156	1	56	1
	2006-NIVA	R44_Ex701_MS-3	D	369	1	20		20	
AL	1987-NIVA		D	352	2500	28			
	1990-NIVA		D	352	2500	128			
AL	2004-NIVA	QT	D	355	10000	173			
	2006-NIVA	R44_Ex699_MS-1	D	355	10000	30			
ALD	1990-IMRN		D	760	0.05	14	5		
ANT	1990-IMRN		D	769	1	14			
	1992-NIVA		D	369	1	24			
	1994-NIVA		D	369	1	24	22		19
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
ANT	2004-NIVA		D	369	1	156		27	
	2006-NIVA	R44_Ex701_MS-3	D	369	1	20		15	
AS	1994-NIVA		D	354	500	12			
AS	2004-NIVA	QT	D	355	15000	172	21		4
	2006-NIVA		D	355	15000	30	29		25
BAP	1990-IMRN		D	769	1	14			
	1992-NIVA		D	369	1	23			
	1994-NIVA		D	369	1	24	12		12
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
BAP	2004-NIVA	QW	D	369	1	156		2	
	2006-NIVA	R44_Ex701_MS-3	D	369	1	20		3	
BBF	1992-NIVA		D	369	1	23			
	1994-NIVA		D	369	1	24	9		8
BBF	2004-NIVA	QW	D	369	0.5	156			
BBJF	2006-NIVA		D	369	miss	20			
BBJKF	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
BBKF	1990-IMRN		D	769	1	14			
BEP	1990-IMRN		D	769	1	14			
	1992-NIVA		D	369	1	23			
	1994-NIVA		D	369	1	24	8		8
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
BEP	2006-NIVA	R44_Ex701_MS-3	D	369	miss	20			
BGHIP	1990-IMRN		D	769	1	14			
	1992-NIVA		D	369	1	24			
	1994-NIVA		D	369	1	24	9		6
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
	2004-NIVA	QW	D	369	1	156			
	2006-NIVA	R44_Ex701_MS-3	D	369	1	20			
BIPN	1992-NIVA		D	369	1	23			
	1994-NIVA		D	369	1	24	21		19
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
BJKF	1992-NIVA		D	369	1	14			
	1994-NIVA		D	369	1	24	11		11
BJKF	2004-NIVA		D	369	0.5	92		1	
BKF	2006-NIVA	R44_Ex701_MS-3	D	369	miss	20			
BAA	1990-IMRN		D	769	1	14			
	1992-NIVA		D	369	1	24			
	1994-NIVA		D	369	1	24	11		11
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
BAA	2004-NIVA	QW	D	369	1	156		3	
	2006-NIVA	R44_Ex701_MS-3	D	369	1	20		3	
CB101	1990-IMRN	8B	D	760	0.05	14			
	1992-NIVA	8C	D	360	0.05	24		24	
	1994-NIVA	8Z	D	360	0.05	24		12	
	1996-NIVA		D	360	0.2	10			
	1997-NIVA		D	360	0.2	18			
	2004-NIVA	QV	D	360	0.2	152		1	
	2006-NIVA	R44_Ex700_MS-2	D	360	0.2	20		20	
CB105	1990-IMRN		D	760	0.05	14			
	1992-NIVA	8C	D	360	0.05	24		24	
	1994-NIVA	8Z	D	360	0.05	24		24	

Contamin.	Mon. Year	Lab.	Inter- calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	N (<) below d.lim
	1996-NIVA			D	360	0.2	10			
	1997-NIVA			D	360	0.2	18			
	2004-NIVA		QV	D	360	0.2	146		1	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.2	20		20	
CB118	1990-IMRN		8B	D	760	0.05	14			
	1992-NIVA		8C	D	360	0.05	24		24	
	1994-NIVA		8Z	D	360	0.05	24		13	
	1996-NIVA			D	360	0.2	10			
	1997-NIVA			D	360	0.2	17			
	2004-NIVA		QV	D	360	0.2	155		1	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.2	20		20	
CB128	1990-IMRN			D	760	0.05	14	1		
CB138	1990-IMRN		8B	D	760	0.05	14			
	1992-NIVA		8C	D	360	0.05	24		21	
	1994-NIVA		8Z	D	360	0.05	24		12	
	1996-NIVA			D	360	0.2	10			
	1997-NIVA			D	360	0.2	18			
	2004-NIVA		QV	D	360	0.2	153		1	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.2	20		20	
CB149	1990-IMRN			D	760	0.05	14			
CB153	1990-IMRN		8B	D	760	0.05	14			
	1992-NIVA		8C	D	360	0.05	24		21	
	1994-NIVA		8Z	D	360	0.05	24		12	
	1996-NIVA			D	360	0.05	10			
	1997-NIVA			D	360	0.05	18			
	2004-NIVA		QV	D	360	0.05	82		19	
CB156	1990-IMRN			D	760	0.05	14	4		
	1992-NIVA			D	360	0.05	24		24	
	1994-NIVA		8Z	D	360	0.05	24		22	
	1996-NIVA			D	360	0.2	10	1		
	1997-NIVA			D	360	0.2	18	2		1
	2004-NIVA			D	360	0.2	154		1	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.2	20		20	
CB170	1990-IMRN			D	760	0.05	14			
CB180	1990-IMRN		8B	D	760	0.05	14			
	1992-NIVA		8C	D	360	0.05	24		23	
	1994-NIVA		8Z	D	360	0.05	24		13	
	1996-NIVA			D	360	0.2	10			
	1997-NIVA			D	360	0.2	18			
	2004-NIVA		QV	D	360	0.2	156		1	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.2	20		20	
CB209	1992-NIVA		8C	D	360	0.05	24		24	
	1994-NIVA		8C	D	360	0.05	24		12	
	1996-NIVA			D	360	0.2	10	1		1
	1997-NIVA			D	360	0.2	18	1		1
	2004-NIVA			D	360	0.2	152		5	
	2006-NIVA			D	360	0.2	20		20	
CB28	1990-IMRN		8B	D	760	0.05	14	5		
	1992-NIVA		8C	D	360	0.05	23		23	
	1994-NIVA		8Z	D	360	0.05	24		2	
	1996-NIVA			D	360	0.2	10			
	1997-NIVA			D	360	0.2	18			
CB28	2004-NIVA		QV	D	360	0.2	152		1	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.2	20		20	
CB31	1990-IMRN		8B	D	760	0.05	14	6		
CB52	1990-IMRN		8B	D	760	0.05	14			
	1992-NIVA		8C	D	360	0.05	24		24	
	1994-NIVA		8Z	D	360	0.05	24		2	
	1996-NIVA			D	360	0.2	10			
	1997-NIVA			D	360	0.2	18			
CB52	2004-NIVA		QV	D	360	0.2	133			
	2006-NIVA		R44_Ex700_MS-2	D	360	0.2	20		20	
CD	1986-NIVA		7C	D	352	50	24			
	1987-NIVA		7C	D	352	50	25		2	
	1990-NIVA			D	353	50	14	1		
	1990-NIVA		7E	D	353	50	114	12		1
	1992-NIVA		7E	D	353	50	107			
	1994-NIVA		7Z	D	353	50	114			
	1996-NIVA			D	353	50	23			
	1997-NIVA			D	353	50	27			
CD	2004-NIVA			D	353	50	173	3		
	2006-NIVA		R44_Ex699_MS-1	D	353	0.05	30			
CHR	1990-IMRN			D	769	1	14			
	1992-NIVA			D	369	1	24			
CHR	2006-NIVA			D	369	miss	20			
CHRTR	1994-NIVA			D	369	0.5	24			
	1996-NIVA			D	369	0.5	10			
	1997-NIVA			D	369	0.5	18			
	2004-NIVA		QW	D	369	0.5	156		2	
COR	1992-NIVA			D	369	1	24			
CORG	1986-NIVA			D	390	1000000	18			
	1987-NIVA			D	390	1000000	28			
	1990-NIVA			D	390	200000	128			

Contamin.	Mon. Year	Lab.	Inter- calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	N (<) below d.lim
	1992-NIVA			D	390	200000	107			
	1994-NIVA			D	390	200000	114			
	1996-NIVA			D	390	200000	23			
	1997-NIVA			D	390	200000	27			
CORG	2004-NIVA			D	390	200000	173			
	2006-NIVA		R44_Ex699_MS-1	D	390	200000	30			
CR	1994-NIVA		7Z	D	353	250	12			
CR	2004-NIVA		QT	D	355	1500	173			
	2006-NIVA		R44_Ex699_MS-1	D	355	1500	30			
CTOT	1994-NIVA			D	390	1000000	12			
	1996-NIVA			D	390	1000000	23			
	1997-NIVA			D	390	1000000	27			
CU	1986-NIVA		7C	D	351	10	24			
	1987-NIVA		7C	D	351	10	28			
	1990-NIVA		7E	D	351	10	128			
	1992-NIVA		7E	D	351	10	107			
	1994-NIVA		7Z	D	351	10	114			
	1996-NIVA			D	351	10	23			
	1997-NIVA			D	351	10	27			
CU	2004-NIVA		QT	D	355	1000	173			
	2006-NIVA		R44_Ex699_MS-1	D	355	1000	30			
DBA3A	1992-NIVA			D	369	1	24			
	1994-NIVA			D	369	1	23	11		11
	1996-NIVA			D	369	1	10			
	1997-NIVA			D	369	1	18			
	2004-NIVA		QW	D	369	1	156		20	
	2006-NIVA		R44_Ex700_MS-2	D	369	1	20		20	
DBAHA	1990-IMRN			D	769	1	14			
DBP	1992-NIVA			D	369	1	24			
DBT	1990-IMRN			D	769	1	14			
	1996-NIVA			D	369	1	10			
	1997-NIVA			D	369	1	18			
DBT	2004-NIVA		QW	D	369	1	156		40	
	2006-NIVA			D	369	1	20		17	
DBTC1	1990-IMRN			D	769	1	14			
	2004-NIVA			D	369	0.5	156		50	
	2006-NIVA			D	369	0.5	20		19	
DBTC2	1990-IMRN			D	769	1	14			
	2004-NIVA			D	369	0.5	156		57	
	2006-NIVA			D	369	0.5	20		18	
DBTC3	1990-IMRN			D	769	1	14			
	2004-NIVA			D	369	0.5	156		63	
	2006-NIVA			D	369	0.5	20		18	
DBTIN	2004-NIVA			D	370	0.26	141		23	
	2006-NIVA			D	370	0.26	30		26	
DDEOP	1990-IMRN			D	760	0.05	14			
DDEPP	1990-IMRN			D	760	0.05	14			
	1992-NIVA			D	360	0.05	24		22	
	1994-NIVA		8Z	D	360	0.05	24		12	
	1996-NIVA			D	360	0.05	10			
	1997-NIVA			D	360	0.05	18			
	2004-NIVA		QV	D	360	0.05	151		99	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.05	20		20	
DDTOP	1990-IMRN			D	760	0.05	14	2		
DDTPP	1990-IMRN			D	760	0.05	14			
	1996-NIVA			D	360	0.7	10		5	
	1997-NIVA			D	360	0.7	18		3	
	2006-NIVA			D	360	miss	20		20	
DPTIN	2004-NIVA			D	370	0.22	128		64	
	2006-NIVA			D	370	0.22	30		30	
FLE	1990-IMRN			D	769	1	14			
	1992-NIVA			D	369	1	24			
	1994-NIVA			D	369	1	24	23		18
	1996-NIVA			D	369	1	10			
	1997-NIVA			D	369	1	18			
FLE	2004-NIVA		QW	D	369	1	156		32	
	2006-NIVA		R44_Ex701_MS-3	D	369	1	20		17	
FLU	1990-IMRN			D	769	1	14			
	1992-NIVA			D	369	1	24			
	1994-NIVA			D	369	1	24	10		10
	1996-NIVA			D	369	1	10			
	1997-NIVA			D	369	1	18			
FLU	2004-NIVA		QW	D	369	1	156		1	
	2006-NIVA		R44_Ex701_MS-3	D	369	1	20			
GSAMT	1986-NIVA			D	392	miss	24			
	1987-NIVA			D	392	miss	28			
	1990-NIVA			D	392	miss	197			
	1992-NIVA			D	392	miss	187			
	1994-NIVA			D	392	miss	204			
	1996-NIVA			D	392	miss	31			
	1996-VKID			D	652	miss	35			
	1997-NIVA			D	392	miss	45			
	1997-VKID			D	652	miss	47			

Contamin.	Mon. Year	Lab.	Inter-calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	N (<) below d.lim
	2004-NIVA			D	392	miss	344			
	2006-NIVA			D	392	miss	60			
HCB	1990-IMRN			D	760	0.05	14			
	1992-NIVA			D	360	0.05	24		18	
	1994-NIVA		8Z	D	360	0.05	24		10	
	1996-NIVA			D	360	0.1	10			
	1997-NIVA			D	360	0.1	18			
HCB	2004-NIVA			D	360	0.1	141		116	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.1	20		20	
HCHA	1990-IMRN			D	760	0.05	14	4		
	1992-NIVA			D	360	0.05	24		24	
	1994-NIVA		8Z	D	360	0.05	24		23	
	1996-NIVA			D	360	0.2	10	2		1
	1997-NIVA			D	360	0.2	18	1		1
HCHA	2004-NIVA			D	360	0.2	148		4	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.2	20		20	
HCHB	1990-IMRN			D	760	0.05	14	3		
HCHG	1990-IMRN			D	760	0.05	14	4		
	1992-NIVA			D	360	0.05	24		24	
	1994-NIVA		8Z	D	360	0.05	24		15	
	1996-NIVA			D	360	0.2	10	1		1
	1997-NIVA			D	360	0.2	18	1		1
HCHG	2004-NIVA		QV	D	360	0.2	149		7	
HG	1986-NIVA		7C	D	350	10	24			
	1987-NIVA		7C	D	350	10	28			
	1990-NIVA		7E	D	350	10	128			
	1992-NIVA		7E	D	350	10	107			
	1994-NIVA		7Z	D	350	10	114	2		
	1996-NIVA			D	350	10	23			
	1997-NIVA			D	350	10	27			
HG	2004-NIVA			D	350	10	173	7		
	2006-NIVA		R44_Ex699_MS-1	D	350	10	30	2		
ICDP	1990-IMRN			D	769	1	14			
	1992-NIVA			D	369	1	24			
	1994-NIVA			D	369	1	24	12		9
	1996-NIVA			D	369	1	10			
	1997-NIVA			D	369	1	18			
ICDP	2004-NIVA		QW	D	369	1	156			
	2006-NIVA		R44_Ex701_MS-3	D	369	1	20			
LI	1990-NIVA		7E	D	353	5000	14			
	1992-NIVA		7E	D	353	5000	107			
	1994-NIVA		7E	D	353	5000	114			
	1996-NIVA			D	353	5000	23			
	1997-NIVA			D	353	5000	27			
LI	2004-NIVA		QT	D	355	1000	173			
	2006-NIVA		R44_Ex699_MS-1	D	355	1000	30			
MBTIN	2004-NIVA			D	370	0.34	142		32	
	2006-NIVA			D	370	0.34	30		23	
MN	2004-NIVA		QT	D	355	300	172			
	2006-NIVA		R44_Ex699_MS-1	D	355	300	30			
MOCON	1990-NIVA			D	392	1000000000	117			
	1992-NIVA			D	392	1000000000	56			
	1994-NIVA			D	392	1000000000	62			
	1996-NIVA			D	392	1000000000	31			
	1996-VKID			D	654	1000000000	35			
	1997-VKID			D	654	1000000000	47			
	2004-NIVA			D	392	1000000000	173			
	2006-NIVA			D	392	1000000000	20			
MPTIN	2004-NIVA			D	370	0.3	118		65	
	2006-NIVA			D	370	0.3	30		30	
NAP	1990-IMRN			D	769	1	14			
	1992-NIVA			D	369	1	23			
	1994-NIVA			D	369	1	24	18		18
	1996-NIVA			D	369	1	10			
	1997-NIVA			D	369	1	18			
NAP	2004-NIVA		QW	D	369	1	154		27	
	2006-NIVA		R44_Ex701_MS-3	D	369	1	20		1	
NAP1M	1992-NIVA			D	369	1	23			
	1994-NIVA			D	369	1	24	19		16
	1996-NIVA			D	369	1	10			
	1997-NIVA			D	369	1	18			
NAP2M	1992-NIVA			D	369	1	23			
	1994-NIVA			D	369	1	24	17		16
	1996-NIVA			D	369	1	10			
	1997-NIVA			D	369	1	18			
NAPC1	1990-IMRN			D	769	1	14			
	2004-NIVA			D	369	2	156		15	
	2006-NIVA			D	369	2	20		20	
NAPC2	1990-IMRN			D	769	1	14			
	2004-NIVA			D	369	2	156		40	
	2006-NIVA			D	369	2	20		10	
NAPC3	1990-IMRN			D	769	1	14			
	2004-NIVA			D	369	2	156		28	

Contamin.	Mon. Year Lab.	Inter- calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	N (<) below d.lim
	2006-NIVA		D	369	2	20		9	
NAPD2	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
NAPD3	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
NAPDI	1992-NIVA		D	369	1	23			
	1994-NIVA		D	369	1	24	18		15
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
NAPT2	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
NAPT3	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
NAPT4	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
NAPTM	1992-NIVA		D	369	1	23			
	1994-NIVA		D	369	1	24	24		24
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
NI	1994-NIVA	7Z	D	353	5000	12			
NI	2004-NIVA	QT	D	355	2000	173			
	2006-NIVA	R44_Ex699_MS-1	D	355	2000	30			
NTOT	1994-NIVA		D	390	1000000	114			
	1996-NIVA		D	390	1000000	23			
	1997-NIVA		D	390	1000000	27			
NTOT	2004-NIVA		D	390	1000000	173			
	2006-NIVA		D	390	1000000	30			
OCS	1992-NIVA		D	360	0.05	24		24	
	1994-NIVA		D	360	0.05	24		24	
	1996-NIVA		D	360	0.1	10			
	1997-NIVA		D	360	0.1	18	1	1	1
OCS	2004-NIVA		D	360	0.1	152		142	
	2006-NIVA		D	360	0.1	17		16	
PA	1990-IMRN		D	769	1	14			
	1992-NIVA		D	369	1	24			
	1994-NIVA		D	369	1	24	11		8
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
PA	2004-NIVA	QW	D	369	1	156		2	
	2006-NIVA	R44_Ex701_MS-3	D	369	1	20			
PAC1	1990-IMRN		D	769	1	14			
PAC1	2004-NIVA		D	369	2	156		14	
	2006-NIVA		D	369	2	20		5	
PAC2	1990-IMRN		D	769	1	14			
PAC2	2004-NIVA		D	369	2	156		28	
	2006-NIVA		D	369	2	20		18	
PAC3	2004-NIVA		D	369	2	156		55	
	2006-NIVA		D	369	2	20		16	
PADM1	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
PADM2	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
PAM1	1992-NIVA		D	369	1	24			
	1994-NIVA		D	369	1	24	17		9
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
PAM2	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
PB	1986-NIVA	7C	D	352	250	24			
	1987-NIVA	7C	D	352	250	28			
	1990-NIVA		D	353	250	14			
	1990-NIVA	7E	D	353	250	114			
	1992-NIVA	7E	D	353	250	107			
	1994-NIVA	7Z	D	353	250	114			
	1996-NIVA		D	353	250	23			
	1997-NIVA		D	353	250	27			
PB	2004-NIVA	QT	D	355	10000	173			
	2006-NIVA	R44_Ex699_MS-1	D	355	10000	30	2		1
PB210	1990-VKID		D	650	~1	70	26		
	1992-VKID		D	650	~1	56	15		
	1994-VKID		D	650	~1	62	25		
	1996-VKID		D	650	~1	11			
	1997-VKID		D	650	~1	21	3		
PER	1990-IMRN		D	769	1	14			
	1992-NIVA		D	369	1	23			
	1994-NIVA		D	369	1	24	3		2
	1996-NIVA		D	369	1	10			
	1997-NIVA		D	369	1	18			
PER	2006-NIVA	R44_Ex701_MS-3	D	369	miss	20		3	
PYR	1990-IMRN		D	769	1	14			
	1992-NIVA		D	369	1	24			
	1994-NIVA		D	369	1	24	12		10
	1996-NIVA		D	369	1	10			

Contamin.	Mon. Year	Lab.	Inter-calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	N (<) below d.lim
	1997-NIVA			D	369	1	18			
PYR	2004-NIVA		QW	D	369	1	156		1	
	2006-NIVA		R44_Ex701_MS-3	D	369	1	20		5	
QCB	1992-NIVA			D	360	0.05	24		22	
	1994-NIVA			D	360	0.05	24		22	
	1996-NIVA			D	360	0.05	10			
	1997-NIVA			D	360	0.05	18			
QCB	2004-NIVA			D	360	0.05	142		100	
	2006-NIVA			D	360	0.05	20		20	
SPAH	1990-IMRN			D	769	1	14			
TBTIN	2004-NIVA			D	370	0.2	142		28	
	2006-NIVA			D	370	0.2	30		30	
TDEOP	1990-IMRN			D	760	0.05	14			
TDEPP	1990-IMRN			D	760	0.05	14			
	1992-NIVA			D	360	0.05	24		22	
	1994-NIVA		8Z	D	360	0.05	24		21	
	1996-NIVA			D	360	0.2	10			
	1997-NIVA			D	360	0.2	18			
	2004-NIVA			D	360	0.2	155		38	
	2006-NIVA		R44_Ex700_MS-2	D	360	0.2	20		20	
TPTIN	2004-NIVA			D	370	0.17	141		69	
	2006-NIVA			D	370	0.17	30		29	
ZN	1986-NIVA		7C	D	351	100	24			
	1987-NIVA		7C	D	351	100	28			
	1990-NIVA		7E	D	351	10000	128			
	1992-NIVA		7E	D	351	100	107			
	1994-NIVA		7Z	D	351	100	114			
	1996-NIVA			D	351	100	23			
	1997-NIVA			D	351	100	27			
ZN	2004-NIVA		QT	D	355	5000	173			
	2006-NIVA		R44_Ex699_MS-1	D	355	5000	30			
Sum of counts							20409	539	2816	341

~ > converting to ppb ignored, due to missing unit

Analytical overview - biota

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
ACNE	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA		W							**309**	0.2	72			20
	1996-NIVA		W							**309**	0.2	65			19
	1997-NIVA		W							**309**	0.5	34			
	1998-NIVA	CI	W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	38			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	46			
	2004-NIVA	R5	W							**309**	0.5	58	32	22	1
	2005-NIVA	E!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
ACNLE	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA		W							**309**	0.2	72			49
	1996-NIVA		W							**309**	0.2	65			42
	1997-NIVA		W							**309**	0.5	34			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	41			
	2002-NIVA		W							**309**	0.5	42			
	2003-NIVA	MQ	W							**309**	0.5	55			
	2004-NIVA	R5	W							**309**	0.5	58	29	7	
	2005-NIVA	R5	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			7
AG	1996-NIVA		W							**315**	0.5	3			
	2004-NIVA		W							**315**	0.5	7			5
ANT	1992-NIVA		W	**309**	0.2	8				**309**	0.2	45			
	1995-NIVA		W							**309**	0.2	72			28
	1996-NIVA		W							**309**	0.2	65			30
	1997-NIVA		W							**309**	0.5	35			
	1998-NIVA	CI	W							**309**	0.5	39			
	1999-NIVA	EK	W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	56			
	2004-NIVA	R5	W							**309**	0.5	58	22	6	
	2005-NIVA	F!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
AS	1996-NIVA		D							**312**	150	18			
	1996-NIVA		W							**312**	150	3			
	2004-NIVA		W							**315**	50	28			
	2005-NIVA	A!	W							**315**	50	30			
	2006-NIVA	R44_EX705_BT-4	W							**315**	50	29			
BAP	1992-NIVA		W	**309**	0.2	8				**309**	0.2	45			
	1995-NIVA		W							**309**	0.2	72			21
	1996-NIVA		W							**309**	0.2	65			26
	1997-NIVA	AL	W							**309**	0.5	36			
	1998-NIVA	CI	W							**309**	0.5	39			
	1999-NIVA	EK	W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	56			
	2004-NIVA	R5	W							**309**	0.5	58	11	6	

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2005-NIVA	E!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
BBF	1992-NIVA		W	**309**	0.2	8				**309**	0.2	45			
	1995-NIVA		W							**309**	0.2	59			9
	1996-NIVA		W							**309**	0.2	57			6
	2004-NIVA		W							**309**	0.2	58			
BBJF	2005-NIVA		W							**309**	0.5	51			
	2006-NIVA		W							**309**	0.5	48			
BBJKF	1995-NIVA		W							**309**	0.2	12			
	1996-NIVA		W							**309**	0.2	8			
	1997-NIVA		W							**309**	0.2	36			1
	1998-NIVA		W							**309**	0.2	39			
	1999-NIVA		W							**309**	0.2	34			
	2000-NIVA		W							**309**	0.2	39			10
	2001-NIVA		W							**309**	0.2	42			
	2002-NIVA		W							**309**	0.2	43			9
	2003-NIVA		W							**309**	0.2	50			9
	2004-NIVA		W							**309**	0.2	21			
BD100	2001-NILU		W	**843**	0.02	6				**843**	0.02	6			
	2002-NILU		W							**843**	0.02	2			
	2004-NIVA		W							**730**	miss	2			2
BD138	2001-NILU		W	**843**	miss	6			6	**843**	miss	6			6
	2004-NIVA		W							**730**	miss	2			2
BD153	1996-NILU		W	**843**	0.01	4			4						
	2001-NILU		W	**843**	0.01	6			4	**843**	0.01	6			
	2002-NILU		W							**843**	0.01	2			
	2004-NIVA		W							**730**	miss	2			2
BD154	2001-NILU		W	**843**	0.01	6				**843**	0.01	6			
	2002-NILU		W							**843**	0.01	2			
	2004-NIVA		W							**730**	miss	2			2
BD183	2001-NILU		W	**843**	0.01	6			3	**843**	0.01	6			
	2002-NILU		W							**843**	0.01	2			
BD209	2001-NILU		W	**843**	0.03	6			5	**843**	0.03	6			1
	2002-NILU		W							**843**	0.03	2			
BDE100	2005-NIVA		W	**730**	miss	58									
	2006-NIVA		W	**730**	miss	58									
BDE119	2005-NIVA		W	**730**	miss	58			13						
	2006-NIVA		W	**730**	miss	57			11						
BDE138	2005-NIVA		W	**730**	miss	58			58						
	2006-NIVA		W	**730**	miss	58			58						
BDE153	2005-NIVA		W	**730**	miss	58			27						
	2006-NIVA		W	**730**	miss	58			27						
BDE154	2005-NIVA		W	**730**	miss	58									
	2006-NIVA		W	**730**	miss	58									
BDE183	2005-NIVA		W	**730**	miss	58			58						
	2006-NIVA		W	**730**	miss	58			58						
BDE205	2005-NIVA		W	**730**	miss	58			57						
	2006-NIVA		W	**730**	miss	58			53						
BDE28	2001-NILU		W	**830**	0.01	6				**830**	0.01	6			
	2002-NILU		W							**830**	0.01	2			
	2005-NIVA		W	**730**	miss	58									
	2006-NIVA		W	**730**	miss	58									
BDE47	1996-NILU		W	**830**	0.11	4									
	2001-NILU		W	**830**	0.11	6				**830**	0.11	6			
	2002-NILU		W							**830**	0.11	2			
	2004-NIVA		W							**730**	miss	2			
	2005-NIVA		W	**730**	miss	58									
	2006-NIVA		W	**730**	miss	58									
BDE49	2005-NIVA		W	**730**	miss	58									

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2006-NIVA		W	**730**	miss	58									
BDE66	2005-NIVA		W	**730**	miss	58			7						
	2006-NIVA		W	**730**	miss	58			1						
BDE71	2005-NIVA		W	**730**	miss	58			58						
	2006-NIVA		W	**730**	miss	58			57						
BDE77	2005-NIVA		W	**730**	miss	58			38						
	2006-NIVA		W	**730**	miss	58			46						
BDE85	2005-NIVA		W	**730**	miss	58			54						
	2006-NIVA		W	**730**	miss	58			54						
BDE99	1996-NILU		W	**830**	0.06	4									
	2001-NILU		W	**830**	0.06	6				**830**	0.06	6	3	1	
	2002-NILU		W							**830**	0.06	2			
	2004-NIVA		W							**730**	miss	2			2
	2005-NIVA		W	**730**	miss	58			1						
	2006-NIVA		W	**730**	miss	58			7						
BEP	1992-NIVA		W	**309**	0.2	8				**309**	0.2	45			
	1995-NIVA		W							**309**	0.2	72			5
	1996-NIVA		W							**309**	0.2	65			6
	1997-NIVA		W							**309**	0.2	36			
	1998-NIVA	CI	W							**309**	0.2	38			
	1999-NIVA	EK	W							**309**	0.2	34			
	2000-NIVA		W							**309**	0.2	39			10
	2001-NIVA		W							**309**	0.2	42			
	2002-NIVA		W							**309**	0.2	43			9
	2003-NIVA	MQ	W							**309**	0.2	56			10
	2004-NIVA	R5	W							**309**	0.2	55			
	2005-NIVA	E!	W							**309**	0.2	51			15
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
BGHIP	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA		W							**309**	0.2	72			20
	1996-NIVA		W							**309**	0.2	65			10
	1997-NIVA		W							**309**	0.5	36			
	1998-NIVA	CI	W							**309**	0.5	35			
	1999-NIVA	EK	W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	56			
	2004-NIVA	R5	W							**309**	0.5	58	6		
	2005-NIVA	F!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
BIPN	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA		W							**309**	0.2	72			52
	1996-NIVA		W							**309**	0.2	62			39
	1997-NIVA		W							**309**	0.5	34			
	1998-NIVA		W							**309**	0.5	39	1		
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	38			1
	2001-NIVA		W							**309**	0.5	41			
	2002-NIVA		W							**309**	0.5	42			
	2003-NIVA		W							**309**	0.5	55			1
BJKF	1992-NIVA		W	**309**	0.2	8				**309**	0.2	45			
	1995-NIVA		W							**309**	0.2	24			21
	1996-NIVA		W							**309**	0.2	57			16
	2004-NIVA		W							**309**	0.5	37	5		
BKF	2005-NIVA	E!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
BAA	1992-NIVA		W	**309**	0.2	8				**309**	0.2	44			
	1995-NIVA		W							**309**	0.2	72			9

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter-calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1996-NIVA		W							**309**	0.2	65			8
	1997-NIVA		W							**309**	0.5	36			
	1998-NIVA	CI	W							**309**	0.5	39			
	1999-NIVA	EK	W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	56			
	2004-NIVA	R5	W							**309**	0.5	58	3	2	
	2005-NIVA	F!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
CB101	1987-SIIF		W							**111**	0.2	21	1		
	1988-SIIF		D							**111**	0.1	6			
	1988-SIIF		W							**111**	0.1	22			
	1989-NACE		W	**510**	20	93									
	1989-SIIF		W							**111**	0.1	36			
	1990-NIVA	2G	W	**340**	1	169	1			**341**	0.05	58			
	1990-SIIF	2G	W							**111**	0.4	41	6		
	1991-NIVA	2H	W	**340**	1	179			8	**341**	0.05	68			
	1991-SIIF	2H	W							**111**	0.2	35			1
	1992-NIVA	2J	W	**340**	5	192	3			**341**	0.1	146			
	1993-NIVA	2K	W	**340**	4	212	12	1		**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300	3			**341**	0.05	170	39	14	
	1995-NIVA		W	**340**	3	318	10	1		**341**	0.05	231	10	2	
	1996-NIVA		W	**340**	3	332	14	1		**341**	0.05	243	9	2	
	1997-NIVA		W	**340**	3	260	24								
	1997-NIVA	AJ	W							**341**	0.05	221	4	1	
	1998-NIVA		W	**340**	3	284	19	4	1						
	1998-NIVA	CH	W							**341**	0.05	203	1	1	3
	1999-NIVA		W	**340**	3	249	6								
	1999-NIVA	EG	W							**341**	0.05	232			13
	2000-NIVA		W	**340**	3	230	24	3							
	2000-NIVA	GU	W							**341**	0.05	186	11	4	7
	2001-NIVA		W	**340**	3	250	19	1	4						
	2001-NIVA	IO	W							**341**	0.05	211			16
	2002-NIVA		W	**340**	3	241	13								
	2002-NIVA	LJ	W							**341**	0.05	212			17
	2003-NIVA		W	**340**	3	239	18	2							
	2003-NIVA	MO	W							**341**	0.05	175			6
	2004-NIVA		W	**340**	3	272	19	1							
	2004-NIVA	R1	W							**341**	0.05	170			
	2005-NIVA		W	**340**	3	282	28								
	2005-NIVA	D!	W							**341**	0.05	252			5
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	186	23			**341**	0.05	162			40
CB105	1991-NIVA	2H	W	**340**	1	87			1	**341**	0.05	47			
	1992-NIVA		W	**340**	5	192	3	3		**341**	0.1	146			
	1993-NIVA	QM	W	**340**	4	212	21	7		**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300	8			**341**	0.05	170	53	38	
	1995-NIVA		W	**340**	3	318	13	1		**341**	0.05	230	34	14	
	1996-NIVA		W	**340**	3	332	22	1		**341**	0.05	237	23	6	
	1997-NIVA		W	**340**	3	260	24			**341**	0.05	221	3		1
	1998-NIVA		W	**340**	3	284	31	7	19						
	1998-NIVA	CH	W							**341**	0.05	207	11	8	16
	1999-NIVA		W	**340**	3	249	17	7							
	1999-NIVA	EG	W							**341**	0.05	232	4	3	62
	2000-NIVA		W	**340**	3	230	32	5							
	2000-NIVA	GU	W							**341**	0.05	186	21	10	40
	2001-NIVA		W	**340**	3	250	29		2						
	2001-NIVA	IO	W							**341**	0.05	211			76
	2002-NIVA		W	**340**	3	249	30	1		**341**	0.05	210			59

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter-calib. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2003-NIVA		W	**340**	3	239	23	4							
	2003-NIVA	MO	W							**341**	0.05	183			45
	2004-NIVA		W	**340**	3	272	44	13							
	2004-NIVA	R1	W							**341**	0.05	241			6
	2005-NIVA		W	**340**	3	282	66	5							
	2005-NIVA	D!	W							**341**	0.05	252			
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	280	70	19		**341**	0.05	216			2
CB118	1989-NACE		W	**510**	20	93									
	1989-SIIF		W							**111**	0.1	36			
	1990-NIVA	2G	W	**340**	1	169				**341**	0.05	58			
	1990-SIIF	2G	W							**111**	0.2	41	1		
	1991-NIVA	2H	W	**340**	1	179				**341**	0.05	68			
	1991-SIIF	2H	W							**111**	0.2	35			1
	1992-NIVA	2J	W	**340**	5	192	2			**341**	0.1	146			
	1993-NIVA	2K	W	**340**	4	212	10	1		**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300	2			**341**	0.05	170	25	8	
	1995-NIVA		W	**340**	3	318	2			**341**	0.05	231	2		
	1996-NIVA		W	**340**	3	332	6			**341**	0.05	243	4	1	
	1997-NIVA		W	**340**	3	260	5								
	1997-NIVA	AJ	W							**341**	0.05	221			
	1998-NIVA		W	**340**	3	284	6		1						
	1998-NIVA	CH	W							**341**	0.05	209	3	1	1
	1999-NIVA		W	**340**	3	249	2								
	1999-NIVA	EG	W							**341**	0.05	232			7
	2000-NIVA		W	**340**	3	230	5	1							
	2000-NIVA	GU	W							**341**	0.05	186	6	4	7
	2001-NIVA		W	**340**	3	250	1		1						
	2001-NIVA	IO	W							**341**	0.05	211			21
	2002-NIVA		W	**340**	3	249	7								
	2002-NIVA	LJ	W							**341**	0.05	212			22
	2003-NIVA		W	**340**	3	239	6								
	2003-NIVA	MO	W							**341**	0.05	183			18
	2004-NIVA		W	**340**	3	272	7								
	2004-NIVA	R1	W							**341**	0.05	241			1
	2005-NIVA		W	**340**	3	282	11								
	2005-NIVA	C!	W							**341**	0.05	252			
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	280	15	1		**341**	0.05	219			
CB126	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	1E-04	18			
	2002-NILU		W							**841**	1E-04	12			
	2003-NILU		W							**841**	1E-04	12			
	2004-NILU		W							**841**	1E-04	1			
	2005-NILU		W							**841**	1E-04	11			
	2006-NILU		W							**841**	1E-04	12			
CB138	1988-SIIF		D							**111**	0.1	6			
	1988-SIIF		W							**111**	0.1	21			
	1989-NACE		W	**510**	20	93									
	1989-SIIF		W							**111**	0.1	36			
	1990-NIVA	2G	W	**340**	1	169				**341**	0.05	58			
	1990-SIIF	2G	W							**111**	0.3	41			
	1991-NIVA	2H	W	**340**	1	179				**341**	0.05	68			
	1991-SIIF	2H	W							**111**	0.3	35			1
	1992-NIVA	2J	W	**340**	5	192				**341**	0.1	143			
	1993-NIVA	QM	W	**340**	4	212	3			**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300				**341**	0.05	170	12	3	
	1995-NIVA		W	**340**	3	318	2			**341**	0.05	230			
	1996-NIVA		W	**340**	3	331	1			**341**	0.05	241			
	1997-NIVA		W	**340**	3	260	1								
	1997-NIVA	AJ	W							**341**	0.05	221			1
	1998-NIVA		W	**340**	3	284	3								

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter-calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1998-NIVA	CH	W							**341**	0.05	209			
	1999-NIVA		W	**340**	3	249									
	1999-NIVA	EG	W							**341**	0.05	232			1
	2000-NIVA		W	**340**	3	230	3								
	2000-NIVA	GU	W							**341**	0.05	186	3	1	
	2001-NIVA		W	**340**	3	250	1		1						
	2001-NIVA	IO	W							**341**	0.05	211			7
	2002-NIVA		W	**340**	3	249	3			**341**	0.05	212			6
	2003-NIVA		W	**340**	3	239	4								
	2003-NIVA	MO	W							**341**	0.05	183			4
	2004-NIVA		W	**340**	3	272	6								
	2004-NIVA	R1	W							**341**	0.05	241			
	2005-NIVA		W	**340**	3	282	4								
	2005-NIVA	D!	W							**341**	0.05	252			
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	280	4			**341**	0.05	221			
CB153	1988-SIIF		D							**111**	0.1	6			
	1988-SIIF		W							**111**	0.1	22			
	1989-NACE		W	**510**	20	93									
	1989-SIIF		W							**111**	0.1	36			
	1990-NIVA	2G	W	**340**	1	169				**341**	0.05	58			
	1990-SIIF	2G	W							**111**	0.3	41			
	1991-NIVA	2H	W	**340**	1	179				**341**	0.05	68			
	1991-SIIF	2H	W							**111**	0.5	35			1
	1992-NIVA	2J	W	**340**	5	192				**341**	0.1	146			
	1993-NIVA	2K	W	**340**	4	212	3			**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300				**341**	0.05	170	9	1	
	1995-NIVA		W	**340**	3	318	1			**341**	0.05	231			
	1996-NIVA		W	**340**	3	332	1			**341**	0.05	243			
	1997-NIVA		W	**340**	3	260									
	1997-NIVA	AJ	W							**341**	0.05	221			
	1998-NIVA		W	**340**	3	284	1								
	1998-NIVA	CH	W							**341**	0.05	209	1		1
	1999-NIVA		W	**340**	3	249									
	1999-NIVA	EG	W							**341**	0.05	232			1
	2000-NIVA		W	**340**	3	230	3								
	2000-NIVA	GU	W							**341**	0.05	186	1	1	
	2001-NIVA		W	**340**	3	250			1						
	2001-NIVA	IO	W							**341**	0.05	211			5
	2002-NIVA		W	**340**	3	249	1								
	2002-NIVA	LJ	W							**341**	0.05	212			4
	2003-NIVA		W	**340**	3	239	1								
	2003-NIVA	MO	W							**341**	0.05	183			1
	2004-NIVA		W	**340**	3	269	4								
	2004-NIVA	R1	W							**341**	0.05	241			
	2005-NIVA		W	**340**	3	282	2								
	2005-NIVA	D!	W							**341**	0.05	252			
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	280	1			**341**	0.05	221			
CB156	1991-NIVA	2H	W	**340**	1	87			15	**341**	0.05	47			5
	1992-NIVA		W	**340**	5	192	3	3		**341**	0.1	146			
	1993-NIVA	QM	W	**340**	4	212	31	14		**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300	24	2	1	**341**	0.05	167	73	60	
	1995-NIVA		W	**340**	3	317	27	3		**341**	0.05	231	68	39	
	1996-NIVA		W	**340**	3	332	48	6		**341**	0.05	243	62	37	
	1997-NIVA		W	**340**	3	260	46	4							
	1997-NIVA	AJ	W							**341**	0.05	221	9	4	10
	1998-NIVA		W	**340**	3	284	52	21	70						
	1998-NIVA	CH	W							**341**	0.05	209	37	26	47
	1999-NIVA		W	**340**	3	249	39	15	2						
	1999-NIVA	EG	W							**341**	0.05	231	12	9	139
	2000-NIVA		W	**340**	3	230	71	29	5						

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2000-NIVA	GU	W							**341**	0.05	186	28	24	95
	2001-NIVA		W	**340**	3	250	82	17	3						
	2001-NIVA	IO	W							**341**	0.05	211	9	8	134
	2002-NIVA		W	**340**	3	249	99	39		**341**	0.05	210			102
	2003-NIVA		W	**340**	3	236	60	21							
	2003-NIVA	MO	W							**341**	0.05	183			83
	2004-NIVA		W	**340**	3	272	127	42							
	2004-NIVA	R1	W							**341**	0.05	241			7
	2005-NIVA		W	**340**	3	282	140	39							
	2005-NIVA	C!	W							**341**	0.05	241			
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	279	176	131		**341**	0.05	221			
CB169	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	1E-04	18	2	1	
	2002-NILU		W							**841**	1E-04	12			
	2003-NILU		W							**841**	1E-04	12	1	1	1
	2004-NILU		W							**841**	1E-04	1			
	2005-NILU		W							**841**	1E-04	11			
	2006-NILU		W							**841**	1E-04	12	1		
CB180	1987-SIIF		W							**111**	0.2	21	6		
	1988-SIIF		D							**111**	0.1	6			
	1988-SIIF		W							**111**	0.1	22			
	1989-NACE		W	**510**	20	93	1	1							
	1989-SIIF		W							**111**	0.1	36			
	1990-NIVA	2G	W	**340**	1	169				**341**	0.05	58			
	1990-SIIF	2G	W							**111**	0.2	41	8		
	1991-NIVA	2H	W	**340**	1	179				**341**	0.05	68			
	1991-SIIF	2H	W							**111**	0.2	35			
	1992-NIVA	2J	W	**340**	5	192	3	1		**341**	0.1	146			
	1993-NIVA	2K	W	**340**	4	212	15			**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300	3			**341**	0.05	167	49	28	
	1995-NIVA		W	**340**	3	318	5	1		**341**	0.05	231	22	7	
	1996-NIVA		W	**340**	3	332	14			**341**	0.05	243	25	9	
	1997-NIVA		W	**340**	3	260	18								
	1997-NIVA	AJ	W							**341**	0.05	221	1	1	1
	1998-NIVA		W	**340**	3	284	20	3	14						
	1998-NIVA	CH	W							**341**	0.05	209	19	9	44
	1999-NIVA		W	**340**	3	249	7		1						
	1999-NIVA	EG	W							**341**	0.05	232	2	1	78
	2000-NIVA		W	**340**	3	230	15	1							
	2000-NIVA	GU	W							**341**	0.05	186	15	7	83
	2001-NIVA		W	**340**	3	250	17		1						
	2001-NIVA	IO	W							**341**	0.05	211			99
	2002-NIVA		W	**340**	3	249	24								
	2002-NIVA	LJ	W							**341**	0.05	212			104
	2003-NIVA		W	**340**	3	238	13								
	2003-NIVA	MO	W							**341**	0.05	183			71
	2004-NIVA		W	**340**	3	272	14	4							
	2004-NIVA	R1	W							**341**	0.05	241			6
	2005-NIVA		W	**340**	3	282	32								
	2005-NIVA	D!	W							**341**	0.05	252			
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	280	40	6		**341**	0.05	221			
CB209	1990-NIVA		W	**340**	2	169	24	15	11	**341**	0.05	58			
	1991-NIVA		W	**340**	2	179	11	10	88	**341**	0.05	68	5	5	13
	1992-NIVA		W	**340**	5	192	3	3		**341**	0.1	146			1
	1993-NIVA		W	**340**	4	212	46	38	14	**341**	0.1	138			
	1994-NIVA		W	**340**	3	300	29	17	24	**341**	0.05	170	96	94	
	1995-NIVA		W	**340**	3	318	36	19		**341**	0.05	231	95	87	5
	1996-NIVA		W	**340**	3	332	255	212		**341**	0.05	243	107	100	9
	1997-NIVA		W	**340**	3	260	196	164		**341**	0.05	221	30	29	14
	1998-NIVA		W	**340**	3	283	120	113	121	**341**	0.05	209	54	54	69

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1999-NIVA		W	**340**	3	243	163	119	17	**341**	0.05	230	19	17	178
	2000-NIVA		W	**340**	3	228	151	115	18	**341**	0.05	178	33	33	111
	2001-NIVA		W	**340**	3	250	184	130	10	**341**	0.05	211	21	21	185
	2002-NIVA		W	**340**	3	248	207	186	1	**341**	0.05	209			114
	2003-NIVA		W	**340**	3	236	126	107		**341**	0.05	177			99
	2004-NIVA		W	**340**	3	272	228	191		**341**	0.05	241			8
	2005-NIVA		W	**340**	3	281	250	171		**341**	0.05	250			
	2006-NIVA		W	**340**	3	280	254	219		**341**	0.05	220			
CB28	1988-SIIF		D							**111**	0.1	6			
	1988-SIIF		W							**111**	0.1	22			
	1989-NACE		W	**510**	20	93									
	1989-SIIF		W							**111**	0.1	36			1
	1990-NIVA	2G	W	**340**	1	169	2		2	**341**	0.05	58			
	1990-SIIF	2G	W							**111**	0.2	41	7		
	1991-NIVA	2H	W	**340**	1	179	2	1	52	**341**	0.05	68	5	3	4
	1991-SIIF	2H	W							**111**	0.3	35			
	1992-NIVA	2J	W	**340**	5	192	3	3		**341**	0.1	143			
	1993-NIVA	2K	W	**340**	4	212	44	29	5	**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	282	18	7	4	**341**	0.05	168	76	67	
	1995-NIVA		W	**340**	3	313	27	15		**341**	0.05	231	80	64	
	1996-NIVA		W	**340**	3	332	107	27		**341**	0.05	242	70	55	
	1997-NIVA		W	**340**	3	260	81	24							
	1997-NIVA	AJ	W							**341**	0.05	221	22	14	14
	1998-NIVA		W	**340**	3	284	96	54	99						
	1998-NIVA	CH	W							**341**	0.05	207	36	26	46
	1999-NIVA		W	**340**	3	249	96	45	18						
	1999-NIVA	EG	W							**341**	0.05	232	14	13	145
	2000-NIVA		W	**340**	3	230	110	55	7						
	2000-NIVA	GU	W							**341**	0.05	186	26	24	66
	2001-NIVA		W	**340**	3	250	146	37	10						
	2001-NIVA	IO	W							**341**	0.05	211	17	16	150
	2002-NIVA		W	**340**	3	249	144	60	1						
	2002-NIVA	LJ	W							**341**	0.05	207			101
	2003-NIVA		W	**340**	3	238	97	31							
	2003-NIVA	MO	W							**341**	0.05	173			75
	2004-NIVA		W	**340**	3	270	160	79							
	2004-NIVA	R1	W							**341**	0.05	240			9
	2005-NIVA		W	**340**	3	282	191	42							
	2005-NIVA	C!	W							**341**	0.05	247			
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	279	183	115	13	**341**	0.05	221			14
CB52	1987-SIIF		W							**111**	0.2	20	1		
	1988-SIIF		D							**111**	0.1	6			
	1988-SIIF		W							**111**	0.1	22			
	1989-NACE		W	**510**	20	93									
	1989-SIIF		W							**111**	0.1	36			
	1990-NIVA	2G	W	**340**	1	169	2	1	6	**341**	0.05	58			
	1990-SIIF	2G	W							**111**	0.4	41	7		
	1991-NIVA	2H	W	**340**	1	179	1		37	**341**	0.05	68	5	3	1
	1991-SIIF	2H	W							**111**	0.3	35			
	1992-NIVA	2J	W	**340**	5	192	3	3		**341**	0.1	143			
	1993-NIVA	2K	W	**340**	4	212	40	16		**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300	9	1		**341**	0.05	170	64	44	
	1995-NIVA		W	**340**	3	312	19	1		**341**	0.05	220	28	5	
	1996-NIVA		W	**340**	3	332	49	10		**341**	0.05	241	31	12	
	1997-NIVA		W	**340**	3	260	116	77							
	1997-NIVA	AJ	W							**341**	0.05	221	25	21	10
	1998-NIVA		W	**340**	3	281	47	26	44	**341**	0.05	169	12	9	17
	1999-NIVA		W	**340**	3	249	52	19	11						
	1999-NIVA	EG	W							**341**	0.05	222	7	6	73
	2000-NIVA		W	**340**	3	230	65	19	4						

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2000-NIVA	GU	W							**341**	0.05	183	22	20	23
	2001-NIVA		W	**340**	3	250	66	5	4						
	2001-NIVA	IO	W							**341**	0.05	186	7	7	58
	2002-NIVA		W	**340**	3	193	29	1							
	2002-NIVA	LJ	W							**341**	0.05	162			55
	2003-NIVA		W	**340**	3	239	54	18							
	2003-NIVA	MO	W							**341**	0.05	147			41
	2004-NIVA		W	**340**	3	267	75	31							
	2004-NIVA	R1	W							**341**	0.05	215			5
	2005-NIVA		W	**340**	3	281	112	15							
	2005-NIVA	C!	W							**341**	0.05	246			
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	274	125	61	13	**341**	0.05	204			96
CB77	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	1E-04	18			
	2002-NILU		W							**841**	1E-04	12			
	2003-NILU		W							**841**	1E-04	12			
	2004-NILU		W							**841**	1E-04	1			
	2005-NILU		W							**841**	1E-04	11			
	2006-NILU		W							**841**	1E-04	12			
CB81	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	1E-04	18			
	2002-NILU		W							**841**	1E-04	12			
	2003-NILU		W							**841**	1E-04	12			
	2004-NILU		W							**841**	1E-04	1			
	2005-NILU		W							**841**	1E-04	11			
	2006-NILU		W							**841**	1E-04	12			
CD	1981-NIVA		D							**312**	30	3			
	1981-SIIF	1E	W	**130**	10	28				**130**	5	27			
	1981-SIIF	1F	W							**130**	10	7			
	1982-NIVA		D							**312**	30	3			
	1982-SIIF	1F	W							**130**	10	18			
	1982-VETN		W	**230**	10	54									
	1983-SIIF	1F	W							**130**	10	17			
	1983-VETN	1Z	W	**230**	10	46									
	1984-FIER	1H	W	**402**	1	23									
	1984-SIIF	1G	W							**130**	10	27			
	1984-VETN	1Z	W	**230**	10	66									
	1985-SIIF	1G	D							**130**	10	35			
	1985-VETN	1Z	W	**230**	10	45			3						
	1986-NIVA	1H	D	**312**	30	56	1			**312**	30	20			
	1987-FIER	1G	W	**402**	1	37									
	1987-NIVA	1H	D	**312**	30	57			4	**312**	30	42			
	1988-NIVA	1H	D	**312**	30	61	11	4	1	**312**	30	55			
	1989-NIVA	1H	D	**312**	30	135	11	6	8	**312**	30	3			
	1989-NIVA	1H	W							**312**	30	36			
	1990-NIVA	1H	D							**312**	10	6			
	1990-NIVA	1H	W	**312**	10	189	9		2	**312**	30	77	5	1	
	1991-NIVA	1H	D							**312**	10	6			
	1991-NIVA	1H	W	**312**	10	190	29	21	2	**312**	10	67			
	1992-NIVA	1H	D							**312**	10	6			
	1992-NIVA	1H	W	**312**	10	191	4	1		**312**	10	111			
	1993-NIVA	1H	D							**312**	50	5			
	1993-NIVA	1H	W	**312**	50	221	98	3		**312**	50	79			
	1994-NIVA	1Z	D							**312**	50	5			
	1994-NIVA	1Z	W	**312**	50	302	134	1		**312**	50	81			
	1995-NIVA		D							**312**	50	6			
	1995-NIVA		W	**312**	50	318	129			**312**	50	139	2		
	1996-NIVA	V1	D							**312**	50	24			
	1996-NIVA	V1	W							**312**	50	125			
	1996-NIVA	V2	W	**312**	50	368	128								

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1997-NIVA		W	**312**	50	287	90								
	1997-NIVA	AH	D							**312**	50	6			
	1997-NIVA	AH	W							**312**	50	128			
	1998-NIVA		D							**312**	50	6			
	1998-NIVA		W	**312**	50	285	101	1		**312**	50	114			
	1999-NIVA		W	**312**	50	235	79								
	1999-NIVA	EF	D							**312**	50	6			
	1999-NIVA	EF	W							**312**	50	153	15	4	
	2000-NIVA		W	**312**	50	227	82								
	2000-NIVA	GS	D							**312**	50	7			
	2000-NIVA	GS	W							**312**	50	109			
	2001-NIVA		W	**312**	50	261	103								
	2001-NIVA	IM	D							**312**	50	6			
	2001-NIVA	IM	W							**312**	50	114			
	2002-NIVA		W	**315**	1	230									
	2002-NIVA	LH	D							**315**	1	6			
	2002-NIVA	LH	W							**315**	1	131			
	2003-NIVA		W	**315**	1	233									
	2003-NIVA	MM	W							**315**	1	120			
	2004-NIVA		W	**315**	1	249				**315**	1	163			
	2005-NIVA	A!	W	**315**	1	272				**315**	1	165			
	2006-NIVA	R44_EX702_BT-1	W	**315**	1	278				**315**	1	142			
CDD1N	1995-NILU		W							**841**	2E-05	6	1	1	1
	1996-NILU		W	**841**	0	4				**841**	1E-05	18			2
	2002-NILU		W							**841**	1E-05	12			2
	2003-NILU		W							**841**	1E-05	12			6
	2004-NILU		W							**841**	1E-05	13			7
	2005-NILU		W							**841**	1E-05	11			
	2006-NILU		W							**841**	1E-05	12			1
CDD4X	1995-NILU		W							**841**	2E-05	6	3	1	1
	1996-NILU		W	**841**	0	4				**841**	2E-05	18			1
	2002-NILU		W							**841**	2E-05	12			2
	2003-NILU		W							**841**	2E-05	12			6
	2004-NILU		W							**841**	2E-05	13			5
	2005-NILU		W							**841**	2E-05	11			1
	2006-NILU		W							**841**	2E-05	12			2
CDD6P	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	4E-05	18			
	2002-NILU		W							**841**	4E-05	12	1		
	2003-NILU		W							**841**	4E-05	12			2
	2004-NILU		W							**841**	4E-05	13			
	2005-NILU		W							**841**	4E-05	11			
	2006-NILU		W							**841**	4E-05	12			
CDD6X	1995-NILU		W							**841**	2E-05	6			1
	1996-NILU		W	**841**	0	4				**841**	2E-05	18			1
	2002-NILU		W							**841**	2E-05	12	2		1
	2003-NILU		W							**841**	2E-05	12			6
	2004-NILU		W							**841**	2E-05	13			5
	2005-NILU		W							**841**	2E-05	11	1	1	
	2006-NILU		W							**841**	2E-05	12			2
CDD9X	1995-NILU		W							**841**	2E-05	6	2		1
	1996-NILU		W	**841**	0	3			1	**841**	2E-05	18			1
	2002-NILU		W							**841**	2E-05	12	2		2
	2003-NILU		W							**841**	2E-05	12			8
	2004-NILU		W							**841**	2E-05	13			7
	2005-NILU		W							**841**	2E-05	11			
	2006-NILU		W							**841**	2E-05	12			1
CDDFS	1996-NILU		W	**844**	miss	4									
CDDO	1995-NILU		W							**841**	2E-05	6			

Tissue			Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter-calibr. +basis	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1996-NILU	W	**841**	0	4				**841**	1E-04	18			
	2002-NILU	W							**841**	1E-04	12			
	2003-NILU	W							**841**	1E-04	12			
	2004-NILU	W							**841**	1E-04	13			
	2005-NILU	W							**841**	1E-04	11			
	2006-NILU	W							**841**	1E-04	12			
CDDSN	1995-NILU	W							**841**	2E-05	5			
	1996-NILU	W	**841**	0	3				**841**	1E-05	18			3
	2002-NILU	W							**841**	1E-05	10			
CDDSP	1995-NILU	W							**841**	2E-05	6			
	1996-NILU	W	**841**	0	4				**841**	4E-05	18			
	2002-NILU	W							**841**	4E-05	11	1		
CDDST	1995-NILU	W							**841**	2E-05	6			
	1996-NILU	W	**841**	0	4				**841**	1E-05	18			
	2002-NILU	W							**841**	1E-05	12			
CDDSX	1995-NILU	W							**841**	2E-05	5			
	1996-NILU	W	**841**	0	3				**841**	2E-05	18			2
	2002-NILU	W							**841**	2E-05	11			
CDF2N	1995-NILU	W							**841**	2E-05	6			
	1996-NILU	W	**841**	0	4				**841**	1E-05	18			1
	2002-NILU	W							**841**	1E-05	12			
	2003-NILU	W							**841**	1E-05	12			3
	2004-NILU	W							**841**	1E-05	12			
	2005-NILU	W							**841**	1E-05	11			
	2006-NILU	W							**841**	1E-05	12			
CDF2T	1995-NILU	W							**841**	2E-05	6			
	1996-NILU	W	**841**	0	4				**841**	1E-05	18			
	2002-NILU	W							**841**	1E-05	12			
	2003-NILU	W							**841**	1E-05	12			
	2004-NILU	W							**841**	1E-05	13			
	2005-NILU	W							**841**	1E-05	11			
	2006-NILU	W							**841**	1E-05	12			
CDF4X	1995-NILU	W							**841**	2E-05	6			
	1996-NILU	W	**841**	0	4				**841**	2E-05	18			1
	2002-NILU	W							**841**	2E-05	12	4		
	2003-NILU	W							**841**	2E-05	12	1	1	3
	2004-NILU	W							**841**	2E-05	13	1	1	
	2005-NILU	W							**841**	2E-05	11			
	2006-NILU	W							**841**	2E-05	12			
CDF6P	1995-NILU	W							**841**	2E-05	6			
	1996-NILU	W	**841**	0	4				**841**	4E-05	18	2		1
	2002-NILU	W							**841**	4E-05	12	3		
	2003-NILU	W							**841**	4E-05	12	1	1	2
	2004-NILU	W							**841**	4E-05	13			
	2005-NILU	W							**841**	4E-05	11			
	2006-NILU	W							**841**	4E-05	12			
CDF6X	1995-NILU	W							**841**	2E-05	6			
	1996-NILU	W	**841**	0	4				**841**	2E-05	18			1
	2002-NILU	W							**841**	2E-05	12			1
	2003-NILU	W							**841**	2E-05	12	1		2
	2004-NILU	W							**841**	2E-05	13	1	1	1
	2005-NILU	W							**841**	2E-05	11	1	1	
	2006-NILU	W							**841**	2E-05	12			
CDF9P	1995-NILU	W							**841**	2E-05	6	2	2	1
	1996-NILU	W	**841**	0	4				**841**	8E-05	17	3	2	1
	2002-NILU	W							**841**	8E-05	12	2		2
	2003-NILU	W							**841**	8E-05	12	3	3	4
	2004-NILU	W							**841**	8E-05	13	8	7	
	2005-NILU	W							**841**	8E-05	11	5	2	

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2006-NILU		W							**841**	8E-05	12	7	6	
CDF9X	1995-NILU		W							**841**	2E-05	6	3	3	1
	1996-NILU		W	**841**	0	4				**841**	2E-05	18			1
	2002-NILU		W							**841**	2E-05	12			3
	2003-NILU		W							**841**	2E-05	12			7
	2004-NILU		W							**841**	2E-05	13	8	8	
	2005-NILU		W							**841**	2E-05	11	5	3	
	2006-NILU		W							**841**	2E-05	12	5	3	
CDFDN	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	1E-05	18			1
	2002-NILU		W							**841**	1E-05	12			
	2003-NILU		W							**841**	1E-05	12			1
	2004-NILU		W							**841**	1E-05	13			1
	2005-NILU		W							**841**	1E-05	11			
	2006-NILU		W							**841**	1E-05	12			1
CDFDX	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	2E-05	18			1
	2002-NILU		W							**841**	2E-05	12			1
	2003-NILU		W							**841**	2E-05	12	1		4
	2004-NILU		W							**841**	2E-05	13	1	1	
	2005-NILU		W							**841**	2E-05	11	1	1	
	2006-NILU		W							**841**	2E-05	12	1	1	
CDFO	1995-NILU		W							**841**	2E-05	6			1
	1996-NILU		W	**841**	0	4				**841**	1E-04	18	3	2	1
	2002-NILU		W							**841**	1E-04	11	1		
	2003-NILU		W							**841**	1E-04	12	1		2
	2004-NILU		W							**841**	1E-04	13	1	1	1
	2005-NILU		W							**841**	1E-04	11	1	1	
	2006-NILU		W							**841**	1E-04	12	1	1	
CDFSN	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	1E-05	18			1
	2002-NILU		W							**841**	1E-05	12			
CDFSP	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	8E-05	18	6		1
	2002-NILU		W							**841**	8E-05	12	4		
CDFST	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	1E-05	18			
	2002-NILU		W							**841**	1E-05	12			
CDFSX	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	2E-05	18			1
	2002-NILU		W							**841**	2E-05	12	1		
CHR	1992-NIVA		W	**309**	0.2	8				**309**	0.2	44			
	1995-NIVA		W							**309**	0.2	56			
	1996-NIVA		W							**309**	0.2	65			3
	2005-NIVA	F!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
CHRTR	1995-NIVA		W							**309**	0.2	15			2
	1997-NIVA		W							**309**	0.5	36			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA		W							**309**	0.5	56			
	2004-NIVA		W							**309**	0.5	58			
CO	1996-NIVA		D							**312**	330	18			
	1996-NIVA		W							**312**	330	3	3		
	2004-NIVA		W							**315**	0.5	28			
	2005-NIVA		W							**315**	0.5	21			

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2006-NIVA		W							**315**	0.5	20			
COR	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
CR	1992-NIVA		W							**312**	10	6			
	1996-NIVA		D							**312**	10	18			
	1996-NIVA		W							**312**	10	3			
	2004-NIVA		W							**315**	100	28			
	2005-NIVA	A!	W							**315**	100	21			
	2006-NIVA	R44_EX702_BT-1	W							**315**	100	20			
CU	1981-NIVA		D							**311**	150	3			
	1982-NIVA		D							**311**	150	3			
	1983-SIIF	1G	W							**130**	10	12			
	1984-SIIF	1G	W							**130**	10	27			
	1986-NIVA	1H	D	**311**	150	56				**311**	150	20			
	1987-FIER	1G	W	**404**	50	37									
	1987-NIVA	1H	D	**311**	150	57				**311**	150	42			
	1988-NIVA	1H	D	**311**	150	61				**311**	150	55			
	1989-NIVA	1H	D	**311**	150	135				**311**	150	3			
	1989-NIVA	1H	W							**311**	150	36			
	1990-NIVA	1H	D							**311**	150	6			
	1990-NIVA	1H	W	**311**	150	189				**311**	150	77			
	1991-NIVA	1H	D							**311**	50	6			
	1991-NIVA	1H	W	**311**	50	193	2			**311**	50	67			
	1992-NIVA	1H	D							**311**	10	6			
	1992-NIVA	1H	W	**311**	10	191				**311**	10	111			
	1993-NIVA	1H	D							**311**	10	5			
	1993-NIVA	1H	W	**311**	10	221				**311**	10	79			
	1994-NIVA	1Z	D							**311**	10	5			
	1994-NIVA	1Z	W	**311**	10	302				**311**	10	81			
	1995-NIVA		D							**311**	10	6			
	1995-NIVA		W	**311**	10	318				**311**	10	124			
	1996-NIVA	V1	D							**311**	10	21			
	1996-NIVA	V1	W							**311**	10	113			
	1996-NIVA	V2	W	**311**	10	368									
	1997-NIVA		W	**311**	5000a	287	1								
	1997-NIVA	AH	D							**311**	10	6			
	1997-NIVA	AH	W							**311**	10	96			
	1998-NIVA		W	**311**	10	285									
	1998-NIVA	CF	D							**311**	10	6			
	1998-NIVA	CF	W							**311**	10	72			
	1999-NIVA		W	**311**	10	235									
	1999-NIVA	EF	D							**311**	10	6			
	1999-NIVA	EF	W							**311**	10	120			
	2000-NIVA		W	**311**	10	227									
	2000-NIVA	GS	D							**311**	10	7			
	2000-NIVA	GS	W							**311**	10	70			
	2001-NIVA		W	**311**	10	261									
	2001-NIVA	IM	D							**311**	10	6			
	2001-NIVA	IM	W							**311**	10	72			
	2002-NIVA		W	**315**	10	230									
	2002-NIVA	LH	D							**315**	10	6			
	2002-NIVA	LH	W							**315**	10	86			
	2003-NIVA		W	**315**	10	233									
	2003-NIVA	MM	W							**315**	10	71			
	2004-NIVA		W	**315**	10	249				**315**	10	122			
	2005-NIVA	B!	W	**315**	10	272				**315**	10	123			
	2006-NIVA	R44_EX702_BT-1	W	**315**	10	278				**315**	10	100			
DBA3A	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA		W							**309**	0.2	71			48
	1996-NIVA		W							**309**	0.2	65			53
	1997-NIVA		W							**309**	0.5	36			

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	56			
	2004-NIVA		W							**309**	0.5	58	26	14	
	2005-NIVA	E!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
DBP	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
DBT	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	56			20
	2004-NIVA	R5	W							**309**	0.5	58	31	20	
	2005-NIVA	F!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
DBTC1	1995-NIVA		W							**309**	0.2	57			14
	1996-NIVA		W							**309**	0.2	65			9
	2004-NIVA		W							**309**	0.5	58			14
	2005-NIVA		W							**309**	0.5	51			47
	2006-NIVA		W							**309**	2	48			16
DBTC2	1995-NIVA		W							**309**	0.2	56			9
	1996-NIVA		W							**309**	0.2	62			11
	2004-NIVA		W							**309**	0.5	58			1
	2005-NIVA		W							**309**	0.5	51			22
	2006-NIVA		W							**309**	2	48			7
DBTC3	1995-NIVA		W							**309**	0.2	57			4
	1996-NIVA		W							**309**	0.2	65			5
	2004-NIVA		W							**309**	0.5	58			5
	2005-NIVA		W							**309**	0.5	51			13
	2006-NIVA		W							**309**	2	48			4
DBTIN	1997-NIVA		D							**320**	5	13			
	1998-NIVA		D							**320**	5	15			
	1999-NIVA		D							**320**	5	13			
	1999-NIVA		W							**320**	5	6	2		
	2000-NIVA		W							**320**	0.5	23			
	2001-GALG		W							**775**	0.15	11			
	2001-NIVA		W							**320**	0.5	16			1
	2002-EFDH		W							**777**	2	33	5	3	
	2002-NIVA		W							**320**	0.5	2			2
	2003-NIVA		W							**320**	2	36	14	7	
	2004-NIVA		W							**320**	2	72	40	12	
	2005-NIVA		W							**320**	2	34	21	14	
	2006-NIVA		W							**320**	2	47	13	3	19
DBTIO	1997-NIVA		W							**309**	0.5	34			
DDEPP	1982-VETN		W	**210**	50	53									
	1983-VETN	2E	W	**210**	50	48				**211**	50	48			
	1984-VETN	2E	W	**210**	50	66									
	1985-VETN	2E	W	**210**	50	45									
	1986-NACE	2Z	W	**510**	20	56									
	1987-NACE	2Z	W	**510**	40	53									
	1988-NACE	2Z	W	**510**	40	61									
	1989-NACE	2Z	W	**510**	20	93									
	1990-NIVA		W	**340**	1	169				**341**	0.05	58			
	1991-NIVA		W	**340**	1	179				**341**	0.05	68			
	1992-NIVA		W	**340**	5	192	2			**341**	0.1	146			

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1993-NIVA		W	**340**	4	212	3			**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	4	300				**341**	0.1	170	27		
	1995-NIVA		W	**340**	4	318	2			**341**	0.1	231	30	6	
	1996-NIVA		W	**340**	4	332	2			**341**	0.1	243	47	10	
	1997-NIVA		W	**340**	4	260	3			**341**	0.1	221	1		
	1998-NIVA		W	**340**	4	284	6								
	1998-NIVA	CH	W							**341**	0.1	209	4	2	
	1999-NIVA		W	**340**	4	249									
	1999-NIVA	EG	W							**341**	0.1	232	2		
	2000-NIVA		W	**340**	4	230	7								
	2000-NIVA	GU	W							**341**	0.1	185	6		
	2001-NIVA		W	**340**	4	250			1						
	2001-NIVA	IO	W							**341**	0.1	211	1		7
	2002-NIVA		W	**340**	4	249	4			**341**	0.1	210	5		
	2003-NIVA	MO	W	**340**	4	239	4			**341**	0.1	183	3		
	2004-NIVA		W	**340**	4	272	6								
	2004-NIVA	R1	W							**341**	0.1	241	56	21	
	2005-NIVA		W	**340**	4	282	4								
	2005-NIVA	C!	W							**341**	0.1	252	29	5	
	2006-NIVA	R44_EX704_BT-3	W	**340**	4	280	6			**341**	0.1	221	36	7	
DDTEP	1983-SIIF		W							**111**	0.5	12			
	1984-SIIF		W							**111**	0.5	24			1
	1985-SIIF		W							**111**	0.5	27	1	1	5
	1986-SIIF		W							**111**	0.5	21			
	1987-SIIF		W							**111**	0.5	21	1		
	1988-SIIF		D							**111**	0.5	6			
	1988-SIIF		W							**111**	0.5	22	1		
	1989-SIIF		W							**111**	0.5	36	1		
	1990-SIIF		W							**111**	0.2	41	1		
	1991-SIIF		W							**111**	0.3	35			
DDTPP	1986-NACE		W	**510**	40	56									
	1987-NACE		W	**510**	40	53									
	1988-NACE		W	**510**	40	61									
	1989-NACE		W	**510**	20	93									
	1991-NIVA		W							**340**	0.05	6			
	1992-NIVA		W							**340**	0.05	6			4
	1993-NIVA		W							**340**	0.05	5			1
	1994-NIVA		W							**340**	0.05	5			
	1995-NIVA		W							**340**	0.05	78			
	1996-NILU		W	**840**	miss	2									
	1996-NIVA		W	**340**	0.05	54			4	**340**	0.05	51			
	1997-NIVA		W	**340**	2	32									
	1997-NIVA	AJ	W							**340**	0.05	48			
	1998-NIVA		W	**340**	2	37	1		8	**340**	0.05	74			28
	1999-NIVA		W	**340**	2	29			4	**340**	0.05	99			7
	2000-NIVA		W	**340**	2	22				**340**	0.05	54			6
	2001-NIVA		W	**340**	2	46			2	**340**	0.05	53			11
	2002-NILU		W							**840**	miss	1			
	2002-NIVA		W	**340**	2	32			10	**340**	0.05	67			21
	2003-NIVA		W	**340**	2	35			10	**340**	0.05	45			22
	2004-NIVA		W	**340**	2	33				**340**	0.05	123			70
	2005-NIVA		W	**340**	2	248	15	9	42	**340**	0.05	241			163
	2006-NIVA		W	**340**	2	279	12	11	78	**341**	0.2	200			
DPTIN	1997-NIVA		D							**320**	5	13	5	5	
	1998-NIVA		D							**320**	2	15			6
	1999-NIVA		D							**320**	5	13	12	6	
	1999-NIVA		W							**320**	5	6	6		
	2000-NIVA		W							**320**	0.5	23	1	1	1
	2001-NIVA		W							**320**	0.5	16			16
	2002-NIVA		W							**320**	0.5	2			2

