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REPORT

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Abstract

This report is part of the Norwegian contribution to the SIME 2007 meeting administrated by OSPAR. JAMP 2005 included the monitoring of contaminants in blue mussel (61), dogwhelk (8), cod (9) and flatfish (12) along the coast of Norway from Oslo to Bergen, Lofoten and Varangerfjord. The results indicated elevated levels of contaminants in the inner Oslofjord (PCBs, mercury and lead in cod; PCBs in blue mussel), and Sørfjord and Hardangerfjord (cadmium, lead, mercury and DDT in blue mussel, and mercury in cod). The results from the remaining stations showed low or moderate levels of contamination in 2005. Considering the whole monitoring period, significant upward trends were found for mercury in cod from the inner Oslofjord and a downward trend was found for lead in blue mussel from Sørfjord/Hardangerfjord. The “Pollution" index was between “marked” and “severe,” as it was in 2004. The “Reference” index was between “slight” 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 discussed.

4 keywords, Norwegian	4 keywords, English
1. Miljøgifter	1. Contaminants
2. Organismer	2. Organisms
3. Marin	3. Marine
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WORKING GROUP ON CONCENTRATIONS, TRENDS AND EFFECTS OF SUBSTANCES IN THE MARINE ENVIRONMENT (SIME)

HAMBURG 6-8 MARCH 2007

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JOINT ASSESSMENT AND MONITORING PROGRAMME (JAMP)

NATIONAL COMMENTS REGARDING

THE NORWEGIAN DATA FOR 2005

Oslo, 19. January 2007

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

This report presents the Norwegian national comments on the 2005 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 2005 investigations are directed to particular JAMP issues relating to contaminants and implemented by SIME. JAMP replaced Joint Monitoring Programme (JMP) in 1995.

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-80106, O-25106, O-26106).

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).

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**. The comments are presented in accordance with the agreed standardised format (ASMO 1997, Annex 12). Following the SIME meeting in Hamburg, 6-8 March 2007, 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, Åse Bakketun, 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, 19 January 2007.

Norman W. Green
Project co-ordinator

Contents

1. General Details

1.1. Executive Summary / Sammendrag

The Norwegian JAMP 2005 included the monitoring of micropollutants (contaminants) in blue mussel (61 stations), dogwhelks (8), cod (9) and flatfish (12) from the border of Sweden in the south along the coast of Norway to the Bergen area, Lofoten and the Varangerfjord bordering Russia. The mussel sites include supplementary stations for the Norwegian Index programme, The results showed several cases of levels of contaminants, higher than Class I 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 lead and mercury, in particular where cod liver from the inner Oslofjord was severely polluted with PCB (Class IV), the highest since monitoring began in 1990, and 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 1984-2005;
- JAMP areas 63 and 62: Sørfjord and Hardangerfjord:for blue mussel, up to Class V for DDT (expressed as DDE), Class III for lead and cadmium as before; and for cod: Class II for mercury and DDE, as before. A significant downward trend was found for lead in blue mussel at two stations in Hardangerfjord 1987-2005, and also for cadmium at three stations in Sørfjord over the same period. An upward trend was found for mercury in fillet in flounder from Sørfjord;
- Part of JAMP area 26: Langesundsfjord has been an area of concern partly due to concentrations of HCB in blue mussel. From 2001 to 2004 the blue mussel have been insignificantly or moderately polluted (Class I and II). However, in 2005 the blue mussel were markedly polluted (Class III). A downward trend was found for the period 1990-2005.

Two environmental indices have been applied annually since 1995 to assess the levels of contamination in blue mussel from "polluted" and "reference" areas. The 2005 Pollution Index result was between the classes "markedly" and "severely" polluted in the Norwegian Pollution Control Authority's (SFT's) classification system, the same level as in 2003. The Reference Index was between the classes "slightly" and "moderately" polluted" (Class II), as in years prior to 2005.

The biological effects methods OH-pyrene (pyrene metabolite; marker for PAH exposure), δ-aminolevulinic acid dehydrase (ALA-D; marker for lead exposure), and the activity of cytochrome P4501A (EROD; marker for planar hydrocarbons, such as certain PCBs/PCNs, PAHs and dioxins) were determined in cod from three to four stations along the coast from the Oslofjord to Hardanger. With respect to OH-pyrene metabolites in 2005, the Oslofjord showed the highest levels of OH-pyrene. Furthermore, the concentrations of OH-pyrene in cod from Lista were the lowest ever recorded at this station. Results for ALA-D indicated exposure of cod to lead in the inner Oslofjord and inner Sørfjord. There were no clear differences in EROD-activities (an indication of CYP1A activity) between stations in 2005. Previous years have also shown that EROD in fish from the Oslofjord and the Sørfjord are not consistently higher than at other presumed cleaner stations, although this has been observed some earlier years. The amount of CYP1A protein was however consistently higher in the Oslofjord than the Sørfjord and the Karihavet, 2003-2005.

The presence of organotin (as TBT) in Norwegian waters was still a problem in 2005, most evident close to harbours, but also at stations 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 eight stations except for one. Seven of the twelve timeseries for TBT in blue mussel 1997-2005 showed significant *downward* trends. There was also a *downward* trend found in effects of TBT (i.e. VDSI) in dogwhelk. This may be an indication that regulatory action has lead to an improvement in the investigated areas.

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 2005 omfattet JAMP undersøkelse av blåskjell (61 stasjoner, inkludert de til SFTs forurensningsindeks og til overvåking av TBT), purpursnegl (8), torsk (9) og flatfisk (12) fra svenskegrensen i syd til Bergen, Lofoten og Varangerfjorden mot den russiske grensen. 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.IV for PCB og mindre forurenset med hensyn til bly og kvikksølv. Torskelever fra indre Oslofjord var markert forurenset med PCB (Kl.IV), som var det høyeste nivået siden 1990. 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 1984-2005;*
- *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 to stasjoner i Hardangerfjorden 1987-2005, og for kadmium på tre stasjoner i Sørfjord. Skrubbefilet fra Sørfjord viste økende trend for kvikksølv .*

- *Langesundfjorden har vært et område med bl.a. høye konsentrasjoner av HCB i blåskjell. Forurensningsnivået fra 2001 til 2004 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 1990-2005.*

SFTs blåskjell-forurensningsindeks og blåskjell-referanseindeks har blitt brukt årlig siden 1995 på en gruppe "forurensede-" og "referanse-" fjordområder. Forurensningsindeksen for 2005 betegnet sin gruppe mellom "markert" og "sterkt" forurenset. Dette var samme klasse som i 2003. 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 ved Lista er de laveste som er registrert på denne stasjonen. Resultatene for ALA-D indikerte bly-eksponering for torsk fra indre Oslofjord og indre Sørfjord. Det var ingen klare forskjeller i EROD-aktivitet (dvs. aktivitet av CYP1A) mellom stasjoner i 2005. Tidligere år har også vist at EROD 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, 2003-2005.

Effekter av organotin (bl.a. TBT) kunne fortsatt registreres i 2005, 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. Syv av tolv tidstrender for TBT i blåskjell perioden 1997-2005 var avtakende. Dette kan kanskje tyde på at forbud mot bruk av TBT som begroingshindrende middel på båter har ført til forbedring i de undersøkte områdene. Virkning av TBT ble funnet på alle stasjoner bortsett i fra Varangerfjorden. Det ble funnet en signifikant nedadgående trend i imposex på Færder.

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).

Data are submitted to ICES under three categories: for Purpose A (health assessment) on a voluntary basis, Purpose C (spatial distribution) on a voluntary basis and Purpose D (temporal trend assessment) on a mandatory basis. Where practical, data collection was in accordance to agreed procedures (OSPAR 1990, 1997). Data were screened and submitted to ICES in accordance with procedures outlined by ICES (1996).

This report focuses on issues and situations in Norway concerning contaminants and considered of interest to the implementation of JAMP (Table 1). It should be noted that these issues are being revised (cf., MON 2001). The Norwegian programme for JAMP 2003 has been outlined previously (Green 2003).

Table 1. Extract from list of JAMP issues, subjects and descriptions to which the Norwegian investigations for 2003 can be addressed (cf. ASMO 1997, Annex 30).

Issue	Subject	Description
1.2	Hg, Cd, and Pb	What are the concentrations and fluxes in sediments and biota?
1.3	TBT	To what extent do biological effects occur in the vicinity of major shipping routes, offshore installations, marinas and shipyards?
1.7	PCBs	Do high concentrations pose a risk to the marine ecosystem?
1.8	PCBs	Do high concentrations of non-ortho and mono-ortho CBs in seafood pose a risk to human health?
1.10	PAHs	What are the concentrations in the maritime area?
1.11	PAHs	Do PAHs affect fish and shellfish?
1.12	Other synthetic compounds	How widespread are synthetic organic compounds within the maritime area?
1.15	Chlorinated dioxins and dibenzofurans	What concentrations occur and have the policy goals (for the relevant parts of the maritime area) been met?
1.17	Biological effects of pollutants	Where do pollutants cause deleterious biological effects?
5.3	Chemical used [mariculture]	In which areas do pesticides and antibiotics affect marine biota?
6.1	Ecosystem health	How can ecosystem health be assessed in order to determine the extent of human impact?

The chapter structure of this report for the first and second level is according to agreed format (ASMO 1997, Annex 12) which *inter alia* presents results before methodology.

1.3. Information on measurements

An overview of JAMP stations in Norway is shown in the tables in Appendix E and maps in Appendix F. The stations and sample counts relevant to the 2005 investigations are noted in the tables in Appendix E. Data reports have been published recently for sediment 1986-1997 (Green *et al.* 2002a) and biota 1981-2002 (Green *et al.* 2002b-d).

Blue mussel was sampled at 61 stations (including supplementary stations for Index and TBT), dogwhelk at 8, cod at 9 and flatfish at 12 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 H or figures in Appendix I, 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 5 and Table 6 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. 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 H. 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 severely polluted with ΣPCB-7 (Class IV, Figure 2A). The median concentration in cod liver was 4157 µg/kg w.w., nearly twice the 2004 value and 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 2005 was 421-8068 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 from the outer Oslofjord was slightly 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 F) 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 2005.

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 H).

The fillet of "small"[1] (35-44 cm) and "large" cod (47-78 cm) from the inner Oslofjord in 2005 were moderately polluted with mercury (Class II, Figure 3A, B). A significant *upward* trend was detected for the period 1984-2005 for both size groups, even though the concentrations in 2002-2005 were lower than the three previous years. No significant trend was found for the period 1998-2005. 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 H). 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) 2005 was 0.14 mg/kg w.w.. This was less than the concentration found in 2004 and a quarter of the 2002 value; the second highest found during the entire period (1990-2005). "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 2005.

A significant *upward* trend was found for cadmium in mussel from one station in the inner Oslofjord (st. 30A). These blue mussel were moderately polluted with respect to cadmium in 2005.

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 marked concentrations of TBT in blue mussel from a station located in the inner Oslofjord (see chapter 1.3.8).

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[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.

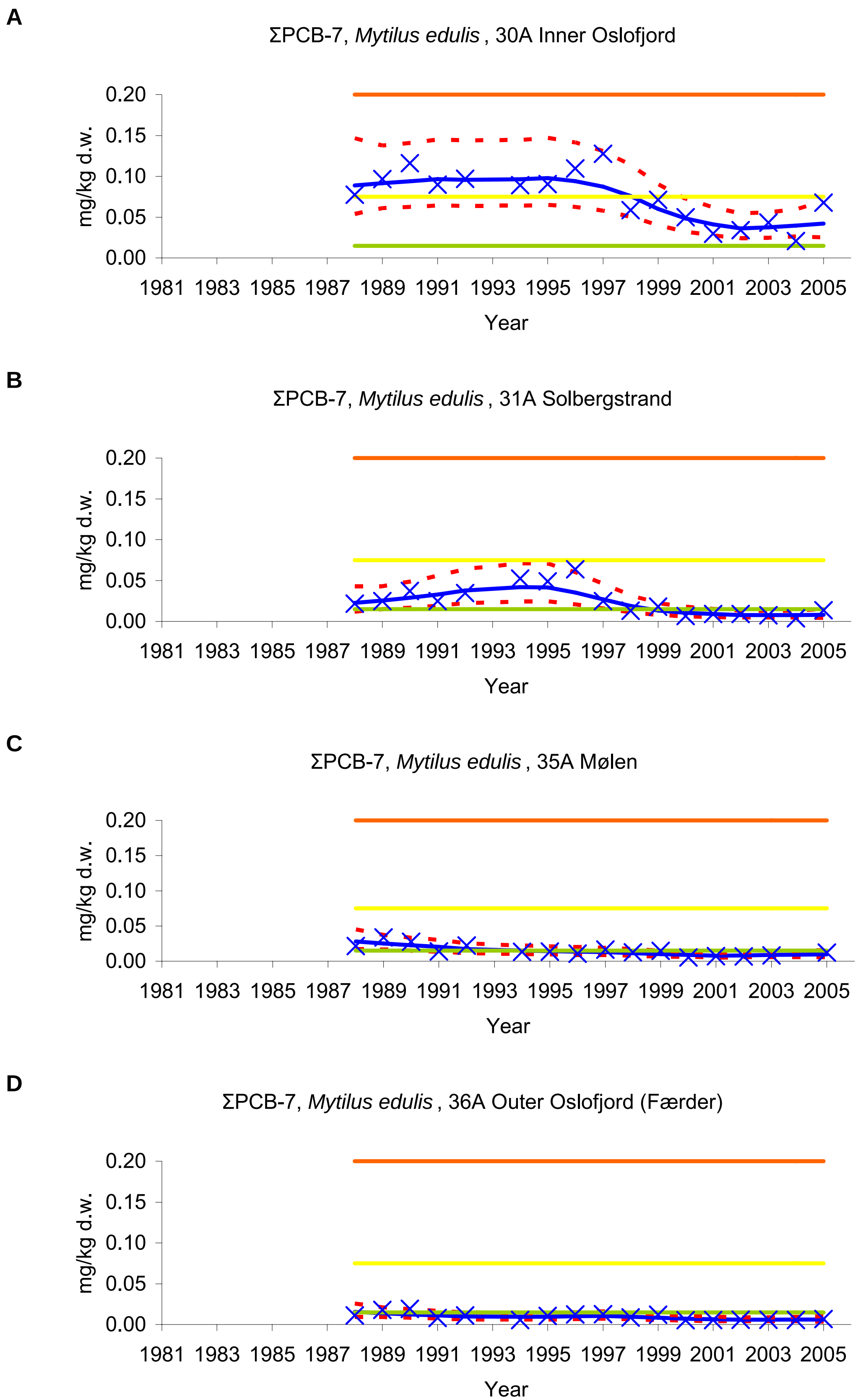


Figure 1. Median ΣPCB-7 (sum of PCB 28, 52, 101, 118, 138, 153 and 180) concentration in blue mussel (*Mytilus edulis*) from inner (st.30A) to outer (st.36A) Oslofjord. (cf. Appendix F and Appendix H, and and key in Figure 20).

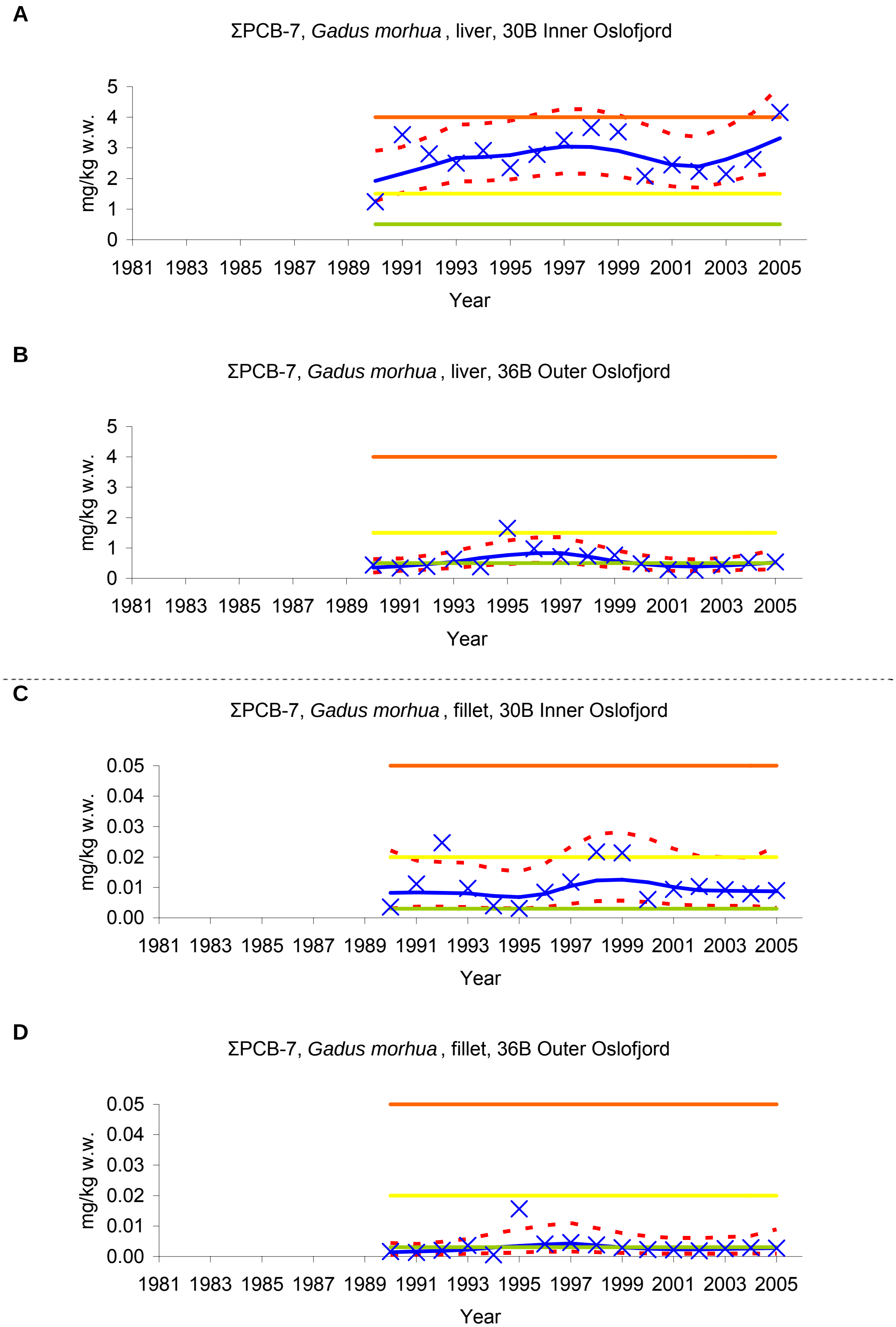


Figure 2. Median ΣPCB-7 (sum of PCB 28, 52, 101, 118, 138, 153 and 180) concentration in liver and fillet of cod (*Gadus morhua*) from the inner (st.30B) to outer (st.36B) Oslofjord. (cf. Appendix F and Appendix H, and key in Figure 20).

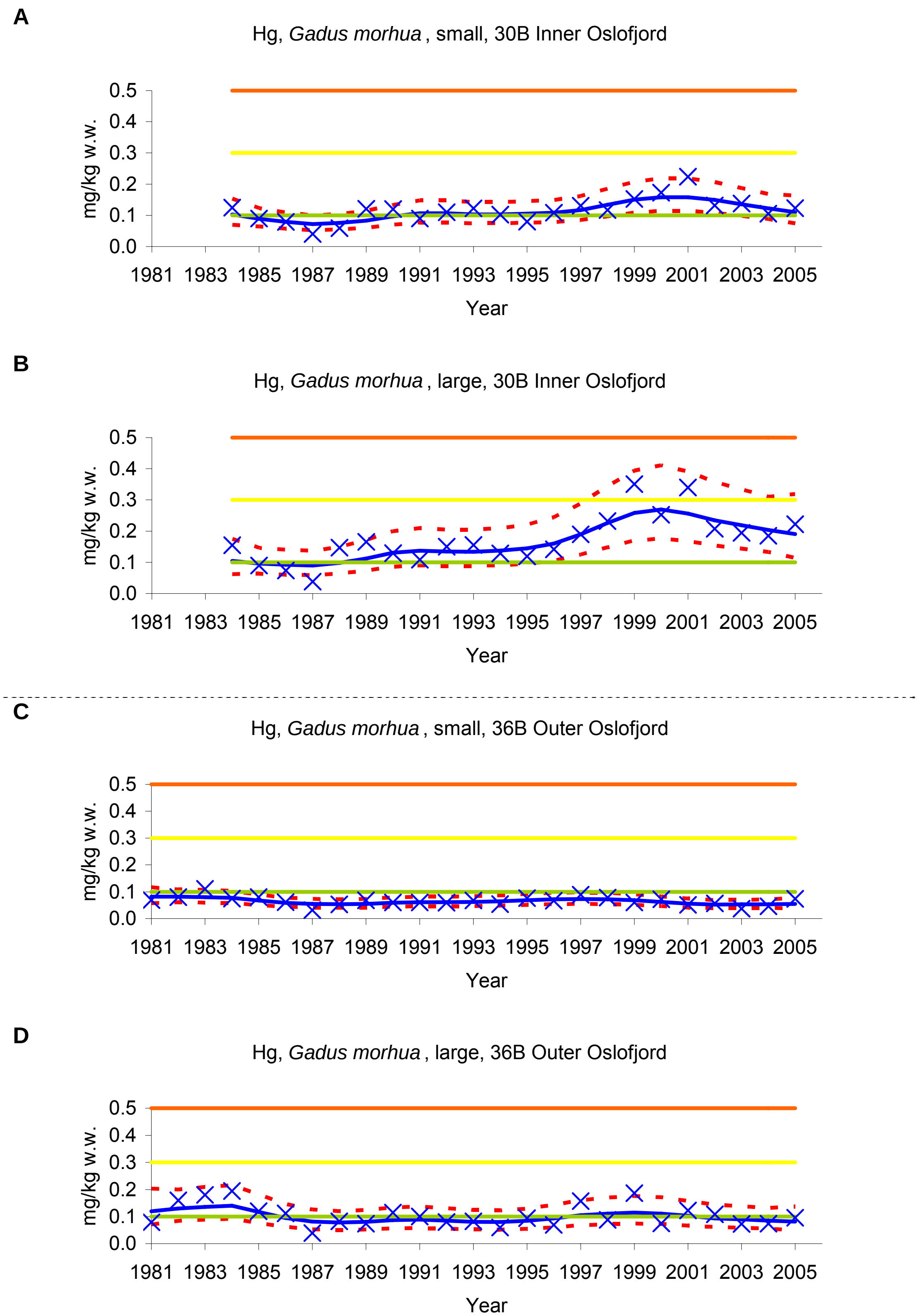


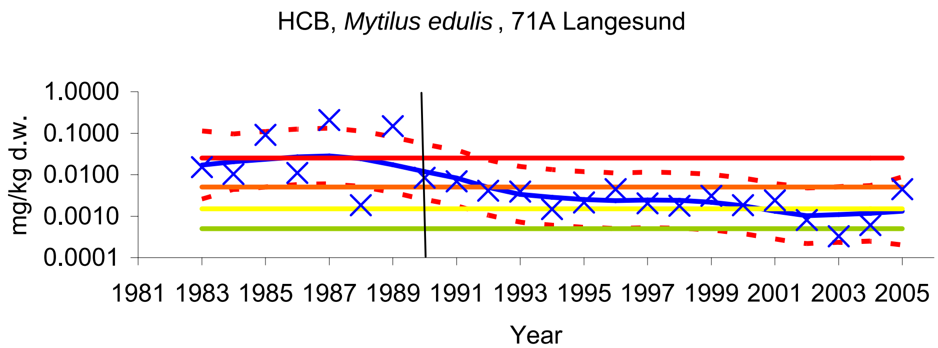
Figure 3. Median mercury (Hg) concentration in fillet of cod (*Gadus morhua*): for the inner Oslofjord (st.30B) “small” (**A**) and “large” (**B**) fish, and for the outer Oslofjord (st.36B) “small” (**C**) and “large” (**D**) fish. (cf. Appendix F and Appendix H, and key in Figure 20).

Blue mussel from Langesundsfjord (st.71A) in 2005 were markedly polluted with HCB (Class III, Figure 4A). The median concentration for 2005 was 4.47 mg/kg dry weight and over 7 times higher than the median found in 2004 and the highest since 1991. Median values found at two nearby Index stations (I712 and I713) were also high (Class IV, 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).

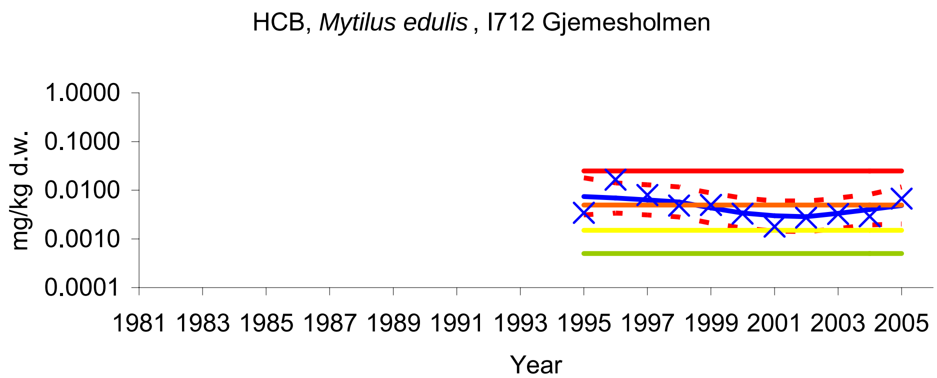
The power of the monitoring programme was 20 years for the period 1990-2005 and more than 25 years for the entire period (cf. Appendix H). The 1983-2005 data series had a significant *downward* trends but no significant trend was found for the recent period (1990-2005).

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 were markedly polluted (SFT Class III) at Langesund (st. 71A) and severely polluted at two nearby Index stations (I712 and I713) (Figure 33).

A



B



C

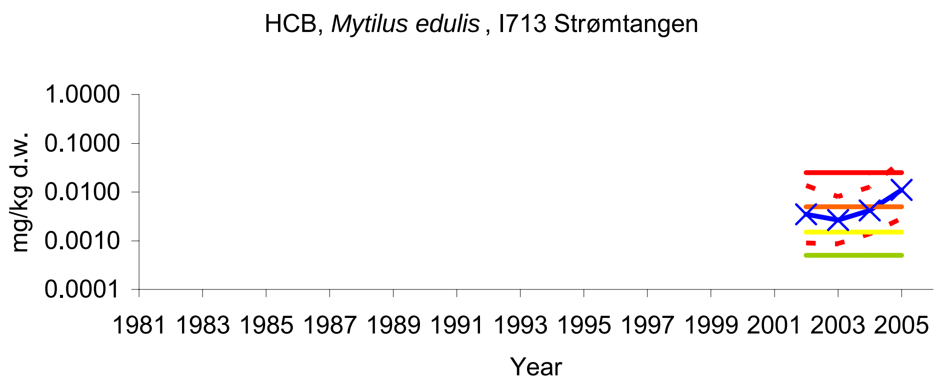


Figure 4. Median HCB concentration in blue mussel (*Mytilus edulis*) from Langesundsfjord (west of Oslofjord **A**) and two "Index" stations in the vicinity; Gjemesholmen (**B**) and Strømtangen (**C**) (cf. Appendix F and Appendix H, and key in Figure 20). Vertical line indicates when a magnesium factory 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 2005 are coupled to other studies in this area (cf. Knutzen & Green 2001a, Ruus & Green 2002, 2003, 2004, 2005, 2006) 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 H). Blue mussel as far as Ranaskjær (st.63A. ca.60 km from Odda at the head of the Sørfjord) were moderately polluted with cadmium (Figure 5). In 2004 this limit was as far as Krossanes at the mouth of the fjord (35 km from Odda). 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 H). Also, the median lead concentration at the stations nearest Odda (st.51A) was markedly polluted (Class III), whereas the other three stations in the Sørfjord (st.52A, 56A, 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) and Vikingneset (st.65A), 1990-2005. Three stations in Sørfjord were moderately polluted with respect to mercury.

Cod fillet from “small” (28-38 cm) and "large" individuals (46-64 cm) from the inner Sørfjord (st.53B) were moderately polluted with mercury (Class II). Overconcentrations for mercury were found in fillet in flounder (4-5 times "background") and an *upward* trend was also found. Overconcentrations were found for cadmium in cod liver and flounder liver from inner Sørfjord (7-8 times). Overcentrations of lead in flounder liver were also observed (4 times).

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, it is estimated that it would take 19-23 years to detect a hypothetical trend of 10% per year with 90% significance (Appendix H). 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) 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 550 µg/kg d.w. and range of 338-583 The lower limit to Class V is 150 µg/kg d.w. Blue mussel elsewhere in the Sørfjord and closest station in Hardangerfjord – Ranaskjær, were moderately polluted (Class II) with the exception of the markedly polluted station at Krossanes ca. 20 km to the north (Figure 9 and Figure 10). Cod fillet and flounder fillet and liver from the Sørfjord as well as flounder fillet from the Hardangerfjord were moderately polluted with ppDDE (Figure 11A, Appendix H).

The liver of cod from Hardangerfjord for 2005 were only slightly 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 H). 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. A *downward* trend was found for these substances in flounder fillet from inner Sørfjord.

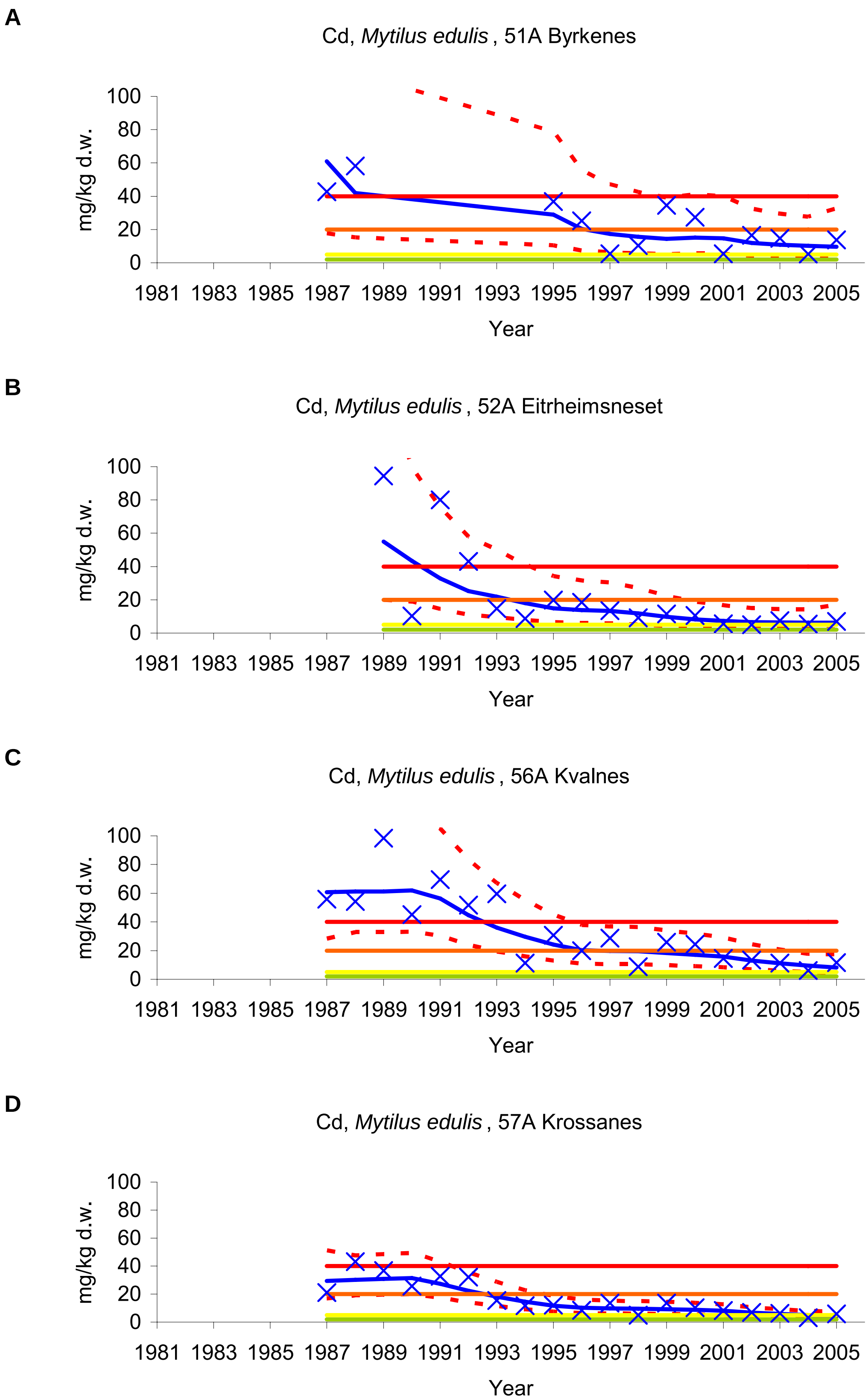


Figure 5. Median cadmium (Cd) concentration in blue mussel (*Mytilus edulis*) from inner (st.51A) to outer (st.57A) Sørfjord. NB: (cf. Appendix F and Appendix H, and key in Figure 20). **Note: for some years the upper confidence interval line is off-scale in figures A-C. Note: horizontal lines for Classes I and II are near x-axis.**

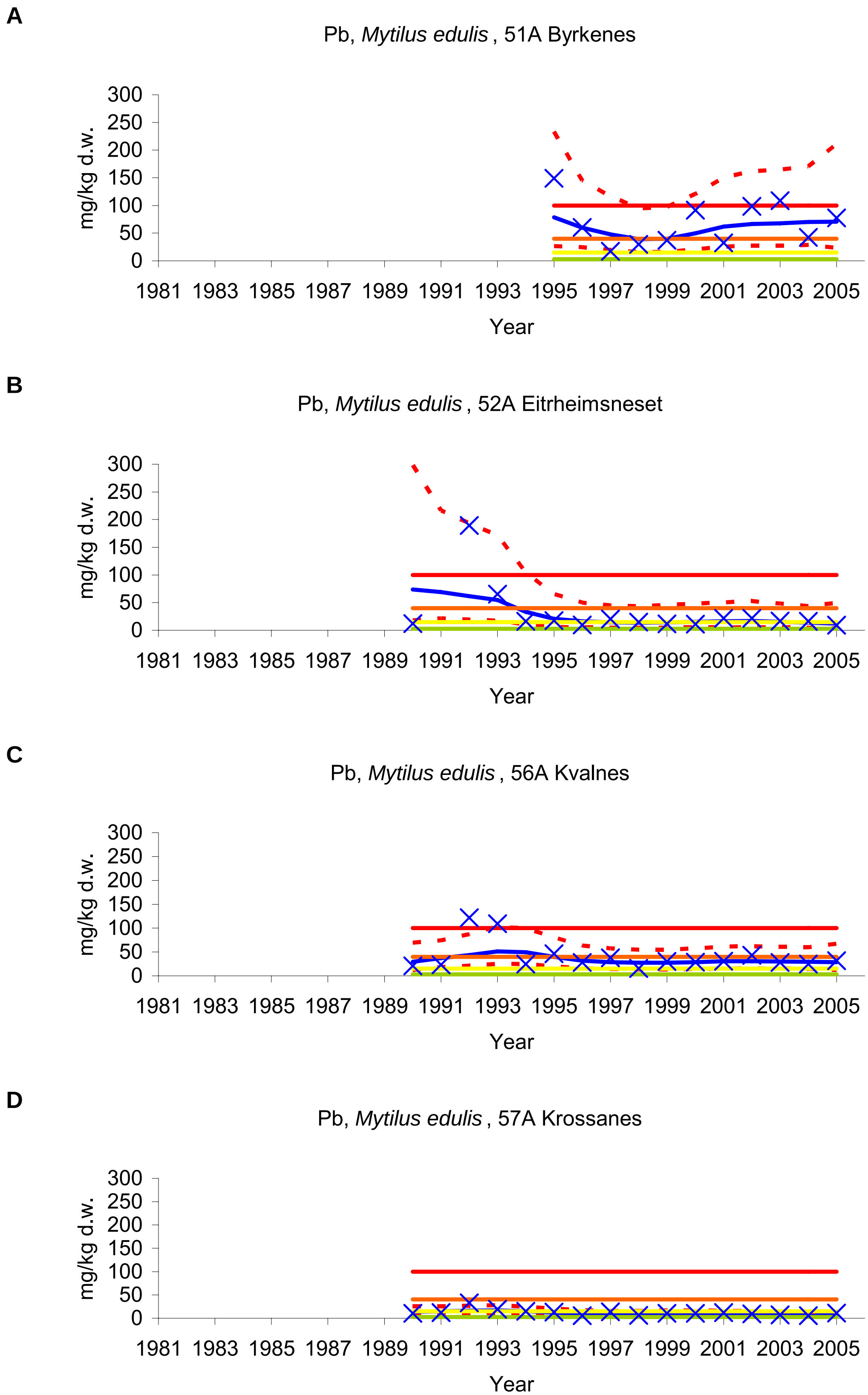


Figure 6. Median lead (Pb) concentration in blue mussel (*Mytilus edulis*) from inner (st.51A) to outer (st.57A) Sørfjord. (cf. Appendix F and Appendix H, and key in Figure 20). **Note: horizontal lines for Classes I and II are near x-axis.**

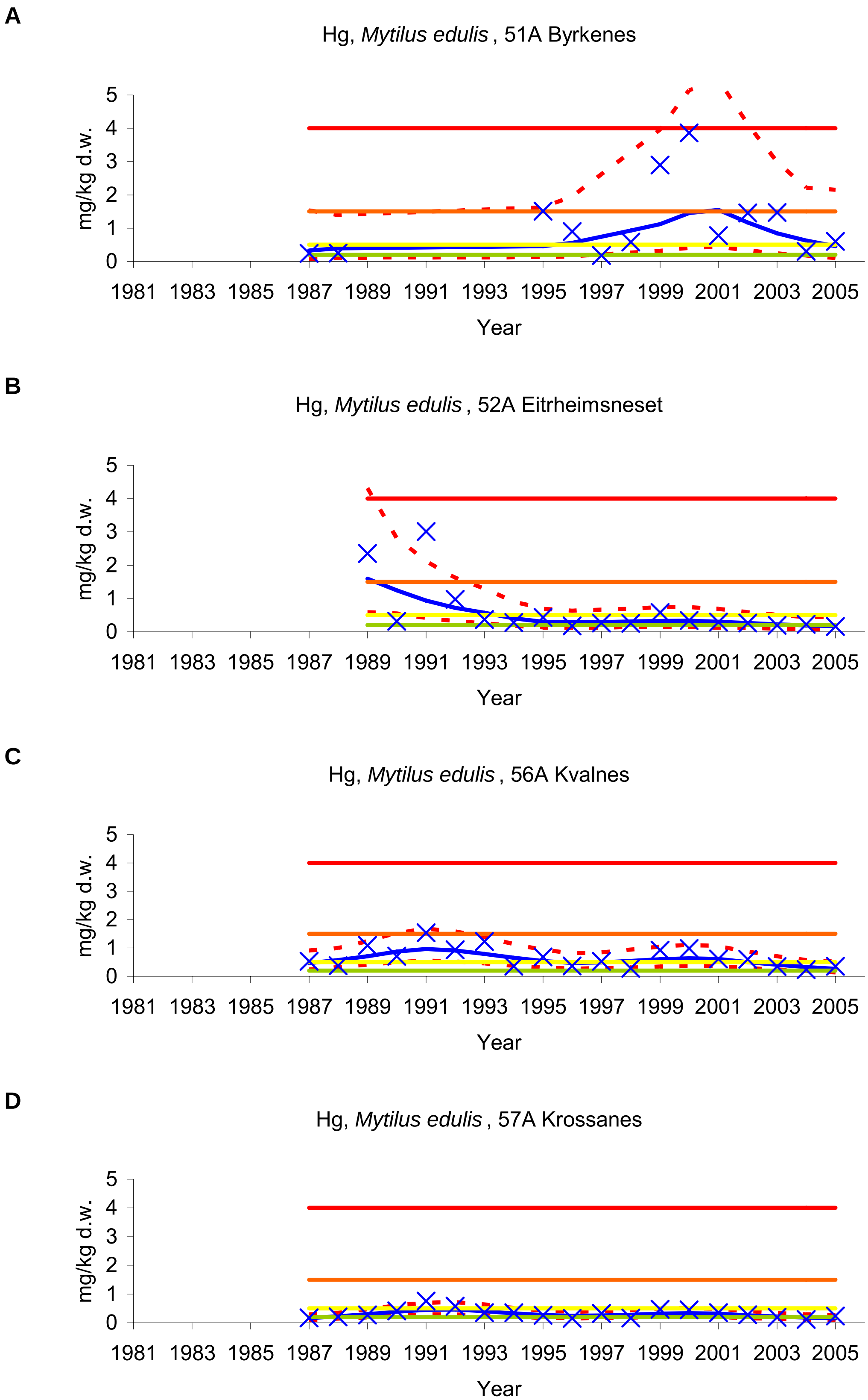


Figure 7. Median mercury (Hg) concentration in blue mussel (*Mytilus edulis*) from inner (st.51A) to outer (st.57A) Sørfjord. (cf. Appendix F and Appendix H, and key in Figure 20). **Note: for some years the upper confidence interval line is off-scale in figure A. Note: horizontal lines for Classes I and II are near x-axis.**

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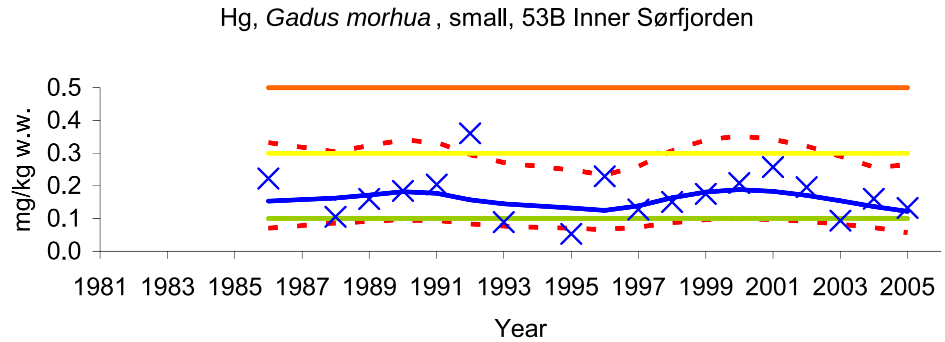

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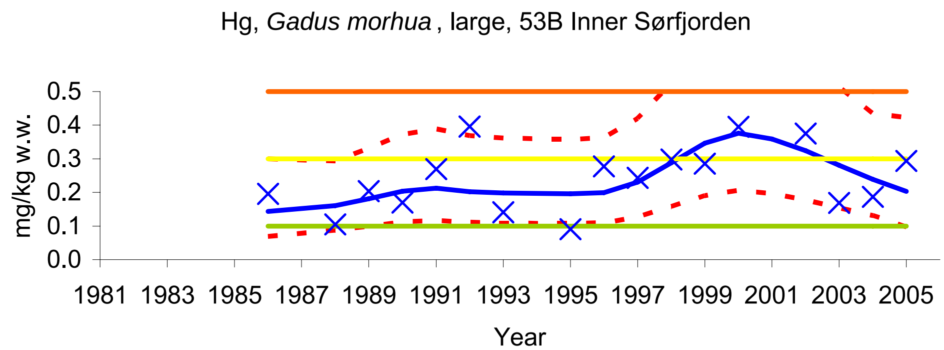

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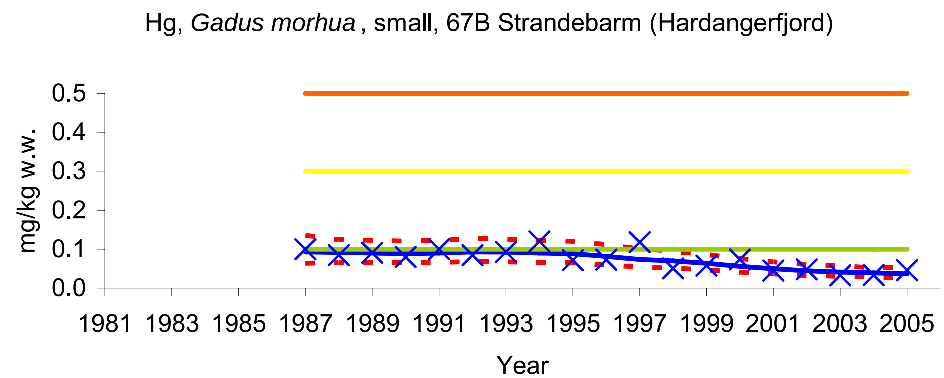

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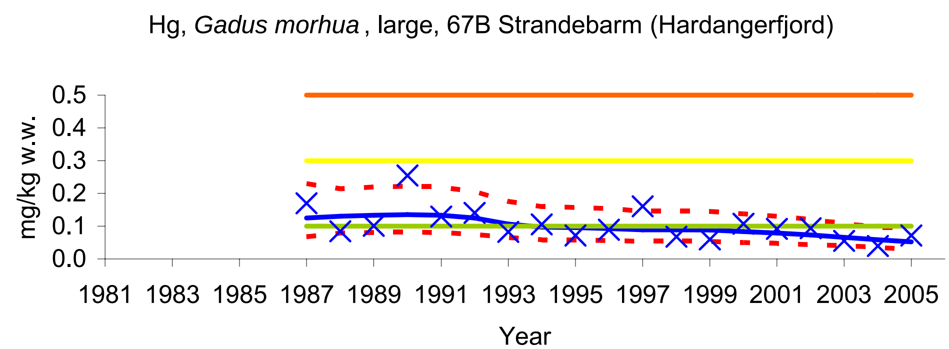
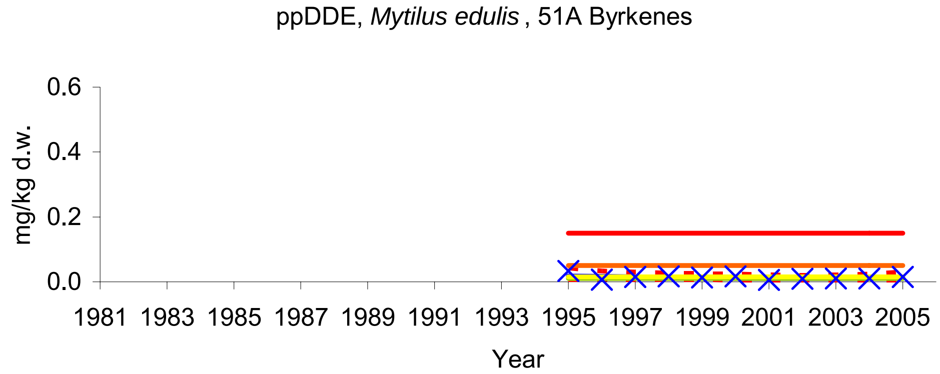


Figure 8. Median mercury (Hg) concentration in fillet of cod (*Gadus morhua*): from Sørfjord (st.53B) for "small" (**A**) and "large" (**B**) fish and Hardangerfjord (st.67B) for "small" (**C**) and "large" (**D**) fish (cf. Appendix F and Appendix H, and key in Figure 20). **Note: for some years the upper confidence interval line is off-scale in Figure B.**

A



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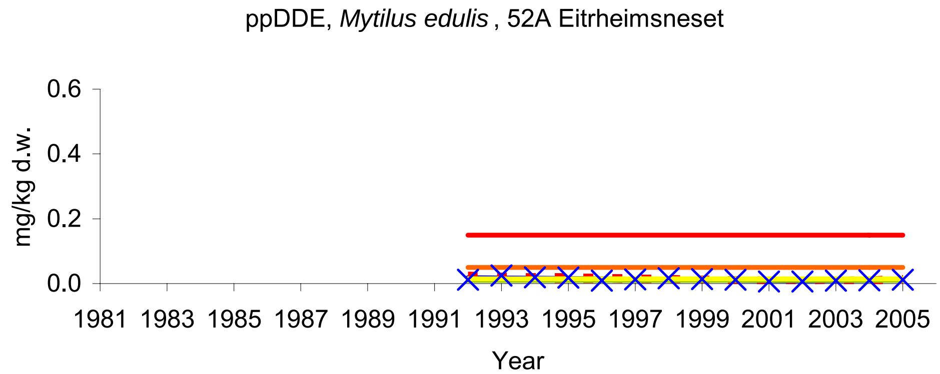

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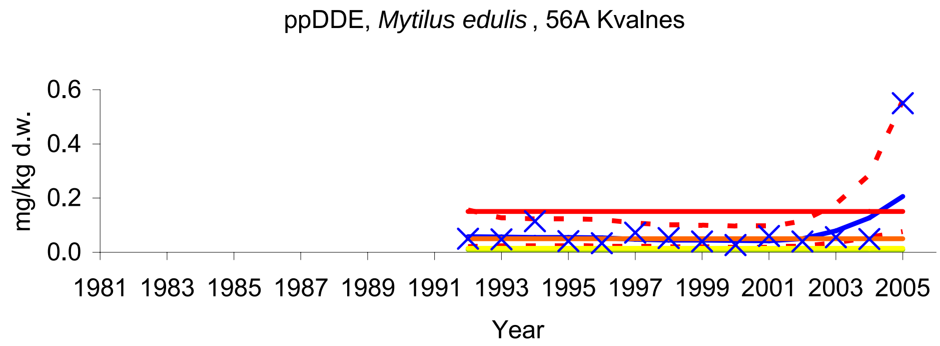

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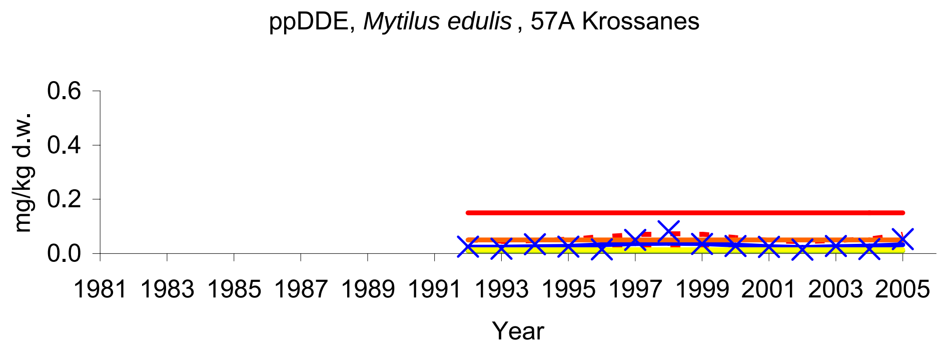


Figure 9. Median ppDDE concentration in blue mussel (*Mytilus edulis*) from inner (st.51A) to outer (st.57A) Sørfjord. (cf. Appendix F and Appendix H, and key in Figure 20). **Note: horizontal line for Class I is near x-axis.**

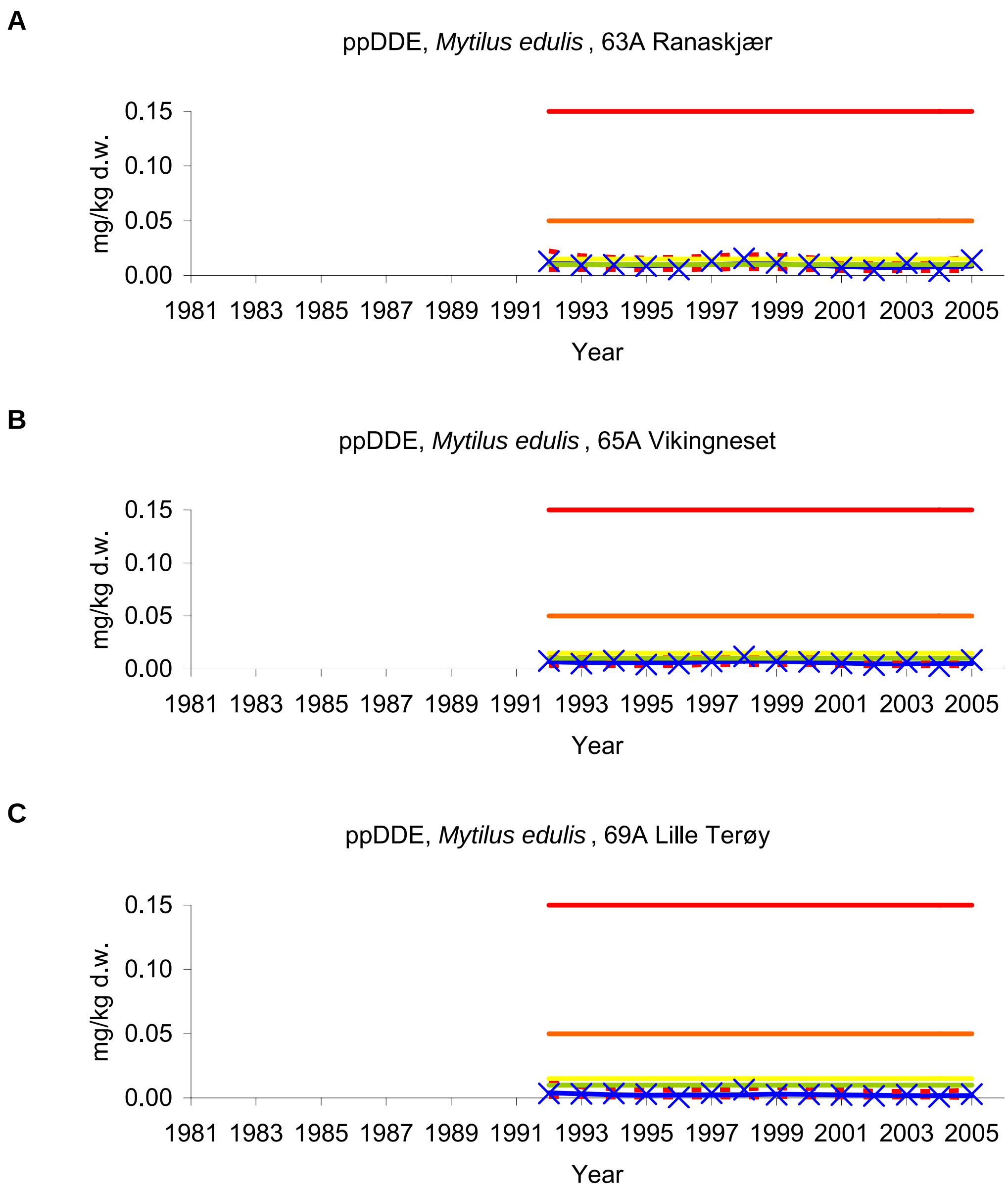


Figure 10. Median ppDDE concentrations in blue mussel (*Mytilus edulis*) from Hardangerfjord (st. 63A, 65A and 69A). (cf. Appendix F and Appendix H, and key in Figure 20). **Note: horizontal line for Class I is near x-axis.**

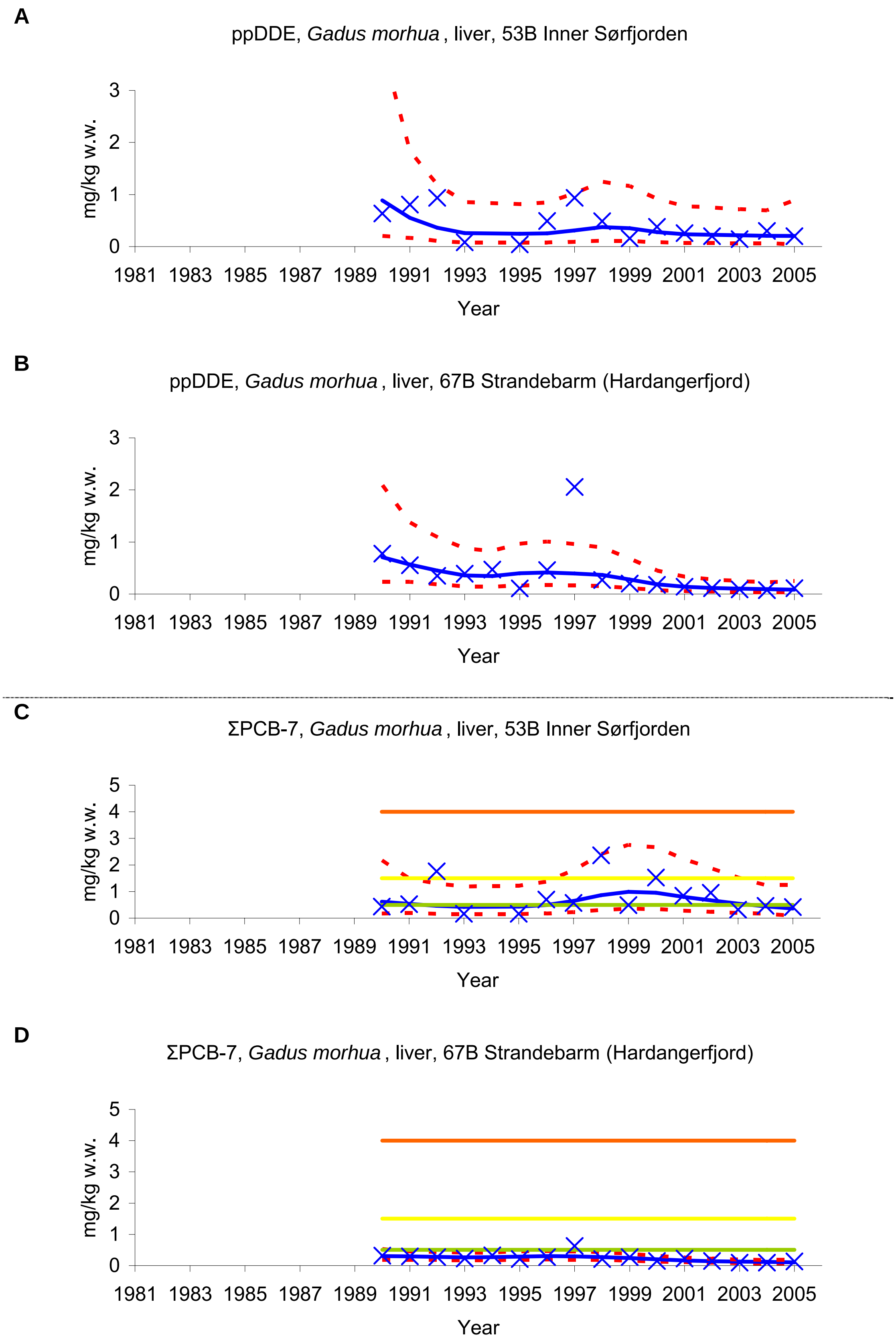


Figure 11. Median ppDDE and ΣPCB-7 concentrations in liver of cod (*Gadus morhua*) from Sørfjord (st.53B) and Hardangerfjord (st.67B) (cf. Appendix F and Appendix H, and key in Figure 20). **Note that for 1989 the upper confidence interval line is off-scale in Figure A.**

1.3.3. Lista area

Blue mussel, cod and dab were slightly polluted (Class I or below provisional high background), with one exception (moderate (Class II) for mercury in ”large” dab) and no upward trends were found (st.15, Appendix H and Appendix I).

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 slightly polluted (Class I) or showed no overcentrations with respect to metals or organochlorines (Appendix H and Appendix I). The unexpectedly the high concentration of ppDDE in the single bulk sample of flounder liver from Kyrping in 2004 remains unexplained.

1.3.5. Orkdalsfjord area

Blue mussel from this area were monitored for the period 1984-1996, and then not again until 2004 when bulk samples from four stations were investigated (Trossavika – st.84A, Flakk – 82A or Ingdalsbukt – 87A). In 2005 the blue mussel could be classified as “slightly polluted” (Class I) in SFT’s system, as found in 2004 and before.

1.3.6. Open coast areas from Bergen to Lofoten

This stretch of coastline covers 7° of latitude to 68°N (Appendix F). Sixteen mussel stations were investigated in 2005, two of these not in 2004 and fourteen of these not since the period 1990-1993. The longest times series, from 1997 to 2005 was obtained from blue mussel collected 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). Since 1997 a "new" 98A2 location 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 2005, the blue mussel were only slightly contaminated (SFT's Class I), which was generally the case for the period 1997-2003 (Appendix H and Appendix I). Plaice from Husholmen (98F2) in the Lofoten area had overconcentrations of cadmium, 5.1 times “background”.

The median concentrations in blue mussel from Sætervik (st.93A) 2005 were moderate (Class II) for ΣPCB-7, as it was in 2004. PCB and pesticides have not been measured at this station previously.

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 F). In 2005 only two mussel stations, one cod station and one plaice station were investigated in the Varangerfjord (at approximately 70°N).

Slight overconcentrations (less than 2 times “high background”) of cadmium were found in liver of plaice (st.10F) (Appendix H and Appendix I).

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 J). 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 3.1 for 2005 compared to 3.4 for 2004 (cf. Appendix J). A value between 3 and 4 would be between “Markedly” and “Severely” polluted. 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 2005 compared to the same five for 1998-2004, 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 2005, unchanged from 2004. 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 is classified between insignificantly (or slightly) and moderately polluted. 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 (1995-2005) have been calculated and show both significant upward and downward trends in blue mussel (cf. Appendix H). Some cases are worth noting:

- 30A Gressholmen, where a *downward* trend in ΣPCB-7 and TBT was found and where the 2005 medians were in Class II,
- 71A Bjørkøya in the Langesund area (Map 3, Appendix F), where a *downward* trend in HCB and TBT was found and where the 2005 medians were in Class III and II, respectively,
- I712 Gjemesholmen also in the Langesund area (Map 3, Appendix F), where a *downward* trend in ΣPCB-7 was found and where the 2005 median was in Class II,
- I713 Strømtangen also in the Langesund area (Map 3, Appendix F), where a *downward* trend in TBT was found and where the 2005 median was in Class II,
- I133 Odderø in the Kristiansand harbour (Map 4, Appendix F), where a *downward* trend for ΣPAH was found, and where the 2005 median was in Class III,
- 52A Eitrheimsneset in the inner Sørfjord (Map 6, Appendix F) where the 2005 median for cadmium was in Class III and a *downward* trend detected.

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 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 2005 included five biological effects methods (BEM): OH-pyrene, ALA-D, EROD, 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 2005 investigations OH-pyrene, ALA-D, EROD 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-2005.

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	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
TBT	Imposex/Intersex	snail soft tissue	organotin

Under controlled conditions the measures derived from OH-pyrene, EROD 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 12were 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.

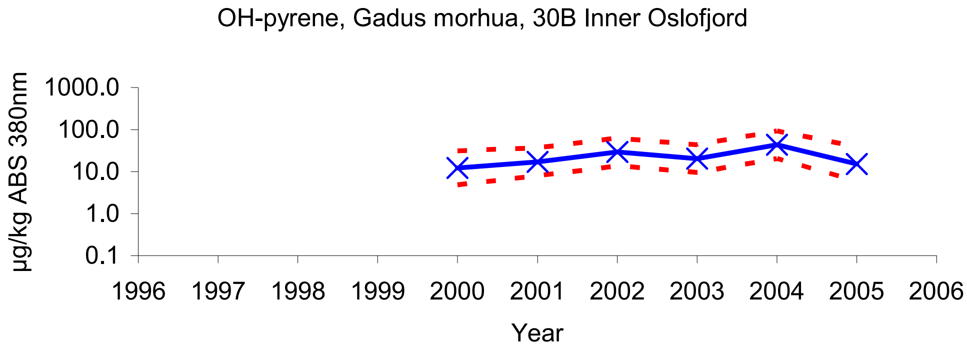
In 2005 the median concentration of OH-pyrene metabolites in cod from the inner Oslofjord (st.30B), was over thirteen times that of cod from Lista (st.15B), and a factor of 5 higher than that of cod from Inner Sørfjorden (st.53B) and the “reference” station in the Karihavet on the west coast (st.23B) (Figure 12, Appendix H).

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 (tst. 30B) but above the reference (st.23B) and those found in the inner Sørfjord (st.53B). It is worth mentioning 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). There was a slight increase in the median OH-pyrene-level at Lista from 2002-2003 to 2004 (Figure 12). However, the 2005-concentrations represented the lowest recorded at this station, and they were also lower than the concentrations observed at all other stations. 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. No significant temporal trends were found at these three stations.

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.

In 2005, as in 2000 and 2002-2004, the median concentration of OH-pyrene in cod from inner Oslofjord (30B) was higher than those observed at the other locations (Lista - 15B, inner Sørfjord - 53B, Karihavet - 23B). When considering the whole period (1998-2005), the annual median concentration at 30B was the highest or second highest compared to the other 2 or 3 stations (Appendix H). Furthermore, in most years, concentrations of OH-pyrene in cod from Sørfjorden (53B) were higher than the concentrations in cod from Sotra Bømlo (23B) (except 2003 and 2005). This confirmed the generally assumed contamination of the two areas (inner Sørfjord and inner Oslofjord).

A



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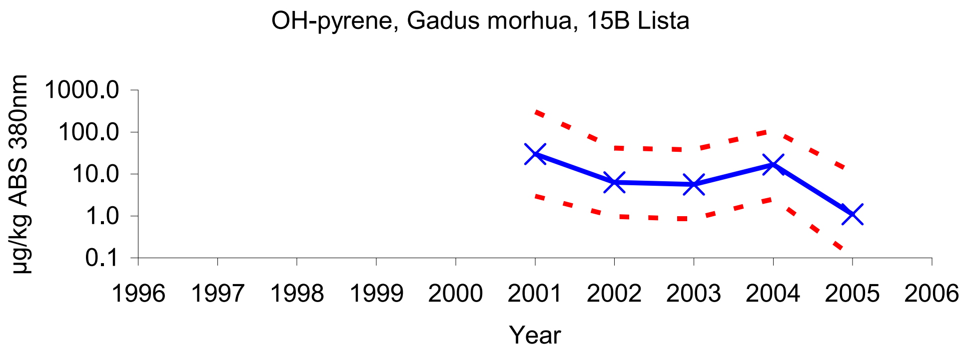

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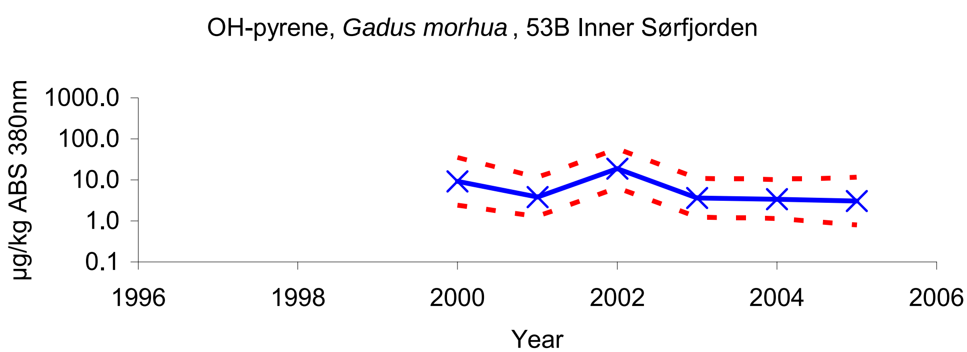

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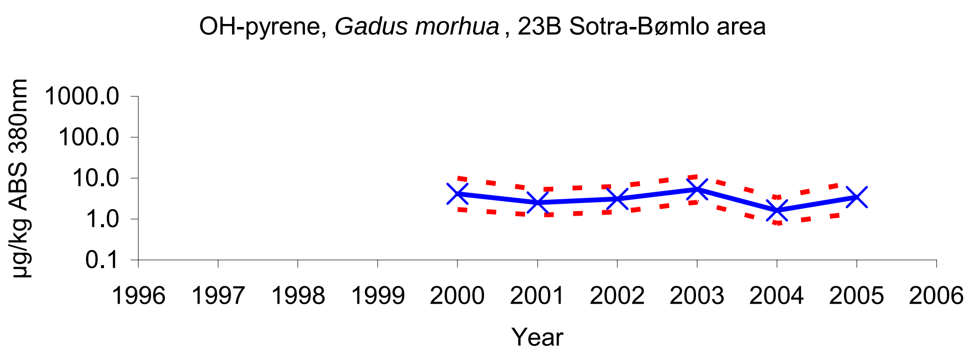


Figure 12. Concentration of OH-pyrene (µg/kg ABS 380nm) in bile from Atlantic cod collected at the inner Olsofjord (st.30B), Lista (st.15B), inner Sørfjorden (st.53B) and Sotra-Bømlo (st.23B). (cf. Appendix F and Appendix H, and key in Figure 20). **NB: log-scale.**

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 2000-2005 (Figure 13 and Appendix H,). For all years 1997-2005 the 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 2005 as in previous years, the inibition was largest in the inner Sørfjord and the inner Oslofjord . (Figure 13, Appendix H). This indicates pollution of lead (and possibly other metals) in these two fjords. In 1997-2002 and 2004-2005, the median ALA-D activity was lowest in the Sørfjord (st. 53B) (Appendix H, cf. Green *et al.*2004a, b). A slight increase in median ALA-D activity could be seen from 2002 to 2003-2005 indicating less exposure. This was supported by measurements of lead concentrations in cod liver, where the median decreased to about a third from 2002 to 2003 (Appendix H). This was followed by an increase in 2004-2005, however not to similar levels as between 1998 and 2002. It is also worth mentioning that the total discharge of lead into the inner Sørfjorden decreased from 3247 kg in 2004 to 1040 kg in 2005 (Ruus & Green 2004, 2005).

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

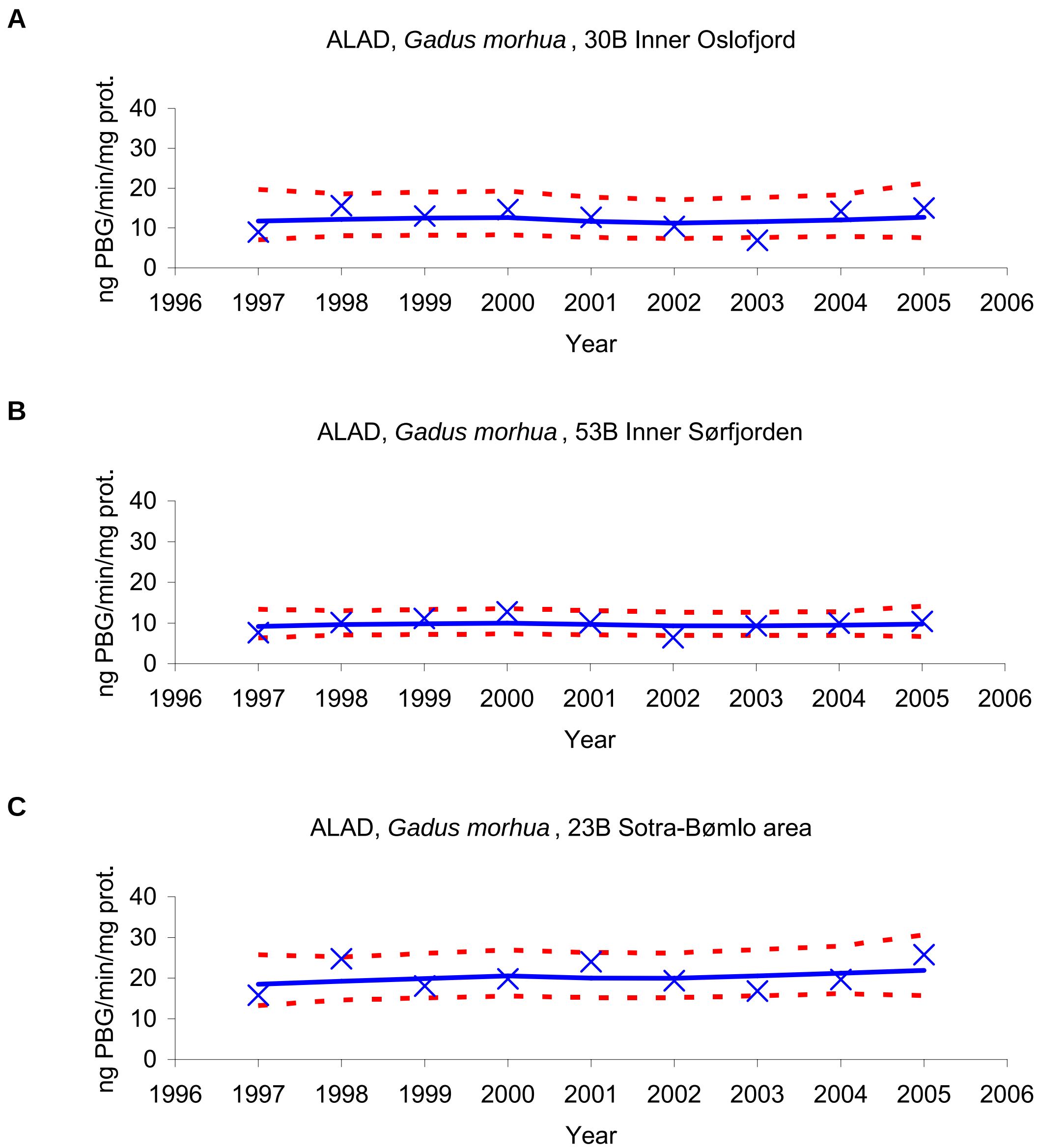


Figure 13. Activity of δ-aminolevulinic acid dehydrase (ALA-D, ng PBG/min/mg protein) in red blood cells from Atlantic cod collected at the inner Olsofjord (st.30B), inner Sørfjorden (st.53B) and Sotra-Bømlo (st.23B). (cf. Appendix F and Appendix H, and key in Figure 20). OBS: lower activity means higher exposure and vice versa.

1.4.3. EROD activity in liver

EROD activity

High activity of hepatic cytochrome P4501A activity (EROD) 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). However, there were no clear differences among the cod from the inner Oslofjord, inner Sørfjord and Karihavet in 2005 (Figure 14, Appendix H). Previous years have also shown that EROD in fish from inner Oslofjord and 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.

In 2002, extreme concentrations of PCBs were found in four individuals of cod from the inner Sørfjord (Green *et al.* 2004a). It might have been expected that this should induce a subfamily of cytochrome P450A1 proteins (CYP 1A) and thus increase EROD activity in these individuals. Two of these four individuals of cod were those with the highest EROD-activities. However, the other two had moderate EROD activities. Thus EROD activities gave no clear evidence to support the high concentrations of PCB observed in some of the cod individuals and it was concluded that moderate EROD activities do not disprove an environmental problem, at least with respect to the PCB congeners in question (Green *et al.* 2004a). In 2004 and 2005 none of the individuals analysed had correspondingly high PCB-concentrations (unpublished data).

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 H), 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 response.

In 2003, a correlation was shown between the EROD activity and the amount of CYP1A protein measured (Green *et al.* 2004b). This correlation was not as evident in 2004 and 2005. However, in contrast to the EROD results CYP1A was 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 H).

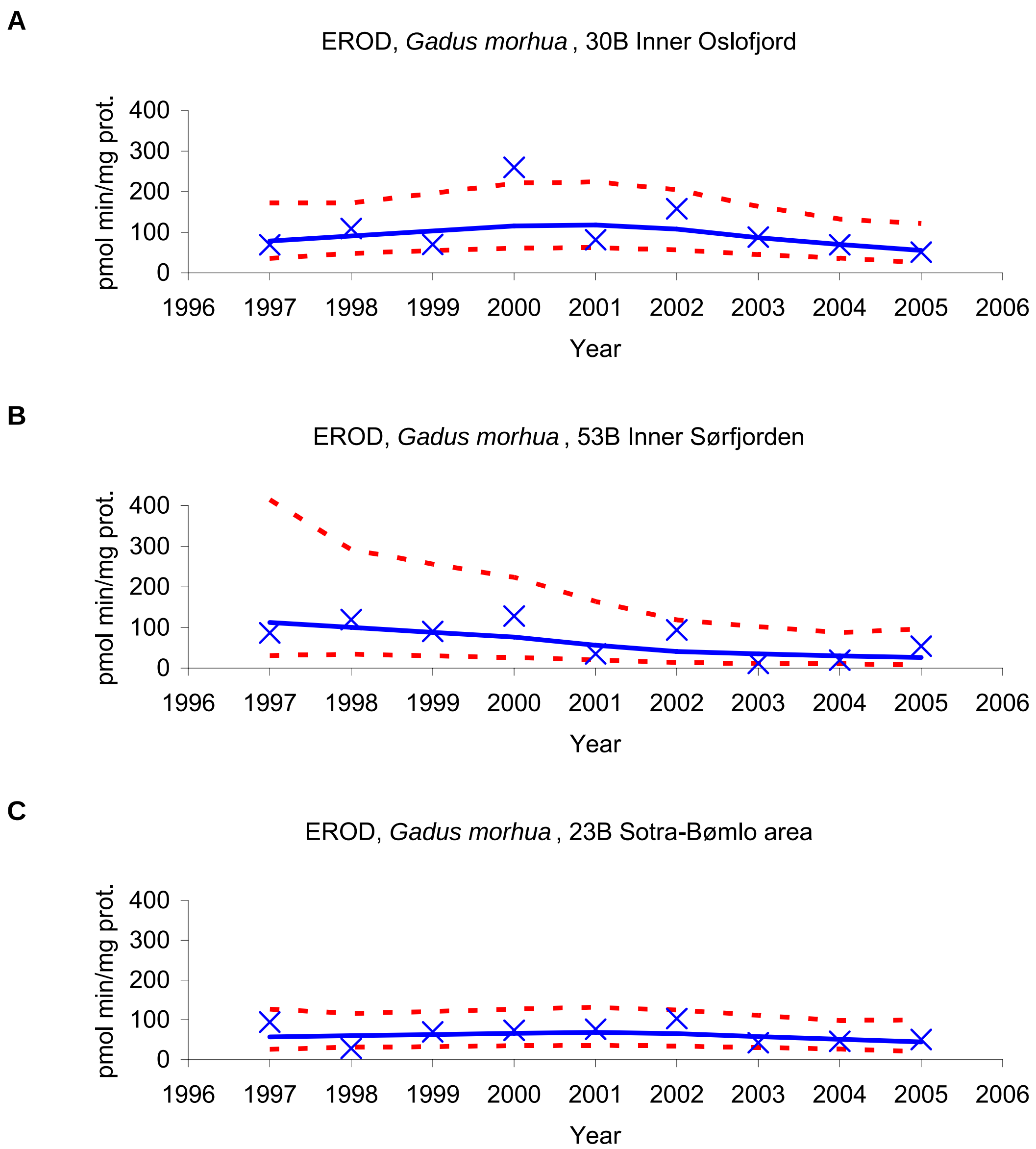


Figure 14. Activity of cytochrome P4501A (EROD, pmol/min/mg protein) in liver from Atlantic cod collected at the inner Olsofjord (st.30B), inner Sørfjorden (st.53B) and Sotra-Bømlo (st.23B). (cf. Appendix F and Appendix H, and key in Figure 20).

A

B

C

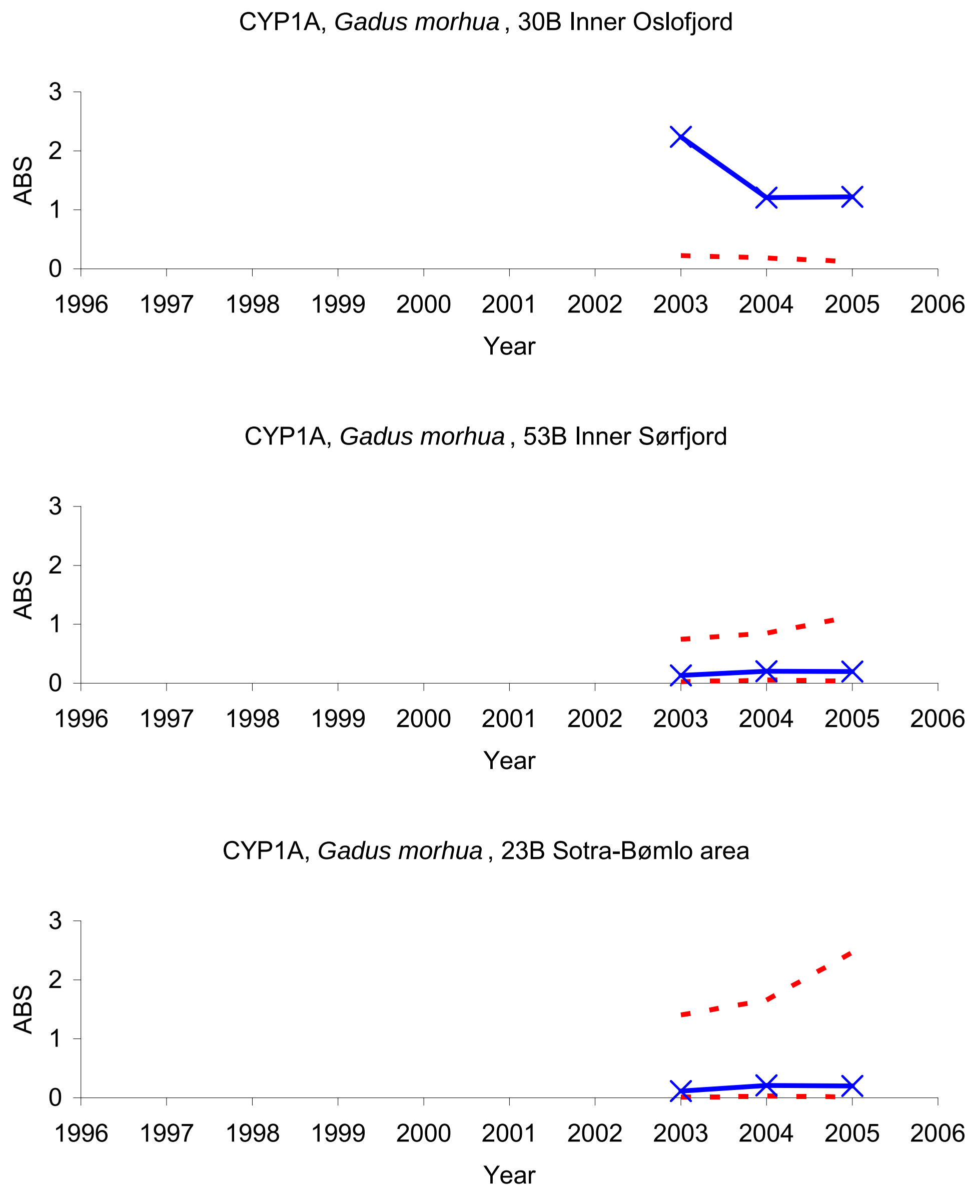


Figure 15. Activity of cytochrome CYP1A (relative amount of Cytochrome P4501A-protein) in liver from Atlantic cod collected at the inner Olsofjord (st.30B), inner Sørfjorden (st.53B) and Sotra-Bømlo (st.23B). (cf. Appendix F and Appendix H, and key in Figure 20). **Note: for some years the upper confidence 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 2005 as in some previous years, relatively large variability was observed between individuals from Lista.