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2003-NIVA		W							**320**	2	36	36	35	
	2004-NIVA		W							**320**	2	72	70	67	
	2005-NIVA		W							**320**	2	34	34	34	
	2006-NIVA		W							**320**	2	47	26	26	21
EOCL	1989-SIIF		W							**605**	170	5			
EPOCL	1986-NACE		W	**610**	800	56									
	1986-SIIF		W							**605**	5000	21	21		
	1987-NACE		W	**610**	800	53									
	1987-SIIF		W							**605**	40	20			
	1988-NACE		W	**610**	800	60									
	1988-SIIF		W							**605**	40	27			
	1989-NACE		W	**610**	800	89	1								
	1989-SIIF		W							**605**	40	35			
	1990-NIVA		W	**615**	40	117			3						
	1990-SIIF		W							**605**	40	41			
	1991-NIVA		W	**615**	40	116			12						
	1991-SIIF		W							**605**	130	35			
	1997-IFEN		W							**607**	50	6			
	1998-IFEN		W							**607**	1	6			
	2000-SINT		W							**609**	1	6			
	2001-SINT		W							**609**	1	6			
	2004-IFEN		W							**607**	1	5			
FLE	1992-NIVA		W	**309**	0.2	8				**309**	0.2	45			
	1995-NIVA		W							**309**	0.2	72			22
	1996-NIVA		W							**309**	0.2	65			6
	1997-NIVA	AL	W							**309**	0.5	34			
	1998-NIVA	CI	W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	56			
	2004-NIVA	R5	W							**309**	0.5	58	18	9	
	2005-NIVA	F!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
FLU	1992-NIVA		W	**309**	0.2	8				**309**	0.2	44			
	1995-NIVA		W							**309**	0.2	72			
	1996-NIVA		W							**309**	0.2	65			
	1997-NIVA	AL	W							**309**	0.2	36			
	1998-NIVA	CI	W							**309**	0.2	39			
	1999-NIVA	EK	W							**309**	0.2	34			
	2000-NIVA		W							**309**	0.2	39			
	2001-NIVA		W							**309**	0.2	42			
	2002-NIVA		W							**309**	0.2	43			3
	2003-NIVA	MQ	W							**309**	0.2	56			
	2004-NIVA	R5	W							**309**	0.2	58			
	2005-NIVA	E!	W							**309**	0.2	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
HBCDA	2001-NILU		W	**830**	miss	4				**830**	miss	5			2
HBCDB	2001-NILU		W	**830**	miss	4			4	**830**	miss	5			5
HBCDG	2001-NILU		W	**830**	miss	5			4	**830**	miss	4			4
HCB	1983-SIIF		W							**111**	0.5	12			
	1983-VETN	2Z	W	**210**	10	48				**211**	10	48			
	1984-SIIF		W							**111**	0.2	24			1
	1984-VETN	2Z	W	**210**	10	66									
	1985-SIIF		W							**111**	0.2	30	6	5	2
	1985-VETN	2Z	W	**210**	10	45			4						
	1986-NACE	2Z	W	**510**	10	56									
	1986-SIIF	2Z	W							**111**	0.2	21	3	2	

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter-calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1987-NACE	2Z	W	**510**	40	53									
	1987-SIIF	2Z	W							**111**	0.2	21	4		
	1988-NACE	2Z	W	**510**	40	61									
	1988-SIIF	2Z	D							**111**	0.2	6			
	1988-SIIF	2Z	W							**111**	0.2	22	2	2	
	1989-NACE	2Z	W	**510**	20	93									
	1989-SIIF	2Z	W							**111**	0.05	36			
	1990-NIVA		W	**340**	1	169	2	1		**341**	0.05	58			
	1990-SIIF	2Z	W							**111**	0.05	41	3		
	1991-NIVA		W	**340**	1	179	4	3	13	**341**	0.05	68	5		1
	1991-SIIF	2Z	W							**111**	0.1	35			
	1992-NIVA		W	**340**	5	189	3	3		**341**	0.1	146			
	1993-NIVA		W	**340**	4	212	31	6		**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300	24		1	**341**	0.05	170	37	7	
	1995-NIVA		W	**340**	3	317	37	2		**341**	0.05	231	32	8	
	1996-NIVA		W	**340**	3	332	52	19		**341**	0.05	243	37	11	
	1997-NIVA		W	**340**	2	260	39	1							
	1997-NIVA	AJ	W							**341**	0.05	221	7		
	1998-NIVA		W	**340**	2	284	48	11	13	**341**	0.05	209	68	23	2
	1999-NIVA		W	**340**	2	249	18	1							
	1999-NIVA	EG	W							**341**	0.05	232	19		8
	2000-NIVA		W	**340**	2	230	40	1							
	2000-NIVA	GU	W							**341**	0.05	186	43	8	1
	2001-NIVA		W	**340**	2	250	36		1	**341**	0.05	211	36	1	3
	2002-NIVA		W	**340**	2	249	39			**341**	0.05	210	29	6	2
	2003-NIVA		W	**340**	2	239	31	3							
	2003-NIVA	MO	W							**341**	0.05	174	18	4	
	2004-NIVA		W	**340**	2	271	42	3							
	2004-NIVA	R1	W							**341**	0.05	241	109	48	
	2005-NIVA		W	**340**	2	281	48	1							
	2005-NIVA	D!	W							**341**	0.05	252	72	17	
	2006-NIVA	R44_EX704_BT-3	W	**340**	2	280	39	2	10	**341**	0.03	221			
HCHA	1990-NIVA		W	**340**	1	168				**341**	0.05	58			
	1991-NIVA		W	**340**	1	179	2		111	**341**	0.05	68	5	3	10
	1992-NIVA		W	**340**	5	192	3	3		**341**	0.1	146			
	1993-NIVA		W	**340**	4	212	45	18	22	**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	296	32	8	3	**341**	0.05	170	85	34	
	1995-NIVA		W	**340**	3	318	45	9		**341**	0.05	231	100	69	
	1996-NIVA		W	**340**	3	332	111	45		**341**	0.05	237	100	62	
	1997-NIVA		W	**340**	0.5	260	2		10	**341**	0.05	221	20	7	11
	1998-NIVA		W	**340**	0.5	284	8	1	208	**341**	0.05	208	26	23	121
	1999-NIVA		W	**340**	0.5	249	17	7	78	**341**	0.05	232	23	23	151
	2000-NIVA		W	**340**	0.5	230	31	22	62	**341**	0.05	186	42	42	84
	2001-NIVA		W	**340**	0.5	250	25	16	50	**341**	0.05	211	20	20	184
	2002-NIVA		W	**340**	0.5	249	23	17	149	**341**	0.05	210			121
	2003-NIVA		W	**340**	0.5	239	4	1	201	**341**	0.05	183			99
	2004-NIVA		W	**340**	0.5	270	13	12	192	**341**	0.05	238	2	2	9
	2005-NIVA		W	**340**	0.5	280	37	17	83						
	2005-NIVA	D!	W							**341**	0.05	245			
	2006-NIVA	R44_EX704_BT-3	W	**340**	0.5	280	18	14	199	**341**	0.05	221			
HCHG	1986-NACE		W	**510**	30	56	1	1							
	1986-SIIF		W							**111**	3	21			
	1987-NACE		W	**510**	40	53									
	1987-SIIF		W							**111**	5	21			1
	1988-NACE		W	**510**	40	61									
	1989-NACE		W	**510**	20	93									
	1989-SIIF		W							**111**	50	36			
	1990-NIVA		W	**340**	1	169	1		9	**341**	0.05	58			
	1990-SIIF		W							**111**	0.1	41			
	1991-NIVA		W	**340**	1	179	3	3	18	**341**	0.05	68	5	5	1

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1991-SIIF		W							**111**	0.3	35			
	1992-NIVA		W	**340**	5	192	3	3		**341**	0.1	146			
	1993-NIVA		W	**340**	4	212	42	7	17	**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300	24	2	1	**341**	0.05	170	46	21	
	1995-NIVA		W	**340**	3	313	31	3		**341**	0.05	219	29	16	
	1996-NIVA		W	**340**	3	330	68	15		**341**	0.05	226	8	2	
	1997-NIVA		W	**340**	2	260	47	2							
	1997-NIVA	AJ	W							**341**	0.05	221	3		9
	1998-NIVA		W	**340**	2	284	25	9	63	**341**	0.05	209	10	3	23
	1999-NIVA		W	**340**	2	249	52	4	3	**341**	0.05	232	19	13	62
	2000-NIVA		W	**340**	2	230	65	20	29	**341**	0.05	186	27	15	10
	2001-NIVA		W	**340**	2	250	96	18	20	**341**	0.05	211	21	21	160
	2002-NIVA		W	**340**	2	249	147	76	13	**341**	0.05	210			83
	2003-NIVA		W	**340**	2	239	96	86	85	**341**	0.05	181			102
	2004-NIVA		W	**340**	2	271	137	87	19	**341**	0.05	241			8
	2005-NIVA		W	**340**	2	281	236	133	10	**341**	0.05	248			
	2006-NIVA	R44_EX704_BT-3	W	**340**	2	280	140	112	1	**341**	0.05	221			
HG	1981-NIVA		D							**310**	10	3			
	1981-SIIF	1E	W	**120**	10	15			1	**120**	10	35			
	1982-NIVA		D							**310**	10	3			
	1982-SIIF	1E	W							**120**	10	18			
	1982-VETN		W	**220**	10	51				**220**	10	54			
	1983-SIIF	1E	W							**120**	10	17			
	1983-VETN	1Z	W							**220**	10	48			
	1984-FIER	1G	W							**401**	10	39			
	1984-SIIF	1G	W							**120**	10	27	6	1	
	1984-VETN	1Z	W							**220**	10	66			
	1985-SIIF	1G	D							**120**	10	30			
	1985-VETN	1Z	W							**220**	10	90			
	1986-NIVA	1H	D							**310**	10	74			
	1987-FIER	1G	W							**401**	10	38			
	1987-NIVA	1H	D							**310**	10	98			14
	1988-NIVA	1H	D							**310**	10	116			
	1989-NIVA	1H	D							**310**	100	137			
	1989-NIVA	1H	W							**310**	10	36	5		
	1990-NIVA	1H	D							**310**	10	6			
	1990-NIVA	1H	W							**310**	10	266			
	1991-NIVA	1H	D							**310**	100	6			
	1991-NIVA	1H	W							**310**	100a	264	126	6	
	1992-NIVA	1H	D							**310**	100	6			
	1992-NIVA	1H	W							**310**	100a	303	122		
	1993-NIVA	1H	D							**310**	5	5			
	1993-NIVA	1H	W							**310**	5	300			
	1994-NIVA	1Z	D							**310**	5	5			
	1994-NIVA	1Z	W							**310**	5	381			
	1995-NIVA		D							**310**	5	6			
	1995-NIVA		W							**310**	5	442	1		
	1996-NIVA	V1	D							**310**	5	24			
	1996-NIVA	V1	W							**310**	5	481			
	1997-NIVA	AH	D							**310**	5	6			
	1997-NIVA	AH	W							**310**	5	404			
	1998-NIVA	CF	D							**310**	5	6			
	1998-NIVA	CF	W							**310**	5	402			
	1999-NIVA		W	**310**	5	3									
	1999-NIVA	EF	D							**310**	5	6			
	1999-NIVA	EF	W							**310**	5	407			
	2000-NIVA	GS	D							**310**	5	7			
	2000-NIVA	GS	W							**310**	5	349			
	2001-NIVA	IM	D							**310**	5	6			
	2001-NIVA	IM	W							**310**	5	377			

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2002-NIVA	LH	D							**310**	5	6			
	2002-NIVA	LH	W							**310**	5	387			
	2003-NIVA	MM	W							**310**	5	368	2		
	2004-NIVA		W							**310**	5	441			
	2005-NIVA	A!	W							**310**	5	453	1		
	2006-NIVA	R42_Ex685_BT-1	W							**310**	5	429			
ICDP	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA		W							**309**	0.2	72			29
	1996-NIVA		W							**309**	0.2	65			23
	1997-NIVA		W							**309**	0.5	36			
	1998-NIVA	CI	W							**309**	0.5	37	2		
	1999-NIVA	EK	W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	56			
	2004-NIVA	R5	W							**309**	0.5	58	7	4	
	2005-NIVA	F!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
MBTIN	1997-NIVA		D							**320**	5	13	4		
	1998-NIVA		D							**320**	5	15			
	1999-NIVA		D							**320**	5	13			
	1999-NIVA		W							**320**	5	6	6		
	2000-NIVA		W							**320**	0.5	23			
	2001-GALG		W							**775**	0.2	11			
	2001-NIVA		W							**320**	0.5	16			5
	2002-EFDH		W							**777**	0.8	33			15
	2002-NIVA		W							**320**	0.5	2			2
	2003-NIVA		W							**320**	0.8	36	1		31
	2004-NIVA		W							**320**	0.8	73	50	48	1
	2005-NIVA		W							**320**	0.8	34	22	22	
	2006-NIVA		W							**320**	0.8	47	13	8	21
MN	1984-SIIF		W							**132**	40	27			
	1985-SIIF		D							**132**	40	35			
	2004-NIVA		W							**315**	20	7			
MPTIN	1997-NIVA		D							**320**	5	13	5	5	
	1998-NIVA		D							**320**	2	15			6
	1999-NIVA		D							**320**	5	13	13	10	
	1999-NIVA		W							**320**	5	6	6		
	2000-NIVA		W							**320**	0.5	23	3	2	
	2001-NIVA		W							**320**	0.5	16			15
	2002-EFDH		W							**730**	4	1			
	2002-NIVA		W							**320**	4	2	2	2	
	2003-NIVA		W							**320**	4	36	36	35	
	2004-NIVA		W							**320**	4	71	71	67	
	2005-NIVA		W							**320**	4	34	34	31	
	2006-NIVA		W							**320**	4	47	47	46	
NAP	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA		W							**309**	0.2	70			21
	1996-NIVA		W							**309**	0.2	61			11
	1997-NIVA		W							**309**	0.2	34			1
	1998-NIVA	CI	W							**309**	0.2	37			
	1999-NIVA		W							**309**	0.2	34			1
	2000-NIVA		W							**309**	0.2	37			7
	2001-NIVA		W							**309**	0.2	41			4
	2002-NIVA		W							**309**	0.2	42			19
	2003-NIVA	MQ	W							**309**	0.2	55			40
	2004-NIVA	R5	W							**309**	0.2	58			18
	2005-NIVA	E!	W							**309**	0.2	51			49
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			47

Tissue			**Fish liver**						**Fish fillet, Shrimp tail, Mussel, Other**					
Contamin.	Mon. Year	Inter-calibr. +basis	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
NAP1M	1992-NIVA	W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA	W							**309**	0.2	15			13
	1997-NIVA	W							**309**	0.5	34			
	1998-NIVA	W							**309**	0.5	37			
	1999-NIVA	W							**309**	0.5	34			
	2000-NIVA	W							**309**	0.5	39			
	2001-NIVA	W							**309**	0.5	41			
	2002-NIVA	W							**309**	0.5	42			9
	2003-NIVA	W							**309**	0.5	55			1
NAP2M	1992-NIVA	W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA	W							**309**	0.2	15			13
	1997-NIVA	W							**309**	0.5	34			
	1998-NIVA	W							**309**	0.5	37			
	1999-NIVA	W							**309**	0.5	34			
	2000-NIVA	W							**309**	0.5	39			
	2001-NIVA	W							**309**	0.5	41			
	2002-NIVA	W							**309**	0.5	42			9
	2003-NIVA	W							**309**	0.5	55			4
NAPC1	1995-NIVA	W							**309**	0.2	55			6
	1996-NIVA	W							**309**	0.2	61			
	2004-NIVA	W							**309**	2	58	23	15	
	2005-NIVA	W							**309**	2	51			
	2006-NIVA	W							**309**	2	48			29
NAPC2	1995-NIVA	W							**309**	0.2	57			6
	1996-NIVA	W							**309**	0.2	60			
	2004-NIVA	W							**309**	2	58	14	6	
	2005-NIVA	W							**309**	2	51			
	2006-NIVA	W							**309**	2	48			15
NAPC3	1995-NIVA	W							**309**	0.2	57			5
	1996-NIVA	W							**309**	0.2	60			
	2004-NIVA	W							**309**	2	58	3		5
	2005-NIVA	W							**309**	2	51			3
	2006-NIVA	W							**309**	2	48			5
NAPD2	1997-NIVA	W							**309**	0.5	34			
	1998-NIVA	W							**309**	0.5	39			
	1999-NIVA	W							**309**	0.5	34			
	2000-NIVA	W							**309**	0.5	39			
	2001-NIVA	W							**309**	0.5	41			
	2002-NIVA	W							**309**	0.5	42			
	2003-NIVA	W							**309**	0.5	55			
NAPD3	1997-NIVA	W							**309**	0.5	34			
	1998-NIVA	W							**309**	0.5	39			
	1999-NIVA	W							**309**	0.5	34			
	2000-NIVA	W							**309**	0.5	39			
	2001-NIVA	W							**309**	0.5	41			
	2002-NIVA	W							**309**	0.5	42			
	2003-NIVA	W							**309**	0.5	38			
NAPDI	1992-NIVA	W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA	W							**309**	0.2	15			6
	1997-NIVA	W							**309**	0.5	34			
	1998-NIVA	W							**309**	0.5	39			
	1999-NIVA	W							**309**	0.5	34			
	2000-NIVA	W							**309**	0.5	39			
	2001-NIVA	W							**309**	0.5	41			
	2002-NIVA	W							**309**	0.5	42			
	2003-NIVA	W							**309**	0.5	55			
NAPT2	1997-NIVA	W							**309**	0.5	34			
	1998-NIVA	W							**309**	0.5	39			
	1999-NIVA	W							**309**	0.5	34			

Tissue				**Fish liver**						**Fish fillet, Shrimp tail, Mussel, Other**					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA		W							**309**	0.5	56			
NAPT3	1997-NIVA		W							**309**	0.5	34			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA		W							**309**	0.5	56			
NAPT4	1997-NIVA		W							**309**	0.5	34			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA		W							**309**	0.5	56			
NAPTM	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA		W							**309**	0.2	15			11
	1997-NIVA		W							**309**	0.5	34			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA		W							**309**	0.5	56			9
NI	1983-SIIF	1G	W							**130**	20	12			
	1992-NIVA		W							**312**	10	6			
	1996-NIVA		D							**312**	10	18			
	1996-NIVA		W							**312**	10	3			
	2004-NIVA		W							**315**	20	28			
	2005-NIVA	B!	W							**315**	20	21			
	2006-NIVA	R44_EX702_BT-1	W							**315**	20	20			
OCS	1990-NIVA		W	**340**	2	169	31	27	24	**341**	0.05	58			1
	1991-NIVA		W	**340**	2	179	14	13	81	**341**	0.05	62	5	5	8
	1992-NIVA		W	**340**	5	192	3	3		**341**	0.1	146			
	1993-NIVA		W	**340**	4	212	51	48	16	**341**	0.1	138			
	1994-NIVA		W	**340**	3	300	39	31	22	**341**	0.05	170	101	98	
	1995-NIVA		W	**340**	3	318	44	43		**341**	0.05	231	108	107	
	1996-NIVA		W	**340**	3	332	287	249		**341**	0.05	243	114	114	
	1997-NIVA		W	**340**	2	260	100	78		**341**	0.05	221	30	30	14
	1998-NIVA		W	**340**	2	277	132	132	101	**341**	0.05	209	188	188	1
	1999-NIVA		W	**340**	2	249	148	96	2	**341**	0.05	232	86	79	26
	2000-NIVA		W	**340**	2	230	140	104	21	**341**	0.05	186	103	98	59
	2001-NIVA		W	**340**	2	250	189	91	2	**341**	0.05	211	94	88	69
	2002-NIVA		W	**340**	2	218	183	108		**341**	0.05	201	96	90	6
	2003-NIVA		W	**340**	2	217	178	131		**341**	0.05	180	79	79	
	2004-NIVA		W	**340**	2	265	218	168		**341**	0.05	241	71	69	1
	2005-NIVA		W	**340**	2	274	230	174	1	**341**	0.05	252	12	12	
	2006-NIVA		W	**340**	2	280	139	124		**341**	0.05	220			
PA	1992-NIVA		W	**309**	0.2	8				**309**	0.2	45			
	1995-NIVA		W							**309**	0.2	72			
	1996-NIVA		W							**309**	0.2	65			
	1997-NIVA	AL	W							**309**	0.2	36			
	1998-NIVA	CI	W							**309**	0.2	39			
	1999-NIVA	EK	W							**309**	0.2	34			
	2000-NIVA		W							**309**	0.2	39			
	2001-NIVA		W							**309**	0.2	42			
	2002-NIVA		W							**309**	0.2	43			

Tissue				**Fish liver**						**Fish fillet, Shrimp tail, Mussel, Other**					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2003-NIVA	MQ	W							**309**	0.2	56			
	2004-NIVA	R5	W							**309**	0.2	58			
	2005-NIVA	F!	W							**309**	0.2	51			2
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
PAC1	1995-NIVA		W							**309**	0.2	57			1
	1996-NIVA		W							**309**	0.2	65			
	2004-NIVA		W							**309**	2	58	8		
	2005-NIVA		W							**309**	2	46			
	2006-NIVA		W							**309**	2	48			1
PAC2	1995-NIVA		W							**309**	0.2	56			
	1996-NIVA		W							**309**	0.2	65			2
	2004-NIVA		W							**309**	2	58			
	2005-NIVA		W							**309**	2	51			
	2006-NIVA		W							**309**	2	48			1
PAC3	2004-NIVA		W							**309**	2	58	5		
	2005-NIVA		W							**309**	2	45			
	2006-NIVA		W							**309**	2	48			6
PADM1	1997-NIVA		W							**309**	0.5	36			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA		W							**309**	0.5	56			
PADM2	1997-NIVA		W							**309**	0.5	36			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			1
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA		W							**309**	0.5	56			
PAH	1987-NIVA		W	**309**	0.02	1									
PAM1	1992-NIVA		W	**309**	0.2	8				**309**	0.2	45			
	1995-NIVA		W							**309**	0.2	15			2
	1997-NIVA		W							**309**	0.5	36			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA		W							**309**	0.5	55			9
PAM2	1997-NIVA		W							**309**	0.5	36			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA		W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	38			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA		W							**309**	0.5	56			
PB	1981-NIVA		D							**312**	150	3			
	1982-NIVA		D							**312**	150	3			
	1983-SIIF	1G	W							**130**	20	12			
	1984-SIIF	1G	W							**130**	20	27			2
	1985-SIIF	1G	D							**130**	20	35			
	1986-NIVA	1Z	D	**312**	150	56	4			**312**	150	20			
	1987-FIER	1G	W	**403**	10	37	1								
	1987-NIVA	1Z	D	**312**	150	57			12	**312**	150	42			
	1988-NIVA	1Z	D	**312**	150	61	17	9	3	**312**	150	55			
	1989-NIVA	1Z	D	**312**	150	135	9	4	9	**312**	150	3			
	1989-NIVA	1Z	W							**312**	150	36			

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1990-NIVA	1Z	D							**312**	50	6			
	1990-NIVA	1Z	W	**312**	50	187	3	3	1	**312**	150	77	3		
	1991-NIVA	1Z	D							**312**	50	6			
	1991-NIVA	1Z	W	**312**	50	193	14	10		**312**	50	67			
	1992-NIVA	1Z	D							**312**	50	6			
	1992-NIVA	1Z	W	**312**	50	191	119	94		**312**	50	111	2	2	
	1993-NIVA	1H	D							**312**	30	5			
	1993-NIVA	1H	W	**312**	30	221	40	36		**312**	30	79			
	1994-NIVA	1Z	D							**312**	30	5			
	1994-NIVA	1Z	W	**312**	30	302	3	2		**312**	30	81			
	1995-NIVA		D							**312**	30	6			
	1995-NIVA		W	**312**	30	318	162	150	30	**312**	30	124			
	1996-NIVA	V1	D							**312**	30	24			
	1996-NIVA	V1	W							**312**	30	110			
	1996-NIVA	V2	W	**312**	30	368			109						
	1997-NIVA		D							**312**	40	6			
	1997-NIVA		W	**312**	40	287	10	8	28	**312**	40	113			
	1998-NIVA		W	**312**	40	285	126	117	2						
	1998-NIVA	CF	D							**312**	40	6			
	1998-NIVA	CF	W							**312**	40	111			
	1999-NIVA		W	**312**	40	235	118	116	11						
	1999-NIVA	EF	D							**312**	40	6			
	1999-NIVA	EF	W							**312**	40	150	10	7	
	2000-NIVA		W	**312**	40	227	67	62	4						
	2000-NIVA	GS	D							**312**	40	7			
	2000-NIVA	GS	W							**312**	40	106			
	2001-NIVA		W	**312**	40	261	156	148	6						
	2001-NIVA	IM	D							**312**	40	6			
	2001-NIVA	IM	W							**312**	40	111			
	2002-NIVA		D							**315**	40	6			
	2002-NIVA		W	**315**	40	230	164	37		**315**	40	128			
	2003-NIVA	MM	W	**315**	40	233	179	136	1	**315**	40	117			
	2004-NIVA		W	**315**	40	249	182	157		**315**	40	160			
	2005-NIVA	A!	W	**315**	40	272	219	149		**315**	40	162			
	2006-NIVA	R44_EX702_BT-1	W	**315**	40	278	194	165		**315**	40	139			
PBB15	1996-NILU		W	**843**	0.01	4			3						
	2001-NILU		W	**843**	0.01	6			6	**843**	0.01	6			
	2002-NILU		W							**843**	0.01	2			
PBB49	2001-NILU		W	**843**	0.01	6			1	**843**	0.01	6			
	2002-NILU		W							**843**	0.01	2			
PBB52	1996-NILU		W	**843**	0.01	4									
	2001-NILU		W	**843**	0.01	6			1	**843**	0.01	6			
	2002-NILU		W							**843**	0.01	2			
PCB	1981-SIIF	2D	W	**110**	10	27				**110**	10	35			
	1982-SIIF	2D	W							**111**	5	17			
	1982-VETN		W	**210**	50	53				**211**	50	54			
	1983-SIIF	2E	W							**111**	5	14			
	1983-VETN	2E	W							**211**	50	48			
	1983-VETN	2Z	W	**210**	50	48									
	1984-SIIF	2E	W							**111**	5	24			
	1984-VETN	2E	W							**211**	50	66			
	1984-VETN	2Z	W	**210**	50	66									
	1985-SIIF	2E	W							**111**	5	32			6
	1985-VETN	2E	W							**211**	50	90			1
	1985-VETN	2Z	W	**210**	50	45									
	1986-NACE	2Z	W	**511**	40a	56				**511**	20	56			
	1986-SIIF	2E	W							**111**	5	21			
	1987-NACE	2Z	W	**510**	40	53				**511**	20	54			
	1987-NIVA		W	**340**	0.1	2									
	1987-SIIF	2E	W							**111**	5	21			

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	1988-NACE	2Z	W	**510**	40	61				**511**	20	13			
	1988-SIIF	2E	D							**111**	5	6			
	1988-SIIF	2E	W							**111**	5	22	4		
	1989-NACE	2Z	W	**510**	20	93				**511**	20	17			
	1989-SIIF	2E	W							**111**	5	36	6		
	1990-SIIF	2E	W							**111**	5	41			
	1991-SIIF	2E	W							**111**	5	35			
PCC26	1996-NILU		W							**842**	0.001	6			
PCC32	1996-NILU		W							**842**	0.003	6			4
PCC50	1996-NILU		W							**842**	0.001	6			
PCC62	1996-NILU		W							**842**	0.025	6			6
PCDD	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	1E-04	18			
	2002-NILU		W							**841**	1E-04	12			
PCDF	1995-NILU		W							**841**	2E-05	6			
	1996-NILU		W	**841**	0	4				**841**	1E-04	18			
	2002-NILU		W							**841**	1E-04	11			
PER	1992-NIVA		W	**309**	0.2	8				**309**	0.2	46			
	1995-NIVA		W							**309**	0.2	72			32
	1996-NIVA		W							**309**	0.2	65			40
	1997-NIVA		W							**309**	0.5	36			
	1998-NIVA		W							**309**	0.5	39			
	1999-NIVA	EK	W							**309**	0.5	34			
	2000-NIVA		W							**309**	0.5	39			
	2001-NIVA		W							**309**	0.5	42			
	2002-NIVA		W							**309**	0.5	43			
	2003-NIVA	MQ	W							**309**	0.5	56			
	2004-NIVA		W							**309**	0.5	55	24	11	
	2005-NIVA	F!	W							**309**	0.5	51			
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.5	48			
PYR	1992-NIVA		W	**309**	0.2	8				**309**	0.2	44			
	1995-NIVA		W							**309**	0.2	72			4
	1996-NIVA		W							**309**	0.2	65			1
	1997-NIVA	AL	W							**309**	0.2	36			
	1998-NIVA	CI	W							**309**	0.2	39			
	1999-NIVA	EK	W							**309**	0.2	34			
	2000-NIVA		W							**309**	0.2	39			
	2001-NIVA		W							**309**	0.2	42			
	2002-NIVA		W							**309**	0.2	43			3
	2003-NIVA	MQ	W							**309**	0.2	56			
	2004-NIVA	R5	W							**309**	0.2	58			
	2005-NIVA	F!	W							**309**	0.2	51			6
	2006-NIVA	R44_EX705_BT-4	W							**309**	0.2	48			3
QCB	1990-NIVA		W	**340**	2	169	33	25	39	**341**	0.05	58			
	1991-NIVA		W	**340**	2	178	13	11	97	**341**	0.05	63	5	5	13
	1992-NIVA		W	**340**	5	192	3	3		**341**	0.1	131			
	1993-NIVA		W	**340**	4	212	52	49	24	**341**	0.1	138			
	1994-NIVA		W	**340**	3	299	38	37	23	**341**	0.05	170	98	95	
	1995-NIVA		W	**340**	3	318	45	42		**341**	0.05	231	108	95	
	1996-NIVA		W	**340**	3	332	306	250		**341**	0.05	243	109	103	
	1997-NIVA		W	**340**	2	260	79	37		**341**	0.05	221	27	20	10
	1998-NIVA		W	**340**	2	284	121	99	101	**341**	0.05	209	177	148	1
	1999-NIVA		W	**340**	2	242	185	113	2	**341**	0.05	232	88	87	14
	2000-NIVA		W	**340**	2	230	198	171	1	**341**	0.05	186	123	112	1
	2001-NIVA		W	**340**	2	232	216	114	1	**341**	0.05	211	95	85	63
	2002-NIVA		W	**340**	2	248	235	175		**341**	0.05	210	99	84	4
	2003-NIVA		W	**340**	2	186	182	151		**341**	0.05	183	79	79	
	2004-NIVA		W	**340**	2	229	227	178		**341**	0.05	241	215	206	
	2005-NIVA		W	**340**	2	271	239	172		**341**	0.05	241	223	202	

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter- calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2006-NIVA		W	**340**	2	255	184	103		**341**	0.03	221			
SCCP	2001-NILU		W	**850**	miss	4				**850**	miss	3			
SE	1982-VETN		W	**240**	10	46				**240**	10	54			
TBA	2001-NILU		W	**843**	0.35	6	3			**843**	0.35	6	2		
	2002-NILU		W							**843**	0.35	1			
TBBPA	2001-NILU		W	**830**	miss	6				**830**	miss	6			
TBTIN	1997-NIVA		D							**320**	5	13			
	1998-NIVA		D							**320**	5	15			
	1999-NIVA		D							**320**	5	13			
	1999-NIVA		W							**320**	5	6			
	2000-NIVA		W							**320**	0.5	23			
	2001-GALG		W							**775**	0.12	11			
	2001-NIVA		W							**320**	0.5	16			
	2002-EFDH		W							**777**	0.2	32			
	2002-NIVA		W							**320**	0.5	2			
	2003-NIVA		W							**320**	0.2	36	1		2
	2004-NIVA		W							**320**	0.2	72			1
	2005-NIVA		W							**320**	0.2	34			2
	2006-NIVA		W							**320**	0.2	47			12
TCDD	1995-NILU		W							**841**	2E-05	6	1		
	1996-NILU		W	**841**	0	4				**841**	1E-05	18			
	2002-NILU		W							**841**	1E-05	12			
	2003-NILU		W							**841**	1E-05	12			2
	2004-NILU		W							**841**	1E-05	13			
	2005-NILU		W							**841**	1E-05	11			
	2006-NILU		W							**841**	1E-05	12			1
TDEPP	1991-NIVA		W	**340**	1	138			1	**341**	0.05	68			
	1992-NIVA		W	**340**	5	191	3	3		**341**	0.1	146			
	1993-NIVA		W	**340**	4	212	24	12	3	**341**	0.1	138			
	1994-NIVA	2Z	W	**340**	3	300	17	3	5	**341**	0.05	170	47	22	
	1995-NIVA		W	**340**	3	318	36	20		**341**	0.05	228	51	30	
	1996-NIVA		W	**340**	3	332	23	3		**341**	0.05	243	16	5	
	1997-NIVA		W	**340**	3	260	23								
	1997-NIVA	AJ	W							**341**	0.05	221	11	2	
	1998-NIVA		W	**340**	3	278	19	6	26						
	1998-NIVA	CH	W							**341**	0.05	209	1	1	44
	1999-NIVA		W	**340**	3	249	6		1						
	1999-NIVA	EG	W							**341**	0.05	232	2	2	71
	2000-NIVA		W	**340**	3	230	35	7	4						
	2000-NIVA	GU	W							**341**	0.05	185	11	10	67
	2001-NIVA		W	**340**	3	250	24	3	3	**341**	0.05	210	1		101
	2002-NIVA		W	**340**	3	248	24	2	3	**341**	0.05	210			124
	2003-NIVA		W	**340**	3	239	18	5	9	**341**	0.05	183			106
	2004-NIVA		W	**340**	3	272	30	6		**341**	0.05	241			138
	2005-NIVA		W	**340**	3	282	41	11	1						
	2005-NIVA	C!	W							**341**	0.05	246			156
	2006-NIVA	R44_EX704_BT-3	W	**340**	3	280	51	25	19	**341**	0.2	221	194	166	
TPTIN	1997-NIVA		D							**320**	5	13			
	1998-NIVA		D							**320**	10	15			
	1999-NIVA		D							**320**	5	13			
	1999-NIVA		W							**320**	5	6	4		
	2000-NIVA		W							**320**	0.5	23			
	2001-GALG		W							**775**	0.1	11			1
	2001-NIVA		W							**320**	0.5	16			9
	2002-EFDH		W							**777**	2	24	13	12	
	2002-NIVA		W							**320**	0.5	2			2
	2003-NIVA		W							**320**	2	36	35	29	
	2004-NIVA		W							**320**	2	64	61	47	
	2005-NIVA		W							**320**	2	34	34	26	

Tissue				Fish liver						Fish fillet, Shrimp tail, Mussel, Other					
Contamin.	Mon. Year	Inter-calibr. +basis		**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim	**Analys method code**	Detect limit (ppb)	Total value count	Count below d.lim	N (<) below d.lim	N (<) above d.lim
	2006-NIVA		W							**320**	2	47	45	39	
V	1996-NIVA		D							**312**	330	18	1		
	1996-NIVA		W							**312**	330	3	3		
ZN	1981-NIVA		D							**311**	3000	3			
	1982-NIVA		D							**311**	3000	3			
	1983-SIIF	1G	W							**131**	400	12			
	1984-SIIF	1G	W							**132**	400	27			
	1985-SIIF	1G	D							**132**	400	35			
	1986-NIVA	1H	D	**311**	3000	56				**311**	3000	20			
	1987-FIER	1G	W	**405**	20	37									
	1987-NIVA	1H	D	**311**	3000	57				**311**	3000	42			
	1988-NIVA	1H	D	**311**	3000	61				**311**	3000	55			
	1989-NIVA	1H	D	**311**	3000	135			1	**311**	3000	3			
	1989-NIVA	1H	W							**311**	3000	36			
	1990-NIVA	1H	D							**311**	3000	6			
	1990-NIVA	1H	W	**311**	3000	189				**311**	3000	77			
	1991-NIVA	1H	D							**311**	1000	6			
	1991-NIVA	1H	W	**311**	1000	193				**311**	1000	67			
	1992-NIVA	1H	D							**311**	1000	6			
	1992-NIVA	1H	W	**311**	1000	191				**311**	1000	111			
	1993-NIVA	1H	D							**311**	1000	5			
	1993-NIVA	1H	W	**311**	1000	221				**311**	1000	79			
	1994-NIVA	1Z	D							**311**	1000	5			
	1994-NIVA	1Z	W	**311**	1000	302				**311**	1000	81			
	1995-NIVA		D							**311**	1000	6			
	1995-NIVA		W	**311**	1000	318				**311**	1000	142			
	1996-NIVA	V1	D							**311**	1000	24			
	1996-NIVA	V1	W							**311**	1000	131			
	1996-NIVA	V2	W	**311**	1000	368									
	1997-NIVA		W	**311**	1000	287									
	1997-NIVA	AH	D							**311**	1000	6			
	1997-NIVA	AH	W							**311**	1000	131			
	1998-NIVA		W	**311**	1000	285									
	1998-NIVA	CF	D							**311**	1000	6			
	1998-NIVA	CF	W							**311**	1000	72			
	1999-NIVA		W	**311**	1000	235									
	1999-NIVA	EF	D							**311**	1000	6			
	1999-NIVA	EF	W							**311**	1000	120			
	2000-NIVA		W	**311**	1000	227									
	2000-NIVA	GS	D							**311**	1000	7			
	2000-NIVA	GS	W							**311**	1000	70			
	2001-NIVA		W	**311**	1000	261									
	2001-NIVA	IM	D							**311**	1000	6			
	2001-NIVA	IM	W							**311**	1000	72			
	2002-NIVA		W	**315**	1000	230									
	2002-NIVA	LI	D							**315**	1000	6			
	2002-NIVA	LI	W							**315**	1000	86			
	2003-NIVA		W	**315**	1000	233									
	2003-NIVA	MM	W							**315**	1000	72			
	2004-NIVA		W	**315**	1000	249				**315**	1000	122			
	2005-NIVA	A!	W	**315**	1000	272				**315**	1000	132			
	2006-NIVA	R44_EX702_BT-1	W	**315**	1000	278				**315**	1000	109			
Sum of counts						97044	16628	8994	4313			96691	7515	5275	7944

a(11) > ambigous value (Maximum value displayed)

Appendix D
Participation in intercalibration exercises

Appendix D1

Participation in intercalibration exercises other than QUASIMEME

Sea water:

4H	ICES/JMG Fifth Round Intercalibration on Trace Metals in Sea Water - Section 4, analysis for Hg - 1983 - (5/TM/SW:4).
4I	JMG Sixth Intercalibration on Trace Metals in Estuarine Waters - 1986 - (6/TM/SW).
4Z	Intercalibration exercise for SIIF/SERI (Cd) and NIVA/IAMK (IAMK=Chalmers Inst., Göteborg) - 1985.

Seabed sediment:

7E	ICES, First Intercalibration Exercise on Trace metals in Marine Sediments - 1984 - (1/TM/MS).
8B	ICES/OSPAR, First Intercomparison Exercise on Organochlorines (individual chlorobiphenyl congeners) in Marine Sediments - Phase 1, analysis of standard solutions - 1989 - (1/OC/MS:1).
8C	ICES/OSPAR, First Intercomparison Exercise on Organochlorines (individual chlorobiphenyl congeners) in Marine Sediments - Phase 2, analysis of standard solutions - 1991 - (1/OC/MS:2).
8B	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 1 - (analysis of standard solutions) - 1989 - (1/OC/MS-1).
8C	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 2 - 1990 - (1/OC/MS-2).
8D	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 3a (1/OC/MS-3a) 1991.
8E	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 3b - (1/OC/MS-3b) 1992.
8F	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 4 - (1/OC/MS-4) 1993.

Marine biota:

1E	ICES, Fifth Intercalibration Exercise on Trace Metals in Biological Tissues - 1978 - (5/TM/BT).
1F	ICES, Sixth Intercalibration Exercise on Trace Metals (Cadmium and Lead only) in Biological Tissues - 1979 - (6/TM/BT).
1G	ICES, Seventh Intercalibration Exercise on Trace Metals in Biological Tissues - Part A - 1983 - (7/TM/BT).
1H	ICES, Seventh Intercalibration Exercise on Trace Metals in Biological Tissues - Part B - 1985 - (7/TM/BT) (preliminary report 1987).
1Z VETN	Interlabcalibration exercise with VETN and SIIF 1983, mercury and cadmium in cod filet and liver.

1Z NIVA	Interlabcalibration exercise with VETN, NACE and NIVA 1986 (Hg, Cd, Cu, Pb and Zn in 6 samples).
2D	ICES Fourth Intercalibration Exercise on Organochlorines (mainly PCBs) in Biological Tissues (Sample No.5) - 1979 - (4/OC/BT).
2E	ICES Fifth Intercalibration Exercise on Organochlorines (PCBs only) in Biological Tissues - 1982 - (5/OC/BT).
2G	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 1 - (analysis of standard solutions) - 1989 - (7/OC/BT-1).
2H	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 2 - 1990 - (7/OC/BT-2).
2I	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 3a - (7/OC/BT-3a) 1991.
2J	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 3b - (7/OC/BT-3b) 1992.
2K	ICES/IOC/OSPAR Intercomparison Programme on the Analysis of Chlorobiphenyls in Marine Media - Step 4 - (7/OC/BT-4) 1993.
2Z VETN	Interlabcalibration exercise with VETN among others, 1983, PCB and HCB in cod liver.
2Z NACE	Interlabcalibration exercise with NACE, VETNand SIIF 1986 (PCB (all labs), DDE, OCS, HCB and DCB (NACE and VETN).

Appendix D2

Participation in QUASIMEME intercalibration exercises

iccod	ICES version 2.2 description	YEAR	Code version 3.2	ICES version 3.2 description
QM	QUASIMEME Round 01 Ex. 80 BT-2: QOR002BT	1993	R01_Ex80_BT-2	QUASIMEME Round 1 Ex. 80 CB's in standard and biota
V1	QUASIMEME Round 06 Ex. 280 BT-1: QTM028BT	1996	R06_Ex280_BT-1	QUASIMEME Round 6 Ex. 280 Trace metals
V2	QUASIMEME Round 06 Ex. 280 BT-1: QTM029BT	1996	R06_Ex280_BT-1	QUASIMEME Round 6 Ex. 280 Trace metals
AH	QUASIMEME Round 12 Ex. 346 BT-1: QTM036BT	1997	R12_Ex346_BT-1	QUASIMEME Round 12 Ex. 346 Metals in biota
AJ	QUASIMEME Round 12 Ex. 347 BT-2: QOR054BT	1997	R12_Ex347_BT-2	QUASIMEME Round 12 Ex. 347 Chlorobiphenyls and organochlorine pesticides in biota
AL	QUASIMEME Round 12 Ex. 348 BT-4: QPH008BT	1997	R12_Ex348_BT-4	QUASIMEME Round 12 Ex. 348 PAHs in biota
CF	QUASIMEME Round 16 Ex. 392 BT-1: QTM042BT	1998	R16_Ex392_BT-1	QUASIMEME Round 16 Ex. 392 Trace metals in biota
CH	QUASIMEME Round 16 Ex. 393 BT-2: QOR059BT	1998	R16_Ex393_BT-2	QUASIMEME Round 16 Ex. 393 Chlorobiphenyls and organochlorine
CI	QUASIMEME Round 16 Ex. 394 BT-4: QPH010BT	1998	R16_Ex394_BT-4	QUASIMEME Round 16 Ex. 394 Polyaromatic hydrocarbons in biota
EF	QUASIMEME Round 20 Ex. 433 BT-1: QTM046BT	1999	R20_Ex433_BT-1	QUASIMEME Round 20 Ex. 433 Trace metals in biota
EG	QUASIMEME Round 20 Ex. 434 BT-2: QOR062BT	1999	R20_Ex434_BT-2	QUASIMEME Round 20 Ex. 434 Chlorobiphenyls and organochlorine pesticides in biota
EK	QUASIMEME Round 20 Ex. 435 BT-4: QPH012BT	1999	R20_Ex435_BT-4	QUASIMEME Round 20 Ex. 435 Polyaromatic hydrocarbons in biota
GS	QUASIMEME Round 24 Ex. 472 BT-1: QTM049BT	2000	R24_Ex472_BT-1	QUASIMEME Round 24 Ex. 472 Trace metals in biota
GU	QUASIMEME Round 24 Ex. 473 BT-2: QOR066BT	2000	R24_Ex473_BT-2	QUASIMEME Round 24 Ex. 473 Chlorobiphenyls and organochlorine pesticides in biota
IM	QUASIMEME Round 28 Ex. 509 BT-1: QTM053BT	2001	R28_Ex509_BT-1	QUASIMEME Round 28 Ex. 509 Trace metals in biota
IO	QUASIMEME Round 28 Ex. 510 BT-2: QOR070BT	2001	R28_Ex510_BT-2	QUASIMEME Round 28 Ex. 510 Chlorobiphenyls and organochlorine pesticides in biota
LH	QUASIMEME Round 32 Ex. 549 BT-1: QTM057BT	2002	R32_Ex549_BT-1	QUASIMEME Round 32 Ex. 549 Trace metals in biota
LI	QUASIMEME Round 32 Ex. 549 BT-1: QTM058BT	2002	R32_Ex549_BT-1	QUASIMEME Round 32 Ex. 549 Trace metals in biota
LJ	QUASIMEME Round 32 Ex. 550 BT-2: QOR074BT	2002	R32_Ex550_BT-2	QUASIMEME Round 32 Ex. 550 Chlorobiphenyls and organochlorine pesticides in biota
MM	QUASIMEME Round 34 Ex. 586 BT-1: QTM059BT	2003	R34_Ex586_BT-1	QUASIMEME Round 34 Ex. 586 Trace metals in biota
MO	QUASIMEME Round 34 Ex. 587 BT-2: QOR076BT	2003	R34_Ex587_BT-2	QUASIMEME Round 34 Ex. 587 Chlorobiphenyls and organochlorine pesticides in biota
MQ	QUASIMEME Round 34 Ex. 588 BT-4: QPH031BT	2003	R34_Ex588_BT-4	QUASIMEME Round 34 Ex. 588 Polyaromatic hydrocarbons in biota
R1	QUASIMEME Round 40 Ex. 652 BT-2: QOR082BT	2004	R40_Ex652_BT-2	QUASIMEME Round 40 Ex. 652 CBs and OCPs in biota
R5	QUASIMEME Round 40 Ex. 654 BT-4: QPH037BT	2004	R40_Ex654_BT-4	QUASIMEME Round 40 Ex. 654 PAHs in biota
A!	QUASIMEME Round 42 Ex. 685 BT-1: QTM067BT	2005	R42_Ex685_BT-1	QUASIMEME Round 42 Ex. 685 Trace metals in biota
B!	QUASIMEME Round 42 Ex. 685 BT-1: QTM068BT	2005	R42_Ex685_BT-1	QUASIMEME Round 42 Ex. 685 Trace metals in biota
C!	QUASIMEME Round 42 Ex. 686 BT-2: QOR084BT	2005	R42_Ex686_BT-2	QUASIMEME Round 42 Ex. 686 CB's and OCPs in biota
D!	QUASIMEME Round 42 Ex. 686 BT-2: QOR085BT	2005	R42_Ex686_BT-2	QUASIMEME Round 42 Ex. 686 CB's and OCPs in biota
E!	QUASIMEME Round 42 Ex. 687 BT-4: QPH039BT	2005	R42_Ex687_BT-4	QUASIMEME Round 42 Ex. 687 PAH's in biota
F!	QUASIMEME Round 42 Ex. 687 BT-4: QPH040BT	2005	R42_Ex687_BT-4	QUASIMEME Round 42 Ex. 687 PAH's in biota
R5	QUASIMEME Round 40 Ex. 654 BT-4: QPH037BT	2005	R40_Ex654_BT-4	QUASIMEME Round 40 Ex. 654 PAHs in biota

Appendix E
Overview of localities and sample count for sediment
1981-2006

Nominel station positions are shown on maps in Appendix G

jmpco: JAMP area code (J99 = unclassified)
jmpst: station code
stnam: station name
nom_lon: Longitude (nominel)
nom_lat: Latitude (nominel)

STATIONS AND SAMPLE COUNT FOR SEDIMENT

jmpco	jmpst	stnam	lat	lon	1986	1987	1990	1992	1994	1996	1997	2004	2006
J26	30S	Steilene	59° 49.1	10° 33.8	8		34			5			
J26	35S	Mølen-Moss	59° 28.96	10° 31.74	6					5			
J26	35S	Mølen-Moss	59° 30	10° 35.7	2		3						
J26	36S	Færder area	59° 0.4	10° 41.6	2		40						
J26	36S	Færder area	59° 1.55	10° 32.99	6								
J26	36S	Færder area	59° 2.5	10° 46.6						56			
J99	77S	Arendal area	58° 24.2	9° 1.8			43				29		
J99	15S	Lista area	58° 1	6° 34.3			32				5		
J63	52S	Tyssedal	60° 6.9	6° 32.9			3				5		
J63	52S	Tyssedal	60° 6.92	6° 32.6								3	
J63	56S	Kvalnes	60° 13.7	6° 35.6			29				5		
J63	56S	Kvalnes	60° 13.72	6° 35.6								3	
J63	57S	Krossanes	60° 23.1	6° 40.7			3				5	3	
J62	63S	Ranaskjær	60° 23.34	6° 26.7								3	
J62	63S	Ranaskjær	60° 23.6	6° 27.1			3				5		
J62	67S	Strandebarm area	60° 13.12	6° 4.6								3	
J62	67S	Strandebarm area	60° 13.5	6° 5.1			28				28		
J62	69S	Kvinnheradsfjorden	60° 1.3	5° 56.1			3				5	3	
J99	22S	Bømlo area	59° 25.9	4° 50.2			29				5	3	
J99	24S	Sotra	60° 15.1	4° 33.3			3					3	
J65	82S	Flakk	63° 27.5	10° 11.8		8						3	
J65	89S	Thamshavn	63° 19.7	9° 52.5								3	
J65	89S	Thamshavn	63° 19.8	9° 52.5		4		3					
J65	84S	Trossavika	63° 21.7	9° 57.4		8		3				3	
J65	90S	Outer Orkdalsfjord	63° 27.3	10° 2.6								3	
J65	90S	Outer Orkdalsfjord	63° 27.4	10° 2.6		8		30					
J99	27S	Stadtlandet (east)	62° 9.3	5° 21.3				30				3	
J99	93S	Raudøya (northeast)	64° 22.7	10° 27.8				30				3	
J99	95S	Rodø (east)	66° 41.8	13° 10								3	
J99	95S	Rodø (east)	66° 41.8	13° 9.9				31					

J99	98S	Skrova (south)	68° 7	14° 41	30		3	
J99	99S	Lundøy (north)	68° 5.8	15° 10.1	30		3	
J99	41S	Vågsfjorden	68° 56.025	17° 5.024				2
J99	41S	Vågsfjorden	68° 56.25	17° 5.24		34		1
J99	42S	Malangen	69° 30.038	18° 6.077				3
J99	42S	Malangen	69° 30.38	18° 6.77		3		
J99	43S	Kvænangen	70° 3.031	21° 7.094				3
J99	43S	Kvænangen	70° 3.31	21° 7.94		34		
J99	44S	Sørøysund	70° 25.091	22° 31.083				3
J99	44S	Sørøysund	70° 25.91	22° 31.83		3		
J99	45S	Revsbotn	70° 42.086	24° 26.065				3
J99	45S	Revsbotn	70° 42.86	24° 26.65		34		
J99	46S	Porsangerfjorden	70° 52.093	26° 11.089				3
J99	46S	Porsangerfjorden	70° 52.93	26° 11.89		28		
J99	47S	Laksfjord	70° 54.096	26° 55.011				3
J99	47S	Laksfjord	70° 54.96	26° 55.11		3		
J99	48S	Tanafjord	70° 52.054	28° 38.053				3
J99	48S	Tanafjord	70° 52.54	28° 38.53		33		
J99	49S	Syltefjord	70° 33.094	30° 19.091				3
J99	49S	Syltefjord	70° 33.94	30° 19.91		3		
J99	10S	Varangerfjorden	69° 56.01	30° 6.07				3
J99	10S	Varangerfjorden	69° 56.07	30° 6.7		29		

Appendix F
Overview of localities and sample count for biota 1981-2006

Nominel station positions are shown on maps in Appendix G

jmpco: JAMP area code (J99 = unclassified)
jmpst: station code
stnam: station name
nom_lon: Longitude (nominel)
nom_lat: Latitude (nominel)
speci: species code (English, Norwegian (Latin))

- MYTI EDU - blue mussel, blåskjell (*Mytilus edulis*)
- NUCE LAP - dogwhelk, purpursnegl (*Nucella lapillus*)
- BROS BRO - tusk, brosme (*Brosme brosme)*
- CHIM MON - rat fish, havmus (*Chimaera monstrosa*)
- GADU MOR - Atlantic cod, torsk (*Gadus morhua*)
- LEPI WHI - megrim, glassvar (*Lepidorhombus whiff-iagonis*)
- LIMA LIM - dab, sandflyndre (*Limanda limanda*)
- MICR KIT - lemon sole, lomre (*Microstomus kitt*)
- MOLV MOL - ling, lange (*Molva molva*)
- PAND BOR - shrimp, reker (*Pandalus borealis)*
- PLAT FLE - flounder, skrubbe (*Platichthys flesus*)
- PLEU PLA - plaice, rødspette (*Pleuronectes platessa*)

tissu: tissue:
SB - soft body
LI - liver
MU - fillet
TM - tail muscle

STATIONS AND SAMPLE COUNT FOR BIOTA

jmpco	jmpst	stnam	nomlat	nomlon	speci	tissu	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006
J26	01A	Sponvika	59° 5.31	11° 13.57	MYTI EDU	SB		3			3					3																
J26	02A	Fugleskjær	59° 6.9	10° 59	MYTI EDU	SB		3			3					3																
J26	03A	Tisler	58° 58.8	10° 57.5	MYTI EDU	SB		2			3					3																
J26	301	Akershuskaia	59° 54.32	10° 44.18	MYTI EDU	SB												2														
J26	302	Ormøya	59° 52.69	10° 45.46	MYTI EDU	SB												2														
J26	303	Malmøya	59° 51.78	10° 45.95	MYTI EDU	SB												1														
J26	304	Gåsøya	59° 51.08	10° 35.32	MYTI EDU	SB												3														
J26	305	Lysaker	59° 54.36	10° 38.6	MYTI EDU	SB												2														
J26	306	Håøya	59° 42.8	10° 33.31	MYTI EDU	SB												3														
J26	30A	Gressholmen	59° 52.89	10° 42.71	MYTI EDU	SB				3	3	3	4	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3	3
J26	30B	Oslo City area	59° 47.96	10° 33.6	GADU MOR	BI																			23	23	25	24	25	25	23	24
J26	30B	Oslo City area	59° 47.96	10° 33.6	GADU MOR	BL																			25	25	25	25	25	25		
J26	30B	Oslo City area	59° 47.96	10° 33.6	GADU MOR	LI				29	25	25	25	25	25	25	24	21	24	25	25	40	40	50	25	25	28	25	25	25	25	25
J26	30B	Oslo City area	59° 47.96	10° 33.6	GADU MOR	MU				29	25	25	25	26	26	30	30	21	29	30	30	48	48	60	30	30	30	30	30	30	30	30
J26	30C	Oslo City area	59° 49	10° 33	PAND BOR	TM				1								2														
J26	30F	Oslo City area	59° 47	10° 34	PLEU PLA	LI												2		5	5											
J26	30F	Oslo City area	59° 47	10° 34	PLEU PLA	MU												2		5	5											
J26	30J	Spro	59° 47.96	10° 33.6	PAND BOR	TM															1											
J26	30K	Storegrunn	59° 47.96	10° 33.6	PAND BOR	TM															1											
J26	30X	West of Nesodden	59° 48.5	10° 36	GADU MOR	LI												22														
J26	30X	West of Nesodden	59° 48.5	10° 36	GADU MOR	MU												22														
J26	31A	Solbergstrand	59° 37.13	10° 38.99	MYTI EDU	SB	2		6	3	3	3	3	3	3	3	3	3	3	3	2	4	3	3	3	3	3	3	3	3	3	3
J26	31B	Solbergstrand	59° 36.9	10° 38.4	GADU MOR	LI	10	27																								
J26	31B	Solbergstrand	59° 36.9	10° 38.4	GADU MOR	MU	10	27																								
J26	31F	Solbergstrand	59° 36.9	10° 38.4	PLAT FLE	LI	8																									
J26	31F	Solbergstrand	59° 36.9	10° 38.4	PLAT FLE	MU	8																									
J26	31C	Solbergstrand	59° 36.9	10° 38.4	PAND BOR	TM				1																						
J26	32A	Rødtangen	59° 31.5	10° 25.6	MYTI EDU	SB	1	3			3																					
J26	33F	Sande (east side)	59° 31.7	10° 21	PLAT FLE	LI			25		1	1	1	1	1	5	5	5	5	5	5	10	10	8	5	5	5	5	5	5	5	5
J26	33F	Sande (east side)	59° 31.7	10° 21	PLAT FLE	MU			25		25	1	1	1	1	5	5	5	5	5	5	10	10	8	5	5	5	5	5	5	5	5
J26	33C	Sande	59° 31.7	10° 21	PAND BOR	TM						1																				
J26	33X	Sande (west side)	59° 31.7	10° 20.4	PLAT FLE	LI										3																
J26	33X	Sande (west side)	59° 31.7	10° 20.4	PLAT FLE	MU										3																
J26	35A	Mølen	59° 29.29	10° 29.88	MYTI EDU	SB	1	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
J26	35C	Mølen-Moss	59° 28.96	10° 31.74	PAND BOR	TM		1						1		2																
J26	35C	Mølen-Moss	59° 28.96	10° 31.74	PAND BOR	XX								1																		
J26	36A	Færder	59° 1.63	10° 31.53	MYTI EDU	SB	1		5	3	3	3	3	3	3	3	3	3	3	3	3	5	3	3	3	3	3	3	3	3	3	3
J26	36G	Færder	59° 1.63	10° 31.53	NUCE LAP	SB																	1	1	1	1	1	1	1	2	2	2
J26	36B	Færder area	59° 2.43	10° 26.15	GADU MOR	BI																	21	25	25	23	25					
J26	36B	Færder area	59° 2.43	10° 26.15	GADU MOR	BL																	20	25	25	23	25					
J26	36B	Færder area	59° 2.43	10° 26.15	GADU MOR	LI	10	27	23	24	14	25	25	25	25	24	25	25	25	25	25	26	25	25	25	23	28	25	25	25	25	25
J26	36B	Færder area	59° 2.43	10° 26.15	GADU MOR	MU	10	27	23	24	14	25	25	26	26	29	30	30	30	30	30	30	30	30	30	27	30	30	30	30	30	30
J26	36F	Færder area	59° 4	10° 23	LIMA LIM	BI																			11	9	20					
J26	36F	Færder area	59° 4	10° 23	LIMA LIM	BL																			20	9	20					
J26	36F	Færder area	59° 4	10° 23	LIMA LIM	LI										5	5	5	5	5	5	5	5	5	25	14	24	5	5	5	5	5
J26	36F	Færder area	59° 4	10° 23	LIMA LIM	MU										5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
J26	73A	Lyngholmen	59° 2.68	10° 17.72	MYTI EDU	SB										3																
J26	74A	Langholmane	58° 57.3	9° 52.1	MYTI EDU	SB										3																
J26	71A	Bjørkøya (Risøyodden)	59° 1.4	9° 45.22	MYTI EDU	SB	1	3	3	3	2	3	3	3	3	3	3	3	3	3	3	4	3	3	3	3	3	3	3	3	3	3
J26	71G	Fugløyskjær	58° 58.85	9° 48.46	NUCE LAP	SB																					1	1	1	1	1	1
J99	76A	Risøy	58° 43.85	9° 16.32	MYTI EDU	SB										3	3	3	3			3	3	3	3	3	3	3	3	3	3	3

J99	76A	Risøy	58° 43.85	9° 16.32	NUCE LAP	SB																						1				
J99	76G	Risøy	58° 43.68	9° 16.53	NUCE LAP	SB																					1	1		1	2	2
J99	77A	Nordstrand	58° 31.42	8° 56.51	MYTI EDU	SB										3	3															
J99	77B	Borøy area	58° 33	9° 1	GADU MOR	LI										14	25															
J99	77B	Borøy area	58° 33	9° 1	GADU MOR	MU										17	30															
J99	77F	Borøy area	58° 33	9° 1	LIMA LIM	LI											3															
J99	77C	Borøy area	58° 29	9° 10	PAND BOR	TM										2																
J99	79A	Gjerdsvoldsøyen (east)	58° 24.8	8° 44.5	MYTI EDU	SB										3	3															
J99	13A	Langøsund	57° 59.87	7° 34.6	MYTI EDU	SB										1	4															
J99	131G	Lastad	58° 3.33	7° 42.52	NUCE LAP	SB																					1	1	1	1	2	2
J99	14A	Aavigen	58° 1.96	7° 12.97	MYTI EDU	SB										3	4															
J99	15A	Gåsøy (Ullerø)	58° 2.87	6° 53.72	MYTI EDU	SB										4	4		3	3	4	4	3	3	3	3	3	3	3	3	3	3
J99	15G	Gåsøy (Ullerø)	58° 2.98	6° 53.74	NUCE LAP	SB																					1	1	1	2	2	2
J99	15B	Ullerø area	58° 3	6° 43	GADU MOR	BI																	10	25	25		24	18	24	22	24	24
J99	15B	Ullerø area	58° 3	6° 43	GADU MOR	BL																	24	25	25		23					
J99	15B	Ullerø area	58° 3	6° 43	GADU MOR	LI										25	24	23	25	23	24	26	25	25	25	25	25	25	25	25	25	25
J99	15B	Ullerø area	58° 3	6° 43	GADU MOR	MU										30	29	27	30	28	29	30	30	30	30	30	30	30	30	30	30	30
J99	15F	Ullerø area	58° 3	6° 43	LIMA LIM	BI																			20		22					
J99	15F	Ullerø area	58° 3	6° 43	LIMA LIM	BL																			25		25					
J99	15F	Ullerø area	58° 3	6° 43	LIMA LIM	LI											3		2	4	5	5	5	5	30	5	30	5	5	5	5	5
J99	15F	Ullerø area	58° 3	6° 43	LIMA LIM	MU											3		2	4	5	5	5	5	5	5	5	5	5	5	5	5
J99	15F	Ullerø area	58° 3	6° 43	PLEU PLA	LI												3	2													
J99	15F	Ullerø area	58° 3	6° 43	PLEU PLA	MU												3	2													
J99	15F	Ullerø area	58° 3	6° 43	MICR KIT	LI														1												
J99	15F	Ullerø area	58° 3	6° 43	MICR KIT	MU														1												
J63	51A	Byrkjenes	60° 5.03	6° 33.03	MYTI EDU	SB						3	3								1	3	3	3	6	3	3	3	3	3	3	3
J63	52A	Eitrheimsneset	60° 5.8	6° 31.97	MYTI EDU	SB								3	3	3	3	2	3	3	3	3	3	6	3	3	3	3	3	3	3	3
J63	53B	Inner Sørfjord	60° 10	6° 34	GADU MOR	BI																			24	25	25	24	24	25	24	24
J63	53B	Inner Sørfjord	60° 10	6° 34	GADU MOR	BL																			25	25	25	25	25	25		
J63	53B	Inner Sørfjord	60° 10	6° 34	GADU MOR	LI						13	1	12	25	25	22	25	25	25	50	30	30	25	25	25	25	25	25	25	25	25
J63	53B	Inner Sørfjord	60° 10	6° 34	GADU MOR	MU						12	1	15	30	30	26	30	30	30	56	36	36	30	30	30	30	30	30	30	30	30
J63	53F	Inner Sørfjord	60° 10	6° 34	PLAT FLE	BI																			25	11	12					
J63	53F	Inner Sørfjord	60° 10	6° 34	PLAT FLE	BL																			23	11	12					
J63	53F	Inner Sørfjord	60° 10	6° 34	PLAT FLE	LI				22			1	30	5	5	5	5	4	4	11	15	11	30	13	17	5	5	5	5		
J63	53F	Inner Sørfjord	60° 10	6° 34	PLAT FLE	MU				22			1	30	5	5	5	5	4	4	11	15	11	5	2	5	5	5	5	5		
J63	53F	Inner Sørfjord	60° 10	6° 34	GLYP CYN	LI						3																				
J63	53F	Inner Sørfjord	60° 10	6° 34	GLYP CYN	MU						3																				
J63	53B	Inner Sørfjord	60° 10	6° 34	SALM TRU	LI									12																	
J63	53B	Inner Sørfjord	60° 10	6° 34	SALM TRU	MU									12																	
J63	53D	Digraneset	60° 11	6° 34.5	BROS BRO	LI																					4					
J63	53D	Digraneset	60° 11	6° 34.5	BROS BRO	MU																					4					
J63	53D	Digraneset	60° 11	6° 34.5	MOLV MOL	LI																					5					
J63	53D	Digraneset	60° 11	6° 34.5	MOLV MOL	MU																					5					
J63	53D	Digraneset	60° 11	6° 34.5	CHIM MON	LI																					2					
J63	53D	Digraneset	60° 11	6° 34.5	CHIM MON	MU																					2					
J63	56A	Kvalnes	60° 13.23	6° 36.12	MYTI EDU	SB						3	15	3	3	3	3	3	3	3	3	3	3	6	3	3	3	3	3	3	3	3
J63	56A1	Kvalnes (north)	60° 13.51	6° 36.26	MYTI EDU	SB																			3			2				
J63	56A2	Kjeken	60° 20.33	6° 39.27	MYTI EDU	SB																			3			2				
J63	56A3	Sekse	60° 15.68	6° 37.4	MYTI EDU	SB																						2				
J63	56A4	Rosstadnes	60° 17.22	6° 37.43	MYTI EDU	SB																						2				
J63	56A5	Lofthus (south)	60° 19.35	6° 39.12	MYTI EDU	SB																						2				
J63	56D	Kvalnes	60° 15	6° 36	BROS BRO	LI																			3							
J63	56D	Kvalnes	60° 15	6° 36	BROS BRO	MU																			3							
J63	56D	Kvalnes	60° 15	6° 36	MOLV MOL	LI																			1							
J63	56D	Kvalnes	60° 15	6° 36	MOLV MOL	MU																			1							
J63	56D	Kvalnes	60° 15	6° 36	CHIM MON	LI																			1							

J63	56D	Kvalnes	60° 15	6° 36	CHIM MON	MU																1							
J63	57A	Krossanes	60° 23.23	6° 41.34	MYTI EDU	SB				3	3	3	3	3	3	3	3	3	3	3	3	6	3	3	3	3	3	3	3
J63	57A1	Urdheim	60° 22.35	6° 40.69	MYTI EDU	SB																3			2				
J63	57A2	Ernes	60° 21.19	6° 39.74	MYTI EDU	SB																			2				
J62	63A	Ranaskjær	60° 25.25	6° 25.32	MYTI EDU	SB				3	3	3	3	3	3	3	3	3	3	3	3	6	3	3	3	3	3	3	3
J62	65A	Vikingneset	60° 14.54	6° 9.16	MYTI EDU	SB				3	15	3	3	3	3	3	3	3	3	3	3	6	3	3	3	3	3	3	3
J62	67B	Strandebarm area	60° 16	6° 2	GADU MOR	BI														25	24	25	15	25					
J62	67B	Strandebarm area	60° 16	6° 2	GADU MOR	BL														25	25	25	13	24					
J62	67B	Strandebarm area	60° 16	6° 2	GADU MOR	LI				22	1	22	16	19	8	12	18	25	35	25	25	25	25	25	25	25	25	25	25
J62	67B	Strandebarm area	60° 16	6° 2	GADU MOR	MU				22	1	23	16	24	9	14	22	30	40	30	30	30	30	30	30	30	30	30	30
J62	67F	Strandebarm area	60° 16	6° 2	PLAT FLE	BI																25	22	25					
J62	67F	Strandebarm area	60° 16	6° 2	PLAT FLE	BL																25	23	23					
J62	67F	Strandebarm area	60° 16	6° 2	PLAT FLE	LI													3		4	30	28	30	5	5	5	5	5
J62	67F	Strandebarm area	60° 16	6° 2	PLAT FLE	MU													3		4	5	5	5	5	5	5	5	5
J62	67F	Strandebarm area	60° 16	6° 2	LIMA LIM	LI															5								
J62	67F	Strandebarm area	60° 16	6° 2	LIMA LIM	MU															5								
J62	67F	Strandebarm area	60° 16	6° 2	LEPI WHI	LI	19			1	1	30	5	5	3	5	5	5	5	5	5	5	5	5	5	5	2	5	4
J62	67F	Strandebarm area	60° 16	6° 2	LEPI WHI	MU	19			1	1	30	5	5	3	5	5	5	5	5	5	5	5	5	5	5	2	5	4
J62	69A	Lille Terøy	59° 58.91	5° 45.15	MYTI EDU	SB									3	1	3	3	3	3	3	6	3	3	3	3	3	3	3
J99	22A	Espevær (west)	59° 35.05	5° 8.63	MYTI EDU	SB							3	3	3	3	3	3	5	3	3	3	3	3	3	3	3	3	3
J99	224G	Heggjelen	59° 24.96	5° 13.9	NUCE LAP	SB														1	1	1	1						
J99	22G	Espevær vest	59° 35.02	5° 8.67	NUCE LAP	SB																		1	1	1	2	2	2
J99	220G	Smørstakk	59° 15.15	5° 21.11	NUCE LAP	SB														1	1	1					2		
J99	22C	Bømlofjord	59° 34	5° 11	PAND BOR	TM							2																
J99	221A	Stangeland	59° 16.62	5° 19.7	MYTI EDU	SB															2	3							
J99	221G	Stangeland	59° 16.21	5° 19.8	NUCE LAP	SB															1	1							
J99	21F	Åkrafjord	59° 45	6° 7	PLAT FLE	BI																11							
J99	21F	Åkrafjord	59° 45	6° 7	PLAT FLE	BL																11	25						
J99	21F	Åkrafjord	59° 45	6° 7	PLAT FLE	LI																14	11	5	5		1	5	5
J99	21F	Åkrafjord	59° 45	6° 7	PLAT FLE	MU																3	5	5	5		1	5	5
J99	21F	Åkrafjord	59° 45	6° 7	LIMA LIM	LI																			5	5	5	5	
J99	22F	Borøyfjorden	59° 42.6	5° 19.8	LIMA LIM	LI							5	5	4		5	2											
J99	21F	Åkrafjord	59° 45	6° 7	LIMA LIM	MU																			5	5	5	5	
J99	22F	Borøyfjorden	59° 42.6	5° 19.8	LIMA LIM	MU							5	5	4		5	2											
J99	22F	Borøyfjorden	59° 42.6	5° 19.8	PLEU PLA	LI													5	5	5								
J99	22F	Borøyfjorden	59° 42.6	5° 19.8	PLEU PLA	MU													5	5	5								
J99	21F	Åkrafjord	59° 45	6° 7	LEPI WHI	LI																5				5	5	5	3
J99	21F	Åkrafjord	59° 45	6° 7	LEPI WHI	MU																5				5	5	5	3
J99	22F	Borøyfjorden	59° 42.6	5° 19.8	MICR KIT	LI										5													
J99	22F	Borøyfjorden	59° 42.6	5° 19.8	MICR KIT	MU										5													
J99	21D	Åkrafjord	59° 48	6° 11	BROS BRO	LI																1		4					
J99	21D	Åkrafjord	59° 48	6° 11	BROS BRO	MU																1		4					
J99	21D	Åkrafjord	59° 48	6° 11	MOLV MOL	LI																1		4					
J99	21D	Åkrafjord	59° 48	6° 11	MOLV MOL	MU																1		4					
J99	21D	Åkrafjord	59° 48	6° 11	CHIM MON	LI																1		2					
J99	21D	Åkrafjord	59° 48	6° 11	CHIM MON	MU																1		2					
J99	222A	Kopervik harbour	59° 16.98	5° 18.94	MYTI EDU	SB																	3						
J99	226X	Karmsund bridge (east)	59° 22.68	5° 17.91	MYTI EDU	SB															1	3	3						
J99	226G	Karmsund bridge (east)	59° 22.68	5° 17.91	NUCE LAP	SB															1	1	1						
J99	226H	Karmsund bridge (west)	59° 22.66	5° 17.55	NUCE LAP	SB														1			1						
J99	227A1	Melandholmen	59° 19.56	5° 19.05	MYTI EDU	SB															2	3							
J99	227A2	Høgevarde	59° 19.56	5° 19.05	MYTI EDU	SB																	3	3	3	3	1	2	2
J99	227G1	Melandholmen	59° 20.24	5° 18.75	NUCE LAP	SB														1	1	1	1	1	1				
J99	227G2	Flatskjær	59° 20.24	5° 18.75	NUCE LAP	SB																				1	1	2	2
J99	23A	Austvik	59° 52.22	5° 6.47	MYTI EDU	SB							3	3													3	3	
J99	23B	Karihavet area	59° 54	5° 8	GADU MOR	BI														22	23	24	23	25	25	25	24	25	25

J99	23B	Karihavet area	59° 54	5° 8	GADU MOR	BL													25	25	25	24	25	25	25	25		
J99	23B	Karihavet area	59° 54	5° 8	GADU MOR	LI							25	25	25	25	25	25	26	25	25	25	25	25	25	25	25	25	25
J99	23B	Karihavet area	59° 54	5° 8	GADU MOR	MU							30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
J99	23F	Karihavet area	59° 54	5° 8	PLAT FLE	LI											1												
J99	23F	Karihavet area	59° 54	5° 8	PLAT FLE	MU											1												
J99	23F	Karihavet area	59° 54	5° 8	PLEU PLA	LI											3												
J99	23F	Karihavet area	59° 54	5° 8	PLEU PLA	MU											3												
J99	23F	Karihavet area	59° 54	5° 8	MICR KIT	LI											1	4											
J99	23F	Karihavet area	59° 54	5° 8	MICR KIT	MU											1	4											
J99	24A	Vardøy	60° 10.27	5° 0.62	MYTI EDU	SB							3	3													3	3	
J99	24G	Vardøy	60° 10.27	5° 0.62	NUCE LAP	SB																					1		
J65	80A	Østmarknes	63° 27.44	10° 26.97	MYTI EDU	SB	1	2																					
J65	81A	Biologisk Stasjon	63° 26.5	10° 20.95	MYTI EDU	SB	1																						
J65	82A	Flakk	63° 27.02	10° 12.38	MYTI EDU	SB	1	2	2	3	1	2		3	2	2		3	3								3	3	
J99	82G	Flakk	63° 27.04	10° 12.15	NUCE LAP	SB									1												1		
J65	83A	Frøsetskjær	63° 25.69	10° 6.4	MYTI EDU	SB	1																						
J65	84A	Tråsåvika	63° 20.79	9° 57.43	MYTI EDU	SB	2	3	3	3	3	3		3	3	3		3	3								3	3	
J99	84G	Tråsåvika	63° 20.79	9° 57.43	NUCE LAP	SB									1														
J65	84B	Tråsåvika	63° 20.92	9° 57.68	GADU MOR	LI	13	1	1	1	1																		
J65	84B	Tråsåvika	63° 20.92	9° 57.68	GADU MOR	MU	13	10	1	1	1																		
J65	84F	Tråsåvika	63° 20.92	9° 57.68	MICR KIT	LI					1																		
J65	84F	Tråsåvika	63° 20.92	9° 57.68	MICR KIT	MU					1																		
J65	84B	Tråsåvika	63° 20.92	9° 57.68	MELA AEG	LI			1	1	1																		
J65	84B	Tråsåvika	63° 20.92	9° 57.68	MELA AEG	MU			1	1	1																		
J65	84B	Tråsåvika	63° 20.92	9° 57.68	MERL MNG	LI				1	1																		
J65	84B	Tråsåvika	63° 20.92	9° 57.68	MERL MNG	MU				1	1																		
J65	84B	Tråsåvika	63° 20.92	9° 57.68	POLL POL	LI		1	1		1																		
J65	84B	Tråsåvika	63° 20.92	9° 57.68	POLL POL	MU		16	1		1																		
J65	84B	Tråsåvika	63° 20.92	9° 57.68	POLL VIR	LI					1																		
J65	84B	Tråsåvika	63° 20.92	9° 57.68	POLL VIR	MU					1																		
J65	85A	Geitstrand	63° 21.84	9° 55.65	MYTI EDU	SB	1																						
J65	86A	Geitnes	63° 26.57	9° 58.66	MYTI EDU	SB	1																						
J65	87A	Ingdalsbukt	63° 27.71	9° 54.43	MYTI EDU	SB	1	1	1	1	1	1		1	1	1		2	2								1	3	
J99	87G	Ingdalsbukt	63° 27.71	9° 54.43	NUCE LAP	SB									1												1		
J65	88A	Rødberg	63° 29.2	10° 0	MYTI EDU	SB	1	1																					
J99	25A	Hinnøy	61° 22.17	4° 52.74	MYTI EDU	SB									3	3											3	3	
J99	25G	Hinnøy	61° 22.17	4° 52.74	NUCE LAP	SB									1												1		
J99	26A	Hamnen	61° 52.56	5° 13.3	MYTI EDU	SB									6	3											3	3	
J99	26G	Hamnen	61° 52.52	5° 13.3	NUCE LAP	SB									1												1		
J99	27A	Grinden	62° 12.11	5° 25.27	MYTI EDU	SB									2												3	3	
J99	27G	Røydeskjær	62° 11	5° 44.42	NUCE LAP	SB									1												1		
J99	27H	Storholmen	62° 11.38	5° 23.59	NUCE LAP	SB									1														
J99	28A	Eiksundet	62° 15.1	5° 51.84	MYTI EDU	SB									5	3											3	3	
J99	28G	Grønevikholmen (Eiksundet)	62° 14.8	5° 53	NUCE LAP	SB									1												1		
J99	28H	Øveråneset (Hareid)	62° 21.69	6° 4.67	NUCE LAP	SB									1														
J99	91A	Nerdvika	63° 21.16	8° 9.43	MYTI EDU	SB									3	3	3											3	
J99	92A1	Krokholmen	64° 3.21	10° 1.79	MYTI EDU	SB									6	3	3	3	3	3									
J99	92A2	Nygården	64° 3.21	10° 1.79	MYTI EDU	SB																						3	
J99	92B	Stokken area	64° 10.28	9° 53.24	GADU MOR	LI										25	24	25	25								25	25	
J99	92B	Stokken area	64° 10.28	9° 53.24	GADU MOR	MU										30	29	30	30								30	30	
J99	92F	Stokken area	64° 10.28	9° 53.24	LIMA LIM	LI												1											
J99	92F	Stokken area	64° 10.28	9° 53.24	LIMA LIM	MU												1											
J99	92F	Stokken area	64° 10.28	9° 53.24	PLEU PLA	LI												1										5	
J99	92F	Stokken area	64° 10.28	9° 53.24	PLEU PLA	MU												1										5	
J99	93A	Sætervik	64° 23.68	10° 29	MYTI EDU	SB									3	3											3	3	
J99	93G	Sætervika (Stadsvikskjæret)	64° 23.69	10° 30	NUCE LAP	SB									1														

J99	94A	Landfast	65° 38.62	12° 0.36	MYTI EDU	SB	3	3											3	3	
J99	94G	Steinskjær (Landfast)	65° 38.44	11° 59.89	NUCE LAP	SB	1												1		
J99	95A	Sleipnesodden (south)	66° 42.61	13° 15.17	MYTI EDU	SB	3	3											3	3	
J99	95G	Sleipnesodden (south)	66° 42.4	13° 14.3	NUCE LAP	SB	1												1		
J99	96A	Breiviken	66° 17.77	12° 50.02	MYTI EDU	SB	6	3											3	3	
J99	97A	Klokkholmen	67° 39.88	14° 44.57	MYTI EDU	SB	3	3											3	3	
J99	97G	Varnesodden	67° 48.08	14° 45.02	NUCE LAP	SB	1												1		
J99	97H	Småfloholmene	67° 53.45	14° 49.1	NUCE LAP	SB	1														
J99	98A1	Yitj-Skarvsundet	68° 9.45	14° 39.2	MYTI EDU	SB	3	3													
J99	98A2	Husvaagen area	68° 15.46	14° 39.83	MYTI EDU	SB						3		3	3	3	3	3	3	3	3
J99	98A3	Vatterfjord	68° 15.46	14° 39.83	MYTI EDU	SB							3								
J99	98G	Svolvær området	68° 14.92	14° 39.8	NUCE LAP	SB										1	1	1	2	2	2
J99	98B2	Austnesfjorden	68° 14.8	14° 48.2	GADU MOR	BI									14	22					
J99	98B2	Austnesfjorden	68° 14.8	14° 48.2	GADU MOR	BL									5	25					
J99	98B1	Bjørnerøya (east)	68° 14.8	14° 48.2	GADU MOR	LI	25	24	25	24	26	25	25	25			25	21	25	25	25
J99	98B2	Austnesfjorden	68° 14.8	14° 48.2	GADU MOR	LI									25	25					
J99	98B1	Bjørnerøya (east)	68° 14.8	14° 48.2	GADU MOR	MU	30	29	30	29	30	30	30	30			30	25	30	30	30
J99	98B2	Austnesfjorden	68° 14.8	14° 48.2	GADU MOR	MU									30	30					
J99	98F1	Bjørnerøya (east)	68° 13.13	14° 48.48	LIMA LIM	LI		4	1	1	5										
J99	98F1	Bjørnerøya (east)	68° 13.13	14° 48.48	LIMA LIM	MU		4	1	1	5										
J99	98F2	Husholmen	68° 13.13	14° 48.48	PLEU PLA	BI									18	24					
J99	98F2	Husholmen	68° 13.13	14° 48.48	PLEU PLA	BL									13	19					
J99	98F1	Bjørnerøya (east)	68° 13.13	14° 48.48	PLEU PLA	LI		3		5		4	5	1							
J99	98F2	Husholmen	68° 13.13	14° 48.48	PLEU PLA	LI									22	30	4	3	5	2	5
J99	98F1	Bjørnerøya (east)	68° 13.13	14° 48.48	PLEU PLA	MU		3		5		4	5	1							
J99	98F2	Husholmen	68° 13.13	14° 48.48	PLEU PLA	MU									4	5	4	3	5	2	5
J99	98F1	Bjørnerøya (east)	68° 13.13	14° 48.48	MICR KIT	LI			1	1											
J99	98F1	Bjørnerøya (east)	68° 13.13	14° 48.48	MICR KIT	MU			1	1											
J99	98F1	Bjørnerøya (east)	68° 13.13	14° 48.48	GLYP CYN	LI				1											
J99	98F1	Bjørnerøya (east)	68° 13.13	14° 48.48	GLYP CYN	MU				1											
J99	98X	Skrova harbour	68° 9.91	14° 39.53	MYTI EDU	SB			3	4	4										
J99	99A	Brunvær	68° 0.3	15° 5.6	MYTI EDU	SB	6	3											3	3	
J99	41A	Fensneset (Grytøya)	68° 56.1	16° 38.47	MYTI EDU	SB			3	3	4	3									3
J99	41G	Harstad (Trondenes)	68° 49.3	16° 33.92	NUCE LAP	SB									1						2
J99	41G1	Feneset	68° 56.1	16° 38.46	NUCE LAP	SB															2
J99	42A	Tennskjær (Malangen)	69° 28.65	18° 18.12	MYTI EDU	SB			3	3											3
J99	42G	Finnsnes	69° 13.55	17° 58.5	NUCE LAP	SB									1						
J99	43A	Lyngneset (Langfjord)	70° 6.03	20° 32.79	MYTI EDU	SB			3	3		3									3
J99	43G1	Lyngneset (Langfjord)	70° 6.04	20° 32.79	NUCE LAP	SB															2
J99	43B1	Leisundet	70° 13.56	21° 23.81	GADU MOR	LI															25
J99	43B1	Leisundet	70° 13.56	21° 23.81	GADU MOR	MU															30
J99	43F1	Leisundet	70° 13.43	21° 23.84	PLEU PLA	LI															4
J99	43F1	Leisundet	70° 13.43	21° 23.84	PLEU PLA	MU															4
J99	43B	Kvænangen (Olderfjord)	70° 13.56	21° 23.81	GADU MOR	LI			25	25	25										
J99	43B	Kvænangen (Olderfjord)	70° 13.56	21° 23.81	GADU MOR	MU			30	30	30										
J99	43G	Skjervøy	70° 2.17	20° 59.76	NUCE LAP	SB									1						2
J99	43F	Kvænangen (Olderfjord)	70° 13.43	21° 23.84	LIMA LIM	LI					3										
J99	43F	Kvænangen (Olderfjord)	70° 13.43	21° 23.84	LIMA LIM	MU					3										
J99	43F	Kvænangen (Olderfjord)	70° 13.43	21° 23.84	MICR KIT	LI					1										
J99	43F	Kvænangen (Olderfjord)	70° 13.43	21° 23.84	MICR KIT	MU					1										
J99	44A	Elenheimsundet	70° 30.97	22° 14.76	MYTI EDU	SB			3	3	4	3									3
J99	44G	Alta	69° 59.4	23° 18.35	NUCE LAP	SB									1						
J99	44G1	Elenheimsundet	70° 30.97	22° 14.73	NUCE LAP	SB															2
J99	45A	Sauhamneset	70° 45.82	24° 19.2	MYTI EDU	SB			3	3											3
J99	45G	Sauhamneset	70° 45.82	24° 19.2	NUCE LAP	SB									1						2
J99	45B	Hammerfest area	70° 46	24° 6.5	GADU MOR	LI			24	25											

J99	45B1	Revsbotn	70° 46	24° 6.5	GADU MOR	LI													25
J99	45B	Hammerfest area	70° 46	24° 6.5	GADU MOR	MU	29	30											
J99	45B1	Revsbotn	70° 46	24° 6.5	GADU MOR	MU													30
J99	45F	Hammerfest area	70° 40	24° 40	PLEU PLA	LI													5
J99	45F	Hammerfest area	70° 40	24° 40	PLEU PLA	MU													5
J99	46A	Smines (Altesula)	70° 58.37	25° 48.1	MYTI EDU	SB	3	3	5										3
J99	46H	Honningsvåg	70° 59.11	25° 57.96	MYTI EDU	SB													3
J99	46H	Honningsvåg	70° 59.11	25° 57.96	NUCE LAP	SB							1						2
J99	47A	Kifjordneset	70° 52.87	27° 22.19	MYTI EDU	SB	3	3											2
J99	47G	Kifjordneset	70° 52.87	27° 22.19	NUCE LAP	SB							1						2
J99	48A	Trollfjorden (Tanafjord)	70° 41.61	28° 33.28	MYTI EDU	SB	3	3	3										3
J99	48G	Mehamn	71° 2.55	27° 50.35	NUCE LAP	SB							1						
J99	48G1	Trollfjorden (Tanafjord)	70° 41.61	28° 33.28	NUCE LAP	SB													2
J99	49G	Syltefjorden	70° 33.01	30° 5.17	NUCE LAP	SB													2
J99	49A	Nordfjorden (Syltefjord)	70° 33.01	30° 5.17	MYTI EDU	SB	3	3											3
J99	10A1	Skagodden	70° 6.21	30° 15.75	MYTI EDU	SB	3	3											
J99	10A2	Skallneset	70° 6.21	30° 15.75	MYTI EDU	SB			4	3	3	3	3	3	3	3	3	3	3
J99	10G3	Vardø	70° 22.65	31° 6.5	NUCE LAP	SB													2
J99	10G4	Vadsø	70° 4.48	29° 42.9	NUCE LAP	SB													2
J99	10B	Varangerfjorden	69° 56	29° 40	GADU MOR	BI							22	21					
J99	10B	Varangerfjorden	69° 56	29° 40	GADU MOR	BL							25	25					
J99	10B	Varangerfjorden	69° 56	29° 40	GADU MOR	LI	21	25	25	23	25	25	25	25	25	25	25	25	10
J99	10B	Varangerfjorden	69° 56	29° 40	GADU MOR	MU	25	30	30	27	30	30	30	30	30	30	30	30	12
J99	10B	Varangerfjorden	69° 56	29° 40	BROS BRO	LI	1												
J99	10B	Varangerfjorden	69° 56	29° 40	BROS BRO	MU	1												
J99	10F	Skogerøy	69° 55	29° 51	PLEU PLA	BI							15	25					
J99	10F	Skogerøy	69° 55	29° 51	PLEU PLA	BL							11	24					
J99	10F	Skogerøy	69° 55	29° 51	PLEU PLA	LI				5		4	18	30	5	4	4	5	
J99	10F	Skogerøy	69° 55	29° 51	PLEU PLA	MU				5		4	3	5	5	4	4	5	
J99	11A1	Sildkrokneset (south)	69° 47.11	30° 11.1	MYTI EDU	SB	3	3											
J99	11A2	Sildkrokneset (north)	69° 47.11	30° 11.1	MYTI EDU	SB			4	3									
J99	11G	Brashavn	69° 53.92	29° 44.65	NUCE LAP	SB									1	1	2	2	2
J99	11X	Brashavn	69° 53.92	29° 44.65	MYTI EDU	SB				3	3	3	3	3	3	3	3	3	3
J26	I001	Sponvikskansen	59° 5.41	11° 12.61	MYTI EDU	SB		3	3										
J26	I011	Kråkenebbet	59° 6.05	11° 17.33	MYTI EDU	SB		3	3										
J26	I021	Kjøkø (south)	59° 7.79	10° 57.11	MYTI EDU	SB		3	3	3	3		3	3	3				
J26	I022	West Damholmen	59° 6.11	11° 2.69	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J26	I023	Singlekalven (south)	59° 5.7	11° 8.2	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J26	I024	Kirkøy (north west)	59° 4.8	10° 59.18	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J26	I301	Akershuskaia	59° 54.32	10° 44.18	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J26	I304	Gåsøya	59° 51.08	10° 35.34	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J26	I306	Håøya	59° 42.8	10° 33.31	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J26	I307	Ramtonholmen	59° 44.67	10° 31.37	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J99	I711	Steinholmen	59° 3.11	9° 40.62	MYTI EDU	SB		3	4	3	3	3	3		3				
J99	I712	Gjemesholmen	59° 2.72	9° 42.41	MYTI EDU	SB		3	4	3	3	3	3	3	3	3	3	3	3
J99	I713	Strømtangen	59° 3.02	9° 41.5	MYTI EDU	SB									3	3	3	3	3
J99	I131A	Lastad	58° 3.33	7° 42.52	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J99	I132	Svensholmen	58° 7.5	7° 59.33	MYTI EDU	SB					3	3	3	3	3	3	3	3	3
J99	I1321	Fiskåtangen	58° 7.7	7° 58.6	MYTI EDU	SB		4	4	3									
J99	I133	Odderø (west)	58° 7.9	8° 0.1	MYTI EDU	SB		4	4	3	3	3	3	3	3	3	3	3	3
J99	I201	Ekkjegrunn (G1)	59° 38.6	6° 21.44	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J99	I205	Bølsnes (G5)	59° 35.5	6° 18.01	MYTI EDU	SB		3		3	3	3	3	3	3	3	3	3	3
J99	I241	Nordnes	60° 24.04	5° 18.1	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J99	I242	Gravdalsneset	60° 23.69	5° 16.01	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J99	I916	Sundalsfjord (Hydro kai)	62° 41.05	8° 33.11	MYTI EDU	SB											3	3	
J99	I243	Hegreneset	60° 24.92	5° 18.29	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3

J99	I914	Flåøya (southeast)	62° 45.35	8° 26.7	MYTI EDU	SB										3			
J99	I915	Flåøya (northwest)	62° 45.48	8° 26.39	MYTI EDU	SB										3	3	3	3
J99	I911	Horvika	62° 44.1	8° 31.4	MYTI EDU	SB		3	3										
J99	I913	Fjøseid	62° 48.59	8° 16.48	MYTI EDU	SB						3	3	3	3	3	3	3	3
J99	I912	Honnhammer	62° 51.2	8° 9.7	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J65	I080	Østmerknes	63° 27.44	10° 26.97	MYTI EDU	SB		3	3										
J99	I965	Moholmen (B5)	66° 18.72	14° 7.55	MYTI EDU	SB								3	3	3	3	3	3
J99	I962	Koksverktomta (B2)	66° 19.57	14° 8.38	MYTI EDU	SB		3	3	2	3								
J99	I964	Toraneskaien	66° 19.3	14° 7.97	MYTI EDU	SB									3	3	3	3	3
J99	I969	Bjørnbærviken (B9)	66° 16.81	14° 2.08	MYTI EDU	SB		3	3	3	3	3	3	3	3	3	3	3	3
J99	R096	Breiviken (Tomma)	66° 17.65	12° 50.48	MYTI EDU	SB		3	3										
J26	A3*	Svartskjær	°	°	MYTI EDU	SB	1												

Appendix G
Map of stations

Nominel station positions 1981-2006
(cf. Appendix H and Appendix L)

Appendix G (cont.) Map of stations

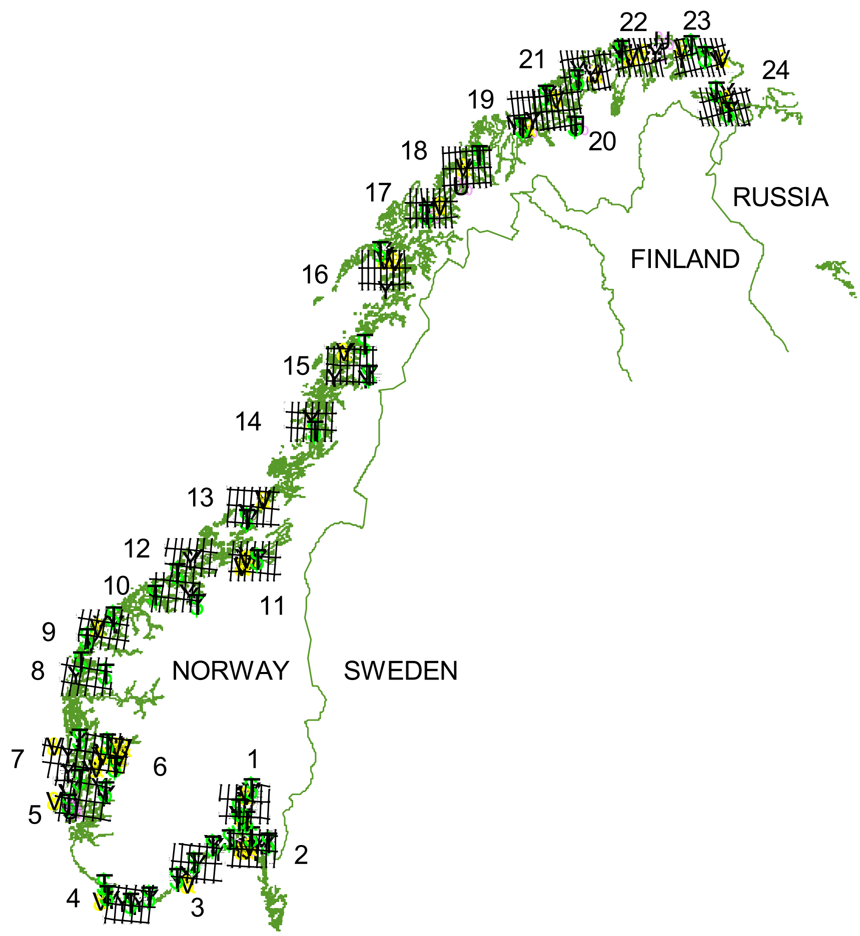
NOTES

The station's nominal position is plotted, and not the specific positions that may have differed from one year to another. The maps are generated using ArcGIS version 9.1.

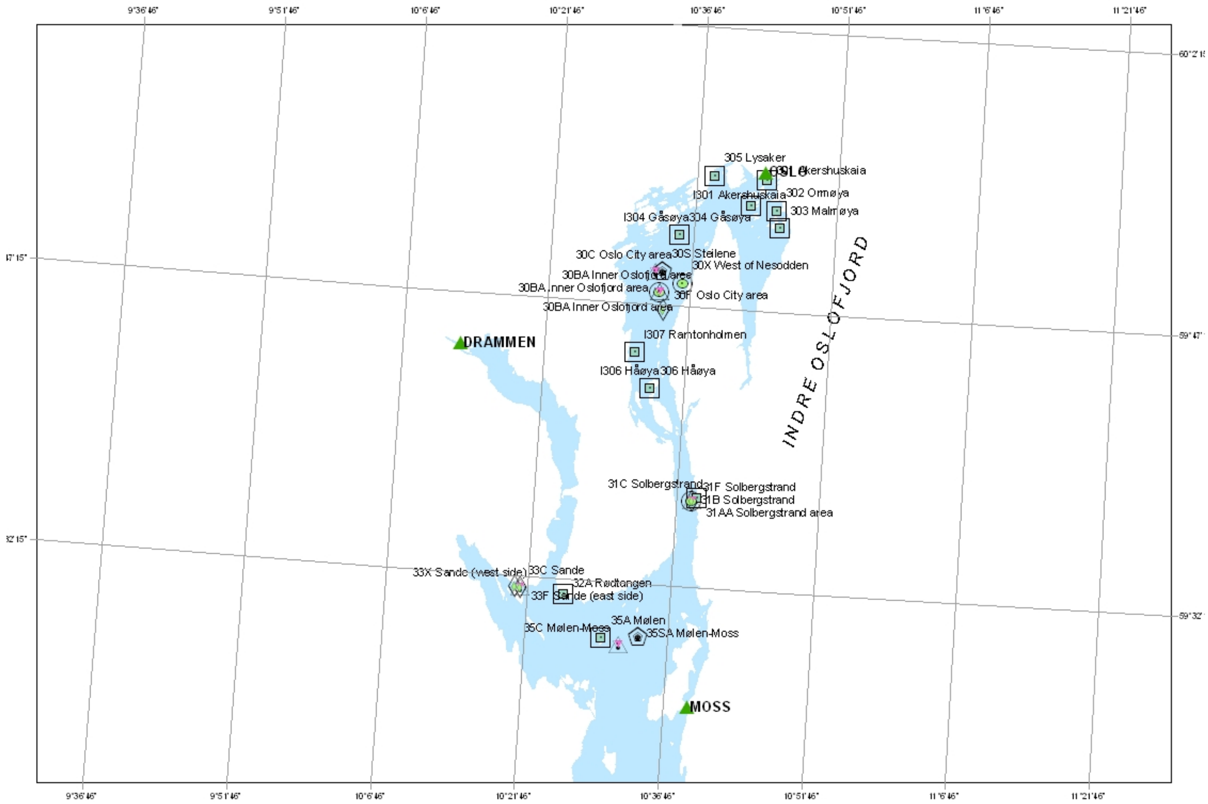
The following symbols and codes apply:

All years	2006	Explanation	Station code
		Sediment	<number>S
		Bluemussel	<number>A
		Bluemussel	I<number/letter> 1)
		Bluemussel	R<number/letter> 1)
		Dogwhelk	<number>F
		Prawn	<number>C
		Atlantic cod	<number>A
		Flatfish	<number>D/E
		Other round fish	
		Town or city	

1) Supplementary station used in SFT bluemussel pollution (I) or reference (R) index (cf. Appendix L).

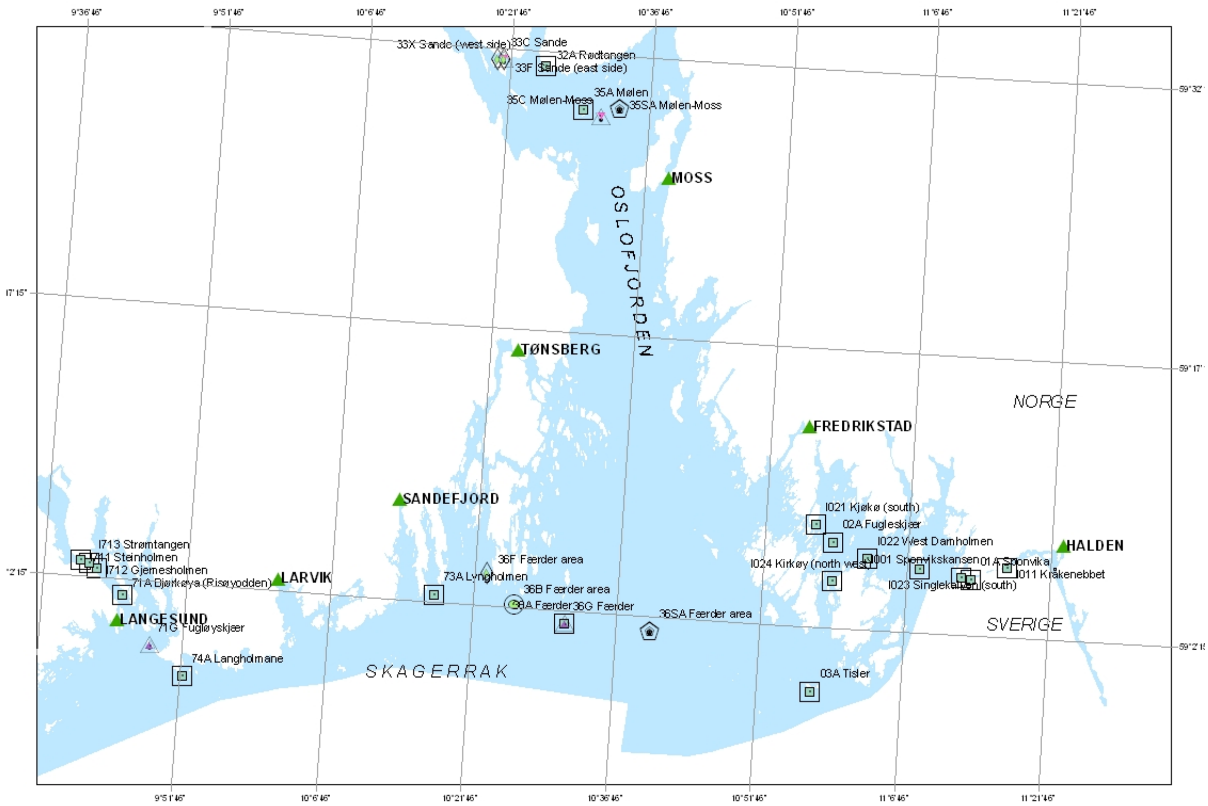


JAMP stations Norway. Numbers indicate map reference that follow.
Note: distance between two lines of latitude is 15 nautical miles (= 27.8 km).



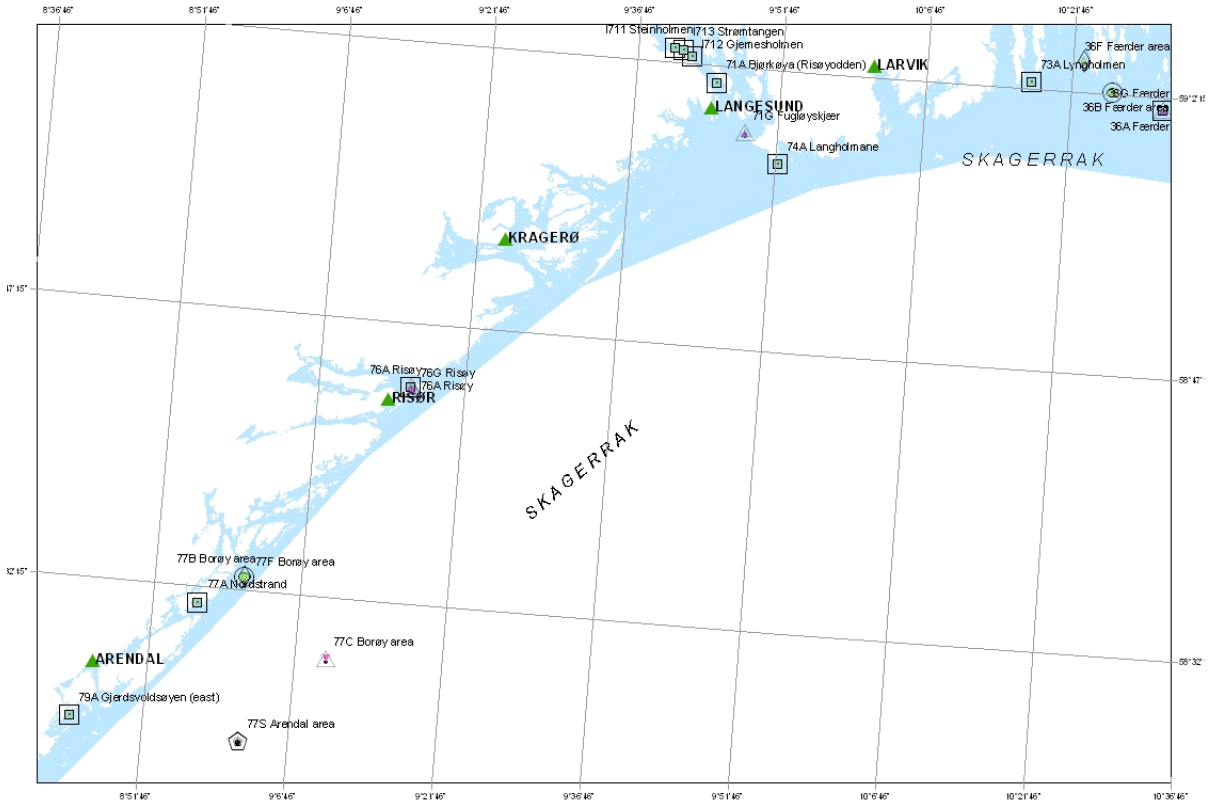
305 Lysaker
301 Akershuskaia
OSLO
I301 Akershuskaia
302 Ormøya
303 Malmøya
I304 Gåsøya
304 Gåsøya
30C Oslo City area
30S Steilene
30X West of Nesodden
30BA Inner Oslofjord area
30BA Inner Oslofjord area
30F Oslo City area
30BA Inner Oslofjord area
I307 Ramtonholmen
DRAMMEN
I306 Håøya
306 Håøya
INDRE OSLOFJORD
31C Solbergstrand
31F Solbergstrand
31B Solbergstrand
31AA Solbergstrand area
33X Sande (west side)
33C Sande
32A Rødtangen
33F Sande (east side)
35A Mølen
35C Mølen-Moss
35SA Mølen-Moss
MOSS

MAP 1

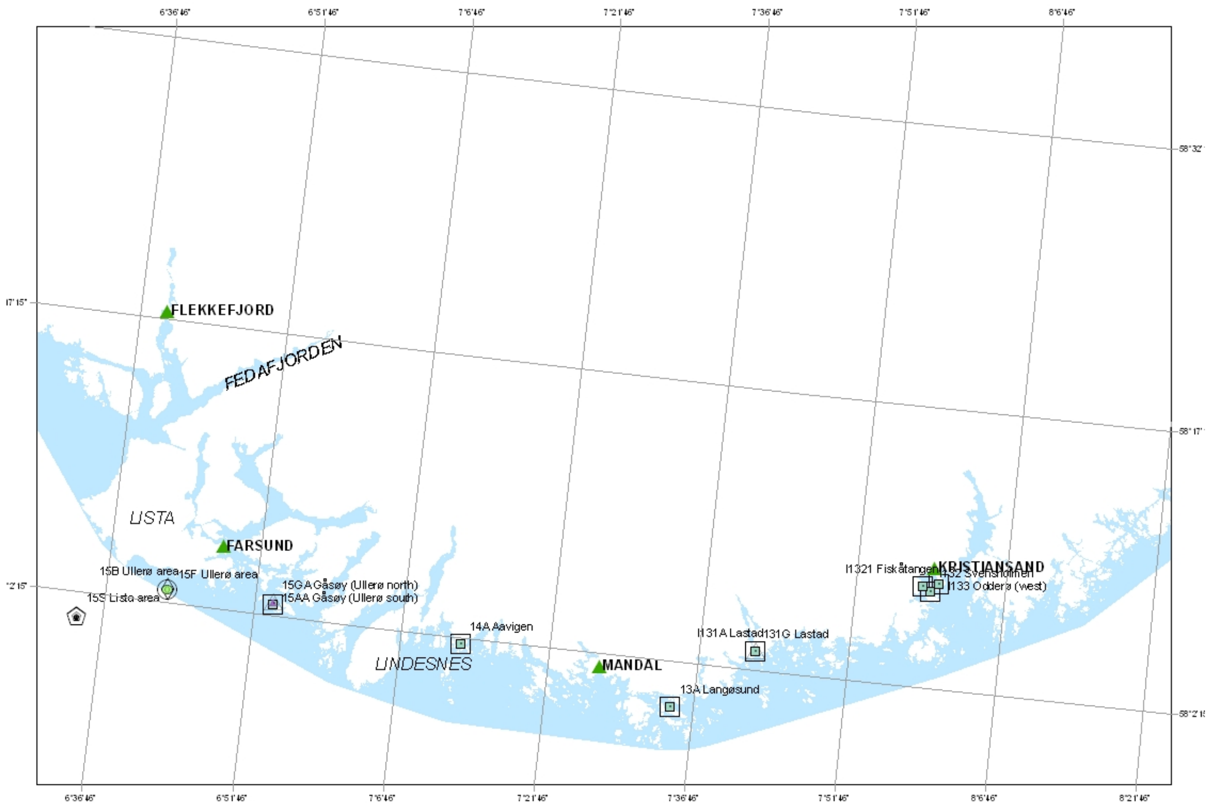


33X Sande (west side)
33C Sande
32A Rødtangen
33F Sande (east side)
35A Mølen
35C Mølen-Moss
35SA Mølen-Moss
MOSS
OSLOFJORDEN
TØNSBERG
NORGE
FREDRIKSTAD
SANDEFJORD
I021 Kjøkø (south)
02A Fugleskjær
I022 West Damholmen
HALDEN
I713 Strømtangen
I711 Steinholmen
I712 Gjemesholmen
71A Bjørkøya (Risøyodden)
LARVIK
36F Færder area
73A Lyngholmen
I024 Kirkøy (north west)
I001 Svenvikskansen
01A Sponvika
I011 Kråkenebbet
I023 Singlekalven (south)
36B Færder area
36A Færder
36G Færder
36SA Færder area
LANGESUND
71G Fugløyskjær
SVERIGE
74A Langholmane
SKAGERRAK
03A Tisler

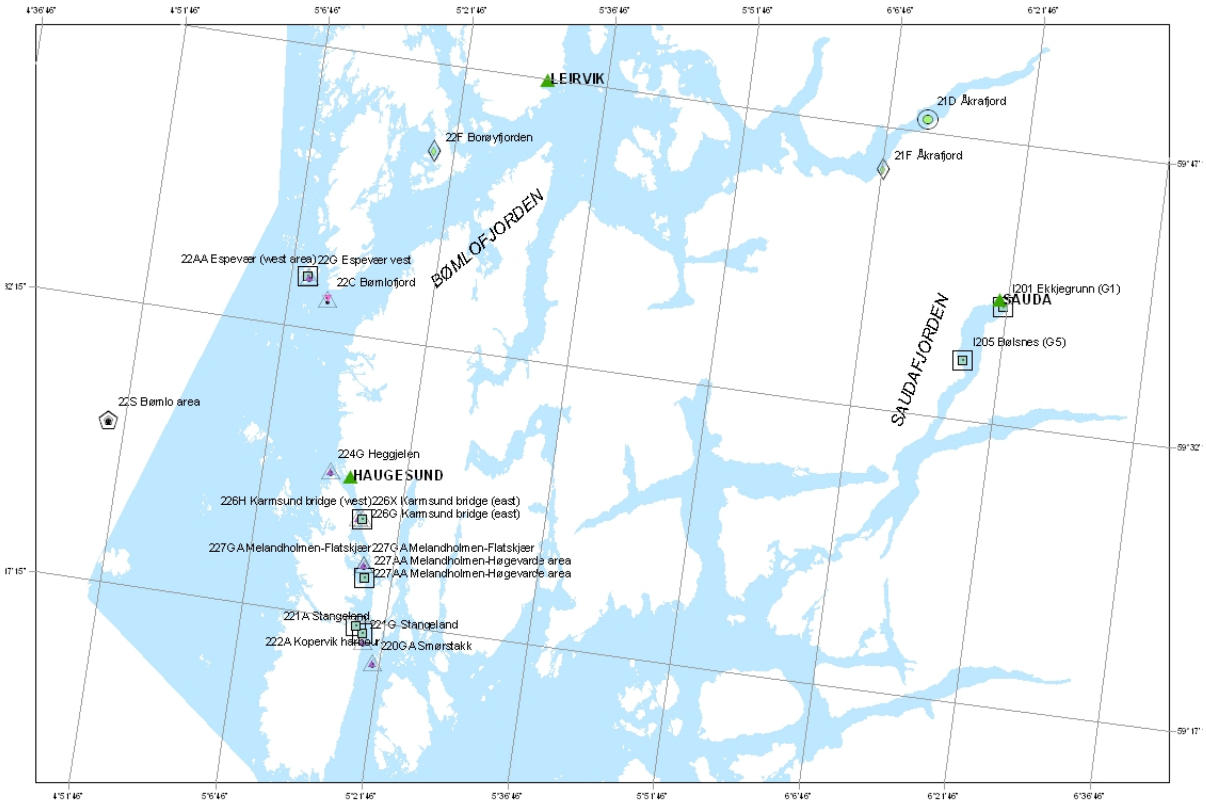
MAP 2


I711 Steinholmen
I713 Strømtangen
I712 Gjemesholmen
71A Bjørkøya (Risøyodden)
LARVIK
LANGESUND
71G Fugløyskjær
74A Langholmane
36F Færder area
73A Lyngholmen
36G Færder
36B Færder area
36A Færder
SKAGERRAK
KRAGERØ
76A Risøy
76G Risøy
76A Risøy
RISØR
SKAGERRAK
77B Borøy area
77F Borøy area
77A Nordstrand
ARENDAL
77C Borøy area
79A Gjerdsvoldsøyen (east)
77S Arendal area

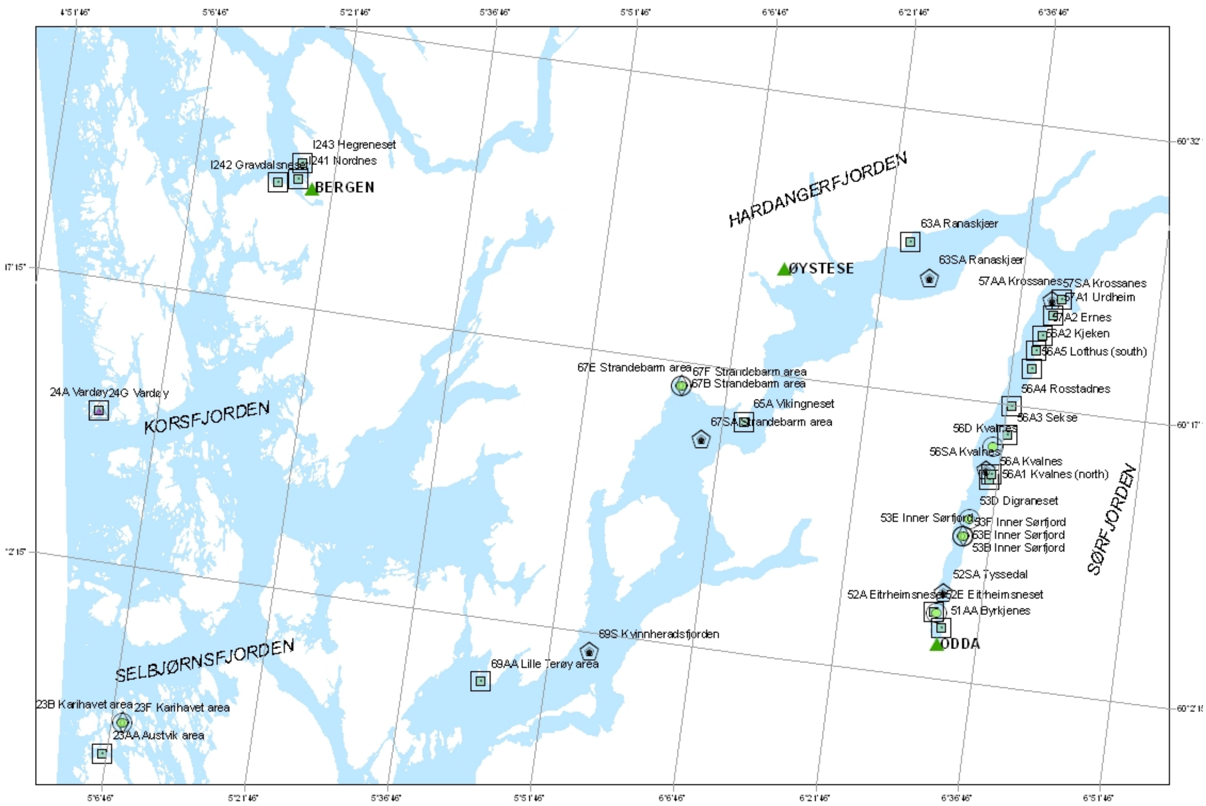
MAP 3


FLEKKEFJORD
FEDAFJORDEN
LISTA
FARSUND
15B Ullerø area
15F Ullerø area
15S Lista area
15GA Gåsøy (Ullerø north)
15AA Gåsøy (Ullerø south)
14A Aavigen
LINDESNES
MANDAL
I131A Lastad
131G Lastad
13A Langøsund
I1321 Fiskåtangen
KRISTIANSAND
I132 Svensholmen
I133 Odderø (west)

MAP 4


LEIRVIK
21D Åkrafjord
22F Borøyfjorden
21F Åkrafjord
BØMLOFJORDEN
22AA Espevær (west area)
22G Espevær vest
22C Bømlofjord
I201 Ekkjegrunn (G1)
SAUDA
I205 Bølsnes (G5)
SAUDAFJORDEN
22S Bømlo area
224G Heggjelen
HAUGESUND
226H Karmsund bridge (west)
226X Karmsund bridge (east)
226G Karmsund bridge (east)
227GA Melandholmen-Flatskjær
227G A Melandholmen-Flatskjær
227AA Melandholmen-Høgevarde area
227AA Melandholmen-Høgevarde area
221A Stangeland
221G Stangeland
222A Kopervik harbour
220GA Smørstakk

MAP 5


I243 Hegreneset
I241 Nordnes
I242 Gravdalsneset
BERGEN
HARDANGERFJORDEN
63A Ranaskjær
63SA Ranaskjær
ØYSTESE
57AA Krossanes
57SA Krossanes
57A1 Urdheim
57A2 Ernes
56A2 Kjeken
56A5 Lofthus (south)
56A4 Rosstadnes
67E Strandebarm area
67F Strandebarm area
67B Strandebarm area
65A Vikingneset
67SA Strandebarm area
24A Vardøy
24G Vardøy
KORSFJORDEN
56A3 Sekse
56D Kvalnes
56SA Kvalnes
56A Kvalnes
56A1 Kvalnes (north)
53D Digraneset
53E Inner Sørfjord
53F Inner Sørfjord
63E Inner Sørfjord
53B Inner Sørfjord
SØRFJORDEN
52SA Tyssedal
52A Eitrheimsneset
52E Eitrheimsneset
51AA Byrkjenes
ODDA
69S Kvinnheradsfjorden
69AA Lille Terøy area
SELBJØRNSFJORDEN
23B Karihavet area
23F Karihavet area
23AA Austvik area

MAP 6


I243 Hegreneset
I241 Nordnes
I242 Gravdalsneset
BERGEN
HARDANGERFJORDEN
63A Ranaskjær
63SA Ranaskjær
ØYSTESE
24S Sotra
67E Strandebarm area
67F Strandebarm area
67B Strandebarm area
65A Vikingneset
67SA Strandebarm area
24A Vardøy
24G Vardøy
KORSFJORDEN
52SA Tyssedal
52E Eitrheimsneset
51AA Byrknes
52A Eitrheimsneset
69S Kvinnheradsfjorden
69AA Lille Terøy area
SELBJØRNSFJORDEN
23B Karihavet area
23F Karihavet area
23AA Austvik area

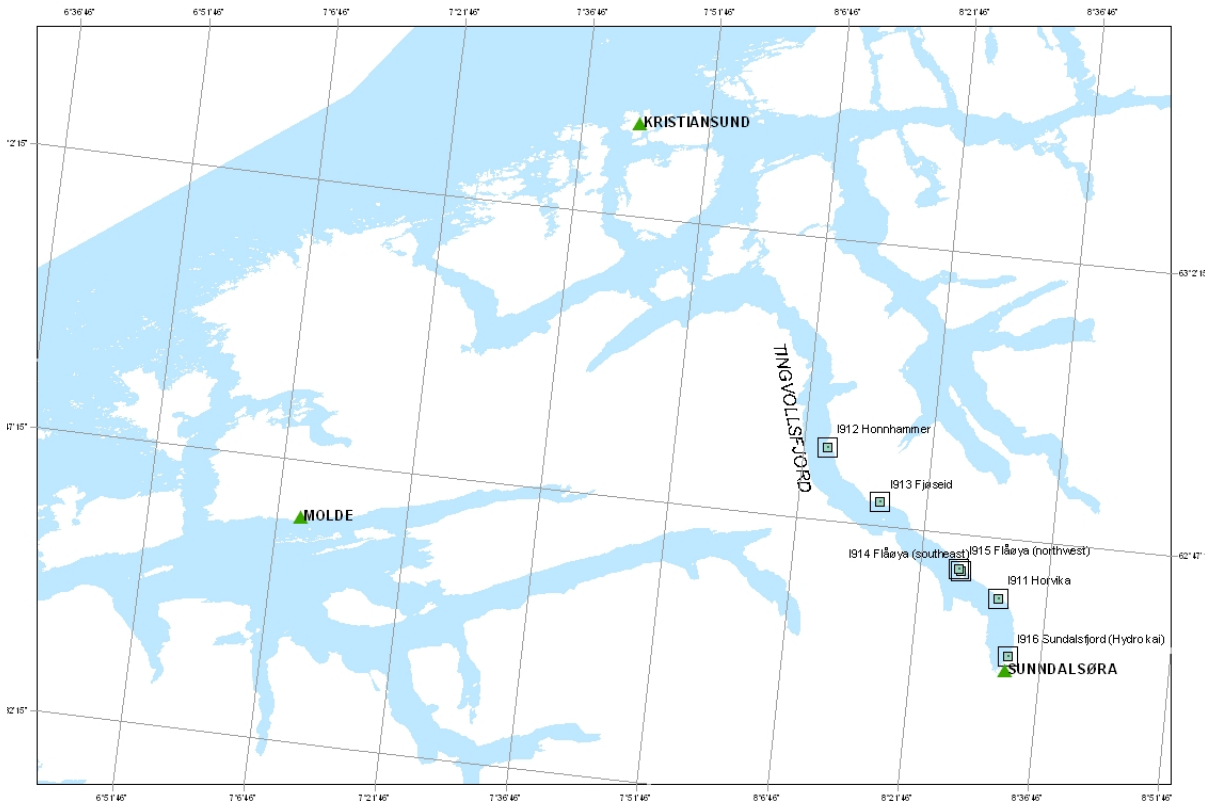
MAP 7


FLORØ
STAVFJORDEN
FØRDE
25AA Hinnøy area
25G A Hinnøy area
VILNESFJORDEN
SOGNEFJORDEN

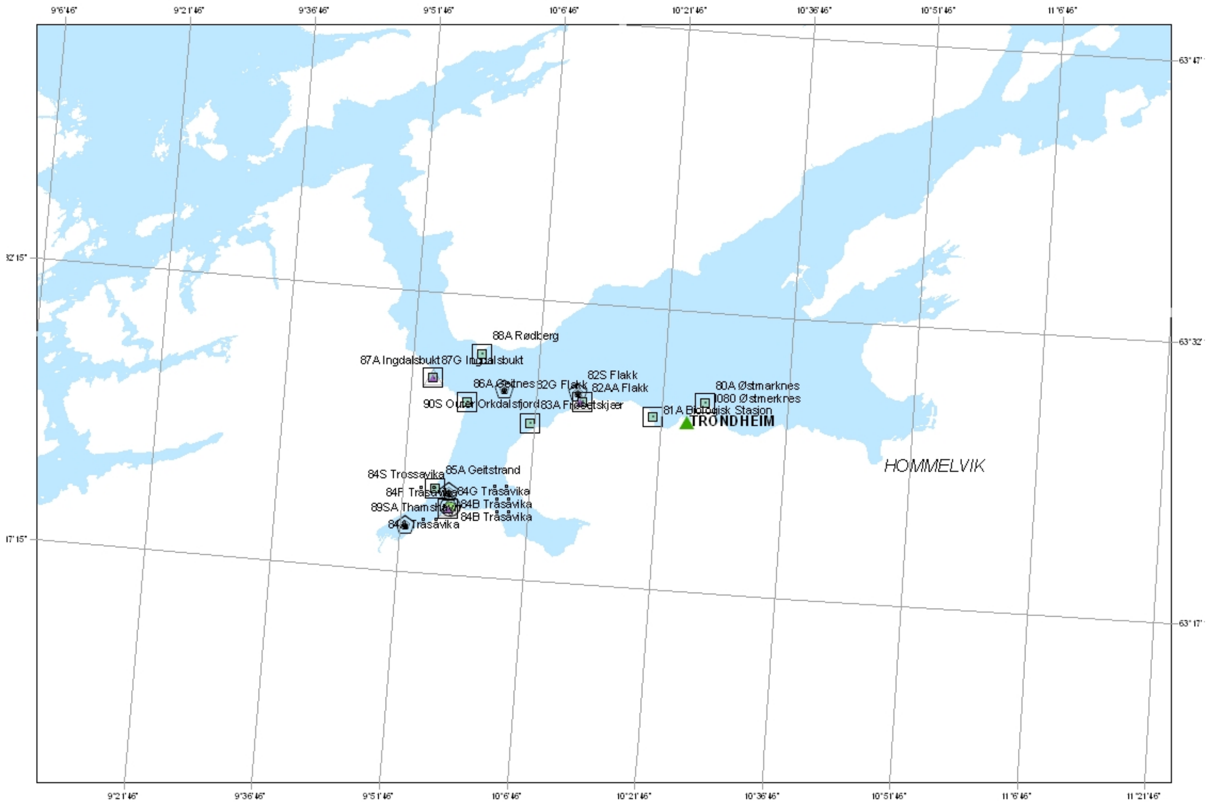
MAP 8


ÅLESUND
ULSTEINVIK
28H Øveråneset (Hareid)
28G Grønevikholmen (Eiksundet)
28AA Eiksundet area
27AA Grinden area
27F Storholmen
27S Stadtlandet (east)
27G A Røydeskjær area
STADTLANDET
MÅLØY
26AA Hamnen area
26G Hamnen

MAP 9


KRISTIANSUND
TINGVOLLSFJORD
I912 Honnhammer
I913 Fjøseid
I914 Flåøya (southeast)
I915 Flåøya (northwest)
I911 Horvika
I916 Sundalsfjord (Hydro kai)
SUNNDALSØRA
MOLDE

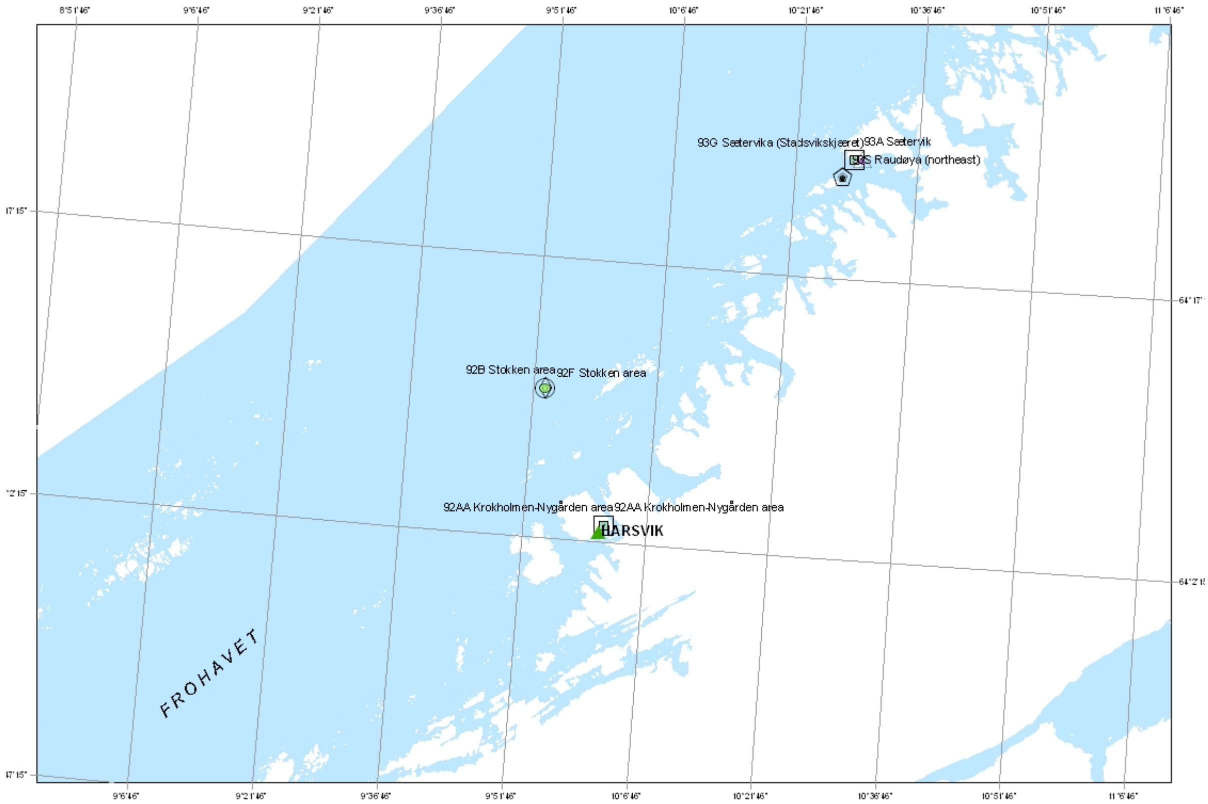
MAP 10


88A Rødberg
87A Ingdalsbukt
87G Ingdalsbukt
86A Settnes
82G Flakk
82S Flakk
82AA Flakk
90S Outer Orkdalsfjord
83A Fiskestkjær
80A Østmarknes
080 Østmarknes
81A Biologisk Stasjon
TRONDHEIM
HOMMELVIK
84S Trossavika
85A Geitstrand
84F Tråsavika
84G Tråsavika
89SA Thamshavn
84B Tråsavika
84A Tråsavika

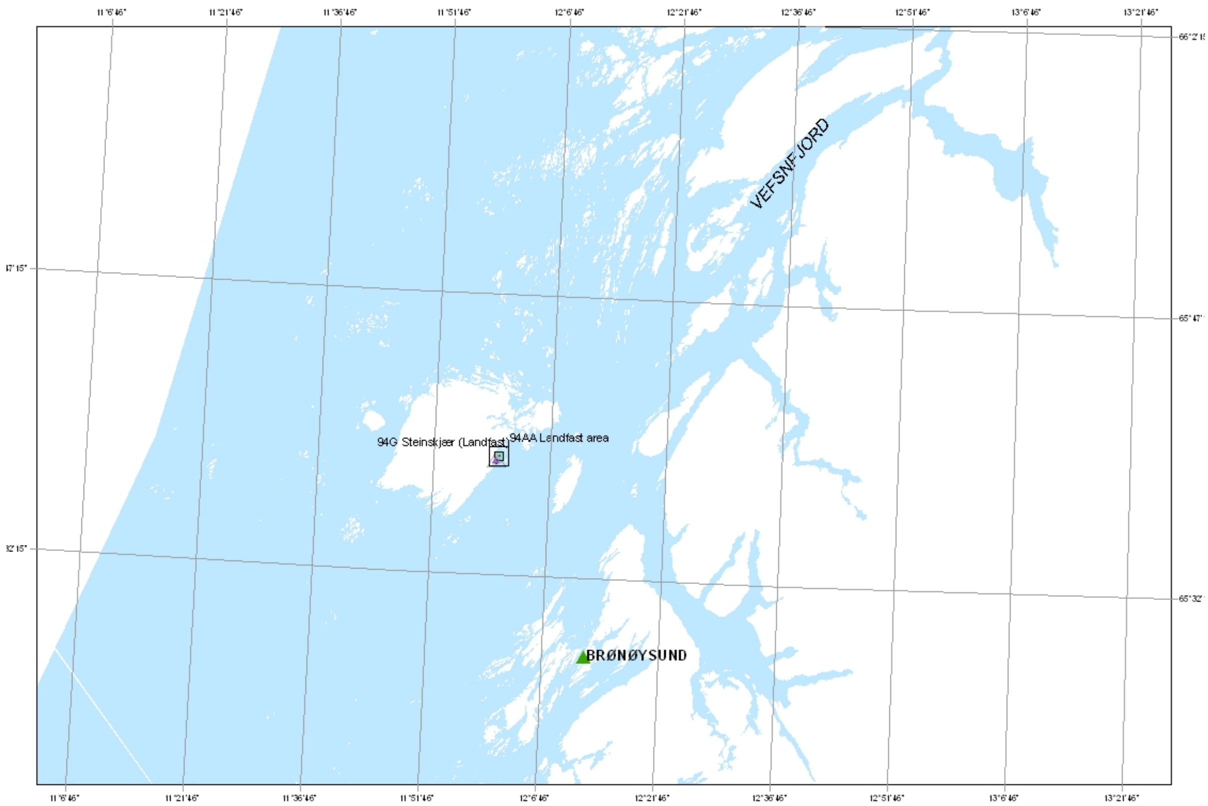
MAP 11


HITRA
SMØLA
TRONDHEIMSLEIA
91A Nerdvika
KRISTIANSUND

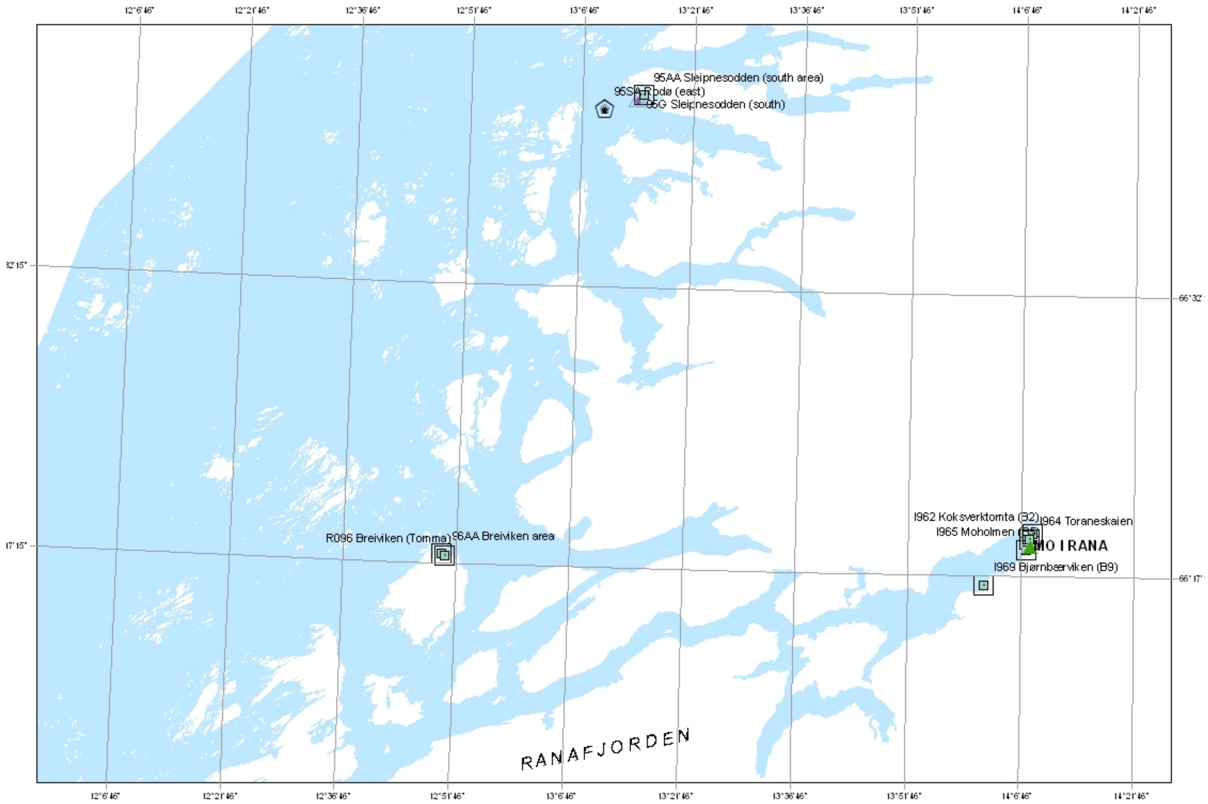
MAP 12


93G Sætervika (Stadsvikskjæret)
93A Sætervik
93S Raudøya (northeast)
92B Stokken area
92F Stokken area
92AA Krokholmen-Nygården area
92AA Krokholmen-Nygården area
BARSVIK
FROHAVET