Chronic exposure to PAHs may lead to liver lesions and reproductive disorders in fish, as shown through National Ocean and Atmospheric Administration's (NOAA) studies in Puget Sound, USA. The highest levels of PAH metabolites observed earlier in the bile of cod from Lista, and recently from the inner Oslofjord, are high compared to other studies, but at present it is not possible to infer population effects on cod in the two areas. It would be relevant to include DNA adduct analyses at some stage to clarify whether the cellular repair system of cod is sufficient to protect against damage from PAH radicals.

Results for the period 1997-2005 clearly 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).

Median EROD activity in the inner Sørfjord was lower than in the less contaminated Sotra-Bømlo area. Previous years have also shown that EROD in fish from the inner Oslofjord and Sørfjord stations are not consistently higher than at other, presumed cleaner stations.

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 F).

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 I). 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 H, 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 H, Appendix I, Figure 17). Concentrations had decreased compared to 2003 and 2004, however, no statistically significant temporal trends for the period 1997-2005 were found.

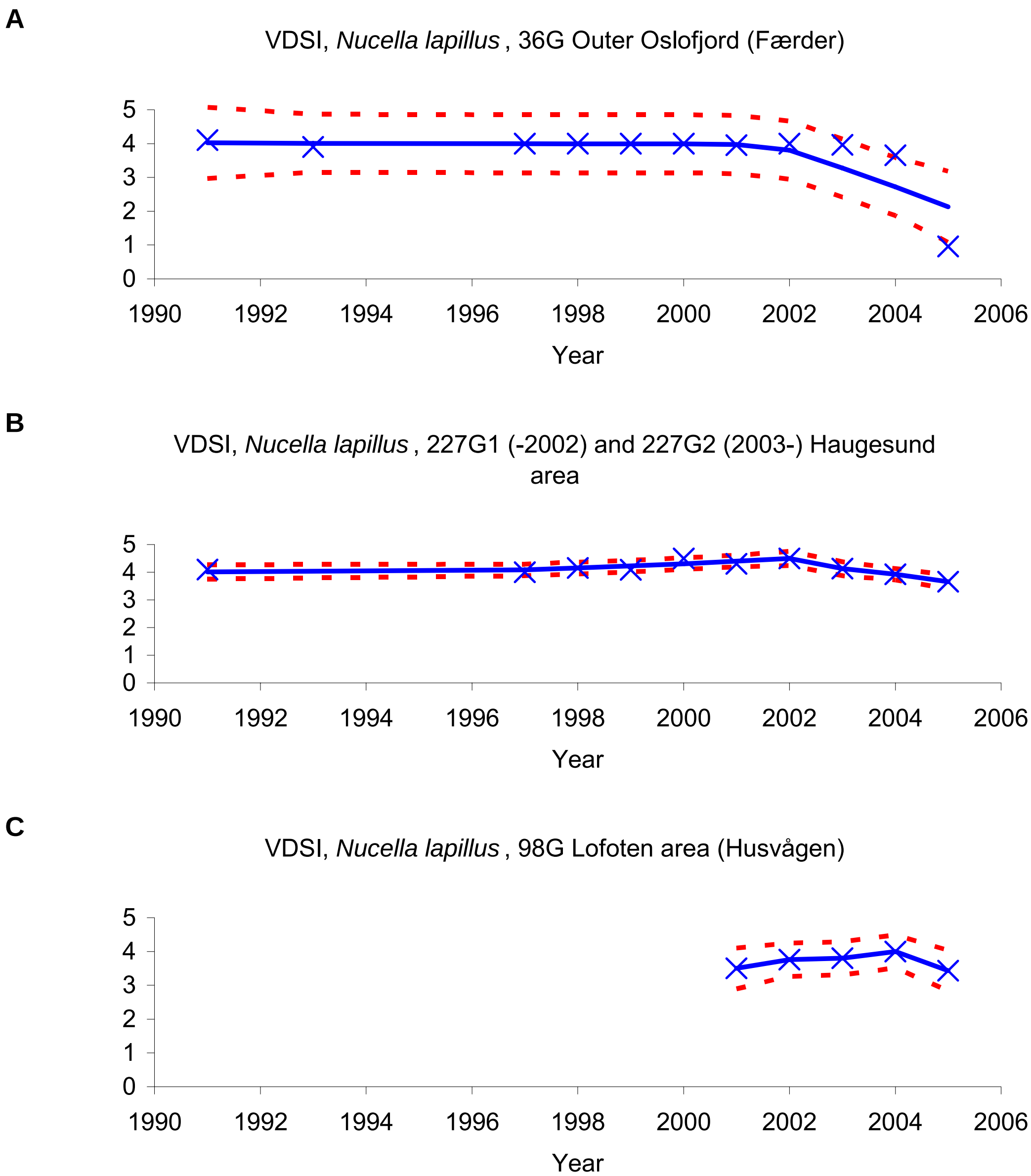
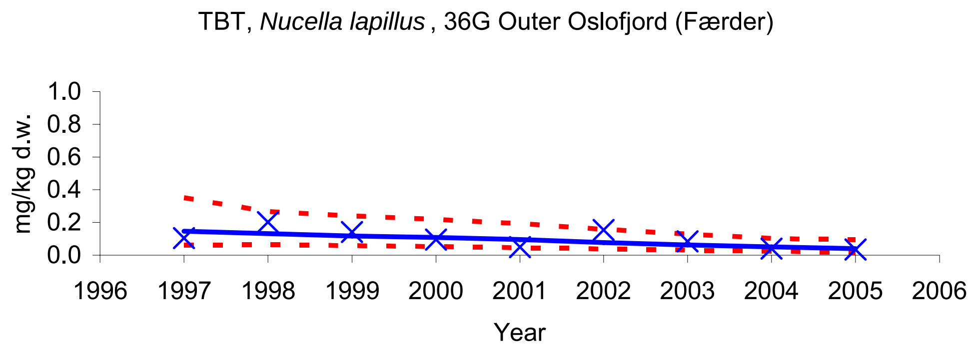
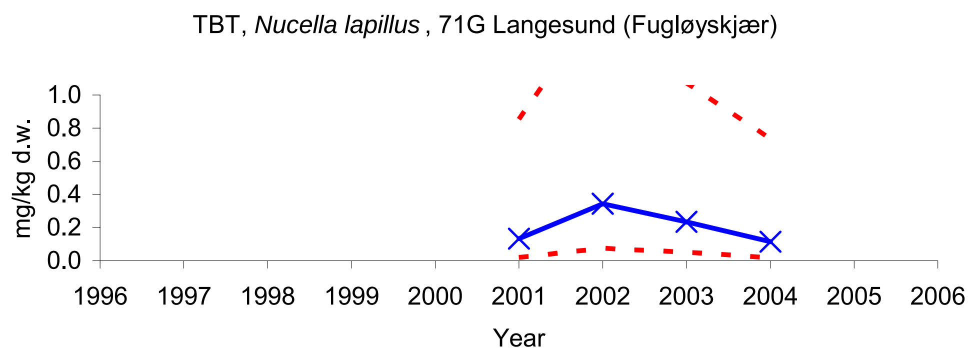


Figure 16. Imposex (VDSI) in dogwhelk (*Nucella lapillus*) at 2 stations in southern Norway; Færder (36G) and Haugesund (227G) and one at Lofoten (98G). Data from 1991 (Harding *et al*. 1992) and 1993 (Walday *et al*. 1997). (cf. Appendix F and Appendix H, and key in Figure 20).

A



B



C

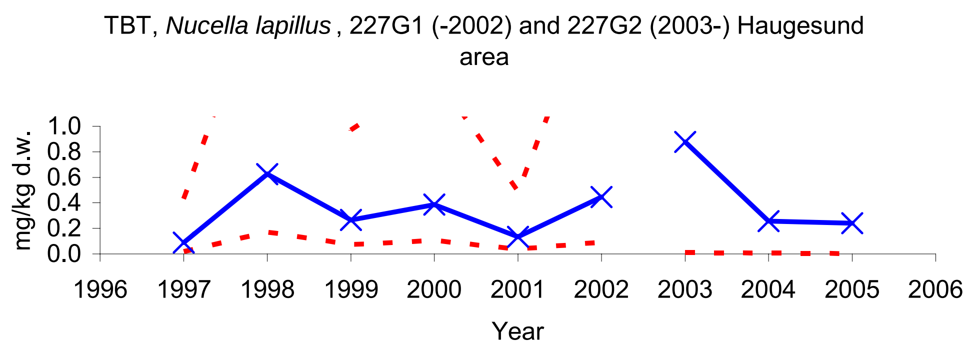


Figure 17. Median concentration of TBT (on a formulation basis) in dogwhelks (*Nucella lapillus*) from outer Oslofjord (st.36G), Langesundsfjord (west of Oslofjord) (st.71G) and Haugesund area (St.227G1 and 227G2), mg/kg (mg TBT/kg) dry weight. NB: (cf. Appendix F and Appendix H, and key in Figure 20). 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 I, 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 remark

The presence of organotin (as TBT) in Norwegian waters still exceeded acceptable levels in 2005, not only in harbour areas but also some stations 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 eight stations investigated. Seven 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.

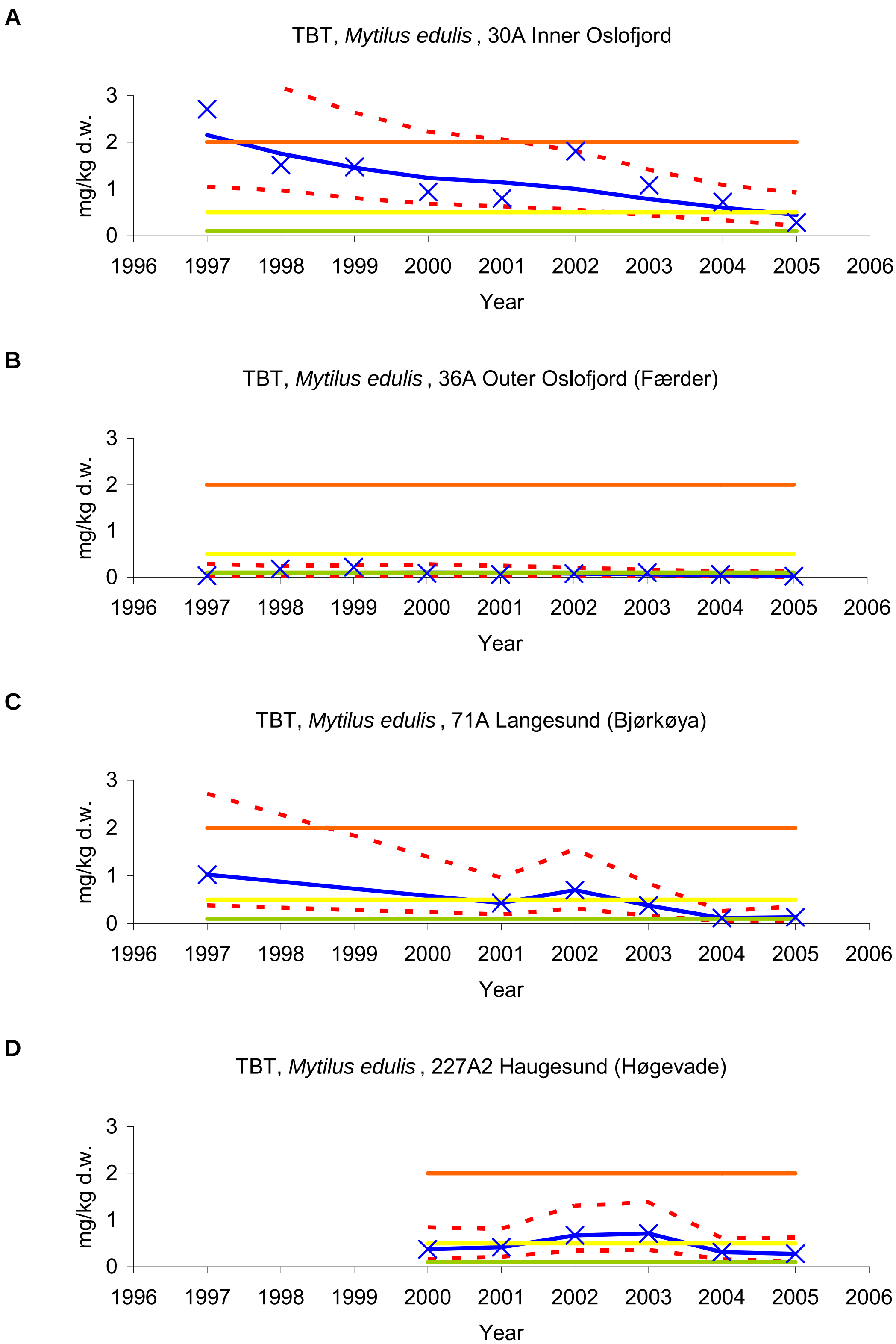


Figure 18. Median concentration of TBT (on a formulation basis) in blue mussel (*Mytilus edulis*) from inner (st.30A) and outer (st.36A) Oslofjord, Langesundsfjord (west of Oslofjord) (st.71A) and Haugesund (St.227X), mg/kg (mg TBT/kg) dry weight. (cf. Appendix F and Appendix H, and key in Figure 20). 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 first time under JAMP, 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).

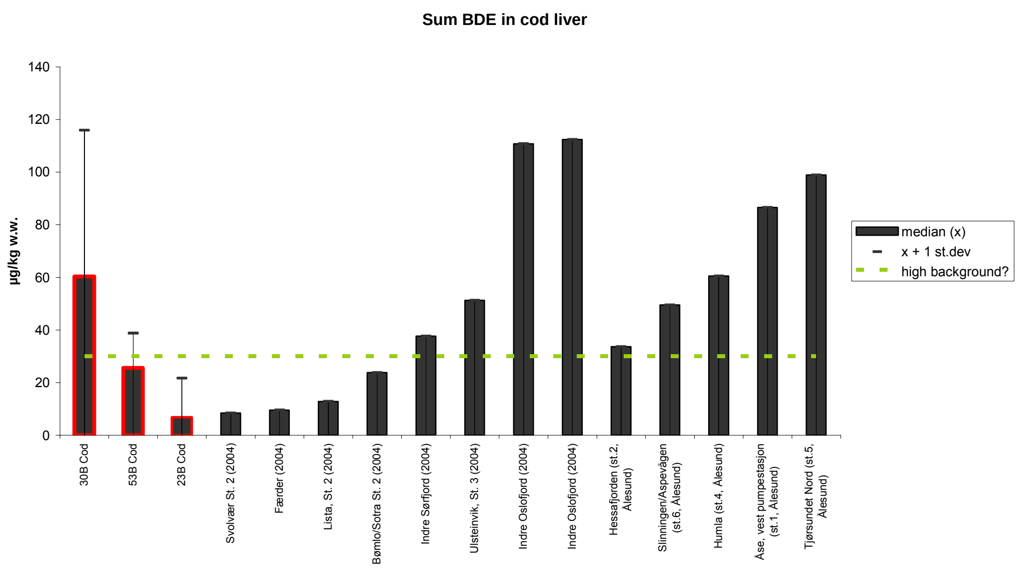


Figure 19. Polybrominated diphenyl ethers (PBDE) in cod (*Gadus morhua*) at 3 JAMP-stations in southern Norway (inner Oslofjord - 30B, inner Søfjord - 53B, and Karihavet - 23B) bar shown with red border, and results from two other investigations (Fjeld *et al.* 2005 – marked as 2004, Berge *et al.* 2006),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

1.7. Overall conclusions

In regards to JMP/JAMP Purpose A (health assessment), 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 Norwegian fjord areas (Table 3). Furthermore, *Mattilsynet* has issued general advice to avoid consumption of seafood taken in or in close proximity to harbours (cf. Økland, 2005).

In regards to JMP/JAMP Purpose C (spatial distribution assessment), the concentrations found in 2005 are indicated in the bar graphs shown in Appendix I. 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 JMP/JAMP Purpose D (temporal trend assessment), and considering where statistically significant linear trends have been found, 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 2005 investigation also includes results on Norwegian Pollution Control Authority Pollution Indices (Appendix J), and discussion of the results of biological effects methods including imposex and intersex (chapters 1.4 and 1.5).The indices remain in the same classes as for 2004. 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.

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 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/ evaluation	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	2002	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	2000	fish, shellfish	Consumption and sale
Farsund area (42.0)	PCB PAH	2000	fish liver, mussels	Consumption and sale
Fedafjord (11.2)	PAH	1995	mussels	Consumption and sale
Flekkefjord (4.2)	PCB	2000	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 (24.1)	PAH	1992	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
Årdalsfjord (30.4)	PAH	2002	mussels	Consumption and sale
Ålesund, Åsefjorden (16.7)	HBCDD [4]	2005	fish, shellfish	Consumption
Sunndalsfjord (100.1)	PAH	2005	fish liver, mussels	Consumption and sale
Hommelvik (2.6)	PAH	1985	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	2000	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

The JAMP issues to which these investigations are relevant are shown in Table 4.

Table 4. JAMP issues relating to the Norwegian JAMP (cf., SIME 2002).

Subject	JAMP issue	Question	Recent Norwegian contribution
Hg, Cd and Pb	JAMP issue 1.2.	What are the concentrations and fluxes in sediments and biota?	1996-1997: Levels in sediment (cf., Green *et al.* 2000) 2004: Levels and trends in biota (annual investigations since 1981, Chapter 1.3) 2004: INDEX for blue mussel from selected stations (annual investigations since 1995, cf. Chapter 1.3.8)
TBT	JAMP issue 1.3.	To what extent do biological effects occur in the vicinity of major shipping routes offshore installations, marinas and shipyards	2004: Levels and trends in blue mussel and snails (annual investigations since 1997, cf. Chapter 1.5)
PCBs	JAMP issue 1.7.	Do high concentrations pose a risk to the marine ecosystem	[as for JAMP issue 1.2]
PCBs	JAMP issue 1.8.	Do high concentrations of non-ortho and mono-ortho CBs in seafood pose a risk to human health?	1995: INDEX for blue mussel from selected stations (cf. Green 1997) 1996: Levels in cod (cf. Green *et al.* 2000)
PAHs	JAMP issue 1.10.	What are the concentrations in the maritime [1)] area?	1992: Levels in shellfish (Green *et al.* 1995) 1992-1993: Levels in fish and blue mussel for selected stations (Knutzen & Green 1995) 1996-1997: Levels in sediment (cf., Green *et al.* 2000) 2004: INDEX for blue mussel from selected stations (annual investigations since 1995, Chapter 1.3.8)
PAHs	JAMP issue 1.11.	Do PAHs affect fish and shellfish?	1998: Biological effects methods in cod (cf. Chapter 1.4)
Other synthetic organic compounds	JAMP issue 1.12.	How widespread are synthetic organic compounds within the maritime [1)] area?	2004: Levels and trends in biota (annual investigations since 1983 of selected organochlorines, cf. Chapter 1.3) 1996: Introductory investigation of organochlorines in cod livers (cf. Green *et al.* 2000)
Chlorinated dioxins and dibenzofurans	JAMP issue 1.15. [2)]	What concentrations occur and have the policy goals (for the relevant parts of the maritime [1)] area) been met?	2004: INDEX for blue mussel from selected stations (cf. Appendix J) 1996: Introductory investigation of organochlorines in cod livers (cf. Green *et al.* 2000)
Biological effects of pollutants	JAMP issue 1.17.	Where do pollutants cause deleterious biological effects?	2004: Southern Coast, planar PCBs, metals, PAHs in cod (annual investigations since 1997, cf. Chapter 1.4)
Chemicals used	JAMP issue 5.3.	In which areas do pesticides and antibiotics affect marine biota?	2004: Levels and trends in biota (cf. Chapter 1.3)
Ecosystem health	JAMP issue 6.1.[2)]	How can ecosystem health be assessed in order to determine the extent of human impact?	Results for the other issues are also relevant here

[1)] Not defined in original text
[2)] See SIME 1997

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) 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 G).

2.1.2. Overconcentrations and classification of environmental quality

This report focuses 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, “slightly 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 H or figures in Appendix I.

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 H). 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. Extracts of the Norwegian Pollution Control Authority revised environmental classification system of contaminants in blue mussel and fish (from Molvær *et al.* 1997 and revised (shaded) Class I concentrations as suggested in this report).

Contaminant			**Classification (upper limit for Classes I-IV)** *Degree of pollution*				
			I *Slight*	**II** *Moderate*	**III** *Marked*	**IV** *Severe*	**V** *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
ΣPCB-7	µg/kg	w.w.	3	15	40	100	>100
		d.w. [2)]	*15*	*75*	*200*	*500*	*>500*
ΣDDT	µg/kg	w.w.	2	5	10	30	>30
		d.w. [2)]	*10*	*25*	*50*	*150*	*>150*
ΣHCH	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*
ΣPAH	µg/kg	w.w.	50	200	2000	5000	>5000
		d.w. [2)]	*250*	*1000*	*10000*	*25000*	*>25000*
ΣKPAH	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
ΣPCB-7	µg/kg	w.w.	3	20	50	150	>150
ΣDDT	µg/kg	w.w.	1	3	10	25	>25
ΣHCH	µg/kg	w.w.	0.3	2	5	15	>15
HCB	µg/kg	w.w.	0.2	0.5	2	5	>5
COD, liver							
ΣPCB-7	µg/kg	w.w.	500	1500	4000	10000	>10000
ΣDDT	µg/kg	w.w.	200	500	1500	3000	>3000
ΣHCH	µg/kg	w.w.	30	200	500	1000	>1000
HCB	µg/kg	w.w.	20	50	200	400	>400
$TE_{PCDF/D}$ [2)]	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 6. Extracts of the Norwegian Pollution Control Authority revised environmental classification system of contaminants in sediment (from Molvær *et al.* 1997).

Contaminant			Classification (upper limit for Classes I-IV)				
			Degree of pollution				
			I	**II**	**III**	**IV**	**V**
			Slight	***Moderate***	***Marked***	***Severe***	***Extreme***
SEDIMENT							
Lead	mg/kg	d.w.	30	120	600	1500	>1500
Cadmium	mg/kg	d.w.	0.25	1	5	10	>10
Copper	mg/kg	d.w.	35	150	700	1500	>1500
Mercury	mg/kg	d.w.	0.15	0.6	3	5	>5
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	w.w.	0.5	2.5	10	50	>50
HCB	µg/kg	w.w.	0.5	2.5	10	50	>50
∑PAH	µg/kg	w.w.	300	2000	6000	20000	>20000
B[*a*]P	µg/kg	w.w.	10	50	200	500	>500
TE$_{PCDF/D}$ [2)]	µg/t [3)]	w.w.	0.01	0.03	0.1	0.5	>0.5

[1]) Tributyltin on a formula basis

[2]) TCDDN (Appendix B)

[3]) 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). The respective "high background" limits are from Knutzen & Skei (1990) with mostly minor adjustments (Knutzen & Green 1995; 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)]	0.1		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 ?	
∑PCB-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 G. The results can be presented as in Figure 20.

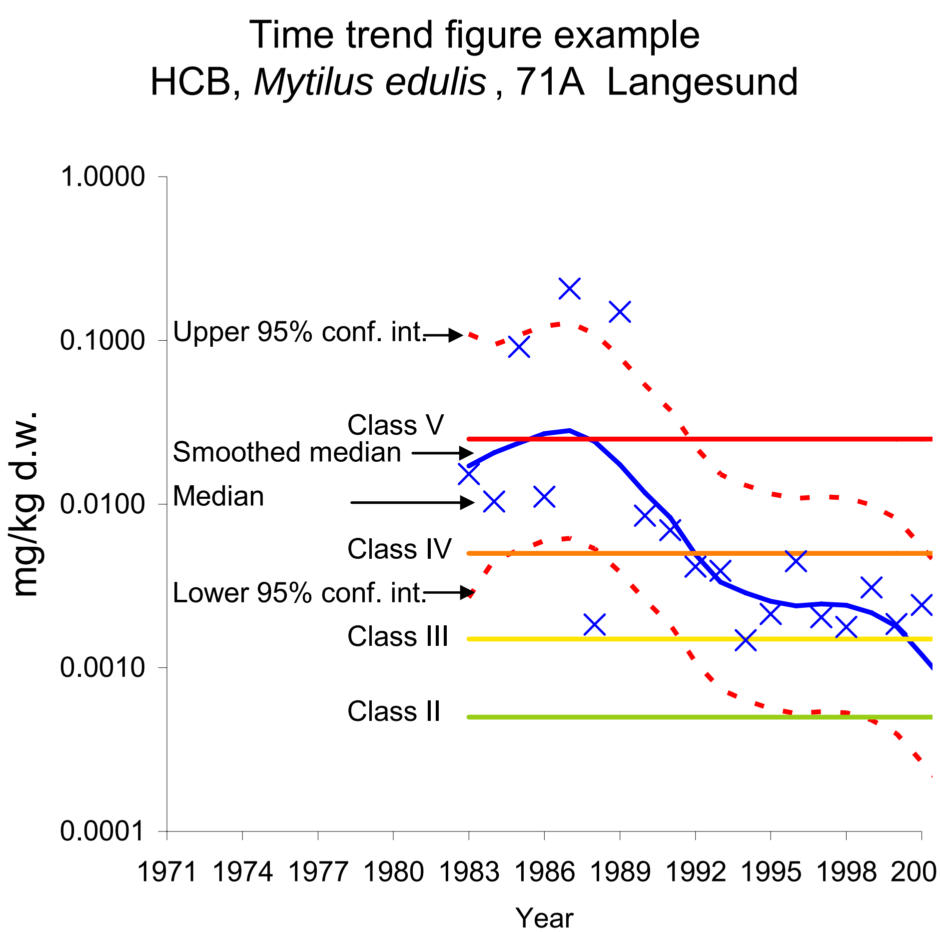


Figure 20. Example presentation and variation in contaminant concentration with time, indicating median concentrations, running mean of median values (Loess smoother), 95% confidence intervals. The horizontal lines indicate the lower boundaries to SFT classes of pollution: Class II (moderate=upper boundary to Class I (slight)), 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, 53, 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.

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 44. These exercises have included nearly all the contaminants analysed for JAMP. Quality assurance programme for NIVA is similar to the 2004 programme (cf. Green *et al.* 2005). In addition, NIVA was accredited in 1993 and are now 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.

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). 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.

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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. NIVA has reference number P009. The chemical laboratoruim satisfy the requirements in NS-EN ISO/IEC 17025.

Summary of quality control results

Standard reference materiales were analysed regularly (Table 8). Dogfish muscle (DORM-2) or dogfish liver (DOLT-3) was used as SRM for the control of the determination of metals (see Table A1). Mackerel oil (350) 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.

NIVA has participated in QUASIMEME exercises up to Round 44 (January to April 2006) which includes:

- QTM069BT - 070BT for metals in biota
- QO086BT-087BT organochlorines in biota
- QPH041BT-042BT for PAH in biota

Following results for round Quasimeme –Round 44 were used. This round would apply to the 2004 samples:

- QTM069BT (no.1) and QTM070BT (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 cadmium in sample no.1.
- QOR086BT (no.1) and QOR087BT (no.2) for organochlorines in biota.
  The results were acceptable except for three results which were classified as questionable, and these were CB105, CB138 and CB180 from sample no.2. It can be noted that sample no.2 had generally very low concentrations of PCBs.
- QPH037BT and QPH038BT for PAH in biota.
  The results were acceptable except for questionable results for benzo(b)fluoranthene in both samples. 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.

Table 8. Summary of the quality control of results for the 2004 biota samples analysed in 2004. The Standard Reference Materials (SRM) were DORM-2* (dogfish muscle) for blue mussel and fish fillet, DOLT-3* (dogfish liver) for fish liver, 350** (mackerel 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(Norsk institutt for luftforskning). 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	19	21	0.046	0.002
		LI	DOLT	19.4 ± 0.6	17	10	19.1	1.2
Cu	**copper**	SB	DORM	2.34 ± 0.16	20	21	2.20	0.15
		LI	DOLT	31.2 ± 1.0	17	10	31.5	1.2
Pb	**lead**	SB	DORM	0.065 ± 0.007	17	21	0.058	0.005
		LI	DOLT	0.319 ± 0.045	17	10	0.32	0.03
Hg	**mercury**	SB	DORM	4.64 ± 0.26	19	23	4.8	0.23
Zn	**zinc**	SB	DORM	25.6 ± 2.3	20	21	24.8	1.7
		LI	DOLT	86.6 ± 2.4	17	10	92.6	5.8
TBTIN	**Tributyl-tin**	SB	NIES	1159 ± 88	5	4	1070	260
TPTIN	**Triphenyl-tin**	SB	NIES	5109 ±363	5	4	3200	374
CB-28	**PCB congener CB-28**	(all)	350	22.5 ± 4	18	10	18.5	3.2
CB-52	**PCB congener CB-52**	(all)	350	62. ± 9	18	10	62.6	9.0
CB-101	**PCB congener CB-101**	(all)	350	164 ± 9	18	10	163	15
CB-118	**PCB congener CB-118**	(all)	350	142 ± 20	17	10	127	12
CB-153	**PCB congener CB-153**	(all)	350	317 ± 20	18	10	313	37.3
CB-180	**PCB congener CB-180**	(all)	350	73 ± 13	18	10	67.0	5.5
ACNLE	**acenaphthylene**	SB	2977		3	2	4.63	1.06
BAA	**benzo[a]anthracene[1)]**	SB	2977	20.34 ± 0.78	4	7	17.3	1.5
BAP	**benzo[a]pyrene[1)]**	SB	2977	8.35 ± 0.72	4	7	6.3	3.8
BBF	**benzo[b]fluoranthene[1,2)]**	SB	2977	11.01 ± 0.28	4	7	15	1
BEP	**benzo[e]pyrene**	SB	2977	13.1 ± 1.1	4	7	17.3	2.2
BGHIP	**benzo[ghi]perylene**	SB	2977	9.53 ± 0.43	4	7	9.5	1.1
BKF	**benzo[k]fluoranthene**	SB	2977	4 ± 1	4	7	5.45	0.6
FLU	**Fluoranthene**	SB	2977	38.7 ± 1.0	4	7	33	1.3
ICDP	**indeno[1,2,3-cd]pyrene**	SB	2977	4.84 ± 0.81	3	2	4.40	0.52
PER	**Perylene**	SB	2977	3.50 ± 0.76	3	2	2.43	0.50
PYR	**Pyrene**	SB	2977	78.9 ± 3.5	3	2	63.3	0.6
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

Appendix B
Abbreviations

Abbreviation[1]	English	*Norwegian*
ELEMENTS		
Al	aluminium	*aluminium*
As	arsenic	*arsen*
Cd	cadmium	*kadmium*
Co	cobalt	*kobolt*
Cr	chromium	*krom*
Cu	copper	*kobber*
Fe	iron	*jern*
Hg	mercury	*kvikksølv*
Li	lithium	*litium*
Mn	manganese	*mangan*
Ni	nickel	*nikkel*
Pb	lead	*bly*
Pb210	lead-210	*bly-210*
Se	selenium	*selen*
Ti	titanium	*titan*
Zn	zinc	*sink*
METAL COMPOUNDS		
TBT	tributyltin	*tributyltinn*
PAHs		
PAH	polycyclic aromatic hydrocarbons	*polysykliske aromatiske hydrokarboner*
ACNE	acenaphthene	*acenaften*
ACNLE	acenaphthylene	*acenaftylen*
ANT	anthracene	*antracen*
BAA [3]	benzo[*a*]anthracene	*benzo[a]antracen*
BAP [3]	benzo[*a*]pyrene	*benzo[a]pyren*
BBF [3]	benzo[*b*]fluoranthene	*benzo[b]fluoranten*
BBJKF [3]	benzo[*b,j,k*]fluoranthene	*benzo[b,j,k]fluoranten*
BBJKF [3]	benzo[b+j,k]fluoranthene	*benzo[b+j,k]fluoranten*
BBKF [3]	benzo[*b+k*]fluoranthene	*benzo[b+k]fluoranten*
BEP	benzo[*e*]pyrene	*benzo[e]pyren*
BGHIP	benzo[*ghi*]perylene	*benzo[ghi]perylen*
BIPN [2]	biphenyl	*bifenyl*
BJKF [3]	benzo[*j,k*]fluoranthene	*benzo[j,k]fluorantren*
BKF [3]	benzo[*k*]fluoranthene	*benzo[k]fluorantren*
CHR	chrysene	*chrysen*
CHRTR	chrysene+triphenylene	*chrysen+trifenylen*
COR	coronene	*coronen*
DBAHA [3]	dibenz[*a,h*]anthracene	*dibenz[a,h]anthracen*
DBA3A [3]	dibenz[*a,c/a,h*]anthracene	*dibenz[a,c/a,h]antracen*
DBP [3]	dibenzopyrenes	*dibenzopyren*
DBT	dibenzothiophene	*dibenzothiofen*
DBTC1	C_1-dibenzothiophenes	*C_1-dibenzotiofen*
DBTC2	C_2-dibenzothiophenes	*C_2-dibenzotiofen*

Abbreviation[1]	English	*Norwegian*
DBTC3	C_3-dibenzothiophenes	*C_3-dibenzotiofen*
FLE	fluorene	*fluoren*
FLU	fluoranthene	*fluoranten*
ICDP [3]	indeno[*1,2,3-cd*]pyrene	*indeno[1,2,3-cd]pyren*
NAP [2]	naphthalene	*naftalen*
NAPC1 [2]	C_1-naphthalenes	*C_1-naftalen*
NAPC2 [2]	C_2-naphthalenes	*C_2-naftalen*
NAPC3 [2]	C_3-naphthalenes	*C_3-naftalen*
NAP1M [2]	1-methylnaphthalene	*1-metylnaftalen*
NAP2M [2]	2-methylnaphthalene	*2-metylnaftalen*
NAPD2 [2]	1,6-dimethylnaphthalene	*1,6-dimetylnaftalen*
NAPD3 [2]	1,5-dimethylnaphthalene	*1,5-dimetylnaftalen*
NAPDI [2]	2,6-dimethylnaphthalene	*2,6-dimetylnaftalen*
NAPT2 [2]	2,3,6-trimethylnaphthalene	*2,3,6-trimetylnaftalen*
NAPT3 [2]	1,2,4-trimethylnaphthalene	*1,2,4-trimetylnaftalen*
NAPT4 [2]	1,2,3-trimethylnaphthalene	*1,2,3-trimetylnaftalen*
NAPTM [2]	2,3,5-trimethylnaphthalene	*2,3,5-trimetylnaftalen*
NPD	Collective term for naphthalenes, phenanthrenes and dibenzothiophenes	*Sammebetegnelse for naftalen, fenantren og dibenzotiofens*
PA	phenanthrene	*fenantren*
PAC1	C_1-phenanthrenes	*C_1-fenantren*
PAC2	C_2-phenanthrenes	*C_2-fenantren*
PAM1	1-methylphenanthrene	*1-metylfenantren*
PAM2	2-methylphenanthrene	*2-metylfenantren*
PADM1	3,6-dimethylphenanthrene	*3,6-dimetylfenantren*
PADM2	9,10-dimethylphenanthrene	*9,10-dimetylfenantren*
PER	perylene	*perylen*
PYR	pyrene	*pyren*
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)	*sum "n" PAH (DI-Σn ikke inkludert)*
PK-Σn / PK_S	sum carcinogen PAHs (footnote 3)	*sum kreftfremkallende PAH (fotnote 3)*
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)*
CB31	CB31 (IUPAC)	*CB31 (IUPAC)*
CB44	CB44 (IUPAC)	*CB44 (IUPAC)*
CB52	CB52 (IUPAC)	*CB52 (IUPAC)*
CB77 [4]	CB77 (IUPAC)	*CB77 (IUPAC)*

Abbreviation[1]	English	*Norwegian*
CB81 [4]	CB81 (IUPAC)	*CB81 (IUPAC)*
CB95	CB95 (IUPAC)	*CB95 (IUPAC)*
CB101	CB101 (IUPAC)	*CB101 (IUPAC)*
CB105	CB105 (IUPAC)	*CB105 (IUPAC)*
CB110	CB110 (IUPAC)	*CB110 (IUPAC)*
CB118	CB118 (IUPAC)	*CB118 (IUPAC)*
CB126 [4]	CB126 (IUPAC)	*CB126 (IUPAC)*
CB128	CB128 (IUPAC)	*CB128 (IUPAC)*
CB138	CB138 (IUPAC)	*CB138 (IUPAC)*
CB149	CB149 (IUPAC)	*CB149 (IUPAC)*
CB153	CB153 (IUPAC)	*CB153 (IUPAC)*
CB156	CB156 (IUPAC)	*CB156 (IUPAC)*
CB169 [4]	CB169 (IUPAC)	*CB169 (IUPAC)*
CB170	CB170 (IUPAC)	*CB170 (IUPAC)*
CB180	CB180 (IUPAC)	*CB180 (IUPAC)*
CB194	CB194 (IUPAC)	*CB194 (IUPAC)*
CB209	CB209 (IUPAC)	*CB209 (IUPAC)*
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*
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*
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*
CDD6X	1, 2, 3, 6, 7, 8-hexachloro-dibenzo dioxin	*1, 2, 3, 6, 7, 8-heksakloro-dibenzo dioksin*
CDD9X	1, 2, 3, 7, 8, 9-hexachloro-dibenzo dioxin	*1, 2, 3, 7, 8, 9-heksakloro-dibenzo dioksin*
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*
CDDSP	Sum of heptachloro-dibenzo dioxins	*Sum heptakloro-dibenzo dioksiner*
CDDO	Octachloro-dibenzo dioxin	*Oktakloro-dibenzo dioksin*
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*
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*
CDF2N	2, 3, 4, 7, 8-pentachloro-dibenzofuran	*2, 3, 4, 7, 8-pentakloro-dibenzofuran*
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*
CDF6X	1, 2, 3, 6, 7, 8-hexachloro-dibenzofuran	*1, 2, 3, 6, 7, 8-heksakloro-dibenzofuran*
CDF9X	1, 2, 3, 7, 8, 9-hexachloro-dibenzofuran	*1, 2, 3, 7, 8, 9-heksakloro-dibenzofuran*
CDF4X	2, 3, 4, 6, 7, 8-hexachloro-dibenzofuran	*2, 3, 4, 6, 7, 8-heksakloro-dibenzofuran*

Abbreviation[1]	English	Norwegian
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*
CDF9P	1, 2, 3, 4, 7, 8, 9-heptachloro-dibenzofuran	*1, 2, 3, 4, 7, 8, 9-heptakloro-dibenzofuran*
CDFSP	Sum of heptachloro-dibenzofurans	*Sum heptakloro-dibenzofuraner*
CDFO	Octachloro-dibenzofurans	*Octakloro-dibenzofuran*
PCDF	Sum of polychlorinated dibenzo-furans	*Sum polyklorinated dibenzo-furaner*
CDDFS	Sum of PCDD and PCDF	*Sum PCDD og PCDF*
TCDDN	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*
DIELD	dieldrin	*dieldrin*
ENDA	endrin	*endrin*
CCDAN	cis-chlordane (=α-chlordane)	*cis-klordan (=α-klordan)*
TCDAN	trans-chlordane (=γ-chlordane)	*trans-klordan (=γ-klordan)*
OCDAN	oxy-chlordane	*oksy-klordan*
TNONC	trans-nonachlor	*trans-nonaklor*
TCDAN	trans-chlordane	*trans-klordan*
OCS	octachlorostyrene	*oktaklorstyren*
QCB	pentachlorobenzene	*pentaklorbenzen*
DDD	dichlorodiphenyldichloroethane 1,1-dichloro-2,2-bis- (4-chlorophenyl)ethane	*diklordifenyldikloretan* *1,1-dikloro-2,2-bis-(4-klorofenyl)etan*
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*
DDT	dichlorodiphenyltrichloroethane 1,1,1-trichloro-2,2-bis- (4-chlorophenyl)ethane	*diklordifenyltrikloretan* *1,1,1-trikloro-2,2-bis-(4-klorofenyl)etan*
DDEOP	o,p'-DDE	*o,p'-DDE*
DDEPP	p,p'-DDE	*p,p'-DDE*
DDTOP	o,p'-DDT	*o,p'-DDT*
DDTPP	p,p'-DDT	*p,p'-DDT*
TDEPP	p,p'-DDD	*p,p'-DDD*
DDTEP	p,p'-DDE + p,p'-DDT	*p,p'-DDE + p,p'-DDT*
DD-nΣ	sum of DDT and metabolites, n = number of compounds	*sum DDT og metabolitter,* *n = antall forbindelser*
HCB	hexachlorobenzene	*heksaklorbenzen*
HCHG	Lindane γ HCH = gamma hexachlorocyclohexane (γ BHC = gamma benzenehexachloride, outdated synonym)	*Lindan* *γ HCH = gamma heksaklorsykloheksan* *(γ BHC = gamma benzenheksaklorid, foreldret betegnelse)*
HCHA	α HCH = alpha HCH	*α HCH = alpha HCH*
HCHB	β HCH = beta HCH	*β HCH = beta HCH*
HC-nΣ	sum of HCHs, n = count	*sum av HCHs, n = antall*

Abbreviation[1]	English	*Norwegian*
EOCl	extractable organically bound chlorine	*ekstraherbart organisk bundet klor*
EPOCl	extractable persistent organically bound chlorine	*ekstraherbart persistent organisk bundet klor*
PBDEs		
PBDE	polybrominated diphenyl ethers	*polybromerte difenyletere*
BDE	Brominated diphenyl ethers	
BDE-28	2,4,4'-tribromodiphenyl ether	*2,4,4'-tribromdifenyleter*
BDE-47	2,2',4,4'-tetrabromodiphenyl ether	*2,2',4,4'-tetrabromdifenyleter*
BDE-49*	2,2',4,5'- tetrabromodiphenyl ether	*2,2',4,5'- tetrabromdifenyleter*
BDE-66*	2,3',4',6- tetrabromodiphenyl ether	*2,3',4',6- tetrabromdifenyleter*
BDE-71*	2,3',4',6- tetrabromodiphenyl ether	*2,3',4',6- tetrabromdifenyleter*
BDE-77	3,3',4,4'-tetrabromodiphenyl ether	*3,3',4,4'-tetrabromdifenyleter*
BDE-85	2,2',3,4,4'-pentabromodiphenyl ether	2,2',3,4,4'-pentabromdifenyleter
BDE-99	2,2',4,4',5-pentabromodiphenyl ether	*2,2',4,4',5-pentabromdifenyleter*
BDE-100	2,2',4,4',6-pentabromodiphenyl ether	*2,2',4,4',6-pentabromdifenyleter*
BDE-119	2,3',4,4',6-pentabromodiphenyl ether	*2,3',4,4',6-pentabromdifenyleter*
BDE-138	2,2',3,4,4',5'-hexabromodiphenyl ether	*2,2',3,4,4',5'-heksabromdifenyleter*
BDE-153	2,2',4,4',5,5'-hexabromodiphenyl ether	*2,2',4,4',5,5'-heksabromdifenyleter*
BDE-154	2,2',4,4',5,6'-hexabromodiphenyl ether	*2,2',4,4',5,6'-heksabromdifenyleter*
BDE-183	2,2',3,4,4',5',6-heptabromodiphenyl ether	*2,2',3,4,4',5',6-heptabromdifenyleter*
BDE-205	2,2',3,3',4,4',5,5',6'-nonabromodiphenyl ether	*2,2',3,3',4,4',5,5',6'-nonabromdifenyleter*
BDE-209	Decabromodiphenyl ether	*Dekabromdifenyleter*
NTOT	total organic nitrogen	*total organisk nitrogen*
CTOT	total organic carbon	*total organisk karbon*
CORG	organic carbon	*organisk karbon*
GSAMT	grain size	*kornfordeling*
MOCON	moisture content	*vanninnhold*
INSTITUTES		
IFEN	Institute for Energy Technology	*Institutt for energiteknikk*
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]*
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*

Abbreviation[1]	English	*Norwegian*
VETN	Norwegian Veterinary Institute	*Veterinærinstituttet*
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)*

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 PAH compounds potentially cancerogenic for humans according to IARC (1987), i.e., categories 2A+2B (possibly and probably carcinogenic).