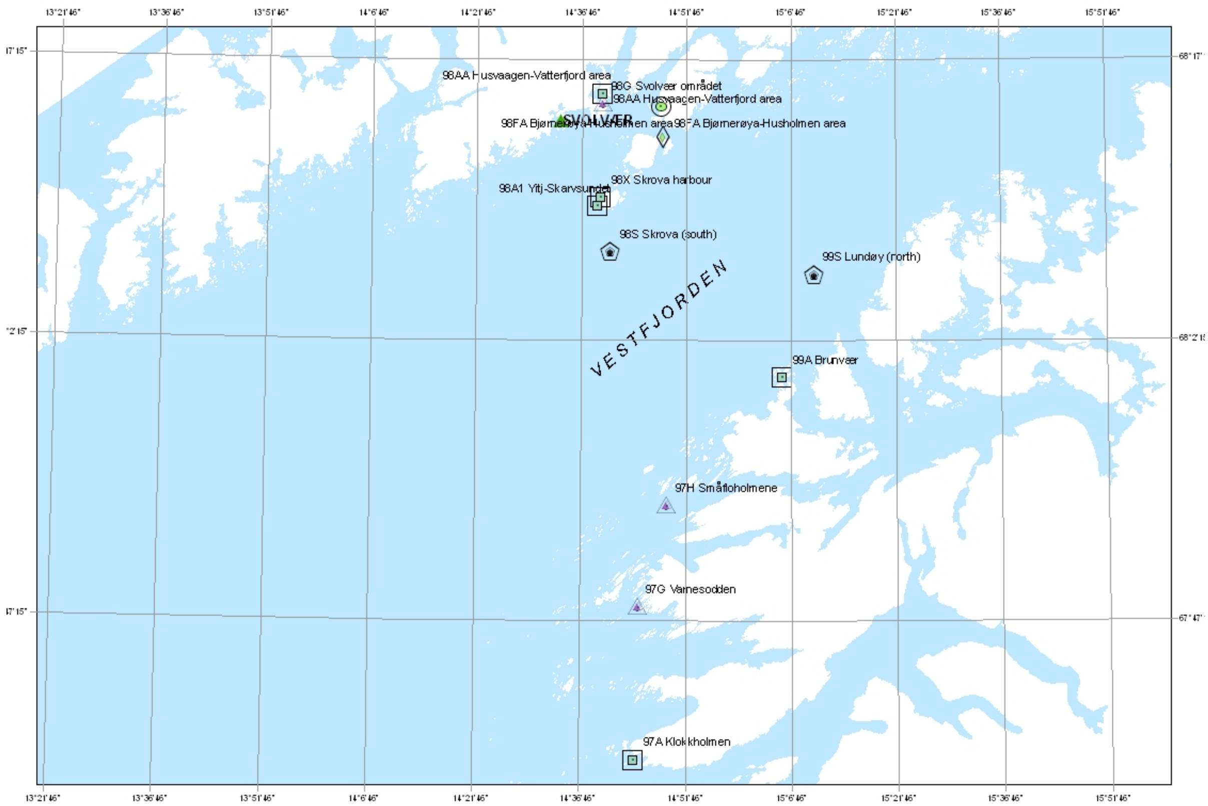
MAP 13


VEFSNFJORD
94G Steinskjær (Landfast)
94AA Landfast area
BRØNØYSUND

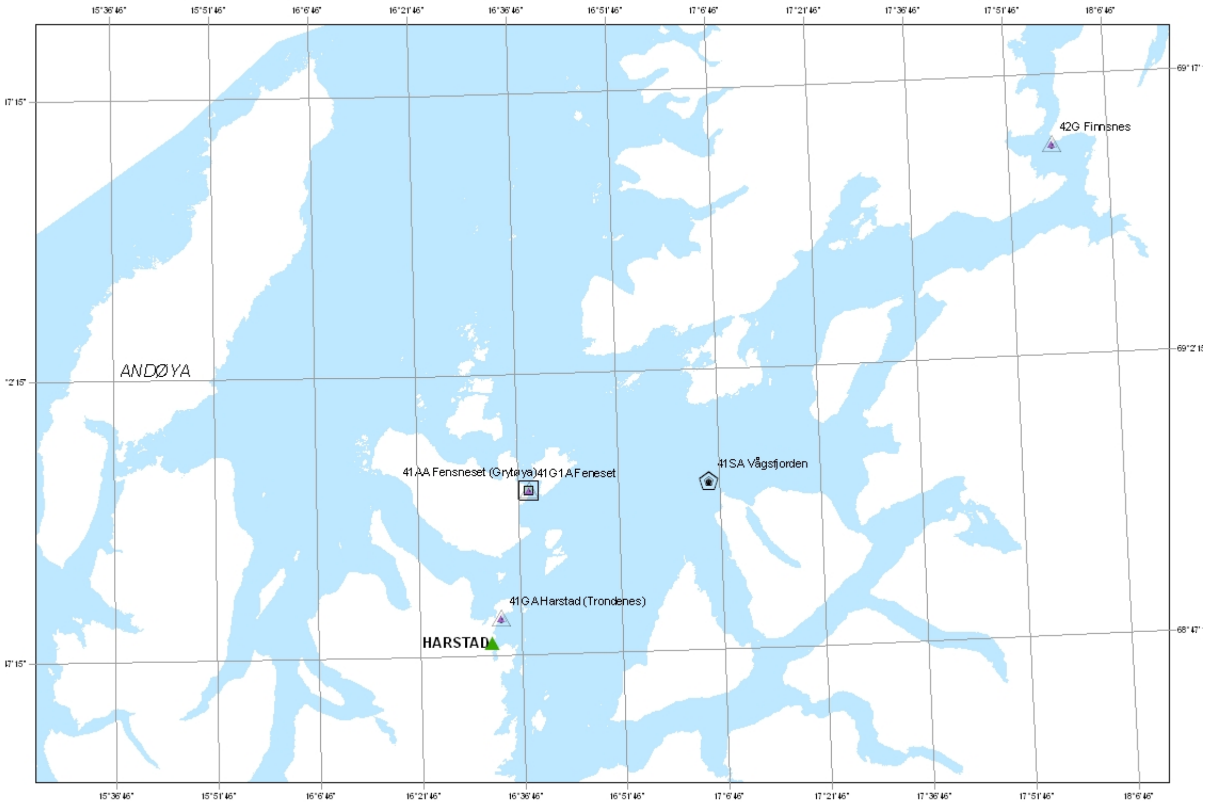
MAP 14


95AA Sleipnesodden (south area)
95G Sleipnesodden (south)
I962 Koksverktomta (B2)
I964 Toraneskaien
I965 Moholmen
MO I RANA
I969 Bjørnbærviken (B9)
R096 Breiviken (Tomma)
96AA Breiviken area
RANAFJORDEN

MAP 15


98AA Husvaagen-Vatterfjord area
98G Svolvær området
98AA Husvaagen-Vatterfjord area
98FA Bjørnerøya-Husholmen area
98X Skrova harbour
98A1 Yitj-Skarvsundet
98S Skrova (south)
99S Lundøy (north)
VESTFJORDEN
99A Brunvær
97H Småloholmene
97G Varnesodden
97A Klokkholmen

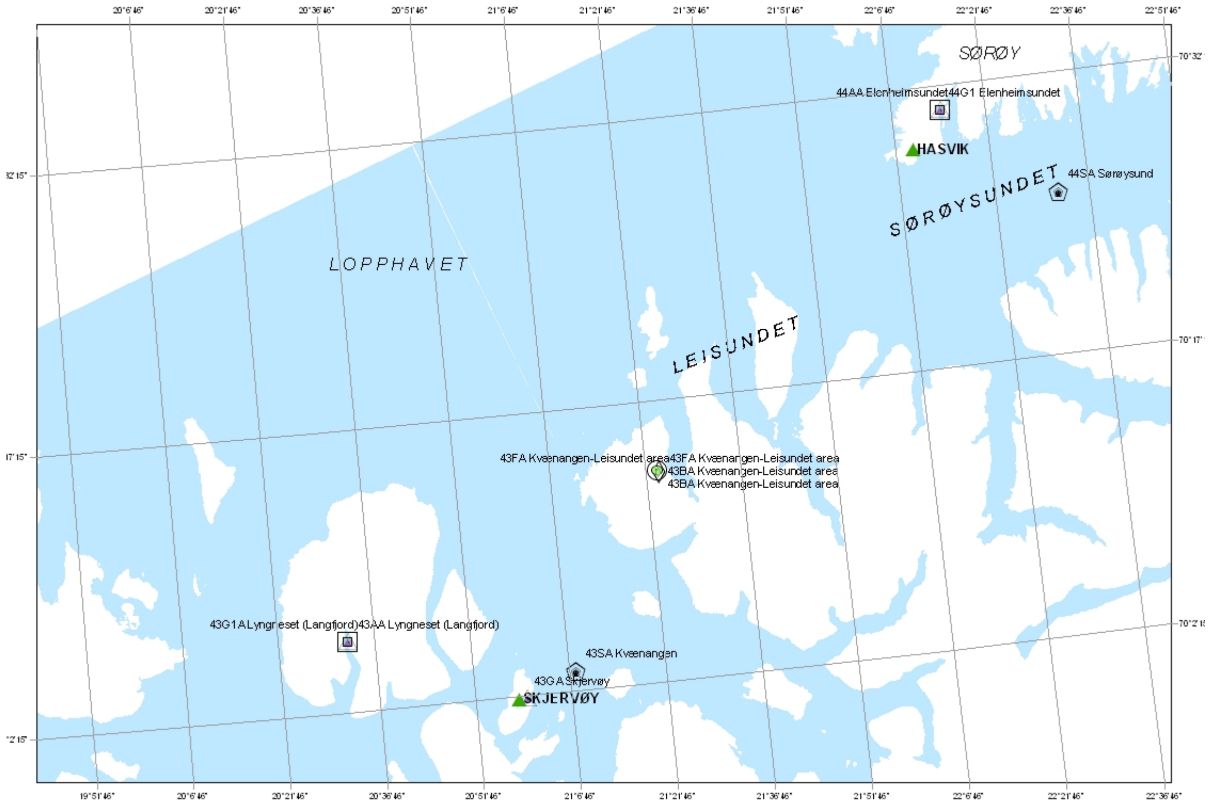
MAP 16


ANDØYA
42G Finnsnes
41AA Fensneset (Grytøya)41G1A Feneset
41SA Vågsfjorden
41GA Harstad (Trondenes)
HARSTAD

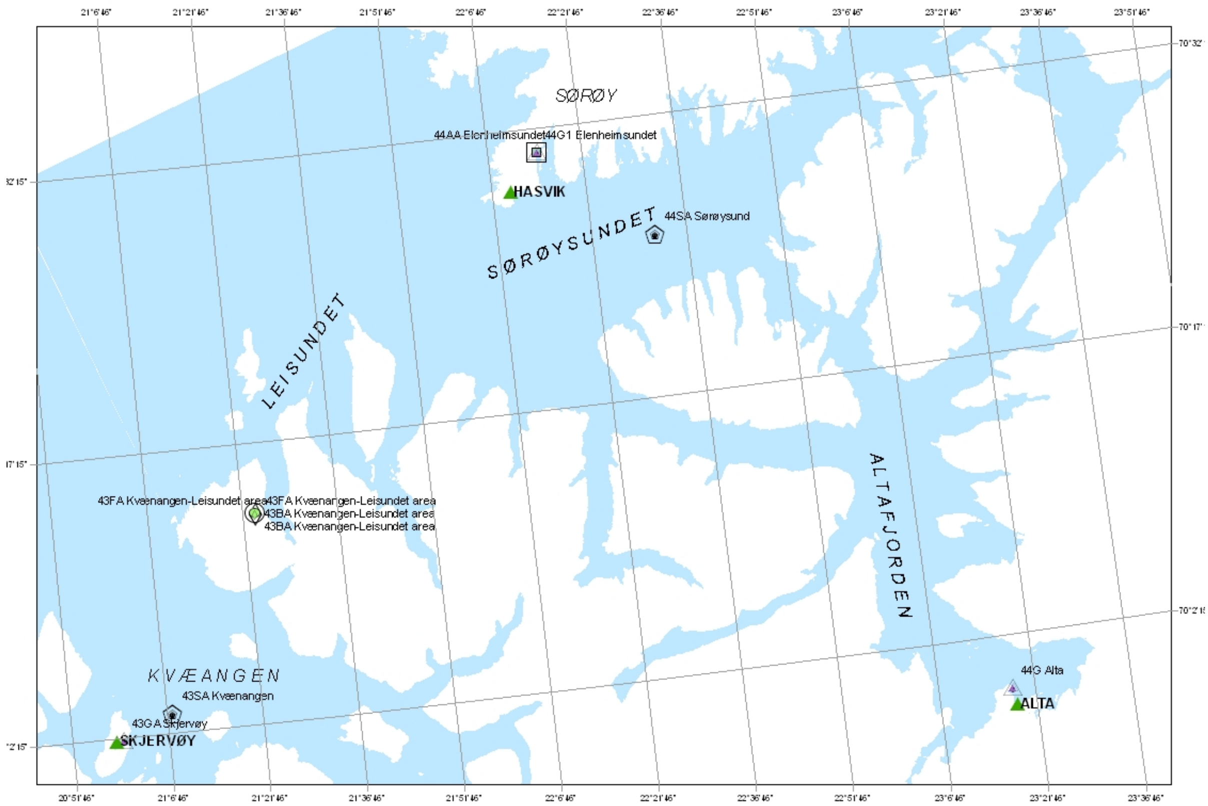
MAP 17


TROMSØ
KVALØY
MALANGEN
42SA Malangen
42AA Tennskjær (Malangen)
42G Finnsnes

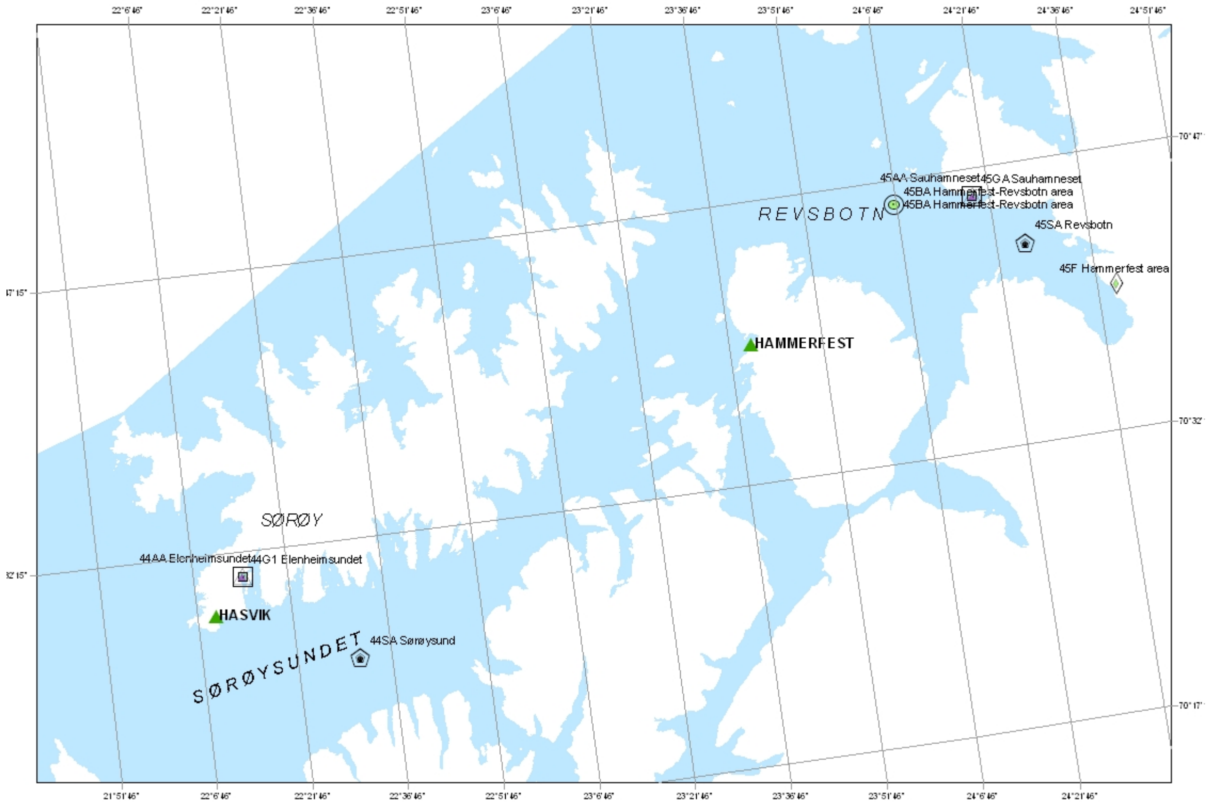
MAP 18


SØRØY
44AA Elenheimsundet44G1 Elenheimsundet
HASVIK
SØRØYSUNDET
44SA Sørøysund
LOPPHAVET
LEISUNDET
43FA Kvænangen-Leisundet area43FA Kvænangen-Leisundet area
43BA Kvænangen-Leisundet area
43BA Kvænangen-Leisundet area
43G1A Lyngneset (Langfjord)43AA Lyngneset (Langfjord)
43SA Kvænangen
43GA Skjervøy
SKJERVØY

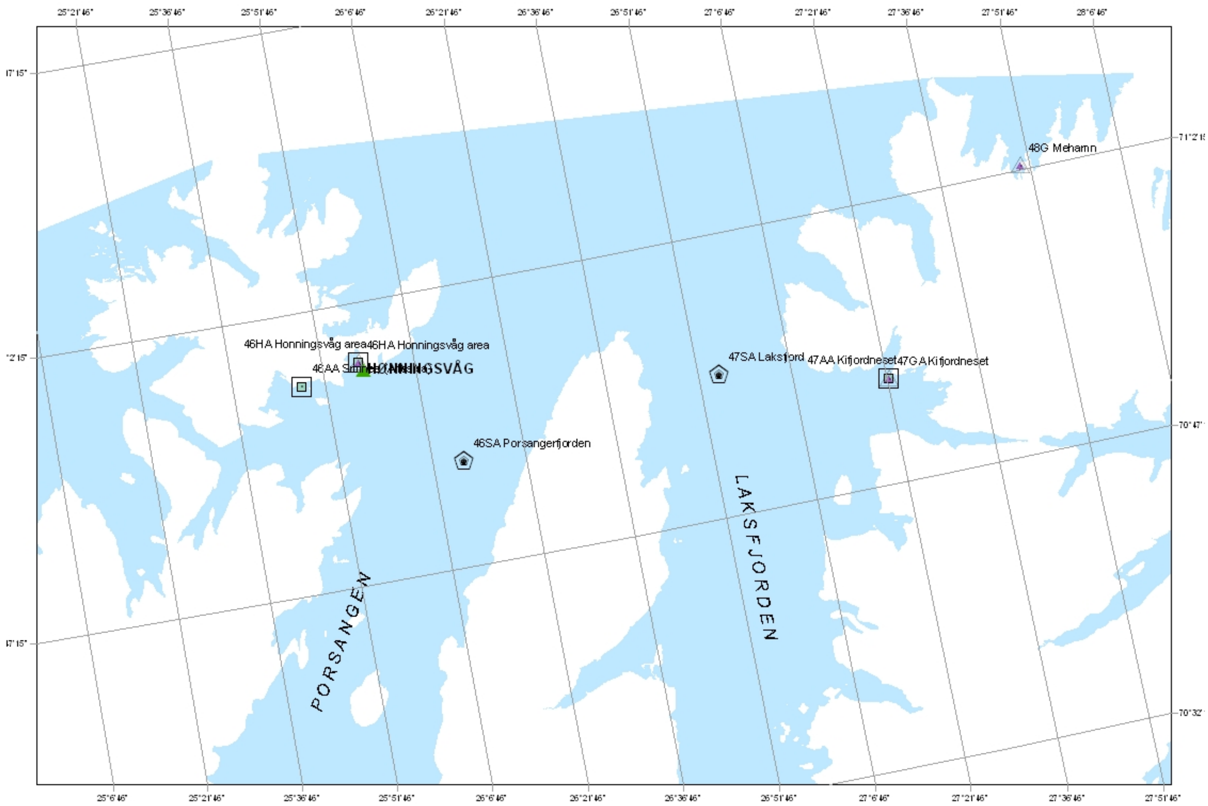
MAP 19


SØRØY
44AA Elenheimsundet44G1 Elenheimsundet
HASVIK
SØRØYSUNDET
44SA Sørøysund
LEISUNDET
43FA Kvænangen-Leisundet area43FA Kvænangen-Leisundet area
43BA Kvænangen-Leisundet area
43BA Kvænangen-Leisundet area
ALTAFJORDEN
KVÆANGEN
43SA Kvænangen
43GA Skjervøy
SKJERVØY
44G Alta
ALTA

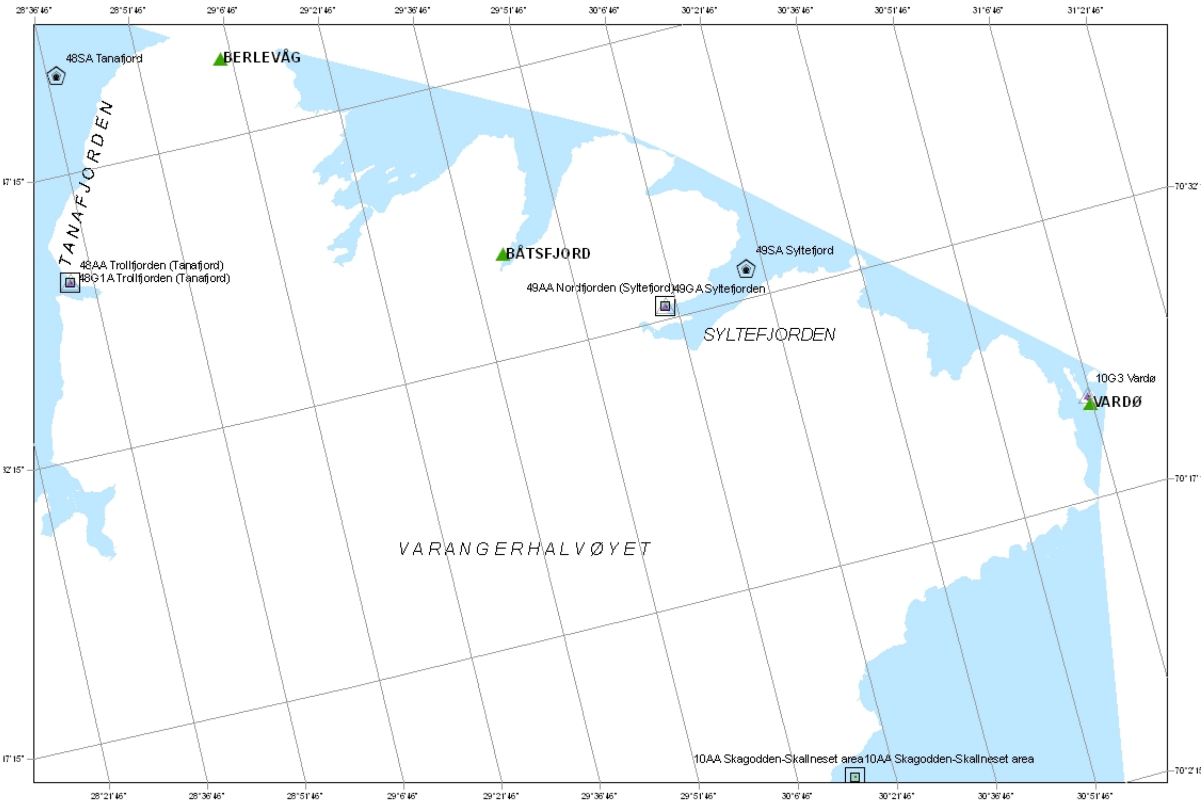
MAP 20


45AA Sauhamneset
45GA Sauhamneset
45BA Hammerfest-Revsbotn area
45BA Hammerfest-Revsbotn area
REVSBOTN
45SA Revsbotn
45F Hammerfest area
HAMMERFEST
SØRØY
44AA Elenheimsundet
44G1 Elenheimsundet
HASVIK
44SA Sørøysund
SØRØYSUNDET

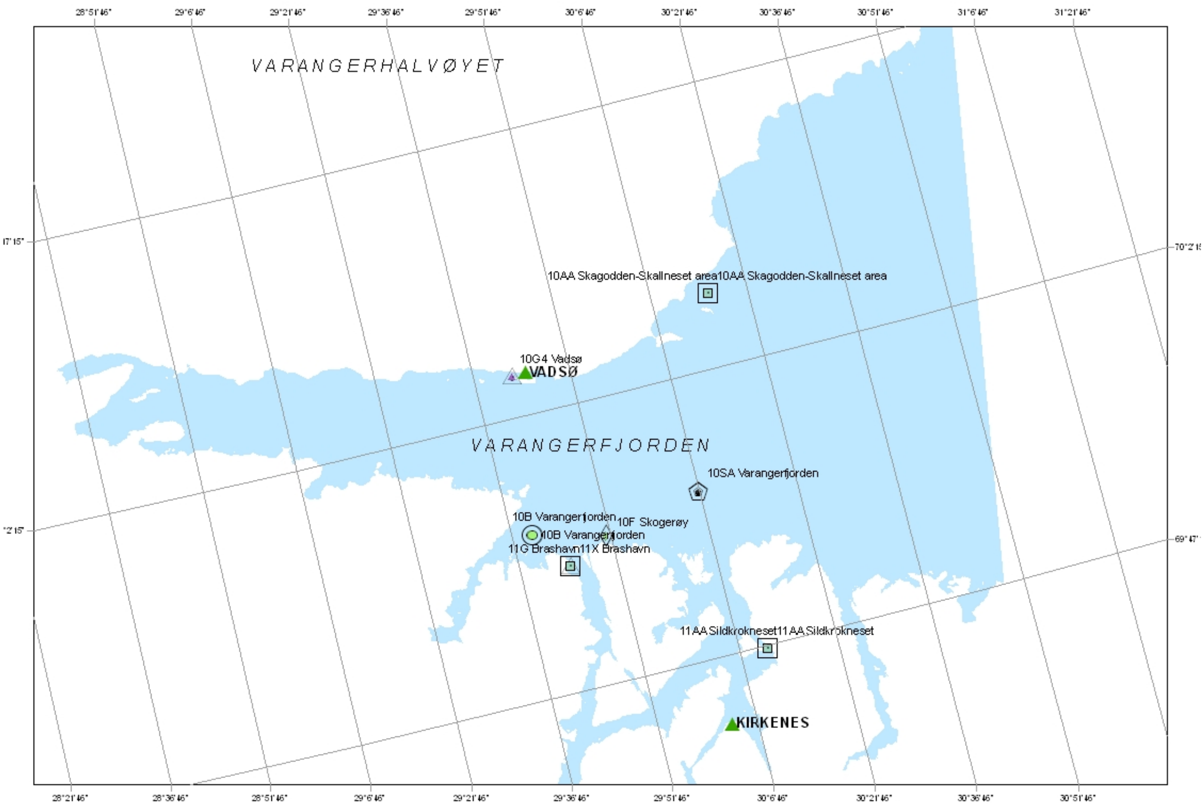
MAP 21


48G Mehamn
46HA Honningsvåg area
46HA Honningsvåg area
HONNINGSVÅG
47SA Laksfjord
47AA Kifjordneset
47GA Kifjordneset
46SA Porsangerfjorden
LAKSFJORDEN
PORSANGEN

MAP 22


48SA Tanafjord
BERLEVÅG
TANAFJORDEN
48AA Trollfjorden (Tanafjord)
48G1A Trollfjorden (Tanafjord)
BÅTSFJORD
49SA Syltefjord
49AA Nordfjorden (Syltefjord)
49GA Syltefjorden
SYLTEFJORDEN
10G3 Vardø
VARDØ
VARANGERHALVØYET
10AA Skagodden-Skallneset area
10AA Skagodden-Skallneset area

MAP 23


VARANGERHALVØYET
10AA Skagodden-Skallneset area
10AA Skagodden-Skallneset area
10G4 Vadsø
VADSØ
VARANGERFJORDEN
10SA Varangerfjorden
10B Varangerfjorden
10F Skogerøy
10B Varangerfjorden
11G Brashavn
11X Brashavn
11AA Sildkrokneset
11AA Sildkrokneset
KIRKENES

MAP 24

Appendix H
Overview of materials and analyses 2006

Nominal station positions are shown on maps in Appendix G

MYTI EDU - Blue Mussel (*Mytilus edulis*)
NUCE LAP – Dog whelk (*Nucella lapillus*)
GADU MOR - Atlantic cod (*Gadus morhua*)
LEPI WHI - Megrim (*Lepidorhombus whiff-iagonis*)
LIMA LIM - Dab (*Limanda limanda*)
PLAT FLE - Flounder (*Platichthys flesus*)
(s) - Small fish
(l) - Large fish
Tsu -tissue:
SB - Soft body tissue
LI - Liver tissue
MU - Muscle tissue
BL - Blood
BI - Bile

ICES-parameter-group codes (See Appendix B for descriptions of codes):

ICES code	Sediment / MYTI EDU	NUCE LAP	BI	BL	LI	MU
I-MET	Cd, Cu, Hg, Pb, Zn				Cd, Cu, Pb, Zn	Hg
O-MET	TBT	TBT				
OC-CB	PCB					
OC-CL	HCB					
OC-DD	DDT, DDE, DDD					
OC-HC	α-, γ-HCH					
OC-DX	Dioxins					
OC-BB					BRF [1)]	
PAH	PAH					
BE [2)]		Imposex	OH-pyrene	ALA-D	EROD-activity, CYP1A	

1) Polybrominated diphenyl ethers (PBDE), including brominated flame retardents
2) Biological effects methods

Appendix H. Sampling and analyses for 2006 - biota.

arial	jmpst	st_name	dec_Lat	dec_Lon	speci	tissu	count	I-MET	OC-BB	OC-CB	OC-CL	OC-DD	OC-DX	OC-HC	O-MET	PAH	BEM
J26	30B	Oslo City area	59.8088	10.5568	GADU MOR	BI	25										23
J26	30B	Oslo City area	59.8088	10.5568	GADU MOR	BL	25										25
J26	30B	Oslo City area	59.8088	10.5568	GADU MOR	LI	25	25	25	25	25	25		25			25
J26	30B	Oslo City area	59.8088	10.5568	GADU MOR	MU	30	25		5	5	5		5			
J26	30A	Gressholmen	59.8837	10.7110	MYTI EDU	SB	3	3		3	3	3	2	3	2	3	
J26	31A	Solbergstrand	59.6155	10.6515	MYTI EDU	SB	3	3		3	3	3		3			
J26	33F	Sande (east side)	59.5283	10.3500	PLAT FLE	LI	5	5		5	5	5		5			
J26	33F	Sande (east side)	59.5283	10.3500	PLAT FLE	MU	5	5		5	5	5		5			
J26	35A	Mølen	59.4882	10.4980	MYTI EDU	SB	3	3		3	3	3	1	3			
J26	36B	Færder area	59.0405	10.4358	GADU MOR	LI	25	25		25	25	25		25			
J26	36F	Færder area	59.0667	10.3833	LIMA LIM	LI	5	5		5	5	5		5			
J26	36B	Færder area	59.0405	10.4358	GADU MOR	MU	30	25		5	5	5		5			
J26	36F	Færder area	59.0667	10.3833	LIMA LIM	MU	5	5		5	5	5		5			
J26	36A	Færder	59.0272	10.5255	MYTI EDU	SB	3	3		3	3	3		3	2		
J26	36G	Færder	59.0272	10.5255	NUCE LAP	SB	1								1		
J26	36G	Færder	59.0272	10.5255	NUCE LAP	WO	1										1
J26	71A	Bjørkøya (Risøyodden)	59.0233	9.7537	MYTI EDU	SB	3	3		3	3	3	2	3	1		
J26	71G	Fugløyskjær	58.9808	9.8077	NUCE LAP	SB	1								1		
J26	71G	Fugløyskjær	58.9808	9.8077	NUCE LAP	WO	1										1
J99	76A	Risøy	58.7308	9.2720	MYTI EDU	SB	3	3		3	3	3	2	3	1		
J99	76G	Risøy	58.7280	9.2755	NUCE LAP	SB	1								1		
J99	76G	Risøy	58.7280	9.2755	NUCE LAP	WO	1										1
J99	131G	Lastad	58.0555	7.7087	NUCE LAP	SB	1								1		
J99	131G	Lastad	58.0555	7.7087	NUCE LAP	WO	1										1
J99	15B	Ullerø area	58.0500	6.7167	GADU MOR	LI	25	25		25	25	25		25			21
J99	15F	Ullerø area	58.0500	6.7167	LIMA LIM	LI	5	5		5	5	5		5			
J99	15B	Ullerø area	58.0500	6.7167	GADU MOR	MU	30	25		5	5	5		5			
J99	15F	Ullerø area	58.0500	6.7167	LIMA LIM	MU	5	5		5	5	5		5			
J99	15A	Gåsøy (Ullerø)	58.0425	6.9003	MYTI EDU	SB	3	3		3	3	3		3	2		
J99	15G	Gåsøy (Ullerø)	58.0493	6.9012	NUCE LAP	SB	1								1		
J99	15G	Gåsøy (Ullerø)	58.0493	6.9012	NUCE LAP	WO	1										1
J63	51A	Byrkjenes	60.0838	6.5505	MYTI EDU	SB	3	3		3	3	3		3			
J63	52A	Eitrheimsneset	60.0967	6.5328	MYTI EDU	SB	3	3		3	3	3		3			
J63	53B	Inner Sørfjord	60.1667	6.5667	GADU MOR	BI	25										23
J63	53B	Inner Sørfjord	60.1667	6.5667	GADU MOR	BL	25										25
J63	53B	Inner Sørfjord	60.1667	6.5667	GADU MOR	LI	25	25	25	25	25	25		25			25
J63	53B	Inner Sørfjord	60.1667	6.5667	GADU MOR	MU	30	25		5	5	5		5			
J63	56A	Kvalnes	60.2205	6.6020	MYTI EDU	SB	3	3		3	3	3		3			
J63	57A	Krossanes	60.3872	6.6890	MYTI EDU	SB	3	3		3	3	3		3			
J62	63A	Ranaskjær	60.4208	6.4053	MYTI EDU	SB	3	3		3	3	3		3			
J62	65A	Vikingneset	60.2423	6.1527	MYTI EDU	SB	3	3		3	3	3		3			
J62	67B	Strandebarm area	60.2667	6.0333	GADU MOR	LI	25	25		25	25	25		25			
J62	67F	Strandebarm area	60.2667	6.0333	LEPI WHI	LI	4	4		4	4	4		4			
J62	67F	Strandebarm area	60.2667	6.0333	PLAT FLE	LI	5	5		5	5	5		5			
J62	67B	Strandebarm area	60.2667	6.0333	GADU MOR	MU	30	25		5	5	5		5			
J62	67F	Strandebarm area	60.2667	6.0333	LEPI WHI	MU	4	4		4	4	4		4			
J62	67F	Strandebarm area	60.2667	6.0333	PLAT FLE	MU	5	5		5	5	5		5			
J62	69A	Lille Terøy	59.9840	5.7545	MYTI EDU	SB	3	3		3	3	3		3			
J99	22A	Espevær (west)	59.5837	5.1458	MYTI EDU	SB	3	3		3	3	3		3	2		
J99	22G	Espevær (west)	59.5837	5.1445	NUCE LAP	SB	1								1		
J99	22G	Espevær (west)	59.5837	5.1445	NUCE LAP	WO	1										1
J99	21F	Åkrafjord	59.7500	6.1167	LEPI WHI	LI	3	3		3	3	3		3			
J99	21F	Åkrafjord	59.7500	6.1167	PLAT FLE	LI	5	5		5	5	5		5			
J99	21F	Åkrafjord	59.7500	6.1167	LEPI WHI	MU	3	3		3	3	3		3			
J99	21F	Åkrafjord	59.7500	6.1167	PLAT FLE	MU	5	5		5	5	5		5			
J99	227A2	Høgevarde	59.3223	5.3188	MYTI EDU	SB	2								2		
J99	227G2	Flatskjær	59.3393	5.3113	NUCE LAP	SB	1								1		
J99	227G2	Flatskjær	59.3393	5.3113	NUCE LAP	WO	1								1		1
J99	23B	Karihavet area	59.9000	5.1333	GADU MOR	BI	25										25
J99	23B	Karihavet area	59.9000	5.1333	GADU MOR	BL	25										25
J99	23B	Karihavet area	59.9000	5.1333	GADU MOR	LI	25	25	24	25	25	25		25			25
J99	23B	Karihavet area	59.9000	5.1333	GADU MOR	MU	30	25		5	5	5		5			
J99	98B1	Bjørnerøya (east)	68.2073	14.8355	GADU MOR	LI	25	25		25	25	25		25			
J99	98F2	Husholmen	68.2302	14.7803	PLEU PLA	LI	9	5		5	5	5		5			
J99	98B1	Bjørnerøya (east)	68.2073	14.8355	GADU MOR	MU	30	25		5	5	5		5			
J99	98F2	Husholmen	68.2302	14.7803	PLEU PLA	MU	9	5		5	5	5		5			
J99	98A2	Husvaagen area	68.2478	14.6668	MYTI EDU	SB	3	3		3	3	3		3	2		
J99	98G	Svolvær området	68.2487	14.6633	NUCE LAP	SB	1								1		
J99	98G	Svolvær området	68.2487	14.6633	NUCE LAP	WO	1										1
J99	10B	Varangerfjorden	69.9333	29.6667	GADU MOR	LI	10	10		9	9	9		9			
J99	10B	Varangerfjorden	69.9333	29.6667	GADU MOR	MU	12	10		2	2	2		2			
J99	10A2	Skallneset	70.1383	30.3617	MYTI EDU	SB	3	3		3	3	3		3			
J99	11G	Brashavn	69.8987	29.7442	NUCE LAP	SB	1								1		
J99	11X	Brashavn	69.8987	29.7442	MYTI EDU	SB	3	3		3	3	3		3	2		
J99	11G	Brashavn	69.8987	29.7442	NUCE LAP	WO	1										1
J26	I022	West Damholmen	59.1018	11.0448	MYTI EDU	SB	3	3		3	3	3		3			
J26	I023	Singlekalven (south)	59.0950	11.1367	MYTI EDU	SB	3	3		3	3	3		3			
J26	I024	Kirkøy (north west)	59.0800	10.9863	MYTI EDU	SB	3	3		3	3	3		3			
J26	I301	Akershuskaia	59.9053	10.7363	MYTI EDU	SB	3	3		3	3	3		3	2	3	
J26	I304	Gåsøya	59.8513	10.5890	MYTI EDU	SB	3	3		3	3	3		3		3	
J26	I306	Håøya	59.7133	10.5552	MYTI EDU	SB	3	3		3	3	3		3		3	
J26	I307	Ramtonholmen	59.7445	10.5228	MYTI EDU	SB	3	3		3	3	3		3		3	
J99	I712	Gjemesholmen	59.0453	9.7068	MYTI EDU	SB	3	3		3	3	3	2	3	2		
J99	I713	Strømtangen	59.0503	9.6917	MYTI EDU	SB	3	3		3	3	3	1	3	2		

J99	I131A	Lastad	58.0555	7.7087	MYTI EDU	SB	3	3		3	3	3		3		3	
J99	I132	Svensholmen	58.1250	7.9888	MYTI EDU	SB	3			3	3	3	1	3	2	3	
J99	I133	Odderø (west)	58.1317	8.0017	MYTI EDU	SB	3			3	3	3	1	3	2	3	
J99	I201	Ekkjegrunn (G1)	59.6433	6.3573	MYTI EDU	SB	3	3								3	
J99	I205	Bølsnes (G5)	59.5917	6.3002	MYTI EDU	SB	3	3								3	
J99	I241	Nordnes	60.4007	5.3017	MYTI EDU	SB	3			3	3	3		3			
J99	I242	Gravdalsneset	60.3948	5.2668	MYTI EDU	SB	3			3	3	3		3			
J99	I243	Hegreneset	60.4153	5.3048	MYTI EDU	SB	3			3	3	3		3			
J99	I915	Flåøya (northwest)	62.7580	8.4398	MYTI EDU	SB	3									3	
J99	I913	Fjøseid	62.8098	8.2747	MYTI EDU	SB	3									3	
J99	I912	Honnhammer	62.8533	8.1617	MYTI EDU	SB	3									3	
J99	I965	Moholmen (B5)	66.3120	14.1258	MYTI EDU	SB	3	3								3	
J99	I964	Toraneskaien	66.3217	14.1328	MYTI EDU	SB	3	3								3	
J99	I969	Bjørnbærviken (B9)	66.2802	14.0347	MYTI EDU	SB	3	3								3	

Appendix H (cont.). Sampling and analyses for 2006 - sediment.

arial	st_code/name	dec_Lat	dec_Lon	count	I-MET	OC-BB	OC-CB	OC-CL	OC-DD	OC-DX	OC-HC	O-MET	PAH
J26	10S Varangerfjorden	+69 56.13	+30 06.68	5	3		2	2	2		2	3	2
J26	41S Vågsfjorden	+68 56.28	+17 05.22	5	3		2	2	2		2	3	2
J26	42S Malangen	+69 30.41	+18 06.93	5	3		2	2	2		2	3	2
J26	43S Kvænangen	+70 03.33	+21 07.85	5	3		2	2	2		2	3	2
J26	44S Sørøysund	+70 25.89	+22 31.85	5	3		2	2	2	2	2	3	2
J26	45S Revsbotn	+70 42.89	+24 26.60	5	3		2	2	2		2	3	2
J26	46S Porsangerfjorden	+70 52.92	+26 11.87	5	3		2	2	2		2	3	2
J26	47S Laksfjord	+70 54.88	+26 55.28	5	3		2	2	2		2	3	2
J26	48S Tanafjord	+70 52.51	+28 38.58	5	3		2	2	2	1	2	3	2
J26	49S Syltefjord	+70 33.86	+30 19.18	5	3		2	2	2		2	3	2

Appendix I
Temporal trend analyses of contaminants and biomarkers in biota 1981-2006

Sorted by contaminant, species and area/station:

Cadmium (Cd)
Mercury (Hg)
Lead (Pb)
Copper (Cu)
Zinc (Zn)
Sum PCB-7 or CB_S7 (CB: 28+52+101+118+138+153+180)
DDEPP (ppDDE)
HCB
BAP (benzo[*a*]pyrene)
PK-Σn or PK_S (sum carcinogen PAHs, cf. Appendix B)
P-Σn or P_S (sum of PAHs, dicyclic “PAHs” not included, cf. Appendix B)
TBT (Tributyltin)
TCDDN (Dioxin toxicity equivalents – Nordic model)
ALA-D (δ-amino levulinic acid dehydrase inhibition)
EROD-activity (Cytochrome P4501A-activity)
CYP1A (relative amount of Cytochrome P4501A protein)
OH-pyrene or PYR10 (Pyrene metabolite)
VDSI (measurement of imposex)

JAMP-stations
"Index"-stations
MYTI EDU - Blue Mussel (*Mytilus edulis*)
NUCE LAP – Dog whelk (*Nucella lapillus*)
GADU MOR - Atlantic cod (*Gadus morhua*)
LEPI WHI - Megrim (*Lepidorhombus whiff-iagonis*)
LIMA LIM - Dab (*Limanda limanda*)
PLAT FLE - Flounder (*Platichthys flesus*)
(s) - Small fish
(l) - Large fish

Tsu -tissue:

SB - Soft body tissue
LI - Liver tissue
MU - Muscle tissue
BL - Blood
BI - Bile

OC	**Overconcentration expressed as quotient of median of last year and “high background” ("?" missing background value)**	
TRD	**trend**	
	D-	**Significant linear trend, downward**
	U-	**Significant linear trend, upward**
	--	**No significant trend**
	-?	**No significant linear trend, systematic non-linear trend can not be tested because of insufficient data (<6 years)**
	-Y	**No significant linear trend, but a systematic non-linear trend**
	DY or UY	**Significant linear trend (downward or upward) and a significant non-linear trend. This is considered the same as "-Y"**
	SIZE length effect (mercury in fillet)	
	L	**Significant difference in concentration levels but pattern of variation same**
	D	**As "L" but pattern of variation significantly different**
	-	**No significant difference between “small” and “large” fish**
SM3	**Projected smoothed median for three years expressed as quotient of value and “high background” ("?" if missing background or if number of years is less than seven)**	
PWR	**POWER; estimated number of years to detect a hypothetical situation of 10% trend a year with a 90% power**	

Note on detection limit: for values designated below detection limit, half of this limit is used.

Annual median concentration of CD (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.				1.07	0.81	1.41	0.6	0.61	0.736	0.769	0.769	1.12	1.26	1.17	0.776	0.8	0.857	1.27	1.16	1.13	0.914	1.75	1.56	2.16	1.7	1.72	no	U-	1.1	10
31A	MYTI EDU	SB	d.w.			1.39	1.31	0.89	1.93	0.4	0.43	0.412	0.719	0.727	0.914	0.933	0.781	1.32	0.789	0.854	1.07	1.25	1	1.76	1.14	1.33	1.4	1.28	1.11	no	UY	no	12
35A	MYTI EDU	SB	d.w.			1.35	0.952	1.17	1.3	0.52	0.66	0.647	0.926	1.05	1.35	1.11	0.958	0.894	0.766	0.965	1.14	1.53	1.33	1.53	1.16	1.06	1.23	1.33	0.86	no	UY	no	10
36A	MYTI EDU	SB	d.w.			0.845	1.19	0.84	1.38	0.59	0.56	0.502	0.407	1.22	1.06	0.899	1.22	1.17	1.6	1.84	0.965	1.01	1.65	2.59	1	0.848	0.956	0.9	0.586	no	--	no	13
71A	MYTI EDU	SB	d.w.			2.52	1.98	1.42	2	0.98	2.11	2.02	0.968	1.09	1.66	1.89	1.97	2.25	1.5	2.44	1.53	1.76	1.99	1.43	1.69	1.44	1.57	1.48	1.43	no	--	no	11
76A	MYTI EDU	SB	d.w.										0.638	0.86	0.957	1.1			1.17	1.19	1.2	1.28	0.823	1.82	1.45	1.05	1.01	0.829	0.816	no	--	no	9
15A	MYTI EDU	SB	d.w.										0.505	0.831		1.18	0.794	1.44	1.22	1.07	1.03	0.841	1.44	4.4	1.31	0.737	0.926	0.788	1.01	no	--	no	15
51A	MYTI EDU	SB	d.w.							42.8	58.2							36.8	25.3	5.45	10.3	34.6	27.3	5.35	16.6	14.7	5.21	13.8	2.35	1.2	--	no	21
52A	MYTI EDU	SB	d.w.									94.4	10.2	80.1	43.1	14.7	8.71	19.8	18.4	13.4	9.14	11.4	10.5	5.59	5	7.38	5.37	7	2.88	1.4	D-	1.2	19
56A	MYTI EDU	SB	d.w.							55.9	54.2	98.4	45	69.4	51.7	59.7	11.4	30.8	20	28.8	8.71	25.9	24.4	14.5	13.4	11.4	6.18	11.7	8.4	4.2	D-	2.7	16
57A	MYTI EDU	SB	d.w.							21.1	43.2	36.7	25.7	32.8	32.1	15.4	11.8	12.2	8.48	13.6	5.02	13.6	10.3	8.19	6.96	6.32	3.12	5.94	6.21	3.1	D-	2.2	13
63A	MYTI EDU	SB	d.w.							47.2	10.3	19	30.4	35.1	18.2	7.81	4.23	8.16	5.4	6.62	4.43	6.87	5.97	6.73	5.38	5.69	1.3	4	3.98	2.0	D-	1.0	17
65A	MYTI EDU	SB	d.w.							15	5.96	8.29	14.6	24	5.09	7.73	3.01	5.37	3.53	4.28	1.72	3.82	3.85	4.5	3.74	3.4	1.31	3.42	3.98	2.0	D-	1.5	16
69A	MYTI EDU	SB	d.w.												4.26	2.37	2.08	2.91	3.2	3.53	1.58	3.76	2.87	3.8	2.41	2.36	1.19	2.26	1.51	no	--	no	13
22A	MYTI EDU	SB	d.w.										0.532	1.14	1.12	0.844	1.02	1.41	1.14	1.01	0.851	1.32	2.69	2.01	0.976	1.04	1.18	0.912	0.844	no	--	no	12
23A	MYTI EDU	SB	d.w.										0.406	0.994													0.832	1.11		no	-?	?	15
24A	MYTI EDU	SB	d.w.										0.52	0.816													0.958	0.944		no	-?	?	10
82A	MYTI EDU	SB	d.w.				1.41	1.15	2.31	0.99	0.4	1.26		1.2	1.21	1.15		0.981	1.22								0.944	1.51		no	--	no	15
84A	MYTI EDU	SB	d.w.				1.39	1.86	2.38	2.1	0.96	1.19		1.82	2.11	1.6		1.64	1.29								1.54	2.05		1.0	--	no	12
87A	MYTI EDU	SB	d.w.				0.968	1.02	1.93	0.77	0.69	0.756		0.872	0.978	0.927		1.15	1.27								1	1.08		no	--	no	11
25A	MYTI EDU	SB	d.w.												1.38	1.05											1.25	1.46		no	-?	?	8
26A	MYTI EDU	SB	d.w.												1.07	1											1.24	1.13		no	-?	?	<=5
27A	MYTI EDU	SB	d.w.												1.1												0.856	0.894		no	-?	?	<=5
28A	MYTI EDU	SB	d.w.												1.12	0.841											0.947	1.04		no	-?	?	8
91A	MYTI EDU	SB	d.w.												1.68	1.27	1.82											1.16		no	-?	?	9
92A1	MYTI EDU	SB	d.w.												1.08	0.544	0.939	0.743	0.691	0.716										no	--	no	11
93A	MYTI EDU	SB	d.w.												1.23	0.645											0.888	0.68		no	-?	?	13
94A	MYTI EDU	SB	d.w.												0.87	0.846											1.13	1.2		no	U?	?	<=5
95A	MYTI EDU	SB	d.w.												1.21	1.47											1	1.11		no	-?	?	7
96A	MYTI EDU	SB	d.w.												0.963	0.782											0.718	1.03		no	-?	?	10
97A	MYTI EDU	SB	d.w.												1.31	1.55											1.44	1.44		no	-?	?	6
98A2	MYTI EDU	SB	d.w.																	0.854		2.17	1.68	2.38	2.13	2.27	1.07	1.29	1.3	no	--	no	12
98X	MYTI EDU	SB	d.w.														0.712	0.688	0.781											no	-?	?	6
99A	MYTI EDU	SB	d.w.												1.43	1.28											1.35	1.27		no	-?	?	<=5
41A	MYTI EDU	SB	d.w.														1.89	2.95	1.63	1.88									2.67	1.3	-?	?	11
42A	MYTI EDU	SB	d.wt														1.05	1.59											0.952	no	-?	?	12
43A	MYTI EDU	SB	d.w.														3.47	4.32		3.85									2.37	1.2	-?	?	8
44A	MYTI EDU	SB	d.w.														1.69	2.74	1.95	1.51									1.86	no	-?	?	11
45A	MYTI EDU	SB	d.wt														1.81	1.61											1.88	no	-?	?	6
46A	MYTI EDU	SB	d.w.														2.7	2.06	2.72										2.2	1.1	-?	?	8
47A	MYTI EDU	SB	d.wt														4.55	3.01											2.29	1.1	-?	?	11
48A	MYTI EDU	SB	d.w.														1.35	1.31	1.38										2.64	1.3	U?	?	<=5
49A	MYTI EDU	SB	d.wt														1.57	1.16											4.07	2.0	-?	?	11
10A2	MYTI EDU	SB	d.w.																2.34	1.06	2.32	1.61	1.53	1.23	1.41	1.98	1.59	1.12	1.74	no	--	no	12
11X	MYTI EDU	SB	d.w.																	1.65	0.67	1.13	1.07	1.32	1.36	1.36	0.911	0.981	0.922	no	--	no	11

Annual median concentration of CD (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.				1.07	0.81	1.41	0.6	0.61	0.736	0.769	0.769	1.12	1.26	1.17	0.776	0.8	0.857	1.27	1.16	1.13	0.914	1.75	1.56	2.16	1.7	1.72	no	U-	1.1	10
51A	MYTI EDU	SB	d.w.							42.8	58.2							36.8	25.3	5.45	10.3	34.6	27.3	5.35	16.6	14.7	5.21	13.8	2.35	1.2	--	no	21
52A	MYTI EDU	SB	d.w.									94.4	10.2	80.1	43.1	14.7	8.71	19.8	18.4	13.4	9.14	11.4	10.5	5.59	5	7.38	5.37	7	2.88	1.4	D-	1.2	19
10A2	MYTI EDU	SB	d.w.																2.34	1.06	2.32	1.61	1.53	1.23	1.41	1.98	1.59	1.12	1.74	no	--	no	12
I021	MYTI EDU	SB	d.w.															1.73	2.26	2.48	3.31		1.83	2.53	2.41					1.2	--	1.1	10
I022	MYTI EDU	SB	d.w.															1.43	1.36	1.26	2.09	1.94	1.33	1.7	2.69	1.61	1.25	1.42	1.74	no	--	no	11
I023	MYTI EDU	SB	d.w.															1.61	1.4	1.77	2.04	1.45	0.948	0.873	1.55	1.48	1.03	1.39	1.79	no	--	no	11
I024	MYTI EDU	SB	d.w.															1.31	1.63	2.04	2.56	2.45	1.83	2.53	2.7	2.03	1.57	1.46	1.97	no	--	no	9
I301	MYTI EDU	SB	d.w.															0.824	0.795	0.817	1.03	1.29	0.716	0.902	0.888	1.15	1.32	1.03	1.49	no	--	no	9
I304	MYTI EDU	SB	d.w.															1.33	0.719	0.784	1.05	0.994	0.921	1.16	1.3	1.37	1.1	1.34	1.35	no	--	no	9
I306	MYTI EDU	SB	d.w.															0.81	0.779	0.646	0.707	0.842	0.592	0.734	0.872	1.28	0.992	1.11	0.806	no	--	no	9
I307	MYTI EDU	SB	d.w.															0.94	0.815	0.687	0.72	0.826	0.719	0.899	1.46	1.44	1.14	1.26	0.933	no	U-	no	9
I201	MYTI EDU	SB	d.w.															0.801	0.856	1.06	0.927	1.27	1.42	1.49	2.8	0.707	0.957	1.47	1.55	no	--	no	13
I205	MYTI EDU	SB	d.w.															0.819		1.37	0.858	1.49	1.99	1.42	2.43	1.25	1.02	2.02	1.91	no	--	no	13
I965	MYTI EDU	SB	d.w.																					2.02	2.15	0.813	1.9	1.8	1.78	no	--	no	14
I962	MYTI EDU	SB	d.w.															0.746	0.606	0.645	0.518									no	-?	?	6
I964	MYTI EDU	SB	d.w.																						1.57	0.652	0.92	2.15	2.11	1.1	-?	?	16
I969	MYTI EDU	SB	d.w.															0.502	0.599	0.318	0.611	0.588	0.827	0.76	0.8	0.557	0.615	1.19	0.432	no	--	no	13

Annual median concentration of CD (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR	LI	w.w.				0.01	0.05	0.0619	0.0711	0.0218	0.0267	0.035	0.027	0.1	0.0645	0.063	0.049	0.055	0.0485	0.107	0.165	0.078	0.111	0.106	0.114	0.1	0.0734	0.115	1.2	U-	no	16
36B	GADU MOR	LI	w.w.	0.078	0.06	0.22	0.07	0.05	0.137	0.0611	0.0314	0.028	0.0235	0.01	0.021	0.034	0.021	0.042	0.033	0.0741	0.036	0.065	0.041	0.029	0.0247	0.0088	0.0067	0.029	0.025	no	DY	no	17
15B	GADU MOR	LI	w.w.										0.026	0.009	0.025	0.016	0.014	0.016	0.024	0.031	0.03	0.026	0.033	0.026	0.0183	0.0374	0.0097	0.019	0.0058	no	--	no	14
53B	GADU MOR	LI	w.w.						0.658		0.058	0.0929	0.045	0.149	0.215	0.038		0.007	0.18	0.143	0.228	0.726	0.829	0.565	0.431	0.253	0.368	0.414	0.2	2.0	--	1.3	24
67B	GADU MOR	LI	w.w.							0.145	0.0519	0.0467	0.069	0.077	0.0514	0.115	0.0989	0.033	0.111	0.277	0.0185	0.0715	0.059	0.032	0.0203	0.01	0.016	0.0252	0.0092	no	--	no	20
23B	GADU MOR	LI	w.w.										0.022	0.024	0.02	0.025	0.015	0.026	0.014	0.029	0.025	0.033	0.019	0.025	0.0206	0.0163	0.0228	0.024	0.0379	no	--	no	11
84B	GADU MOR	LI	w.w.				0.13	0.0949	0.0688		0.0291																			no	D?	?	6
92B	GADU MOR	LI	w.w.													0.036	0.029	0.022	0.066								0.0229	0.024		no	--	no	14
98B1	GADU MOR	LI	w.w.												0.069	0.15	0.025	0.113	0.33	0.064	0.047	0.039			0.0291	0.0254	0.0332	0.051	0.0379	no	--	no	20
43B	GADU MOR	LI	w.w.														0.168	0.183	0.097											no	-?	?	12
10B	GADU MOR	LI	w.w.														0.23	0.188	0.095	0.128	0.119	0.137	0.125	0.129	0.059	0.099	0.103	0.079	0.0779	no	--	no	11

Annual median concentration of CD (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
33F	PLAT FLE	LI	w.w.			0.19		0.195	0.176	0.251	0.061	0.106	0.234	0.196	0.16	0.184	0.087	0.091	0.114	0.119	0.0952	0.126	0.071	0.091	0.0569	0.0627	0.0313	0.025	0.0677	no	D-	no	14
53F	PLAT FLE	LI	w.w.								2.24	1.53	1.54	1.72	1.79	0.789		0.135	2.53	0.892	1.47	2.55	1.77	2.74	2.74	4.56	1.46	1.31		4.4	--	2.5	20
67F	PLAT FLE	LI	w.w.																2.48		0.187	0.185	0.148	0.059	0.065	0.0802	0.0605	0.124	0.14	no	DY	no	18
21F	PLAT FLE	LI	w.w.																			0.052	0.0979	0.141	0.22		0.0473	0.125	0.129	no	--	no	18
36F	LIMA LIM	LI	w.w.										0.106	0.112	0.23	0.295	0.135	0.147	0.139	0.123	0.202	0.227	0.139	0.232	0.127	0.142	0.188	0.144	0.128	no	--	no	12
15F	LIMA LIM	LI	w.w.													0.0992	0.136	0.125	0.153	0.076	0.181	0.167		0.313	0.129	0.11	0.189	0.225	0.377	1.3	--	1.4	14
22F	LIMA LIM	LI	w.w.										0.095	0.091	0.128		0.169	0.125												no	-?	?	9
21F	LIMA LIM	LI	w.w.																						0.0166	0.0085	0.0747	0.014		no	-?	?	>25
30F	PLEU PLA	LI	w.w.												0.11		0.101	0.222												1.1	-?	?	15
22F	PLEU PLA	LI	w.w.																0.23	0.231	0.244									1.2	-?	?	<=5
98F2	PLEU PLA	LI	w.w.																				0.821	0.521	0.217	0.218	0.0726	1.01	0.593	3.0	--	3.9	23
10F	PLEU PLA	LI	w.w.																	0.571		0.141	0.248	0.302	0.204	0.316	0.307	0.271		1.4	--	1.6	15
67F	LEPI WHI	LI	w.w.			0.181				0.18	0.109	0.066	0.197	0.085	0.1	0.12	0.304	0.259	0.2	0.097	0.033	0.051	0.037	0.049	0.0342	0.0543	0.0485	0.0609	0.0449	m	DY	m	14
21F	LEPI WHI	LI	w.w.																							0.0592	0.0812	0.112	0.186	m	U?	m	6

Annual median concentration of HG (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.				0.118	0.073	0.147	0.05	0.13	0.0437	0.0641	0.0533	0.0508	0.0703	0.0865	0.0574	0.07	0.0604	0.0778	0.114	0.0599	0.0586	0.0952	0.071	0.153	0.113	0.1	no	--	no	13
31A	MYTI EDU	SB	d.w.			0.0757	0.164	0.086	0.12	0.05	0.09	0.0225	0.0599	0.0485	0.0508	0.0446	0.0502	0.0623	0.0435	0.0515	0.0699	0.0881	0.0464	0.051	0.0577	0.0577	0.0935	0.11	0.18	no	UY	1.3	13
35A	MYTI EDU	SB	d.w.			0.0933	0.0741	0.084	0.17	0.05	0.18	0.05	0.0617	0.0585	0.0578	0.0537	0.0607	0.0369	0.0383	0.0354	0.0667	0.101	0.028	0.0472	0.0575	0.0574	0.0938	0.12	0.045	no	--	no	15
36A	MYTI EDU	SB	d.w.			0.0516	0.0427	0.084	0.14	0.05	0.14	0.034	0.0452	0.0476	0.0394	0.0321	0.0481	0.0333	0.0442	0.0743	0.0299	0.0455	0.0377	0.0245	0.0342	0.0526	0.108	0.05	0.0364	no	--	no	15
71A	MYTI EDU	SB	d.w.			0.393	0.242	0.218	0.247	0.12	0.34	0.249	0.182	0.145	0.178	0.14	0.212	0.201	0.222	0.312	0.11	0.155	0.132	0.123	0.15	0.154	0.189	0.177	0.18	no	--	1.1	12
76A	MYTI EDU	SB	d.w.										0.0709	0.0682	0.0498	0.0205			0.057	0.0824	0.0632	0.101	0.0328	0.0634	0.0585	0.0843	0.101	0.0824	0.0579	no	--	no	14
15A	MYTI EDU	SB	d.w.										0.0561	0.0522		0.0244	0.0503	0.0217	0.0488	0.0558	0.0529	0.0437	0.163	0.0354	0.0452	0.0596	0.0946	0.075	0.0632	no	--	no	16
51A	MYTI EDU	SB	d.w.							0.24	0.25							1.51	0.901	0.175	0.577	2.89	3.86	0.774	1.45	1.47	0.304	0.607	0.231	1.2	--	no	23
52A	MYTI EDU	SB	d.w.									2.35	0.321	3.01	0.976	0.372	0.282	0.437	0.178	0.26	0.258	0.58	0.34	0.298	0.264	0.195	0.228	0.163	0.135	no	D-	no	18
56A	MYTI EDU	SB	d.w.							0.53	0.37	1.09	0.71	1.54	0.935	1.22	0.352	0.679	0.365	0.526	0.282	0.917	0.982	0.611	0.602	0.346	0.235	0.358	0.336	1.7	--	no	15
57A	MYTI EDU	SB	d.w.							0.17	0.21	0.269	0.411	0.758	0.576	0.349	0.35	0.26	0.155	0.319	0.166	0.467	0.451	0.349	0.277	0.193	0.115	0.229	0.229	1.1	DY	no	13
63A	MYTI EDU	SB	d.w.							0.31	0.14	0.177	0.394	0.468	0.294	0.143	0.19	0.252	0.172	0.203	0.226	0.268	0.299	0.365	0.289	0.213	0.0695	0.18	0.187	no	--	no	15
65A	MYTI EDU	SB	d.w.							0.1	0.15	0.104	0.312	0.328	0.124	0.119	0.134	0.148	0.118	0.136	0.0792	0.142	0.155	0.189	0.132	0.135	0.0638	0.133	0.156	no	--	no	13
69A	MYTI EDU	SB	d.w.												0.106	0.0263	0.0829	0.0704	0.104	0.111	0.0773	0.161	0.107	0.146	0.106	0.0989	0.0586	0.1	0.0778	no	--	no	14
22A	MYTI EDU	SB	d.w.										0.0529	0.0732	0.112	0.0476	0.0673	0.0657	0.0723	0.0683	0.046	0.0736	0.0288	0.0545	0.0461	0.126	0.161	0.125	0.106	no	--	1.0	13
23A	MYTI EDU	SB	d.w.										0.0543	0.0759													0.0855	0.107		no	-?	?	9
24A	MYTI EDU	SB	d.w.										0.0578	0.0748													0.0903	0.075		no	-?	?	8
82A	MYTI EDU	SB	d.w.				0.0508	0.11	0.17	0.08	0.12	0.0668		0.0743	0.0519	0.0787		0.0493	0.0691								0.0508	0.0941		no	--	no	13
84A	MYTI EDU	SB	d.w.				0.0766	0.112	0.15	0.08	0.24	0.0571		0.0657	0.0902	0.0568		0.0542	0.0433								0.0511	0.0824		no	--	no	15
87A	MYTI EDU	SB	d.w.				0.178		0.15	0.05	0.26	0.0462		0.0564	0.0543	0.0488		0.0439	0.0623								0.0467	0.045		no	--	no	16
25A	MYTI EDU	SB	d.w.												0.141	0.0368											0.0952	0.0727		no	-?	?	19
26A	MYTI EDU	SB	d.w.												0.0959	0.0459											0.0843	0.0789		no	-?	?	14
27A	MYTI EDU	SB	d.w.												0.107												0.0824	0.0722		no	-?	?	6
28A	MYTI EDU	SB	d.w.												0.0765	0.0619											0.0851	0.125		no	-?	?	10
91A	MYTI EDU	SB	d.w.												0.0539	0.0758	0.0943											0.0647		no	-?	?	12
92A1	MYTI EDU	SB	d.w.												0.0548	0.0335	0.0521	0.0407	0.0234	0.067										no	--	no	14
93A	MYTI EDU	SB	d.w.												0.0679	0.118											0.202	0.126		no	-?	?	13
94A	MYTI EDU	SB	d.w.												0.082	0.0631											0.0508	0.0591		no	-?	?	8
95A	MYTI EDU	SB	d.w.												0.0765	0.0598											0.0526	0.0667		no	-?	?	9
96A	MYTI EDU	SB	d.w.												0.0481	0.0304											0.039	0.04		no	-?	?	10
97A	MYTI EDU	SB	d.w.												0.0765	0.0703											0.0594	0.0619		no	-?	?	<=5
98A2	MYTI EDU	SB	d.w.																	0.104		0.246	0.109	0.109	0.115	0.14	0.0817	0.08	0.0889	no	--	no	13
98X	MYTI EDU	SB	d.w.														0.335	0.34	0.328											1.6	-?	?	<=5
99A	MYTI EDU	SB	d.w.												0.0881	0.0487											0.0552	0.0588		no	-?	?	12
41A	MYTI EDU	SB	d.w.														0.0686	0.0635	0.064	0.0848									0.05	no	-?	?	8
42A	MYTI EDU	SB	d.wt														0.0449	0.0492											0.0348	no	-?	?	6
43A	MYTI EDU	SB	d.w.														0.0844	0.0946		0.104									0.0667	no	-?	?	8
44A	MYTI EDU	SB	d.w.														0.0552	0.05	0.0517	0.0592									0.0444	no	-?	?	6
45A	MYTI EDU	SB	d.wt														0.0819	0.0667											0.0474	no	-?	?	7
46A	MYTI EDU	SB	d.w.														0.0387	0.0618	0.0564										0.0348	no	-?	?	11
47A	MYTI EDU	SB	d.wt														0.064	0.0425											0.0579	no	-?	?	12
48A	MYTI EDU	SB	d.w.														0.0726	0.0599	0.0524										0.125	no	-?	?	10
49A	MYTI EDU	SB	d.wt														0.0651	0.0543											0.0474	no	-?	?	7
10A2	MYTI EDU	SB	d.w.																0.0588	0.0617	0.0581	0.0625	0.0503	0.052	0.0494	0.0549	0.0503	0.0368	0.0412	no	D-	no	7
11X	MYTI EDU	SB	d.w.																	0.0811	0.0366	0.0564	0.0667	0.065	0.0372	0.0372	0.037	0.0429	0.0368	no	--	no	11

Annual median concentration of HG (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.				0.118	0.073	0.147	0.05	0.13	0.0437	0.0641	0.0533	0.0508	0.0703	0.0865	0.0574	0.07	0.0604	0.0778	0.114	0.0599	0.0586	0.0952	0.071	0.153	0.113	0.1	no	--	no	13
51A	MYTI EDU	SB	d.w.							0.24	0.25							1.51	0.901	0.175	0.577	2.89	3.86	0.774	1.45	1.47	0.304	0.607	0.231	1.2	--	no	23
52A	MYTI EDU	SB	d.w.									2.35	0.321	3.01	0.976	0.372	0.282	0.437	0.178	0.26	0.258	0.58	0.34	0.298	0.264	0.195	0.228	0.163	0.135	no	D-	no	18
10A2	MYTI EDU	SB	d.w.																0.0588	0.0617	0.0581	0.0625	0.0503	0.052	0.0494	0.0549	0.0503	0.0368	0.0412	no	D-	no	7
I021	MYTI EDU	SB	d.w.															0.212	0.397	0.496	0.859		0.356	0.436	0.319					1.6	--	1.2	13
I022	MYTI EDU	SB	d.w.															0.13	0.134	0.321	0.404	0.415	0.182	0.238	0.289	0.197	0.155	0.243	0.215	1.1	--	no	13
I023	MYTI EDU	SB	d.w.															0.14	0.143	0.295	0.31	0.263	0.0944	0.0959	0.15	0.142	0.129	0.164	0.177	no	--	1.1	13
I024	MYTI EDU	SB	d.w.															0.107	0.18	0.45	0.543	0.425	0.12	0.295	0.238	0.233	0.21	0.291	0.275	1.4	--	1.5	15
I301	MYTI EDU	SB	d.w.															0.0656	0.0682	0.0582	0.0675	0.0625	0.0408	0.0677	0.05	0.0732	0.114	0.125	0.0929	no	U-	no	10
I304	MYTI EDU	SB	d.w.															0.047	0.0694	0.0395	0.0541	0.0503	0.0294	0.0513	0.0462	0.0491	0.063	0.0702	0.0615	no	--	no	10
I306	MYTI EDU	SB	d.w.															0.0447	0.0617	0.0387	0.061	0.0508	0.0355	0.0353	0.0403	0.0507	0.0744	0.069	0.05	no	--	no	10
I307	MYTI EDU	SB	d.w.															0.0383	0.0705	0.0337	0.0465	0.0542	0.0327	0.0488	0.0541	0.062	0.0893	0.0952	0.0438	no	--	no	13
71A	MYTI EDU	SB	d.w.			0.393	0.242	0.218	0.247	0.12	0.34	0.249	0.182	0.145	0.178	0.14	0.212	0.201	0.222	0.312	0.11	0.155	0.132	0.123	0.15	0.154	0.189	0.177	0.18	no	--	1.1	12
I711	MYTI EDU	SB	d.w.																		0.382	0.287	0.198		0.2					no	-?	?	9
I712	MYTI EDU	SB	d.w.																		0.181	0.257	0.214	0.218	0.211	0.145	0.178	0.184	0.218	1.1	--	1.0	9
I713	MYTI EDU	SB	d.w.																						0.111	0.177	0.157	0.108	0.164	no	-?	?	11
I131A	MYTI EDU	SB	d.w.															0.127	0.0691	0.0601	0.144	0.0635	0.0337	0.0784	0.0503	0.0652	0.1	0.0634	0.0786	no	--	no	14
I201	MYTI EDU	SB	d.w.																		0.101	0.132	0.157	0.169	0.313	0.0964	0.13	0.291	0.215	1.1	--	1.3	15
I205	MYTI EDU	SB	d.w.																		0.0974	0.171	0.205	0.167	0.218	0.151	0.142	0.306	0.285	1.4	--	1.8	12
I965	MYTI EDU	SB	d.w.																						0.2	0.0904	0.168	0.124	0.107	no	-?	?	13
I964	MYTI EDU	SB	d.w.																						0.136	0.0592	0.0494	0.155	0.17	no	-?	?	18
I969	MYTI EDU	SB	d.w.																						0.0632	0.0419	0.0359	0.103	0.0421	no	-?	?	16

Annual median concentration of HG (ppm)
Cursive values in shaded area indicate temporal trend analysis based on data since 1998