4) 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:	*"Toxisitetsekvivalentfaktorer" for de giftigste forbindelsene innen følgende grupper.*
	• 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]	• *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-ortho and mono-ortho substituted chlorobiphenyls after WHO model (Ahlborg *et al.*, 1994) [3] or Safe (1994, cf. NILU pers. comm.)	• *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, 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 - biota

Tissue					Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year	Lab.	Inter-calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count 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	1
	2005-NIVA		E!	W						309	0.5	51		
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	
	2005-NIVA		R5	W						309	0.5	51		
AG	1996-NIVA			W						999	miss	3		
	2004-NIVA			W						315	miss	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	
	2005-NIVA		F!	W						309	0.5	51		
AS	1996-NIVA			W						999	miss	3		
	2004-NIVA			W						315	miss	7		
	2005-NIVA		A!	W						315	miss	9		
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	
	2005-NIVA		E!	W						309	0.5	51		
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		
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		miss	6				miss	6		
	2002-NILU			W						843	0.02	2		
	2004-NIVA			W							miss	2		2
BD138	2001-NILU			W		miss	6		6		miss	6		6
	2004-NIVA			W							miss	2		2
BD153	1996-NILU			W		miss	4		4					
	2001-NILU			W		miss	6		4		miss	6		4
	2002-NILU			W						843	0.01	2		
	2004-NIVA			W							miss	2		2
BD154	2001-NILU			W		miss	6				miss	6		4
	2002-NILU			W						843	0.01	2		
	2004-NIVA			W							miss	2		2
BD183	2001-NILU			W		miss	6		3		miss	6		6
	2002-NILU			W						843	0.01	2		
BD209	2001-NILU			W		miss	6		5		miss	6		1
	2002-NILU			W						843	0.03	2		
BDE100	2005-NIVA			W		miss	58							
BDE119	2005-NIVA			W		miss	58		13					
BDE138	2005-NIVA			W		miss	58		58					
BDE153	2005-NIVA			W		miss	58		27					
BDE154	2005-NIVA			W		miss	58							
BDE183	2005-NIVA			W		miss	58		58					
BDE205	2005-NIVA			W		miss	58		57					
BDE28	2001-NILU			W		miss	6				miss	6		1
	2002-NILU			W						843	0.01	2		
	2005-NIVA			W		miss	58							
BDE47	1996-NILU			W		miss	4							
	2001-NILU			W		miss	6				miss	6		

Tissue Contamin.	Mon. Year	Lab.	Inter- calibr. +basis		Fish liver Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Fish fillet, Shrimp tail, Mussel, Other Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	2002-NILU			W						843	0.11	2		
	2004-NIVA			W							miss	2		
	2005-NIVA			W		miss	58							
BDE49	2005-NIVA			W		miss	58							
BDE66	2005-NIVA			W		miss	58		7					
BDE71	2005-NIVA			W		miss	58		58					
BDE77	2005-NIVA			W		miss	58		38					
BDE85	2005-NIVA			W		miss	58		54					
BDE99	1996-NILU			W		miss	4							
	2001-NILU			W		miss	6				miss	6		1
	2002-NILU			W						843	0.06	2		
	2004-NIVA			W							miss	2		2
	2005-NIVA			W		miss	58		1					
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
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		
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							miss	37		
BKF	2005-NIVA		E!	W						309	0.5	51		
BAA	1992-NIVA			W	309	0.2	8			309	0.2	44		
	1995-NIVA			W						309	0.2	72		9
	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	
	2005-NIVA		F!	W						309	0.5	51		
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		341	0.1	138		
	1994-NIVA		2Z	W	340	3	300	3		341	0.05	170	39	
	1995-NIVA			W	340	3	318	10		341	0.05	231	10	
	1996-NIVA			W	340	3	332	14		341	0.05	243	9	
	1997-NIVA			W	340	3	260	24						
	1997-NIVA		AJ	W						341	0.05	221	4	
	1998-NIVA			W	340	3	284	19	1					
	1998-NIVA		CH	W						341	0.05	203	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						
	2000-NIVA		GU	W						341	0.05	186	11	7
	2001-NIVA			W	340	3	250	19	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						
	2003-NIVA		MO	W						341	0.05	175		6
	2004-NIVA			W	340	3	272	19						
	2004-NIVA		R1	W						341	0.05	170		
	2005-NIVA			W	340	3	282	28						
	2005-NIVA		D!	W						341	0.05	252		5
CB105	1991-NIVA		2H	W	340	1	87		1	341	0.05	47		
	1992-NIVA			W	340	5	192	3		341	0.1	146		
	1993-NIVA		QM	W	340	4	212	21		341	0.1	138		
	1994-NIVA		2Z	W	340	3	300	8		341	0.05	170	53	
	1995-NIVA			W	340	3	318	13		341	0.05	230	34	

Tissue					Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year	Lab.	Inter-calibr.	+basis	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	1996-NIVA			W	340	3	332	22		341	0.05	237	23	
	1997-NIVA			W	340	3	260	24		341	0.05	221	3	1
	1998-NIVA			W	340	3	284	31	19					
	1998-NIVA		CH	W						341	0.05	207	11	16
	1999-NIVA			W	340	3	249	17						
	1999-NIVA		EG	W						341	0.05	232	4	62
	2000-NIVA			W	340	3	230	32						
	2000-NIVA		GU	W						341	0.05	186	21	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		341	0.05	210		59
	2003-NIVA			W	340	3	239	23						
	2003-NIVA		MO	W						341	0.05	183		45
	2004-NIVA			W	340	3	272	44						
	2004-NIVA		R1	W						341	0.05	241		6
	2005-NIVA			W	340	3	282	66						
	2005-NIVA		D!	W						341	0.05	252		
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		341	0.1	138		
	1994-NIVA		2Z	W	340	3	300	2		341	0.05	170	25	
	1995-NIVA			W	340	3	318	2		341	0.05	231	2	
	1996-NIVA			W	340	3	332	6		341	0.05	243	4	
	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
	1999-NIVA			W	340	3	249	2						
	1999-NIVA		EG	W						341	0.05	232		7
	2000-NIVA			W	340	3	230	5						
	2000-NIVA		GU	W						341	0.05	186	6	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		
CB126	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.0001	4			841	0.0001	18		
	2002-NILU			W						841	0.0001	12		
	2003-NILU			W						841	0.0001	12		
	2005-NILU			W						841	0.0001	11		
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	
	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						
	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	
	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		
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	
	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	

Tissue					Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year	Lab.	Inter-calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	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		
CB156	1991-NIVA		2H	W	340	1	87		15	341	0.05	47		5
	1992-NIVA			W	340	5	192	3		341	0.1	146		
	1993-NIVA		QM	W	340	4	212	31		341	0.1	138		
	1994-NIVA		2Z	W	340	3	300	24	1	341	0.05	167	73	
	1995-NIVA			W	340	3	317	27		341	0.05	231	68	
	1996-NIVA			W	340	3	332	48		341	0.05	243	62	
	1997-NIVA			W	340	3	260	46						
	1997-NIVA		AJ	W						341	0.05	221	9	10
	1998-NIVA			W	340	3	284	52	70					
	1998-NIVA		CH	W						341	0.05	209	37	47
	1999-NIVA			W	340	3	249	39	2					
	1999-NIVA		EG	W						341	0.05	231	12	139
	2000-NIVA			W	340	3	230	71	5					
	2000-NIVA		GU	W						341	0.05	186	28	95
	2001-NIVA			W	340	3	250	82	3					
	2001-NIVA		IO	W						341	0.05	211	9	134
	2002-NIVA			W	340	3	249	99		341	0.05	210		102
	2003-NIVA			W	340	3	236	60						
	2003-NIVA		MO	W						341	0.05	183		83
	2004-NIVA			W	340	3	272	127						
	2004-NIVA		R1	W						341	0.05	241		7
	2005-NIVA			W	340	3	282	140						
	2005-NIVA		C!	W						341	0.05	241		
CB169	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.0001	4			841	0.0001	18	2	
	2002-NILU			W						841	0.0001	12		
	2003-NILU			W						841	0.0001	12	1	1
	2005-NILU			W						841	0.0001	11		
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						
	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		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	
	1995-NIVA			W	340	3	318	5		341	0.05	231	22	
	1996-NIVA			W	340	3	332	14		341	0.05	243	25	
	1997-NIVA			W	340	3	260	18						
	1997-NIVA		AJ	W						341	0.05	221	1	1
	1998-NIVA			W	340	3	284	20	14					
	1998-NIVA		CH	W						341	0.05	209	19	44
	1999-NIVA			W	340	3	249	7	1					
	1999-NIVA		EG	W						341	0.05	232	2	78
	2000-NIVA			W	340	3	230	15						
	2000-NIVA		GU	W						341	0.05	186	15	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						
	2004-NIVA		R1	W						341	0.05	241		6
	2005-NIVA			W	340	3	282	32						
	2005-NIVA		D!	W						341	0.05	252		
CB209	1990-NIVA			W	340	2	169	24	11	341	0.05	58		
	1991-NIVA			W	340	2	179	11	88	341	0.05	68	5	13
	1992-NIVA			W	340	5	192	3		341	0.1	146		1
	1993-NIVA			W	340	4	212	46	14	341	0.1	138		
	1994-NIVA			W	340	3	300	29	24	341	0.05	170	96	
	1995-NIVA			W	340	3	318	36		341	0.05	231	95	5
	1996-NIVA			W	340	3	332	255		341	0.05	243	107	9
	1997-NIVA			W	340	3	260	196		341	0.05	221	30	14
	1998-NIVA			W	340	3	283	120	121	341	0.05	209	54	69
	1999-NIVA			W	340	3	243	163	17	341	0.05	230	19	178
	2000-NIVA			W	340	3	228	151	18	341	0.05	178	33	111
	2001-NIVA			W	340	3	250	184	10	341	0.05	211	21	185
	2002-NIVA			W	340	3	248	207	1	341	0.05	209		114
	2003-NIVA			W	340	3	236	126		341	0.05	177		99
	2004-NIVA			W	340	3	272	228		341	0.05	241		8
	2005-NIVA			W	340	3	281	250		341	0.05	250		
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	52	341	0.05	68	5	4
	1991-SIIF		2H	W						111	0.3	35		
	1992-NIVA		2J	W	340	5	192	3		341	0.1	143		
	1993-NIVA		2K	W	340	4	212	44	5	341	0.1	138		
	1994-NIVA		2Z	W	340	3	282	18	4	341	0.05	168	76	
	1995-NIVA			W	340	3	313	27		341	0.05	231	80	
	1996-NIVA			W	340	3	332	107		341	0.05	242	70	
	1997-NIVA			W	340	3	260	81						
	1997-NIVA		AJ	W						341	0.05	221	22	14
	1998-NIVA			W	340	3	284	96	99					

Tissue				Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year / Lab.	Inter- calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	1998-NIVA	CH	W						341	0.05	207	36	46
	1999-NIVA		W	340	3	249	96	18					
	1999-NIVA	EG	W						341	0.05	232	14	145
	2000-NIVA		W	340	3	230	110	7					
	2000-NIVA	GU	W						341	0.05	186	26	66
	2001-NIVA		W	340	3	250	146	10					
	2001-NIVA	IO	W						341	0.05	211	17	150
	2002-NIVA		W	340	3	249	144	1					
	2002-NIVA	LJ	W						341	0.05	207		101
	2003-NIVA		W	340	3	238	97						
	2003-NIVA	MO	W						341	0.05	173		75
	2004-NIVA		W	340	3	270	160						
	2004-NIVA	R1	W						341	0.05	240		9
	2005-NIVA		W	340	3	282	191						
	2005-NIVA	C!	W						341	0.05	247		
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	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	1
	1991-SIIF	2H	W						111	0.3	35		
	1992-NIVA	2J	W	340	5	192	3		341	0.1	143		
	1993-NIVA	2K	W	340	4	212	40		341	0.1	138		
	1994-NIVA	2Z	W	340	3	300	9		341	0.05	170	64	
	1995-NIVA		W	340	3	312	19		341	0.05	220	28	
	1996-NIVA		W	340	3	332	49		341	0.05	241	31	
	1997-NIVA		W	340	3	260	116						
	1997-NIVA	AJ	W						341	0.05	221	25	10
	1998-NIVA		W	340	3	281	47	44	341	0.05	169	12	17
	1999-NIVA		W	340	3	249	52	11					
	1999-NIVA	EG	W						341	0.05	222	7	73
	2000-NIVA		W	340	3	230	65	4					
	2000-NIVA	GU	W						341	0.05	183	22	23
	2001-NIVA		W	340	3	250	66	4					
	2001-NIVA	IO	W						341	0.05	186	7	58
	2002-NIVA		W	340	3	193	29						
	2002-NIVA	LJ	W						341	0.05	162		55
	2003-NIVA		W	340	3	239	54						
	2003-NIVA	MO	W						341	0.05	147		41
	2004-NIVA		W	340	3	267	75						
	2004-NIVA	R1	W						341	0.05	215		5
	2005-NIVA		W	340	3	281	112						
	2005-NIVA	C!	W						341	0.05	246		
CB77	1995-NILU		W						841	0.00002	6		
	1996-NILU		W	841	0.0001	4			841	0.0001	18		
	2002-NILU		W						841	0.0001	12		
	2003-NILU		W						841	0.0001	12		
	2005-NILU		W						841	0.0001	11		
CB81	1995-NILU		W						841	0.00002	6		
	1996-NILU		W	841	0.0001	4			841	0.0001	18		
	2002-NILU		W						841	0.0001	12		
	2003-NILU		W						841	0.0001	12		
	2005-NILU		W						841	0.0001	11		
CD	1981-NIVA		D							miss	3		
	1981-SIIF	1E	W	130	10	28			130	5	27		
	1981-SIIF	1F	W						130	10	7		
	1982-NIVA		D							miss	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	1	312	30	55		
	1989-NIVA	1H	D	312	30	135	11	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	
	1991-NIVA	1H	D						312	10	6		
	1991-NIVA	1H	W	312	10	190	29	2	312	10	67		
	1992-NIVA	1H	D						312	10	6		
	1992-NIVA	1H	W	312	10	191	4		312	10	111		
	1993-NIVA	1H	D						312	50	5		
	1993-NIVA	1H	W	312	50	221	98		312	50	79		
	1994-NIVA	1Z	D						312	50	5		
	1994-NIVA	1Z	W	312	50	302	134		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	6		
	1996-NIVA	V1	W						312	50	125		
	1996-NIVA	V2	W	312	50	368	128						
	1997-NIVA		W	312	50	287	90						
	1997-NIVA	AH	D						312	50	6		
	1997-NIVA	AH	W						312	50	107		
	1998-NIVA		D						312	50	6		
	1998-NIVA		W	312	50	285	101		312	50	93		
	1999-NIVA		W	312	50	235	79						
	1999-NIVA	EF	D						312	50	6		
	1999-NIVA	EF	W						312	50	132	15	
	2000-NIVA		W	312	50	227	82						
	2000-NIVA	GS	D						312	50	7		
	2000-NIVA	GS	W						312	50	90		
	2001-NIVA		W	312	50	261	103						

Tissue					Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year	Lab.	Inter-calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	2001-NIVA		IM	D						312	50	6		
	2001-NIVA		IM	W						312	50	93		
	2002-NIVA			W	315	50	230	126						
	2002-NIVA		LH	D						315	50	6		
	2002-NIVA		LH	W						315	50	110		
	2003-NIVA			W	315	50	233	121						
	2003-NIVA		MM	W						315	50	99		
	2004-NIVA			W	315	50	249	146		315	50	142		
	2005-NIVA		A!	W	315	50	272	138		315	50	144		
CDD1N	1995-NILU			W						841	0.00002	6	1	1
	1996-NILU			W	841	0.00001	4			841	0.00001	18		2
	2002-NILU			W						841	0.00001	12		2
	2003-NILU			W						841	0.00001	12		6
	2004-NILU			W						841	0.00001	12		6
	2005-NILU			W						841	0.00001	11		
CDD4X	1995-NILU			W						841	0.00002	6	3	1
	1996-NILU			W	841	0.00002	4			841	0.00002	18		1
	2002-NILU			W						841	0.00002	12		2
	2003-NILU			W						841	0.00002	12		6
	2004-NILU			W						841	0.00002	12		5
	2005-NILU			W						841	0.00002	11		1
CDD6P	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.00004	4			841	0.00004	18		
	2002-NILU			W						841	0.00004	12	1	
	2003-NILU			W						841	0.00004	12		2
	2004-NILU			W						841	0.00004	12		
	2005-NILU			W						841	0.00004	11		
CDD6X	1995-NILU			W						841	0.00002	6		1
	1996-NILU			W	841	0.00002	4			841	0.00002	18		1
	2002-NILU			W						841	0.00002	12	2	1
	2003-NILU			W						841	0.00002	12		6
	2004-NILU			W						841	0.00002	12		5
	2005-NILU			W						841	0.00002	11	1	
CDD9X	1995-NILU			W						841	0.00002	6	2	1
	1996-NILU			W	841	0.00002	3		1	841	0.00002	18		1
	2002-NILU			W						841	0.00002	12	2	2
	2003-NILU			W						841	0.00002	12		8
	2004-NILU			W						841	0.00002	12		6
	2005-NILU			W						841	0.00002	11		
CDDFS	1996-NILU			W		miss	4							
CDDO	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.0001	4			841	0.0001	18		
	2002-NILU			W						841	0.0001	12		
	2003-NILU			W						841	0.0001	12		
	2004-NILU			W						841	0.0001	12		
	2005-NILU			W						841	0.0001	11		
CDDSN	1995-NILU			W						841	0.00002	5		
	1996-NILU			W	841	0.00001	3			841	0.00001	18		3
	2002-NILU			W						841	0.00001	10		
CDDSP	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.00004	4			841	0.00004	18		
	2002-NILU			W						841	0.00004	11	1	
CDDST	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.00001	4			841	0.00001	18		
	2002-NILU			W						841	0.00001	12		
CDDSX	1995-NILU			W						841	0.00002	5		
	1996-NILU			W	841	0.00002	3			841	0.00002	18		2
	2002-NILU			W						841	0.00002	11		
CDF2N	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.00001	4			841	0.00001	18		1
	2002-NILU			W						841	0.00001	12		
	2003-NILU			W						841	0.00001	12		3
	2004-NILU			W						841	0.00001	12		
	2005-NILU			W						841	0.00001	11		
CDF2T	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.00001	4			841	0.00001	18		
	2002-NILU			W						841	0.00001	12		
	2003-NILU			W						841	0.00001	12		
	2004-NILU			W						841	0.00001	12		
	2005-NILU			W						841	0.00001	11		
CDF4X	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.00002	4			841	0.00002	18		1
	2002-NILU			W						841	0.00002	12	4	
	2003-NILU			W						841	0.00002	12	1	3
	2004-NILU			W						841	0.00002	12	1	
	2005-NILU			W						841	0.00002	11		
CDF6P	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.00004	4			841	0.00004	18	2	1
	2002-NILU			W						841	0.00004	12	3	
	2003-NILU			W						841	0.00004	12	1	2
	2004-NILU			W						841	0.00004	12		
	2005-NILU			W						841	0.00004	11		
CDF6X	1995-NILU			W						841	0.00002	6		
	1996-NILU			W	841	0.00002	4			841	0.00002	18		1
	2002-NILU			W						841	0.00002	12		1
	2003-NILU			W						841	0.00002	12	1	2
	2004-NILU			W						841	0.00002	12	1	1
	2005-NILU			W						841	0.00002	11	1	
CDF9P	1995-NILU			W						841	0.00002	6	2	1
	1996-NILU			W	841	0.00008	4			841	0.00008	17	3	1
	2002-NILU			W						841	0.00008	12	2	2
	2003-NILU			W						841	0.00008	12	3	4
	2004-NILU			W						841	0.00008	12	7	
	2005-NILU			W						841	0.00008	11	5	
CDF9X	1995-NILU			W						841	0.00002	6	3	1
	1996-NILU			W	841	0.00002	4			841	0.00002	18		1
	2002-NILU			W						841	0.00002	12		3
	2003-NILU			W						841	0.00002	12		7
	2004-NILU			W						841	0.00002	12	7	
	2005-NILU			W						841	0.00002	11	5	
CDFDN	1995-NILU			W						841	0.00002	6		

Tissue				Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year Lab.	Inter-calibr.	+basis	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	1996-NILU		W	841	0.00001	4			841	0.00001	18		1
	2002-NILU		W						841	0.00001	12		
	2003-NILU		W						841	0.00001	12		1
	2004-NILU		W						841	0.00001	12		1
	2005-NILU		W						841	0.00001	11		
CDFDX	1995-NILU		W						841	0.00002	6		
	1996-NILU		W	841	0.00002	4			841	0.00002	18		1
	2002-NILU		W						841	0.00002	12		1
	2003-NILU		W						841	0.00002	12	1	4
	2004-NILU		W						841	0.00002	12	1	
	2005-NILU		W						841	0.00002	11	1	
CDFO	1995-NILU		W						841	0.00002	6		1
	1996-NILU		W	841	0.0001	4			841	0.0001	18	3	1
	2002-NILU		W						841	0.0001	11	1	
	2003-NILU		W						841	0.0001	12	1	2
	2004-NILU		W						841	0.0001	12	1	1
	2005-NILU		W						841	0.0001	11	1	
CDFSN	1995-NILU		W						841	0.00002	6		
	1996-NILU		W	841	0.00001	4			841	0.00001	18		1
	2002-NILU		W						841	0.00001	12		
CDFSP	1995-NILU		W						841	0.00002	6		
	1996-NILU		W	841	0.00008	4			841	0.00008	18	6	1
	2002-NILU		W						841	0.00008	12	4	
CDFST	1995-NILU		W						841	0.00002	6		
	1996-NILU		W	841	0.00001	4			841	0.00001	18		
	2002-NILU		W						841	0.00001	12		
CDFSX	1995-NILU		W						841	0.00002	6		
	1996-NILU		W	841	0.00002	4			841	0.00002	18		1
	2002-NILU		W						841	0.00002	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		
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		W						999	miss	3		
	2004-NIVA		W						315	miss	7		
COR	1992-NIVA		W	309	0.2	8			309	0.2	46		
CR	1992-NIVA		W						312	10	6		
	1996-NIVA		W						999	miss	3		
	2004-NIVA		W						315	miss	7		
CU	1981-NIVA		D							miss	3		
	1982-NIVA		D							miss	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	6		
	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	51		
	1999-NIVA		W	311	10	235							
	1999-NIVA	EF	D						311	10	6		
	1999-NIVA	EF	W						311	10	99		
	2000-NIVA		W	311	10	227							
	2000-NIVA	GS	D						311	10	7		
	2000-NIVA	GS	W						311	10	51		
	2001-NIVA		W	311	10	261							
	2001-NIVA	IM	D						311	10	6		
	2001-NIVA	IM	W						311	10	51		
	2002-NIVA		W	315	10	230							
	2002-NIVA	LH	D						315	10	6		
	2002-NIVA	LH	W						315	10	65		
	2003-NIVA		W	315	10	233							
	2003-NIVA	MM	W						315	10	51		
	2004-NIVA		W	315	10	249			315	10	101		
	2005-NIVA	B!	W	315	10	272			315	10	102		
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		
	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 Lab.	Inter-calibr.	+basis	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count 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	MQ	W						309	0.5	56		
	2004-NIVA		W						309	0.5	58	26	
	2005-NIVA	E!	W						309	0.5	51		
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	
	2005-NIVA	F!	W						309	0.5	51		
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
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
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
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						520	0.15	11		
	2001-NIVA		W						320	0.5	16		1
	2002-EFDH		W						720	2	33	5	
	2002-NIVA		W							miss	2		2
	2003-NIVA		W						720	2	36	14	
	2004-NIVA		W						720	2	72	40	
	2005-NIVA		W						720	2	34	21	
DBTIO	1997-NIVA		W						309	0.5	34		
DDEPP	1982-VETN		W	210	50	53							
	1983-VETN	2E	W	210	50	48			211a	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		
	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	
	1996-NIVA		W	340	4	332	2		341	0.1	243	47	
	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	
	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	
	2005-NIVA		W	340	4	282	4						
	2005-NIVA	C!	W						341	0.1	252	29	
DDTEP	1983-SIIF		W						111	0.5	12		
	1984-SIIF		W						111	0.5	24		1
	1985-SIIF		W						111	0.5	27	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							miss	6		
	1992-NIVA		W							miss	6		4
	1993-NIVA		W							miss	5		1
	1994-NIVA		W							miss	5		
	1995-NIVA		W						340	0.05	78		
	1996-NILU		W		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							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	42	340	0.05	241		163

Tissue					Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year	Lab.	Inter-calibr.	+basis	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
DPTIN	1997-NIVA			D						320	5	13	5	
	1998-NIVA			D						320	2	15		6
	1999-NIVA			D						320	5	13	12	
	1999-NIVA			W						320	5	6	6	
	2000-NIVA			W						320	0.5	23	1	1
	2001-NIVA			W						320	0.5	16		16
	2002-NIVA			W							miss	2		2
	2003-NIVA			W						720	2	36	36	
	2004-NIVA			W						720	2	72	70	
	2005-NIVA			W						720	2	34	34	
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						607	1	6		
	2001-SINT			W						607	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	
	2005-NIVA		F!	W						309	0.5	51		
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		
HBCDA	2001-NILU			W		miss	4				miss	5		2
HBCDB	2001-NILU			W		miss	4		4		miss	5		5
HBCDG	2001-NILU			W		miss	5		4		miss	4		4
HCB	1983-SIIF			W						111	0.5	12		
	1983-VETN		2Z	W	210	10	48			211a	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	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	
	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	
	1989-NACE		2Z	W	510	20	93							
	1989-SIIF		2Z	W						111	0.05	36		
	1990-NIVA			W	340	1	169	2		341	0.05	58		
	1990-SIIF		2Z	W						111	0.05	41	3	
	1991-NIVA			W	340	1	179	4	13	341	0.05	68	5	1
	1991-SIIF		2Z	W						111	0.1	35		
	1992-NIVA			W	340	5	189	3		341	0.1	146		
	1993-NIVA			W	340	4	212	31		341	0.1	138		
	1994-NIVA		2Z	W	340	3	300	24	1	341	0.05	170	37	
	1995-NIVA			W	340	3	317	37		341	0.05	231	32	
	1996-NIVA			W	340	3	332	52		341	0.05	243	37	
	1997-NIVA			W	340	2	260	39						
	1997-NIVA		AJ	W						341	0.05	221	7	
	1998-NIVA			W	340	2	284	48	13	341	0.05	209	68	2
	1999-NIVA			W	340	2	249	18						
	1999-NIVA		EG	W						341	0.05	232	19	8
	2000-NIVA			W	340	2	230	40						
	2000-NIVA		GU	W						341	0.05	186	43	1
	2001-NIVA			W	340	2	250	36	1	341	0.05	211	36	3
	2002-NIVA			W	340	2	249	39		341	0.05	210	29	2
	2003-NIVA			W	340	2	239	31						
	2003-NIVA		MO	W						341	0.05	174	18	
	2004-NIVA			W	340	2	271	42						
	2004-NIVA		R1	W						341	0.05	241	109	
	2005-NIVA			W	340	2	281	48						
	2005-NIVA		D!	W						341	0.05	252	72	
HCHA	1990-NIVA			W	340	1	168			341	0.05	58		
	1991-NIVA			W	340	1	179	2	111	341	0.05	68	5	10
	1992-NIVA			W	340	5	192	3		341	0.1	146		
	1993-NIVA			W	340	4	212	45	22	341	0.1	138		
	1994-NIVA		2Z	W	340	3	296	32	3	341	0.05	170	85	
	1995-NIVA			W	340	3	318	45		341	0.05	231	100	
	1996-NIVA			W	340	3	332	111		341	0.05	237	100	
	1997-NIVA			W	340	0.5	260	2	10	341	0.05	221	20	11

Tissue				Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year Lab.	Inter-calibr.	+basis	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	1998-NIVA		W	340	0.5	284	8	208	341	0.05	208	26	121
	1999-NIVA		W	340	0.5	249	17	78	341	0.05	232	23	151
	2000-NIVA		W	340	0.5	230	31	62	341	0.05	186	42	84
	2001-NIVA		W	340	0.5	250	25	50	341	0.05	211	20	184
	2002-NIVA		W	340	0.5	249	23	149	341	0.05	210		121
	2003-NIVA		W	340	0.5	239	4	201	341	0.05	183		99
	2004-NIVA		W	340	0.5	270	13	192	341	0.05	238	2	9
	2005-NIVA		W	340	0.5	280	37	83					
	2005-NIVA	D!	W						341	0.05	245		
HCHG	1986-NACE		W	510	30	56	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	18	341	0.05	68	5	1
	1991-SIIF		W						111	0.3	35		
	1992-NIVA		W	340	5	192	3		341	0.1	146		
	1993-NIVA		W	340	4	212	42	17	341	0.1	138		
	1994-NIVA	2Z	W	340	3	300	24	1	341	0.05	170	46	
	1995-NIVA		W	340	3	313	31		341	0.05	219	29	
	1996-NIVA		W	340	3	330	68		341	0.05	226	8	
	1997-NIVA		W	340	2	260	47						
	1997-NIVA	AJ	W						341	0.05	221	3	9
	1998-NIVA		W	340	2	284	25	63	341	0.05	209	10	23
	1999-NIVA		W	340	2	249	52	3	341	0.05	232	19	62
	2000-NIVA		W	340	2	230	65	29	341	0.05	186	27	10
	2001-NIVA		W	340	2	250	96	20	341	0.05	211	21	160
	2002-NIVA		W	340	2	249	147	13	341	0.05	210		83
	2003-NIVA		W	340	2	239	96	85	341	0.05	181		102
	2004-NIVA		W	340	2	271	137	19	341	0.05	241		8
	2005-NIVA		W	340	2	281	236	10	341	0.05	248		
HG	1981-NIVA		D							miss	3		
	1981-SIIF	1E	W	120	10	15		1	120	10	35		
	1982-NIVA		D							miss	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	
	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	
	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	6		
	1996-NIVA	V1	W						310	5	481		
	1997-NIVA	AH	D						310	5	6		
	1997-NIVA	AH	W						310	5	383		
	1998-NIVA	CF	D						310	5	6		
	1998-NIVA	CF	W						310	5	381		
	1999-NIVA		W	310	5	3							
	1999-NIVA	EF	D						310	5	6		
	1999-NIVA	EF	W						310	5	386		
	2000-NIVA	GS	D						310	5	7		
	2000-NIVA	GS	W						310	5	330		
	2001-NIVA	IM	D						310	5	6		
	2001-NIVA	IM	W						310	5	356		
	2002-NIVA	LH	D						310	5	6		
	2002-NIVA	LH	W						310	5	366		
	2003-NIVA	MM	W						310	5	347	2	
	2004-NIVA		W						310	5	420		
	2005-NIVA	A!	W						310	5	432	1	
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	
	2005-NIVA	F!	W						309	0.5	51		
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						520	0.2	11		
	2001-NIVA		W						320	0.5	16		5

Tissue					Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year	Lab.	Inter- calibr.	+basis	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	2002-EFDH			W						720	0.8	33		15
	2002-NIVA			W							miss	2		2
	2003-NIVA			W						720	0.8	36	1	31
	2004-NIVA			W						720	0.8	73	50	1
	2005-NIVA			W						720	0.8	34	22	
MN	1984-SIIF			W						132	40	27		
	1985-SIIF			D						132	40	35		
	2004-NIVA			W						315	miss	7		
MPTIN	1997-NIVA			D						320	5	13	5	
	1998-NIVA			D						320	2	15		6
	1999-NIVA			D						320	5	13	13	
	1999-NIVA			W						320	5	6	6	
	2000-NIVA			W						320	0.5	23	3	
	2001-NIVA			W						320	0.5	16		15
	2002-EFDH			W						720	4	1		
	2002-NIVA			W							miss	2		2
	2003-NIVA			W						720	4	36	36	
	2004-NIVA			W						720	4	71	71	
	2005-NIVA			W						720	4	34	34	
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
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	
	2005-NIVA			W						309	2	51		
NAPC2	1995-NIVA			W						309	0.2	57		6
	1996-NIVA			W						309	0.2	60		
	2004-NIVA			W						309	2	58	14	
	2005-NIVA			W						309	2	51		
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
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		
	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		

Tissue					Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year	Lab.	Inter-calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count 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		
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			W						999	miss	3		
	2004-NIVA			W						315	miss	7		
OCS	1990-NIVA			W	340	2	169	31	24	341	0.05	58		1
	1991-NIVA			W	340	2	179	14	81	341	0.05	62	5	8
	1992-NIVA			W	340	5	192	3		341	0.1	146		
	1993-NIVA			W	340	4	212	51	16	341	0.1	138		
	1994-NIVA			W	340	3	300	39	22	341	0.05	170	101	
	1995-NIVA			W	340	3	318	44		341	0.05	231	108	
	1996-NIVA			W	340	3	332	287		341	0.05	243	114	
	1997-NIVA			W	340	2	260	100		341	0.05	221	30	14
	1998-NIVA			W	340	2	277	132	101	341	0.05	209	188	1
	1999-NIVA			W	340	2	249	148	2	341	0.05	232	86	26
	2000-NIVA			W	340	2	230	140	21	341	0.05	186	103	59
	2001-NIVA			W	340	2	250	189	2	341	0.05	211	94	69
	2002-NIVA			W	340	2	218	183		341	0.05	201	96	6
	2003-NIVA			W	340	2	217	178		341	0.05	180	79	
	2004-NIVA			W	340	2	265	218		341	0.05	241	71	1
	2005-NIVA			W	340	2	274	230	1	341	0.05	252	12	
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		
	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
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		
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		
PAC3	2004-NIVA			W						309	2	58	5	
	2005-NIVA			W						309	2	45		
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							miss	3		
	1982-NIVA			D							miss	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	3	312	150	55		
	1989-NIVA		1Z	D	312	150	135	9	9	312	150	3		
	1989-NIVA		1Z	W						312	150	36		
	1990-NIVA		1Z	D						312	50	6		
	1990-NIVA		1Z	W	312	50	187	3	1	312	150	77	3	
	1991-NIVA		1Z	D						312	50	6		
	1991-NIVA		1Z	W	312	50	193	14		312	50	67		

Tissue				Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year Lab.	Inter-calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	1992-NIVA	1Z	D						312	50	6		
	1992-NIVA	1Z	W	312	50	191	119		312	50	111	2	
	1993-NIVA	1H	D						312	30	5		
	1993-NIVA	1H	W	312	30	221	40		312	30	79		
	1994-NIVA	1Z	D						312	30	5		
	1994-NIVA	1Z	W	312	30	302	3		312	30	81		
	1995-NIVA		D						312	30	6		
	1995-NIVA		W	312	30	318	162	30	312	30	124		
	1996-NIVA	V1	D						312	30	6		
	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	28	312	40	92		
	1998-NIVA		W	312	40	285	126	2					
	1998-NIVA	CF	D						312	40	6		
	1998-NIVA	CF	W						312	40	90		
	1999-NIVA		W	312	40	235	118	11					
	1999-NIVA	EF	D						312	40	6		
	1999-NIVA	EF	W						312	40	129	10	
	2000-NIVA		W	312	40	227	67	4					
	2000-NIVA	GS	D						312	40	7		
	2000-NIVA	GS	W						312	40	87		
	2001-NIVA		W	312	40	261	156	6					
	2001-NIVA	IM	D						312	40	6		
	2001-NIVA	IM	W						312	40	90		
	2002-NIVA		D						315	40	6		
	2002-NIVA		W	315	40	230	164		315	40	107		
	2003-NIVA	MM	W	315	40	233	179	1	315	40	96		
	2004-NIVA		W	315	40	249	182		315	40	139		
	2005-NIVA	A!	W	315	40	272	219		315	40	141		
PBB15	1996-NILU		W		miss	4		3					
	2001-NILU		W		miss	6		6		miss	6		3
	2002-NILU		W						843	0.01	2		
PBB49	2001-NILU		W		miss	6		1		miss	6		3
	2002-NILU		W						843	0.01	2		
PBB52	1996-NILU		W		miss	4							
	2001-NILU		W		miss	6		1		miss	6		5
	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	511a	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		
	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	0.00002	6		
	1996-NILU		W	841	0.0001	4			841	0.0001	18		
	2002-NILU		W						841	0.0001	12		
PCDF	1995-NILU		W						841	0.00002	6		
	1996-NILU		W	841	0.0001	4			841	0.0001	18		
	2002-NILU		W						841	0.0001	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	
	2005-NIVA	F!	W						309	0.5	51		
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
QCB	1990-NIVA		W	340	2	169	33	39	341	0.05	58		
	1991-NIVA		W	340	2	178	13	97	341	0.05	63	5	13
	1992-NIVA		W	340	5	192	3		341	0.1	131		
	1993-NIVA		W	340	4	212	52	24	341	0.1	138		
	1994-NIVA		W	340	3	299	38	23	341	0.05	170	98	

Tissue					Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year	Lab.	Inter-calibr. +basis		Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	1995-NIVA			W	340	3	318	45		341	0.05	231	108	
	1996-NIVA			W	340	3	332	306		341	0.05	243	109	
	1997-NIVA			W	340	2	260	79		341	0.05	221	27	10
	1998-NIVA			W	340	2	284	121	101	341	0.05	209	177	1
	1999-NIVA			W	340	2	242	185	2	341	0.05	232	88	14
	2000-NIVA			W	340	2	230	198	1	341	0.05	186	123	1
	2001-NIVA			W	340	2	232	216	1	341	0.05	211	95	63
	2002-NIVA			W	340	2	248	235		341	0.05	210	99	4
	2003-NIVA			W	340	2	186	182		341	0.05	183	79	
	2004-NIVA			W	340	2	229	227		341	0.05	241	215	
	2005-NIVA			W	340	2	271	239		341	0.05	241	223	
SCCP	2001-NILU			W		miss	4				miss	3		
SE	1982-VETN			W	240	10	46			240	10	54		
TBA	2001-NILU			W		miss	6				miss	6		
	2002-NILU			W						843	0.35	1		
TBBPA	2001-NILU			W		miss	6				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						520	0.12	11		
	2001-NIVA			W						320	0.5	16		
	2002-EFDH			W						720	0.2	32		
	2002-NIVA			W							miss	2		
	2003-NIVA			W						720	0.2	36	1	2
	2004-NIVA			W						720	0.2	72		1
	2005-NIVA			W						720	0.2	34		2
TCDD	1995-NILU			W						841	0.00002	6	1	
	1996-NILU			W	841	0.00001	4			841	0.00001	18		
	2002-NILU			W						841	0.00001	12		
	2003-NILU			W						841	0.00001	12		2
	2004-NILU			W						841	0.00001	12		
	2005-NILU			W						841	0.00001	11		
TDEPP	1991-NIVA			W	340	1	138		1	341	0.05	68		
	1992-NIVA			W	340	5	191	3		341	0.1	146		
	1993-NIVA			W	340	4	212	24	3	341	0.1	138		
	1994-NIVA		2Z	W	340	3	300	17	5	341	0.05	170	47	
	1995-NIVA			W	340	3	318	36		341	0.05	228	51	
	1996-NIVA			W	340	3	332	23		341	0.05	243	16	
	1997-NIVA			W	340	3	260	23						
	1997-NIVA		AJ	W						341	0.05	221	11	
	1998-NIVA			W	340	3	278	19	26					
	1998-NIVA		CH	W						341	0.05	209	1	44
	1999-NIVA			W	340	3	249	6	1					
	1999-NIVA		EG	W						341	0.05	232	2	71
	2000-NIVA			W	340	3	230	35	4					
	2000-NIVA		GU	W						341	0.05	185	11	67
	2001-NIVA			W	340	3	250	24	3	341	0.05	210	1	101
	2002-NIVA			W	340	3	248	24	3	341	0.05	210		124
	2003-NIVA			W	340	3	239	18	9	341	0.05	183		106
	2004-NIVA			W	340	3	272	30		341	0.05	241		138
	2005-NIVA			W	340	3	282	41	1					
	2005-NIVA		C!	W						341	0.05	246		156
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						520	0.1	11		1
	2001-NIVA			W						320	0.5	16		9
	2002-EFDH			W						720	2	24	13	
	2002-NIVA			W							miss	2		2
	2003-NIVA			W						720	2	36	35	
	2004-NIVA			W						720	2	64	61	
	2005-NIVA			W						720	2	34	34	
V	1996-NIVA			W						999	miss	3		
ZN	1981-NIVA			D							miss	3		
	1982-NIVA			D							miss	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	6		
	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	110		
	1998-NIVA			W	311	1000	285							
	1998-NIVA		CF	D						311	1000	6		
	1998-NIVA		CF	W						311	1000	51		
	1999-NIVA			W	311	1000	235							
	1999-NIVA		EF	D						311	1000	6		
	1999-NIVA		EF	W						311	1000	99		

Tissue					Fish liver					Fish fillet, Shrimp tail, Mussel, Other				
Contamin.	Mon. Year	Lab.	Inter-calibr.	+basis	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim	Analys method code	Detect limit (ppb)	Total value count	Count below d.lim	N (<) above d.lim
	2000-NIVA			W	311	1000	227							
	2000-NIVA		GS	D						311	1000	7		
	2000-NIVA		GS	W						311	1000	51		
	2001-NIVA			W	311	1000	261							
	2001-NIVA		IM	D						311	1000	6		
	2001-NIVA		IM	W						311	1000	51		
	2002-NIVA			W	315	1000	230							
	2002-NIVA		LI	D						315	1000	6		
	2002-NIVA		LI	W						315	1000	65		
	2003-NIVA			W	315	1000	233							
	2003-NIVA		MM	W						315	1000	51		
	2004-NIVA			W	315	1000	249			315	1000	101		
	2005-NIVA		A!	W	315	1000	272			315	1000	111		
Sum of counts							90151	15482	3608			88655	7105	7597

a(7) > 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 biota 1981-2005

Nominel station positions are shown on maps in Appendix F

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	nom_lat	nom_lon	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
J26	01A	Sponvika	59.0885	11.22617	MYTI EDU	SB		3			3					3															
J26	02A	Fugleskjær	59.115	10.98333	MYTI EDU	SB		3			3					3															
J26	03A	Tisler	58.98	10.95833	MYTI EDU	SB		2			3					3															
J26	301	Akershuskaia	59.90533	10.73633	MYTI EDU	SB												2													
J26	302	Ormøya	59.87817	10.75767	MYTI EDU	SB												2													
J26	303	Malmøya	59.863	10.76583	MYTI EDU	SB												1													
J26	304	Gåsøya	59.85133	10.58867	MYTI EDU	SB												3													
J26	305	Lysaker	59.906	10.64333	MYTI EDU	SB												2													
J26	306	Håøya	59.71333	10.55517	MYTI EDU	SB												3													
J26	30A	Gressholmen	59.882	10.7115	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
J26	30B	Oslo City area	59.81667	10.55	GADU MOR	BI																		27	23	23	25	24	25	25	23
J26	30B	Oslo City area	59.81667	10.55	GADU MOR	BL																	20	30	25	25	25	25	25	25	
J26	30B	Oslo City area	59.81667	10.55	GADU MOR	LI				29	25	25	25	25	25	25	24	21	24	25	25	50	50	50	25	25	28	25	25	25	25
J26	30B	Oslo City area	59.81667	10.55	GADU MOR	MU				29	25	25	25	26	26	30	30	21	29	30	30	60	60	60	30	30	30	30	30	30	30
J26	30C	Oslo City area	59.81667	10.55	PAND BOR	TM				1								2													
J26	30F	Oslo City area	59.78333	10.56667	PLEU PLA	LI												2		5	5										
J26	30F	Oslo City area	59.78333	10.56667	PLEU PLA	MU												2		5	5										
J26	30J	Spro	59.76333	10.575	PAND BOR	TM															1										
J26	30K	Storegrunn	59.80833	10.55833	PAND BOR	TM															1										
J26	30X	West of Nesodden	59.80833	10.6	GADU MOR	LI												22													
J26	30X	West of Nesodden	59.80833	10.6	GADU MOR	MU												22													
J26	31A	Solbergstrand	59.61883	10.64983	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
J26	31B	Solbergstrand	59.615	10.64	GADU MOR	LI	10	27																							
J26	31B	Solbergstrand	59.615	10.64	GADU MOR	MU	10	27																							
J26	31F	Solbergstrand	59.615	10.64	PLAT FLE	LI	8																								
J26	31F	Solbergstrand	59.615	10.64	PLAT FLE	MU	8																								
J26	31C	Solbergstrand	59.615	10.64	PAND BOR	TM				1																					
J26	32A	Rødtangen	59.525	10.42667	MYTI EDU	SB	1	3			3																				
J26	33F	Sande (east side)	59.52833	10.35	PLAT FLE	LI			25		1	1	1	1	1	5	5	5	5	5	5	15	15	13	5	5	5	5	5	5	5
J26	33F	Sande (east side)	59.52833	10.35	PLAT FLE	MU			25		25	1	1	1	1	5	5	5	5	5	5	15	15	13	5	5	5	5	5	5	5
J26	33C	Sande	59.52833	10.35	PAND BOR	TM						1																			
J26	33X	Sande (west side)	59.52833	10.34	PLAT FLE	LI										3															
J26	33X	Sande (west side)	59.52833	10.34	PLAT FLE	MU										3															
J26	35A	Mølen	59.48817	10.498	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
J26	35C	Mølen-Moss	59.48267	10.529	PAND BOR	TM		1						1		2															
J26	35C	Mølen-Moss	59.48267	10.529	PAND BOR	XX								1																	
J26	36A	Færder	59.02717	10.5255	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
J26	36G	Færder	59.02717	10.5255	NUCE LAP	SB																	1	1	1	1	1	1	1	2	2
J26	36B	Færder area	59.0405	10.43583	GADU MOR	BI																	21	25	25	23	25				
J26	36B	Færder area	59.0405	10.43583	GADU MOR	BL																	20	25	25	23	25				
J26	36B	Færder area	59.0405	10.43583	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
J26	36B	Færder area	59.0405	10.43583	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
J26	36F	Færder area	59.06667	10.38333	LIMA LIM	BI																			11	9	20				
J26	36F	Færder area	59.06667	10.38333	LIMA LIM	BL																			20	9	20				
J26	36F	Færder area	59.06667	10.38333	LIMA LIM	LI										5	5	5	5	5	5	5	5	5	25	14	24	5	5	5	5
J26	36F	Færder area	59.06667	10.38333	LIMA LIM	MU										5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
J26	73A	Lyngholmen	59.04467	10.29533	MYTI EDU	SB										3															

jmpco	jmpst	stnam	nom_lat	nom_lon	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
J26	74A	Langholmane	58.955	9.868333	MYTI EDU	SB										3															
J26	71A	Bjørkøya (Risøyodden)	59.02333	9.753667	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
J26	71G	Fugløyskjær	58.98083	9.807667	NUCE LAP	SB																					1	1	1	1	1
J99	76A	Risøy	58.73083	9.272	MYTI EDU	SB										3	3	3	3			3	3	3	3	3	3	3	3	3	3
J99	76A	Risøy	58.73083	9.272	NUCE LAP	SB																							1		
J99	76G	Risøy	58.728	9.2755	NUCE LAP	SB																					1	1		1	2
J99	77A	Nordstrand	58.52367	8.941833	MYTI EDU	SB										3	3														
J99	77B	Borøy area	58.55	9.016667	GADU MOR	LI										14	25														
J99	77B	Borøy area	58.55	9.016667	GADU MOR	MU										17	30														
J99	77F	Borøy area	58.55	9.016667	LIMA LIM	LI											3														
J99	77C	Borøy area	58.48333	9.166667	PAND BOR	TM										2															
J99	79A	Gjerdsvoldsøyen (east)	58.41333	8.741667	MYTI EDU	SB										3	3														
J99	13A	Langøsund	57.99783	7.576667	MYTI EDU	SB										1	4														
J99	131G	Lastad	58.0555	7.708667	NUCE LAP	SB																					1	1	1	1	2
J99	14A	Aavigen	58.03267	7.216167	MYTI EDU	SB										3	4														
J99	15A	Gåsøy (Ullerø)	58.051	6.886667	MYTI EDU	SB										4	4		3	3	4	4	3	3	3	3	3	3	3	3	3
J99	15G	Gåsøy (Ullerø)	58.05167	6.888333	NUCE LAP	SB																					1	1	1	2	2
J99	15B	Ullerø area	58.05	6.716667	GADU MOR	BI																	10	25	25		24	18	24	22	24
J99	15B	Ullerø area	58.05	6.716667	GADU MOR	BL																	24	25	25		23				
J99	15B	Ullerø area	58.05	6.716667	GADU MOR	LI										25	24	23	25	23	24	26	25	25	25	25	25	25	25	25	25
J99	15B	Ullerø area	58.05	6.716667	GADU MOR	MU										30	29	27	30	28	29	30	30	30	30	30	30	30	30	30	30
J99	15F	Ullerø area	58.05	6.716667	LIMA LIM	BI																			20		22				
J99	15F	Ullerø area	58.05	6.716667	LIMA LIM	BL																			25		25				
J99	15F	Ullerø area	58.05	6.716667	LIMA LIM	LI											3		2	4	5	5	5	5	30	5	30	5	5	5	5
J99	15F	Ullerø area	58.05	6.716667	LIMA LIM	MU											3		2	4	5	5	5	5	5	5	5	5	5	5	5
J99	15F	Ullerø area	58.05	6.716667	PLEU PLA	LI												3	2												
J99	15F	Ullerø area	58.05	6.716667	PLEU PLA	MU												3	2												
J99	15F	Ullerø area	58.05	6.716667	MICR KIT	LI														1											
J99	15F	Ullerø area	58.05	6.716667	MICR KIT	MU														1											
J63	51A	Byrkjenes	60.08383	6.5505	MYTI EDU	SB							3	3							1	3	3	3	6	3	3	3	3	3	3
J63	52A	Eitrheimsneset	60.09667	6.533	MYTI EDU	SB									3	3	3	3	2	3	3	3	3	3	6	3	3	3	3	3	3
J63	53B	Inner Sørfjord	60.16667	6.566667	GADU MOR	BI																	15	28	24	25	25	24	24	25	24
J63	53B	Inner Sørfjord	60.16667	6.566667	GADU MOR	BL																	15	30	25	25	25	25	25	25	
J63	53B	Inner Sørfjord	60.16667	6.566667	GADU MOR	LI							13	1	12	25	25	22	25	25	25	50	30	30	25	25	25	25	25	25	25
J63	53B	Inner Sørfjord	60.16667	6.566667	GADU MOR	MU							12	1	15	30	30	26	30	30	30	56	36	36	30	30	30	30	30	30	30
J63	53F	Inner Sørfjord	60.16667	6.566667	PLAT FLE	BI																			25	11	12				
J63	53F	Inner Sørfjord	60.16667	6.566667	PLAT FLE	BL																			23	11	12				
J63	53F	Inner Sørfjord	60.16667	6.566667	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	60.16667	6.566667	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	60.16667	6.566667	GLYP CYN	LI							3																		
J63	53F	Inner Sørfjord	60.16667	6.566667	GLYP CYN	MU							3																		
J63	53B	Inner Sørfjord	60.16667	6.566667	SALM TRU	LI										12															
J63	53B	Inner Sørfjord	60.16667	6.566667	SALM TRU	MU										12															
J63	53D	Digraneset	60.18333	6.575	BROS BRO	LI																					4				
J63	53D	Digraneset	60.18333	6.575	BROS BRO	MU																					4				
J63	53D	Digraneset	60.18333	6.575	MOLV MOL	LI																					5				
J63	53D	Digraneset	60.18333	6.575	MOLV MOL	MU																					5				
J63	53D	Digraneset	60.18333	6.575	CHIM MON	LI																					2				
J63	53D	Digraneset	60.18333	6.575	CHIM MON	MU																					2				
J63	56A	Kvalnes	60.2205	6.602	MYTI EDU	SB							3	15	3	3	3	3	3	3	3	3	3	3	6	3	3	3	3	3	3

jmpco	jmpst	stnam	nom_lat	nom_lon	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
J63	56A1	Kvalnes (north)	60.22517	6.604333	MYTI EDU	SB																			3			2			
J63	56A2	Kjeken	60.33883	6.6545	MYTI EDU	SB																			3			2			
J63	56A3	Sekse	60.26133	6.623333	MYTI EDU	SB																						2			
J63	56A4	Rosstadnes	60.287	6.623833	MYTI EDU	SB																						2			
J63	56A5	Lofthus (south)	60.3225	6.652	MYTI EDU	SB																						2			
J63	56D	Kvalnes	60.25	6.6	BROS BRO	LI																			3						
J63	56D	Kvalnes	60.25	6.6	BROS BRO	MU																			3						
J63	56D	Kvalnes	60.25	6.6	MOLV MOL	LI																			1						
J63	56D	Kvalnes	60.25	6.6	MOLV MOL	MU																			1						
J63	56D	Kvalnes	60.25	6.6	CHIM MON	LI																			1						
J63	56D	Kvalnes	60.25	6.6	CHIM MON	MU																			1						
J63	57A	Krossanes	60.36283	6.670167	MYTI EDU	SB							3	3	3	3	3	3	3	3	3	3	3	3	6	3	3	3	3	3	3
J63	57A1	Urdheim	60.3725	6.678167	MYTI EDU	SB																			3			2			
J63	57A2	Ernes	60.35317	6.662333	MYTI EDU	SB																						2			
J62	63A	Ranaskjær	60.42083	6.405167	MYTI EDU	SB							3	3	3	3	3	3	3	3	3	3	3	3	6	3	3	3	3	3	3
J62	65A	Vikingneset	60.24233	6.152667	MYTI EDU	SB							3	15	3	3	3	3	3	3	3	3	3	3	6	3	3	3	3	3	3
J62	67B	Strandebarm area	60.26667	6.033333	GADU MOR	BI																	25	24	25	15	25				
J62	67B	Strandebarm area	60.26667	6.033333	GADU MOR	BL																	25	25	25	13	24				
J62	67B	Strandebarm area	60.26667	6.033333	GADU MOR	LI							22	1	22	16	19	8	12	18	25	35	25	25	25	25	25	25	25	25	25
J62	67B	Strandebarm area	60.26667	6.033333	GADU MOR	MU							22	1	23	16	24	9	14	22	30	40	30	30	30	30	30	30	30	30	30
J62	67F	Strandebarm area	60.26667	6.033333	PLAT FLE	BI																			25	22	25				
J62	67F	Strandebarm area	60.26667	6.033333	PLAT FLE	BL																			25	23	23				
J62	67F	Strandebarm area	60.26667	6.033333	PLAT FLE	LI																3		4	30	28	30	5	5	5	5
J62	67F	Strandebarm area	60.26667	6.033333	PLAT FLE	MU																3		4	5	5	5	5	5	5	5
J62	67F	Strandebarm area	60.26667	6.033333	LIMA LIM	LI																		5							
J62	67F	Strandebarm area	60.26667	6.033333	LIMA LIM	MU																		5							
J62	67F	Strandebarm area	60.26667	6.033333	LEPI WHI	LI				19			1	1	30	5	5	3	5	5	5	5	5	5	5	5	5	5	5	2	5
J62	67F	Strandebarm area	60.26667	6.033333	LEPI WHI	MU				19			1	1	30	5	5	3	5	5	5	5	5	5	5	5	5	5	5	2	5
J62	69A	Lille Terøy	59.9815	5.7515	MYTI EDU	SB												3	1	3	3	3	3	3	6	3	3	3	3	3	3
J99	22A	Espevær (west)	59.58367	5.145833	MYTI EDU	SB										3	3	3	3	3	3	5	3	3	3	3	3	3	3	3	3
J99	224G	Heggjelen	59.416	5.231667	NUCE LAP	SB																	1	1	1	1					
J99	22G	Espevær vest	59.58367	5.1445	NUCE LAP	SB																					1	1	1	2	2
J99	220G	Smørstakk	59.2525	5.351833	NUCE LAP	SB																	1	1	1					2	
J99	22C	Bømlofjord	59.56667	5.183333	PAND BOR	TM										2															
J99	221A	Stangeland	59.277	5.328333	MYTI EDU	SB																		2	3						
J99	221G	Stangeland	59.27017	5.33	NUCE LAP	SB																		1	1						
J99	21F	Åkrafjord	59.75	6.116667	PLAT FLE	BI																			11						
J99	21F	Åkrafjord	59.75	6.116667	PLAT FLE	BL																			11	25					
J99	21F	Åkrafjord	59.75	6.116667	PLAT FLE	LI																			14	11	5	5		1	5
J99	21F	Åkrafjord	59.75	6.116667	PLAT FLE	MU																			3	5	5	5		1	5
J99	21F	Åkrafjord	59.75	6.116667	LIMA LIM	LI																						5	5	5	5
J99	22F	Borøyfjorden	59.71667	5.35	LIMA LIM	LI										5	5	4		5	2										
J99	21F	Åkrafjord	59.75	6.116667	LIMA LIM	MU																						5	5	5	5
J99	22F	Borøyfjorden	59.71667	5.35	LIMA LIM	MU										5	5	4		5	2										
J99	22F	Borøyfjorden	59.71667	5.35	PLEU PLA	LI																5	5	5							
J99	22F	Borøyfjorden	59.71667	5.35	PLEU PLA	MU																5	5	5							
J99	21F	Åkrafjord	59.75	6.116667	LEPI WHI	LI																			5				5	5	5
J99	21F	Åkrafjord	59.75	6.116667	LEPI WHI	MU																			5				5	5	5
J99	22F	Borøyfjorden	59.71667	5.35	MICR KIT	LI													5												
J99	22F	Borøyfjorden	59.71667	5.35	MICR KIT	MU													5												

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J99	21D	Åkrafjord	59.8	6.183333	BROS BRO	LI																			1		4				
J99	21D	Åkrafjord	59.8	6.183333	BROS BRO	MU																			1		4				
J99	21D	Åkrafjord	59.8	6.183333	MOLV MOL	LI																			1		4				
J99	21D	Åkrafjord	59.8	6.183333	MOLV MOL	MU																			1		4				
J99	21D	Åkrafjord	59.8	6.183333	CHIM MON	LI																			1		2				
J99	21D	Åkrafjord	59.8	6.183333	CHIM MON	MU																			1		2				
J99	222A	Kopervik harbour	59.283	5.315667	MYTI EDU	SB																				3					
J99	226X	Karmsund bridge (east)	59.378	5.2985	MYTI EDU	SB																		1	3	3					
J99	226G	Karmsund bridge (east)	59.378	5.2985	NUCE LAP	SB																		1	1	1					
J99	226H	Karmsund bridge (west)	59.37767	5.2925	NUCE LAP	SB																	1			1					
J99	227A1	Melandholmen	59.32767	5.316833	MYTI EDU	SB																		2	3						
J99	227A2	Høgevarde	59.32767	5.316833	MYTI EDU	SB																				3	3	3	3	1	2
J99	227G1	Melandholmen	59.3365	5.313167	NUCE LAP	SB																	1	1	1	1	1	1			
J99	227G2	Flatskjær	59.3365	5.313167	NUCE LAP	SB																							1	1	2
J99	23A	Austvik	59.87033	5.108	MYTI EDU	SB										3	3													3	3
J99	23B	Karihavet area	59.9	5.133333	GADU MOR	BI																	22	23	24	23	25	25	25	24	25
J99	23B	Karihavet area	59.9	5.133333	GADU MOR	BL																	25	25	25	24	25	25	25	25	
J99	23B	Karihavet area	59.9	5.133333	GADU MOR	LI										25	25	25	25	25	25	26	25	25	25	25	25	25	25	25	25
J99	23B	Karihavet area	59.9	5.133333	GADU MOR	MU										30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30
J99	23F	Karihavet area	59.9	5.133333	PLAT FLE	LI														1											
J99	23F	Karihavet area	59.9	5.133333	PLAT FLE	MU														1											
J99	23F	Karihavet area	59.9	5.133333	PLEU PLA	LI														3											
J99	23F	Karihavet area	59.9	5.133333	PLEU PLA	MU														3											
J99	23F	Karihavet area	59.9	5.133333	MICR KIT	LI														1	4										
J99	23F	Karihavet area	59.9	5.133333	MICR KIT	MU														1	4										
J99	24A	Vardøy	60.17117	5.010333	MYTI EDU	SB										3	3													3	3
J99	24G	Vardøy	60.17117	5.010333	NUCE LAP	SB																								1	
J65	80A	Østmarknes	63.45733	10.4495	MYTI EDU	SB				1	2																				
J65	81A	Biologisk Stasjon	63.44167	10.34917	MYTI EDU	SB				1																					
J65	82A	Flakk	63.45033	10.20617	MYTI EDU	SB				1	2	2	3	1	2		3	2	2		3	3								3	3
J99	82G	Flakk	63.45067	10.2025	NUCE LAP	SB												1												1	
J65	83A	Frøsetskjær	63.42817	10.10667	MYTI EDU	SB				1																					
J65	84A	Tråsåvika	63.3465	9.957167	MYTI EDU	SB				2	3	3	3	3	3		3	3	3		3	3								3	3
J99	84G	Tråsåvika	63.3465	9.957167	NUCE LAP	SB												1													
J65	84B	Tråsåvika	63.34867	9.961333	GADU MOR	LI				13	1	1	1	1																	
J65	84B	Tråsåvika	63.34867	9.961333	GADU MOR	MU				13	10	1	1	1																	
J65	84F	Tråsåvika	63.34867	9.961333	MICR KIT	LI								1																	
J65	84F	Tråsåvika	63.34867	9.961333	MICR KIT	MU								1																	
J65	84B	Tråsåvika	63.34867	9.961333	MELA AEG	LI						1	1	1																	
J65	84B	Tråsåvika	63.34867	9.961333	MELA AEG	MU						1	1	1																	
J65	84B	Tråsåvika	63.34867	9.961333	MERL MNG	LI							1	1																	
J65	84B	Tråsåvika	63.34867	9.961333	MERL MNG	MU							1	1																	
J65	84B	Tråsåvika	63.34867	9.961333	POLL POL	LI					1	1		1																	
J65	84B	Tråsåvika	63.34867	9.961333	POLL POL	MU					16	1		1																	
J65	84B	Tråsåvika	63.34867	9.961333	POLL VIR	LI								1																	
J65	84B	Tråsåvika	63.34867	9.961333	POLL VIR	MU								1																	
J65	85A	Geitstrand	63.364	9.9275	MYTI EDU	SB				1																					
J65	86A	Geitnes	63.44283	9.977667	MYTI EDU	SB				1																					
J65	87A	Ingdalsbukt	63.46183	9.907167	MYTI EDU	SB				1	1	1	1	1	1		1	1	1		2	2								1	3
J99	87G	Ingdalsbukt	63.46183	9.907167	NUCE LAP	SB												1												1	

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J65	88A	Rødberg	63.48667	10	MYTI EDU	SB				1	1																				
J99	25A	Hinnøy	61.3695	4.878833	MYTI EDU	SB												3	3											3	3
J99	25G	Hinnøy	61.3695	4.878833	NUCE LAP	SB												1												1	
J99	26A	Hamnen	61.876	5.221667	MYTI EDU	SB												6	3											3	3
J99	26G	Hamnen	61.87533	5.221667	NUCE LAP	SB												1												1	
J99	27A	Grinden	62.20183	5.421167	MYTI EDU	SB												2												3	3
J99	27G	Røydeskjær	62.18333	5.740333	NUCE LAP	SB												1												1	
J99	27H	Storholmen	62.18967	5.393167	NUCE LAP	SB												1													
J99	28A	Eiksundet	62.25167	5.864	MYTI EDU	SB												5	3											3	3
J99	28G	Grønevikholmen (Eiksundet)	62.24667	5.883333	NUCE LAP	SB												1												1	
J99	28H	Øveråneset (Hareid)	62.3615	6.077833	NUCE LAP	SB												1													
J99	91A	Nerdvika	63.35267	8.157167	MYTI EDU	SB												3	3	3											3
J99	92A1	Krokholmen	64.0535	10.02967	MYTI EDU	SB												6	3	3	3	3	3								
J99	92A2	Nygården	64.0535	10.02967	MYTI EDU	SB																									3
J99	92B	Stokken area	64.17133	9.887333	GADU MOR	LI													25	24	25	25								25	25
J99	92B	Stokken area	64.17133	9.887333	GADU MOR	MU													30	29	30	30								30	30
J99	92F	Stokken area	64.17133	9.887333	LIMA LIM	LI															1										
J99	92F	Stokken area	64.17133	9.887333	LIMA LIM	MU															1										
J99	92F	Stokken area	64.17133	9.887333	PLEU PLA	LI															1										5
J99	92F	Stokken area	64.17133	9.887333	PLEU PLA	MU															1										5
J99	93A	Sætervik	64.39467	10.48333	MYTI EDU	SB												3	3											3	3
J99	93G	Sætervika (Stadsvikskjæret)	64.39483	10.5	NUCE LAP	SB												1													
J99	94A	Landfast	65.64367	12.00617	MYTI EDU	SB												3	3											3	3
J99	94G	Steinskjær (Landfast)	65.64067	11.99817	NUCE LAP	SB												1												1	
J99	95A	Sleipnesodden (south)	66.71017	13.25033	MYTI EDU	SB												3	3											3	3
J99	95G	Sleipnesodden (south)	66.70667	13.23833	NUCE LAP	SB												1												1	
J99	96A	Breiviken	66.296	12.83367	MYTI EDU	SB												6	3											3	3
J99	97A	Klokkholmen	67.66467	14.74283	MYTI EDU	SB												3	3											3	3
J99	97G	Varnesodden	67.80133	14.75033	NUCE LAP	SB												1												1	
J99	97H	Småfloholmene	67.89083	14.81833	NUCE LAP	SB												1													
J99	98A1	Yitj-Skarvsundet	68.1575	14.65333	MYTI EDU	SB												3	3												
J99	98A2	Husvaagen area	68.26483	14.66283	MYTI EDU	SB																	3		3	3	3	3	3	3	3
J99	98A3	Vatterfjord	68.26483	14.66283	MYTI EDU	SB																		3							
J99	98G	Svolvær området	68.24867	14.66333	NUCE LAP	SB																					1	1	1	2	2
J99	98B2	Austnesfjorden	68.26633	14.78717	GADU MOR	BI																				14	22				
J99	98B2	Austnesfjorden	68.26633	14.78717	GADU MOR	BL																				5	25				
J99	98B1	Bjørnerøya (east)	68.26633	14.78717	GADU MOR	LI												25	24	25	24	26	25	25	25			25	21	25	25
J99	98B2	Austnesfjorden	68.26633	14.78717	GADU MOR	LI																				25	25				
J99	98B1	Bjørnerøya (east)	68.26633	14.78717	GADU MOR	MU												30	29	30	29	30	30	30	30			30	25	30	30
J99	98B2	Austnesfjorden	68.26633	14.78717	GADU MOR	MU																				30	30				
J99	98F1	Bjørnerøya (east)	68.21867	14.80783	LIMA LIM	LI													4	1	1	5									
J99	98F1	Bjørnerøya (east)	68.21867	14.80783	LIMA LIM	MU													4	1	1	5									
J99	98F2	Husholmen	68.21867	14.80783	PLEU PLA	BI																				18	24				
J99	98F2	Husholmen	68.21867	14.80783	PLEU PLA	BL																				13	19				
J99	98F1	Bjørnerøya (east)	68.21867	14.80783	PLEU PLA	LI													3		5		4	5	1						
J99	98F2	Husholmen	68.21867	14.80783	PLEU PLA	LI																				22	30	4	3	5	2
J99	98F1	Bjørnerøya (east)	68.21867	14.80783	PLEU PLA	MU													3		5		4	5	1						
J99	98F2	Husholmen	68.21867	14.80783	PLEU PLA	MU																				4	5	4	3	5	2
J99	98F1	Bjørnerøya (east)	68.21867	14.80783	MICR KIT	LI														1	1										
J99	98F1	Bjørnerøya (east)	68.21867	14.80783	MICR KIT	MU														1	1										

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J99	98F1	Bjørnerøya (east)	68.21867	14.80783	GLYP CYN	LI															1										
J99	98F1	Bjørnerøya (east)	68.21867	14.80783	GLYP CYN	MU															1										
J99	98X	Skrova harbour	68.16517	14.65883	MYTI EDU	SB														3	4	4									
J99	99A	Brunvær	68.005	15.09333	MYTI EDU	SB												6	3											3	3
J99	41A	Fensneset (Grytøya)	68.935	16.64117	MYTI EDU	SB														3	3	4	3								
J99	41G	Harstad (Trondenes)	68.82167	16.56533	NUCE LAP	SB																				1					
J99	42A	Tennskjær (Malangen)	69.47667	18.3	MYTI EDU	SB														3	3										
J99	42G	Finnsnes	69.22583	17.975	NUCE LAP	SB																				1					
J99	43A	Lyngneset (Langfjord)	70.10033	20.5465	MYTI EDU	SB														3	3		3								
J99	43B	Kvænangen	70.15	21.36667	GADU MOR	LI														25	25	25									
J99	43B	Kvænangen	70.15	21.36667	GADU MOR	MU														30	30	30									
J99	43G	Skjervøy	70.036	20.99517	NUCE LAP	SB																				1					
J99	43F	Kvænangen (Olderfjord)	70.15	21.36667	LIMA LIM	LI																3									
J99	43F	Kvænangen (Olderfjord)	70.15	21.36667	LIMA LIM	MU																3									
J99	43F	Kvænangen (Olderfjord)	70.15	21.36667	MICR KIT	LI																1									
J99	43F	Kvænangen (Olderfjord)	70.15	21.36667	MICR KIT	MU																1									
J99	44A	Elenheimsundet	70.51617	22.24667	MYTI EDU	SB														3	3	4	3								
J99	44G	Alta	69.99	23.30583	NUCE LAP	SB																				1					
J99	45A	Sauhamneset	70.7635	24.32033	MYTI EDU	SB														3	3										
J99	45G	Sauhamneset	70.7635	24.32033	NUCE LAP	SB																				1					
J99	46A	Smines ved Altesula	70.973	25.80233	MYTI EDU	SB														3	3	5									
J99	46H	Honningsvåg	70.98467	25.9655	NUCE LAP	SB																				1					
J99	46B	Hammerfest area	70.83333	23.73333	GADU MOR	LI														24	25										
J99	46B	Hammerfest area	70.83333	23.73333	GADU MOR	MU														29	30										
J99	47A	Kifjordneset	70.881	27.37	MYTI EDU	SB														3	3										
J99	47G	Kifjordneset	70.881	27.37	NUCE LAP	SB																				1					
J99	48A	Trollfjorden (Tanafjord)	70.6935	28.55467	MYTI EDU	SB														3	3	3									
J99	48G	Mehamn	71.0425	27.83917	NUCE LAP	SB																				1					
J99	49A	Nordfjorden (Syltefjord)	70.55017	30.08617	MYTI EDU	SB														3	3										
J99	10A1	Skagodden	70.1035	30.2625	MYTI EDU	SB														3	3										
J99	10A2	Skallneset	70.1035	30.2625	MYTI EDU	SB																4	3	3	3	3	3	3	3	3	3
J99	10B	Varangerfjorden	69.93333	29.66667	GADU MOR	BI																				22	21				
J99	10B	Varangerfjorden	69.93333	29.66667	GADU MOR	BL																				25	25				
J99	10B	Varangerfjorden	69.93333	29.66667	GADU MOR	LI														21	25	25	23	25	25	25	25	25	25	25	25
J99	10B	Varangerfjorden	69.93333	29.66667	GADU MOR	MU														25	30	30	27	30	30	30	30	30	30	30	30
J99	10B	Varangerfjorden	69.93333	29.66667	BROS BRO	LI														1											
J99	10B	Varangerfjorden	69.93333	29.66667	BROS BRO	MU														1											
J99	10F	Skogerøy	69.91667	29.85	PLEU PLA	BI																				15	25				
J99	10F	Skogerøy	69.91667	29.85	PLEU PLA	BL																				11	24				
J99	10F	Skogerøy	69.91667	29.85	PLEU PLA	LI																	5		4	18	30	5	4	4	5
J99	10F	Skogerøy	69.91667	29.85	PLEU PLA	MU																	5		4	3	5	5	4	4	5
J99	11A1	Sildkrokneset (south)	69.78517	30.185	MYTI EDU	SB														3	3										
J99	11A2	Sildkrokneset (north)	69.78517	30.185	MYTI EDU	SB																4	3								
J99	11G	Brashavn	69.89867	29.74417	NUCE LAP	SB																						1	1	2	2
J99	11X	Brashavn	69.89867	29.74417	MYTI EDU	SB																	3	3	3	3	3	3	3	3	3
J26	I001	Sponvikskansen	59.09017	11.21017	MYTI EDU	SB															3	3									
J26	I011	Kråkenebbet	59.10083	11.28883	MYTI EDU	SB															3	3									
J26	I021	Kjøkø (south)	59.12983	10.95183	MYTI EDU	SB															3	3	3	3		3	3	3			
J26	I022	West Damholmen	59.10183	11.04483	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J26	I023	Singlekalven (south)	59.095	11.13667	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3

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J26	I024	Kirkøy (north west)	59.08	10.98633	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J26	I301	Akershuskaia	59.90533	10.73633	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J26	I304	Gåsøya	59.85133	10.589	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J26	I306	Håøya	59.71333	10.55517	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J26	I307	Ramtonholmen	59.7445	10.52283	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J99	I711	Steinholmen	59.05183	9.677	MYTI EDU	SB															3	4	3	3	3	3		3			
J99	I712	Gjemesholmen	59.04533	9.706833	MYTI EDU	SB															3	4	3	3	3	3	3	3	3	3	3
J99	I713	Strømtangen	59.05033	9.691667	MYTI EDU	SB																						3	3	3	3
J99	I131	Lastad	58.0555	7.708667	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J99	I132	Svensholmen	58.125	7.988833	MYTI EDU	SB																		3	3	3	3	3	3	3	3
J99	I1321	Fiskåtangen	58.12833	7.976667	MYTI EDU	SB															4	4	3								
J99	I133	Odderø (west)	58.13167	8.001667	MYTI EDU	SB															4	4	3	3	3	3	3	3	3	3	3
J99	I201	Ekkjegrunn (G1)	59.64333	6.357333	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J99	I205	Bølsnes (G5)	59.59167	6.300167	MYTI EDU	SB															3		3	3	3	3	3	3	3	3	3
J99	I241	Nordnes	60.40067	5.301667	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J99	I242	Gravdalsneset	60.39483	5.266833	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J99	I916	Sundalsfjord (Hydro kai)	62.68417	8.551833	MYTI EDU	SB																								3	3
J99	I243	Hegreneset	60.41533	5.304833	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J99	I914	Flåøya (southeast)	62.75583	8.445	MYTI EDU	SB																							3		
J99	I915	Flåøya (northwest)	62.758	8.439833	MYTI EDU	SB																							3	3	3
J99	I911	Horvika	62.735	8.523333	MYTI EDU	SB															3	3									
J99	I913	Fjøseid	62.80983	8.274667	MYTI EDU	SB																			3	3	3	3	3	3	3
J99	I912	Honnhammer	62.85333	8.161667	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J65	I080	Østmerknes	63.45733	10.4495	MYTI EDU	SB															3	3									
J99	I965	Moholmen (B5)	66.312	14.12583	MYTI EDU	SB																					3	3	3	3	3
J99	I962	Koksverktomta (B2)	66.32617	14.13967	MYTI EDU	SB															3	3	2	3							
J99	I964	Toraneskaien	66.32167	14.13283	MYTI EDU	SB																						3	3	3	3
J99	I969	Bjørnbærviken (B9)	66.28017	14.03467	MYTI EDU	SB															3	3	3	3	3	3	3	3	3	3	3
J99	R096	Breiviken (Tomma)	66.29417	12.84133	MYTI EDU	SB															3	3									
J26	A3*	Svartskjær	58.98167	9.83167	MYTI EDU	SB	1																								

Appendix F
Map of stations

Nominel station positions 1981-2005
(cf. Appendix G and Appendix J)

Appendix F (cont.) Map of stations

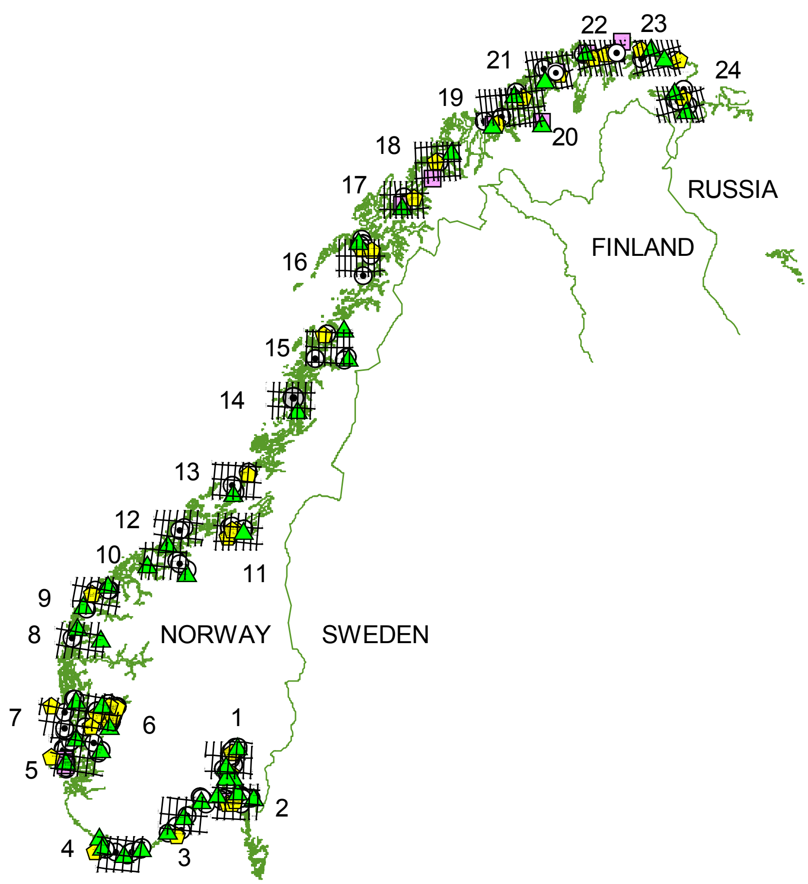
NOTES

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

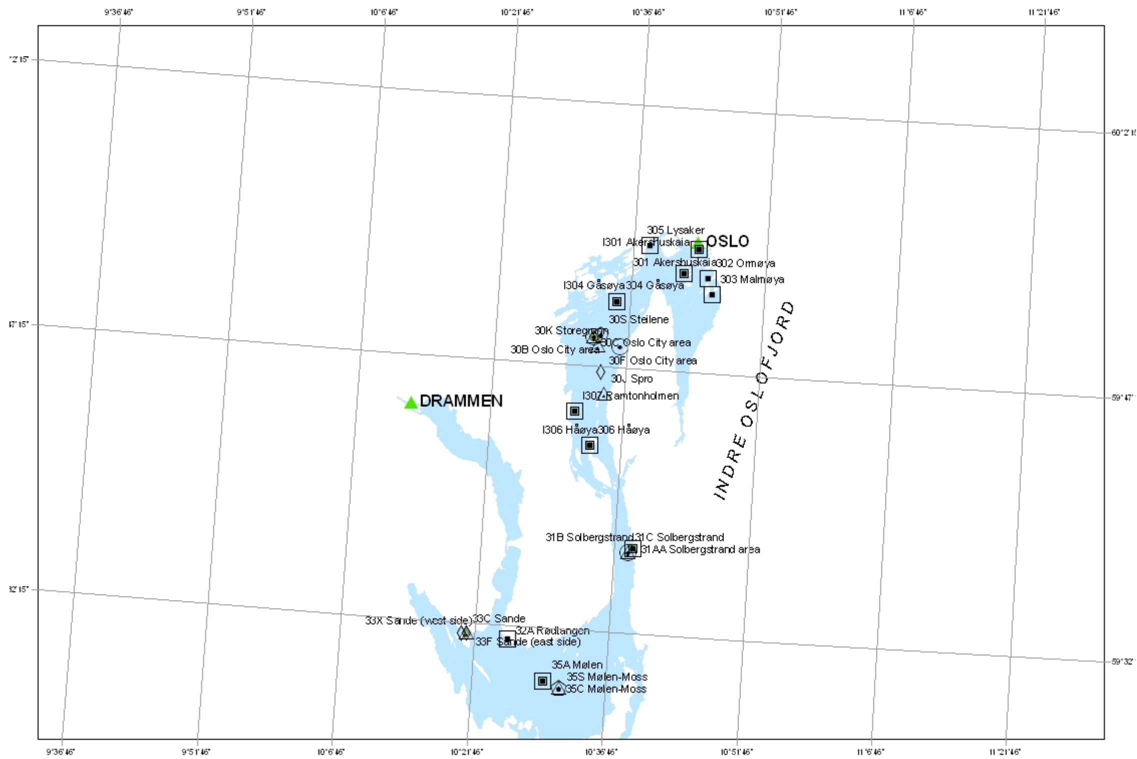
The following symbols and codes apply:

All years	2005	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 J).