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR (s)	MU	w.w.				0.125	0.0894	0.0788	0.0402	0.0585	0.121	0.12	0.09	0.11	0.122	0.102	0.08	0.12	0.13	0.117	0.153	0.173	0.224	0.131	0.137	0.105	0.123	0.215	2.2	U-L	1.7	11
30B	GADU MOR (l)	MU	w.w.				0.155	0.09	0.0735	0.0379	0.147	0.166	0.13	0.108	0.15	0.155	0.129	0.119	0.148	0.182	0.232	0.351	0.252	0.34	0.207	0.194	0.185	0.222	0.285	2.8	U-L	2.6	13
30B	GADU MOR (s)	MU	w.w.																		*0.117*	*0.153*	*0.173*	*0.224*	*0.131*	*0.137*	*0.105*	*0.123*	*0.215*	2.2	--L	1.7	11
30B	GADU MOR (l)	MU	w.w.																		*0.232*	*0.351*	*0.252*	*0.34*	*0.207*	*0.194*	*0.185*	*0.222*	*0.285*	2.8	--L	2.6	10
36B	GADU MOR (s)	MU	w.w.	0.069	0.08	0.11	0.0748	0.08	0.0612	0.0317	0.0529	0.0685	0.06	0.06	0.0592	0.0674	0.0535	0.0759	0.0665	0.0885	0.0778	0.06	0.072	0.0515	0.0569	0.0365	0.0455	0.074	0.0789	no	--L	no	10
36B	GADU MOR (l)	MU	w.w.	0.079	0.16	0.18	0.195	0.12	0.112	0.0393	0.083	0.0739	0.115	0.1	0.08	0.0829	0.0599	0.0946	0.0695	0.157	0.088	0.186	0.075	0.123	0.108	0.073	0.074	0.0963	0.1	1.0	--L	no	13
15B	GADU MOR (s)	MU	w.w.										0.0648	0.04	0.026	0.018	0.045	0.0435	0.0585	0.0761	0.0435	0.023	0.0377	0.064	0.0375	0.0325	0.024	0.028	0.0285	no	--L	no	14
15B	GADU MOR (l)	MU	w.w.										0.12	0.07	0.063	0.0394	0.081	0.0455	0.0874	0.108	0.09	0.0265	0.0465	0.0865	0.048	0.037	0.0265	0.041	0.038	no	--L	no	15
53B	GADU MOR (s)	MU	w.w.						0.223		0.105	0.16	0.184	0.204	0.36	0.0896		0.0535	0.229	0.128	0.151	0.175	0.209	0.257	0.196	0.0935	0.161	0.132	0.103	1.0	--L	no	16
53B	GADU MOR (l)	MU	w.w.						0.196		0.105	0.203	0.17	0.269	0.396	0.141		0.0904	0.277	0.243	0.298	0.285	0.395	0.715	0.375	0.168	0.186	0.294	0.195	2.0	--L	1.1	15
67B	GADU MOR (s)	MU	w.w.							0.1	0.0847	0.0902	0.0794	0.1	0.0847	0.0925	0.12	0.0712	0.073	0.117	0.0505	0.0575	0.0735	0.045	0.048	0.0325	0.033	0.046	0.032	no	D-L	no	10
67B	GADU MOR (l)	MU	w.w.							0.17	0.0847	0.102	0.255	0.13	0.141	0.0828	0.106	0.072	0.089	0.16	0.068	0.0595	0.107	0.092	0.0939	0.0555	0.0397	0.0719	0.0735	no	--L	no	14
23B	GADU MOR (s)	MU	w.w.										0.0648	0.07	0.06	0.0415	0.0515	0.069	0.0595	0.073	0.075	0.0605	0.0833	0.0725	0.0634	0.0409	0.0778	0.0625	0.072	no	--L	no	9
23B	GADU MOR (l)	MU	w.w.										0.17	0.11	0.0837	0.0981	0.0735	0.109	0.057	0.105	0.116	0.113	0.107	0.097	0.102	0.0884	0.109	0.101	0.124	1.2	--L	1.3	10
84B	GADU MOR (s)	MU	w.w.				0.0346	0.04	0.0246		0.0439																			no	-?-	?	12
84B	GADU MOR (l)	MU	w.w.				0.06	0.04	0.0246		0.0439																			no	-?-	?	14
92B	GADU MOR (s)	MU	w.w.													0.0464	0.0785	0.0795	0.077								0.054	0.0495		no	---	no	11
92B	GADU MOR (l)	MU	w.w.													0.058	0.091	0.074	0.117								0.0685	0.0555		no	---	no	12
98B1	GADU MOR (s)	MU	w.w.												0.0665	0.0543	0.069	0.0685	0.0395	0.095	0.0664	0.0465			0.047	0.0669	0.099	0.055	0.0732	no	---	no	12
98B1	GADU MOR (l)	MU	w.w.												0.065	0.064	0.069	0.0863	0.037	0.128	0.0895	0.043			0.0593	0.0593	0.162	0.0634	0.0744	no	---	1.0	16
43B	GADU MOR (s)	MU	w.w.														0.065	0.054	0.047											no	-?-	?	<=5
43B	GADU MOR (l)	MU	w.w.														0.05	0.059	0.0568											no	-?-	?	6
10B	GADU MOR (s)	MU	w.w.														0.044	0.0339	0.0285	0.011	0.0135	0.0165	0.0105	0.009	0.00949	0.0155	0.0135	0.017	0.016	no	DYL	no	11
10B	GADU MOR (l)	MU	w.w.														0.0555	0.0525	0.0395	0.02	0.019	0.032	0.015	0.0105	0.012	0.0165	0.018	0.0185	0.024	no	DYL	no	12

Annual median concentration of HG (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
33F	PLAT FLE (s)	MU	w.w.			0.11		0.09	0.0769	0.019	0.0694		0.175	0.0877	0.116	0.0918	0.0694	0.053	0.047	0.074	0.0408	0.0455	0.0495	0.0293	0.067	0.0234	0.0345	0.0396	0.03	no	--L	no	15
33F	PLAT FLE (l)	MU	w.w.			0.139		0.1	0.0769	0.0238	0.0694		0.195	0.135	0.196	0.103	0.088	0.049	0.06	0.087	0.0626	0.119	0.0778	0.059	0.0281	0.0615	0.0909	0.0509	0.066	no	--L	no	16
53F	PLAT FLE (s)	MU	w.w.								0.111	0.0738	0.139	0.154	0.141	0.0712		0.0352	0.165	0.13	0.165	0.249	0.289	0.333	0.553	0.521	0.103	0.831		8.3	---	4.5	18
53F	PLAT FLE (l)	MU	w.w.								0.111	0.128	0.09	0.124	0.1	0.116		0.0356	0.208	0.221	0.257	0.157	0.233	0.438	0.45	0.49	0.443	0.717		7.2	U--	8.9	15
67F	PLAT FLE (s)	MU	w.w.																0.1		0.0426	0.0363	0.0638	0.0442	0.0505	0.0573	0.0487	0.0475	0.0335	no	---	no	12
67F	PLAT FLE (l)	MU	w.w.																0.246		0.0608	0.0337	0.082	0.0678	0.0712	0.0655	0.0649	0.0798	0.0629	no	---	no	16
21F	PLAT FLE (s)	MU	w.w.																			0.075	0.0814	0.0389	0.0375		0.021	0.0424	0.039	no	---	no	13
21F	PLAT FLE (l)	MU	w.w.																			0.119	0.0796	0.0337	0.044		0.021	0.0439	0.0591	no	---	no	15
36F	LIMA LIM (s)	MU	w.w.										0.0447	0.0707	0.066	0.0703	0.0495	0.0539	0.0487	0.0306	0.0615	0.0375	0.0563	0.041	0.0617	0.0575	0.0498	0.0812	0.0679	no	--L	no	10
36F	LIMA LIM (l)	MU	w.w.										0.098	0.0742	0.133	0.101	0.0756	0.0997	0.0659	0.0906	0.0915	0.0676	0.102	0.0989	0.114	0.083	0.117	0.162	0.104	1.0	--L	1.4	10
15F	LIMA LIM (s)	MU	w.w.											0.09		0.038	0.0368	0.0245	0.0374	0.0475	0.042	0.036		0.0548	0.0559	0.0339	0.0551	0.0502	0.0596	no	--L	no	11
15F	LIMA LIM (l)	MU	w.w.											0.15		0.034	0.036	0.0564	0.108	0.0727	0.0884	0.059		0.165	0.105	0.0807	0.124	0.133	0.224	2.2	--L	2.5	16
22F	LIMA LIM (s)	MU	w.w.										0.0837	0.04	0.207		0.045	0.063												no	-?-	?	20
22F	LIMA LIM (l)	MU	w.w.										0.174	0.152	0.282		0.223	0.372												3.7	-?-	?	11
21F	LIMA LIM (s)	MU	w.w.																						0.0189	0.0049	0.0468	0.006		no	-?-	?	>25
21F	LIMA LIM (l)	MU	w.w.																						0.0281	0.0104	0.1	0.0134		no	-?-	?	>25
30F	PLEU PLA (s)	MU	w.w.												0.058		0.0275	0.0372												no	-?-	?	13
30F	PLEU PLA (l)	MU	w.w.												0.035		0.0559	0.0476												no	-?-	?	10
22F	PLEU PLA (s)	MU	w.w.																0.0287	0.0431	0.0495									no	-?-	?	7
22F	PLEU PLA (l)	MU	w.w.																0.0506	0.0505	0.0827									no	-?-	?	9
98F2	PLEU PLA (s)	MU	w.w.																				0.0579	0.0588	0.0334	0.018	0.0157	0.085	0.0322	no	---	no	19
98F2	PLEU PLA (l)	MU	w.w.																				0.164	0.0896	0.0309	0.041	0.016	0.063	0.0911	no	---	no	19
10F	PLEU PLA (s)	MU	w.w.																	0.032		0.014	0.029	0.019	0.0189	0.015	0.0156	0.024		no	--L	no	13
10F	PLEU PLA (l)	MU	w.w.																	0.0415		0.0339	0.031	0.024	0.0349	0.0194	0.0345	0.0277		no	--L	no	10
67F	LEPI WHI (s)	MU	w.w.			0.235				0.35	0.329	0.21	0.343	0.0748	0.174	0.187	0.305	0.364	0.398	0.172	0.0663	0.11	0.104	0.0936	0.208	0.0789	0.119	0.0893	0.071	m	D-L	m	15
67F	LEPI WHI (l)	MU	w.w.			0.499				0.35	0.329	0.32	0.589	0.147	0.327	0.336	0.422	0.341	0.372	0.331	0.275	0.392	0.33	0.237	0.0914	0.186	0.334	0.279	0.194	m	--L	m	14
21F	LEPI WHI (s)	MU	w.w.																							0.0931	0.116	0.144	0.176	m	U?-	m	<=5
21F	LEPI WHI (l)	MU	w.w.																							0.182	0.242	0.237	0.234	m	-?-	m	7

Annual median concentration of PB (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.										1.86	1.36	3.95	2.27	2.54	1.58	2.12	2.69	36.7	2.13	1.74	1.76	2.24	2.58	3.74	3.38	4.12	1.4	--	2.0	21
31A	MYTI EDU	SB	d.w.										1.38	1.21	1.26	1.03	1.37	1.68	1.79	0.732	1.54	0.629	0.629	0.51	1.43	0.805	0.781	0.869	0.855	no	--	no	13
35A	MYTI EDU	SB	d.w.										1.44	1.07	1.68	1.2	1.28	0.507	0.628	0.664	0.759	0.714	0.522	0.866	0.571	0.574	0.813	1.21	0.805	no	D-	no	11
36A	MYTI EDU	SB	d.w.										1.01	0.847	0.787	1.12	1.39	1.24	2.04	2.17	1.57	0.995	0.943	0.618	0.449	0.585	0.956	0.578	0.559	no	DY	no	11
71A	MYTI EDU	SB	d.w.										1.16	0.745	1.72	1.42	1.92	1.49	2.21	2.83	0.867	0.903	0.774	1.45	0.919	0.915	0.866	0.962	0.98	no	--	no	13
76A	MYTI EDU	SB	d.w.										1.77	0.968	1.5	0.913			0.796	1.84	1.23	1.99	0.602	0.829	0.766	0.938	1.48	0.778	1.19	no	--	no	14
15A	MYTI EDU	SB	d.w.										1.46	0.777		0.976	1.05	0.522	0.671	1.12	1.28	1.66	2.2	0.96	0.714	0.76	0.857	1.66	0.781	no	--	no	13
51A	MYTI EDU	SB	d.w.															149	60.3	17.2	29.6	37.1	91.7	32.4	98.4	108	42.2	77.5	17.6	5.9	--	no	19
52A	MYTI EDU	SB	d.w.										12.1	313	189	65.5	16.4	17.5	9.84	20.6	14.7	11.6	11	21.8	21.8	16.9	16.3	9.27	8.44	2.8	--	no	22
56A	MYTI EDU	SB	d.w.										20.7	23.4	121	109	24.7	46.4	27.8	37.5	15.7	30.3	28.5	30.5	42.9	27.8	24.7	32	28.9	9.6	--	8.5	16
57A	MYTI EDU	SB	d.w.										10.5	12.1	33.3	19.2	15.1	13.2	5.6	13.7	6.15	10.4	10.3	11.9	9.59	7.02	5.79	11.3	10.4	3.5	--	3.5	14
63A	MYTI EDU	SB	d.w.										12.1	10.1	15.4	10.9	7.22	12.1	7.6	6.1	6.39	4.84	4.52	7.05	6.57	6.3	1.92	4.53	5.36	1.8	D-	1.1	13
65A	MYTI EDU	SB	d.w.										5.61	3.78	5.19	6.53	3.28	4.73	2.41	3	1.77	1.63	2.45	2.84	3.05	2.82	1.25	3	4.01	1.3	--	1.2	13
69A	MYTI EDU	SB	d.w.												4.62	3.42	2.8	3.17	4.02	3.66	1.98	3.4	2.27	3.91	2.76	2.53	0.957	1.74	2.01	no	--	no	13
22A	MYTI EDU	SB	d.w.										1.37	1.46	2.78	1.87	1.39	1.18	1.51	1.37	1.21	1.7	1.3	1.21	0.884	1.46	1.79	1.88	1.31	no	--	no	11
23A	MYTI EDU	SB	d.w.										1.42	1.47													0.878	2.13		no	-?	?	15
24A	MYTI EDU	SB	d.w.										1.42	1.21													2.01	1.44		no	-?	?	9
82A	MYTI EDU	SB	d.w.											1.28	0.933	0.916		0.622	0.674								0.558	0.529		no	DY	no	7
84A	MYTI EDU	SB	d.w.											1.01	1.15	1.38		1.38	0.833								1.11	1		no	--	no	9
87A	MYTI EDU	SB	d.w.											0.974	0.87	0.634		1.4	2.47								0.421	0.3		no	--	no	19
25A	MYTI EDU	SB	d.w.												2.68	1.77											2.01	1.09		no	-?	?	13
26A	MYTI EDU	SB	d.w.												1.42	1.38											1.87	1.4		no	-?	?	8
27A	MYTI EDU	SB	d.w.												1.83												0.941	0.833		no	D?	?	<=5
28A	MYTI EDU	SB	d.w.												1.39	1.87											0.957	1.29		no	-?	?	10
91A	MYTI EDU	SB	d.w.												0.898	1.46	2.01											0.778		no	-?	?	15
92A1	MYTI EDU	SB	d.w.												0.933	0.628	1.09	0.664	0.654	2.18										no	--	1.4	16
93A	MYTI EDU	SB	d.w.												1.14	1.62											2.13	1.05		no	-?	?	14
94A	MYTI EDU	SB	d.w.												0.765	1.18											0.305	0.482		no	-?	?	13
95A	MYTI EDU	SB	d.w.												1.04	2.16											0.585	0.463		no	-?	?	14
96A	MYTI EDU	SB	d.w.												1.13	0.988											0.488	0.835		no	-?	?	12
97A	MYTI EDU	SB	d.w.												1.37	1.26											0.495	0.47		no	D?	?	<=5
98A2	MYTI EDU	SB	d.w.																	1.54		1.59	1.49	1.34	0.892	1.16	1.09	0.54	0.706	no	D-	no	10
98X	MYTI EDU	SB	d.w.														4.34	3.12	4.11											1.4	-?	?	11
99A	MYTI EDU	SB	d.w.												1.2	0.752											0.697	0.529		no	-?	?	11
41A	MYTI EDU	SB	d.w.														1.29	0.9	0.793	0.651									0.63	no	-?	?	10
42A	MYTI EDU	SB	d.wt														1.54	0.761											0.557	no	-?	?	15
43A	MYTI EDU	SB	d.w.														1.56	1.51		0.855									0.713	no	-?	?	11
44A	MYTI EDU	SB	d.w.														2.81	2.57	1.66	1.15									0.82	no	-?	?	12
45A	MYTI EDU	SB	d.wt														1.1	1.99											0.69	no	-?	?	15
46A	MYTI EDU	SB	d.w.														1.26	1.57	1.38										0.761	no	-?	?	8
47A	MYTI EDU	SB	d.wt														1.09	1.18											0.603	no	-?	?	6
48A	MYTI EDU	SB	d.w.														0.682	1.08	0.333										0.451	no	-?	?	17
49A	MYTI EDU	SB	d.wt														2.38	7.65											2.73	no	-?	?	22
10A2	MYTI EDU	SB	d.w.																0.735	0.807	2.34	1.57	1.44	1.39	1.8	1.65	1.02	0.674	0.988	no	--	no	13
11X	MYTI EDU	SB	d.w.																	0.743	0.521	0.314	1.09	2.32	0.74	0.279	0.37	0.323	0.511	no	--	no	19

Annual median concentration of PB (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.										1.86	1.36	3.95	2.27	2.54	1.58	2.12	2.69	36.7	2.13	1.74	1.76	2.24	2.58	3.74	3.38	4.12	1.4	--	2.0	21
51A	MYTI EDU	SB	d.w.															149	60.3	17.2	29.6	37.1	91.7	32.4	98.4	108	42.2	77.5	17.6	5.9	--	no	19
52A	MYTI EDU	SB	d.w.										12.1	313	189	65.5	16.4	17.5	9.84	20.6	14.7	11.6	11	21.8	21.8	16.9	16.3	9.27	8.44	2.8	--	no	22
10A2	MYTI EDU	SB	d.w.																0.735	0.807	2.34	1.57	1.44	1.39	1.8	1.65	1.02	0.674	0.988	no	--	no	13
I021	MYTI EDU	SB	d.w.															1.06	2.29	1.65	2.12		0.99	1.65	1.19					no	--	no	13
I022	MYTI EDU	SB	d.w.															1	0.599	1.18	1.31	1.94	1.05	0.952	1.27	1.36	3.51	1.26	1.34	no	--	no	14
I023	MYTI EDU	SB	d.w.															0.774	1.27	1.38	1.7	1.38	0.636	0.616	0.754	1.28	2.34	0.901	1.05	no	--	no	14
I024	MYTI EDU	SB	d.w.															0.971	1.1	1.16	1.7	1.79	0.617	1.33	1.1	1.73	2.68	1.06	1.18	no	--	no	14
I301	MYTI EDU	SB	d.w.																		2.47	2.11	1.32	3.16	1.98	1.77	3.07	2.15	5.38	1.8	--	1.8	13
I304	MYTI EDU	SB	d.w.																		2.23	1.19	0.765	1.88	1.3	1.16	1.73	1.95	2.16	no	--	no	13
I306	MYTI EDU	SB	d.w.																		1.34	0.678	0.542	1.03	0.658	0.704	1.08	1.09	0.938	no	--	no	12
I307	MYTI EDU	SB	d.w.																		1.05	0.798	0.513	1.01	1.26	1.01	1.07	1.39	1.04	no	--	no	12
I201	MYTI EDU	SB	d.w.															3.54	4.39	4.77	4.67	4.43	6.41	3.78	8.21	1.87	3.33	4.31	3.41	1.1	--	no	14
I205	MYTI EDU	SB	d.w.															4.77		6.96	4	5.97	7.09	6.15	9.27	3.4	2.76	6.3	5.26	1.8	--	1.4	14
I965	MYTI EDU	SB	d.w.																					20	12.7	6.45	13.1	12.5	13.7	4.6	--	4.8	14
I962	MYTI EDU	SB	d.w.															4.44	5.34	3.55	2.99									no	-?	?	9
I964	MYTI EDU	SB	d.w.																						8.75	3.49	6.57	13	13.3	4.4	-?	?	16
I969	MYTI EDU	SB	d.w.															2.47	2.08	1.62	2.91	5.13	3	2.57	2.58	1.85	1.59	3.92	2.11	no	--	no	13

Annual median concentration of PB (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR	LI	w.w.										0.2	0.115	0.249	0.105	0.12	0.11	0.06	0.0949	0.163	0.85	0.24	0.22	0.513	0.24	0.17	0.138	0.101	1.0	--	no	17
36B	GADU MOR	LI	w.w.										0.115	0.05	0.03	0.02	0.03	0.02	0.03	0.04	0.03	0.04	0.04	0.03	0.0061	0.02	0.02	0.02	0.02	no	D-	no	15
15B	GADU MOR	LI	w.w.										0.17	0.06	0.03	0.03	0.03	0.02	0.03	0.04	0.03	0.03	0.04	0.03	0.01	0.02	0.02	0.02	0.02	no	D-	no	13
53B	GADU MOR	LI	w.w.										0.19	0.26	0.14	0.03		0.02	0.0748	0.07	0.105	0.115	0.13	0.13	0.142	0.04	0.09	0.082	0.0453	no	--	no	17
67B	GADU MOR	LI	w.w.										0.13	0.18	0.03	0.0748	0.09	0.04	0.04	0.09	0.03	0.04	0.04	0.03	0.0149	0.02	0.02	0.0075	0.02	no	D-	no	17
23B	GADU MOR	LI	w.w.										0.06	0.08	0.03	0.03	0.03	0.02	0.03	0.04	0.03	0.04	0.03	0.03	0.0061	0.02	0.02	0.02	0.0423	no	--	no	15
92B	GADU MOR	LI	w.w.													0.02	0.03	0.03	0.04								0.02	0.02		no	--	no	11
98B1	GADU MOR	LI	w.w.												0.03	0.03	0.03	0.04	0.04	0.05	0.03	0.03			0.01	0.02	0.02	0.02	0.02	no	D-	no	12
43B	GADU MOR	LI	w.w.														0.03	0.03	0.03											no	-?	?	<=5
10B	GADU MOR	LI	w.w.														0.03	0.02	0.04	0.04	0.04	0.03	0.04	0.03	0.02	0.02	0.02	0.02	0.02	no	D-	no	10

Annual median concentration of PB (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
33F	PLAT FLE	LI	w.w.										0.24	0.35	0.06	0.03	0.03	0.02	0.03	0.04	0.04	0.04	0.04	0.03	0.0295	0.03	0.02	0.03	0.0439	no	DY	no	13
53F	PLAT FLE	LI	w.w.										0.71	0.81	0.41	0.23		0.0245	0.46	0.35	0.52	0.46	0.357	0.57	1.29	0.73	0.44	1.35		4.5	--	4.1	22
67F	PLAT FLE	LI	w.w.																0.35		0.03	0.03	0.03	0.03	0.0078	0.02	0.02	0.02	0.02	no	--	no	19
21F	PLAT FLE	LI	w.w.																			0.04	0.0447	0.06	0.0461		0.04	0.1	0.11	no	--	no	12
36F	LIMA LIM	LI	w.w.										0.6	0.07	0.04	0.07	0.03	0.02	0.03	0.05	0.05	0.05	0.06	0.04	0.0477	0.03	0.05	0.05	0.0473	no	DY	no	16
15F	LIMA LIM	LI	w.w.											0.07		0.0408	0.03	0.02	0.03	0.05	0.04	0.0346		0.05	0.0212	0.02	0.03	0.03	0.037	no	--	no	12
22F	LIMA LIM	LI	w.w.										0.25	0.16	0.0424		0.06	0.07												no	-?	?	18
21F	LIMA LIM	LI	w.w.																						0.0293	0.02	0.05	0.02		no	-?	?	17
30F	PLEU PLA	LI	w.w.												0.739		0.54	0.57												2.9	-?	?	7
22F	PLEU PLA	LI	w.w.																0.28	0.28	0.46									2.3	-?	?	9
98F2	PLEU PLA	LI	w.w.																				0.104	0.04	0.0682	0.04	0.02	0.204	0.15	no	--	1.1	21
10F	PLEU PLA	LI	w.w.																	0.15		0.0648	0.08	0.05	0.0583	0.0447	0.0447	0.03		no	D-	no	10
67F	LEPI WHI	LI	w.w.										0.19	0.07	0.06	0.07	0.04	0.07	0.03	0.04	0.04	0.03	0.03	0.04	0.0312	0.02	0.0245	0.02	0.02	m	D-	m	12
21F	LEPI WHI	LI	w.w.																							0.02	0.02	0.02	0.031	m	-?	m	9

Annual median concentration of CU (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.				4.57		7.45	4.96	5.48	5.97	10.3	10.5	5.84	6.67	8.56	6.94	7.69	9.47	7.72	8.01	6.49	5.81	6.29	7.68	8.55	9.31	8.2	no	--	1.1	10
31A	MYTI EDU	SB	d.w.			7.03	6.57			4.44	4.52	4.51	9.04	11	5.49	5.67	6.21	7.26	6.61	6.08	8.08	7.55	5.54	5.82	5.47	6.31	6.73	6.86	8.4	no	--	no	10
35A	MYTI EDU	SB	d.w.			6.32	3.62		8.06	4.89	4.58	5.26	8.02	10.1	6.56	6.34	6.61	6.41	6.94	6.81	7.23	7.14	5.49	6.19	6.51	7.38	8.31	7.94	6.55	no	--	no	10
36A	MYTI EDU	SB	d.w.			6.29	3.57		6.08	4.47	4.87	4.3	5.5	9.23	5.16	5.51	5.63	7.67	9.06	6.86	6.83	6.2	5.52	5.83	5.21	6.32	6.96	6.24	6.27	no	--	no	10
71A	MYTI EDU	SB	d.w.			8.47	5.24			6.08	8.43	6.99	8.33	10.3	7.4	7.88	7.18	8.11	7.66	9.44	7.5	7.57	8.81	7.53	7.12	11.2	8.81	8.93	10.1	1.0	--	1.1	9
76A	MYTI EDU	SB	d.w.										8.51	10.8	5.65	5.57			6.65	7.8	9.14	10.2	6.93	7.67	6.39	9.76	7.99	7.76	7	no	--	no	9
15A	MYTI EDU	SB	d.w.										5.72	7.21		5.5	5.25	5.26	7.32	6.14	7.62	7.34	7.62	9.47	5.68	8.07	6.47	6.81	6.81	no	--	no	8
51A	MYTI EDU	SB	d.w.							7.14	6.14							10.2	10.2	7.44		8.21								no	--	no	9
52A	MYTI EDU	SB	d.w.									8.4	7.49	72.1	9.35	8.45	6.98	7.03	6.28	7.73	6.47	5.53	6.97	5.88	7.45	9.19	6.21	7.47	5.56	no	--	no	17
56A	MYTI EDU	SB	d.w.							8.07	7.87	8.82	5.37	7.54	7.4	9.15	6.36	7.71	6.59	7.79	7.18	8.17	8.72	5.77	6	9.1	5.36	8	7.47	no	--	no	9
57A	MYTI EDU	SB	d.w.							8.21	6.33	6.01	6.16	7.27	6.59	6.77	6.43	5.62	5.54	6.98	6.91	6.39	5.13	5.81	7.21	5.98	3.26	6.88	8.29	no	--	no	10
63A	MYTI EDU	SB	d.w.							9.84	6.16	5.11	6.84	11.1	6.32	6.11	6.71	6.84	6.56	6.12	5.61	5.13	5.69	5.46	6.67	7.95	2.39	6.27	7	no	--	no	12
65A	MYTI EDU	SB	d.w.							7.98	4.94	5.19	12.2	8.14	5.51	6	5.12	5.66	5.82	5.59	5.14	5.05	5.27	5.93	6.54	7.71	2.81	6.94	6.76	no	--	no	12
69A	MYTI EDU	SB	d.w.												6.19	5.32	5.41	6.26	7.28	5.56	5.22	7.22	8.51	6.82	5.81	12.6	3.06	5.84	5.55	no	--	no	13
22A	MYTI EDU	SB	d.w.										6.35	6.69	5.38	5.76	6.28	6.81	9.29	4.16	8.56	7.47	8.54	5.27	5.86	7.81	14.9	6.82	8.72	no	--	1.1	12
23A	MYTI EDU	SB	d.w.										5.58	6.52													6.64	6.93		no	-?	?	6
24A	MYTI EDU	SB	d.w.										5.78	7.01													6.78	5.91		no	-?	?	7
82A	MYTI EDU	SB	d.w.				6.38			4.69	5.77	7.49		11.8	6.87	9.61		7.44	7.93								5.52	6.94		no	--	no	10
84A	MYTI EDU	SB	d.w.				10.3		96.8	56.8	39.3	26.8		17.1	22.2	24		9.51	7.21								8.07	8.39		no	--	no	19
87A	MYTI EDU	SB	d.w.				4.57			20.1	8.35	5.88		7.28	6.3	6.88		7.63	7.52								6.92	5.95		no	--	no	15
25A	MYTI EDU	SB	d.w.												6.48	5.77											6.48	6.05		no	-?	?	6
26A	MYTI EDU	SB	d.w.												6.98	6.28											6.41	6.75		no	-?	?	<=5
27A	MYTI EDU	SB	d.w.												6.92												5.89	5.52		no	-?	?	<=5
28A	MYTI EDU	SB	d.w.												5.36	5.18											5.69	8.12		no	-?	?	9
91A	MYTI EDU	SB	d.w.												6.59	6.36	8.36											7.33		no	-?	?	8
92A1	MYTI EDU	SB	d.w.												6.65	6.03	7.56	6.26	7.48	6.4										no	--	no	7
93A	MYTI EDU	SB	d.w.												6.46	6.79											7.93	8.11		no	U?	?	<=5
94A	MYTI EDU	SB	d.w.												6.81	6.72											6.72	5.77		no	-?	?	6
95A	MYTI EDU	SB	d.w.												7.84	6.44											7.95	7.28		no	-?	?	7
96A	MYTI EDU	SB	d.w.												7.22	6.2											6.46	6.68		no	-?	?	6
97A	MYTI EDU	SB	d.w.												8.12	7.01											6.77	7.35		no	-?	?	6
98A2	MYTI EDU	SB	d.w.																	5.5		5.94	6.84	6.1	6.58	7.22	8.34	7.13	8.2	no	U-	no	6
98X	MYTI EDU	SB	d.w.														8.99	8.91	7.74											no	-?	?	<=5
99A	MYTI EDU	SB	d.w.												8.65	7.29											6.72	7.11		no	-?	?	6
41A	MYTI EDU	SB	d.w.														6.83	8.16	7.64	4.76									7.5	no	-?	?	11
42A	MYTI EDU	SB	d.wt														7.4	7.61											7.09	no	-?	?	<=5
43A	MYTI EDU	SB	d.w.														7.79	9.32		6.32									8.88	no	-?	?	10
44A	MYTI EDU	SB	d.w.														6.56	9.56	7.78	6.86									9.1	no	-?	?	9
45A	MYTI EDU	SB	d.wt														6.22	7.39											5.95	no	-?	?	7
46A	MYTI EDU	SB	d.w.														6.63	7.43	8										7.09	no	-?	?	7
47A	MYTI EDU	SB	d.wt														5.7	5.84											6.5	no	-?	?	<=5
48A	MYTI EDU	SB	d.w.														6.57	7.74	7.1										5.76	no	-?	?	6
49A	MYTI EDU	SB	d.wt														7.36	9.68											8	no	-?	?	9
10A2	MYTI EDU	SB	d.w.																7.84	5.71	7.9	6.93	6.17	5.43	6.4	7.42	6.95	6.79	8	no	--	no	8
11X	MYTI EDU	SB	d.w.																	5.51	5.45	6.49	5.27	5.45	6.51	7.07	6.54	6.1	8.16	no	--	no	7

Annual median concentration of ZN (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.				138	90.5	140	120	93.1	76.2	161	116	147	104	117	109	114	126	173	106	93.4	92.3	116	123	141	118	125	no	--	no	10
31A	MYTI EDU	SB	d.w.			88.1	132	76.9	106	66.3	67.7	58.1	181	128	125	96.4	96.8	151	103	128	120	112	84	83.1	92.9	127	128	116	108	no	--	no	11
35A	MYTI EDU	SB	d.w.			91.9	79.6	75.9	89.8	68.4	81.5	83.2	166	139	131	119	97.6	82.9	94.3	103	112	111	66.1	72.3	84.6	106	131	118	80.5	no	--	no	9
36A	MYTI EDU	SB	d.w.			66.5	85.8	66.1	57.7	61.5	73.6	65.3	126	127	104	84	121	115	137	145	105	95.5	125	100	102	125	98.6	90.6	83.6	no	UY	no	9
71A	MYTI EDU	SB	d.w.			124	125	77	115	101	169	128	162	143	166	120	157	150	122	192	114	114	99.4	97.9	134	121	117	105	95.3	no	--	no	9
76A	MYTI EDU	SB	d.w.										158	127	124	57.6			112	135	137	132	83.1	116	123	127	128	107	92.6	no	--	no	11
15A	MYTI EDU	SB	d.w.										157	144		71.4	88.9	62.6	232	107	127	105	127	83.3	110	101	114	103	112	no	--	no	13
51A	MYTI EDU	SB	d.w.							378	253							386	223	120		170								no	--	no	14
52A	MYTI EDU	SB	d.w.									824	272	453	408	218	141	196	183	247	160	143	134	180	90.6	137	106	104	90.6	no	D-	no	12
56A	MYTI EDU	SB	d.w.							869	410	1170	572	479	418	388	211	290	246	377	143	271	225	158	146	151	178	171	140	no	D-	no	12
57A	MYTI EDU	SB	d.w.							378	263	441	520	292	256	147	173	182	115	223	121	207	167	124	108	98.8	84.4	112	105	no	D-	no	11
63A	MYTI EDU	SB	d.w.							579	216	241	509	392	207	122	122	189	147	170	129	115	115	127	106	119	54.6	110	113	no	D-	no	13
65A	MYTI EDU	SB	d.w.							191	156	199	424	308	131	139	118	166	147	184	121	152	154	155	145	151	69.6	139	147	no	--	no	12
69A	MYTI EDU	SB	d.w.												135	102	135	163	161	218	144	201	133	190	136	177	84	123	92.5	no	--	no	10
22A	MYTI EDU	SB	d.w.										172	162	135	116	98	144	221	110	128	122	72.1	117	90.3	134	142	121	88.8	no	--	no	11
23A	MYTI EDU	SB	d.w.										136	133													105	113		no	D?	?	<=5
24A	MYTI EDU	SB	d.w.										175	133													130	99.4		no	-?	?	9
82A	MYTI EDU	SB	d.w.				127	106	132	109	76.1	129		145	123	112		109	87.6								81.2	88.2		no	--	no	9
84A	MYTI EDU	SB	d.w.				118	160	163	133	132	142		185	180	113		121	85.8								93	108		no	--	no	9
87A	MYTI EDU	SB	d.w.				100	92.8	97.7	102	105	96.6		117	114	90.2		109	97.2								72.4	75.7		no	D-	no	7
25A	MYTI EDU	SB	d.w.												184	117											119	111		no	-?	?	10
26A	MYTI EDU	SB	d.w.												125	118											146	110		no	-?	?	8
27A	MYTI EDU	SB	d.w.												164												128	131		no	-?	?	<=5
28A	MYTI EDU	SB	d.w.												141	96.1											103	174		no	-?	?	12
91A	MYTI EDU	SB	d.w.												96.2	102	116											99.4		no	-?	?	7
92A1	MYTI EDU	SB	d.w.												88.7	61.1	90.2	77.5	59.2	97.8										no	--	no	10
93A	MYTI EDU	SB	d.w.												94.4	95.9											103	89.5		no	-?	?	6
94A	MYTI EDU	SB	d.w.												74.3	81.3											65.9	59.5		no	-?	?	6
95A	MYTI EDU	SB	d.w.												94.7	81											76.6	71.7		no	-?	?	6
96A	MYTI EDU	SB	d.w.												102	71.6											68.3	82		no	-?	?	9
97A	MYTI EDU	SB	d.w.												91.7	91.6											89.6	79		no	-?	?	<=5
98A2	MYTI EDU	SB	d.w.																	89.9		82.1	96	100	84.5	87	88	91.7	103	no	--	no	6
98X	MYTI EDU	SB	d.w.														187	182	146											no	-?	?	6
99A	MYTI EDU	SB	d.w.												107	70.3											84	77.6		no	-?	?	10
41A	MYTI EDU	SB	d.w.														85.1	89	94.8	90.9									81	no	-?	?	<=5
42A	MYTI EDU	SB	d.wt														87.1	80.9											64.3	no	-?	?	<=5
43A	MYTI EDU	SB	d.w.														98.7	96.6		89.2									70	no	D?	?	<=5
44A	MYTI EDU	SB	d.w.														67.2	91.3	81	78.8									71.9	no	-?	?	8
45A	MYTI EDU	SB	d.wt														115	117											97.9	no	-?	?	<=5
46A	MYTI EDU	SB	d.w.														88.4	112	93.3										79.1	no	-?	?	8
47A	MYTI EDU	SB	d.wt														122	88.2											121	no	-?	?	10
48A	MYTI EDU	SB	d.w.														74.9	87	68.8										69.4	no	-?	?	7
49A	MYTI EDU	SB	d.wt														95.7	101											64.8	no	-?	?	<=5
10A2	MYTI EDU	SB	d.w.																94.6	114	102	103	125	114	134	100	149	87.4	87.5	no	--	no	9
11X	MYTI EDU	SB	d.w.																	104	70.2	81	101	121	89.6	72.4	78.2	80.5	81.1	no	--	no	9

Annual median concentration of CB_S7 (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.								77.5	96.5	116	89.6	97		89.3	90.4	110	128	58.5	71.1	49.9	29.6	33.9	43.4	20.7	67.9	28.8	1.9	D-	2.6	12
31A	MYTI EDU	SB	d.w.								21.7	24.9	37.1	24.7	34.6		52.2	49	63.8	24.6	12.9	18	6.49	8.87	8.97	7.58	3.79	13.8	9.3	no	DY	no	14
35A	MYTI EDU	SB	d.w.								21.5	33.6	27.5	14.2	22.1		13.4	13.6	10.7	16.5	12.5	14.6	5.52	7.32	6.97	8.2		12.3	4.91	no	D-	no	13
36A	MYTI EDU	SB	d.w.								11	17.9	19.3	7.94	11.2		5.69	10.5	12.3	12.7	8.62	12.1	5.28	5.54	6.03	5.75	5.58	6.92	3.61	no	D-	no	12
71A	MYTI EDU	SB	d.w.								17	34.4	25	14.2	15.3		16.5	10.5		9.27	11.8	13.6	8.52	12.7	7.55	9.74		14.3	9.33	no	D-	no	12
76A	MYTI EDU	SB	d.w.										16.6	6.49	7.21				16.3	19.1	14.4	16.4	6.34	6.78	5.12	5.06		3.29	4.59	no	D-	no	14
15A	MYTI EDU	SB	d.w.										11.8				6.29	3.06	2.41	3.88	4.72	5.28	2.56	4.19	3.15	2.73	2.74	3.34	2.56	no	--	no	12
51A	MYTI EDU	SB	d.w.															26.2	9.69	14.7	10.5	11.5	12	28	16.9	16	10.6	14.5	11.2	no	--	no	13
52A	MYTI EDU	SB	d.w.									40.2	14.9		11.3	11.3	17.1	16.9	10	19	10.6	11.2	7.19	74.2	12.5	12	10.3	9.97	11.1	no	--	no	18
56A	MYTI EDU	SB	d.w.								12.5	45.8	37.7	12.1	12	9.41	13.8	11.9		16.8	9.55	11.2	5.98	216	13	13.1	6.73	9.33	6.04	no	--	no	23
57A	MYTI EDU	SB	d.w.									28		7.63	7.55	4.74	8.38	6.54	4.18	8.41	10.3	8.16	3.89	55.9	5.89	6.16	2.89	7.47	4.28	no	--	no	20
63A	MYTI EDU	SB	d.w.									21.8		9.71	6.45	3.68	5.7	5.72		4.15	7.95	7.26	4.09	13.8	3.54	6.05	1.25	5.3	4.09	no	--	no	17
65A	MYTI EDU	SB	d.w.								6.05	11.1	33.4	9.29	5.59	3.69	5.55	3.37	5.19	3.76	7.62	6.44	3	8.31	2.73	3.73	1.24	4.75	3.28	no	--	no	18
69A	MYTI EDU	SB	d.w.												4.82		4.97	4.51	2.77	5.41	12.6	5.83	2.53	5.7	3.18	4.01	1.27	4.03	2.48	no	--	no	17
22A	MYTI EDU	SB	d.w.										18.9	8.23	8.61		7.97	6.84	5.19	4.69	11.5	6.01	5.14	4.69	3.24	8.5	5.51	8.74	5.76	no	--	no	13
82A	MYTI EDU	SB	d.w.								8.4	15.6															2.39	3.09		no	-?	?	14
84A	MYTI EDU	SB	d.w.								5.25	20.5		5.05	8.44			3.6	6.37								0.852	5.11		no	--	no	23
87A	MYTI EDU	SB	d.w.								3.9	12.8																3.38		no	-?	?	23
91A	MYTI EDU	SB	d.w.												2.81		7.64											3.14		no	-?	?	20
92A1	MYTI EDU	SB	d.w.												4.46	2.49	5.83	4.05	2.89	7.74										no	--	no	15
96A	MYTI EDU	SB	d.w.												3.35	1.52											0.785	2.83		no	-?	?	21
98A2	MYTI EDU	SB	d.w.																	10.7		4.14	3.54	4.56	3.23	3.62	1.85	2.72	3.39	no	--	no	13
98X	MYTI EDU	SB	d.w.														87.3	78.4	46.4											3.1	-?	?	9
99A	MYTI EDU	SB	d.w.												3.42	1.97											0.871	1.29		no	-?	?	13
41A	MYTI EDU	SB	d.w.														3.49	4.26	2.39	2.58									2.35	no	-?	?	10
43A	MYTI EDU	SB	d.w.														2.92	3.1		3.02									2.5	no	-?	?	<=5
45A	MYTI EDU	SB	d.wt														6.45	5.31											4.25	no	-?	?	7
46A	MYTI EDU	SB	d.w.														5.74	4.16	3.11										4.8	no	-?	?	12
48A	MYTI EDU	SB	d.w.														6.22	4.04	3.1										5.16	no	-?	?	13
10A2	MYTI EDU	SB	d.w.																4.66	6.29		5.11	4.33	3.03	2.13	2.58	1.28	2.29	4.59	no	--	no	13
11X	MYTI EDU	SB	d.w.																	3.34	3.56	4.48	2.79	3.1	1.93	1.93	1.28	3.02	2	no	--	no	12

Annual median concentration of CB_S7 (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.								77.5	96.5	116	89.6	97		89.3	90.4	110	128	58.5	71.1	49.9	29.6	33.9	43.4	20.7	67.9	28.8	1.9	D-	2.6	12
51A	MYTI EDU	SB	d.w.															26.2	9.69	14.7	10.5	11.5	12	28	16.9	16	10.6	14.5	11.2	no	--	no	13
52A	MYTI EDU	SB	d.w.									40.2	14.9		11.3	11.3	17.1	16.9	10	19	10.6	11.2	7.19	74.2	12.5	12	10.3	9.97	11.1	no	--	no	18
10A2	MYTI EDU	SB	d.w.																4.66	6.29		5.11	4.33	3.03	2.13	2.58	1.28	2.29	4.59	no	--	no	13
I021	MYTI EDU	SB	d.w.															43.1	31.8	32.2	24.1		22.2	20	25.1					1.7	D-	1.1	8
I022	MYTI EDU	SB	d.w.															32.1	25.9	41.2	22.4	28.9	19.2	22.4	20.8	15.2	17.1	11	11.1	no	D-	no	9
I023	MYTI EDU	SB	d.w.															19.6	20.9	26	15	22.2	10.8	17.4	15.9	12.3	12.6	9.73	8.91	no	D-	no	10
I024	MYTI EDU	SB	d.w.															31.8	36.1	45.6	36.6	28.7	16.8	17.7	26	15	15.8	11.3	10.6	no	D-	no	10
I301	MYTI EDU	SB	d.w.															118	113	182	86.5	125	58.7	64.6	62.6	70.4	57.9	84.7	75.4	5.0	--	5.9	11
I304	MYTI EDU	SB	d.w.															35.2	23.8	44.4	35.9		19.9	25	24.4	27.5	30	21.4	23.4	1.6	--	1.5	11
I306	MYTI EDU	SB	d.w.															16.4	15.7	54.2	26.1		21.8	17.2	15.7	15.4	17.9	12.9	20.1	1.3	--	1.2	14
I307	MYTI EDU	SB	d.w.															20.6	28.5	40.2	17.3		20.3	16.9	17.5	15.4	13	11.7		no	--	no	11
I711	MYTI EDU	SB	d.w.															24.8	13.3	13.3	20.6	21.6	18.4		13.4					no	--	1.1	12
I712	MYTI EDU	SB	d.w.															33.3	31.2	25.3	22.4	24.9	13.9	12.5	10.9	16.9		16.2	14.2	no	DY	1.1	9
I713	MYTI EDU	SB	d.w.																						12.5	15	21.4	18.1	15.7	1.0	-?	?	9
I131A	MYTI EDU	SB	d.w.															7.94	11.7	13.1	22.4	12.7	10.1	14	29.4	8.13	3.98	9.65	4.65	no	--	no	16
I132	MYTI EDU	SB	d.w.																		31.1	22.5	10.2	15.8	11.8	13.3		11.5	10.9	no	--	no	11
I133	MYTI EDU	SB	d.w.															22.8	22.3	21.5	24.7	23	10.4	11.7	9.24	9.23	12.5	10	9.68	no	D-	no	9
I241	MYTI EDU	SB	d.w.															54.3	78.9	47.2	55.2	80.8	55.5	36.3	96.4	125	118	61.8	48.5	3.2	--	2.9	14
I242	MYTI EDU	SB	d.w.															63	81.6	29.6	45.6	59.5	36.6	26.2	44.6	81.9	55.9	36.8	31.7	2.1	--	1.9	14
I243	MYTI EDU	SB	d.w.															115	169	122	78.2	92.4	47.9	29.3	52.5	326	288	217	75.2	5.0	--	14.6	19

Annual median concentration of CB_S7 (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR	LI	w.w.										1240	3430	2800	2500	2910	2350	2930	3090	3660	3520	2080	2440	2230	2140	2620	4160	3550	7.1	--	10.3	11
36B	GADU MOR	LI	w.w.										441	344	396	636	376	1650	974	720	736	766	482	288	269	425	535	542	591	1.2	--	1.8	13
15B	GADU MOR	LI	w.w.										182	349	266	182	295	307	274	399	279	257	153	377	244	213	154	186	131	no	--	no	12
53B	GADU MOR	LI	w.w.										435	524	1760	166		162	701	576	2370	487	1520	842	956	317	463	422	340	no	--	no	21
67B	GADU MOR	LI	w.w.										316	293	268	226	329	210	269	627	206	273	148	225	145	92.6	94.4	134	56.1	no	D-	no	13
23B	GADU MOR	LI	w.w.										222	244	228	208	128	193	196	125	179	229	207	167	111	114	202	210	141	no	--	no	11
92B	GADU MOR	LI	w.w.													135	152	311	369								119	42.8		no	--	no	19
98B1	GADU MOR	LI	w.w.												239	183	114	197	278	372	165	147			62.6	110	183	91.6	102	no	--	no	15
43B	GADU MOR	LI	w.w.														325	329	140											no	-?	?	13
10B	GADU MOR	LI	w.w.														645	485	210	189	168	255	99.4	109	151	146	127	104	96.6	no	D-	no	12
30B	GADU MOR	MU	w.w.										3.58	11.1	24.7	9.65	3.94	3.12	8.9	10.5	21.7	21.4	6.06	9.4	10.3	9.31	7.91	9.01	11.9	4.0	--	3.8	18
36B	GADU MOR	MU	w.w.										1.62	1.29	2	3.65	0.525	15.6	4.14	4.54	3.78	2.86	2.26	2.19	1.9	2.52	2.88	2.71	9.34	3.1	--	3.2	20
15B	GADU MOR	MU	w.w.										1.35	1.22	1.38	0.65	0.38	1.03	1.14	1.44	1.41	0.81	1.42	1.88	0.655	1.23	0.2	0.675	0.575	no	--	no	17
53B	GADU MOR	MU	w.w.										8.2	2.23	15	1.1		0.37	21.9	3.76	138	6.61	36.3	1.08	23.6	4.84	3.09	2.2	1.12	no	--	no	>25
67B	GADU MOR	MU	w.w.										0.835	1.43	1.1	0.624	1.15	0.605	3.5	7.07	0.73	1.72	1.18	9.98	0.61	0.35	0.407	0.865	0.235	no	--	no	24
23B	GADU MOR	MU	w.w.										0.64	2.26	0.75	0.85	0.18	0.625	0.46	0.81	1.49	0.95	0.45	0.62	0.38	0.495	0.325	0.7	1.01	no	--	no	17
92B	GADU MOR	MU	w.w.													0.55	0.225	0.36	0.905								0.225	0.255		no	--	no	17
98B1	GADU MOR	MU	w.w.												0.9	0.9	0.135	0.34	0.475	1.4	0.44	0.585			0.24	0.385	0.32	0.435	0.385	no	--	no	19
43B	GADU MOR	MU	w.w.														0.515	0.815	0.39											no	-?	?	16
10B	GADU MOR	MU	w.w.														1.77	2.49	0.367	0.9	0.79	1.39	0.5	0.55	0.635	0.555	1.15	0.535	0.609	no	--	no	17

Annual median concentration of CB_S7 (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
33F	PLAT FLE	LI	w.w.										36	31.1	97.5	69	57	86	54.9	30.3	35.3	47.2	90.7	158	53	60.1	62.8	63.4	68.9	no	--	no	14
53F	PLAT FLE	LI	w.w.										509	517	309	36		22.8	115	113	111	156	95.8	95.1	158	165	108	363		3.6	--	3.6	19
67F	PLAT FLE	LI	w.w.																70		96.9	45.8	44	36.3	32	27.6	33.1	39	42.7	no	DY	no	9
21F	PLAT FLE	LI	w.w.																			22.9	6.97	33.6	48.9		121	15.5	20.1	no	--	no	24
33F	PLAT FLE	MU	w.w.										2.04	3.96	1.8	0.95	0.51	1.37	1.91	0.935	1.14	5.32	1.14	1.76	1.53	1.25	0.675	0.48	0.805	no	--	no	18
53F	PLAT FLE	MU	w.w.										27.4	33.2	14.2	1.45		0.757	3.19	2.74	2.19	2.73	3	2.67	2.02	1.13	1.96	6.73		2.2	DY	1.5	20
67F	PLAT FLE	MU	w.w.																0.775		1.8	1.66	1.48	0.95	0.845	0.82	0.295	0.565	0.47	no	D-	no	14
21F	PLAT FLE	MU	w.w.																			0.76	0.2	0.61	1.33		1.56	0.957	1.19	no	--	no	19
36F	LIMA LIM	LI	w.w.										301	217	339	418	404	433	386	387	236	412	838	527	297	272	538	511	620	1.2	--	1.5	13
15F	LIMA LIM	LI	w.w.											124		58.2	77	74	62.5	64.5	51.1	69.6		106	50.2	49.8	66.8	105	47.1	no	--	no	13
22F	LIMA LIM	LI	w.w.										170	127	140		60	88.7												no	-?	?	11
21F	LIMA LIM	LI	w.w.																						149	115	136	123		no	-?	?	7
36F	LIMA LIM	MU	w.w.										2.76	7.05	5.6	7.8	5.9	8.18	9.62	5.19	9.41	3.88	8.38	7.73	6.56	3.73	4.34	4.47	7.18	1.4	--	1.1	13
15F	LIMA LIM	MU	w.w.											3.72		0.806	0.369	1.14	1.81	1.28	1.42	0.959		1.21	0.665	0.94	0.349	1.25	0.695	no	--	no	18
22F	LIMA LIM	MU	w.w.										1.97	5	3.82		1.24	5.14												1.0	-?	?	20
21F	LIMA LIM	MU	w.w.																						1.54	1.12	1.12	1.62		no	-?	?	10
30F	PLEU PLA	LI	w.w.												313		207	216												4.3	-?	?	8
22F	PLEU PLA	LI	w.w.																21	20.1	14.5									no	-?	?	7
98F2	PLEU PLA	LI	w.w.																				40.8	25.5	10.3	10.5	8.4	24.1	13.8	no	--	no	16
10F	PLEU PLA	LI	w.w.																	42.1		62.8	45	24.9	86.2	16.6	22.3	25.7		no	--	no	17
30F	PLEU PLA	MU	w.w.												6.82		3.01	1.46												no	-?	?	9
22F	PLEU PLA	MU	w.w.																1.39	0.95	3.33									1.7	-?	?	19
98F2	PLEU PLA	MU	w.w.																				1.54	0.6	0.291	0.25	0.175	0.862	0.74	no	--	no	19
10F	PLEU PLA	MU	w.w.																	0.97		2.58	1.78	1.12	1	0.457	0.175	0.435		no	--	no	17
67F	LEPI WHI	LI	w.w.										111	100	143	101	172	166	97.2	91.5	118	82.3	83.9	63.8	105	85.2	73.3	58	52.5	m	D-	m	10
21F	LEPI WHI	LI	w.w.																							101	78.5	101	112	m	-?	m	8
67F	LEPI WHI	MU	w.w.										0.84	0.935	1.4	0.55	0.48	1.46	0.445	0.68	0.42	1.03	0.82	0.673	0.37	0.43	0.464	0.639	0.428	m	--	m	15
21F	LEPI WHI	MU	w.w.																							0.45	0.345	1.11	0.93	m	-?	m	15

Annual median concentration of DDEPP (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.												5.24	3.86	7.08	5.7	2.56	5.88	3.87	5.91	3.47	1.99	1.97	2.08	1.22	2.56	1.77	no	D-	no	13
31A	MYTI EDU	SB	d.w.												3.3	1.89	3.45	1.84	0.505	3.37	3.49	5.47	1.19	2.1	1.79	1.01	1.25	3.17	6.32	no	--	no	19
35A	MYTI EDU	SB	d.w.												4.91	2.08	3.13	2.84	0.57	3.91	3.73	5.93	1.61	3.29	2.17	1.8	2.94	5.47	2.4	no	--	no	19
36A	MYTI EDU	SB	d.w.												2.76	1.06	1.03	1.76	0.442	2.11	1.79	2.98	1.48	1.51	1.34	0.76	1.47	1.56	1.41	no	--	no	16
71A	MYTI EDU	SB	d.w.												2.61	1.58	3.21	1.29	0.736	1.02	2.2	2.41	2.26	3.58	1.1	1.67	0.763	1.8	2.17	no	--	no	16
76A	MYTI EDU	SB	d.w.												1.4	0.794			0.355	1.21	2.29	2.49	0.779	0.829	0.746	0.621	1.1	0.611	1.38	no	--	no	17
15A	MYTI EDU	SB	d.w.													0.976	1.72	0.735	0.294	1.02	1.41	2.05	0.536	0.622	0.854	0.667	0.857	0.688	0.722	no	--	no	17
51A	MYTI EDU	SB	d.w.															33.9	6.67	14.7	17.1	13.2	16.9	5.48	9.52	10	10.5	14.7	7.5	no	--	1.1	16
52A	MYTI EDU	SB	d.w.												12.3	25.5	19.4	18.5	9.53	13.1	16.7	13.7	11.9	6.47	6.82	8.86	10.5	12.5	4.71	no	--	no	13
56A	MYTI EDU	SB	d.w.												50	47.5	115	40.8	33.9	72.3	52.6	39.8	26.2	60.6	40	55.1	49.3	550	186	18.6	--	50.8	18
57A	MYTI EDU	SB	d.w.												25.9	18.3	35	25.3	15.8	50	82.9	35.2	27.5	24.7	14.7	27.8	16.6	53.3	12.1	1.2	--	2.0	17
63A	MYTI EDU	SB	d.w.												12.9	9.29	9.68	8.36	5.53	13	15.5	11.4	10.2	7.09	4.76	11.3	3.82	14	5.67	no	--	no	15
65A	MYTI EDU	SB	d.w.												7.6	5.19	7.79	4.12	5	6.9	11.9	7.38	6.76	5.43	3.61	6.47	2.55	8.33	3.63	no	--	no	14
69A	MYTI EDU	SB	d.w.												3.55	3.16	3.54	2.91	0.4	3.69	6.52	2.61	2.7	2.25	1.61	2.62	0.909	3	0.85	no	--	no	21
22A	MYTI EDU	SB	d.w.												2.22	1.31	1.88	1.45	0.387	1.37	5.11	1.96	1.49	0.909	0.725	1.46	0.861	1.65	4.78	no	--	no	19
84A	MYTI EDU	SB	d.w.												3.13	2.23		0.985	0.736								0.509	0.889		no	--	no	16
25A	MYTI EDU	SB	d.w.												1.29	1.03											0.879	1.05		no	-?	?	8
26A	MYTI EDU	SB	d.w.												2.74												1.35	1.84		no	-?	?	11
27A	MYTI EDU	SB	d.w.												1.8												0.442	0.833		no	-?	?	16
28A	MYTI EDU	SB	d.w.												1.11	0.858											0.378	0.765		no	-?	?	14
91A	MYTI EDU	SB	d.w.												0.625		1.32											0.667		no	-?	?	17
92A1	MYTI EDU	SB	d.w.												0.68	2.09	1.41	0.766	0.275	1.93										no	--	no	22
96A	MYTI EDU	SB	d.w.												1.03	0.435											0.262	0.7		no	-?	?	19
98A2	MYTI EDU	SB	d.w.																	1.59		0.87	0.575	1.31	0.625	0.725	0.415	0.778	0.889	no	--	no	14
98X	MYTI EDU	SB	d.w.														31.6	22.9	5.16											no	-?	?	15
99A	MYTI EDU	SB	d.w.												0.621	0.873											0.254	0.294		no	-?	?	10
41A	MYTI EDU	SB	d.w.														0.621	0.423	0.291	0.61									0.35	no	-?	?	13
43A	MYTI EDU	SB	d.w.															0.608		0.855									0.313	no	-?	?	13
44A	MYTI EDU	SB	d.w.															0.486	0.343	1.41									3.3	no	-?	?	18
45A	MYTI EDU	SB	d.wt														1.74	2											0.8	no	-?	?	8
46A	MYTI EDU	SB	d.w.														1.05	0.756	0.273										0.522	no	-?	?	19
48A	MYTI EDU	SB	d.w.														1.71	1.13	0.286										1.24	no	-?	?	24
10A2	MYTI EDU	SB	d.w.																0.439	1.49		1.45	0.611	0.867	0.61	0.576	0.267	0.474	0.588	no	--	no	16
11X	MYTI EDU	SB	d.w.																	0.811	1.04	1.04	0.769	0.758	0.472	0.465	0.317	0.524	0.389	no	D-	no	10

Annual median concentration of DDEPP (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.												5.24	3.86	7.08	5.7	2.56	5.88	3.87	5.91	3.47	1.99	1.97	2.08	1.22	2.56	1.77	no	D-	no	13
51A	MYTI EDU	SB	d.w.															33.9	6.67	14.7	17.1	13.2	16.9	5.48	9.52	10	10.5	14.7	7.5	no	--	1.1	16
52A	MYTI EDU	SB	d.w.												12.3	25.5	19.4	18.5	9.53	13.1	16.7	13.7	11.9	6.47	6.82	8.86	10.5	12.5	4.71	no	--	no	13
10A2	MYTI EDU	SB	d.w.																0.439	1.49		1.45	0.611	0.867	0.61	0.576	0.267	0.474	0.588	no	--	no	16
I021	MYTI EDU	SB	d.w.															4.6	1.45	4.8	3.25		5.19	2.73	4.73					no	--	no	17
I022	MYTI EDU	SB	d.w.															3.95	1.38	7.13	4.58	7.96	4.92	3.73	4.51	2.54	2.7	1.43	1.31	no	--	no	15
I023	MYTI EDU	SB	d.w.															1.81	1.32	3.79	2.32	6.1	2.39	2.91	3.31	1.42	1.29	1.47	1.45	no	--	no	14
I024	MYTI EDU	SB	d.w.															3.5	3.52	8.91	7.17	8.96	4.94	2.52	5.15	2.4	2.32	1.7	1.33	no	DY	no	13
I301	MYTI EDU	SB	d.w.															2.59	3.75	17.8	5.96	7.45	5.58	4.51	5.06	3.54	4.47	5.17	3.57	no	--	no	15
I304	MYTI EDU	SB	d.w.															2.14	0.751	3.42	3.89		1.95	2.71	2.62	1.73	2.71	1.43	1.85	no	--	no	16
I306	MYTI EDU	SB	d.w.															1.84	0.455	4.25	3.31		2.37	1.88	1.92	1.12	1.74	1.09	2.47	no	--	no	19
I307	MYTI EDU	SB	d.w.															2.18	1.03	3.42	2.74		2.12	4.13	2.28	1.09	1.34	0.873	2.5	no	--	no	16
I711	MYTI EDU	SB	d.w.															3.46	0.719	1.49	2.19	2.18	3.85		1.26					no	--	no	19
I712	MYTI EDU	SB	d.w.															2.43	1.34	3.14	3.09	3.49	3.46	2.48	1.6	2.65	2.94	1.36	2.36	no	--	no	13
I713	MYTI EDU	SB	d.w.																						1.61	2.26	2.96	0.676	2.19	no	-?	?	19
I131A	MYTI EDU	SB	d.w.															1.46	0.691	1.89	2.06	1.67	1.11	0.915	1.11	0.942	1.37	2.39	0.846	no	--	no	15
I132	MYTI EDU	SB	d.w.																		2.02	2.06	1.19	1.15	1.26	1.17	0.917	1.83	1.13	no	--	no	11
I133	MYTI EDU	SB	d.w.															2.16	0.879	1.62	1.93	2.73	1.16	1.11	1.03	0.925	0.94	1.55	1.35	no	--	no	13
I241	MYTI EDU	SB	d.w.															6.4	6.21	2.3	6.49	5.59	4.45	2.93	4.4	4.37	5.49	6.17	3	no	--	no	14
I242	MYTI EDU	SB	d.w.															6.52	9.74	1.58	3.53	9.47	3.52	2.22	2.88	3.38	4.41	2.57	1.93	no	--	no	18
I243	MYTI EDU	SB	d.w.															7.47	6.12	1.72	5.43	5.11	4.01	1.99	3.32	3.88	6.41	19.5	5.88	no	--	1.8	18

Annual median concentration of DDEPP (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR	LI	w.w.										163	440	182	159	191	194	321	380	260	230	160	180	180	240	210	260	190	no	--	1.2	12
36B	GADU MOR	LI	w.w.										91.9	51	50	75	55	105	141	129	45	86	47	46	39	32	34	40	59	no	D-	no	13
15B	GADU MOR	LI	w.w.										50	136	48	57	86	33.5	75	140	72.5	76	46	60	78	74	50	58	51	no	--	no	14
53B	GADU MOR	LI	w.w.										637	806	939	85		42	491	936	490	160	380	260	200	145	300	199	220	1.1	--	1.1	23
67B	GADU MOR	LI	w.w.										776	554	347	392	471	109	460	2060	270	200	177	140	110	89	74	110	34	no	D-	no	19
23B	GADU MOR	LI	w.w.										68	85.4	42	41	35	31	49	33	49	48	59	52.9	24	37	52	46	33	no	--	no	11
92B	GADU MOR	LI	w.w.													53	50.5	50	196								50	22		no	--	no	20
98B1	GADU MOR	LI	w.w.												73	83.4	43	49	138	198	78	41			29	64	73	22	37	no	--	no	18
43B	GADU MOR	LI	w.w.														126	69	60											no	-?	?	9
10B	GADU MOR	LI	w.w.														211	71	75	99	65	90	32	38.5	54	51.5	50	37	34	no	D-	no	13
30B	GADU MOR	MU	w.w.										0.45	1.21	2	1	0.32	0.29	1.01	0.989	1.5	1.5	0.44	0.67	0.73	0.7	0.66	0.73	0.65	no	--	no	17
36B	GADU MOR	MU	w.w.										0.34	0.29	0.2	0.5	0.09	0.93	0.58	0.88	0.31	0.32	0.171	0.24	0.22	0.21	0.26	0.41	0.38	no	--	no	17
15B	GADU MOR	MU	w.w.										0.47	0.36	0.346	0.2	0.12	0.26	0.35	0.514	0.23	0.32	0.31	0.19	0.22	0.39	0.07	0.21	0.18	no	--	no	16
53B	GADU MOR	MU	w.w.										2.36	2.16	6.75	1.8		0.08	4.09	4.59	4.64	3.2	2.5	0.6	1.79	2.4	1.9	4.2	0.63	no	--	1.2	>25
67B	GADU MOR	MU	w.w.										2.25	3.03	1.4	1	2.46	1.08	6.96	19	1	1.1	1.1	1.8	0.44	0.24	0.31	0.66	0.12	no	D-	no	23
23B	GADU MOR	MU	w.w.										0.21	0.59	0.1	0.2	0.04	0.16	0.14	0.18	0.14	0.18	0.12	0.16	0.1	0.13	0.08	0.17	0.29	no	--	no	17
92B	GADU MOR	MU	w.w.													0.1	0.09	0.17	0.49								0.11	0.1		no	--	no	20
98B1	GADU MOR	MU	w.w.												0.4	0.4	0.06	0.05	0.24	0.6	0.18	0.15			0.09	0.12	0.21	0.14	0.09	no	--	no	21
43B	GADU MOR	MU	w.w.														0.23	0.23	0.14											no	-?	?	9
10B	GADU MOR	MU	w.w.														0.74	0.68	0.12	0.4	0.26	0.41	0.15	0.18	0.23	0.18	0.41	0.17	0.175	no	--	no	17

Annual median concentration of DDEPP (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
33F	PLAT FLE	LI	w.w.										13	9.1	24	14	13	7	12.7	9.29	8.99	6.8	27	27	17	22	19	16	20	no	--	no	14
53F	PLAT FLE	LI	w.w.										94	70.1	32	41		8	25	45	38	44	17.5	39	42	40	29	45		1.5	--	1.6	16
67F	PLAT FLE	LI	w.w.																27		84.5	40	35	25	24	20	21	22	26	no	--	no	13
21F	PLAT FLE	LI	w.w.																			11	2.6	16	7.4		90	7.7	4.8	no	--	no	>25
33F	PLAT FLE	MU	w.w.										0.9	1.93	0.6	0.2	0.15	0.25	0.495	0.299	0.26	1.5	0.3	0.56	0.43	0.53	0.25	0.16	0.25	no	--	no	18
53F	PLAT FLE	MU	w.w.										4.67	5.3	3.8	1.3		0.373	1.79	1.36	0.96	0.93	0.61	0.88	0.66	0.81	0.57	1.3		1.3	D-	1.1	17
67F	PLAT FLE	MU	w.w.																0.85		1.31	1.4	1.2	0.54	0.63	0.68	0.11	0.33	0.26	no	--	no	17
21F	PLAT FLE	MU	w.w.																			0.32	0.1	0.43	0.16		1.2	0.61	0.3	no	--	no	23
36F	LIMA LIM	LI	w.w.										28	34.4	28	21	50	40	40	22	18	52	45	27	31	36	17	21	35	no	--	no	14
15F	LIMA LIM	LI	w.w.											39		13.4	23.5	9	20.7	20	13	32		41	15	17	23	26	15	no	--	no	15
22F	LIMA LIM	LI	w.w.										68.9	48	39.9		21	9.17												no	D?	?	10
21F	LIMA LIM	LI	w.w.																						74	82	56	69		no	-?	?	9
36F	LIMA LIM	MU	w.w.										0.41	1.15	0.7	0.5	0.96	0.91	0.91	0.46	0.67	0.49	0.52	0.51	0.61	0.53	0.13	0.31	0.38	no	--	no	15
15F	LIMA LIM	MU	w.w.											1.21		0.173	0.143	0.3	0.55	0.42	0.38	0.324		0.55	0.18	0.28	0.1	0.46	0.24	no	--	no	20
22F	LIMA LIM	MU	w.w.										1.1	2	1.18		0.56	0.83												no	-?	?	14
21F	LIMA LIM	MU	w.w.																						1.4	0.82	0.51	1.1		no	-?	?	16
30F	PLEU PLA	LI	w.w.												21.2		13	12												1.2	-?	?	6
22F	PLEU PLA	LI	w.w.																7.8	12	2.8									no	-?	?	21
98F2	PLEU PLA	LI	w.w.																				10.8	8	5.1	3.6	2.8	9.19	4.6	no	--	no	15
10F	PLEU PLA	LI	w.w.																	15		34.7	28	8.9	19	4.74	5.79	10		1.0	--	no	18
30F	PLEU PLA	MU	w.w.												0.693		0.32	0.17												no	-?	?	8
22F	PLEU PLA	MU	w.w.																0.47	0.34	0.76									no	-?	?	15
98F2	PLEU PLA	MU	w.w.																				0.465	0.24	0.135	0.09	0.05	0.434	0.34	no	--	no	21
10F	PLEU PLA	MU	w.w.																	0.4		0.859	1.1	0.3	0.4	0.134	0.0671	0.18		no	--	no	19
67F	LEPI WHI	LI	w.w.										294	240	183	163	250	145	143	167	160	160	130	58	64	73	71.1	55	61.6	m	D-	m	10
21F	LEPI WHI	LI	w.w.																							44	27.9	48	45	m	-?	m	12
67F	LEPI WHI	MU	w.w.										2.56	1.51	2.5	0.8	0.8	3.04	0.78	1.27	0.56	1.4	1.1	0.54	0.39	0.59	0.483	0.57	0.37	m	D-	m	16
21F	LEPI WHI	MU	w.w.																							0.27	0.15	0.6	0.38	m	-?	m	18

Annual median concentration of HCB (ppb)
Cursive values indicate data from 1990 and since

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.				1.18	0.877	2.06	0.917	1.15	0.866	0.35	0.592	0.952	0.541	0.27	0.239	0.251	0.275	0.298		0.361	0.225	0.34	0.323	0.242	0.188	0.25	no	D-	no	13
31A	MYTI EDU	SB	d.w.			13.4	1.38	3.83	1.89	0.93	0.893	0.361	0.317	0.606	0.549	0.446	0.243	0.312	0.219	0.258	0.21		0.226	0.265	0.321	0.327	0.216	0.207	0.421	no	DY	no	15
35A	MYTI EDU	SB	d.w.			12.8	0.952	3.33	0.793	0.976	1.12	0.474	0.42	0.585	0.578	0.505	0.234	0.276	0.219	0.522	0.2	0.336	0.36	0.3	0.287	0.273	0.313	0.533	0.35	no	DY	1.0	16
36A	MYTI EDU	SB	d.w.			15	0.948	3.83	2.9	2.37	0.957	0.426	0.33	0.546	0.394	0.529	0.24	0.333	0.276	0.311	0.149		0.252	0.197	0.214	0.292	0.216	0.353	0.182	no	DY	no	17
71A	MYTI EDU	SB	d.w.			15.3	10.4	91.4	11.1	207	1.83	149	8.48	6.91	4.14	3.91	1.47	2.13	4.48	2.04	1.78	3.1	1.85	2.42	0.809	0.327	0.606	4.47	1.27	2.5	D-	4.9	>25
71A	MYTI EDU	SB	w.w.										*8.48*	*6.91*	*4.14*	*3.91*	*1.47*	*2.13*	*4.48*	*2.04*	*1.78*	*3.1*	*1.85*	*2.42*	*0.809*	*0.327*	*0.606*	*4.47*	*1.27*	2.5	D-	4.9	19
76A	MYTI EDU	SB	d.w.										0.378	0.568	0.498	0.794			0.254	0.289	0.4	0.256	0.216	0.244	0.299	0.311	0.974	0.294	0.188	no	--	no	16
15A	MYTI EDU	SB	d.w.										0.203			0.488	0.253	0.217	0.294	0.254	0.159	0.224	0.179	0.253	0.296	0.331	0.291	0.313	0.167	no	--	no	12
51A	MYTI EDU	SB	d.w.															0.612	0.333	0.313	0.4	0.4	0.385	0.196	0.476	0.403	0.49	0.575	0.5	no	--	1.5	12
52A	MYTI EDU	SB	d.w.									0.855	0.378		0.813	0.811	0.276	0.316	0.262	0.333	0.214	0.334	0.199	0.376	0.318		0.458	0.313	0.5	1.0	--	1.1	13
56A	MYTI EDU	SB	d.w.								0.2	0.787	0.413	0.794	0.935	1.04	0.309	0.382	0.309	0.442	0.348	0.704	0.183	0.336	0.301	0.451	0.526	0.333	0.6	1.2	--	1.3	15
57A	MYTI EDU	SB	d.w.									0.769		0.763	0.719	0.794	0.357	0.301	0.262	0.431	0.576	0.625	0.262	0.361	0.254	0.397	0.237	0.533	0.538	1.1	--	1.4	12
63A	MYTI EDU	SB	d.w.									1.05		0.971	0.74	0.625	0.316	0.329	0.333	0.407	0.452	0.51	0.23	0.321	0.329	0.352	0.154	0.533	0.235	no	D-	no	13
65A	MYTI EDU	SB	d.w.								0.2	0.427	0.516	0.862	0.621	0.667	0.284	0.296	0.294	0.345	0.377	0.524	0.15	0.272	0.258	0.294	0.179	0.556	0.188	no	--	no	14
69A	MYTI EDU	SB	d.w.												0.532	0.526	0.286	0.251	0.286	0.5	0.483	0.361	0.207	0.331	0.311	0.266	0.247	0.368	0.158	no	--	no	12
22A	MYTI EDU	SB	d.w.										0.265	0.61	0.559	0.444	0.248	0.253	0.301	0.311	0.172	0.316	0.202	0.298	0.242	0.329	0.219	0.176	0.167	no	--	no	12
82A	MYTI EDU	SB	d.w.				2.26	10.7	0.656	0.617	0.8	0.535															0.181	0.235		no	--	no	23
84A	MYTI EDU	SB	d.w.				3.41	8.79	3.33	2.04	1.23	0.476		0.505	0.625	0.532		0.246	0.215								0.292	0.188		no	DY	no	15
87A	MYTI EDU	SB	d.w.								0.917	0.42															0.14	0.19		no	-?	?	14
25A	MYTI EDU	SB	d.w.												0.704	0.513											0.35	0.364		no	-?	?	8
26A	MYTI EDU	SB	d.w.												0.614												0.318	0.474		no	-?	?	12
27A	MYTI EDU	SB	d.w.												0.599												0.188	0.222		no	-?	?	9
28A	MYTI EDU	SB	d.w.												0.556	0.429											0.16	0.353		no	-?	?	15
91A	MYTI EDU	SB	d.w.												0.625		0.314											0.278		no	-?	?	14
92A1	MYTI EDU	SB	d.w.												0.68	0.418	0.244	0.225	0.23	0.254										no	D-	no	12
96A	MYTI EDU	SB	d.w.												0.525	0.422											0.146	0.3		no	-?	?	14
98A2	MYTI EDU	SB	d.w.																	0.336		0.435	0.286	0.291	0.313	0.362	0.433	0.294	0.167	no	--	no	11
98X	MYTI EDU	SB	d.w.														0.559	0.318	0.26											no	-?	?	8
99A	MYTI EDU	SB	d.w.												0.621	0.442											0.152	0.176		no	D?	?	9
41A	MYTI EDU	SB	d.w.														0.292	0.263	0.291	0.303									0.15	no	D?	?	7
43A	MYTI EDU	SB	d.w.														0.325	0.338		0.45									0.188	no	-?	?	11
44A	MYTI EDU	SB	d.w.															0.273	0.286	0.329									0.25	no	-?	?	7
45A	MYTI EDU	SB	d.wt														0.292	0.278											0.263	no	-?	?	<=5
46A	MYTI EDU	SB	d.w.														0.263	0.291	0.273										0.13	no	D?	?	7
48A	MYTI EDU	SB	d.w.														0.279	0.294	0.238										0.188	no	-?	?	6
10A2	MYTI EDU	SB	d.w.																0.245	0.309		0.284	0.278	0.289	0.305	0.275	0.279	0.263	0.188	no	--	no	7
11X	MYTI EDU	SB	d.w.																	0.34	0.208	0.249	0.242	0.253	0.236		0.279	0.381	0.167	no	--	no	11

Annual median concentration of HCB (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.				1.18	0.877	2.06	0.917	1.15	0.866	0.35	0.592	0.952	0.541	0.27	0.239	0.251	0.275	0.298		0.361	0.225	0.34	0.323	0.242	0.188	0.25	no	--	no	13
51A	MYTI EDU	SB	d.w.															0.612	0.333	0.313	0.4	0.4	0.385	0.196	0.476	0.403	0.49	0.575	0.5	no	--	1.5	12
52A	MYTI EDU	SB	d.w.									0.855	0.378		0.813	0.811	0.276	0.316	0.262	0.333	0.214	0.334	0.199	0.376	0.318		0.458	0.313	0.5	1.0	--	1.1	13
10A2	MYTI EDU	SB	d.w.																0.245	0.309		0.284	0.278	0.289	0.305	0.275	0.279	0.263	0.188	no	--	no	7
I021	MYTI EDU	SB	d.w.															0.833	0.916	0.48	0.375		0.481	0.636	0.549					1.1	--	1.1	11
I022	MYTI EDU	SB	d.w.															0.421	0.479	0.97	0.312	0.783	0.455	0.543	0.549	0.379	0.513	0.476	0.692	1.4	--	1.4	13
I023	MYTI EDU	SB	d.w.															0.482	0.424	0.431	0.259	0.615	0.347	0.342	0.417	0.394	0.446	0.541	0.545	1.1	--	1.4	10
I024	MYTI EDU	SB	d.w.															0.488	0.602	1.16	0.426	0.66	0.556	0.536	0.495	0.388	0.404	0.532	0.615	1.2	--	1.3	12
I301	MYTI EDU	SB	d.w.															0.294	0.284	0.695	0.818	1.55	0.508	0.677	0.423	0.318	0.965	0.735	0.357	no	--	1.1	16
I304	MYTI EDU	SB	d.w.															0.336	0.281	0.719	0.486		0.294	0.526	0.385	0.307	0.5	0.439	0.286	no	--	no	13
I306	MYTI EDU	SB	d.w.															0.299	0.307	0.774	0.253		0.296	0.294	0.336	0.352	0.462	0.431	0.438	no	--	1.1	13
I307	MYTI EDU	SB	d.w.															0.273	0.318	0.674	0.174		0.327	0.336	0.45	0.365	0.357	0.238	0.5	no	--	no	15
I711	MYTI EDU	SB	d.w.															4.45	5.54	0.575	4.46	6.96	2.56		4					8.0	--	11.3	24
I712	MYTI EDU	SB	d.w.															3.43	16.4	7.9	4.83	5	3.31	1.78	2.75	3.27	2.9	6.72	2.09	4.2	--	7.8	17
I713	MYTI EDU	SB	d.w.																						3.49	2.64	4.17	11.1	3.56	7.1	-?	?	17
71A	MYTI EDU	SB	d.w.			15.3	10.4	91.4	11.1	207	1.83	149	8.48	6.91	4.14	3.91	1.47	2.13	4.48	2.04	1.78	3.1	1.85	2.42	0.809	0.327	0.606	4.47	1.27	2.5	D-	4.9	>25
71A	MYTI EDU	SB	d.w.			15.3	10.4	91.4	11.1	207	1.83	149	*8.48*	*6.91*	*4.14*	*3.91*	*1.47*	*2.13*	*4.48*	*2.04*	*1.78*	*3.1*	*1.85*	*2.42*	*0.809*	*0.327*	*0.606*	*4.47*	*1.27*	2.5	D-	4.9	19
I131A	MYTI EDU	SB	d.w.															0.316	0.298	0.273	0.196	0.582	0.288	0.327	0.292	0.373	1.4	0.724	0.643	1.3	--	2.6	15
I132	MYTI EDU	SB	d.w.																		44.2	1.89	4.73	3.11	2.36	1.56	1.94	6.42	4.93	9.9	--	14.6	22
I133	MYTI EDU	SB	d.w.															18.1	43.5	8.12	28	1.7	6.18	2.3	1.62	2.45	3.76	7.18	4.09	8.2	--	16.5	21
I241	MYTI EDU	SB	d.w.															1.28	0.706	0.69	0.753	0.698	0.618	0.293	0.55	0.299	1.14	1.33	1.55	3.1	UY	5.8	13
I242	MYTI EDU	SB	d.w.															1.2	0.923	0.562	0.604	0.651	0.552	0.241	0.5	0.463	0.593	0.857	1.07	2.1	DY	3.2	11
I243	MYTI EDU	SB	d.w.															1.03	0.663	0.516	1.24	0.662	0.67	0.262	0.444	0.34	0.611	0.92	1.19	2.4	--	3.7	13

Annual median concentration of HCB (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR	LI	w.w.										10	17	7.48	16	11	11	12	7	5.3	5.1	9.1	8.9	6.7	6	8.9	6.3	5.5	no	--	no	12
36B	GADU MOR	LI	w.w.										7	9	9	10	9	5	9	6	4.4	6.5	5.4	4.6	3.1	3.3	4	3.3	3.5	no	D-	no	10
15B	GADU MOR	LI	w.w.										5	20.5	10	14	14	9	11	13	11.5	11	6.2	6.6	8.2	6.4	9.7	9.1	13	no	--	no	13
53B	GADU MOR	LI	w.w.										10	10	16.5	7		5	7	7	5	4.7	12	2.1	3	2.25	2.6	1.3	3.9	no	D-	no	16
67B	GADU MOR	LI	w.w.										14	8	7.94	8	8.49	10	8	15.5	9.9	4.6	5.63	4.9	4.6	5.1	5.3	7.7	5.3	no	D-	no	11
23B	GADU MOR	LI	w.w.										6	9.49	12	9	8	6	10	6	8.4	7.8	7.6	9.25	4.7	7.9	5.8	6.9	5.5	no	--	no	11
92B	GADU MOR	LI	w.w.													17	11	14	13								9.8	6		no	D-	no	10
98B1	GADU MOR	LI	w.w.												20	9.95	12	18	35	20.5	16	13			10	13	11	10	13	no	--	no	12
43B	GADU MOR	LI	w.w.														15	16.5	13											no	-?	?	8
10B	GADU MOR	LI	w.w.														13	11	16	17	17	25	9	9.9	11	9.43	5.1	7.7	6.8	no	D-	no	12
30B	GADU MOR	MU	w.w.										0.09	0.09	0.1	0.1	0.04	0.03	0.05	0.05	0.06	0.06	0.06	0.05	0.06	0.05	0.06	0.06	0.05	no	--	no	11
36B	GADU MOR	MU	w.w.										0.11	0.07	0.1	0.1	0.04	0.05	0.06	0.06	0.05	0.06	0.04	0.05	0.03	0.03	0.03	0.04	0.04	no	D-	no	11
15B	GADU MOR	MU	w.w.										0.11	0.11	0.1	0.1	0.06	0.07	0.08	0.0748	0.1	0.06	0.1	0.04	0.06	0.07	0.05	0.06	0.07	no	--	no	11
53B	GADU MOR	MU	w.w.										0.1	0.03	0.1	0.1		0.03	0.0648	0.06	0.05	0.05	0.09	0.04	0.05	0.08	0.03	0.04	0.03	no	--	no	16
67B	GADU MOR	MU	w.w.										0.1	0.0849	0.1	0.1	0.0748	0.06	0.05	0.07	0.06	0.05	0.05	0.04	0.05	0.05	0.04	0.07	0.04	no	D-	no	9
23B	GADU MOR	MU	w.w.										0.08	0.08	0.1	0.1	0.04	0.06	0.06	0.06	0.06	0.06	0.06	0.06	0.04	0.05	0.03	0.07	0.08	no	--	no	11
92B	GADU MOR	MU	w.w.													0.1	0.07	0.05	0.09								0.07	0.07		no	--	no	11
98B1	GADU MOR	MU	w.w.												0.2	0.2	0.07	0.1	0.11	0.1	0.1	0.08			0.07	0.09	0.08	0.11	0.08	no	--	no	11
43B	GADU MOR	MU	w.w.														0.09	0.13	0.06											no	-?	?	15
10B	GADU MOR	MU	w.w.														0.16	0.11	0.09	0.2	0.17	0.26	0.09	0.11	0.13	0.09	0.09	0.1	0.0849	no	--	no	13

Annual median concentration of HCB (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
33F	PLAT FLE	LI	w.w.										1	0.5	5	2	1	1	0.648	0.693	0.643	0.54	1.6	1.6	1.6	1.9	1.2	1.3	1.8	no	--	no	17
53F	PLAT FLE	LI	w.w.										6	4.47	5	2		1	2	3	1.8	2.5	2.39	2	2.9	1.4	1	1.2		no	D-	no	13
67F	PLAT FLE	LI	w.w.																3		6.39	3.6	4.2	4.3	3.5	3.7	3.1	4.3	3.8	no	--	no	10
21F	PLAT FLE	LI	w.w.																			3.1	1.1	2.4	0.9		3.6	2.1	1.2	no	--	no	18
33F	PLAT FLE	MU	w.w.										0.06	0.07	0.1	0.1	0.03	0.03	0.03	0.05	0.03	0.06	0.04	0.04	0.05	0.06	0.03	0.03	0.04	no	--	no	13
53F	PLAT FLE	MU	w.w.										0.45	0.3	0.2	0.1		0.0837	0.05	0.1	0.06	0.06	0.09	0.06	0.05	0.13	0.03	0.07		no	D-	no	14
67F	PLAT FLE	MU	w.w.																0.05		0.098	0.19	0.16	0.12	0.14	0.12	0.03	0.08	0.07	no	--	no	16
21F	PLAT FLE	MU	w.w.																			0.1	0.03	0.06	0.04		0.09	0.08	0.06	no	--	no	16
36F	LIMA LIM	LI	w.w.										5.48	3	5	2	3	2	2.3	3	1.1	2.5	3	2.6	2	2.5	1.8	1.6	2.2	no	--	no	13
15F	LIMA LIM	LI	w.w.											4		4	4	2	3	3.2	3	3.64		5.9	2.5	4.3	3.1	4	2.6	no	--	no	11
22F	LIMA LIM	LI	w.w.										6	3	5		1	1.41												no	-?	?	15
21F	LIMA LIM	LI	w.w.																						4.8	9.1	3.1	8		no	-?	?	18
36F	LIMA LIM	MU	w.w.										0.1	0.09	0.1	0.1	0.06	0.06	0.07	0.05	0.05	0.05	0.05	0.06	0.06	0.05	0.03	0.03	0.04	no	D-	no	9
15F	LIMA LIM	MU	w.w.											0.2		0.1	0.0447	0.07	0.09	0.07	0.09	0.08		0.15	0.04	0.09	0.03	0.09	0.05	no	--	no	16
22F	LIMA LIM	MU	w.w.										0.12	0.2	0.1		0.05	0.0742												no	-?	?	14
21F	LIMA LIM	MU	w.w.																						0.13	0.13	0.06	0.15		no	-?	?	16
30F	PLEU PLA	LI	w.w.												5		2	2												no	-?	?	11
22F	PLEU PLA	LI	w.w.																0.5	0.9	0.3									no	-?	?	19
98F2	PLEU PLA	LI	w.w.																				1.3	1.8	0.955	0.68	1.2	1.09	0.45	no	--	no	14
10F	PLEU PLA	LI	w.w.																	6.1		8.77	6.4	2.4	1.6	2.15	1.99	2.9		no	D-	no	14
30F	PLEU PLA	MU	w.w.												0.141		0.05	0.03												no	D?	?	<=5
22F	PLEU PLA	MU	w.w.																0.03	0.03	0.04									no	-?	?	7
98F2	PLEU PLA	MU	w.w.																				0.07	0.04	0.0447	0.04	0.03	0.0648	0.04	no	--	no	12
10F	PLEU PLA	MU	w.w.																	0.22		0.303	0.49	0.15	0.43	0.0648	0.0346	0.07		no	--	no	20
67F	LEPI WHI	LI	w.w.										9	4	5	4	5	2	4.6	4	5	2.8	4.8	3.4	3.8	3.9	3.45	2	2.2	m	--	m	12
21F	LEPI WHI	LI	w.w.																							4.8	1	2.9	4.2	m	-?	m	22
67F	LEPI WHI	MU	w.w.										0.09	0.07	0.1	0.1	0.03	0.04	0.03	0.07	0.03	0.04	0.05	0.03	0.04	0.04	0.0346	0.04	0.03	m	--	m	13
21F	LEPI WHI	MU	w.w.																							0.04	0.03	0.07	0.06	m	-?	m	13

Annual median concentration of BAP (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.												2.53			3.35	3.52	4.95	3.57	2.99	2.99	3.29	3.4	3.23	4.26	3.85	6.07	1.2	U-	1.4	8
I301	MYTI EDU	SB	d.w.															4.44	19.3	18.8	6.02	13.1	2.55	9.77	3.13	3.18	34.2	3.47	42.1	8.4	--	7.6	25
I304	MYTI EDU	SB	d.w.															3.36	2.81	3.29	3.38	2.76	2.94	3.76	3.85	3.07	5.33	4.39	3.85	no	--	no	9
I306	MYTI EDU	SB	d.w.															2.99	3.07	2.87	3.05	3.07	2.96	2.94	3.36	3.52	4.79	4.31	3.13	no	--	no	8
I307	MYTI EDU	SB	d.w.															2.73	3.21	2.75	2.91	3.01	3.27	3.36	4.5	3.65	5.27	3.97	3.13	no	--	no	8
I131A	MYTI EDU	SB	d.w.															3.25	2.66	2.73	3.6	5.02	2.4	3.27	2.79	3.73	8	3.4	3.85	no	--	1.0	13
I132	MYTI EDU	SB	d.w.																		22.6	300	10.8	32.7	49.6	89.7	52.4	150	61.3	12.3	--	26.2	>25
I133	MYTI EDU	SB	d.w.															80.6	13.7	51.7	18.6		8.47	19	23.7	39.3	135	67.3	50	10.0	--	24.9	20
I201	MYTI EDU	SB	d.w.															93.2	207	679	10.5	83.8	47.4	31.7	188	7.23	3.79	8.55	5	no	--	no	>25
I205	MYTI EDU	SB	d.w.															7.39		23.1	64.5	7.51	5.59	7.55	33	3.16	48.2	4.5	3.85	no	--	no	>25
I913	MYTI EDU	SB	d.w.																			5.85	15.6	2.96	13.3	3.65	1.36	3.29	2.78	no	--	no	21
I912	MYTI EDU	SB	d.w.															7.02		9.46	5.35	16.4	135	4.17	20	3.97	1.46	3.65	3.33	no	--	no	>25
I965	MYTI EDU	SB	d.w.																					233	30.8	43.6	87.7	19.3	58	11.6	--	no	22
I962	MYTI EDU	SB	d.w.															246	33.5		87									17.4	-?	?	>25
I964	MYTI EDU	SB	d.w.																						37.3	289	251	55.4	200	40.0	-?	?	25
I969	MYTI EDU	SB	d.w.															14.2	10.7	17.6	8.42	10.3	17.1	23.5	3.68	46.7	34.7	7.27	24.2	4.8	--	4.5	22

Annual median concentration of PK_S (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.												66.6			43.3	58.3	87.9	66.4	39.4	39.2	52.3	13.3	22.3	63.5	16.1	75.1	1.5	--	1.3	17
I301	MYTI EDU	SB	d.w.															133	465	440	203	316	90.6	190	58.5	55.4	401	67.3	442	8.8	--	8.4	22
I304	MYTI EDU	SB	d.w.															21.2	31.7	20.7	60.6	70.4	15	38.9	11.5	12.8	94.1	20.4	47.7	no	--	1.3	21
I306	MYTI EDU	SB	d.w.															19.2	29.6	55.7	50	56.5	12.7	43.8	16.1	10.9	69.1	14.7	32.9	no	--	no	20
I307	MYTI EDU	SB	d.w.															17.1	32.4	39.6	47.9	82.8	18.5	39.9	41.6	13.7	92.8	17.7	31.8	no	--	no	19
I131A	MYTI EDU	SB	d.w.															48.4	17.9	35.4	61.4	57.1	26.9	28	15.5	26.6	127	20.1	9.62	no	--	no	21
I132	MYTI EDU	SB	d.w.																		825	3700	363	596	1070	1910	753	1260	694	13.9	--	16.0	21
I133	MYTI EDU	SB	d.w.															978	197	874	456		298	498	629	762	1610	751	572	11.4	--	16.9	18
I201	MYTI EDU	SB	d.w.															929	2050	9160	423	1370	1290	834		267	161	299	155	3.1	--	no	24
I205	MYTI EDU	SB	d.w.															127		620	1770	307	291	264	2370	141	1130	146	80.2	1.6	--	no	>25
I913	MYTI EDU	SB	d.w.																			249	1160	172	812	43.1	37.4	14.8	17.6	no	D-	no	25
I912	MYTI EDU	SB	d.w.															260		534	364	479	2650	154	805	43.6	18.2	10.9	13.6	no	D-	no	25
I965	MYTI EDU	SB	d.w.																					1630	497	626	1080	252	550	11.0	--	no	18
I962	MYTI EDU	SB	d.w.															2110	396		881									17.6	-?	?	>25
I964	MYTI EDU	SB	d.w.																						454	3100	3140	697	1400	27.9	-?	?	24
I969	MYTI EDU	SB	d.w.															224	158	379	185	368	302	233	50.3	883	495	114	357	7.1	--	7.3	23

Annual median concentration of P_S (ppb)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.												215			179	219	397	268	216	140	124	54.9	126	163	74.6	292	1.2	--	1.1	15
I301	MYTI EDU	SB	d.w.															486	1810	1880	657	1050	438	645	312	216	1040	271	1730	6.9	--	5.9	20
I304	MYTI EDU	SB	d.w.															75.5	111	182	228	326	60.4	136	51.5	66.1	215	53.6	179	no	--	no	18
I306	MYTI EDU	SB	d.w.															73.7	87	188	172	225	53.8	115	121	45.9	147	53.9	155	no	--	no	17
I307	MYTI EDU	SB	d.w.															59.6	90.4	153	155	325	64.4	112	244	64.8	178	40.6	170	no	--	no	20
I131A	MYTI EDU	SB	d.w.															120	98.4	140	213	240	181	91.8	95	133	344	109	80.6	no	--	no	16
I132	MYTI EDU	SB	d.w.																		1590	6470	1270	1000	1750	2440	1060	2800	1760	7.1	--	9.7	19
I133	MYTI EDU	SB	d.w.															1940	715	1710	1000		908	863	1120	1070	2530	1410	1320	5.3	--	7.9	14
I201	MYTI EDU	SB	d.w.															2170	4450	15500	793	3400	2300	1130		579	381	569	303	1.2	--	no	23
I205	MYTI EDU	SB	d.w.															476		1630	3210	801	603	457		384	2170	309	221	no	--	no	23
I913	MYTI EDU	SB	d.w.																			559	2200	578	2000	128	98.1	55.1	75.7	no	--	no	24
I912	MYTI EDU	SB	d.w.															648		1390	873	1510	5990	735	1970	164	42.3	32.9	42.9	no	DY	no	23
I965	MYTI EDU	SB	d.w.																					2770	720	1320	2930	587	1500	6.0	--	no	20
I962	MYTI EDU	SB	d.w.															3400	982		1600									6.4	-?	?	21
I964	MYTI EDU	SB	d.w.																						643	6270	7960	1010	2590	10.4	-?	?	>25
I969	MYTI EDU	SB	d.w.															695	803	673	551	807	988	675	136	2340	1540	283	660	2.6	--	2.5	23

Annual median concentration of TBT (ppm)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	d.w.																	2.71	1.51	1.47	0.935	0.802	1.81	1.08	0.723	0.282	0.36	3.6	D-	no	14
36A	MYTI EDU	SB	d.w.																	0.0336	0.179	0.217	0.0831	0.0591	0.0792	0.103	0.0603	0.0224	0.0172	no	--	no	19
71A	MYTI EDU	SB	d.w.																	1.02				0.431	0.702	0.375	0.119	0.136	0.0567	no	D-	no	14
76A	MYTI EDU	SB	d.w.																	0.188				0.0529	0.092	0.106	0.034	0.0318	0.0206	no	D-	no	16
15A	MYTI EDU	SB	d.w.																					0.098	0.0811	0.0622	0.0179	0.0179	0.0078	no	D-	no	12
22A	MYTI EDU	SB	d.w.																					0.17	0.138	0.587	0.291	0.249	0.1	1.0	--	no	19
226X	MYTI EDU	SB	d.w.																		1.61	0.854	0.555							5.6	-?	?	6
227A2	MYTI EDU	SB	d.w.																				0.375	0.417	0.672	0.709	0.314	0.277	0.134	1.3	--	no	13
98A2	MYTI EDU	SB	d.w.																					0.108	0.105	0.114	0.0468	0.0252	0.0191	no	D-	no	12
10A2	MYTI EDU	SB	d.w.																					0.0224	0.0123	0.0067				no	D?	?	<=5
11X	MYTI EDU	SB	d.w.																						0.0348	0.0201	0.00401	0.00233	0.00263	no	D?	?	16
I301	MYTI EDU	SB	d.w.																						2.59	2.11	2.83	2.94	1.27	12.7	-?	?	13
I712	MYTI EDU	SB	d.w.																						1.2	0.912	0.3	0.268	0.219	2.2	D?	?	12
I713	MYTI EDU	SB	d.w.																						1.37	0.668	0.22	0.213	0.13	1.3	D?	?	12
36G	NUCE LAP	SB	d.w.																	0.105	0.203	0.142	0.0951	0.0496	0.155	0.0846	0.0412	0.0344	0.00625	m	D-	m	17
71G	NUCE LAP	SB	d.w.																					0.133	0.344	0.235	0.115		0.0429	m	-?	m	18
76G	NUCE LAP	SB	d.w.																					0.0409	0.196		0.0679	0.0467	0.0165	m	-?	m	22
131G	NUCE LAP	SB	d.w.																					0.0326	0.064	0.075	0.0507	0.022		m	-?	m	17
15G	NUCE LAP	SB	d.w.																					0.0706	0.091	0.0652	0.0264	0.0215	0.00641	m	D-	m	15
224G	NUCE LAP	SB	d.w.																	0.0769	0.295		0.12							m	-?	m	24
22G	NUCE LAP	SB	d.w.																					0.0699	0.101	0.322	0.2	0.13	0.0262	m	--	m	24
220G	NUCE LAP	SB	d.w.																	0.0815	0.1	0.0851					0.113			m	-?	m	7
226G	NUCE LAP	SB	d.w.																		0.844	0.225	0.21							m	-?	m	16
227G1	NUCE LAP	SB	d.w.																	0.0891	0.625	0.267	0.387	0.135	0.446					m	--	m	21
227G2	NUCE LAP	SB	d.w.																							0.878	0.258	0.239	0.065	m	D?	m	13
98G	NUCE LAP	SB	d.w.																					0.026	0.0629	0.0612	0.0492	0.0394	0.014	m	--	m	18
11G	NUCE LAP	SB	d.w.																						0.0133	0.0261	0.0103	0.0184	0.00862	m	-?	m	15

Annual median concentration of TCDDN (ppp)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30A	MYTI EDU	SB	w.w.																						0.11	0.108	0.127	0.169	0.153	m	U?	m	7
71A	MYTI EDU	SB	w.w.																						2.37	2.36	2.02	2.64	2.76	m	-?	m	7
76A	MYTI EDU	SB	w.w.																						0.0566	0.078	0.133	0.142	0.111	m	-?	m	11
I712	MYTI EDU	SB	w.w.																						4.31	4.29	3.26	1.51	3.24	m	-?	m	14
I713	MYTI EDU	SB	w.w.																						3.59	4.16	2.98	4.77	1.41	m	-?	m	15
I132	MYTI EDU	SB	w.w.																						0.479	0.611	0.211	1.53	0.303	m	-?	m	23
I133	MYTI EDU	SB	w.w.																						0.277	0.24	0.371	0.249	0.227	m	-?	m	10

Annual median concentration of ALAD (NG PBG/MIN/MG PROT)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR	BL	w.w.																	8.98	14.7	13	14.6	12.7	10.4	6.91	14.2	15	32.3	m	--	m	12
36B	GADU MOR	BL	w.w.																	13	26.2	9.93	22	19.4						m	-?	m	15
15B	GADU MOR	BL	w.w.																	17.2	23.4	8.45		18.9						m	-?	m	17
53B	GADU MOR	BL	w.w.																	7.64	10.1	11.1	12.7	10	6.44	9.32	9.95	10.4	33.7	m	--	m	13
67B	GADU MOR	BL	w.w.																	7.17	28.2	16.9	22.4	19						m	-?	m	16
23B	GADU MOR	BL	w.w.																	15.8	24.8	18.1	19.8	24	19.4	16.8	19.7	25.8	38	m	--	m	9

Annual median concentration of EROD-activity (PMIN/MIN/MG PROT)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR	LI	w.w.																	68.8	124	70	260	81.2	158	88.3	69	50.9	98.7	m	--	m	16
36B	GADU MOR	LI	w.w.																	95.1	11.4	60.2	64.9	76.2						m	-?	m	24
15B	GADU MOR	LI	w.w.																	49.9	52.3	184		61						m	-?	m	20
53B	GADU MOR	LI	w.w.																	86.5	119	90.1	128	34.7	93.9	11.7	20	53.9	54.2	m	--	m	19
67B	GADU MOR	LI	w.w.																	103	76.2	84.6	103	72.9						m	-?	m	9
23B	GADU MOR	LI	w.w.																	94.1	28.6	70.1	73.5	76.5	103	41.9	45.9	50.8	57.2	m	--	m	15

Annual median concentration of CYP1A (ABS)

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR	LI	w.w.																							2.24	1.21	1.22	0.822	m	-?	m	9
53B	GADU MOR	LI	w.w.																							0.132	0.207	0.201	0.0655	m	-?	m	17
23B	GADU MOR	LI	w.w.																							0.113	0.212	0.199	0.0795	m	-?	m	17

Annual median concentration of PYR1O (µG/KG/ABS 380 NM)
Cursive values indicate data that were not included in the temporal trend analysis because they were derived from a method that can not be compared to method used during the following years

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
30B	GADU MOR	BI	w.w.																		*116*	*130*	12.3	17	29.2	20.3	43.5	15.1	13.9	m	--	m	20
36B	GADU MOR	BI	w.w.																		*42.9*	*28.9*	5.14	3.72						m	D?	m	15
15B	GADU MOR	BI	w.w.																		*3770*	*253*		29.7	6.32	5.66	16.7	1.1	2.61	m	D-	m	>25
53B	GADU MOR	BI	w.w.																		*83*	*58.6*	9.23	3.81	18.8	3.65	3.39	3.04	2.18	m	D-	m	20
67B	GADU MOR	BI	w.w.																		*19.8*	*16.5*	1.62	1.66						m	-?	m	20
23B	GADU MOR	BI	w.w.																		*12.7*	*11.2*	4.15	2.55	3.1	5.32	1.62	3.46	1.34	m	D-	m	16

Annual median concentration of VDSI ()

St	Species	Tis	Base	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	OC	TRD	SM3	PWR
36G	NUCE LAP	WO	w.w.											4.1		3.9				4	4	4	4	3.95	4	3.96	3.65	0.96	0.125	m	DY	m	17
71G	NUCE LAP	WO	w.w.																					4	4.1	4	4	4	4	m	--	m	<=5
76G	NUCE LAP	WO	w.w.																					3.41	3.03		3.28	0.643	0.778	m	-?	m	23
131G	NUCE LAP	WO	w.w.																					3.89	3.77	3.47	3.63	1.86	1.08	m	D-	m	18
15G	NUCE LAP	WO	w.w.																					3.69	3.86	3.42	3.43	1.28	0.125	m	D-	m	22
22G	NUCE LAP	WO	w.w.																					4	4	3.95	4	4	2.96	m	--	m	13
220G	NUCE LAP	WO	w.w.																	4.05	4	4					4			m	-?	m	<=5
227G1	NUCE LAP	WO	w.w.											4.1						4	4.15	4.09	4.5	4.3	4.5					m	--	m	8
227G2	NUCE LAP	WO	w.w.																							4.13	3.92	3.65	3.66	m	-?	m	6
98G	NUCE LAP	WO	w.w.																					3.5	3.76	3.8	4	3.43	2.97	m	--	m	13
11G	NUCE LAP	WO	w.w.																						0.0333	0	0.289	0	0	m	-?	m	8

Appendix J
Geographical distribution of contaminants and biomarkers in biota 1990-2006

Sorted by contaminant and species:

Cadmium (Cd)
Mercury (Hg)
Lead (Pb)
Sum of 7 CBs (CB-28, -52, 101, -118, -138, -153 and -180)
DDEPP (ppDDE)
HCB
TCDDN
BDE
OH-pyrene
ALA-D (δ-amino levulinic acid dehydrase inhibition)
EROD-activity (Cytochrome P4501A-activity)
CYP1A (relative amount of cytochrome P4501A-protein)
TBT
VDSI

MYTI EDU - Blue Mussel (*Mytilus edulis*)
GADU MOR - Atlantic cod (*Gadus morhua*)
PLAT FLE - Flounder (*Platichthys flesus*)
LIMA LIM - Dab (*Limanda limanda*)
PLEU PLA - Plaice (*Pleuronectes platessa*)
MICR KIT - Lemon sole (*Microstomus kitt*)
LEPI WHI - Megrim (*Lepidorhombus whiff-iagonis*)

Station positions are shown on maps in Appendix G

Results are presented for three periods: 1990-1996, 2005 and 2006.
The average median concentrations was used for each period. Cf. Appendix E.

Appendix J
Geographical distribution of contaminants and biomarkers in biota 1990-2006
(cont.)

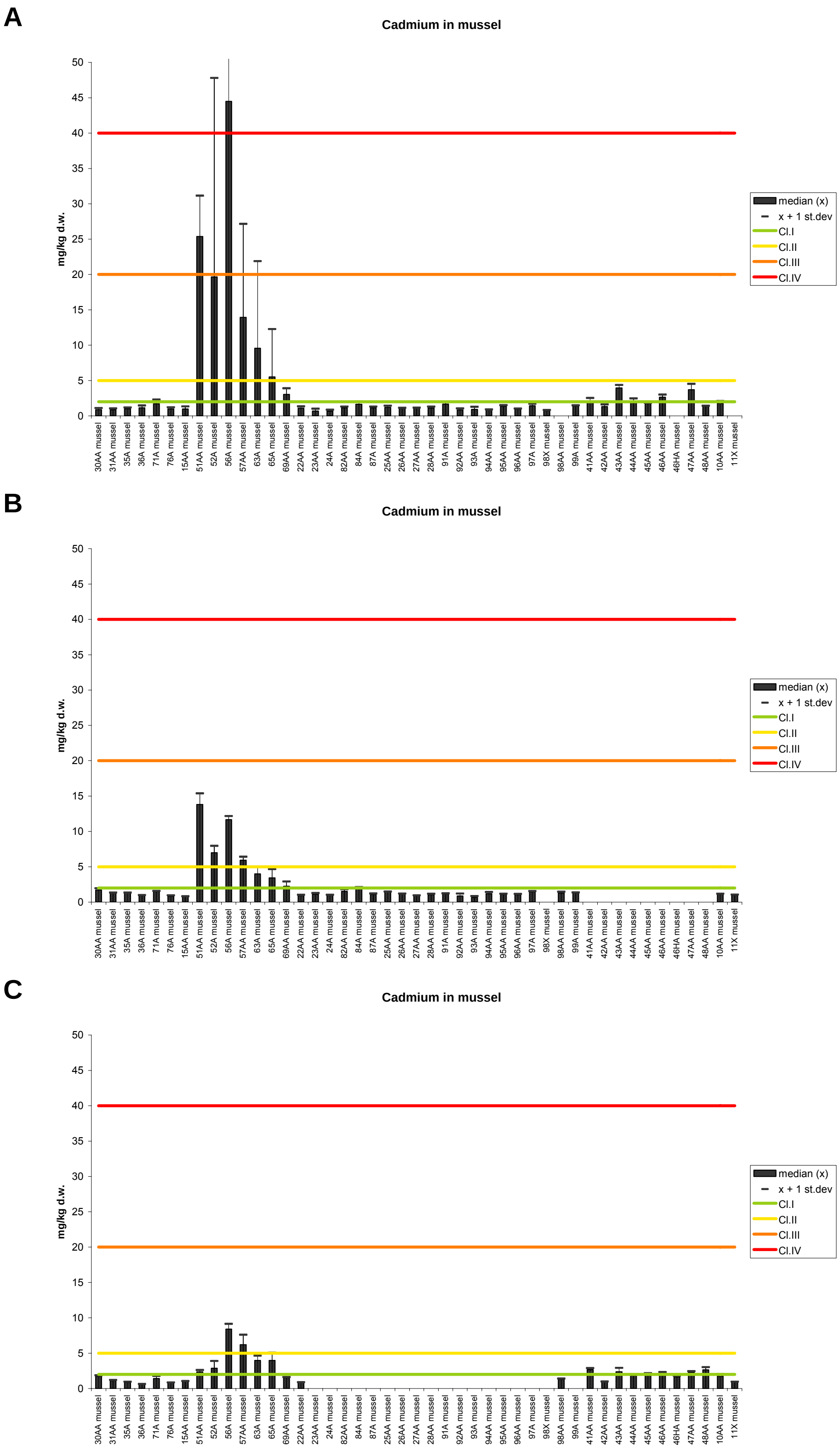


Figure 23. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for cadmium in blue mussel (*Mytilus edulis*) 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppm (mg/kg) wet weight (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figures A.**

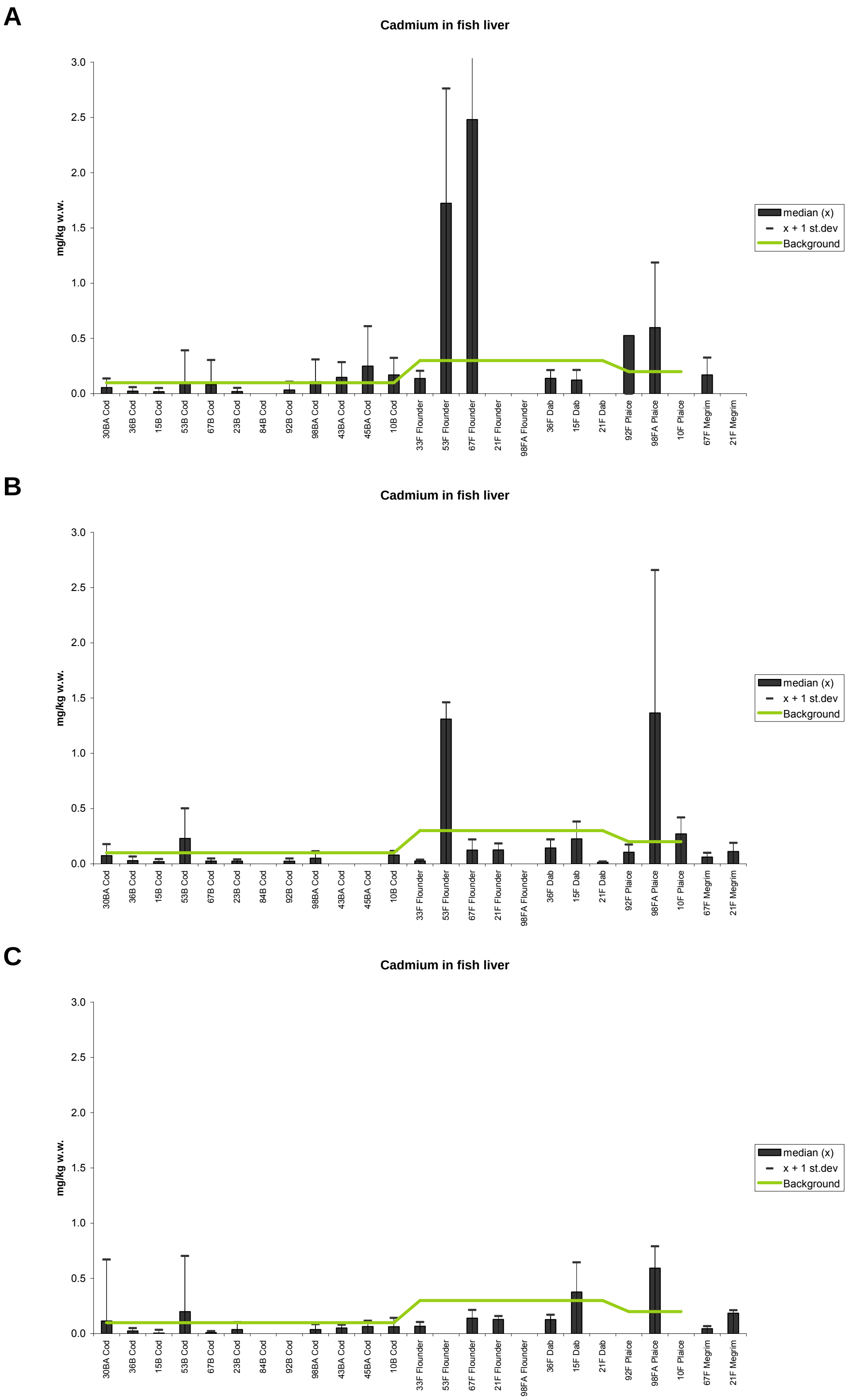


Figure 24. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for cadmium in fish liver 1990-1996 **(A),** 2005 (**B**) and 2006 (**C**), ppm (mg/kg) wet weight, "Cl. – B" indicates that only upper limit to SFT Classes or provisional high back ground concentration is indicated for all fish, (see maps in Appendix G).

A

B

C

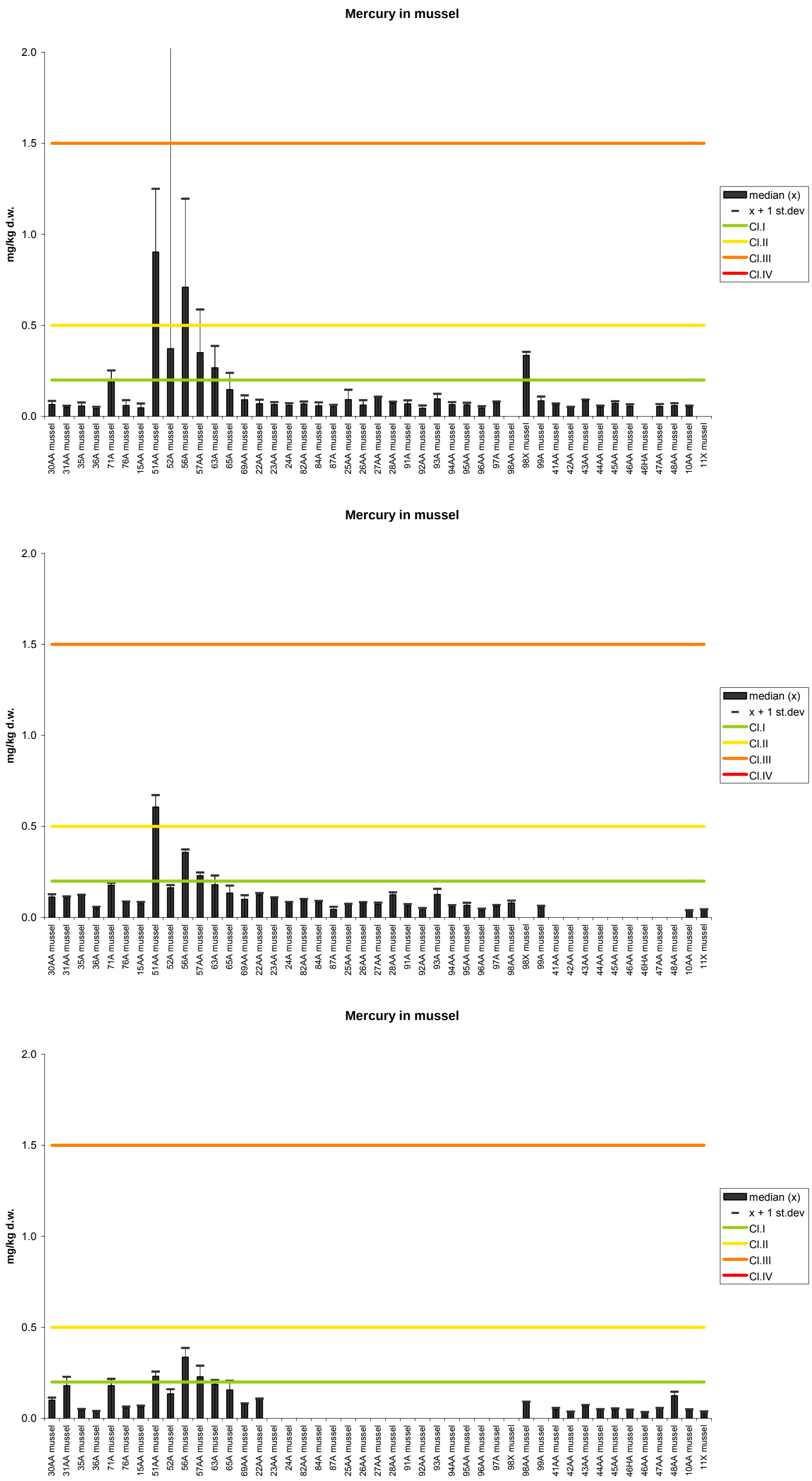


Figure 25. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for mercury in blue mussel (*Mytilus edulis*) 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppm (mg/kg) wet weight (see maps in Appendix G).

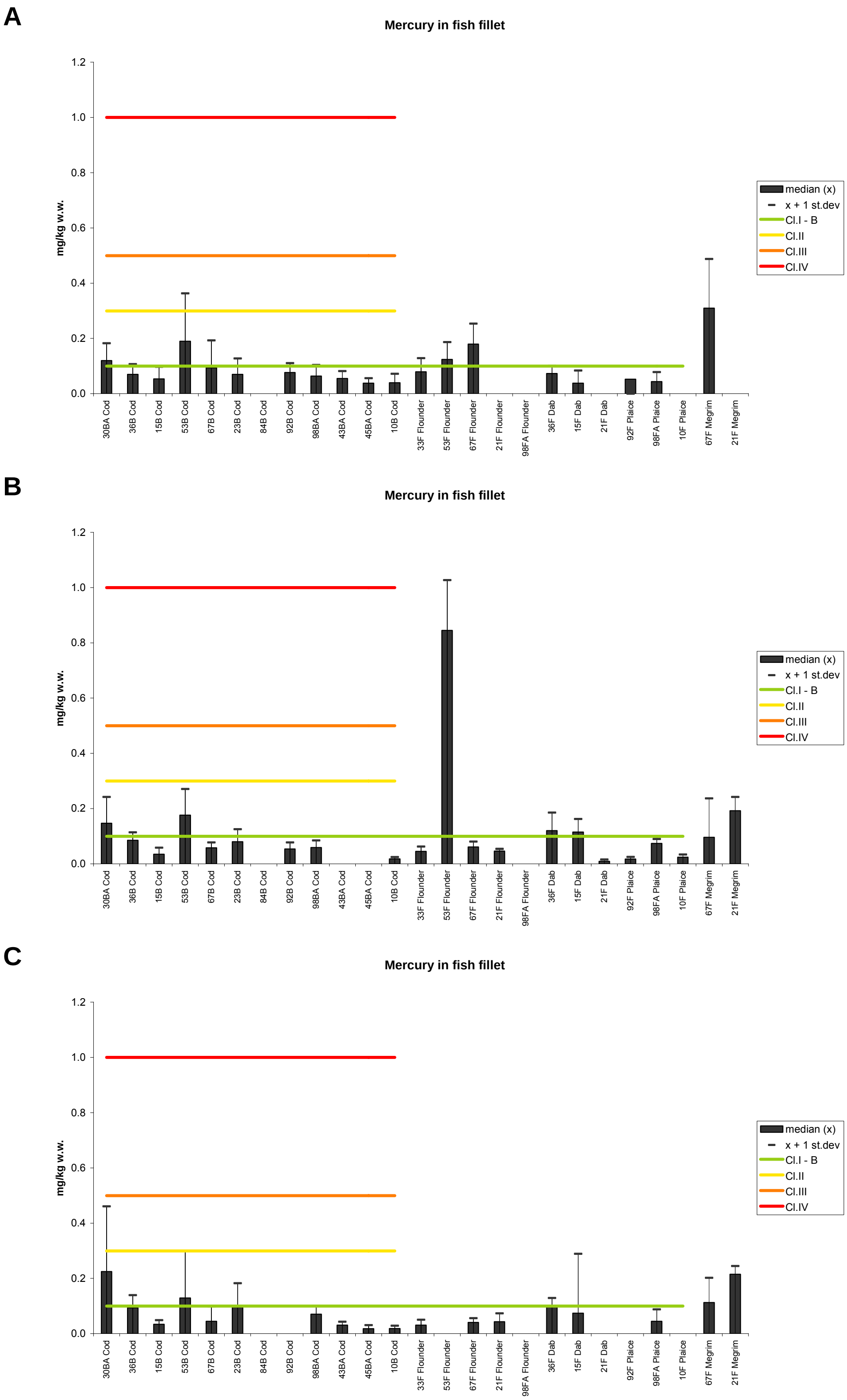
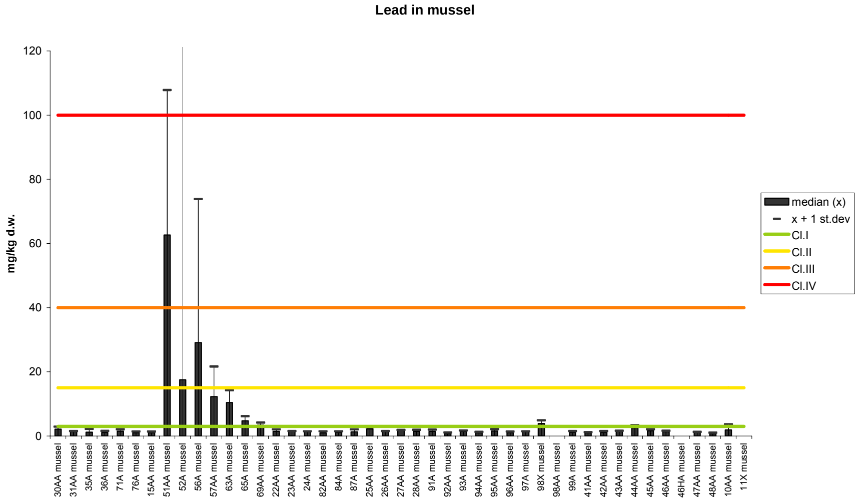
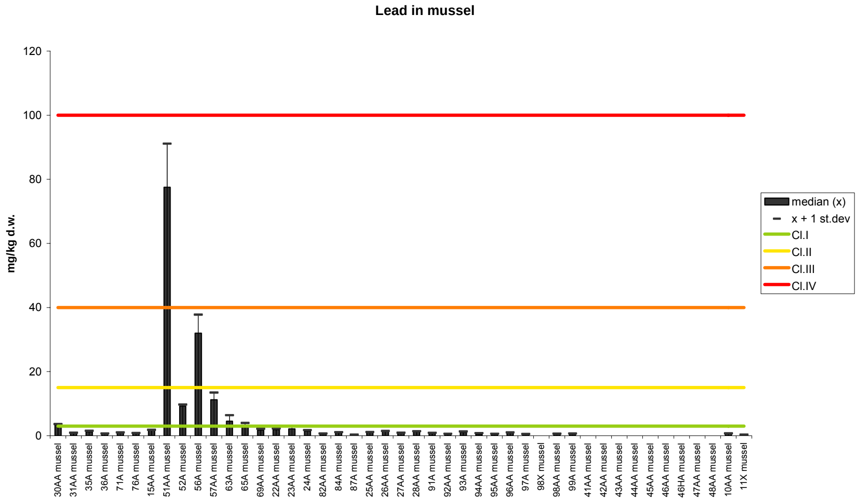


Figure 26. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for mercury in fish fillet 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppm (mg/kg) wet weight, “Cl. – B” indicates that only upper limit to SFT Classes or provisional high back ground concentration is indicated for flatfish, (see maps in Appendix G).

A



B



C

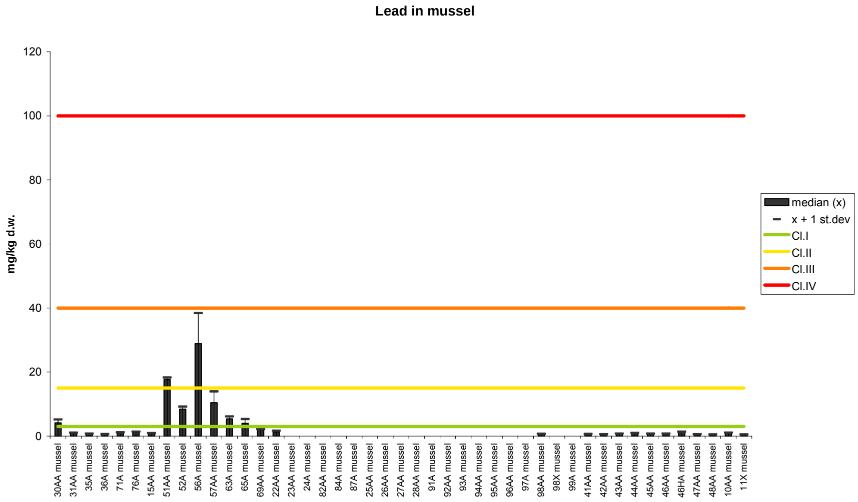


Figure 27. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for lead in blue mussel (*Mytilus edulis*) 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppm (mg/kg) wet weight (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figure A.**

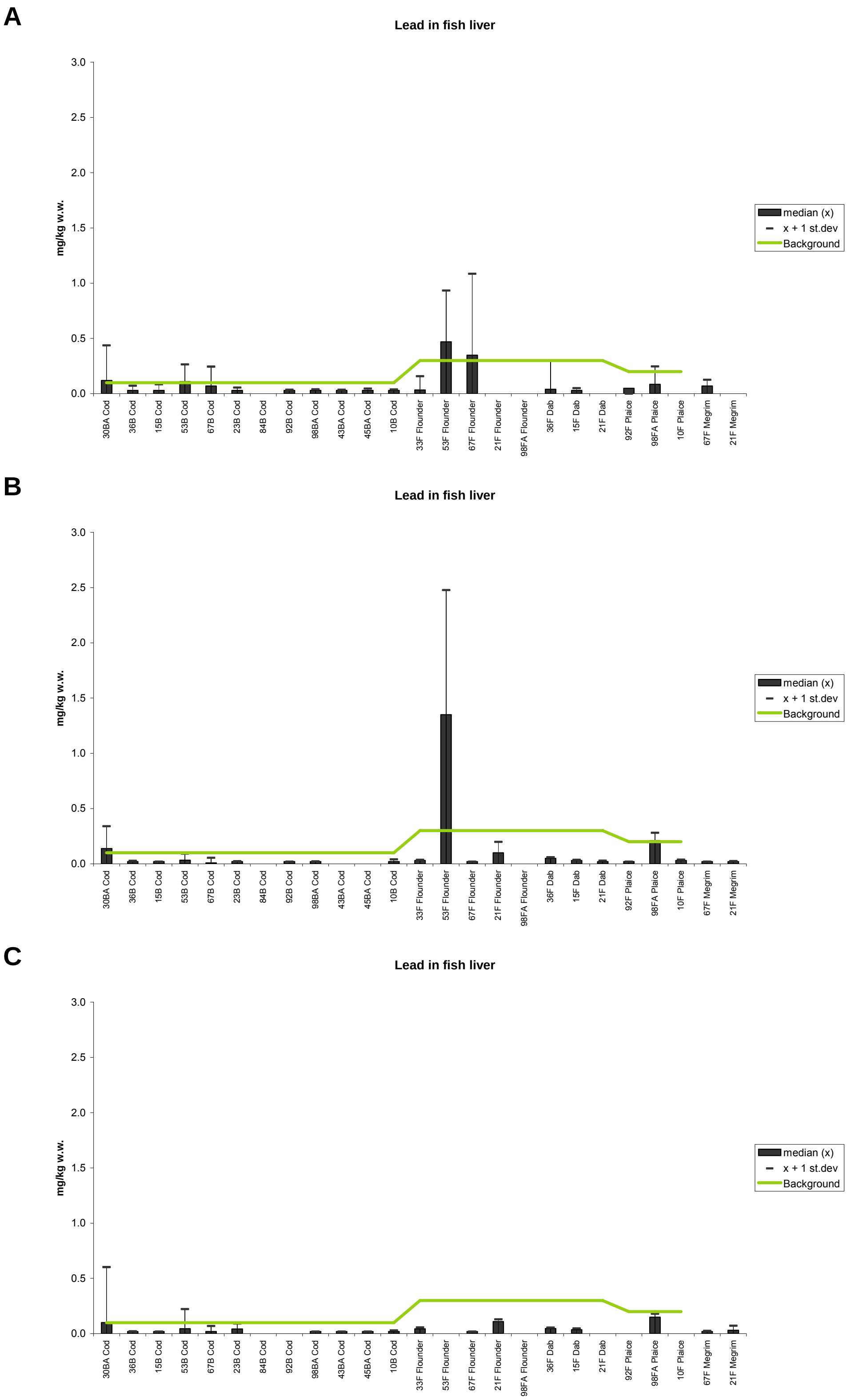


Figure 28. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for lead in fish liver 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppm (mg/kg) wet weight, “Cl. – B” indicates that only upper limit to SFT Classes or provisional high back ground concentration is indicated for all fish, (see maps in Appendix G).

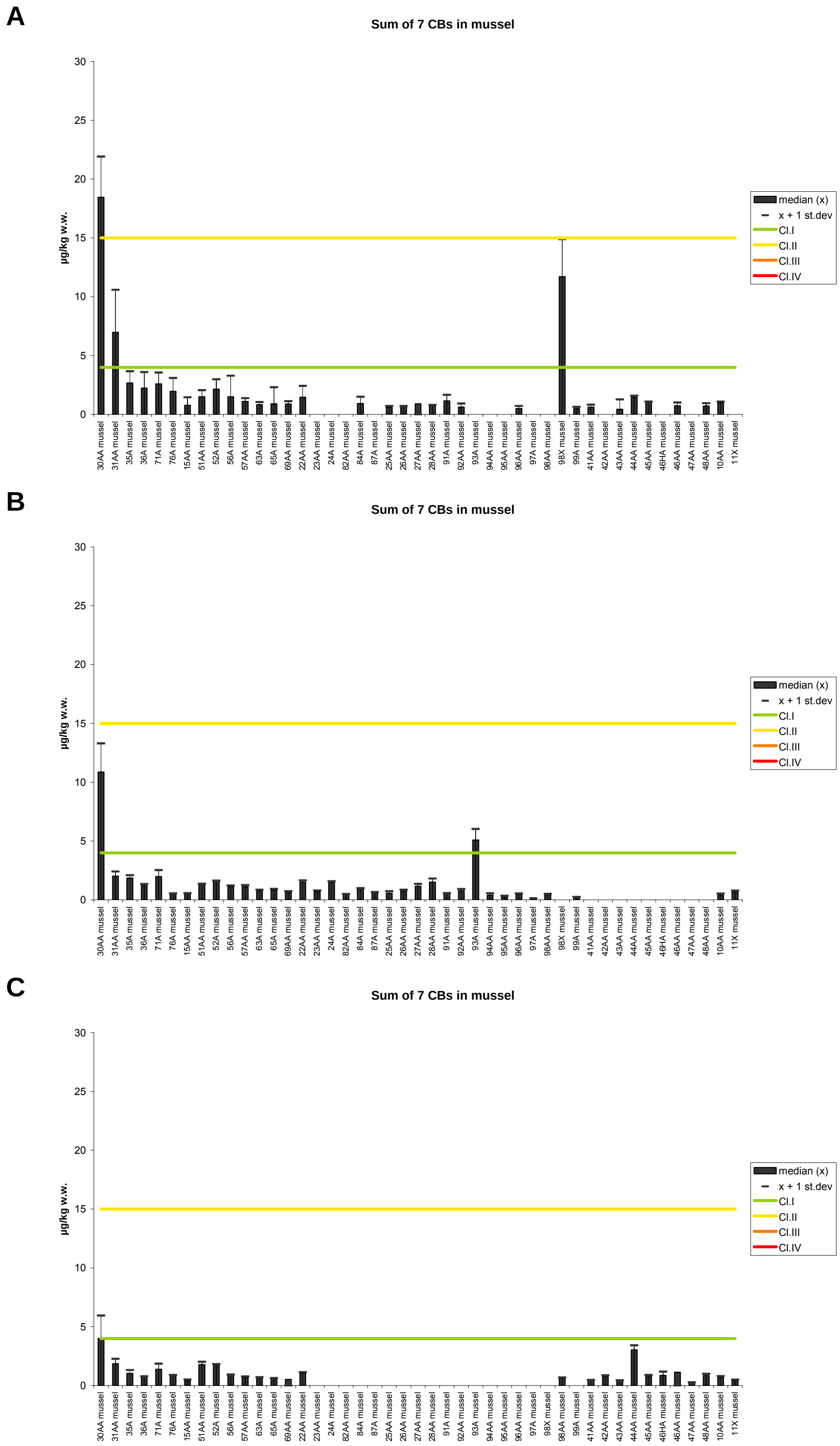
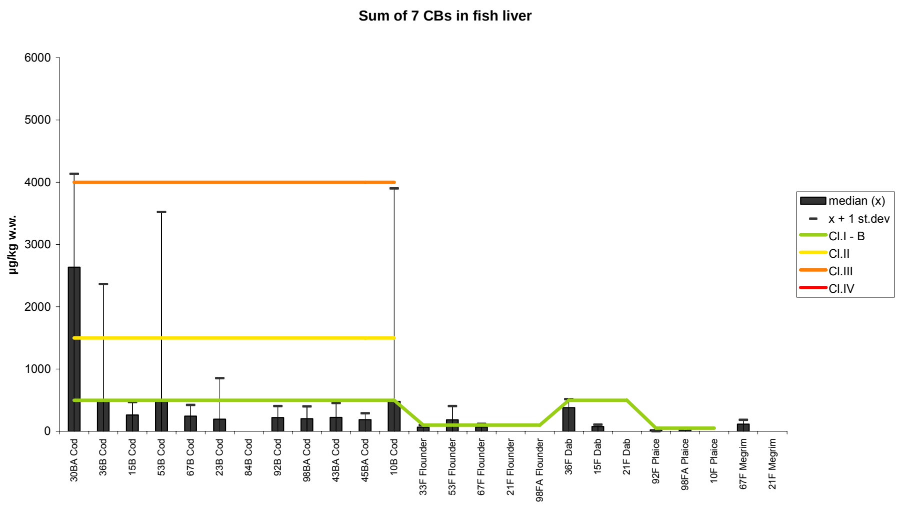
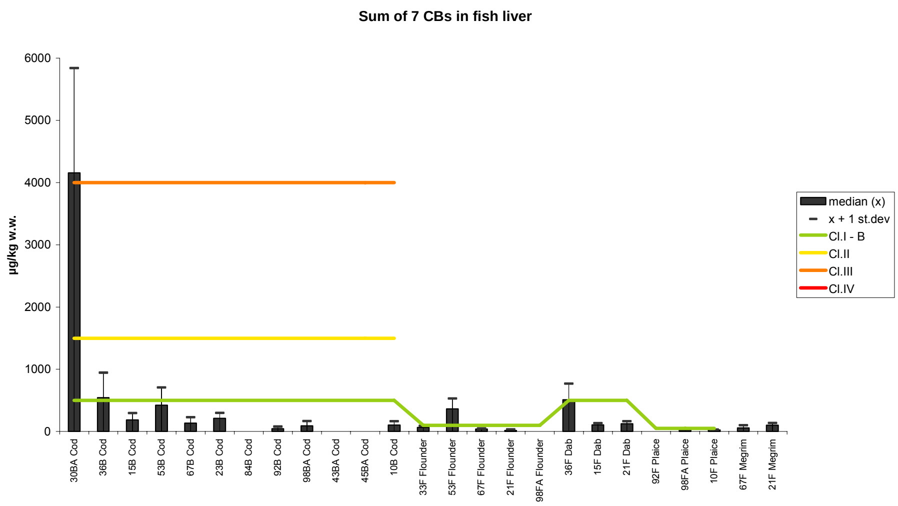


Figure 29. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for sum of 7 PCBs (CB-28, -52, 101, -118, -138, -153 and -180) in blue mussel (*Mytilus edulis*) 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppb (µg/kg) wet weight (see maps in Appendix G).