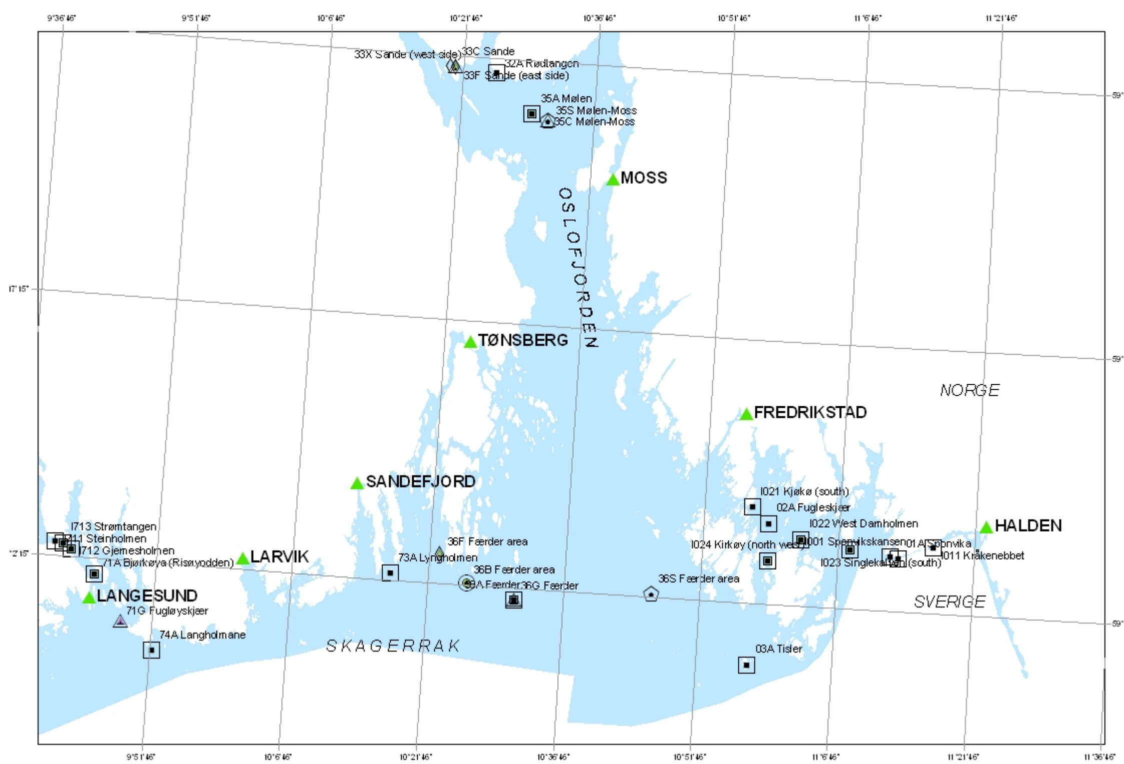


JAMP stations Norway. Numbers indicate map reference that follow.
Note: distance between two lines of latitude is 15 nautical miles (= 27.8 km).



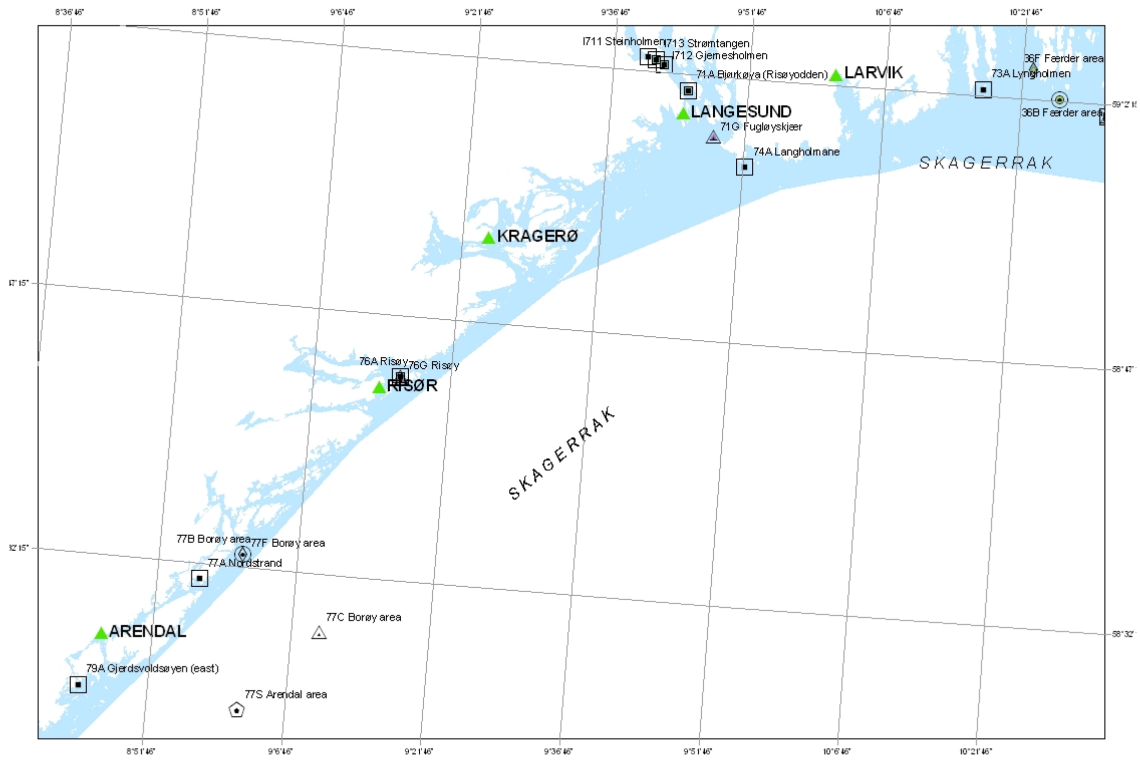
OSLO
305 Lysaker
I301 Akershuskaia
301 Akershuskaia
302 Ormøya
303 Malmøya
I304 Gåsøya
304 Gåsøya
30S Steilene
30K Storegrunn
30C Oslo City area
30B Oslo City area
30F Oslo City area
30 Spro
I307 Ramtonholmen
DRAMMEN
I306 Håøya
306 Håøya
INDRE OSLOFJORD
31B Solbergstrand
31C Solbergstrand
31AA Solbergstrand area
33X Sande (west side)
33C Sande
32A Rødlangen
33F Sande (east side)
35A Mølen
35S Mølen-Moss
35C Mølen-Moss

MAP 1

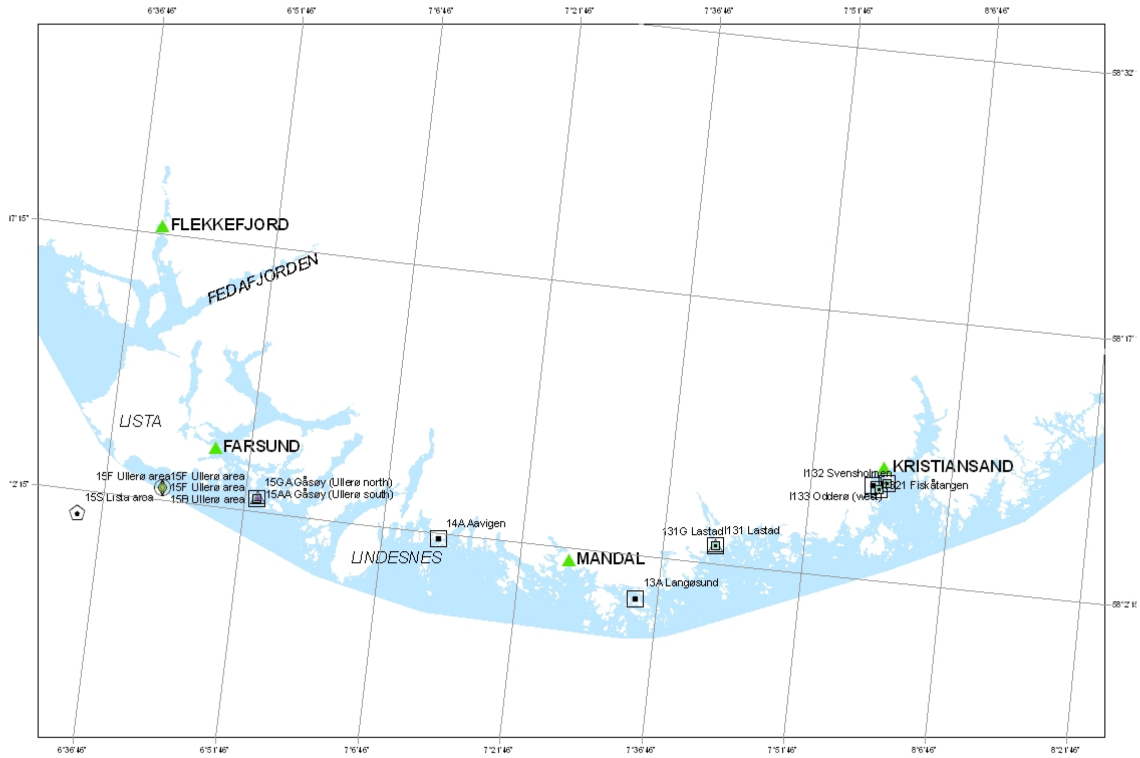


33X Sande (west side)
33C Sande
32A Rødlangen
33F Sande (east side)
35A Mølen
35S Mølen-Moss
35C Mølen-Moss
MOSS
OSLOFJORDEN
TØNSBERG
NORGE
FREDRIKSTAD
SANDEFJORD
I021 Kjøkø (south)
02A Fugleskjær
I022 West Damholmen
HALDEN
I713 Strømtangen
I711 Steinholmen
I712 Gjemesholmen
71A Bjørkøya (Risøyodden)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

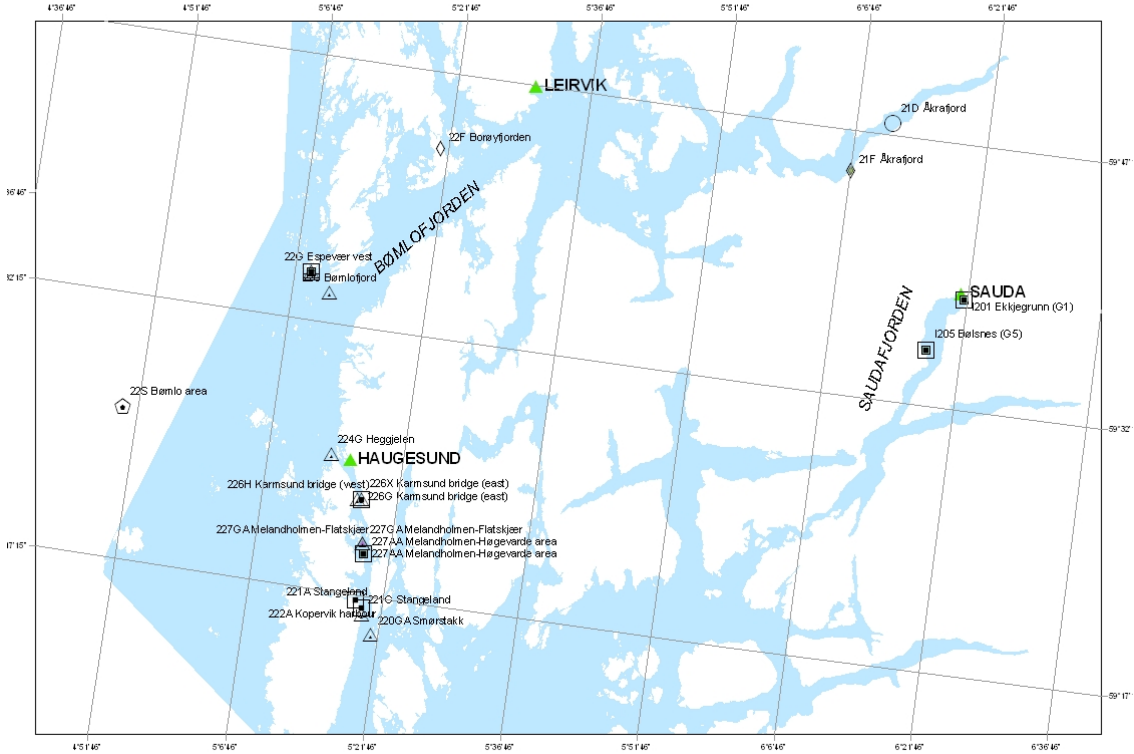
MAP 2


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

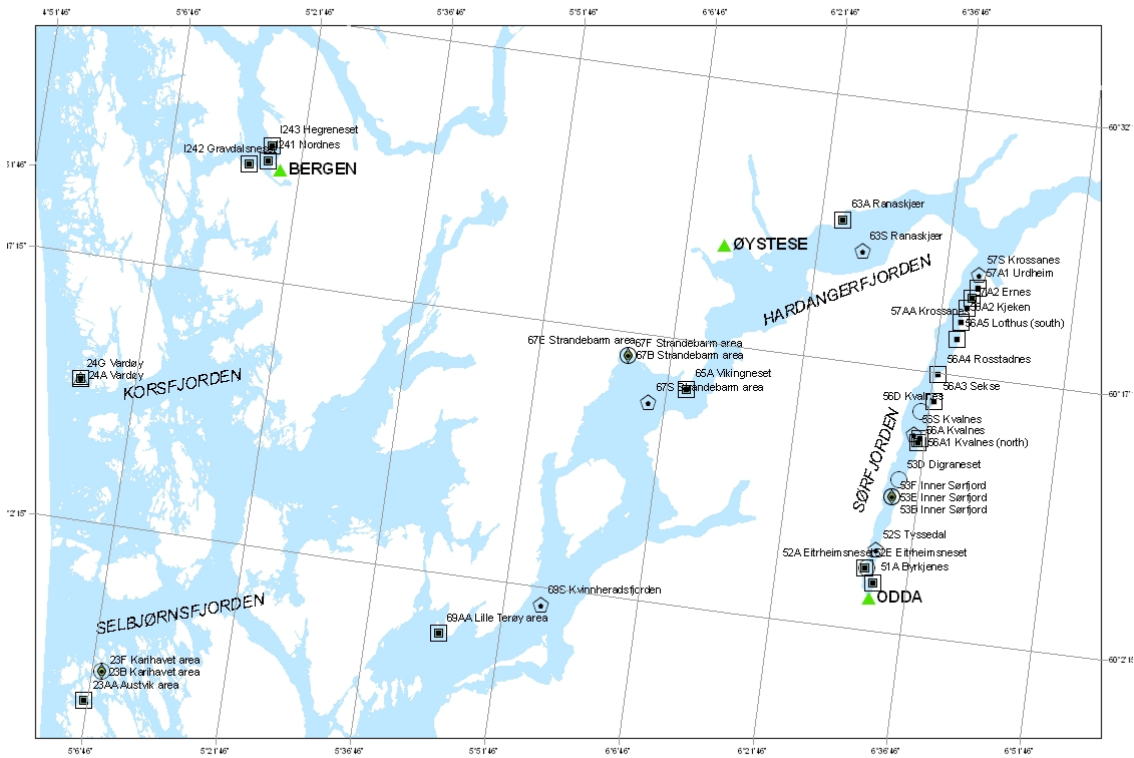
MAP 3


FLEKKEFJORD
FEDAFJORDEN
LISTA
FARSUND
15F Ullerø area
15F Ullerø area
15F Ullerø area
15B Ullerø area
15S Lista area
15G Gåsøy (Ullerø north)
15AA Gåsøy (Ullerø south)
14A Aavigen
LINDESNES
MANDAL
131G Lastad
I131 Lastad
13A Langøsund
I132 Svensholmen
KRISTIANSAND
I133 Odderø (west)
I121 Fiskåtangen

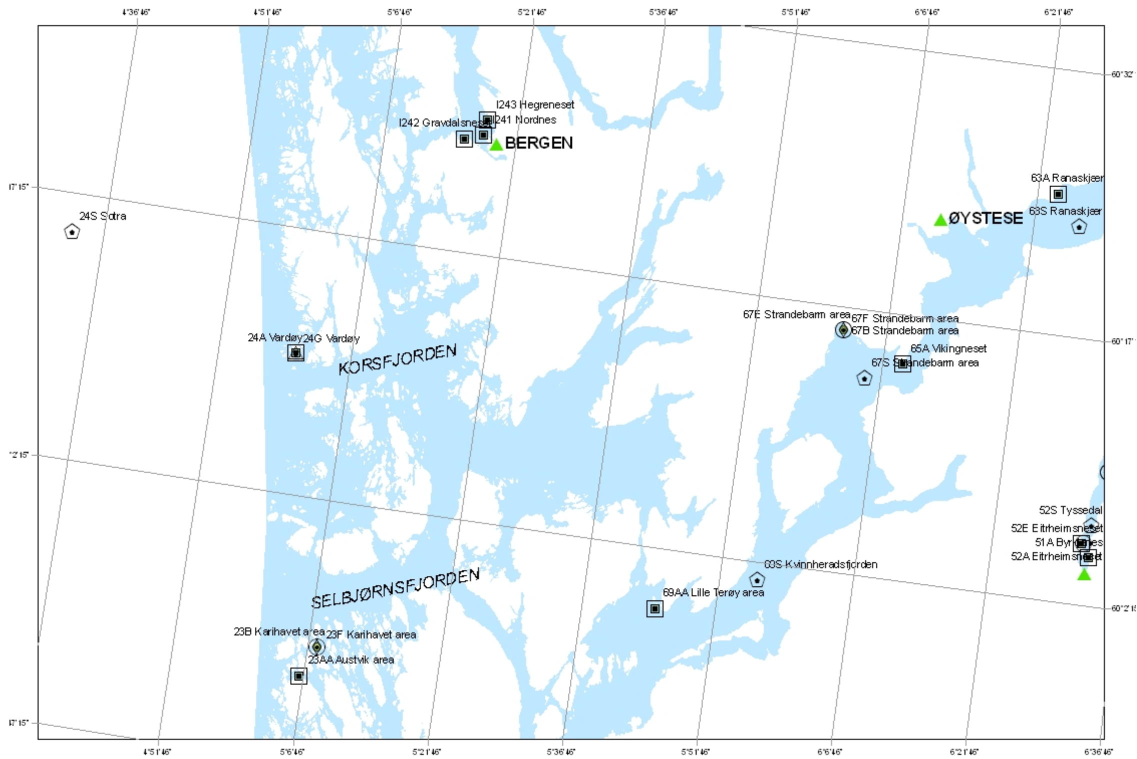
MAP 4


LEIRVIK
21D Åkrafjord
22F Børøyfjorden
21F Åkrafjord
BØMLOFJORDEN
22G Espevær vest
Bømlofjord
SAUDA
I201 Ekkjegrunn (G1)
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
227GA Melandholmen-Flatskjær
227AA Melandholmen-Høgevarde area
227AA Melandholmen-Høgevarde area
221A Stangeland
221C Stangeland
222A Kopervik harbour
220GA Smørstakk

MAP 5


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

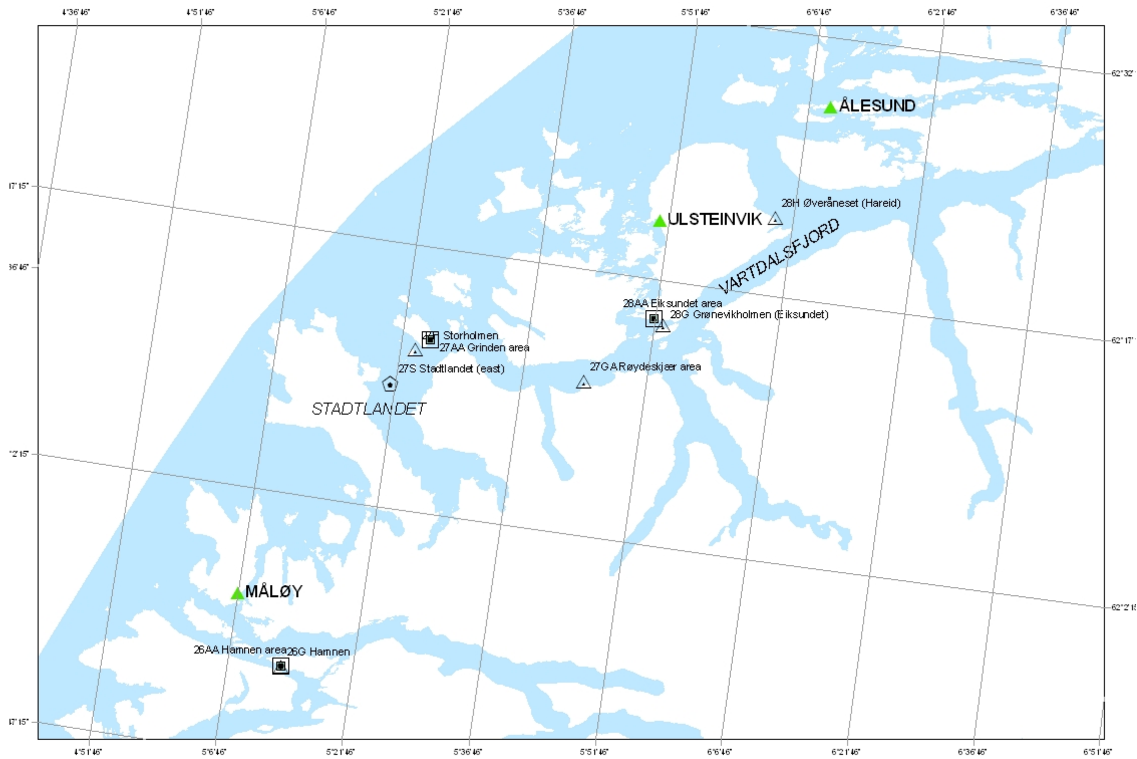
MAP 6


I243 Hegreneset
I241 Nordnes
I242 Gravdalsneset
BERGEN
63A Ranaskjær
63S Ranaskjær
ØYSTESE
24S Sotra
67E Strandebarm area
67F Strandebarm area
67B Strandebarm area
65A Vikingneset
67S Strandebarm area
24A Vardøy
24G Vardøy
KORSFJORDEN
52S Tyssedal
52E Eitrheimsneset
51A Byrkjenes
52A Eitrheimsneset
60S Kvinnheradsfjorden
69AA Lille Terøy area
SELBJØRNSFJORDEN
23B Karihavet area
23F Karihavet area
23AA Austvik area

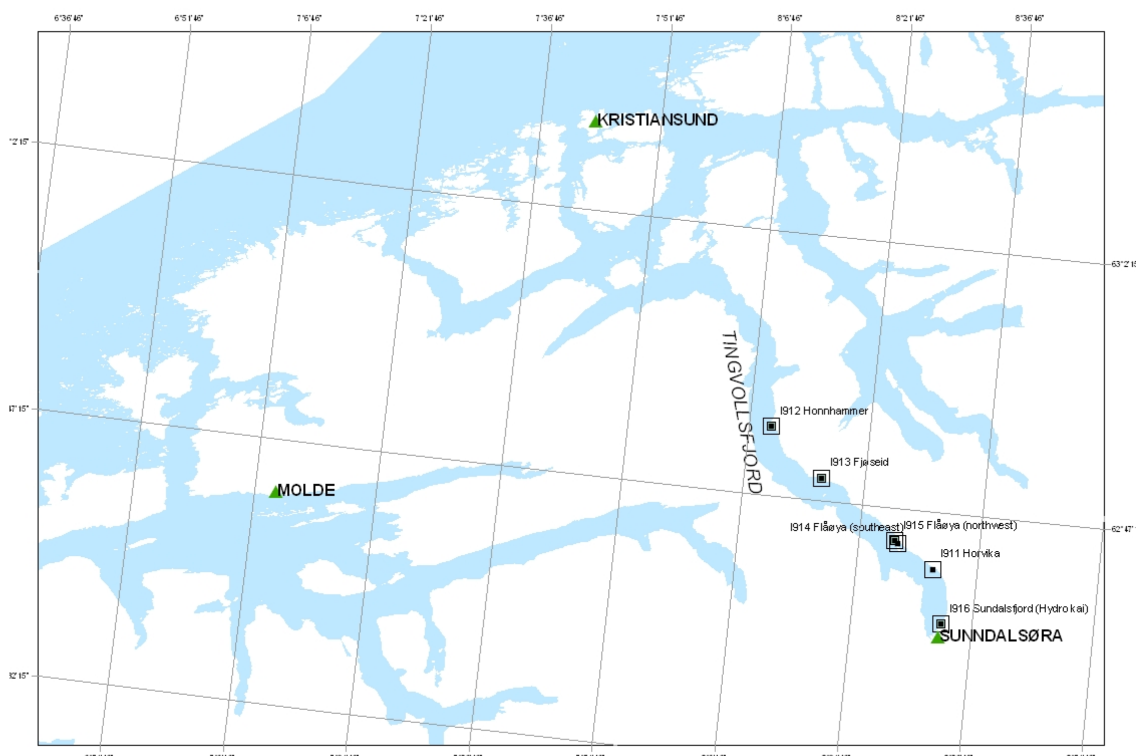
MAP 7


FLORØ
STAVFJORDEN
FØRDE
25AA Hinnøy area
25GA Hinnøy area
VILNESFJORDEN
SOGNEFJORDEN

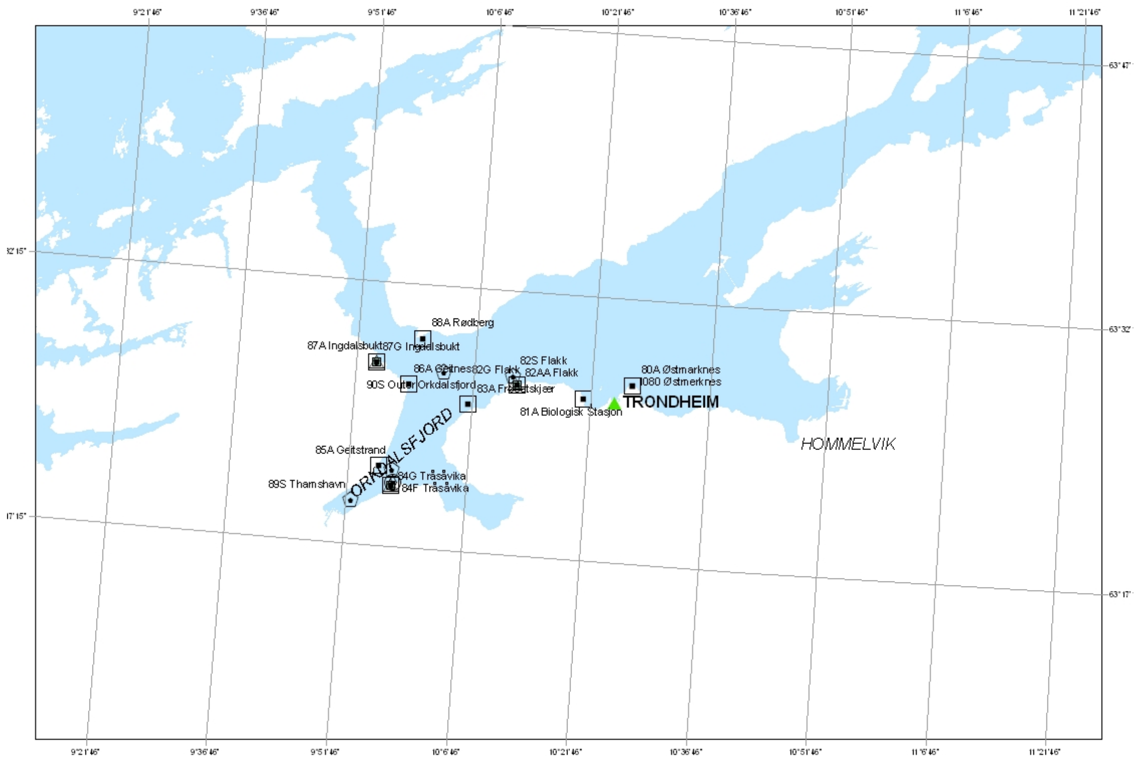
MAP 8


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

MAP 9


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

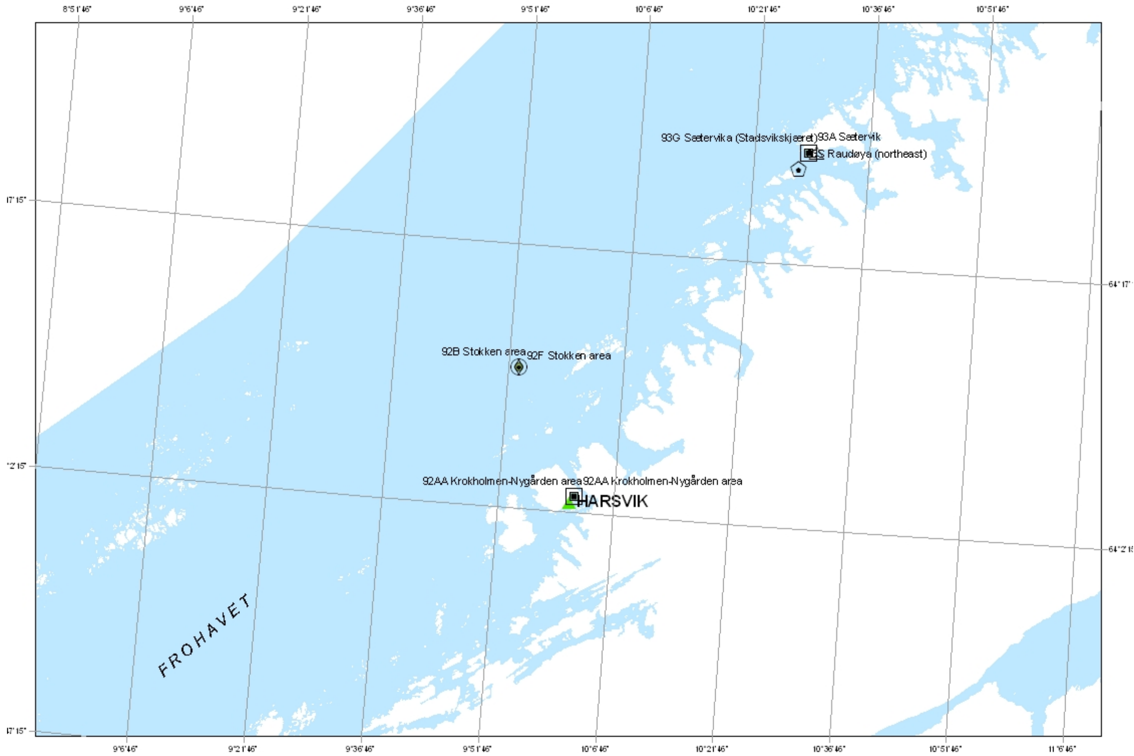
MAP 10


88A Rødberg
87A Ingdalsbukt
87G Ingdalsbukt
86A Gjetnes
82G Flakk
82S Flakk
82AA Flakk
90S Outer Orkdalsfjord
83A Fraenfjord
80A Østmarknes
1080 Østmarknes
81A Biologisk Stasjon
TRONDHEIM
HOMMELVIK
ORKDALSFJORD
85A Geitstrand
89S Thamshavn
84G Trasavika
84F Trasavika