A



B



C

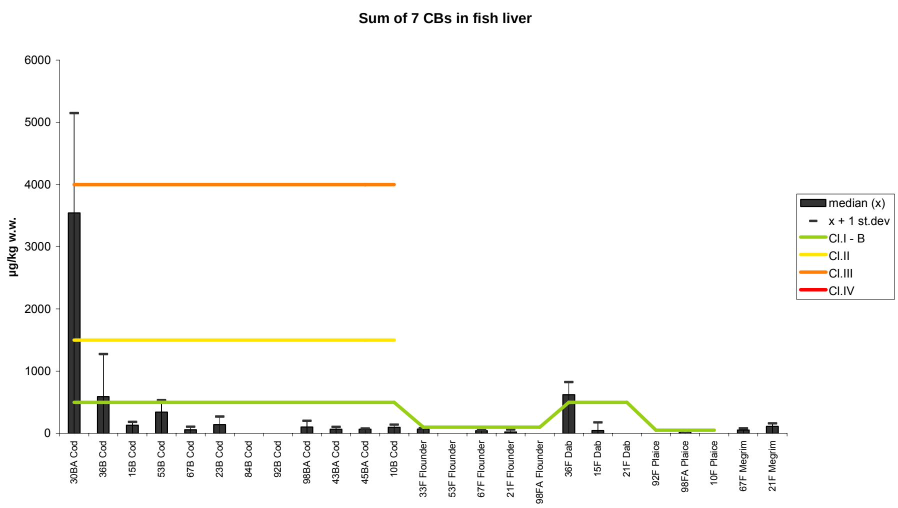


Figure 30. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for sum of 7 PCBs (CB-28, -52, 101, -118, -138, -153 and -180) in fish liver 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppb (µg/kg) wet weight, "Cl. – B" indicates that only upper limit to SFT Classes or provisional high back ground concentration is indicated for flatfish, (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figures A-C.**

A

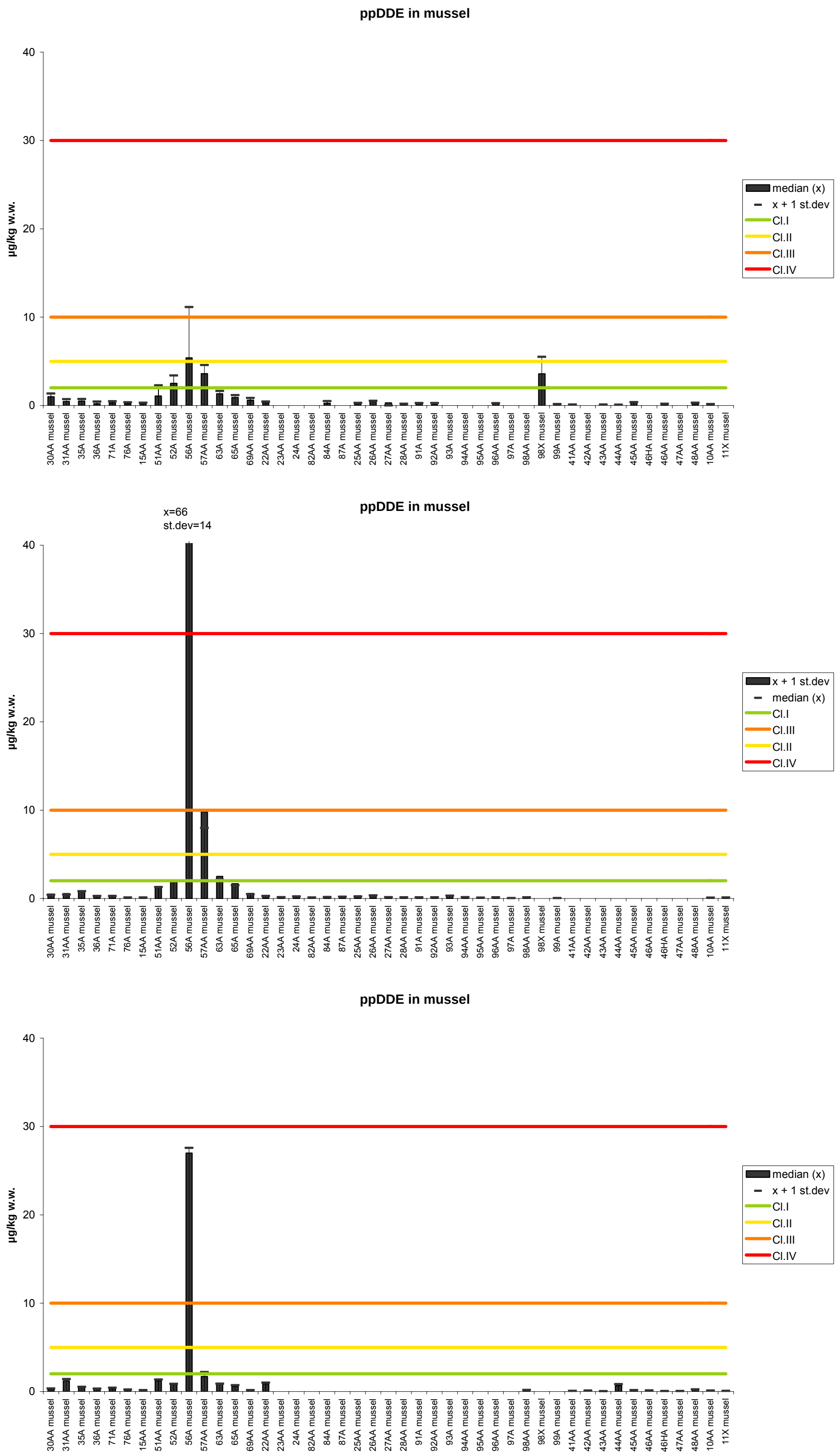
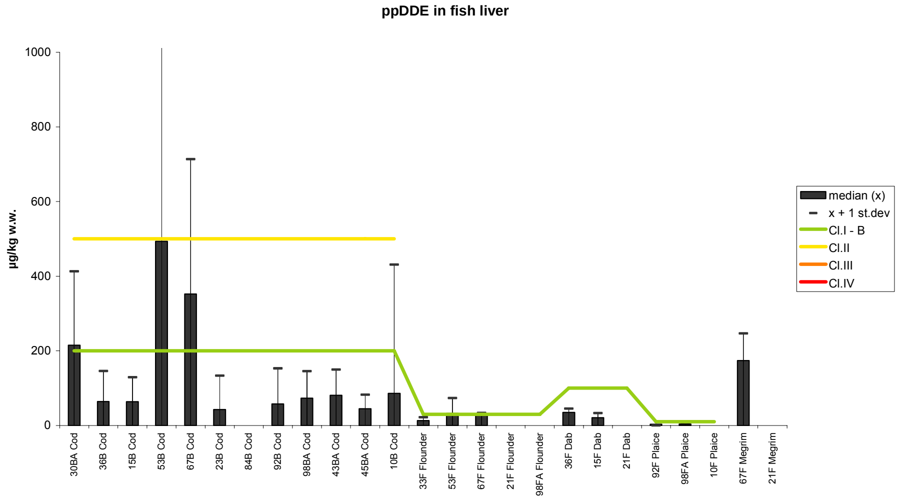
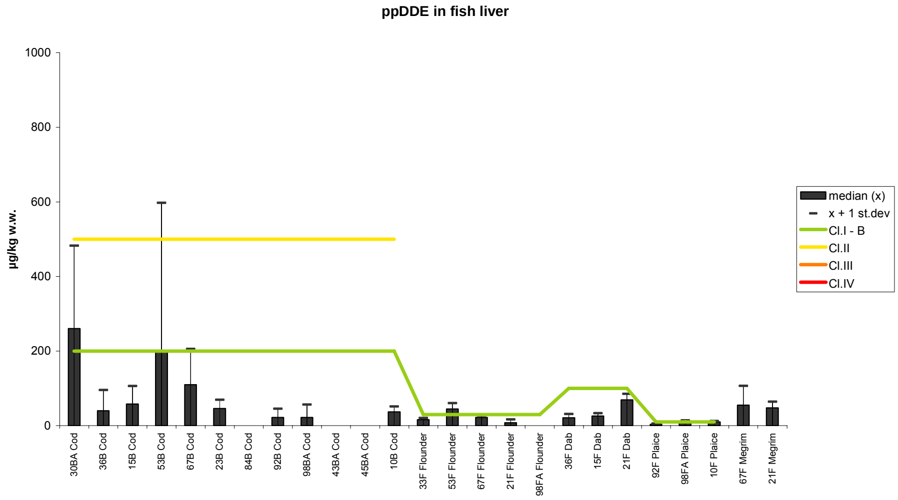


Figure 31. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for ppDDE (DDEPP) in blue mussel (*Mytilus edulis*) 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppb (µg/kg) wet weight (see maps in Appendix G). (See also footnote in Table 7). **Note: Class limits for ΣDDT used, and for some stations the standard deviation is off-scale in figure B.**

A



B



C

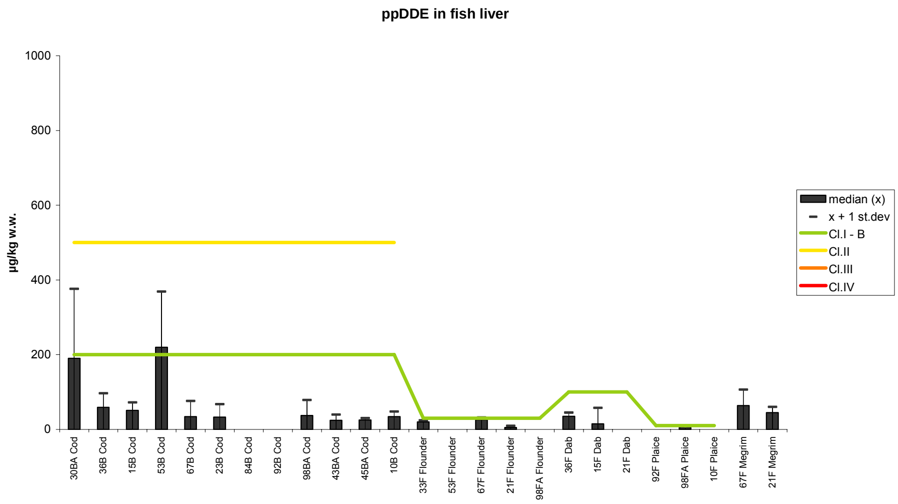


Figure 32. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for ppDDE (DDEPP) in fish liver 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppb (µg/kg) wet weight, “Cl. – B” indicates that only upper limit to SFT Classes or provisional high back ground concentration is indicated for flatfish, (see maps in Appendix G). (See also footnote in Table 7). **Note: Class limits for ΣDDT used**

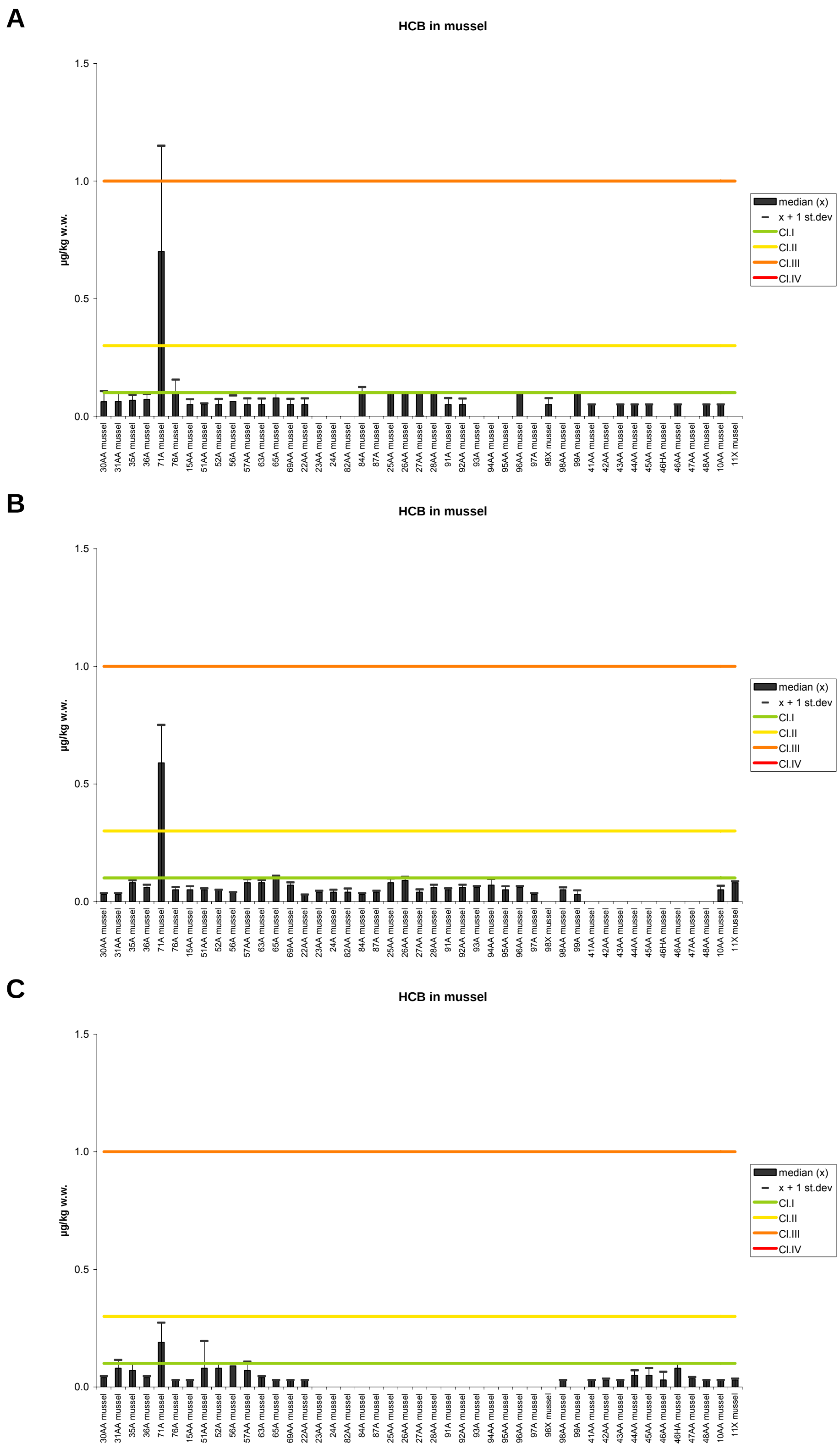


Figure 33. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for HCB in blue mussel (*Mytilus edulis*) 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppb (µg/kg) wet weight (see maps in Appendix G).

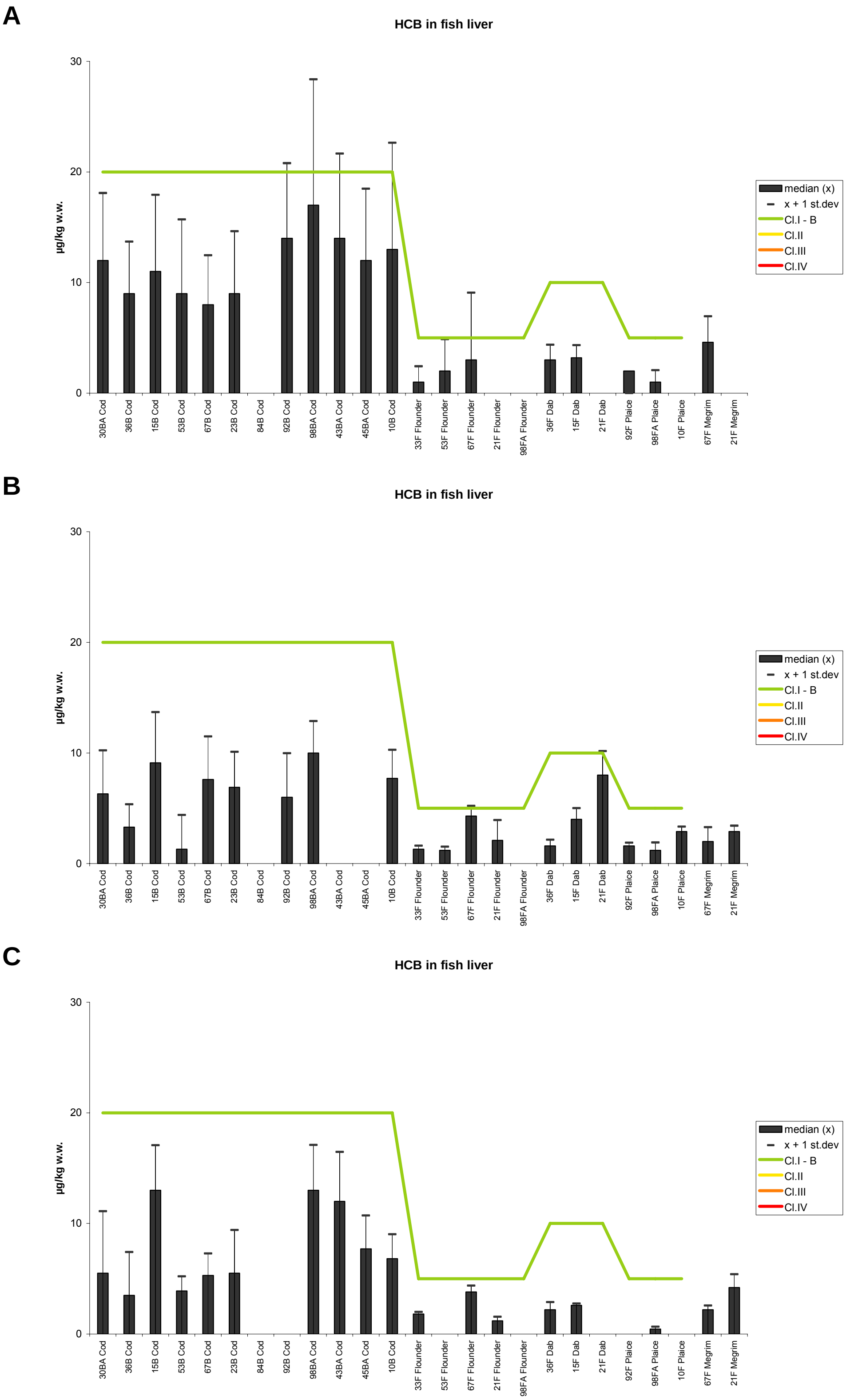


Figure 34. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for HCB in fish liver 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppb (µg/kg) wet weight, "Cl. – B" indicates that only upper limit to SFT Classes or provisional high back ground concentration is indicated for all fish, (see maps in Appendix G).

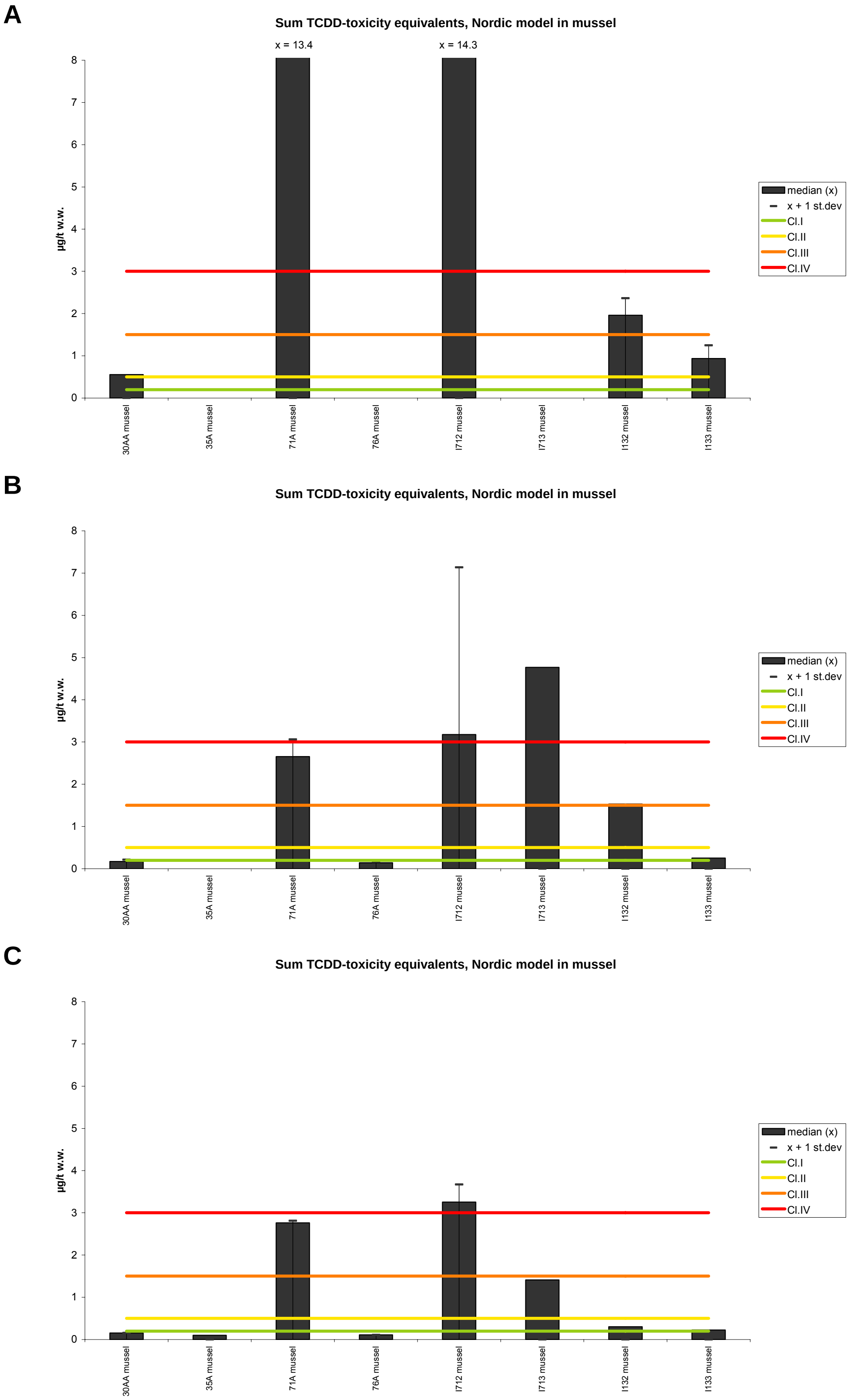
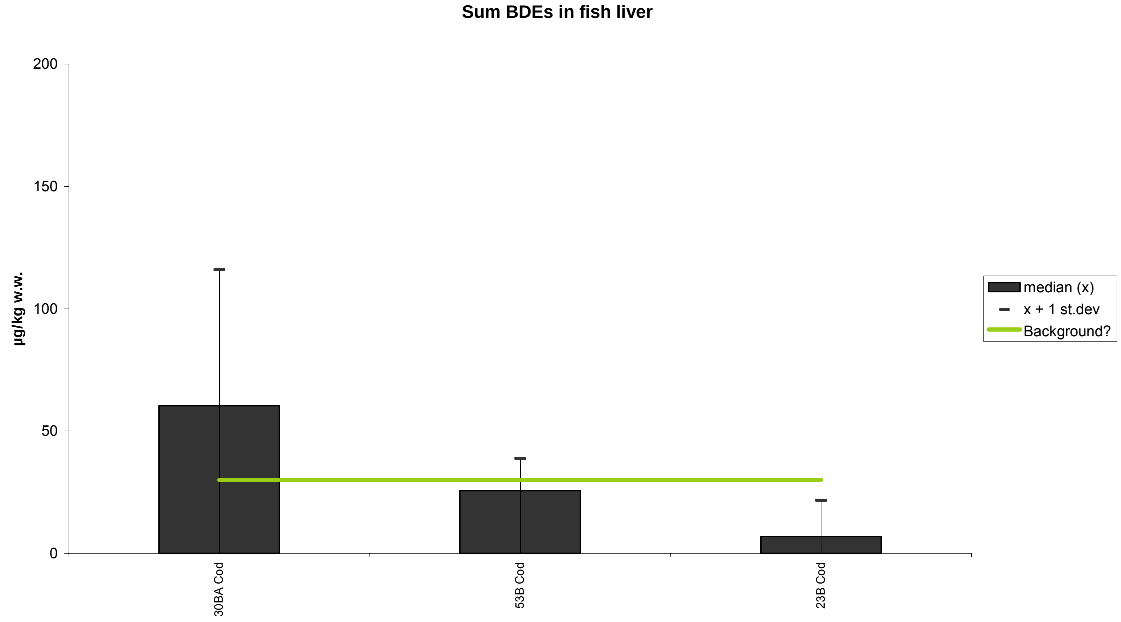


Figure 35. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for dioxin TCDD-toxicity equivalents after nordic model (TCDDN) in blue mussel 1990-1996 (**A**), 2005 (**B**) and 2006 (**C**), ppp (ng/kg) wet weight (see maps in Appendix G). NB: TCDDN is a sum of specific dioxin compounds of which may include compounds of uncertain quantification.

A



B

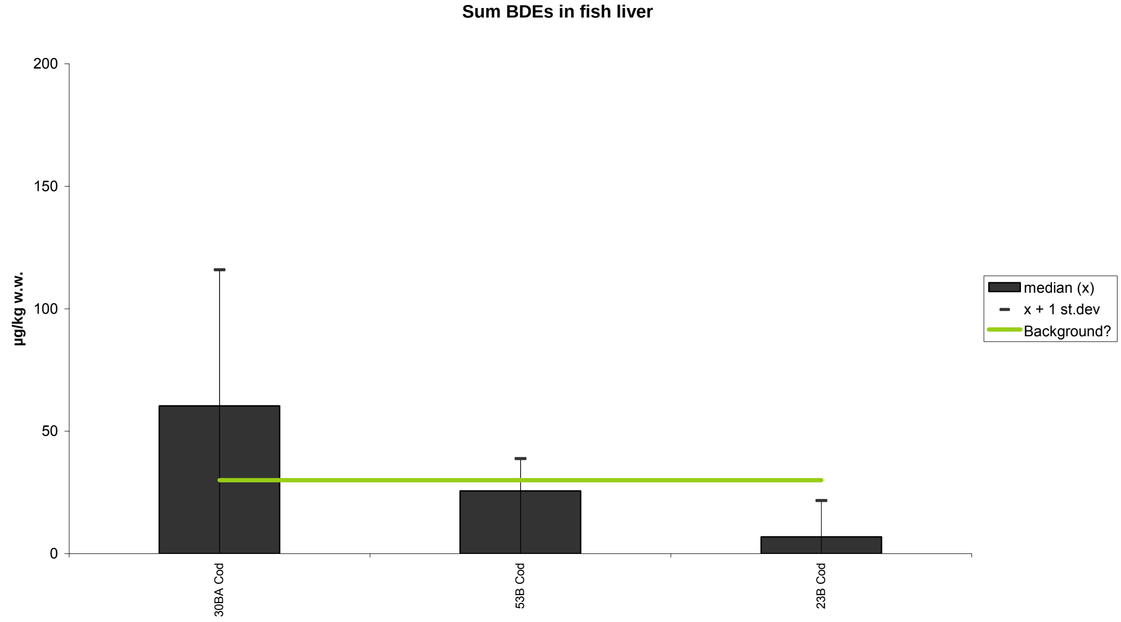


Figure 36. Median and upper limit to SFT Classes or provisional "high background" concentration for brominated flame retardent in cod liver 2005 (**A**) and 2006 (**B**) ppb (µg/kg) wet weight for three JAMP stations (inner Oslofjord - st.30B, inner Sørfjord - st.53B and Karihavet - st.23B) (see maps in Appendix G), and from two other investigations (see text).

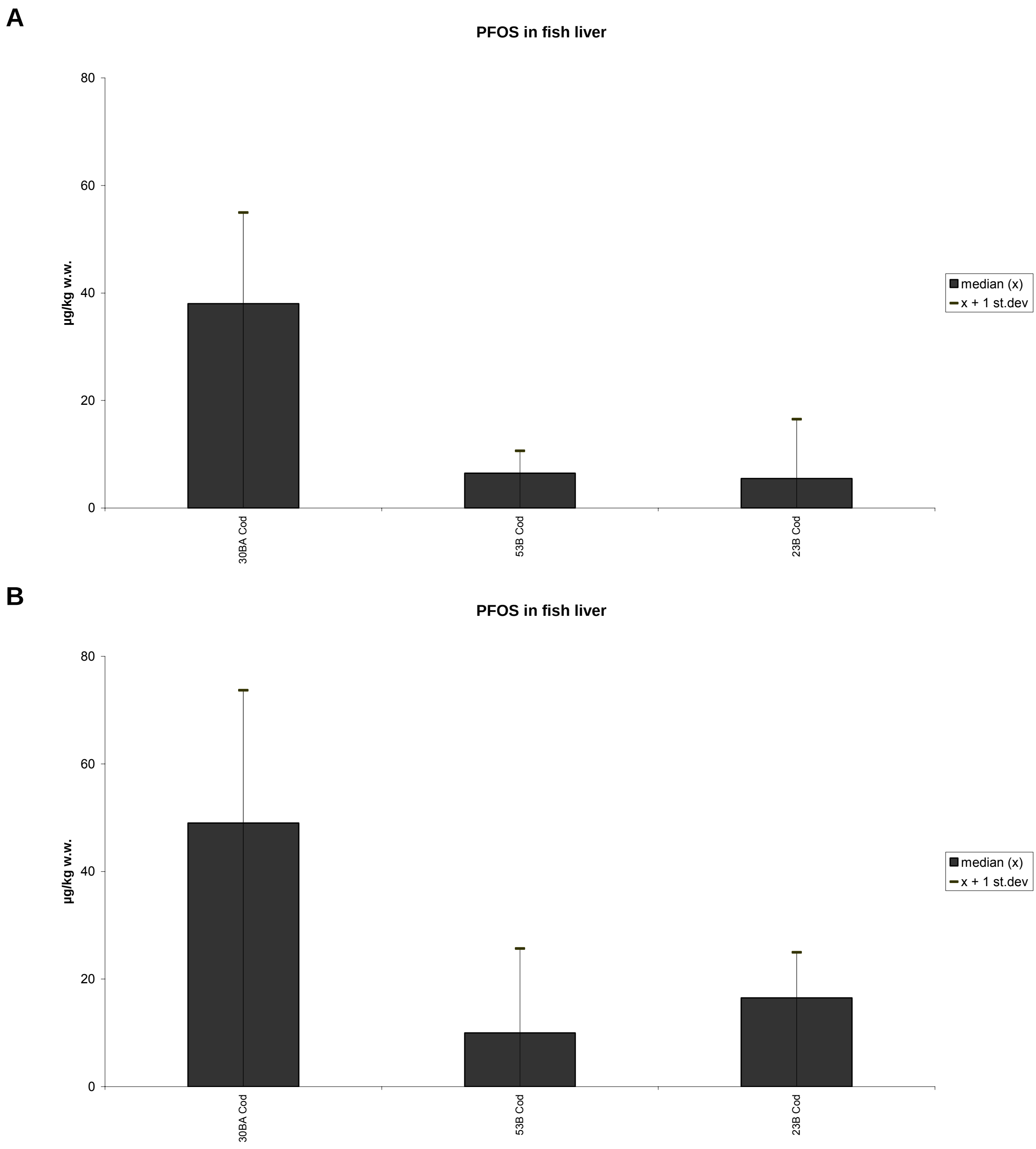
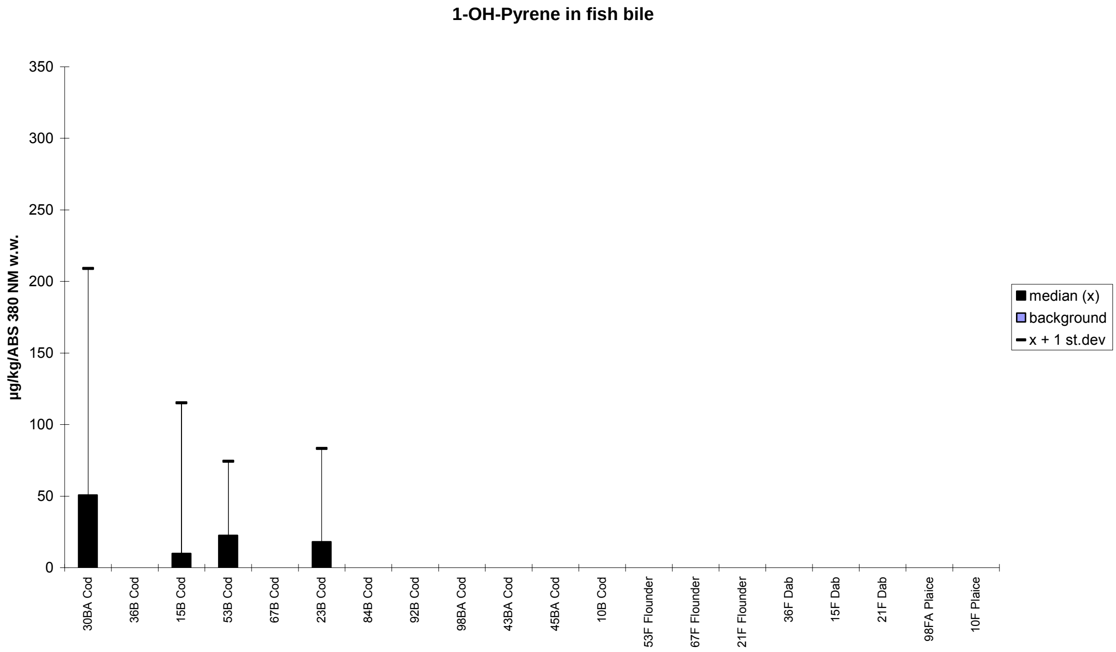


Figure 37. Median concentration for perfluoroctanoic sulfonate (PFOS) in cod liver 2005 (**A**) and 2006 (**B**) ppb (µg/kg) wet weight for three JAMP stations (inner Oslofjord - st.30B, inner Sørfjord - st.53B and Karihavet - st.23B) (see maps in Appendix G), and from two other investigations (see text).

A



B

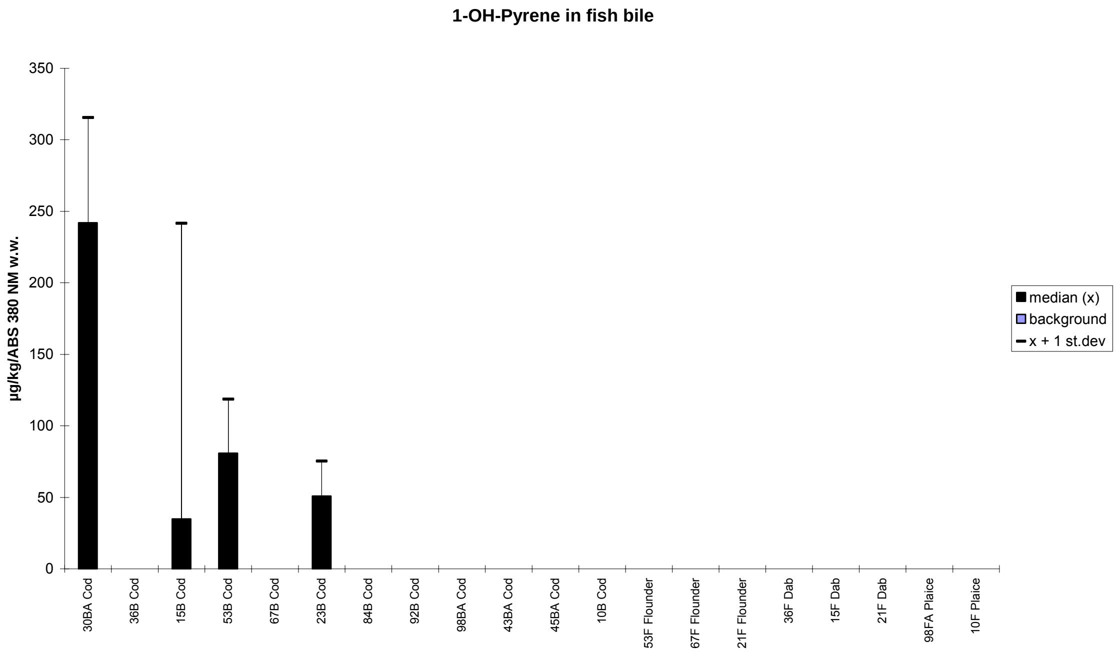
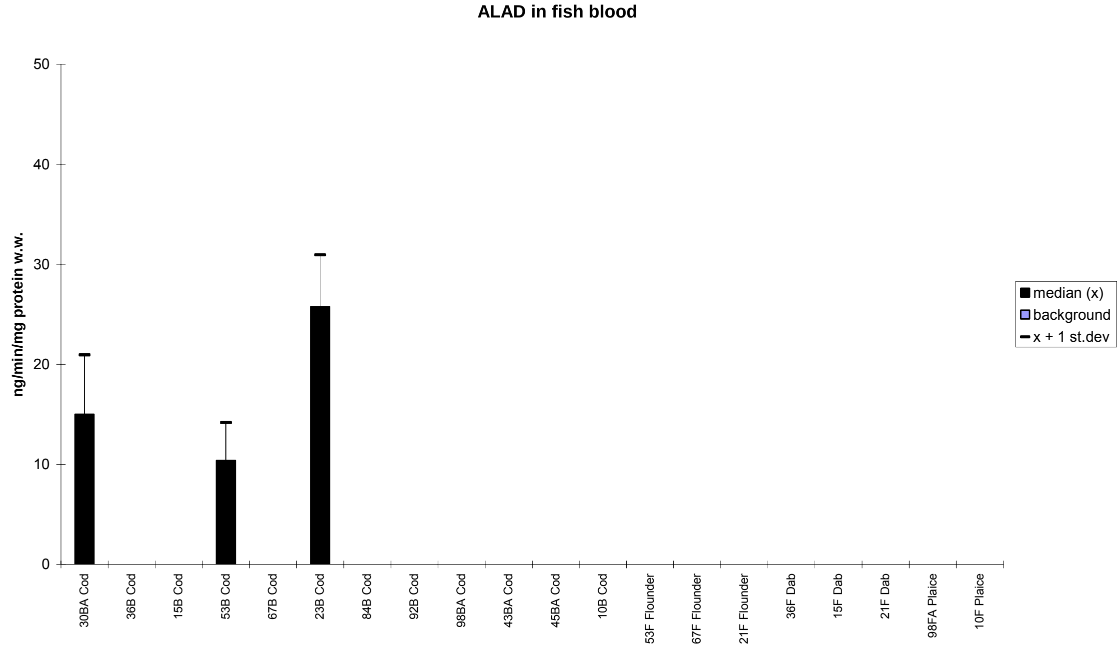


Figure 38. Median and standard deviation concentration for OH-pyrene (Pyrene metabolite) in fish bile 2005 (**A**) and 2006 (**B**), µg/kg/ABS (absorbance) 380 nm (see maps in Appendix G).

A



B

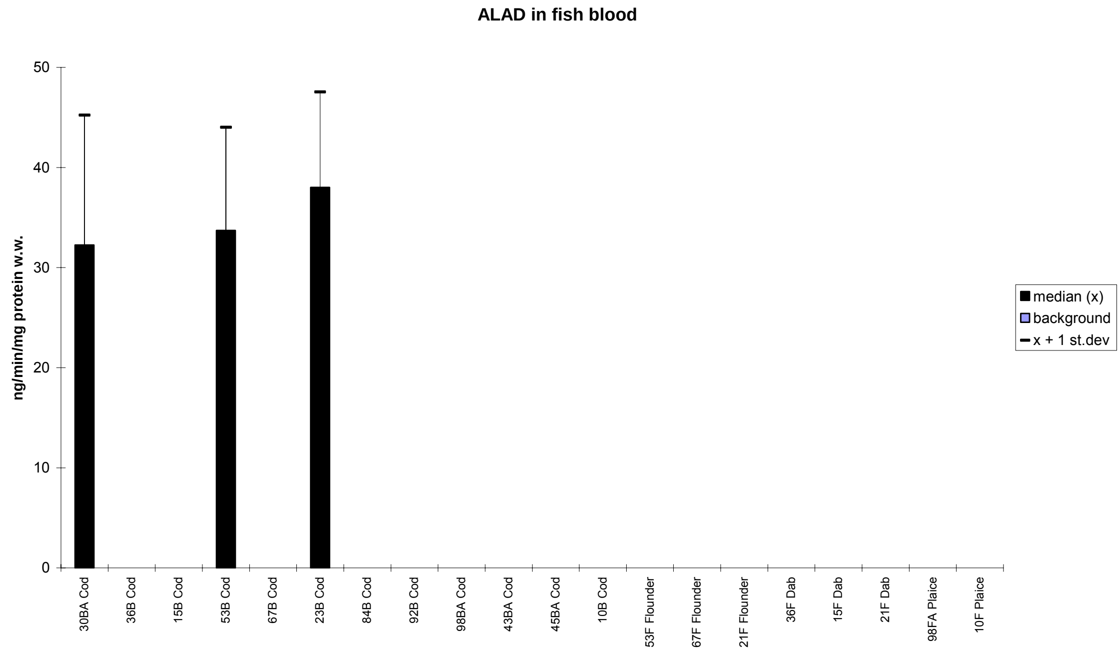
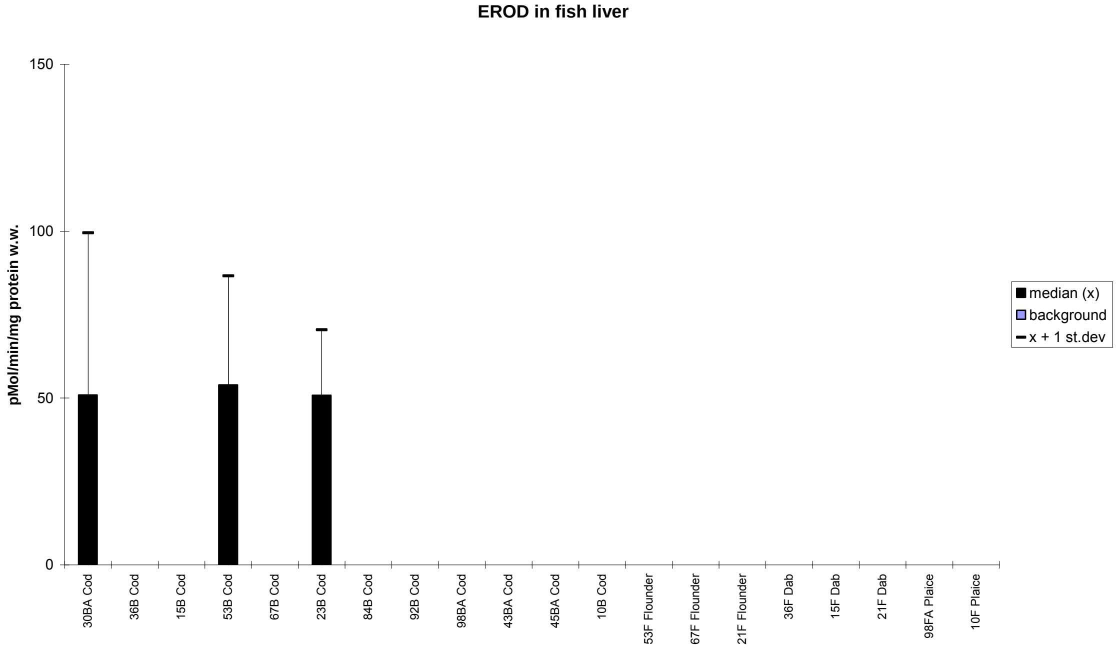


Figure 39. Median and standard deviation activity for ALA-D (δ-amino levulinic acid dehydrase inhibition) in fish liver 2005 (**A**) and 2006 (**B**), ng PBG (porphobilinogen)/min/mg protein (see maps in Appendix G).

A



B

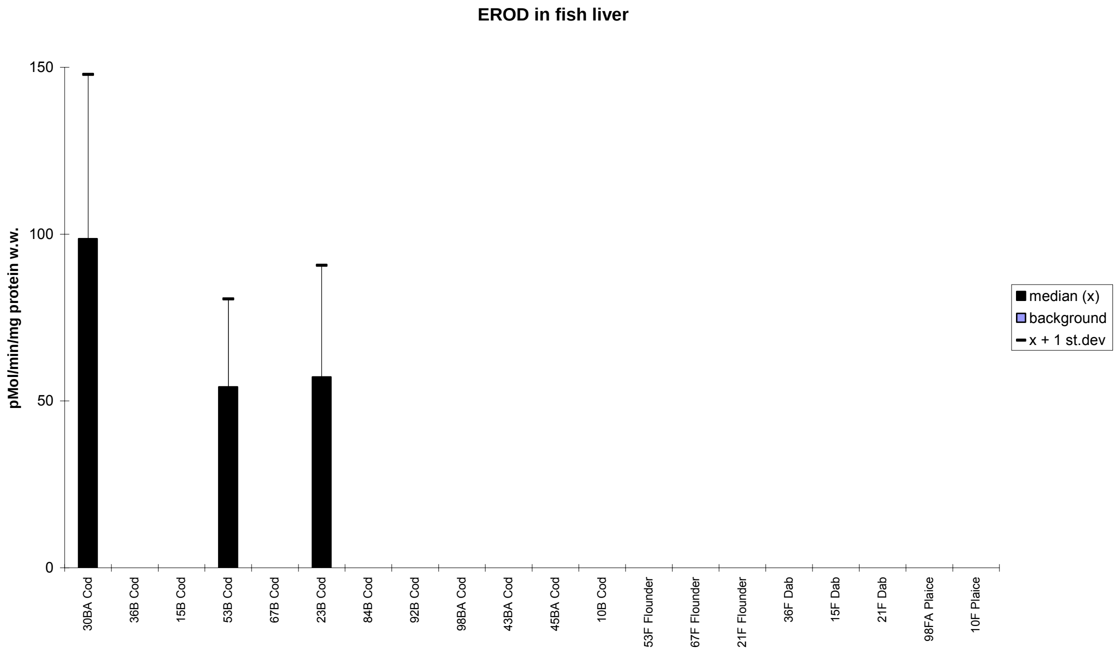
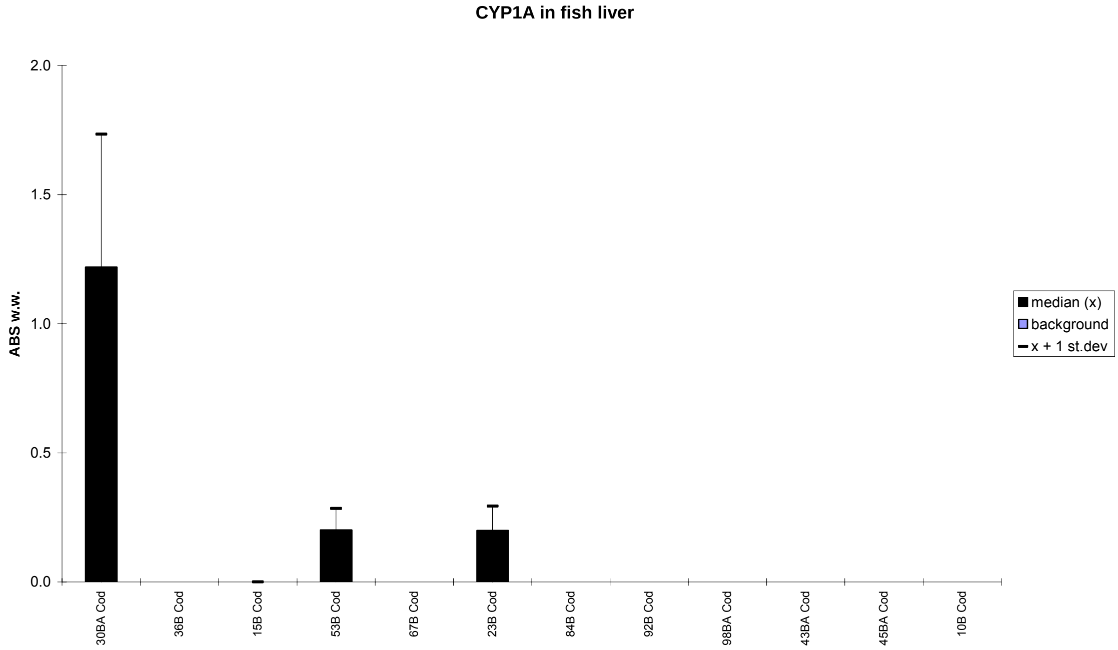


Figure 40. Median and standard deviation activity for EROD (Cytochrome P4501A-activity) in fish liver 2005 (**A**) and 2006 (**B**), pmol/min/mg protein (see maps in Appendix G).

A



B

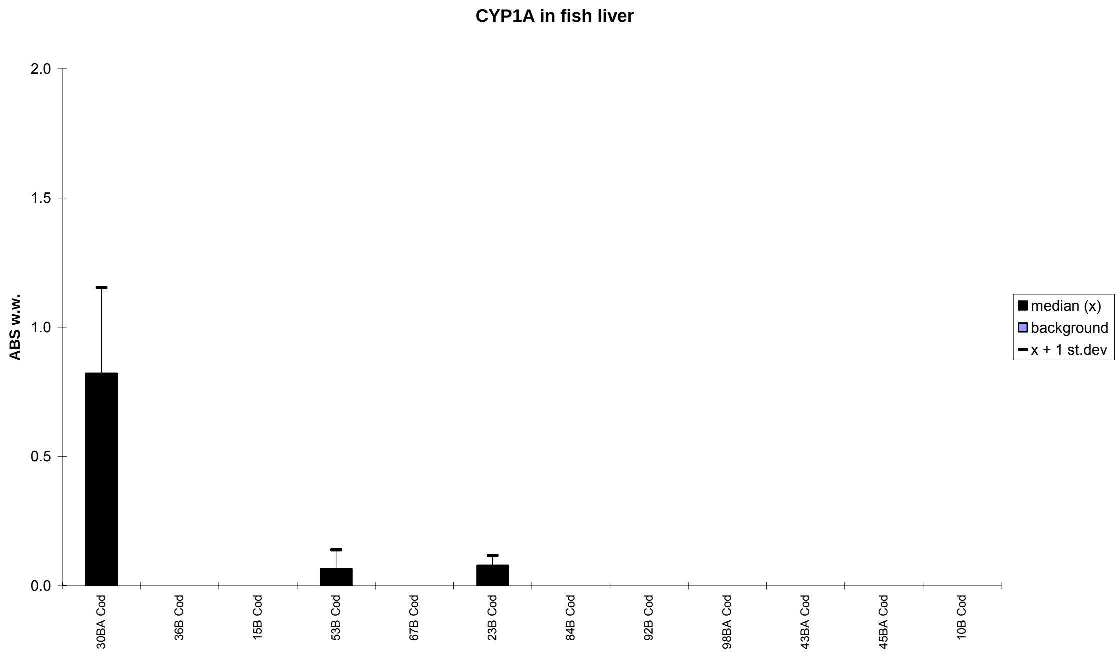
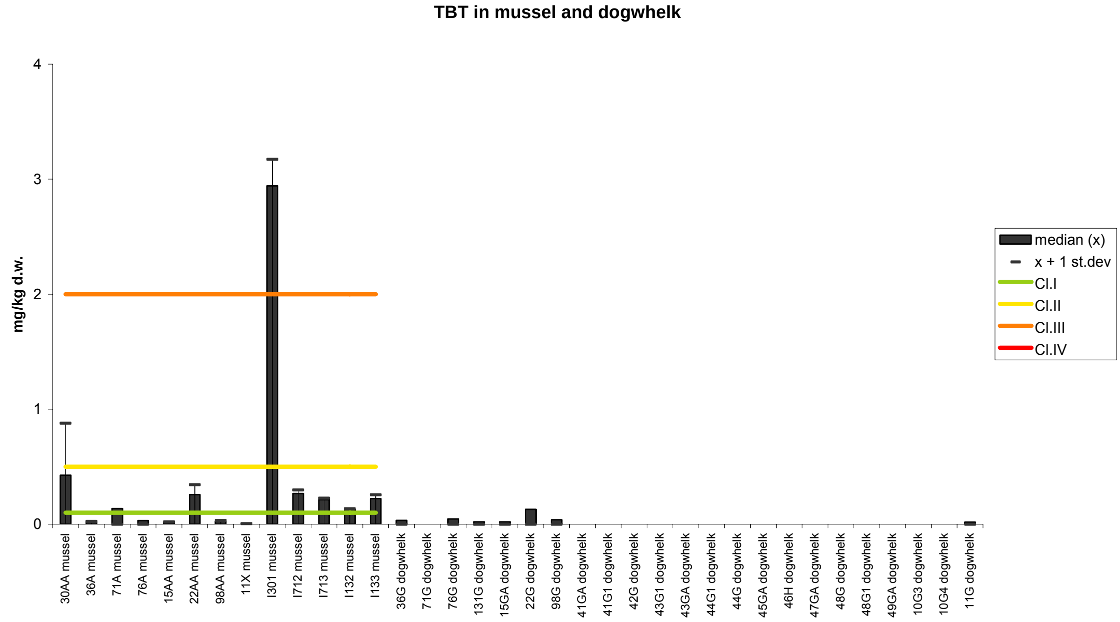


Figure 41. Median and standard deviation activity for CYP1A (relative amount of Cytochrome P4501A-protein) in fish liver 2005 (**A**) and 2006 (**B**), pmol/min/mg protein (see maps in Appendix G).

A



B

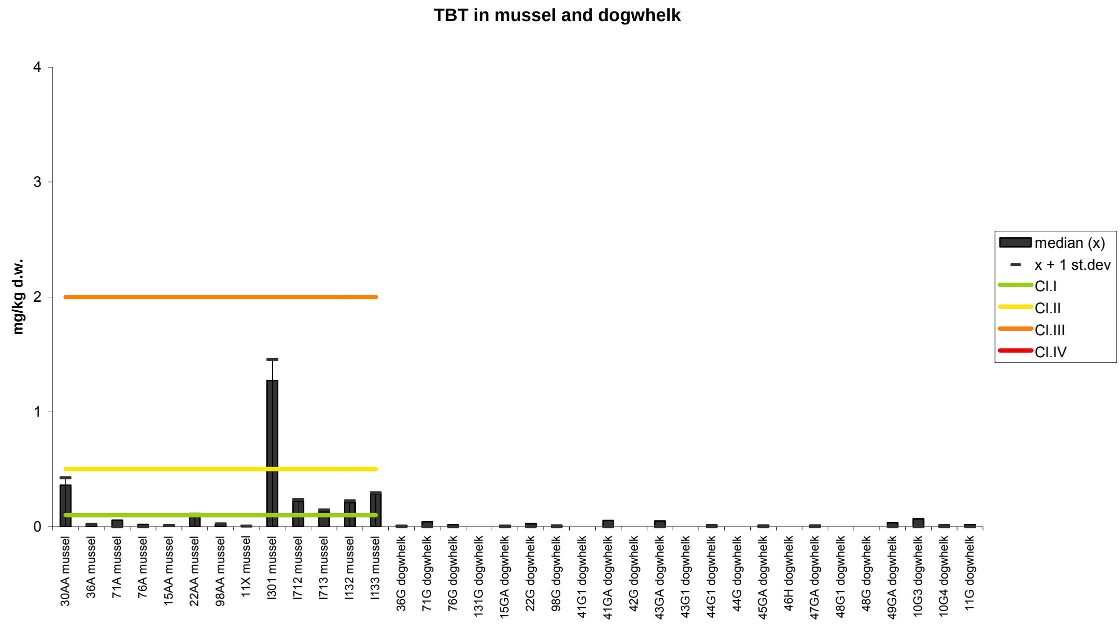
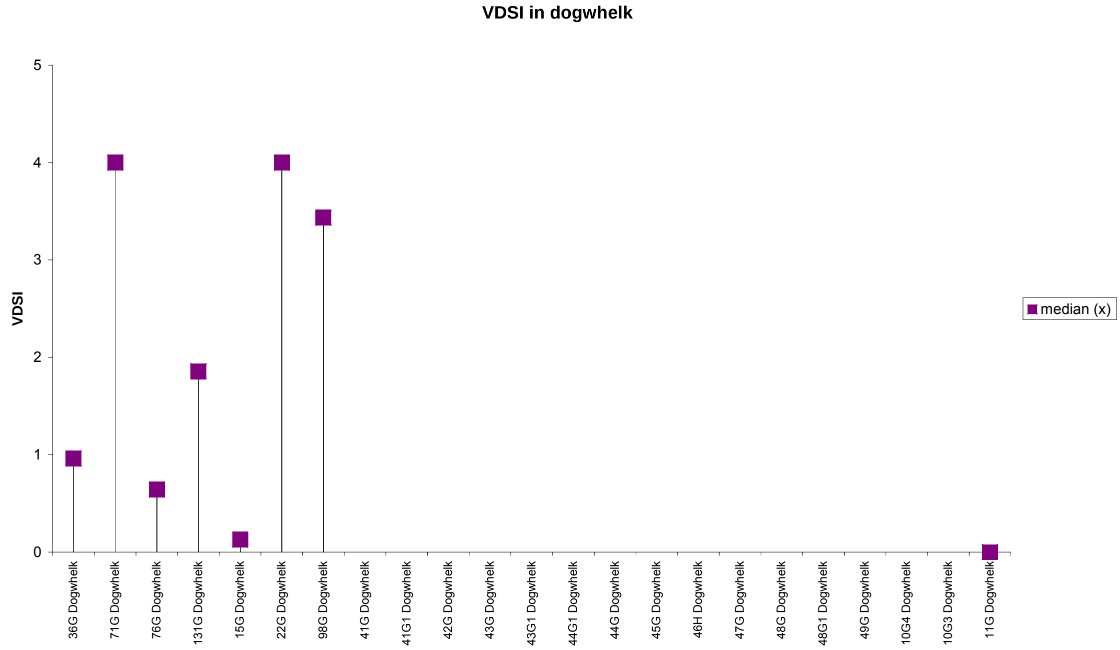


Figure 42. Median, standard deviation and upper limit to SFT Classes or provisional "high background" concentration for tributyl tin (TBT-concentration on a formulation basis) in blue mussel and dogwhelk 2005 (**A**) and 2006 (**B**), ppm (2.44* mg Sn/kg) dry weight (see maps in Appendix G).

A



B

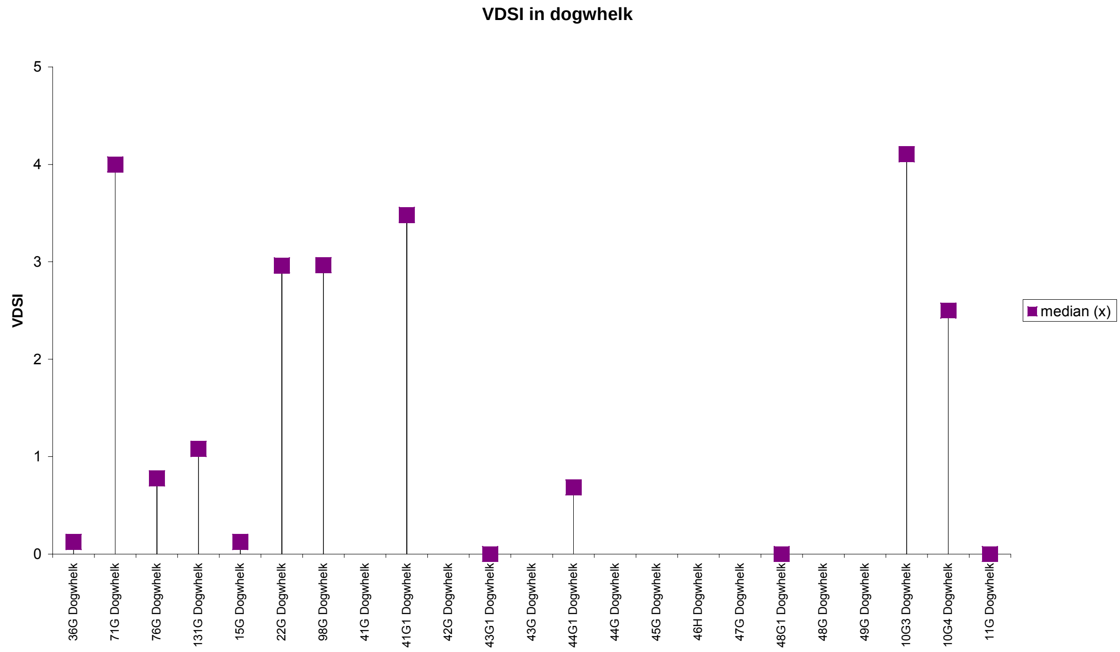


Figure 43. Average VDSI in dogwhelk 2005 (**A**) and 2006 (**B**) (see maps in Appendix G).

Appendix K
Geographical distribution of contaminants in surficial sediment 1987-2006

Cadmium (Cd)
Mercury (Hg)
Lead (Pb)
Copper (Cu)
Zinc (Zn)
Sum of 7 CBs (CB-28, -52, 101, -118, -138, -153 and -180)
DDEPP (ppDDE)
γ-HCH
HCB
BAP (benzo[*a*]pyrene)
PK-Σn or PK_S (sum carcinogen PAHs, cf. Appendix B)
P-Σn or P_S (sum of PAHs, dicyclic “PAHs” not included, cf. Appendix B)
TBT

Station positions are shown on maps in Appendix G

Results are presented for three periods: 1987-1990, 1992-1997 and 2004-2006.
A station was not monitored more than once during each period.

Appendix K
Geographical distribution of contaminants in surficial sediment 1987-2006
(cont.)

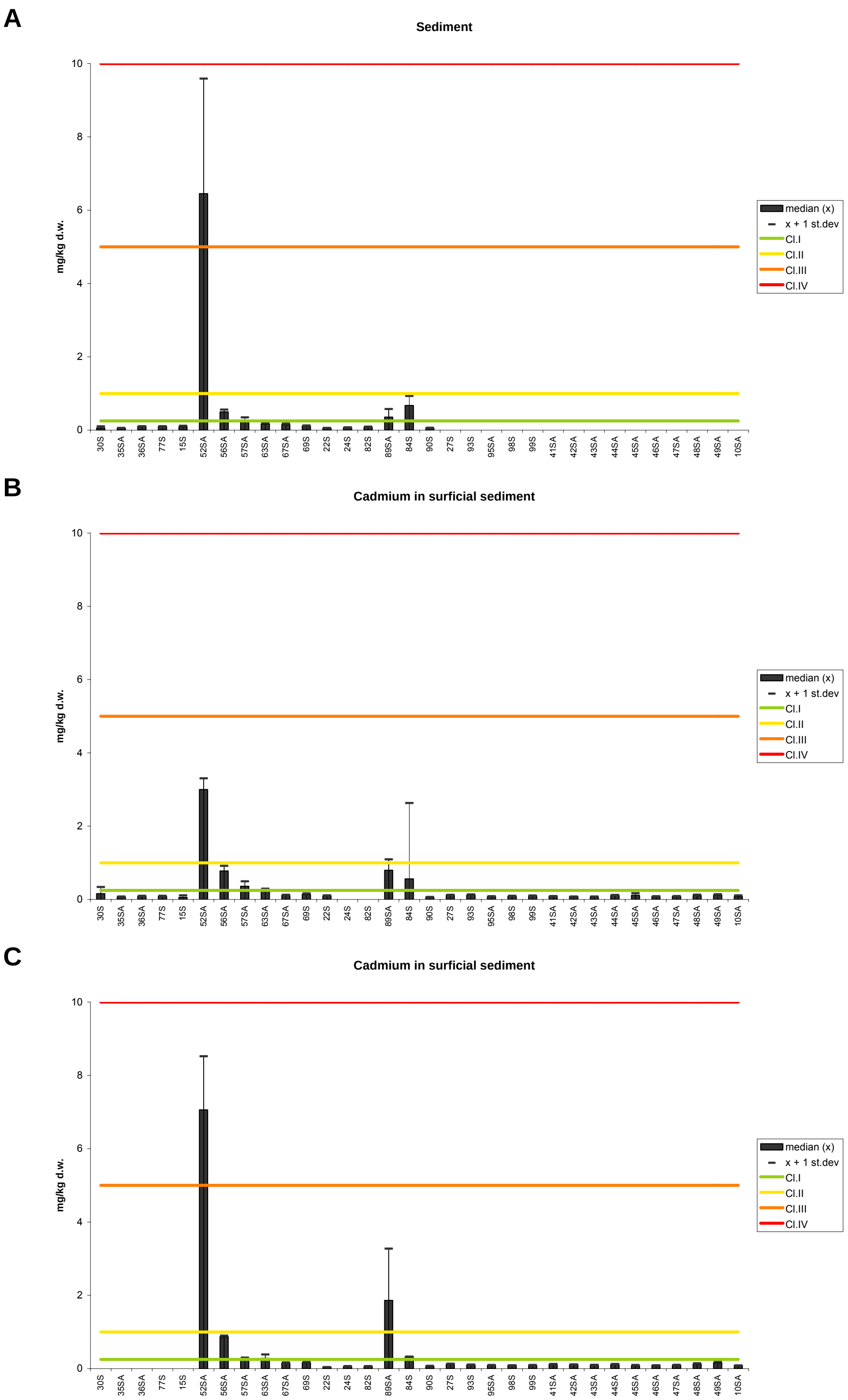
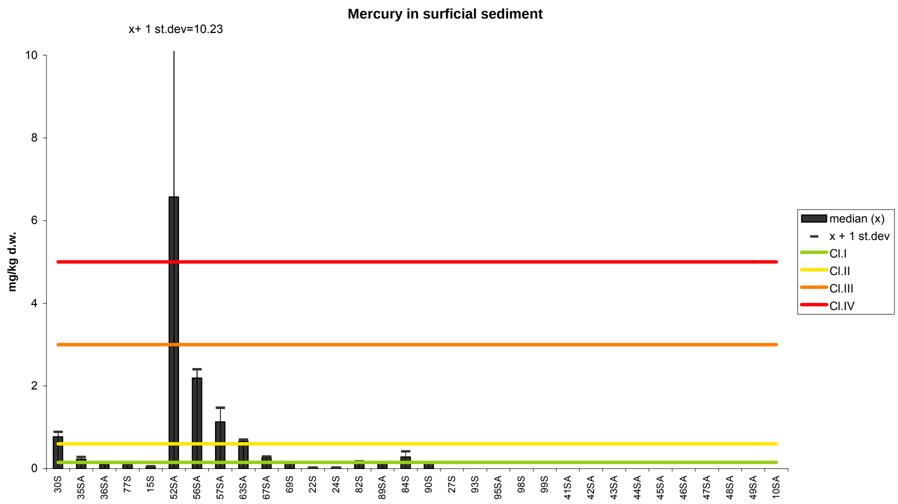
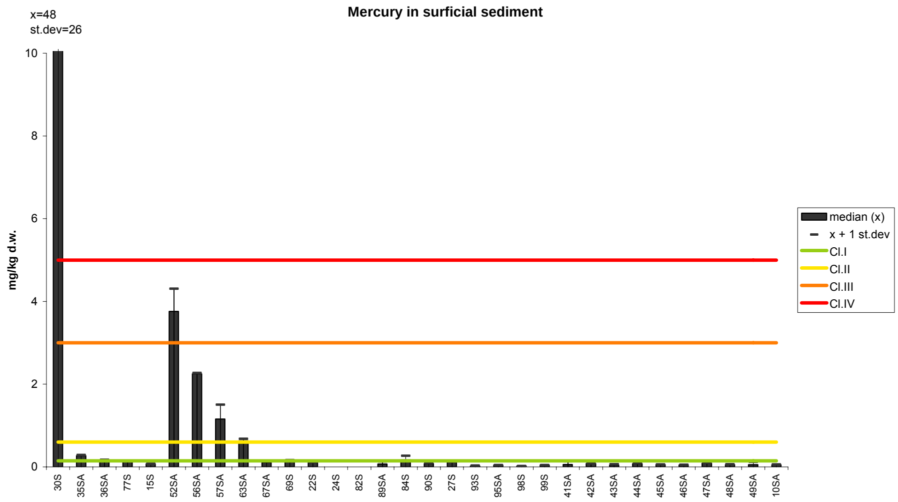


Figure 44. Median, standard deviation and provisional "high background" concentration for cadmium in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppm (mg/kg) dry weight (see maps in Appendix G).

A



B



C

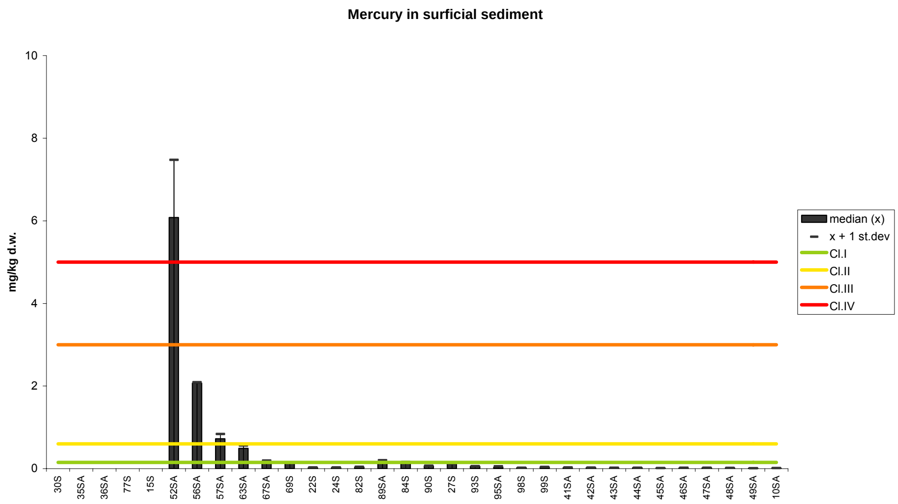


Figure 45. Median, standard deviation and provisional "high background" concentration for mercury in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppm (mg/kg) dry weight (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figures A and B.**

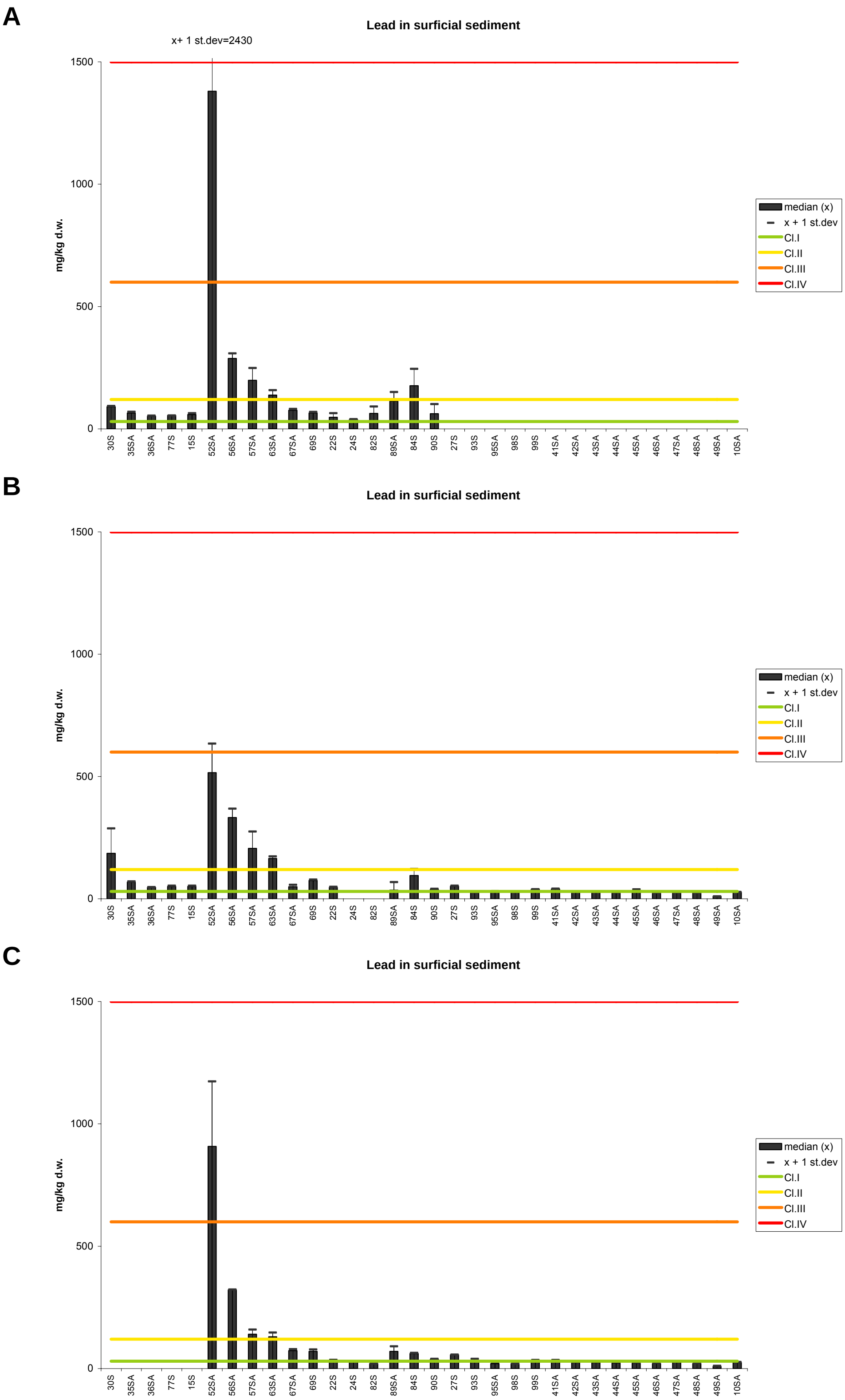
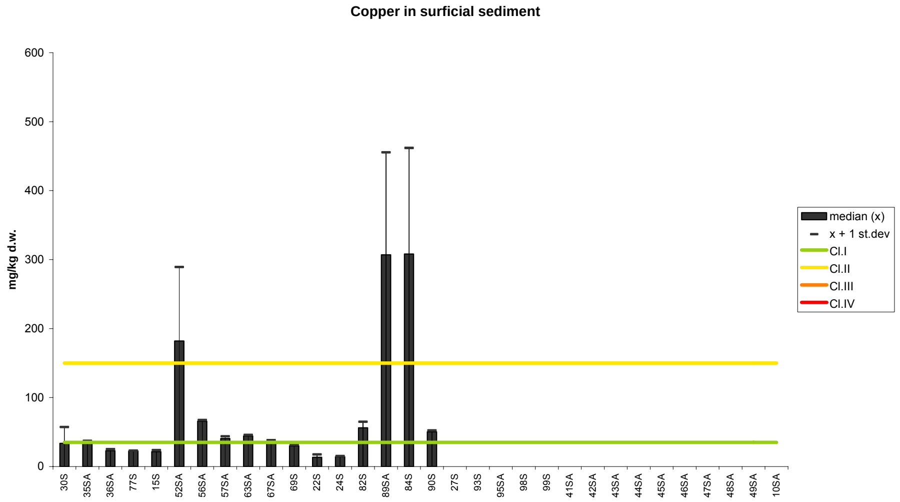
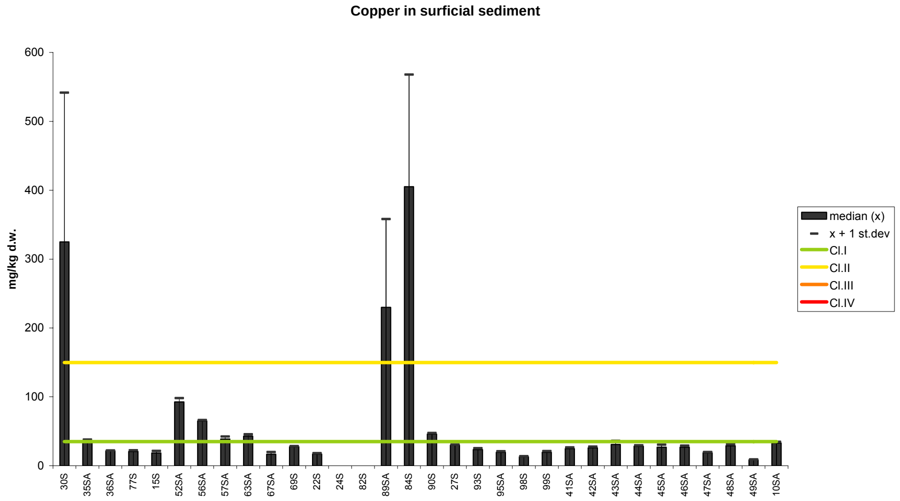


Figure 46. Median, standard deviation and provisional "high background" concentration for lead in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppm (mg/kg) dry weight (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figure A.**

A



B



C

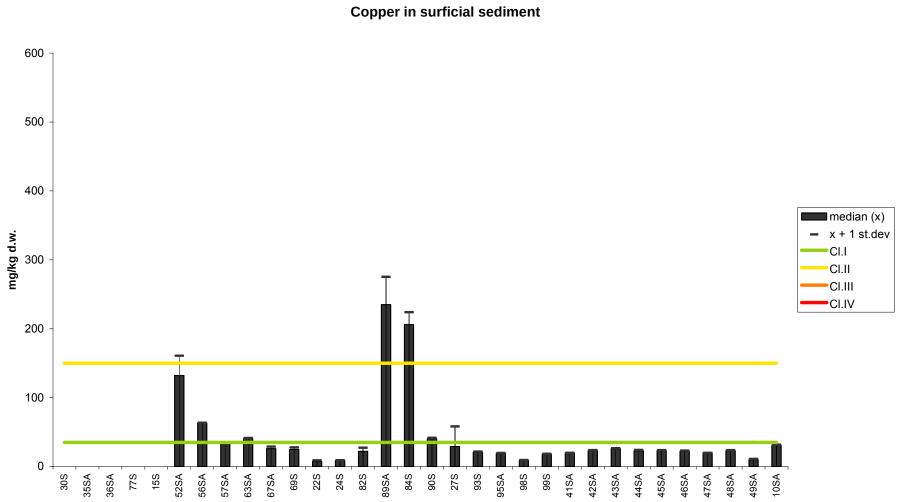
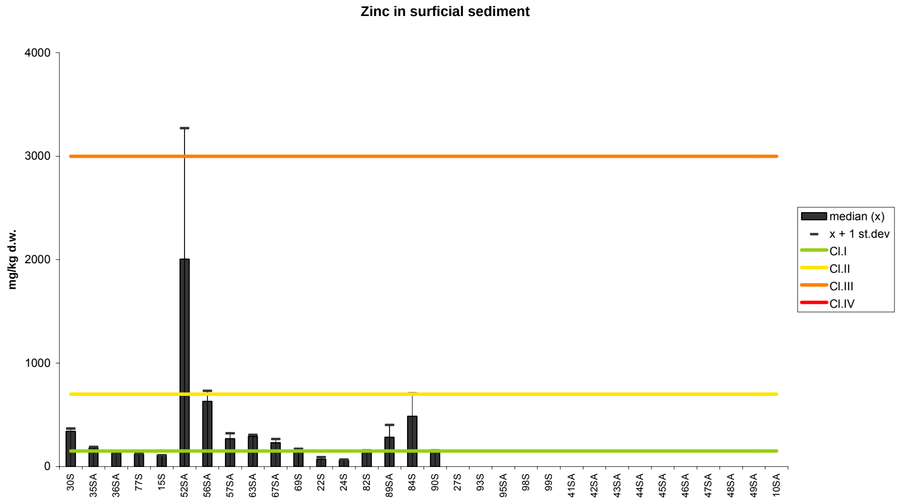
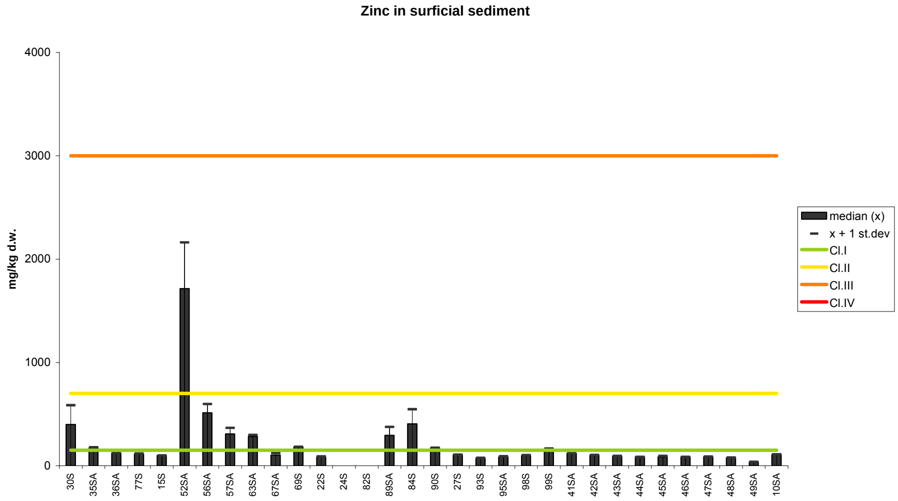


Figure 47. Median, standard deviation and provisional "high background" concentration for copper in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppm (mg/kg) dry weight (see maps in Appendix G).