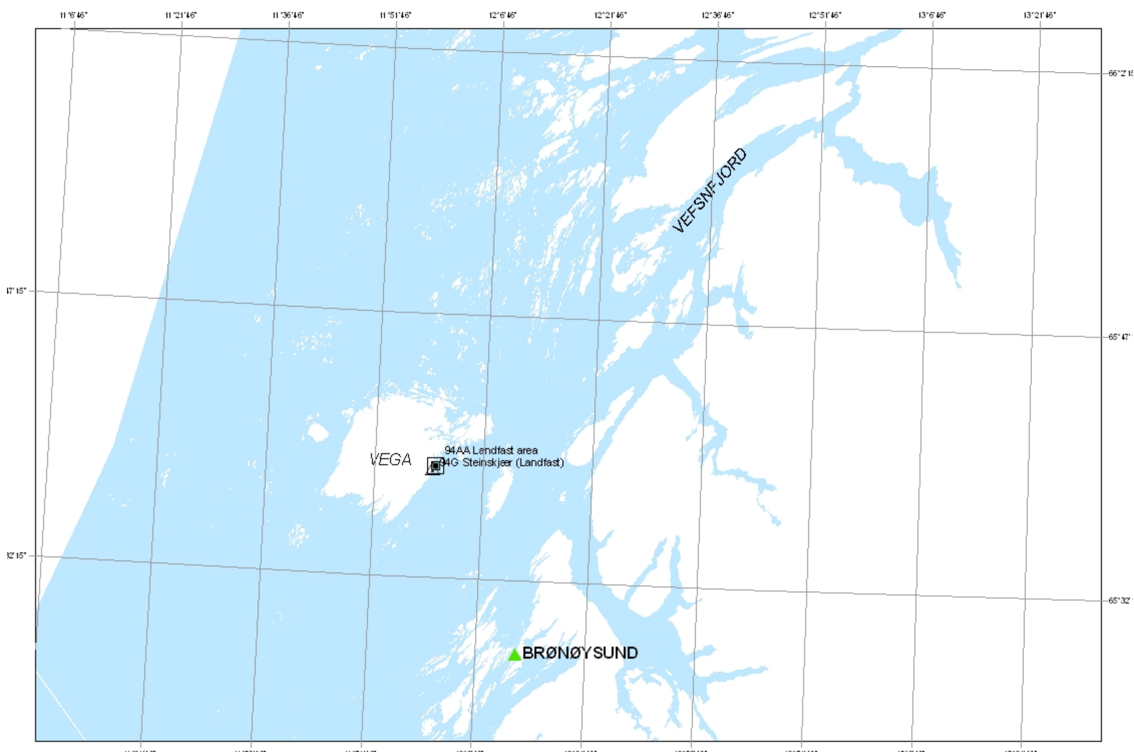
MAP 11


HITRA
SMØLA
TRONDHEIMSLEIA
91A Nerdvika
KRISTIANSUND

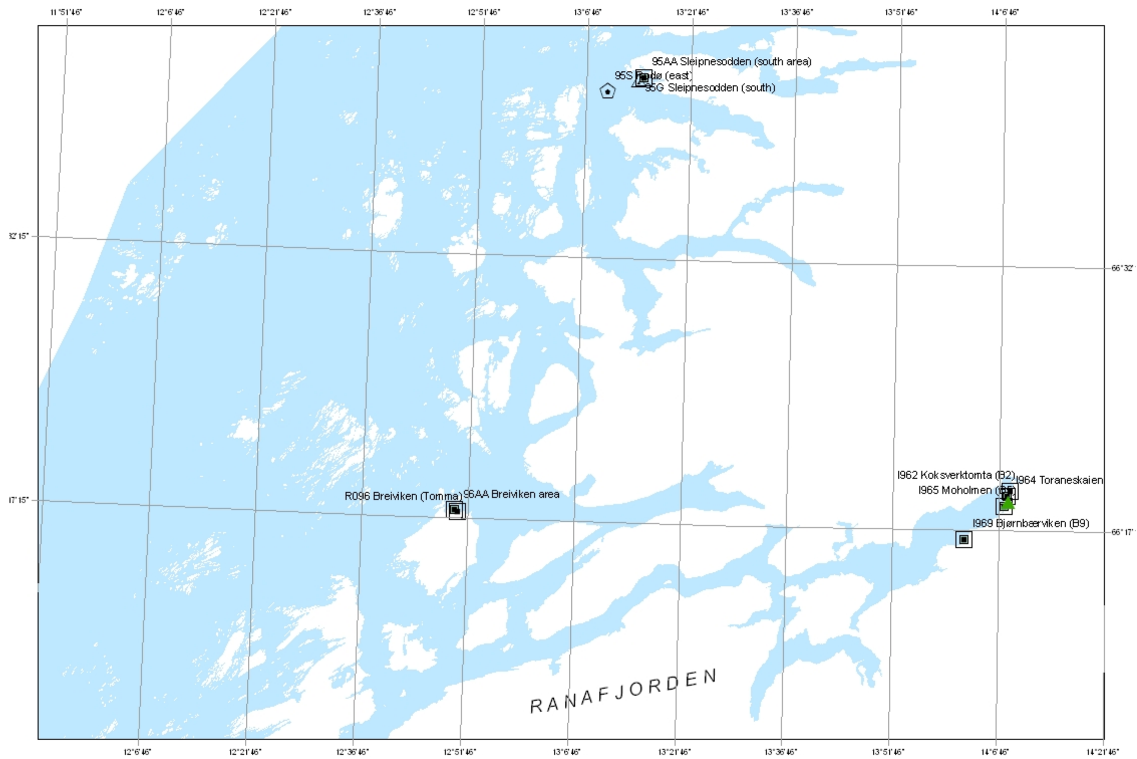
MAP 12


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

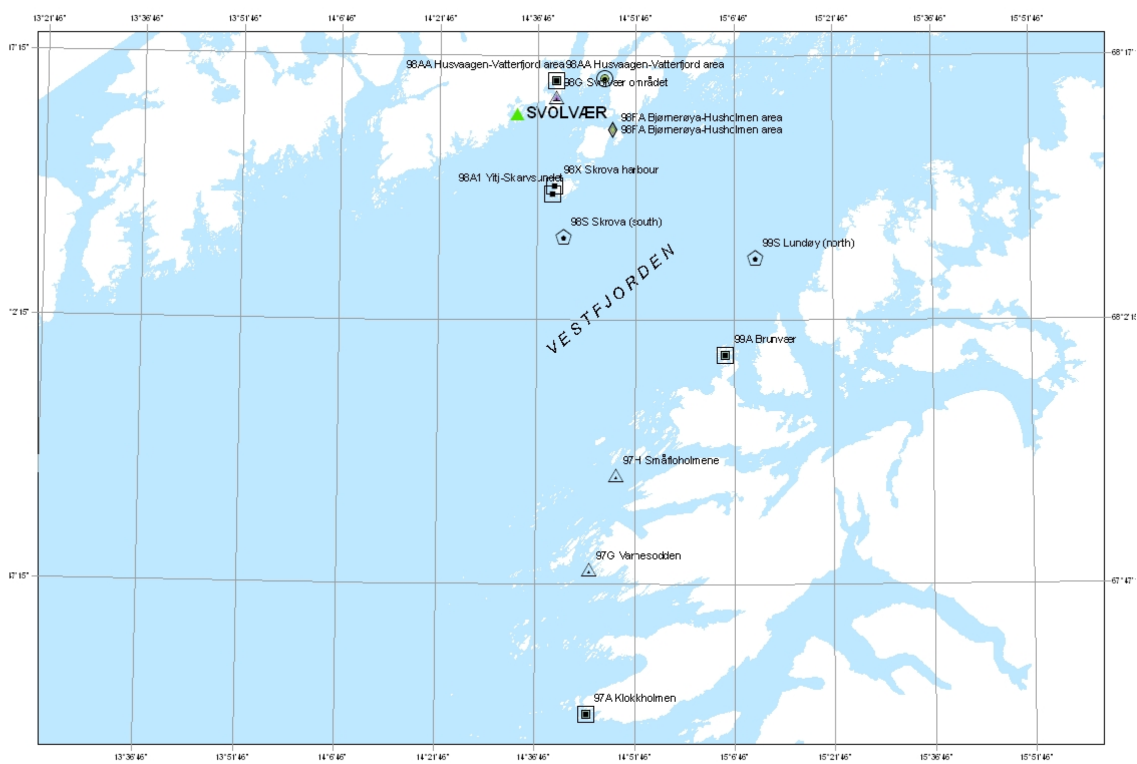
MAP 13


VEFSNFJORD
VEGA
94AA Landfast area
4G Steinskjær (Landfast)
BRØNØYSUND

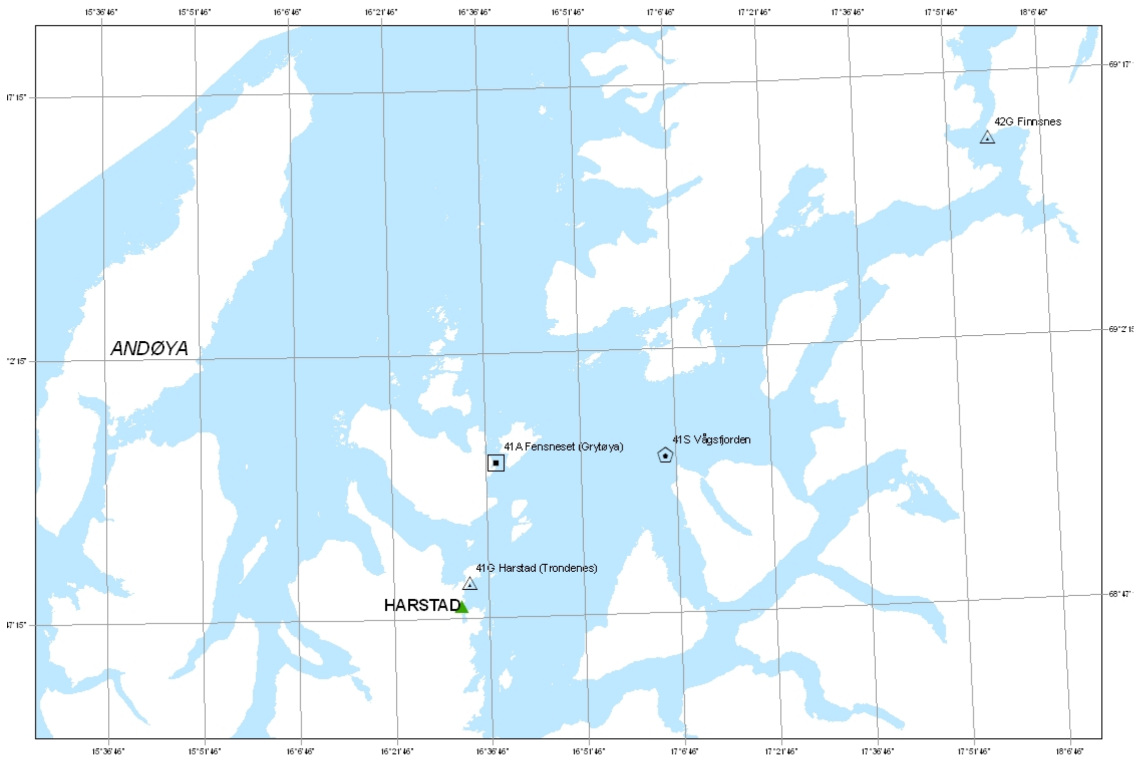
MAP 14


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

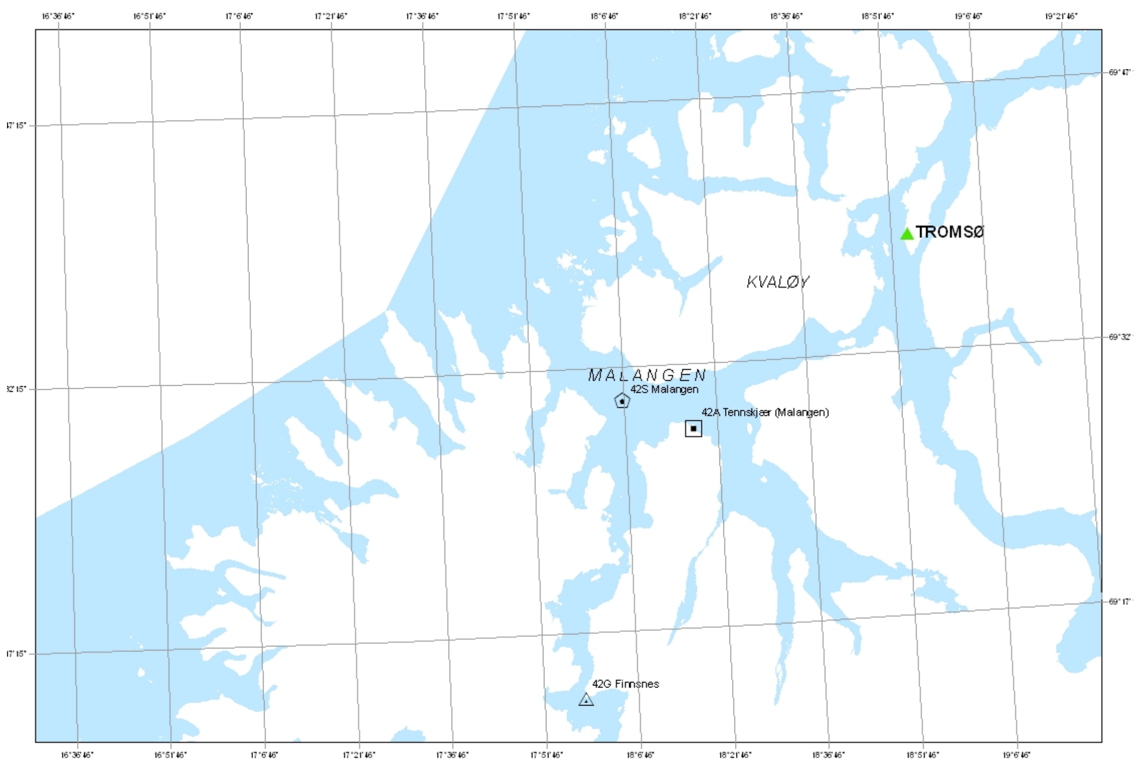
MAP 15


98AA Husvaagen-Vatterfjord area
98AA Husvaagen-Vatterfjord area
SVOLVÆR
98FA Bjørnerøya-Husholmen area
98FA Bjørnerøya-Husholmen area
98X Skrova harbour
98S Skrova (south)
99S Lundøy (north)
VESTFJORDEN
99A Brunvær
97H Småfloholmene
97G Varnesodden
97A Klokkholmen

MAP 16


42G Finnsnes
ANDØYA
41A Fensneset (Grytøya)
41S Vågsfjorden
41G Harstad (Trondenes)
HARSTAD

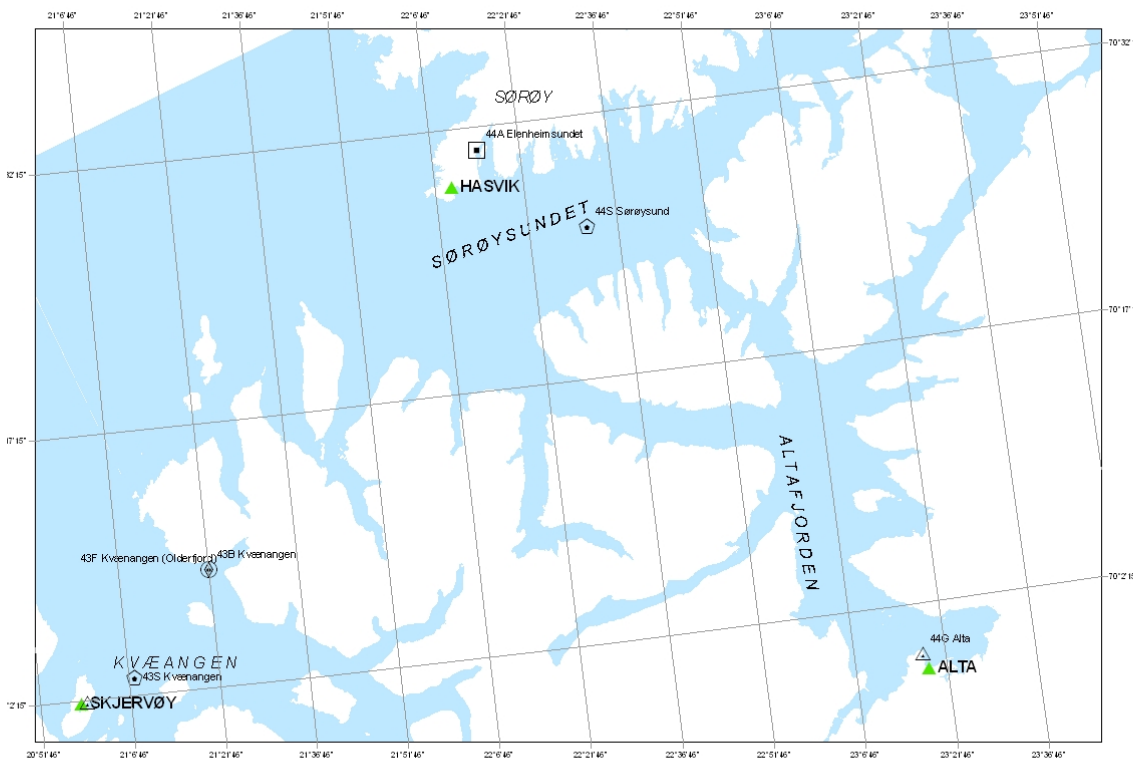
MAP 17


TROMSØ
KVALØY
MALANGEN
42S Malangen
42A Tennskjær (Malangen)
42G Finnsnes

MAP 18


SØRØY
44A Elenheimsundet
HASVIK
SØRØYSUNDET
44S Sørøysund
LOPPHAVET
43F Kvænangen (Olderfjord)
43B Kvænangen
43A Lyngneset (Langfjord)
KVÆANGEN
43S Kvænangen
43G Skjervøy
SKJERVØY

MAP 19


SØRØY
44A Elenheimsundet
HASVIK
SØRØYSUNDET
44S Sørøysund
ALTAFJORDEN
43F Kvænangen (Olderfjord)
43B Kvænangen
KVÆANGEN
43S Kvænangen
SKJERVØY
44G Alta
ALTA

MAP 20


46B Hammerfest area
46A Sauhamneset 45G Sauhamneset
REVSBOTN
45S Revsbotn
HAMMERFEST
SØRØY
44A Elenheimsundet
HASVIK
SØRØYSUNDET
44S Sørøysund

MAP 21


48G Mehamn
46H Honningsvåg
46A Smines ved Altesula
HØNNINGSVÅG
47S Laksfjord
47A Kifjordneset 47G Kifjordneset
46S Porsangerfjorden
LAKSFJORDEN
PORSANGEN

MAP 22

BERLEVÅG
48S Tanafjord
TANAFJORDEN
48A Trollfjorden (Tanafjord)
BÅTSFJORD
49S Syltefjord
49A Nordfjorden (Syltefjord)
SYLTEFJORDEN
VARDØ
VARANGERHALVØYET

MAP 23

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

MAP 24

Appendix G
Overview of materials and analyses 2005

Nominal station positions are shown on maps in Appendix F

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	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	ALA-D	OH-pyrene	EROD, CYP1A	

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

Appendix G. Sampling and analyses for 2005.

jmpst	stnam	nom_lat	nom_lon	speci	tissu	Antallprøver	I-MET	O-MET	OC-CB	OC-CL	OC-DD	OC-HC	OC-DX	OC-BB	PAH	BE
23B	Oslo City area	59.81667	10.55000	GADU MOR	BI	25										25
23B	Oslo City area	59.81667	10.55000	GADU MOR	BL	25										25
30B	Oslo City area	59.81667	10.55000	GADU MOR	LI	25	25		25	25	25	25		25		25
30B	Oslo City area	59.81667	10.55000	GADU MOR	MU	30	25		5	5	5	5				
30A	Gressholmen	59.88200	10.71150	MYTI EDU	SB	3	3	2	3	3	3	3	2		3	
31A	Solbergstrand	59.61883	10.64983	MYTI EDU	SB	3	3		3	3	3	3				
33F	Sande (east side)	59.52833	10.35000	PLAT FLE	LI	5	5		5	5	5	5				
33F	Sande (east side)	59.52833	10.35000	PLAT FLE	MU	5	5		5	5	5	5				
35A	Mølen	59.48817	10.49800	MYTI EDU	SB	3	3		3	3	3	3				
36B	Færder area	59.04050	10.43583	GADU MOR	LI	25	25		25	25	25	25				
36F	Færder area	59.06667	10.38333	LIMA LIM	LI	5	5		5	5	5	5				
36B	Færder area	59.04050	10.43583	GADU MOR	MU	30	25		5	5	5	5				
36F	Færder area	59.06667	10.38333	LIMA LIM	MU	5	5		5	5	5	5				
36A	Færder	59.02717	10.52550	MYTI EDU	SB	3	3	2	3	3	3	3				
36G	Færder	59.02717	10.52550	NUCE LAP	SB	1		1								26
71A	Bjørkøya (Risøyodden)	59.02333	9.75367	MYTI EDU	SB	3	3	1	3	3	3	3	2			
71G	Fugløyskjær	58.98083	9.80767	NUCE LAP	SB	1		1								8
76A	Risøy	58.73083	9.27200	MYTI EDU	SB	3	3	1	3	3	3	3	2			
76G	Risøy	58.72800	9.27550	NUCE LAP	SB	1		1								29
131G	Lastad	58.05550	7.70867	NUCE LAP	SB	1		1								36
23B	Ullerø area	58.05000	6.71667	GADU MOR	BI	25										25
15B	Ullerø area	58.05000	6.71667	GADU MOR	LI	25	25		25	25	25	25				
15F	Ullerø area	58.05000	6.71667	LIMA LIM	LI	5	5		5	5	5	5				
15B	Ullerø area	58.05000	6.71667	GADU MOR	MU	30	25		5	5	5	5				
15F	Ullerø area	58.05000	6.71667	LIMA LIM	MU	5	5		5	5	5	5				
15A	Gåsøy (Ullerø)	58.05100	6.88667	MYTI EDU	SB	3	3	2	3	3	3	3				
15G	Gåsøy (Ullerø)	58.05167	6.88833	NUCE LAP	SB	1		1								30
51A	Byrkjenes	60.08383	6.55050	MYTI EDU	SB	3	3		3	3	3	3				
52A	Eitrheimsneset	60.09667	6.53300	MYTI EDU	SB	3	3		3	3	3	3				
23B	Inner Sørfjord	60.16667	6.56667	GADU MOR	BI	25										25
23B	Inner Sørfjord	60.16667	6.56667	GADU MOR	BL	25										25
53B	Inner Sørfjord	60.16667	6.56667	GADU MOR	LI	25	25		25	25	25	25		12		25
53F	Inner Sørfjord	60.16667	6.56667	PLAT FLE	LI	5	5		5	5	5	5				
53B	Inner Sørfjord	60.16667	6.56667	GADU MOR	MU	30	25		5	5	5	5				
53F	Inner Sørfjord	60.16667	6.56667	PLAT FLE	MU	5	5		5	5	5	5				
56A	Kvalnes	60.22050	6.60200	MYTI EDU	SB	3	3		3	3	3	3				
57A	Krossanes	60.36283	6.67017	MYTI EDU	SB	3	3		3	3	3	3				
63A	Ranaskjær	60.42083	6.40517	MYTI EDU	SB	3	3		3	3	3	3				
65A	Vikingneset	60.24233	6.15267	MYTI EDU	SB	3	3		3	3	3	3				
67B	Strandebarm area	60.26667	6.03333	GADU MOR	LI	25	25		25	25	25	25				
67F	Strandebarm area	60.26667	6.03333	LEPI WHI	LI	5	5		5	5	5	5				
67F	Strandebarm area	60.26667	6.03333	PLAT FLE	LI	5	5		5	5	5	5				
67B	Strandebarm area	60.26667	6.03333	GADU MOR	MU	30	25		5	5	5	5				
67F	Strandebarm area	60.26667	6.03333	LEPI WHI	MU	5	5		5	5	5	5				
67F	Strandebarm area	60.26667	6.03333	PLAT FLE	MU	5	5		5	5	5	5				
69A	Lille Terøy	59.98150	5.75150	MYTI EDU	SB	3	3		3	3	3	3				
22A	Espevær (west)	59.58367	5.14583	MYTI EDU	SB	3	3	2	3	3	3	3				
22G	Espevær vest	59.58367	5.14450	NUCE LAP	SB	1		1								35
21F	Åkrafjord	59.75000	6.11667	LEPI WHI	LI	5	5		5	5	5	5				
21F	Åkrafjord	59.75000	6.11667	LIMA LIM	LI	5	5		5	5	5	5				
21F	Åkrafjord	59.75000	6.11667	PLAT FLE	LI	5	5		5	5	5	5				
21F	Åkrafjord	59.75000	6.11667	LEPI WHI	MU	5	5		5	5	5	5				
21F	Åkrafjord	59.75000	6.11667	LIMA LIM	MU	5	5		5	5	5	5				
21F	Åkrafjord	59.75000	6.11667	PLAT FLE	MU	5	5		5	5	5	5				
227A2	Høgevarde	59.32767	5.31683	MYTI EDU	SB	2		2								
227G2	Flatskjær	59.33650	5.31317	NUCE LAP	SB	1		1								24
23B	Karihavet area	59.90000	5.13333	GADU MOR	BI	25										25
23B	Karihavet area	59.90000	5.13333	GADU MOR	BL	25										25
23B	Karihavet area	59.90000	5.13333	GADU MOR	LI	25	25		25	25	25	25		25		25
23B	Karihavet area	59.90000	5.13333	GADU MOR	MU	30	25		5	5	5	5				
23A	Austvik	59.87033	5.10800	MYTI EDU	SB	3	3		3	3	3	3				
24A	Vardøy	60.17117	5.01033	MYTI EDU	SB	3	3		3	3	3	3				
82A	Flakk	63.45033	10.20617	MYTI EDU	SB	3	3		3	3	3	3				
84A	Tråsåvika	63.34650	9.95717	MYTI EDU	SB	3	3		3	3	3	3				
87A	Ingdalsbukt	63.46183	9.90717	MYTI EDU	SB	3	3		3	3	3	3				
25A	Hinnøy	61.36950	4.87883	MYTI EDU	SB	3	3		3	3	3	3				
26A	Hamnen	61.87600	5.22167	MYTI EDU	SB	3	3		3	3	3	3				
27A	Grinden	62.20183	5.42117	MYTI EDU	SB	3	3		3	3	3	3				
28A	Eiksundet	62.25167	5.86400	MYTI EDU	SB	3	3		3	3	3	3				
91A	Nerdvika	63.35267	8.15717	MYTI EDU	SB	3	3		3	3	3	3				
92A2	Nygården	64.05350	10.02967	MYTI EDU	SB	3	3		3	3	3	3				

jmpst	stnam	nom_lat	nom_lon	speci	tissu	Antallprøver	I-MET	O-MET	OC-CB	OC-CL	OC-DD	OC-HC	OC-DX	OC-BB	PAH	BE
92B	Stokken area	64.17133	9.88733	GADU MOR	LI	25	25		25	25	25	25				
92F		64.17133	9.88733	PLEU PLA	LI	5	5		5	5	5	5				
92B	Stokken area	64.17133	9.88733	GADU MOR	MU	30	25		5	5	5	5				
92F		64.17133	9.88733	PLEU PLA	MU	5	5		5	5	5	5				
93A	Sætervik	64.39467	10.48333	MYTI EDU	SB	3	3		3	3	3	3				
94A	Landfast	65.64367	12.00617	MYTI EDU	SB	3	3		3	3	3	3				
95A	Sleipnesodden (south)	66.71017	13.25033	MYTI EDU	SB	3	3		3	3	3	3				
96A	Breiviken	66.29600	12.83367	MYTI EDU	SB	3	3		3	3	3	3				
97A	Klokkholmen	67.66467	14.74283	MYTI EDU	SB	3	3		3	3	3	3				
98B1	Bjørnerøya (east)	68.26633	14.78717	GADU MOR	LI	25	25		25	25	25	25				
98F2	Husholmen	68.21867	14.80783	PLEU PLA	LI	2	2		2	2	2	2				
98B1	Bjørnerøya (east)	68.26633	14.78717	GADU MOR	MU	30	25		5	5	5	5				
98F2	Husholmen	68.21867	14.80783	PLEU PLA	MU	2	2		2	2	2	2				
98A2	Husvaagen area	68.26483	14.66283	MYTI EDU	SB	3	3	2	3	3	3	3				
98G	Svolvær området	68.24867	14.66333	NUCE LAP	SB	1		1								31
99A	Brunvær	68.00500	15.09333	MYTI EDU	SB	3	3		3	3	3	3				
10B	Varangerfjorden	69.93333	29.66667	GADU MOR	LI	25	25		25	25	25	25				
10F	Skogerøy	69.91667	29.85000	PLEU PLA	LI	5	5		5	5	5	5				
10B	Varangerfjorden	69.93333	29.66667	GADU MOR	MU	30	25		5	5	5	5				
10F	Skogerøy	69.91667	29.85000	PLEU PLA	MU	5	5		5	5	5	5				
10A2	Skallneset	70.10350	30.26250	MYTI EDU	SB	3	3		3	3	3	3				
11G	Brashavn	69.89867	29.74417	NUCE LAP	SB	1		1								31
11X	Brashavn	69.89867	29.74417	MYTI EDU	SB	3	3	2	3	3	3	3				
I022	West Damholmen	59.10183	11.04483	MYTI EDU	SB	3	3		3	3	3	3				
I023	Singlekalven (south)	59.09500	11.13667	MYTI EDU	SB	3	3		3	3	3	3				
I024	Kirkøy (north west)	59.08000	10.98633	MYTI EDU	SB	3	3		3	3	3	3				
I301	Akershuskaia	59.90533	10.73633	MYTI EDU	SB	3	3	2	3	3	3	3			3	
I304	Gåsøya	59.85133	10.58900	MYTI EDU	SB	3	3		3	3	3	3			3	
I306	Håøya	59.71333	10.55517	MYTI EDU	SB	3	3		3	3	3	3			3	
I131	Lastad	58.05550	7.70867	MYTI EDU	SB	3	3		3	3	3	3			3	
I132	Svensholmen	58.12500	7.98883	MYTI EDU	SB	3		2	3	3	3	3	1		3	
I133	Odderø (west)	58.13167	8.00167	MYTI EDU	SB	3		2	3	3	3	3	1		3	
I201	Ekkjegrunn (G1)	59.64333	6.35733	MYTI EDU	SB	3	3								3	
I205	Bølsnes (G5)	59.59167	6.30017	MYTI EDU	SB	3	3								3	
I241	Nordnes	60.40067	5.30167	MYTI EDU	SB	3			3	3	3	3				
I242	Gravdalsneset	60.39483	5.26683	MYTI EDU	SB	3			3	3	3	3				
I916	Sundalsfjord (Hydro kai)	62.68417	8.55183	MYTI EDU	SB	3									3	
I243	Hegreneset	60.41533	5.30483	MYTI EDU	SB	3			3	3	3	3				
I915	Flåøya (northwest)	62.75800	8.43983	MYTI EDU	SB	3									3	
I913	Fjøseid	62.80983	8.27467	MYTI EDU	SB	3									3	
I912	Honnhammer	62.85333	8.16167	MYTI EDU	SB	3									3	
I965	Moholmen (B5)	66.31200	14.12583	MYTI EDU	SB	3	3								3	
I964	Toraneskaien	66.32167	14.13283	MYTI EDU	SB	3	3								3	
I969	Bjørnbærviken (B9)	66.28017	14.03467	MYTI EDU	SB	3	3								3	

Appendix H
Temporal trend analyses of contaminants and biomarkers in biota 1981-2005

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 (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**	

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	OC	ANA 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	no	U-	1.3	11
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	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	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	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	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	no	--	no	10
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	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	6.9	--	3.8	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	3.5	D-	2.9	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	5.8	D-	1.9	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	3.0	D-	1.0	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	2.0	D-	no	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	1.7	D-	no	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	1.1	--	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	no	--	no	13
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
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	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									no	-?	?	12
43A	MYTI EDU	SB	d.w.														3.47	4.32		3.85									1.9	-?	?	8
44A	MYTI EDU	SB	d.w.														1.69	2.74	1.95	1.51									no	-?	?	12
46A	MYTI EDU	SB	d.w.														2.7	2.06	2.72										1.4	-?	?	10
48A	MYTI EDU	SB	d.w.														1.35	1.31	1.38										no	-?	?	<=5
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	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	no	--	no	12

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	OC	ANA 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	no	U-	1.3	11
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	6.9	--	3.8	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	3.5	D-	2.9	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	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	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	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	no	UY	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	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	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	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	no	U-	no	9
I131	MYTI EDU	SB	d.w.															1.24	0.875	1.14	1.31	1.18	1.98	2.48	1.13	0.862	1.34	0.965	no	--	no	12
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	no	--	no	14
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	1.0	--	no	13
I965	MYTI EDU	SB	d.w.																					2.02	2.15	0.813	1.9	1.8	no	-?	?	15
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	1.1	-?	?	18
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	no	--	no	12

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	OC	ANA 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	0.045	0.045	0.107	0.165	0.078	0.111	0.106	0.114	0.1	0.0734	no	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	no	D-	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	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	4.1	--	2.1	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	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	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	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	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	OC	ANA 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	0.11	0.107	0.108	0.126	0.071	0.091	0.0569	0.0627	0.0313	0.025	no	D-	no	13
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	no	D-	no	19
21F	PLAT FLE	LI	w.w.																			0.052	0.0979	0.141	0.22		0.0473	0.125	no	--	no	19
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	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	no	--	no	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	5.1	--	10.1	>25
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	m	DY	m	14
21F	LEPI WHI	LI	w.w.																							0.0592	0.0812	0.112	m	U?	m	<=5

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	OC	ANA 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	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	no	--	no	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	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	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	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	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	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	3.0	--	no	24
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	no	D-	no	19
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	1.8	--	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	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	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	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	no	--	no	15
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	no	--	1.3	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
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	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									no	-?	?	8
43A	MYTI EDU	SB	d.w.														0.0844	0.0946		0.104									no	-?	?	<=5
44A	MYTI EDU	SB	d.w.														0.0552	0.05	0.0517	0.0592									no	-?	?	6
46A	MYTI EDU	SB	d.w.														0.0387	0.0618	0.0564										no	-?	?	10
48A	MYTI EDU	SB	d.w.														0.0726	0.0599	0.0524										no	-?	?	<=5
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	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	no	--	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	OC	ANA 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	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	3.0	--	no	24
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	no	D-	no	19
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	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	1.2	--	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	no	--	no	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	1.5	--	1.5	16
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	no	UY	no	9
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	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	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	no	--	no	11
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	no	--	no	9
I713	MYTI EDU	SB	d.w.																						0.111	0.177	0.157	0.108	no	-?	?	12
I131	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	no	--	no	15
I201	MYTI EDU	SB	d.w.																		0.101	0.132	0.157	0.169	0.313	0.0964	0.13	0.291	1.5	--	1.1	15
I205	MYTI EDU	SB	d.w.																		0.0974	0.171	0.205	0.167	0.218	0.151	0.142	0.306	1.5	--	1.3	12
I965	MYTI EDU	SB	d.w.																						0.2	0.0904	0.168	0.124	no	-?	?	14
I964	MYTI EDU	SB	d.w.																						0.136	0.0592	0.0494	0.155	no	-?	?	20
I969	MYTI EDU	SB	d.w.																						0.0632	0.0419	0.0359	0.103	no	-?	?	17

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	OC	ANA 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	0.108	0.131	0.117	0.153	0.173	0.224	0.131	0.137	0.105	0.123	1.2	U-L	no	11
30B	GADU MOR (s)	MU	w.w.																		*0.117*	*0.153*	*0.173*	*0.224*	*0.131*	*0.137*	*0.105*	*0.123*	*1.2*	*--L*	*no*	*10*
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	0.142	0.19	0.232	0.351	0.252	0.34	0.207	0.194	0.185	0.222	2.2	U-L	1.5	13
30B	GADU MOR (l)	MU	w.w.																		*0.232*	*0.351*	*0.252*	*0.34*	*0.207*	*0.194*	*0.185*	*0.222*	*2.2*	*--L*	*1.4*	*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	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	no	--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	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	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	1.3	--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	2.9	--L	no	16
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	no	D-L	no	11
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	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	no	--L	no	10
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	1.0	--L	1.0	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	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	no	---	1.1	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	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	no	D-L	no	12

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	OC	ANA TRD	SM3	PWR
33F	PLAT FLE (s)	MU	w.w.										0.175	0.0877	0.116	0.0918	0.0694	0.053	0.047	0.076	0.0384	0.0455	0.0495	0.0293	0.067	0.0234	0.0345	0.0396	no	D-L	no	12
33F	PLAT FLE (l)	MU	w.w.										0.195	0.135	0.196	0.103	0.088	0.049	0.06	0.087	0.0699	0.119	0.0778	0.059	0.0281	0.0615	0.0909	0.0509	no	D-L	no	13
53F	PLAT FLE (s)	MU	w.w.										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	19
53F	PLAT FLE (s)	MU	w.w.																		*0.165*	*0.249*	*0.289*	*0.333*	*0.553*	*0.521*	*0.103*	*0.831*	*8.3*	*---*	*4.5*	*20*
53F	PLAT FLE (l)	MU	w.w.										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
53F	PLAT FLE (l)	MU	w.w.																		*0.257*	*0.157*	*0.233*	*0.438*	*0.45*	*0.49*	*0.443*	*0.717*	*7.2*	*U--*	*8.9*	*12*
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	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	no	---	no	16
21F	PLAT FLE (s)	MU	w.w.																			0.075	0.0814	0.0389	0.0375		0.021	0.0424	no	---	no	13
21F	PLAT FLE (l)	MU	w.w.																			0.119	0.0796	0.0337	0.044		0.021	0.0439	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	no	--L	no	11
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	1.6	--L	1.7	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	no	--L	no	12
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	1.3	--L	1.4	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	no	---	1.7	21
98F2	PLEU PLA (l)	MU	w.w.																				0.164	0.0896	0.0309	0.041	0.016	0.063	no	---	no	20
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	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	m	--L	m	14
21F	LEPI WHI (s)	MU	w.w.																							0.0931	0.116	0.144	m	U?-	m	<=5
21F	LEPI WHI (l)	MU	w.w.																							0.182	0.242	0.237	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	OC	ANA 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	1.1	--	1.7	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	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	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	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	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	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	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	25.8	--	25.3	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	3.1	--	2.5	23
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	10.7	--	8.8	17
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	3.8	--	2.3	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	1.5	D-	no	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	1.0	D-	no	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	no	--	no	12
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	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
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	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									no	D?	?	6
43A	MYTI EDU	SB	d.w.														1.56	1.51		0.855									no	-?	?	8
44A	MYTI EDU	SB	d.w.														2.81	2.57	1.66	1.15									no	D?	?	7
46A	MYTI EDU	SB	d.w.														1.26	1.57	1.38										no	-?	?	8
48A	MYTI EDU	SB	d.w.														0.682	1.08	0.333										no	-?	?	19
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	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	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	OC	ANA 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	1.1	--	1.7	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	25.8	--	25.3	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	3.1	--	2.5	23
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	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	no	--	no	15
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	no	--	no	15
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	no	--	no	15
I301	MYTI EDU	SB	d.w.																		2.47	2.11	1.32	3.16	1.98	1.77	3.07	2.15	no	--	no	13
I304	MYTI EDU	SB	d.w.																		2.23	1.19	0.765	1.88	1.3	1.16	1.73	1.95	no	--	no	14
I306	MYTI EDU	SB	d.w.																		1.34	0.678	0.542	1.03	0.658	0.704	1.08	1.09	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	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	1.4	--	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	2.1	--	no	14
I965	MYTI EDU	SB	d.w.																					20	12.7	6.45	13.1	12.5	4.2	-?	?	15
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	4.3	-?	?	18
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	1.3	--	no	14

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	OC	ANA TRD	SM3	PWR
30B	GADU MOR	LI	w.w.										0.2	0.115	0.249	0.105	0.12	0.11	0.06	0.1	0.163	0.85	0.24	0.22	0.513	0.24	0.17	0.138	1.4	--	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	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	no	D-	no	14
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	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	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	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	no	--	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	no	--	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	OC	ANA 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	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	no	--	no	20
21F	PLAT FLE	LI	w.w.																			0.04	0.0447	0.06	0.0461		0.04	0.1	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	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	no	--	no	13
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	1.0	--	2.1	23
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	m	D-	m	12
21F	LEPI WHI	LI	w.w.																							0.02	0.02	0.02	m	-?	m	<=5

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	OC	ANA 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	no	--	1.2	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	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	no	--	1.0	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	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	no	--	1.0	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	no	--	no	10
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	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	no	--	no	18
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	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	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	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	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	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	no	--	1.2	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
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	no	--	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									no	-?	?	10
43A	MYTI EDU	SB	d.w.														7.79	9.32		6.32									no	-?	?	9
44A	MYTI EDU	SB	d.w.														6.56	9.56	7.78	6.86									no	-?	?	10
46A	MYTI EDU	SB	d.w.														6.63	7.43	8										no	-?	?	<=5
48A	MYTI EDU	SB	d.w.														6.57	7.74	7.1										no	-?	?	7
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	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	no	--	no	7
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	no	D-	no	17

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	OC	ANA 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	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	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	no	UY	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	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	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	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	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	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	no	D-	no	13
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	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	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	no	--	no	12
69A	MYTI EDU	SB	d.w.												135	102	135	163	161	218	144	201	133	190	136	177	84	123	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	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
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	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									no	-?	?	<=5
43A	MYTI EDU	SB	d.w.														98.7	96.6		89.2									no	-?	?	<=5
44A	MYTI EDU	SB	d.w.														67.2	91.3	81	78.8									no	-?	?	8
46A	MYTI EDU	SB	d.w.														88.4	112	93.3										no	-?	?	9
48A	MYTI EDU	SB	d.w.														74.9	87	68.8										no	-?	?	8
10A2	MYTI EDU	SB	d.w.																94.6	114	102	103	125	114	134	100	149	87.4	no	--	no	9
11X	MYTI EDU	SB	d.w.																	104	70.2	81	101	121	89.6	72.4	78.2	80.5	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	OC	ANA 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	4.5	D-	3.3	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	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	no	D-	no	12
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	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	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	no	DY	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	no	--	no	13
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	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	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	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	no	--	no	21
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	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	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	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	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
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	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									no	-?	?	10
43A	MYTI EDU	SB	d.w.														2.92	3.1		3.02									no	-?	?	<=5
44A	MYTI EDU	SB	d.w.															7.31	8.46	29.4									2.0	-?	?	15
46A	MYTI EDU	SB	d.w.														5.74	4.16	3.11										no	D?	?	<=5
48A	MYTI EDU	SB	d.w.														6.22	4.04	3.1										no	-?	?	6
10A2	MYTI EDU	SB	d.w.																4.66	6.29		5.11	4.33	3.03	2.13	2.58	1.28	2.29	no	D-	no	11
11X	MYTI EDU	SB	d.w.																	3.34	3.56	4.48	2.79	3.1	1.93	1.93	1.28	3.02	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	OC	ANA 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	4.5	D-	3.3	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	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	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	no	D-	no	11
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	no	D-	no	10
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	no	--	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	no	D-	no	11
I301	MYTI EDU	SB	d.w.															118	113	182	86.5	125	58.7	64.6	62.6	70.4	57.9	84.7	5.6	--	5.4	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	1.4	--	1.7	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	no	--	no	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	1.1	D-	no	9
I713	MYTI EDU	SB	d.w.																						12.5	15	21.4	18.1	1.2	-?	?	9
I131	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	no	--	no	17
I132	MYTI EDU	SB	d.w.																		31.1	22.5	10.2	15.8	11.8	13.3		11.5	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	no	D-	no	10
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	4.1	--	7.8	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	2.5	--	3.9	15
I243	MYTI EDU	SB	d.w.															115	169	122	78.2	92.4	47.9	29.3	52.5	326	288	217	14.5	--	42.4	18

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	OC	ANA TRD	SM3	PWR
30B	GADU MOR	LI	w.w.										1240	3430	2800	2500	2910	2350	2790	3240	3660	3520	2080	2440	2230	2140	2620	4160	8.3	--	8.7	11
36B	GADU MOR	LI	w.w.										441	344	396	636	376	1650	974	720	736	766	482	288	269	425	535	542	1.1	--	1.4	13
15B	GADU MOR	LI	w.w.										182	349	266	182	295	307	274	399	279	257	153	377	244	213	154	186	no	--	no	12
53B	GADU MOR	LI	w.w.										435	524	1760	166		162	701	576	2370	487	1520	842	956	317	463	422	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	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	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	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	no	D-	no	12
30B	GADU MOR	MU	w.w.										3.58	11.1	24.7	9.65	3.94	3.12	8.46	11.8	21.7	21.4	6.06	9.4	10.3	9.31	7.91	9.01	3.0	--	2.8	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	no	--	1.1	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	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	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	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	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	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	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	OC	ANA TRD	SM3	PWR
33F	PLAT FLE	LI	w.w.										36	31.1	97.5	69	57	86	38.3	40.5	30.5	47.2	90.7	158	53	60.1	62.8	63.4	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	no	D-	no	10
21F	PLAT FLE	LI	w.w.																			22.9	6.97	33.6	48.9		121	15.5	no	--	no	25
33F	PLAT FLE	MU	w.w.										2.04	3.96	1.8	0.95	0.51	1.37	1.37	0.995	0.85	5.32	1.14	1.76	1.53	1.25	0.675	0.48	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	no	--	no	14
21F	PLAT FLE	MU	w.w.																			0.76	0.2	0.61	1.33		1.56	0.957	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	1.0	--	no	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	no	--	no	12
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	no	--	no	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	no	--	no	19
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	no	--	no	18
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	no	--	no	22
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	m	--	m	10
21F	LEPI WHI	LI	w.w.																							101	78.5	101	m	-?	m	9
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	m	--	m	15
21F	LEPI WHI	MU	w.w.																							0.45	0.345	1.11	m	-?	m	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	OC	ANA 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	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	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	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	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	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	no	--	no	18
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	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	1.5	--	1.6	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	1.3	--	1.4	12
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	55.0	--	39.2	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	5.3	--	4.4	16
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	1.4	--	1.0	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	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	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	no	--	no	18
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
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	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									no	-?	?	15
44A	MYTI EDU	SB	d.w.															0.486	0.343	1.41									no	-?	?	20
46A	MYTI EDU	SB	d.w.														1.05	0.756	0.273										no	-?	?	11
48A	MYTI EDU	SB	d.w.														1.71	1.13	0.286										no	-?	?	14
10A2	MYTI EDU	SB	d.w.																0.439	1.49		1.45	0.611	0.867	0.61	0.576	0.267	0.474	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	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	OC	ANA 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	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	1.5	--	1.6	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	1.3	--	1.4	12
10A2	MYTI EDU	SB	d.w.																0.439	1.49		1.45	0.611	0.867	0.61	0.576	0.267	0.474	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	no	--	no	16
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	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	no	D-	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	no	--	no	16
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	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	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	no	--	no	15
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	no	--	no	13
I713	MYTI EDU	SB	d.w.																						1.61	2.26	2.96	0.676	no	-?	?	20
I131	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	no	--	no	13
I132	MYTI EDU	SB	d.w.																		2.02	2.06	1.19	1.15	1.26	1.17	0.917	1.83	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	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	no	--	no	13
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	no	--	no	19
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	2.0	--	2.2	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	OC	ANA TRD	SM3	PWR
30B	GADU MOR	LI	w.w.										163	440	182	159	191	194	312	383	260	230	160	180	180	240	210	260	1.3	--	1.5	12
36B	GADU MOR	LI	w.w.										91.9	51	50	75	55	105	141	129	45	86	47	46	39	32	34	40	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	no	--	no	15
53B	GADU MOR	LI	w.w.										637	806	939	85		42	491	936	490	160	380	260	200	145	300	199	no	--	no	23
67B	GADU MOR	LI	w.w.										776	554	347	392	471	109	460	2060	270	200	177	140	110	89	74	110	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	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	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	no	--	no	13
30B	GADU MOR	MU	w.w.										0.45	1.21	2	1	0.32	0.29	0.97	1.04	1.5	1.5	0.44	0.67	0.73	0.7	0.66	0.73	no	--	no	18
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	no	--	no	18
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	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	4.2	--	5.1	>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	no	--	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	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	no	--	no	22
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	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	OC	ANA TRD	SM3	PWR
33F	PLAT FLE	LI	w.w.										13	9.1	24	14	13	7	10.2	9.7	8.6	6.8	27	27	17	22	19	16	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	no	--	no	14
21F	PLAT FLE	LI	w.w.																			11	2.6	16	7.4		90	7.7	no	--	1.2	>25
33F	PLAT FLE	MU	w.w.										0.9	1.93	0.6	0.2	0.15	0.25	0.43	0.28	0.24	1.5	0.3	0.56	0.43	0.53	0.25	0.16	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	no	--	no	17
21F	PLAT FLE	MU	w.w.																			0.32	0.1	0.43	0.16		1.2	0.61	no	--	1.6	21
36F	LIMA LIM	LI	w.w.										28	34.4	28	21	50	40	40	22	18	52	45	27	31	36	17	21	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	no	--	no	16
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	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	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	no	--	1.6	17
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	no	--	no	24
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	m	D-	m	10
21F	LEPI WHI	LI	w.w.																							44	27.9	48	m	-?	m	14
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	m	--	m	16
21F	LEPI WHI	MU	w.w.																							0.27	0.15	0.6	m	-?	m	21