A



B



C

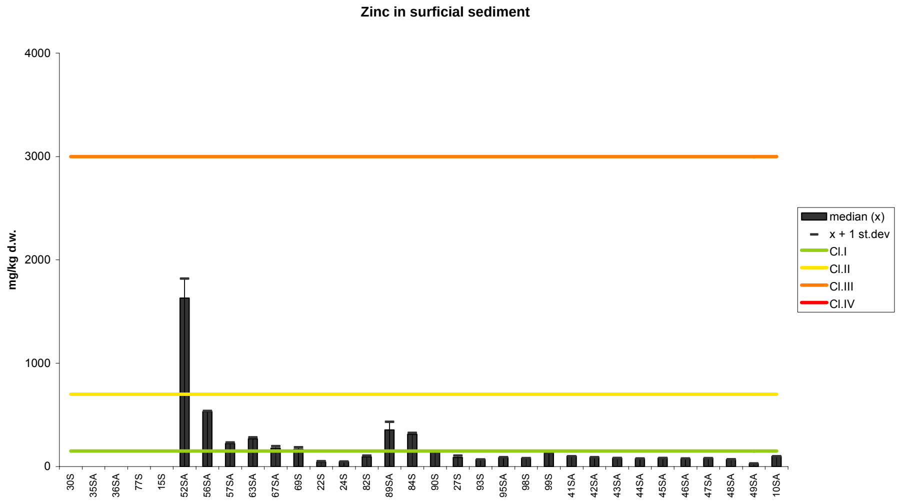
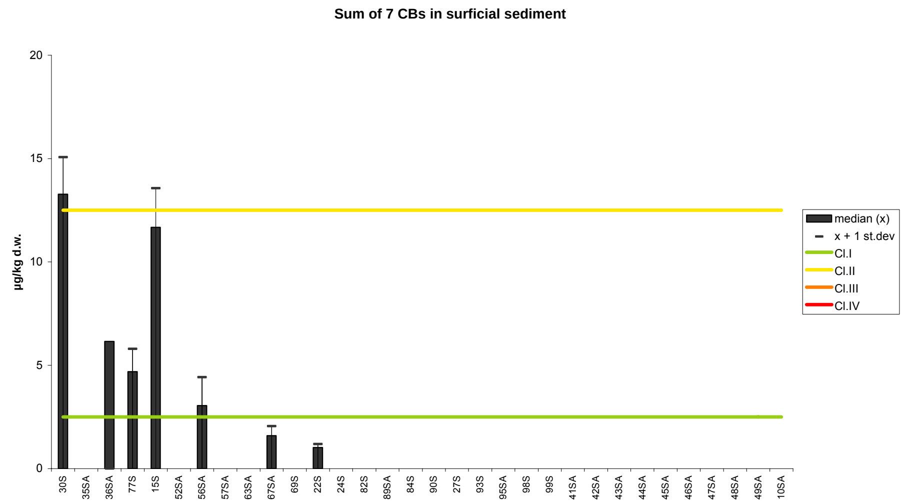
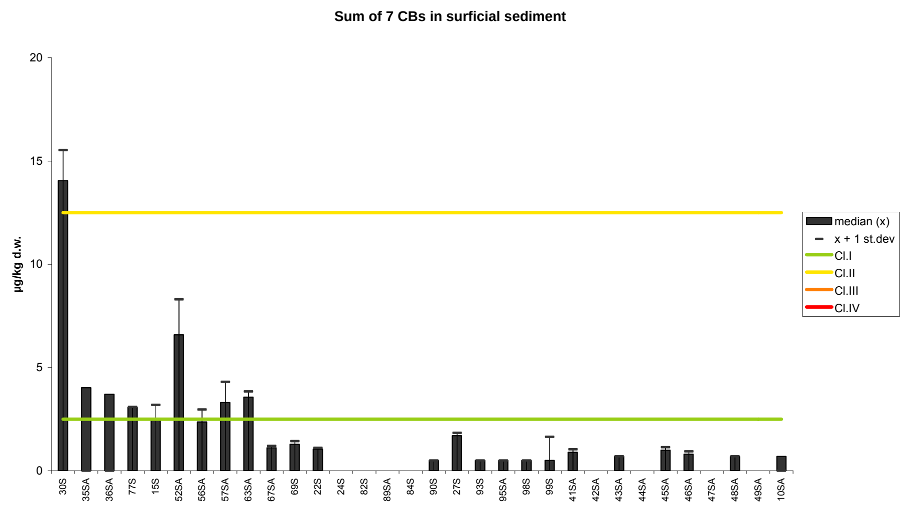


Figure 48. Median, standard deviation and provisional "high background" concentration for zinc in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppm (mg/kg) dry weight (see maps in Appendix G).

A



B



C

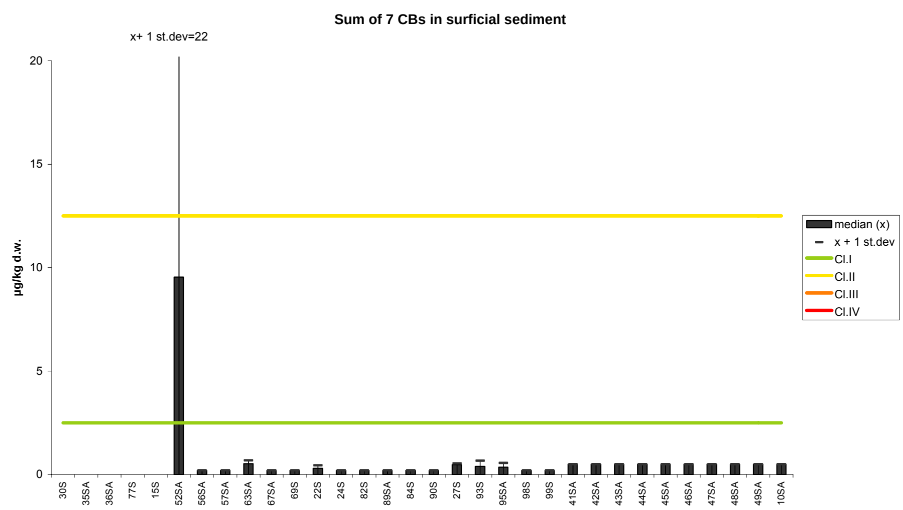
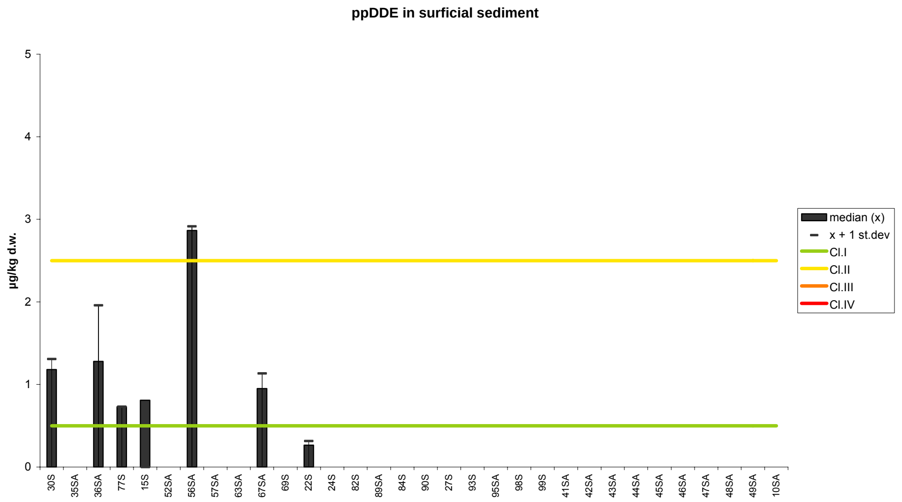
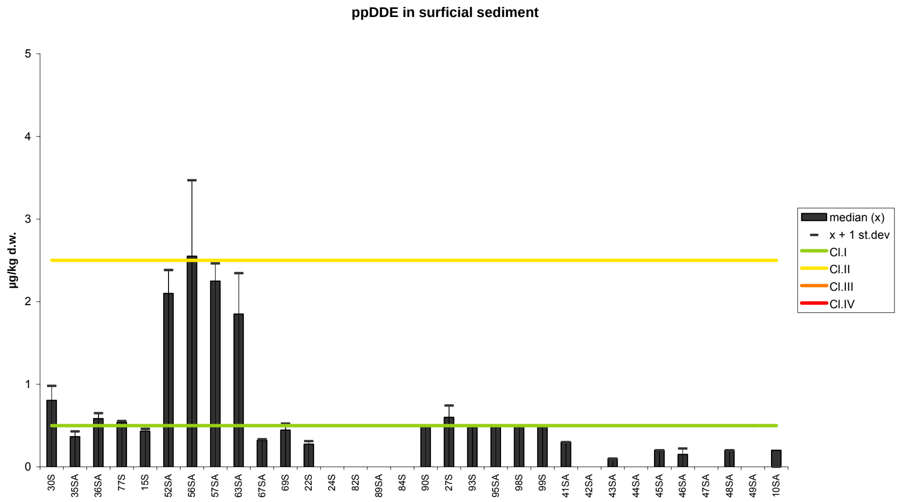


Figure 49. Median, standard deviation and provisional "high background" concentration for sum of 7 PCBs (CB-28, -52, 101, -118, -138, -153 and -180) in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppb (µg/kg) dry weight (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figure C.**

A



B



C

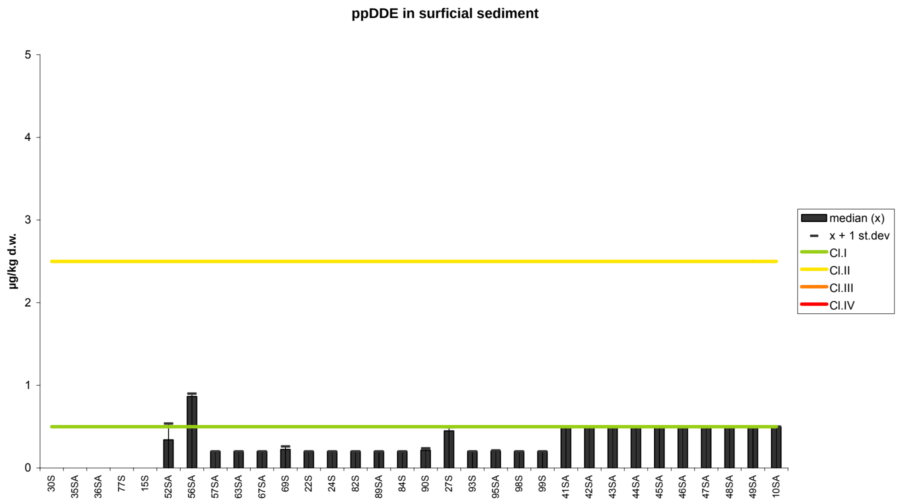
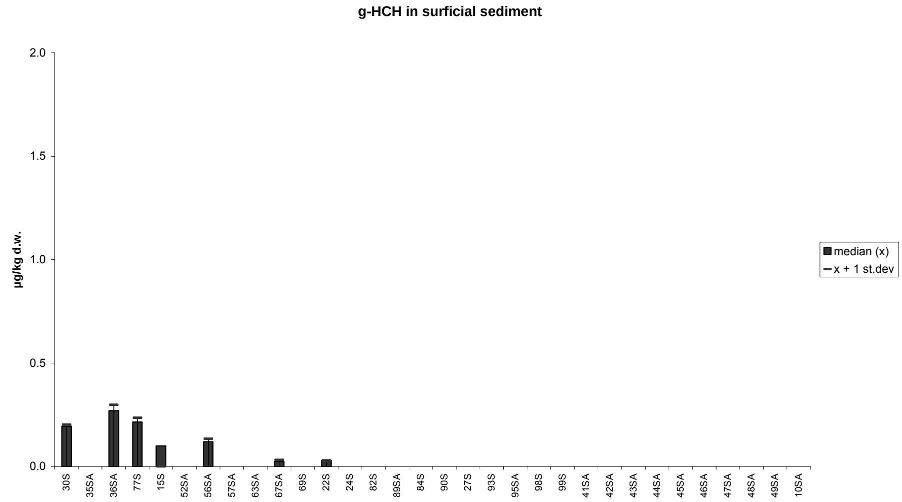
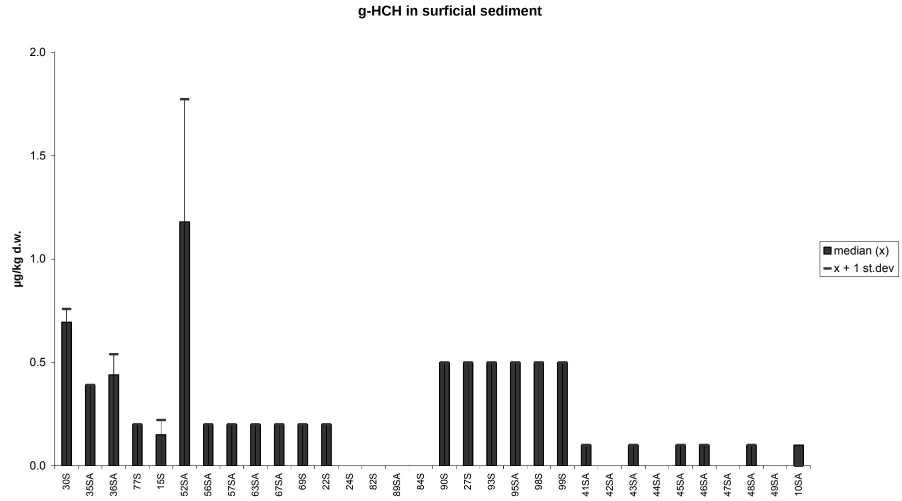


Figure 50. Median, standard deviation and provisional "high background" concentration for ppDDE (DDEPP) in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppb (µg/kg) dry weight (see maps in Appendix G). **Note: Class limits for ΣDDT used, and for some stations the standard deviation is off-scale in figure B.**

A



B



C

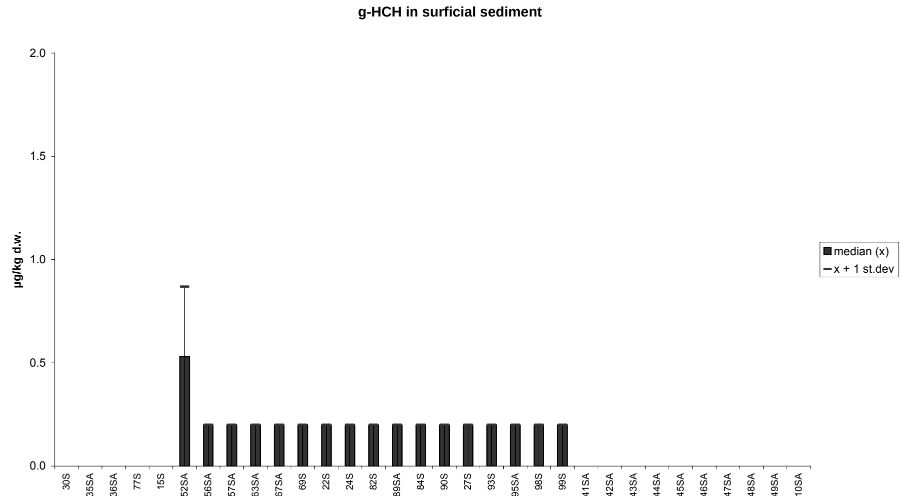
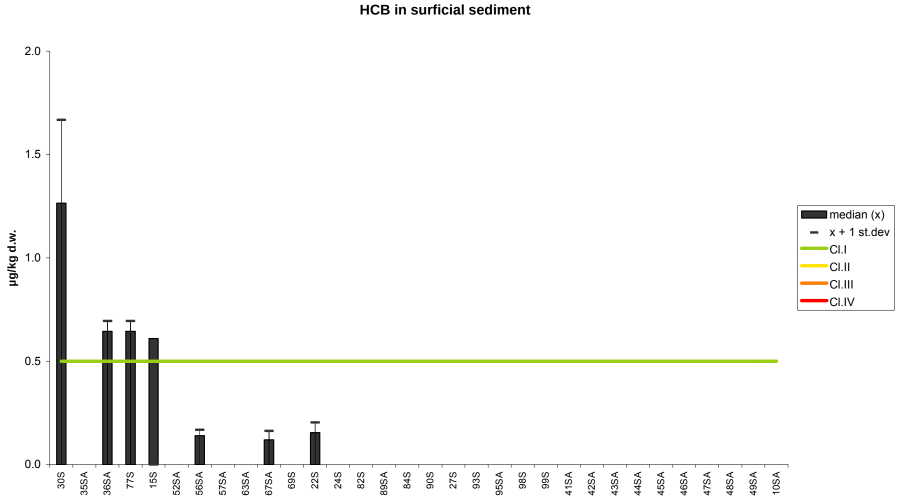
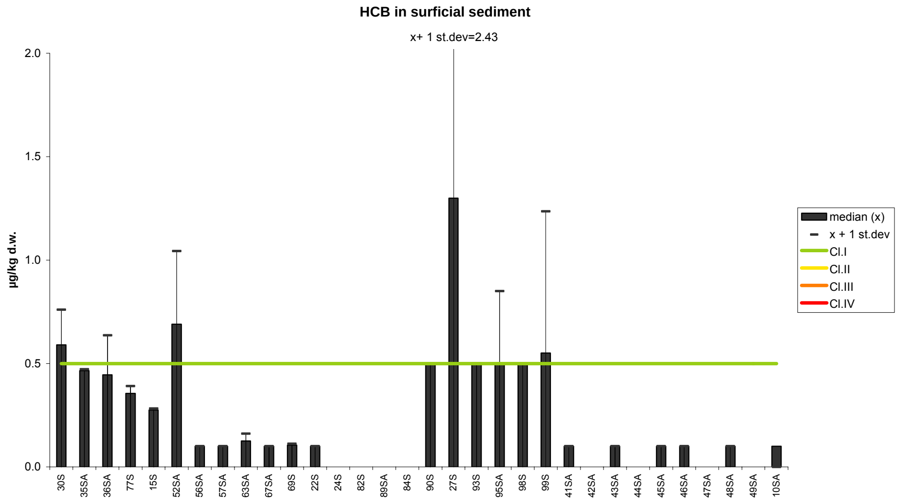


Figure 51. Median, standard deviation and provisional "high background" concentration for γ-HCH (Lindane) in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppb (µg/kg) dry weight (see maps in Appendix G).

A



B



C

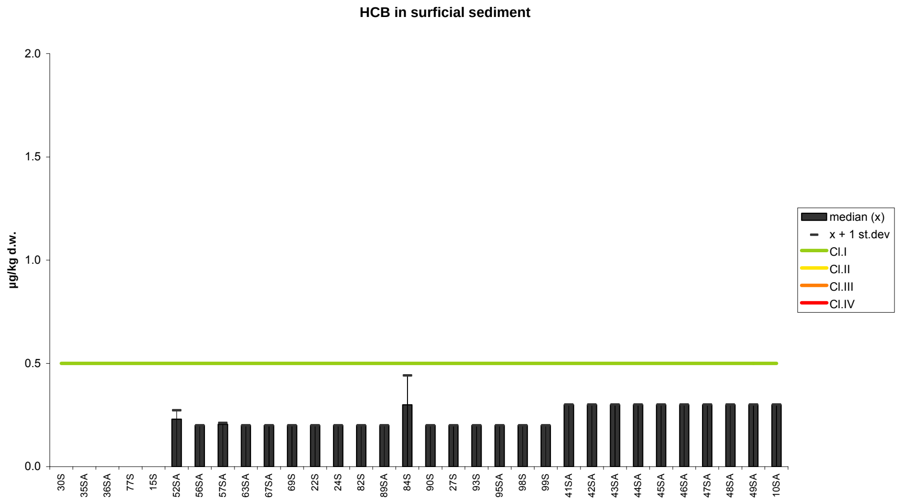


Figure 52. Median, standard deviation and provisional "high background" concentration for HCB in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppb (µg/kg) dry weight (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figure B.**

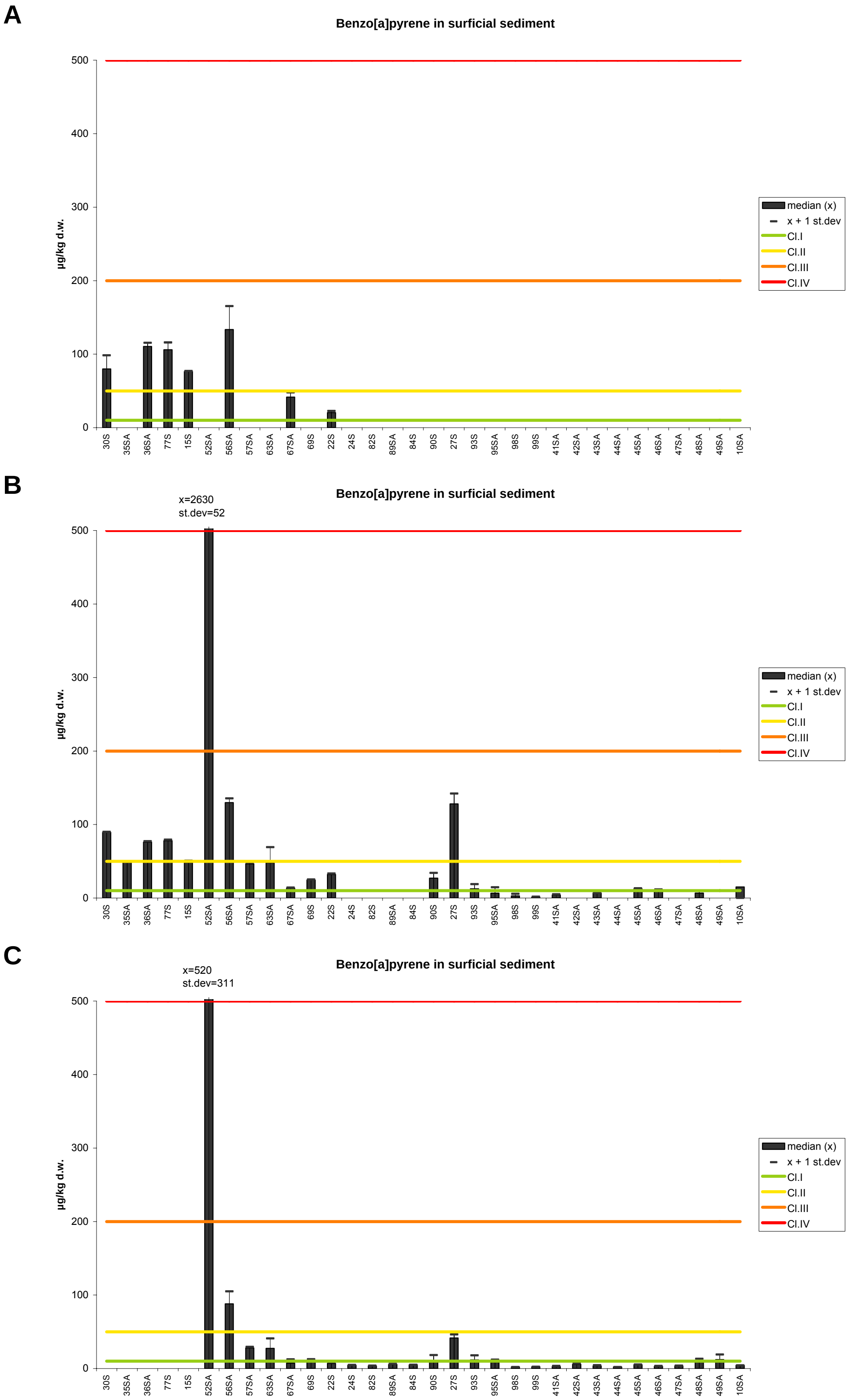


Figure 53. Median, standard deviation and provisional "high background" concentration for Benzo[*a*]pyrene (BAP) in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppb (µg/kg) dry weight (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figure B.**

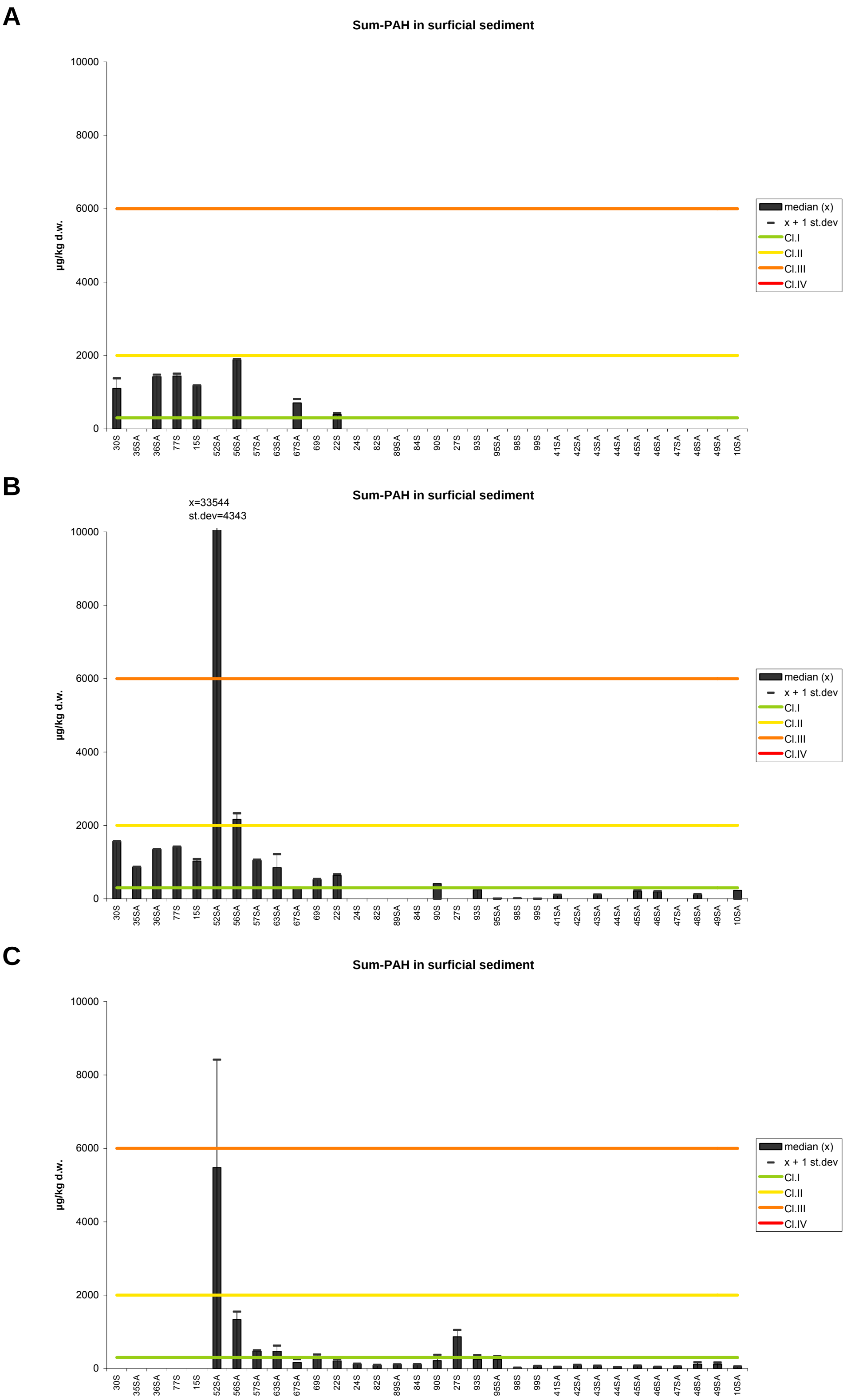


Figure 54. Median, standard deviation and provisional "high background" concentration for sum of PAH in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppb (µg/kg) dry weight (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figure B.**

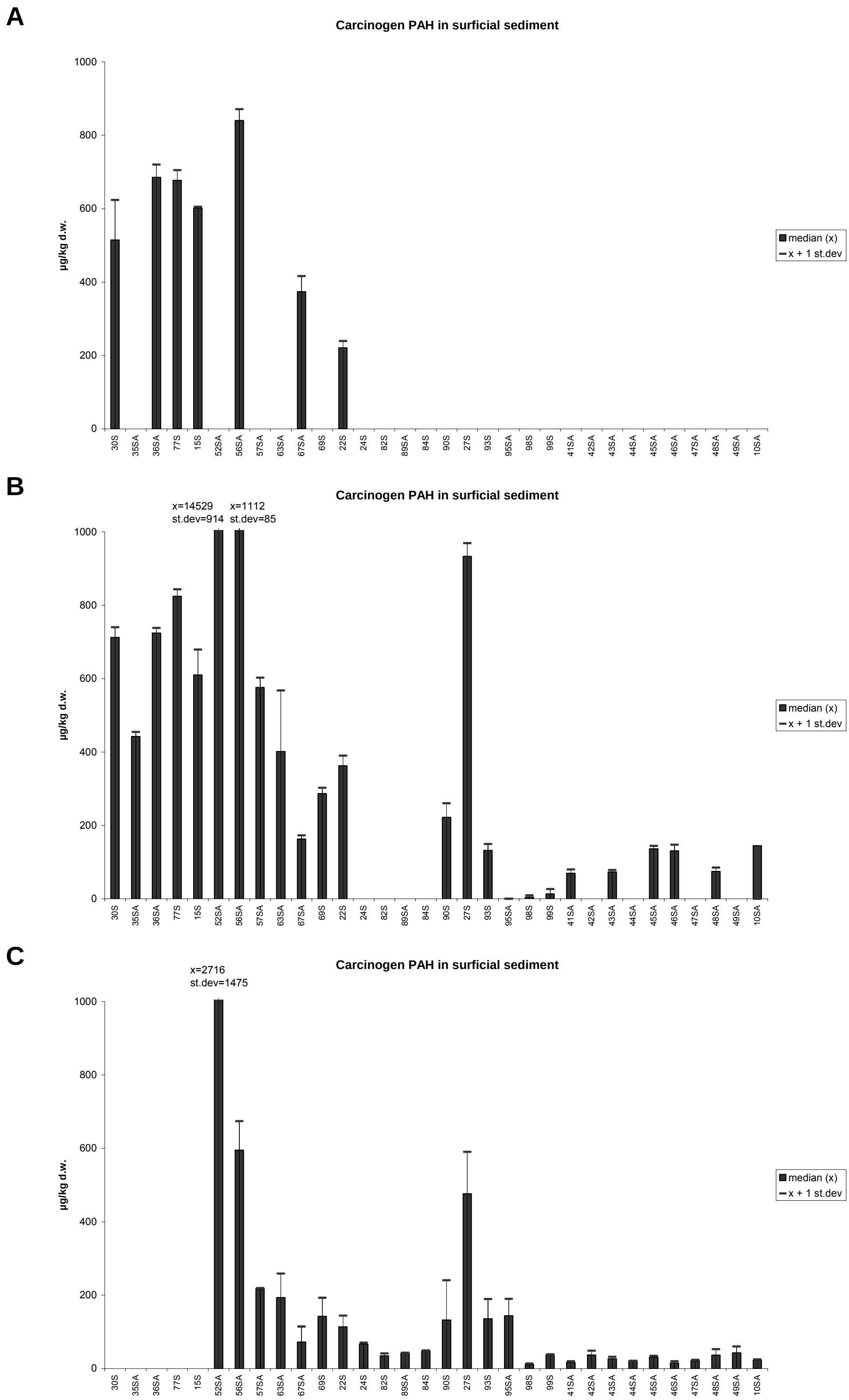


Figure 55. Median, standard deviation and provisional "high background" concentration for sum of carcinogen PAHs in surficial sediment (0-2cm) 1987-1990 (**A**), 1992-1997 (**B**) and 2004-2006 (**C**), ppb (µg/kg) dry weight (see maps in Appendix G). **Note: for some stations the standard deviation is off-scale in figure B.**

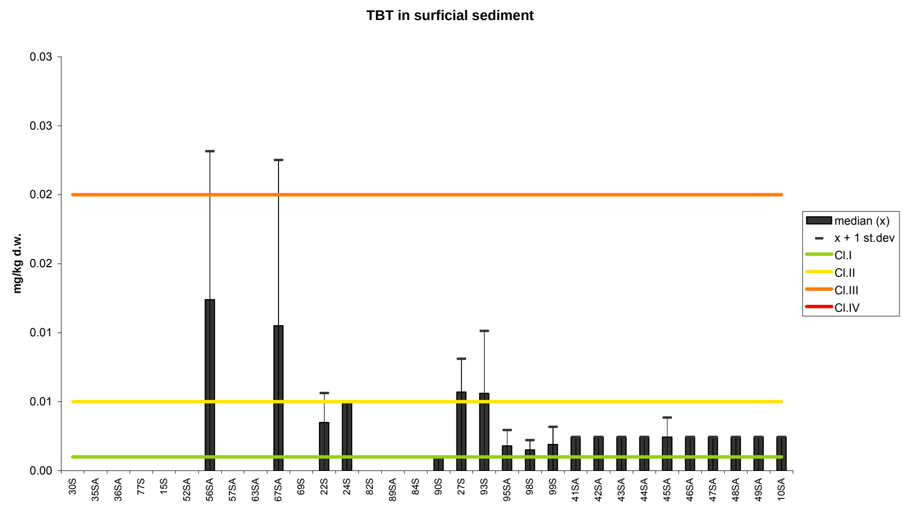


Figure 56. Median, standard deviation and provisional "high background" concentration for sum of TBT in surficial sediment (0-2cm) 2004-2006 and ppm (mg/kg) dry weight (see maps in Appendix G).

Appendix L
Results from INDEX determinations 1995-2005

Introduction

The Norwegian Pollution Control Authority (SFT) has requested that a small group of indices be established to assess the quality of the environment with respect to contaminants. The target indicator medium for both indices may vary depending on what purpose is defined, however sediment, cod and blue mussel are considered to be the most relevant choices. Blue mussel was selected for this investigation (Appendix L1).

Two indices are calculated. One index is based on the contaminant concentrations in the blue mussel collected annually from 9 of the more contaminated fjords in Norway (Walday *et al.* 1995), herein designated “Pollution Index”. This index was initiated in 1995. Initially there were 11 fjords but sampling from Orkdalsfjord and Iddefjord was discontinued in 1997. It was practical to organise sampling within JAMP. Some JAMP results could be used to calculate the index value.

In addition, a “Reference Index” was initiated in 1995 based on annual contaminant concentrations in the blue mussel. The blue mussel were collected at JAMP stations along the entire coast where there is presumably low levels of contamination. The importance of “reference” stations for monitoring of contaminants has been discussed earlier (cf. Green 1987). One of the main reasons for this work is to establish points of reference for contaminated fjords. Initially 8 areas were involved but since 1998 only 5 have been sampled.

Calculation of the index

Sampling strategy and a detailed discussion of calculation of the Pollution Index has been given earlier (cf. Walday *et al.* 1995) and only a brief summary will be given here. The relevant contaminants for each of the Pollution Index fjords are summarised in Appendix L2 and J3. Their selection is based on earlier investigations. Two to five stations were sampled from each area. Three replicate samples with 20 individuals with a shell length of 3-5 cm were collected from each station. Each sample was analysed for the contaminants according to the scheme in Appendix L2. "Dioxins" were only investigated in 1995-96, but reinstated for some stations in 2002 as part of the annual investigations. Assessment of TBT concentrations was introduced in 2002 even though it is not identified as a selection criteria by Walday *et al.* (1995).

One to three stations were sampled from selected areas for the determination of the Reference Index. Each station included three replicates which were analysed for the usual JAMP contaminants (cf. analysis code A, Appendix L2). Some samples were also analysed for PAHs and dioxins.

The strategy for sampling blue mussel differed depending on whether the blue mussel were to be used for the Index or for JAMP and Index in that stations that were exclusively to be used for Index calculations allowed a slightly greater size range (3-5 cm) compared to JAMP and that the blue mussel were frozen directly and not depurated.

The maximum median for each contaminant for all the stations in an area was determined. These concentrations were classified according to SFT’s classification system for contaminants in the marine environment (Appendix L4 and Appendix L5). The highest class found for any contaminant measured in an area determined the index value for that area.

The SFT Classes are based on the provisional “high background” levels. This system has been revised (Molvær *et al.* 1997); where among other changes the sum of CB-28, -52, -101, -118, -138, -153, and -180 (CBΣΣe) is now a distinct parameter for classification. The sum of all PAHs excluding the dicyclic PAHs (PAH_Σ) was compared to the system’s “sum-PAH”. Previously this was the calculation of sum-PAH that included the dicyclic PAHs. As analytical methods improved through the years more non-dicyclic PAHs could be quantified, and included the C1-, C2-, and C3-dibenzpthiophenes, and C1-, C2-, C3- and methylated phenathrenes. These were included in the sum of all non-dicyclic PAHs, and comparison between years could be misleading. For this report, PAH_Σ was re-calculated, also for previous years, using only the 15 non-dycyclic PAH listed in the EPA protocol 8310[1]. The recalculation revealed only one difference from previously reported index values, and that was for the Reference Index 2006 reported to SFT as 1.6 in June of 2007, but the recalulation was 1.4 because PAH_Σ at Lista dropped into Cl.I from Cl.II.

"Dioxins" were assessed based on toxicity equivalency factors (TEQ) according to a Nordic model (Ahlborg 1989) which differs insignificantly from the recently revised WHO-model (van den Berg *et al.* 1998). Note that EPOCl is considered a relevant contaminant for one area but is not included in the part of the classification system based on levels in blue mussel. Likewise, there are contaminants which are included in the classification system but have not been measured in any area (e.g., tributyltin (TBT), arsenic, fluoride, nickel, silver).

The maximum class found for any contaminant determined the Class (I-V) of the area. The average Class for all the contaminated sub areas and all the reference localities determined the Pollution or Reference Index, respectively. The lowest Index value is 1 and means that all median values were in Class I (insignificantly polluted). The highest Index value is 5 and means that at least one median value from each of the areas was in Class V (extremely polluted).

Conclusion from application of the indices

The indices have been in use since 1995 based on contaminant concentrations in blue mussel from 14-19 areas (cf. Green *et al.* 2007). An assessment of their application suggested that the pollution index needed mainly two improvements (Green & Knutzen 2001): 1) more stations to avoid the consequences of insufficient sample size and 2) inclusion of more relevant contaminant analyses with respect to the pollution load expected and in relation to the SFT classification system for environmental quality (Molvær *et al.* 1997). SFT provided funds to improve the index in 2002. Three additional stations have since been established: one in the Frierfjord area (I713 Strømtangen, about 800 m east of I711 Steinsholmen), one in the inner Ranfjord (I964 Toraneskaien, about 500 m north of I965 Moholmen) and one in the Sunndalsfjord area (I915 Flåøya, northwest, about halfway between I913 and the inner most part of the fjord). Dioxin and TBT analyses were added to the programme for samples collected in the Frierfjord area, inner Oslofjord and the inner Kristiansandsfjord. TBT-analyses were also included for some of the reference stations (see Annex). These changes affect the outcome of the index and comparison to previous years should be cautioned. For results up to and including 2001 SFT has presented only the results using the old method of calculation, for 2002 the results for both the old and new methods are presented, and for 2003 and since then only the results for the new method are presented (cf. SFT's website at www.miljostatus.no/templates/themepage___2699.aspx or www.miljøstatus.no >> *Vannforurensning* >> *Miljøgifter,vann*.) Comparison of the two methods for 2002 and 2003 has been done earlier (Green *et al.*, 2004 a, b).

It should also be noted that the SFT classification system is under revision and may affect calculations of the indices in the future. One likely change will be the lowering of limits to the

[1] Acenaphthene, acenaphthylene, anthracene, benzo[*a*]anthracene, benzo[*a*]pyrene, benzo[b]fluoranthene, benzo[ghi]perlyene, benzo[*k*]fluoranthene, chrysene, dibenzo[*a,h*]anthracene, fluoranthene, indeno[*1,2,3-cd*]pyrene, phenanthrene and pyrene. NB. for NIVA's PAH_Σ, a where these cannot be distinguished but included in a group, such as benzo[*b*]fluoranthene benzo[*b,b,f*]fluoranthene, the value for the group is used. A single compound can not be included in more than one group.

classes for PCBs taking into consideration a lower background from 4 to 3 ppb wet weight suggested by Green & Knutzen (2003).

No special considerations were made when one but not all the stations within an area were sampled. The lack of sufficient samples has occurred several times for the Pollution Index: (st. I205 Bølsnes from Saudafjord 1996, st. I911 Horvika in the Sunndalsfjord since 1999, st. I021 in the Hvaler area 1999, st.I962 in the Inner Ranfjord since 1999, and st. I711 Steinholmen in the Frierfjord 2001).

Because insufficient amount of blue mussel were found at station Horvika in the Sunndalsfjord, two new stations were introduced; Fjøseid (I913) in 1999 and Flåøya, northwest (I915), in 2003, about 15 and 5 km farther out the fjord from Horvika, respectively. It can be noted that inclusion of supplementary analyses of blue mussel from the “Hydro kai” (I916), innermost in Sunndalsfjord, would have increased the index. Because sufficient amount of blue mussel were not found at station I962 Koksverktomta in the Ranfjord since 1999, a new station (I965 - Moholmen) was introduced in 2001 about 2 km south of Koksverktomta.

Based on the new calculation with the mentioned supplementary stations and supplementary analyses of dioxin and TBT, the **Pollution Index for 2006 was 2.9** compared to 3.1 for 2005 (Table 10, Appendix L4). A value between 3 and 4 would be between “Marked” and “Severe” Classes in the SFT system, and between 2 and 3 would be between “Moderate” and “Marked” Classes. The index decreased one class for both Inner Oslofjord, Kristiansandsfjord and Sørfjorden, because of lower concentrations of TBT, dioxins and lead, respectively, but increased one class for Inner Ranfjord because of benzo[*a*]pyrene. Statistical analyses did reveal significant temporal trends but only a downward trend was found for TBT from the Inner Oslofjord in this group of combination contaminant/fjords.

Only 5 fjords/areas were monitored for the Reference Index for 1998-2006 compared to 7 for 1997 and 8 for 1995-1996 (Table 11, Appendix L5). However, only four of these provided a common basis (cf., Table 11). Similar to the application Pollution Index, the Reference Index made no special considerations when one but not all the stations within an area were sampled. For the four common areas, this has occurred several times, all in the Varangerfjord area (st.48A since 1997 and st.11A since 1998). With Lofoten and the supplementary analyses of TBT included, the **Reference Index for 2006 was 1.4**, unchanged from 2005 (Table 11, Appendix L5). All five fjords/areas included the TBT analyses. A value between 1 and 2 would be between “Slight” and “Moderate” Classes. The index increased one class for the mid/outer Oslofjorden because of an increase in DDT. No statistically significant temporal trends were found for DDT from stations in these fjords/areas.

Table 10. Maximum environmental classification for fjords selected for Pollution INDEX. (See text and Appendix L4).

Index Area [1]	1995	1996	1997 [2]	1998	1999	2000	2001	2002	2002 new [7]	2003	2003 new [7]	2004 new [7]	2005 new [7]	2006 new [7]
Hvaler/Singlefjord	2	2	2	3	2	2	2	2	2	2	2	2	2	2
Iddefjord	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inner Oslofjord	3	3	4	2	3	2	2	2	4	2	4	4	4	3
Frierfjord, Grenlandsfjords	3	4	3	3	3	3	3	5 [6]	5	3 [6]	5	5	5	5
Inner Kristiansandsfjord	5	5	5	5	5	4	3	3	3	4	4	4	4	3
Saudafjord	4	5	5	3	4	3	3	4	4	2	2	3	2	2
Sørfjord	5	4	3	3	4	4	3	4	4	5	5	4	4	3
Byfjorden, Bergen [3]	3	3	3	2	2	2	2	3	3	4	4	3	3	3
Sunndalsfjord	3	3	3 [4]	2	3	4	2	3	3	1 [6]	1	1	1	1
Orkdalsfjord	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Inner Ranfjord	5	3	3 [5]	4	2	2	4 [9]	3 [6]	3	3 [8]	5	5	3	4
AVERAGE (Pollution INDEX)	**3.7**	**3.6**	**3.4**	**3.0**	**3.1**	**2.9**	**2.7**	**3.2**	**3.4**	**2.9**	**3.6**	**3.4**	**3.1**	**3.1**

[1] Iddefjord and Orkdalsfjord not sampled since 1997, hence the indices 1995-96 do not include the local indices from these fjords
[2] Copper, zinc and TCDDN excluded since 1997, hence indices for 1995-96 excludes these contaminants
[3] PCB (DDTΣ, HCB, HCHΣΣ and CBΣΣ) analysed in stored samples for 1995-1996
[4] Change in classification (cf. Green *et al.* 1999) due to recalculation of PAHs that excluded the dicyclic compounds
[5] Change in classification (cf. Green *et al.* 1999) due to calculation error
[6] Results from supplementary station would not influence the outcome of classification
[7] Inclusion of supplementary a station in Frierfjord, Inner Ranfjord, and Sunndalsfjord (2003), and supplementary dioxin and TBT analyses for Inner Oslofjord, Frierfjord, and Inner Kristiansandfjord.
[8] Results from supplementary station would influence the outcome of classification.
[9] Previously erroneously reported as “3”. Average index was correct.

Table 11. Maximum environmental classification for fjords selected for Reference INDEX. (See text and Appendix L5).

Index Area	1995	1996	1997	1998	1999	2000	2001	2002	2002 new [5]	2003	2003 new [5]	2004 new [5]	2005 new [5]	2006 new [5]
Mid and outer Oslofjord [1]	2	2	2	1	1	1	2	1	1	1	2	1	1	2
Lista	1	1	1	1	2	2	2	2	2	1	1	2	2	1
Bømlo-Sotra	1	1	1	1	1	2	2	1	2	1	3	2	2	2
Outer Ranfjord, Helgeland [2]	(1)	(1)	-	-	-	-	-	-	-	-	-	(1)	-	-
Lofoten [3]	(2)	(2)	(1)	(2)	(2)	(1)	(2)	(2)	2	(2)	2	1	1	1
Finnsnes-Skjervøy [2]	(2)	(1)	(1)	-	-	-	-	-	-	-	-	-	-	-
Hammerfest-Honningsvåg [2]	(2)	(3) [4]	(2)	-	-	-	-	-	-	-	-	-	-	-
Varanger Peninsula	1	2	1	2	1	1	1	1	1	1	1	1	1	1
AVERAGE (Reference INDEX)	**1.3**	**1.5**	**1.3**	**1.3**	**1.3**	**1.5**	**1.8**	**1.3**	**1.6**	**1.2**	**1.8**	**1.4**	**1.4**	**1.4**

[1] Inclusion of results for arsenic, nickel and silver in 1996 did not affect the classification

[2] Inconsistency in sampling from sites from Outer Ranfjord, Finnsnes-Skjervøy and Hammerfest-Honningsvåg, hence, results were excluded. See cf., Green *et al.* 2000 for more details for outer Ranfjord.

[3] Inconsistency in sampling from this site, hence, results from Lofoten excluded. See cf., Green *et al.* 2000 for more details for st 98X.

[4] Change in classification (cf. Green *et al.* 1999) due to recalculation of PAHs that excluded the dicyclic compounds.

[5] Inclusion of supplementary TBT analyses for Mid and outer Oslofjord, Lista, Bømlo-Sotra, Lofoten and Varangerfjord Peninsula.

Appendix L1
INDEX - Sampling and analyses for 1995-2006

Appendix L1. Blue mussel samples planned or used in INDEX and other purposes besides JAMP 1995-2006, where P = "Pollution Index" and R = "Reference Index" (contaminated and assumed "background" stations, respectively). + indicates JAMP sampling and analyses (i.e. equivalent to analysis code A). The number indicates the number samples analysed. Codes for analysis (A, B etc.) are defined in Appendix L2. See Walday *et al.* (1995) for discussion of selection of stations and analyses.

	st.	STATION	INDEX	+	A	B	C	D	E	F	G	H	I	J	K	CM
		HVALER/SINGLEFJORD AREA														
	I021	Kjøkø, south	P	.	3	.	.	.	.	.	.	.	.	.	.	
	I024	Kirøy, north west	P	.	3	.	.	.	.	.	.	.	.	.	.	
	I022	West Damholmen	P	.	3	.	.	.	.	.	.	.	.	.	.	
	I023	Singlekalven, south	P	.	3	.	.	.	.	.	.	.	.	.	.	
		IDDEFJORD														
	I001	Sponvikskansen	P	.	.	3	.	.	.	.	.	.	.	.	.	
	I011	Kråkenebbet	P	.	.	3	.	.	.	.	.	.	.	.	.	
		OSLOFJORD, inner														
	30A	Gressholmen	P	+	3	.	.	.	.	.	.	3	.	2	2	
	I301	Akershuskaia	P	.	.	.	3	.	.	.	.	.	.	.	2	
	I304	Gåsøya	P	.	.	.	3	.	.	.	.	.	.	.	.	
	I307	Ramtonholmen	P	.	.	.	3	.	.	.	.	.	.	.	.	
	I306	Håøya	P	.	.	.	3	.	.	.	.	.	.	.	.	
		OSLOFJORD, mid and outer														
	31A	Solbergstrand	R	+	3	.	.	.	.	.	.	.	.	.	.	
	35A	Mølen	R	+	3	.	.	.	.	.	.	.	.	.	.	
	36A	Færder	R	+	3	.	.	.	.	.	.	.	.	.	2	
		FRIERFJORD AREA, west of outer Oslofjord														
	I712	Gjermundsholmen	P	.	.	.	.	3	.	.	.	.	.	2	2	
	I713	Strømtangen	P	.	.	.	.	3	.	.	.	.	.	1	2	
	71A	Bjørkøya	P	+	3	.	.	.	.	.	.	.	.	2	1	
	76A	Risøy	R	+	3	.	.	.	.	.	.	.	.	2	1	
		INNER KRISTRIANSANDSFJORD														
	I1321	Fiskåtangen	P	.	.	.	.	.	3	.	.	.	.	2	2	
	I133	Odderø, west	P	.	.	.	.	.	3	.	.	.	.	1	2	
		LISTA AREA														
	15A	Gåsøya	R	+	3	.	.	.	.	.	.	.	.	.	2	
	I131A	Lastad	R	.	.	.	3.	.	.	.	.	.	.	.	.	g
		SAUDAFJORD														
	I201	Ekkjegrunn (G1)	P	.	.	.	.	.	.	3	.	.	.	.	.	
**	I205	Bølsnes (G5)	P	.	.	.	.	.	.	3	.	.	.	.	.	
		[HAUGESUND AREA not related to INDEX investigation]														
	227A1	Melandsholmen	O	.	3	.	.	.	.	.	.	.	.	.	1	
		BØMLO-SOTRA AREA														
	22A	Espevær, west	R	+	3	.	.	.	.	.	.	.	.	.	2	c,a
		SØRFJORD														
*	51A	Byrkjeneset	P	.	3	.	.	.	.	.	.	.	.	.	.	
	52A	Eirtrheimsneset	P	+	3	.	.	.	.	.	.	.	.	.	.	c

Appendix L1 (cont'd)

	st.	STATION	INDEX	+	A	B	C	D	E	F	G	H	I	J	K	CM
		BYFJORDEN, BERGEN														
	I242	Valheimsneset	P	.	.	.	.	.	.	.	3	.	.	.	.	
	I241	Nordnes	P	.	.	.	.	.	.	.	3	.	.	.	.	
	I243	Hagreneset	P	.	.	.	.	.	.	.	3	.	.	.	.	
		SUNNDALSFJORD														
	I912	Honnhammer	P	.	.	.	.	.	.	.	.	3	.	.	.	
	I913	Fjøseid	P	.	.	.	.	.	.	.	.	3	.	.	.	
	I914	Flåøya, southeast	P	.	.	.	.	.	.	.	.	3	.	.	.	
	I915	Flåøya, northwest	P	.	.	.	.	.	.	.	.	3	.	.	.	
		[TRONDHEIM AREA - not related to index investigation]														
*	80A	Østmarknes	-	.	.	.	.	.	.	.	.	.	3	.	.	
		ORKDALSFJORD AREA (not suggested in Walday *et al.* 1995)														
	82A	Flakk	P	+	3	.	.	.	.	.	.	.	.	.	.	
	84A	Trossavika	P	+	3	.	.	.	.	.	.	.	.	.	.	
	87A	Ingdalsbukta	P	+	3	.	.	.	.	.	.	.	.	.	.	
		INNER RANFJORD														
	I962	Koksverkkaien (B2)	P	.	.	.	.	.	.	.	.	.	3	.	.	c
	I964	Toraneskaien	P	.	.	.	.	.	.	.	.	.	3	.	.	
	I965	Moholmen (B5)	P	.	.	.	.	.	.	.	.	.	3	.	.	
	I969	Bjørnbærviken (B9)	P	.	.	.	.	.	.	.	.	.	3	.	.	
		OUTER RANFJORD, HELGELAND AREA														
*	R096	Breivika, Tomma	R	.	3	.	.	.	.	.	.	.	.	.	.	a
	96A	Breivika, Tomma	R	.	3	.	.	.	.	.	.	.	.	.	.	a
		LOFOTEN AREA														
	98A	Husvågen	R	+	3	.	.	.	.	.	.	.	.	.	2	e
		FINNSNES-SKJERVØY AREA														
	41A	Fensneset, Grytøya	R	.	3	.	.	.	.	.	.	.	.	.	.	c
		HAMMERFEST-HONNINGSVÅG AREA														
	44A	Elenheimsundet	R	.	3	.	.	.	.	.	.	.	.	.	.	a,f
	46A	Smineset in Altesula	R	.	3	.	.	.	.	.	.	.	.	.	.	c,f
		VARANGER PENINSULA AREA														
	48A	Trollfjorden i Tanafjord	R	.	3	.	.	.	.	.	.	.	.	.	.	
	10A1	Skagoodden	R	+	3	.	.	.	.	.	.	.	.	.		b
	11X	Brashavn	R	+	3	.	.	.	.	.	.	.	.	.	2	

* - JAMP station but not sampled in accordance to JAMP guidelines, see Appendix text.
** - Sufficient mussel-sample not found in 1996.

Notes (CM):
a - blue mussel collected from buoy and/or buoy anchor lines
b - blue mussel collected from sand/gravel bottom
c - blue mussel collected from iron/cement pilings
d - blue mussel collected from metal navigation buoys
e - blue mussel collected from floating dock
f - blue mussel collected from wooden docks
g - blue mussel collected from tire on jetty

Appendix L2
INDEX - Key to analysis codes and sample counts
(Used in Appendix L1)

ANALYSIS CODES[1)] See Walday *et al.* (1995) for discussion of selection of analyses.

Contaminant	Analysis code										
	A	B	C	D	E	F	G	H	I	J	K
Lead	x	x	.	.	.	x	.	.	x	.	.
Cadmium	x	x	x	.	.	x	.	.	x	.	.
Copper [2])	x	x	x	.	.	.	.	.	.	.	.
Mercury	x	x	x	.	.	.	.	.	.	.	.
Zinc [2])	x	x	x	.	.	.	x	.	x	.	.
EPOCl	.	.	.	.	x	.	.	.	.	.	.
PAHs	.	.	x	.	x	x	.	x	x	.	.
PCBs	x	.	x	x	x	.	x	.	.	.	.
“Dioxin” [3])	.	.	.	.	.	.	.	.	.	x	..
TBT [4])	.	.	.	.	.	.	.	.	.	.	x

[1]) Concerns MUSSEL - 1 size group (3-5 cm), 3 replicate samples each a bulk of 20 individuals (see text)
[2]) Concerns MUSSEL - discontinued since 1996
[3]) Concerns MUSSEL - discontinued since 1995, but reinstated 2002 for st.30A, 71A, I711, I712, I713, 76A, I132 and I133
[4]) Concerns MUSSEL – not included in Walday *et al.* (1995).

Appendix L3
INDEX - SFT Environmental quality classes

(Molvær *et al.* 1997)

As	Arsenic
Pb	Lead
F	Fluoride
Cd	Cadmium
Cu	Copper
Cr	Chromium
Hg	Mercury
Ni	Nickel
Zn	Zinc
Ag	Silver
TBT	Tributyltin
PAH_S	total PAH excluding dicyclic (=PAH_Σ)*
BAP	benzo[*a*]pyrene
DDTSS	DDTPP+DDEPP+TDEPP (=DDTΣΣ)*
HCB	hexachlorobenzene
HCHSS	HCHG+HCHA+HCHB (=HCHΣΣ)*
CBSSe	sum of CB: 28+52+101+118+138+153+180 *
TCDDN	Sum of TCDD-toxicity equivalents *

*) See also Appendix B for definitions.

Basis: D = dry weight, W = wet weight
Units: M = ppm (mg/kg), U = ppb (μg/kg), P = ppp (ng/kg)

SFT's Environmental quality classes for blue mussel (Molvær *et al.* 1997).

Contaminant	basis	unit	Class I	Class II	Class III	Class IV	Class V
As	D	M	<10	10-30	30-100	100-200	>200
Pb	D	M	<3	3-15	15-40	40-100	>100
F	D	M	<15	15-50	50-150	150-300	>300
Cd	D	M	<2	2-5	5-20	20-40	>40
Cu	D	M	<10	10-30	30-100	100-200	>200
Cr	D	M	<3	3-10	10-30	30-60	>60
Hg	D	M	<0.2	0.2-0.5	0.5-1.5	1.5-4	>4
Ni	D	M	<5	5-20	20-50	50-100	>100
Zn	D	M	<200	200-400	400-1000	1000-2500	>2500
Ag	D	M	<0.3	0.3-1	1-2	2-5	>5
TBT	D	M	<0.1	0.1-0.5	0.5-2	2-5	>5
PAH_S	W	U	<50	50-200	200-2000	2000-5000	>5000
BAP	W	U	<1	1-3	3-10	10-30	>30
DDTSS	W	U	<2	2-5	5-10	10-30	>30
HCB	W	U	<0.1	0.1-0.3	0.3-1	1-5	>5
HCHSS	W	U	<1	1-3	3-10	10-30	>30
CBSSe	W	U	<4	4-15	15-40	40-100	>100
TCDDN	W	P	<0.2	0.2-0.5	0.5-1.5	1.5-3	>3

Appendix L4
INDEX - Summary table "Pollution index"
2005-2006

Pollution index 2005-new (with supplementary analyses and stations)

Average of Max E.C is 3.1

Index areaname (Pollution area) 2005	n	N	As ppm d.wt	Pb ppm d.wt	F ppm d.wt	Cd ppm d.wt	Cu ppm d.wt	Cr ppm d.wt	Hg ppm d.wt	Ni ppm d.wt	Zn ppm d.wt	Ag ppm d.wt	PAH_S ppb w.wt	BAP ppb w.wt	DDTSS ppb w.wt	HCB ppb w.wt	HCHSS ppb w.wt	CBSSe ppb w.wt	TCDDN ppp w.wt	TBT ppm d.wt	Max E.C I:V
Hvaler/Singlefjorden	3	4	i	1.26	i	1.46	i	i	0.29	i	i	i	i	i	<0.37	0.06	<0.10	1.17	i	i	II
Iddefjord	0	2	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	miss
Inner Oslofjord	5	5	i	i	i	1.7	i	i	0.13	i	i	i	<155.21	<0.50	3.32	0.1	<0.05	12.28	<0.17	2.94	IV
Frierfjorden	3	4	i	i	i	i	i	i	i	i	i	i	i	i	1.16	1.5	<0.05	2.44	4.74	0.27	V
Inner Kristiandsfjord	2	3	i	i	i	i	i	i	i	i	i	i	<460.39	18	0.57	0.79	0.28	1.38	<1.52	0.22	IV
Saudafjord	2	2	i	6.3	i	2.02	i	i	i	i	i	i	<99.83	1	i	i	i	i	i	i	II
Sørfjord	2	2	i	77.53	i	13.82	i	i	0.61	i	i	i	i	i	3.78	0.05	<0.05	<1.61	i	i	IV
Byfjorden	3	3	i	i	i	i	i	i	i	i	i	i	i	i	8.2	0.16	0.14	20.7	i	i	III
Sunndalsfjord	3	4	i	i	i	i	i	i	i	i	i	i	<25.79	0.76	i	i	i	i	i	i	I
Orkdalsfjord area	0	3	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	miss
Inner Ranfjord	3	4	i	13.03	i	2.15	i	i	i	i	i	i	<182.47	6.1	i	i	i	i	i	i	III

I	24
II	15
III	7
IV	5
V	1

Pollution index 2006-new (with supplementary analyses and stations)

Max(median). Statistics for alle areas: (n = Index-station measured, N = Station programmed for index)

Average of Max E.C is 2.9

Index areaname (Pollution area) 2006	n	N	As ppm d.wt	Pb ppm d.wt	F ppm d.wt	Cd ppm d.wt	Cu ppm d.wt	Cr ppm d.wt	Hg ppm d.wt	Ni ppm d.wt	Zn ppm d.wt	Ag ppm d.wt	PAH_S ppb w.wt	BAP ppb w.wt	DDTSS ppb w.wt	HCB ppb w.wt	HCHSS ppb w.wt	CBSSe ppb w.wt	TCDDN ppp w.wt	TBT ppm d.wt	Max E.C I:V
Hvaler/Singlefjorden	3	4	i	1.34	i	1.97	i	i	0.28	i	i	i	i	i	<0.37	0.09	<0.12	1.44	i	i	II
Iddefjord	0	2	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	miss
Inner Oslofjord	5	5	i	i	i	1.72	i	i	0.1	i	i	i	241.6	5.9	1.2	0.08	<0.05	10.55	<0.15	1.27	III
Frierfjorden	3	4	i	i	i	i	i	i	i	i	i	i	i	i	<0.71	0.26	<0.10	<1.56	3.25	0.22	V
Inner Kristiandsfjord	2	3	i	i	i	i	i	i	i	i	i	i	<249.07	8.5	<0.37	0.71	<0.11	<1.68	0.3	0.29	III
Saudafjord	2	2	i	5.26	i	1.91	i	i	i	i	i	i	<45.48	0.71	i	i	i	i	i	i	II
Sørfjord	2	2	i	17.63	i	2.88	i	i	0.23	i	i	i	i	i	2.18	0.08	<0.05	1.79	i	i	III
Byfjorden	3	3	i	i	i	i	i	i	i	i	i	i	i	i	3.18	0.31	0.11	12.78	i	i	III
Sunndalsfjord	3	4	i	i	i	i	i	i	i	i	i	i	<14.82	<0.50	i	i	i	i	i	i	I
Orkdalsfjord area	0	3	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	i	miss
Inner Ranfjord	3	4	i	13.71	i	2.11	i	i	i	i	i	i	<259.61	21	i	i	i	i	i	i	IV

I	27
II	14
III	9
IV	1
V	1

Appendix L5
INDEX - Summary table "Reference Index"
2005-2006

Reference index 2005-new (with supplementary analyses and stations)

Average of Max E.C is 1.4

Index areaname (Reference area) **2005**	n	N	As ppm d.wt	Pb ppm d.wt	F ppm d.wt	Cd ppm d.wt	Cu ppm d.wt	Cr ppm d.wt	Hg ppm d.wt	Ni ppm d.wt	Zn ppm d.wt	Ag ppm d.wt	PAH_S ppb w.wt	BAP ppb w.wt	DDTSS ppb w.wt	HCB ppb w.wt	HCHSS ppb w.wt	CBSSe ppb w.wt	TCDDN ppp w.wt	TBT ppm d.wt	Max E.C I:V
Mid and outer Oslofjord	3	3	w	1.21	w	1.33	i	w	0.12	w	i	w	w	w	1.47	0.08	<0.10	<2.02	w	0.02	I
Lista area	2	2	w	1.66	w	0.96	i	w	0.08	w	i	w	<77.76	<0.50	<0.75	0.11	<0.05	1.37	w	0.02	II
Bømlo-Sotra area	1	1	w	1.88	w	0.91	i	w	0.13	w	i	w	w	w	1	<0.03	<0.05	<1.51	w	0.26	II
Outer Ranfjord, Helgeland	0	2	w	w	w	w	i	w	w	w	i	w	w	w	w	w	w	w	w	w	miss
Lofoten area	1	3	w	0.54	w	1.29	i	w	0.08	w	i	w	w	w	<0.34	0.05	<0.05	<0.44	w	0.03	I
Finnsnes- Skjervøy area	0	1	w	w	w	w	i	w	w	w	i	w	w	w	w	w	w	w	w	w	miss
Hammerfest-Honningsvåg	0	2	w	w	w	w	i	w	w	w	i	w	w	w	w	w	w	w	w	w	miss
Varanger peninsula area	1	5	w	0.67	w	1.12	i	w	0.04	w	i	w	w	w	<0.29	0.05	<0.05	<0.41	w	w	I

I	38
II	3
III	0
IV	0
V	0

Reference index 2005-new (with supplementary analyses and stations)

Max(median). Statistics for alle areas: (n = Index-station measured, N = Station programmed for index)

Average of Max E.C is 1.4

Index areaname (Reference area) 2006	n	N	As ppm d.wt	Pb ppm d.wt	F ppm d.wt	Cd ppm d.wt	Cu ppm d.wt	Cr ppm d.wt	Hg ppm d.wt	Ni ppm d.wt	Zn ppm d.wt	Ag ppm d.wt	PAH_S ppb w.wt	BAP ppb w.wt	DDTSS ppb w.wt	HCB ppb w.wt	HCHSS ppb w.wt	CBSSe ppb w.wt	TCDDN ppp w.wt	TBT ppm d.wt	Max E.C I:V
Mid and outer Oslofjord	3	3	w	0.86	w	1.11	i	w	0.18	w	i	w	w	w	2.3	0.08	<0.05	1.86	<0.10	0.02	II
Lista area	2	2	w	0.78	w	1.01	i	w	0.08	w	i	w	<9.14	<0.50	<0.33	0.09	<0.05	<0.63	w	0.01	I
Bømlo-Sotra area	1	1	w	1.31	w	0.84	i	w	0.11	w	i	w	w	w	<1.06	<0.03	<0.05	<1.04	w	0.1	II
Outer Ranfjord, Helgelan	0	2	w	w	w	w	i	w	w	w	i	w	w	w	w	w	w	w	w	w	miss
Lofoten area	1	3	w	0.71	w	1.3	i	w	0.09	w	i	w	w	w	<0.36	<0.03	<0.05	<0.61	w	0.02	I
Finnsnes- Skjervøy area	0	1	w	w	w	w	i	w	w	w	i	w	w	w	w	w	w	w	w	w	miss
Hammerfest-Honningsvåg	0	2	w	w	w	w	i	w	w	w	i	w	w	w	w	w	w	w	w	w	miss
Varanger peninsula area	1	5	w	0.99	w	1.74	i	w	0.04	w	i	w	w	w	<0.29	<0.03	<0.05	<0.69	w	w	I

I	40
II	2
III	0
IV	0
V	0

Statens forurensningstilsyn
Postboks 8100 Dep,
0032 Oslo
Besøksadresse: Strømsveien 96

Telefon: 22 57 34 00
Telefaks: 22 67 67 06
E-post: postmottak@sft.no
www.sft.no

Statlig program for forurensningsovervåking omfatter overvåking av forurensningsforholdene i luft og nedbør, skog, vassdrag, fjorder og havområder. Overvåkningsprogrammet dekker langsiktige undersøkelser av:

- overgjødsling
- forsuring (sur nedbør)
- ozon (ved bakken og i stratosfæren)
- klimagasser
- miljøgifter

Overvåkningsprogrammmet skal gi informasjon om tilstanden og utviklingen av forurensningssituasjonen, og påvise eventuell uheldig utvikling på et tidlig tidspunkt. Programmet skal dekke myndighetenes informasjonsbehov om forurensningsforholdene, registrere virkningen av iverksatte tiltak for å redusere forurensningen, og danne grunnlag for vurdering av nye tiltak. SFT er ansvarlig for gjennomføringen av overvåkningsprogrammet

TA-2371/2008
ISBN 978-82-577-5299-6