Annual median concentration of HCB (ppb)
Cursive values in shaded area indicate temporal trend analysis based on data since 1990

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	OC	ANA 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	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	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	1.1	DY	1.0	17
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	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	8.9	D-	3.3	>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*	8.9	--	3.3	20
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	no	--	1.3	15
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	no	--	no	11
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	1.1	--	1.6	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	no	--	no	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	no	--	1.0	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	1.1	--	no	13
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	1.1	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	1.1	--	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	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	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
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	no	--	no	9
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									no	-?	?	6
43A	MYTI EDU	SB	d.w.														0.325	0.338		0.45									no	-?	?	<=5
44A	MYTI EDU	SB	d.w.															0.273	0.286	0.329									no	-?	?	<=5
46A	MYTI EDU	SB	d.w.														0.263	0.291	0.273										no	-?	?	6
48A	MYTI EDU	SB	d.w.														0.279	0.294	0.238										no	-?	?	7
10A2	MYTI EDU	SB	d.w.																0.245	0.309		0.284	0.278	0.289	0.305	0.275	0.279	0.263	no	--	no	6
11X	MYTI EDU	SB	d.w.																	0.34	0.208	0.249	0.242	0.253	0.236		0.279	0.381	no	--	no	9

Annual median concentration of HCB (ppb)
Cursive values in shaded area indicate temporal trend analysis based on data since 1990

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	OC	ANA 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	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	1.1	--	1.6	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	no	--	no	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	no	--	no	6
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	no	--	no	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	1.1	--	1.2	11
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	1.1	--	no	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	1.5	--	1.7	15
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	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	no	--	1.2	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	no	--	no	14
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	6.21	13.4	--	14.1	16
I713	MYTI EDU	SB	d.w.																						3.49	2.64	4.17	11.1	22.2	-?	?	15
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	8.9	D-	3.3	>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*	8.9	--	3.3	20
I131	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	1.4	--	3.0	15
I132	MYTI EDU	SB	d.w.																		44.2	1.89	4.73	3.11	2.36	1.56	1.94	6.42	12.8	--	8.3	24
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	14.4	--	14.8	22
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	2.7	--	3.6	14
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	1.7	--	2.1	12
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	1.8	--	2.1	14

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	OC	ANA 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	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	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	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	no	D-	no	15
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	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	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	no	--	no	13
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	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	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	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	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	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	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	no	--	no	12
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	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	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	OC	ANA TRD	SM3	PWR
33F	PLAT FLE	LI	w.w.										1	0.5	5	2	1	1	0.6	0.8	0.59	0.54	1.6	1.6	1.6	1.9	1.2	1.3	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	no	--	no	11
21F	PLAT FLE	LI	w.w.																			3.1	1.1	2.4	0.9		3.6	2.1	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	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	no	--	no	16
21F	PLAT FLE	MU	w.w.																			0.1	0.03	0.06	0.04		0.09	0.08	no	--	1.5	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	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	no	--	no	12
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	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	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	no	--	no	13
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	no	--	no	13
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	m	--	m	12
21F	LEPI WHI	LI	w.w.																							4.8	1	2.9	m	-?	m	>25
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	m	--	m	13
21F	LEPI WHI	MU	w.w.																							0.04	0.03	0.07	m	-?	m	15

Annual median concentration of BAP (ppb)

																													ANALYSIS			
St	Species	Tissue	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	OC	TRND	SM+3	POWER
30A	MYTI EDU	SB	d.wt												2.53			3.35	3.52	4.95	3.57	2.99	2.99	3.29	3.4	3.23	4.26	3.85	no	--	no	8
I301	MYTI EDU	SB	d.wt															4.44	19.3	18.8	6.02	13.1	2.55	9.77	3.13	3.18	34.2	3.47	no	--	1.9	25
I304	MYTI EDU	SB	d.wt															3.36	2.81	3.29	3.38	2.76	2.94	3.76	3.85	3.07	5.33	4.39	no	--	1.1	8
I306	MYTI EDU	SB	d.wt															2.99	3.07	2.87	3.05	3.07	2.96	2.94	3.36	3.52	4.79	4.31	no	UY	1.2	6
I307	MYTI EDU	SB	d.wt															2.73	3.21	2.75	2.91	3.01	3.27	3.36	4.5	3.65	5.27	3.97	no	U-	1.0	7
I131	MYTI EDU	SB	d.wt															3.25	2.66	2.73	3.6	5.02	2.4	3.27	2.79	3.73	8	3.4	no	--	1.3	13
I132	MYTI EDU	SB	d.wt																		22.6	300	10.8	32.7	49.6	89.7	52.4	150	30.0	--	40.7	>25
I133	MYTI EDU	SB	d.wt															80.6	13.7	51.7	18.6		8.47	19	23.7	39.3	135	67.3	13.5	--	38.4	20
I201	MYTI EDU	SB	d.wt															93.2	207	679	10.5	83.8	47.4	31.7	188	7.23	3.79	8.55	1.7	--	no	>25
I205	MYTI EDU	SB	d.wt															7.39		23.1	64.5	7.51	5.59	7.55	33	3.16	48.2	4.5	no	--	1.9	>25
I913	MYTI EDU	SB	d.wt																			5.85	15.6	2.96	13.3	3.65	1.36	3.29	no	--	no	22
I912	MYTI EDU	SB	d.wt															7.02		9.46	5.35	16.4	135	4.17	20	3.97	1.46	3.65	no	--	no	>25
I965	MYTI EDU	SB	d.wt																					233	30.8	43.6	87.7	19.3	3.9	-?	?	22
I962	MYTI EDU	SB	d.wt															246	33.5		87								17.4	-?	?	>25
I964	MYTI EDU	SB	d.wt																						37.3	289	251	55.4	11.1	-?	?	>25
I969	MYTI EDU	SB	d.wt															14.2	10.7	17.6	8.42	10.3	17.1	23.5	3.68	46.7	34.7	7.27	1.5	--	3.1	23

Annual median concentration of PK_S (ppb)

																													ANALYSIS			
St	Species	Tissue	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	OC	TRND	SM+3	POWER
30A	MYTI EDU	SB	d.wt												38.1			27.5	28.3	46	38.5	20.4	16.5	38.3	11.6	17.6	45.7	14.2	no	--	no	16
I301	MYTI EDU	SB	d.wt															73	257	197	100	175	32.4	112	43.7	38.4	313	40.9	no	--	1.9	23
I304	MYTI EDU	SB	d.wt															14.4	16.7	13.7	36.8	33.2	7.62	21.4	9.62	8.01	69.9	15.5	no	--	no	21
I306	MYTI EDU	SB	d.wt															12.8	15.1	34.8	31.3	27.9	7.4	28.2	12.1	8.8	52.7	12.6	no	--	no	20
I307	MYTI EDU	SB	d.wt															11.8	18.9	19.9	27.7	41.7	11.6	27.2	29.3	9.69	74	13.6	no	--	no	20
I131	MYTI EDU	SB	d.wt															48.4	17.9	35.4	61.4	57.1	26.9	28	15.5	26.6	127	20.1	no	--	1.0	20
I132	MYTI EDU	SB	d.wt																		581	2730	243	389	783	1520	570	813	16.3	--	23.7	23
I133	MYTI EDU	SB	d.wt															602	121	647	287		150	339	476	580	1200	451	9.0	--	23.3	20
I201	MYTI EDU	SB	d.wt															705	1590	7970	281	999	903	638		189	111	212	4.2	--	no	>25
I205	MYTI EDU	SB	d.wt															96.4		470	1380	197	187	189	1680	97.5	808	98.2	2.0	--	2.0	>25
I913	MYTI EDU	SB	d.wt																			107	604	76.7	405	28.8	20.9	8.22	no	--	no	25
I912	MYTI EDU	SB	d.wt															109		342	195	187	1560	58.9	412	27.9	10.6	9.12	no	D-	no	>25
I965	MYTI EDU	SB	d.wt																					1330	431	468	854	181	3.6	-?	?	18
I962	MYTI EDU	SB	d.wt															1450	265		665								13.3	-?	?	>25
I964	MYTI EDU	SB	d.wt																						368	2370	2090	501	10.0	-?	?	>25
I969	MYTI EDU	SB	d.wt															139	108	230	131	285	192	169	39.7	625	361	73.6	1.5	--	3.4	23

Annual median concentration of P_S (ppb)

																													ANALYSIS			
St	Species	Tissue	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	OC	TRND	SM+3	POWER
30A	MYTI EDU	SB	d.wt												248			236	616	524	324	262	162	150	66	167	562	265	1.1	--	2.2	17
I301	MYTI EDU	SB	d.wt															726	3420	2100	830	1250	571	795	412	250	5500	1080	4.3	--	10.3	24
I304	MYTI EDU	SB	d.wt															103	256	208	267	405	77.1	201	66.5	82.5	563	181	no	--	1.5	20
I306	MYTI EDU	SB	d.wt															100	507	228	205	296	73.1	139	146	59.6	417	190	no	--	1.3	20
I307	MYTI EDU	SB	d.wt															83.7	275	177	182	421	82.4	168	279	79.8	389	119	no	--	no	20
I131	MYTI EDU	SB	d.wt															207	255	191	265	360	282	118	133	214	1180	555	2.2	--	5.1	17
I132	MYTI EDU	SB	d.wt																		1730	7270	1380	1170	1920	2790	2240	3830	15.3	--	19.7	19
I133	MYTI EDU	SB	d.wt															5690	1770	1960	1150		1080	964	1440	1260	3310	3700	14.8	DY	23.6	13
I201	MYTI EDU	SB	d.wt															2660	5210	17100	861	3720	2560	1300		615	716	842	3.4	--	no	23
I205	MYTI EDU	SB	d.wt															614		1770	3540	891	658	509		444	2780	472	1.9	--	3.5	23
I913	MYTI EDU	SB	d.wt																			621	2490	657	2250	190	254	189	no	--	no	23
I912	MYTI EDU	SB	d.wt															1100		1530	963	1970	7300	832	2220	280	92.8	100	no	DY	no	21
I965	MYTI EDU	SB	d.wt																					3200	854	1480	4090	1170	4.7	-?	?	21
I962	MYTI EDU	SB	d.wt															6340	1690		1850								7.4	-?	?	20
I964	MYTI EDU	SB	d.wt																						771	6970	10400	1770	7.1	-?	?	>25
I969	MYTI EDU	SB	d.wt															1060	986	747	629	917	1160	824	170	2550	2060	469	1.9	--	4.6	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	OC	ANA 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	2.8	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	no	--	no	20
71A	MYTI EDU	SB	d.w.																	1.02				0.431	0.702	0.375	0.119	0.136	1.4	D-	no	16
76A	MYTI EDU	SB	d.w.																	0.188				0.0529	0.092	0.106	0.034	0.0318	no	D-	no	15
15A	MYTI EDU	SB	d.w.																					0.098	0.0811	0.0622	0.0179	0.0179	no	D?	?	13
22A	MYTI EDU	SB	d.w.																					0.17	0.138	0.587	0.291	0.249	2.5	-?	?	18
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	2.8	--	no	14
98A2	MYTI EDU	SB	d.w.																					0.108	0.105	0.114	0.0468	0.0252	no	D?	?	13
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	no	D?	?	13
I301	MYTI EDU	SB	d.w.																						2.59	2.11	2.83	2.94	29.4	-?	?	8
I712	MYTI EDU	SB	d.w.																						1.2	0.912	0.3	0.268	2.7	-?	?	12
I713	MYTI EDU	SB	d.w.																						1.37	0.668	0.22	0.213	2.1	D?	?	13
I131	MYTI EDU	SB	d.w.																					0.491	0.12		0.0623		no	-?	?	17
36G	NUCE LAP	SB	d.w.																	0.105	0.203	0.142	0.0951	0.0496	0.155	0.0846	0.0412	0.0344	m	--	m	16
71G	NUCE LAP	SB	d.w.																					0.133	0.344	0.235	0.115		m	-?	m	18
76G	NUCE LAP	SB	d.w.																					0.0409	0.196		0.0679	0.0467	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	m	D?	m	13
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	m	-?	m	18
220G	NUCE LAP	SB	d.w.																	0.0815	0.1	0.0851					0.113		m	-?	m	7
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	m	-?	m	15
226G	NUCE LAP	SB	d.w.																		0.844	0.225	0.21						m	-?	m	16
98G	NUCE LAP	SB	d.w.																					0.026	0.0629	0.0612	0.0492	0.0394	m	-?	m	14
11G	NUCE LAP	SB	d.w.																						0.0133	0.0261	0.0103	0.0184	m	-?	m	16

Annual median concentration of TCDDN (ppp)
NB: including suspect/questionable data

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	OC	ANA TRD	SM3	PWR
30A	MYTI EDU	SB	w.wt																						0.112	0.115	0.128	0.172	m	-?	m	7
71A	MYTI EDU	SB	w.wt																						2.52	2.49	2.13	2.79	m	-?	m	8
76A	MYTI EDU	SB	w.wt																						0.0586	0.086	0.136	0.146	m	U?	m	8
I712	MYTI EDU	SB	w.wt																						4.59	4.6	3.42	1.59	m	-?	m	11
I713	MYTI EDU	SB	w.wt																						3.78	4.44	3.1	5.07	m	-?	m	11
I132	MYTI EDU	SB	w.wt																						0.497	0.628	0.217	1.6	m	-?	m	23
I133	MYTI EDU	SB	w.wt																						0.286	0.247	0.383	0.256	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	OC	ANA TRD	SM3	PWR
30B	GADU MOR	BL	w.w.																	8.98	15.6	13	14.6	12.7	10.4	6.91	14.2	15	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	m	--	m	10
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	m	--	m	9

Annual median concentration of EROD (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	OC	ANA TRD	SM3	PWR
30B	GADU MOR	LI	w.w.																	68.8	109	70	260	81.2	158	88.3	69	50.9	m	--	m	15
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	m	--	m	20
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	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	OC	ANA TRD	SM3	PWR
30B	GADU MOR	LI	w.w.																							2.24	1.21	1.22	m	-?	m	11
53B	GADU MOR	LI	w.w.																							0.132	0.207	0.201	m	-?	m	9
23B	GADU MOR	LI	w.w.																							0.113	0.212	0.199	m	-?	m	11

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	OC	ANA TRD	SM3	PWR
30B	GADU MOR	BI	w.w.																		*115*	*130*	12.3	17	29.2	20.3	43.5	15.1	m	--	m	15
36B	GADU MOR	BI	w.w.																		*42.9*	*28.9*	5.14	3.72					--	--	--	--
15B	GADU MOR	BI	w.w.																		*3770*	*253*		29.7	6.32	5.66	16.7	1.1	m	-?	m	25
53B	GADU MOR	BI	w.w.																		*83*	*58.6*	9.23	3.81	18.8	3.65	3.39	3.04	m	--	m	19
67B	GADU MOR	BI	w.w.																		*19.8*	*16.5*	1.62	1.66					--	--	--	--
23B	GADU MOR	BI	w.w.																		*12.7*	*11.2*	4.15	2.55	3.1	5.32	1.62	3.46	m	--	m	15

Annual median concentration of VDSI (vas deferens stage index - IMPOSEX)

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	OC	ANA 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	m	D-	m	18
71G	NUCE LAP	WO	w.w.																					4	4.1	4	4	4	m	-?	m	<=5
76G	NUCE LAP	WO	w.w.																					3.41	3.03		3.28	0.643	m	-?	m	>25
131G	NUCE LAP	WO	w.w.																					3.89	3.77	3.47	3.63	1.86	m	-?	m	17
15G	NUCE LAP	WO	w.w.																					3.69	3.86	3.42	3.43	1.28	m	-?	m	21
22G	NUCE LAP	WO	w.w.																					4	4	3.95	4	4	m	-?	m	<=5
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	m	-?	m	<=5
98G	NUCE LAP	WO	w.w.																					3.5	3.76	3.8	4	3.43	m	-?	m	11
11G	NUCE LAP	WO	w.w.																						0.0333	0	0.289	0	m	-?	m	9

Appendix I
Geographical distribution of contaminants and biomarkers in biota 1990-2005

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 (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 F

Results are presented for three periods: 1990-1993, 2004 and 2005.
The average median concentrations was used for each period. Cf. Appendix E.

Appendix I
Geographical distribution of contaminants and biomarkers in biota 1990-2005
(cont.)

A

B

C

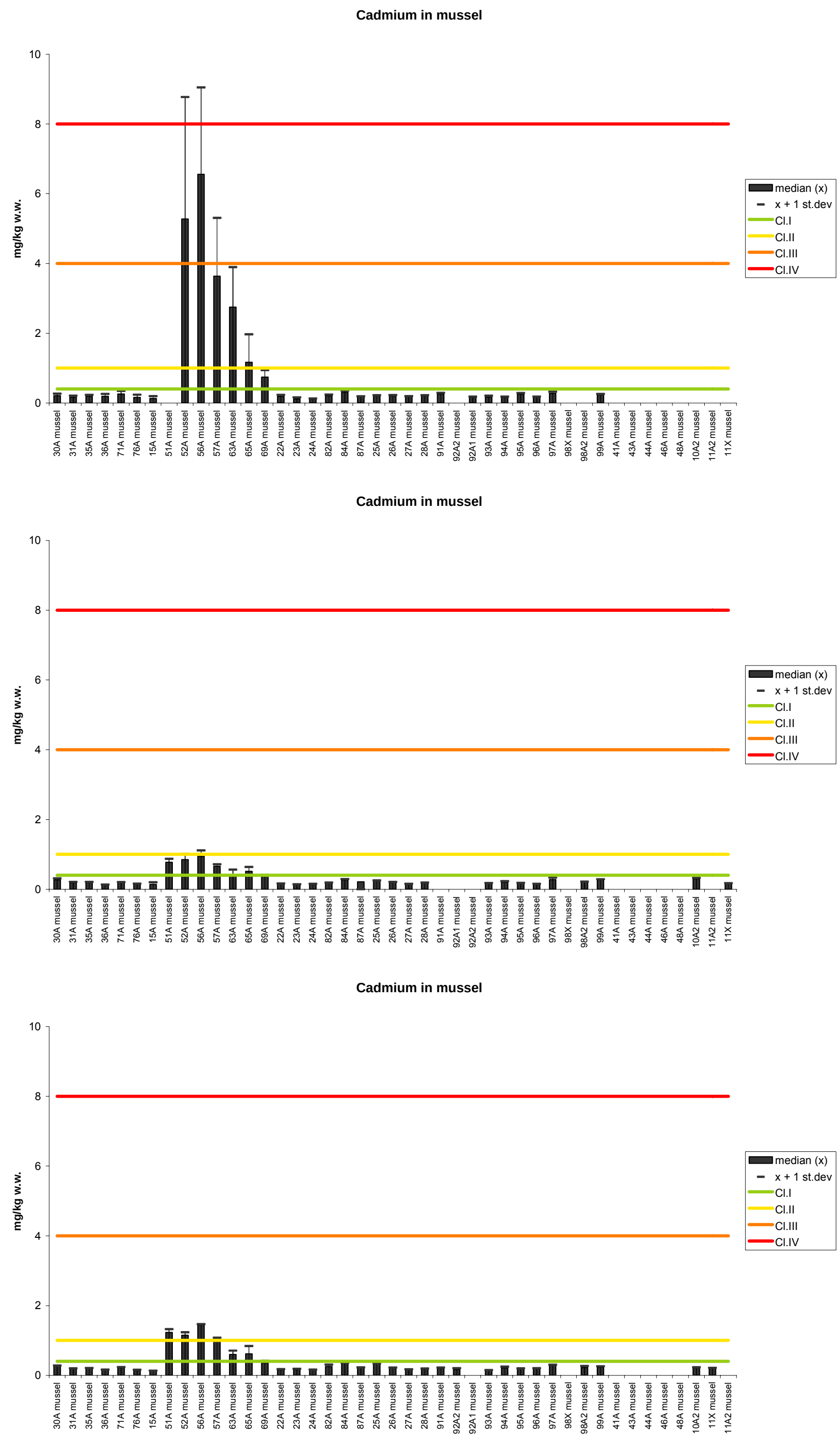
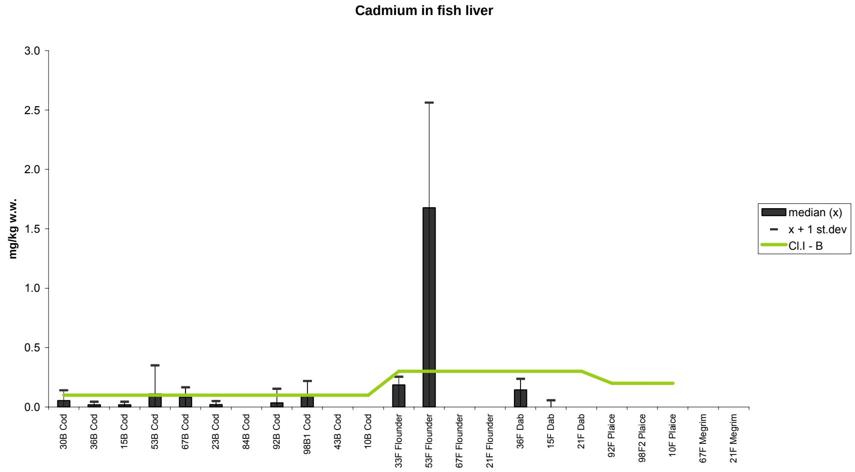
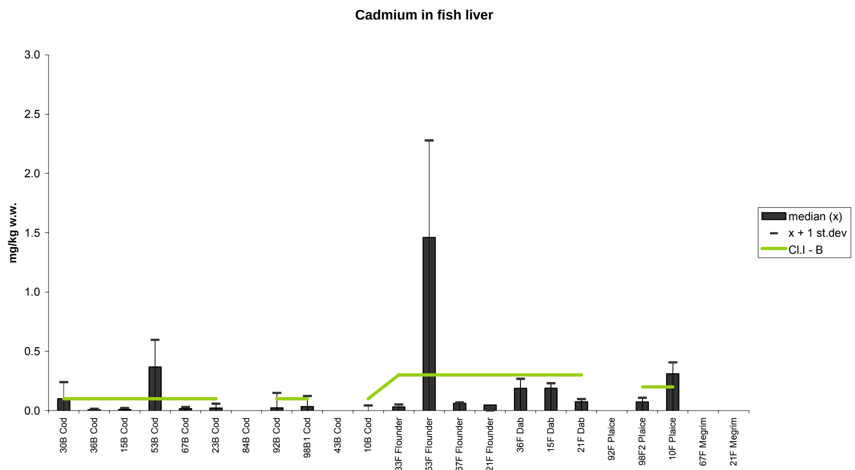


Figure 21. Median, standard deviation and provisional "high background" concentration for cadmium in blue mussel (*Mytilus edulis*) 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppm (mg/kg) wet weight (see maps in Appendix F). **Note: for some stations the standard deviation is off-scale in figures A.**

A



B



C

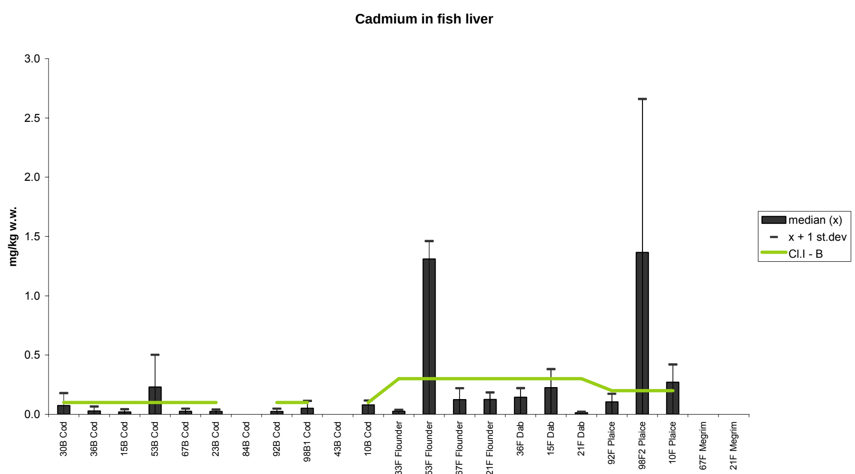


Figure 22. Median, standard deviation and provisional "high background" concentration for cadmium in fish liver 1990-1993 **(A),** 2004 (**B**) and 2005 (**C**), ppm (mg/kg) wet weight, “Cl. – B” indicates that only provisional high back ground concentration is indicated for all fish, (see maps in Appendix F).

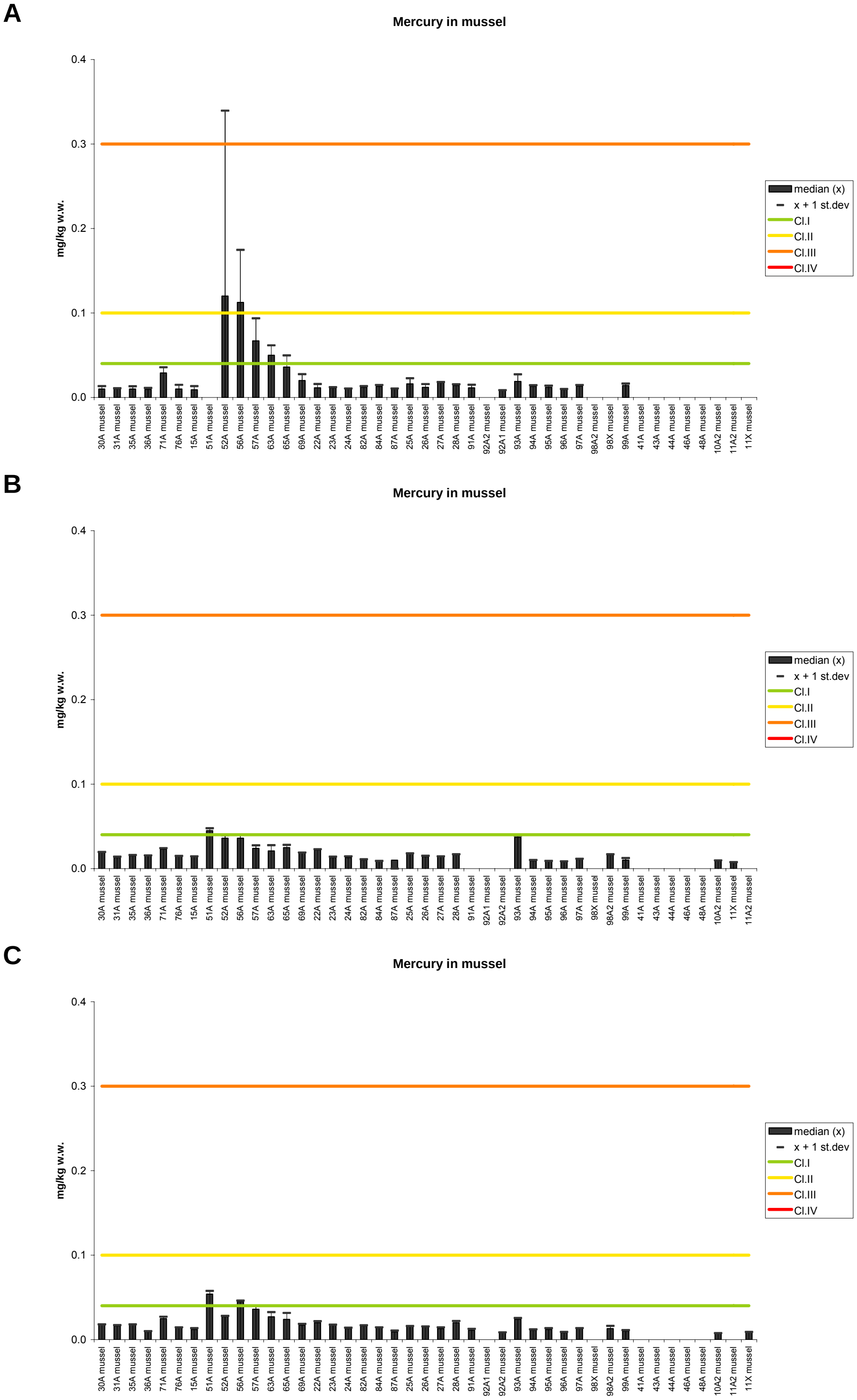


Figure 23. Median, standard deviation and provisional "high background" concentration for mercury in blue mussel (*Mytilus edulis*) 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppm (mg/kg) wet weight (see maps in Appendix F).

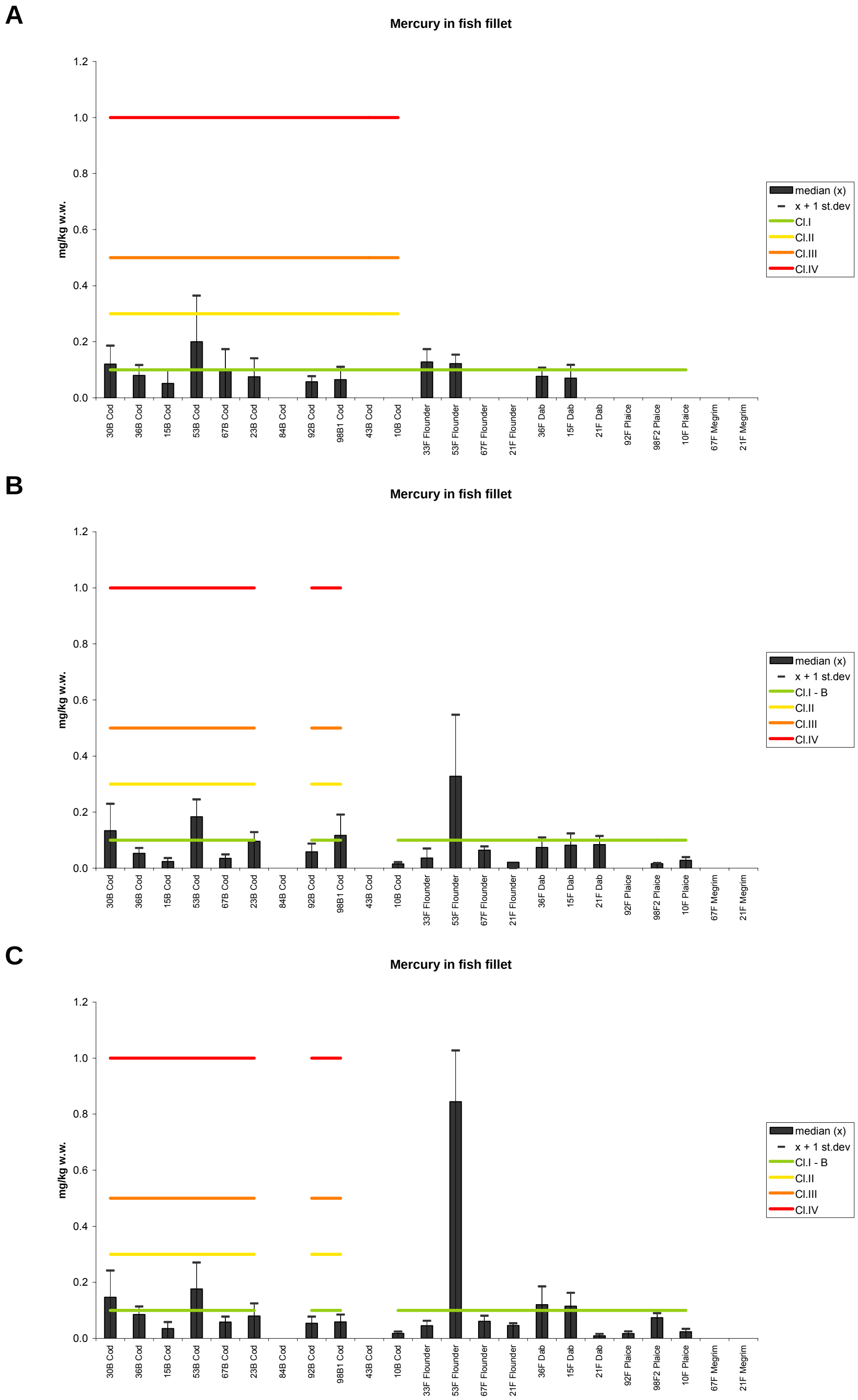
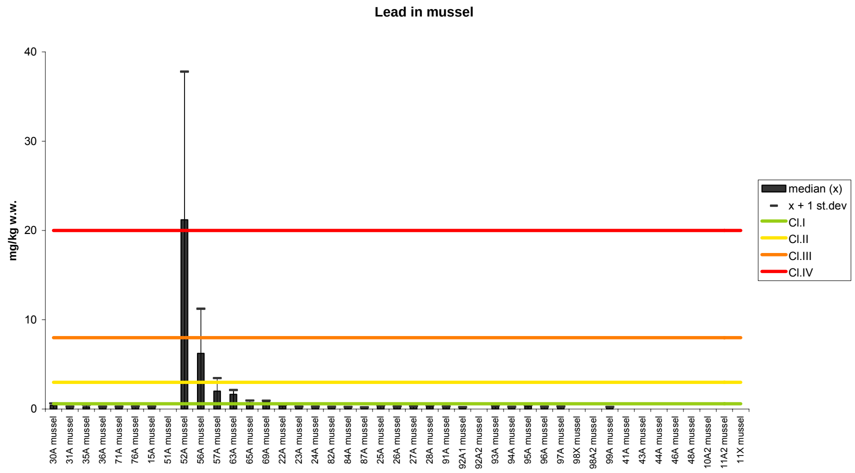
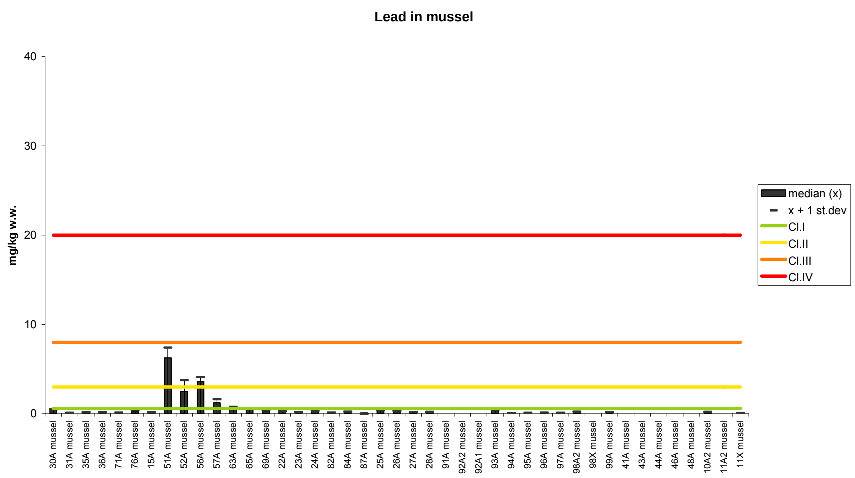


Figure 24. Median, standard deviation and provisional "high background" concentration for mercury in fish fillet 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppm (mg/kg) wet weight, “Cl. – B” indicates that only provisional high back ground concentration is indicated for flatfish, (see maps in Appendix F).

A



B



C

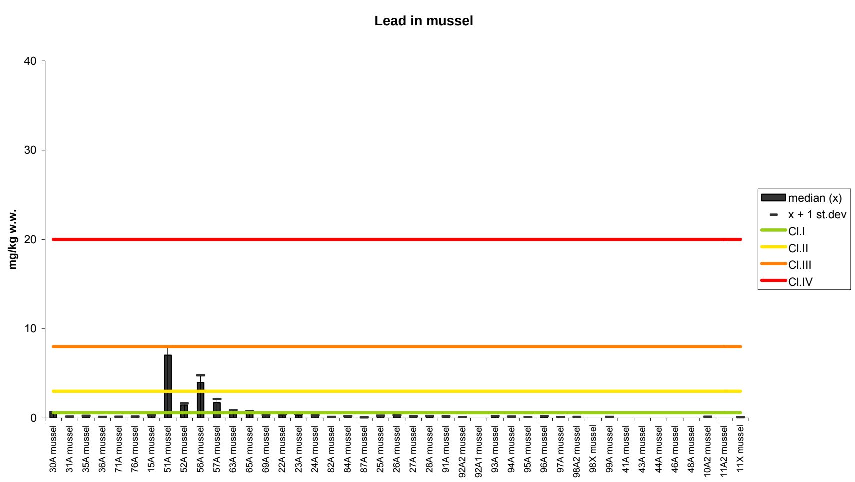


Figure 25. Median, standard deviation and provisional "high background" concentration for lead in blue mussel (*Mytilus edulis*) 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppm (mg/kg) wet weight (see maps in Appendix F). **Note: for some stations the standard deviation is off-scale in figure A.**

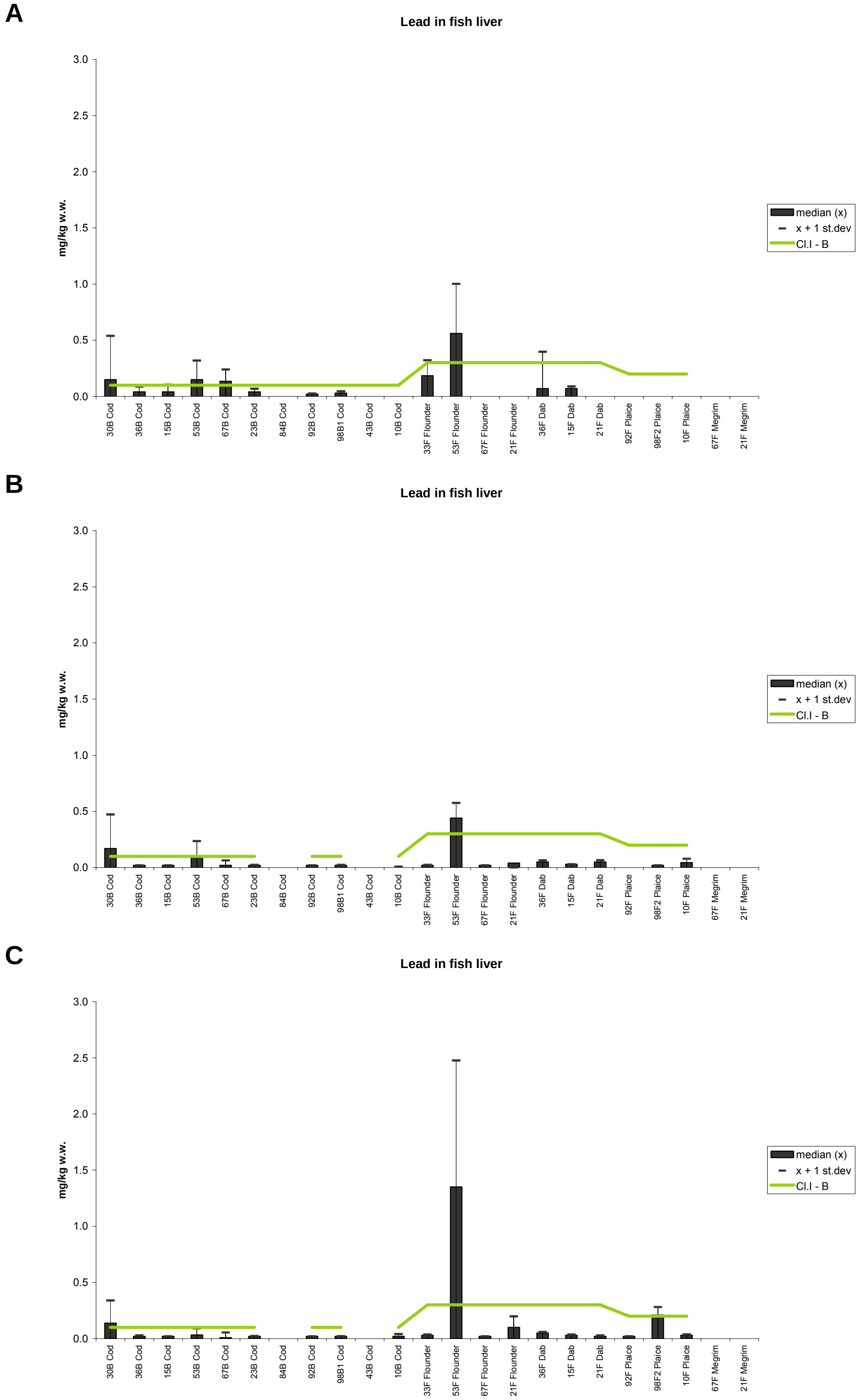


Figure 26. Median, standard deviation and provisional "high background" concentration for lead in fish liver 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppm (mg/kg) wet weight, "Cl. – B" indicates that only provisional high back ground concentration is indicated for all fish, (see maps in Appendix F).

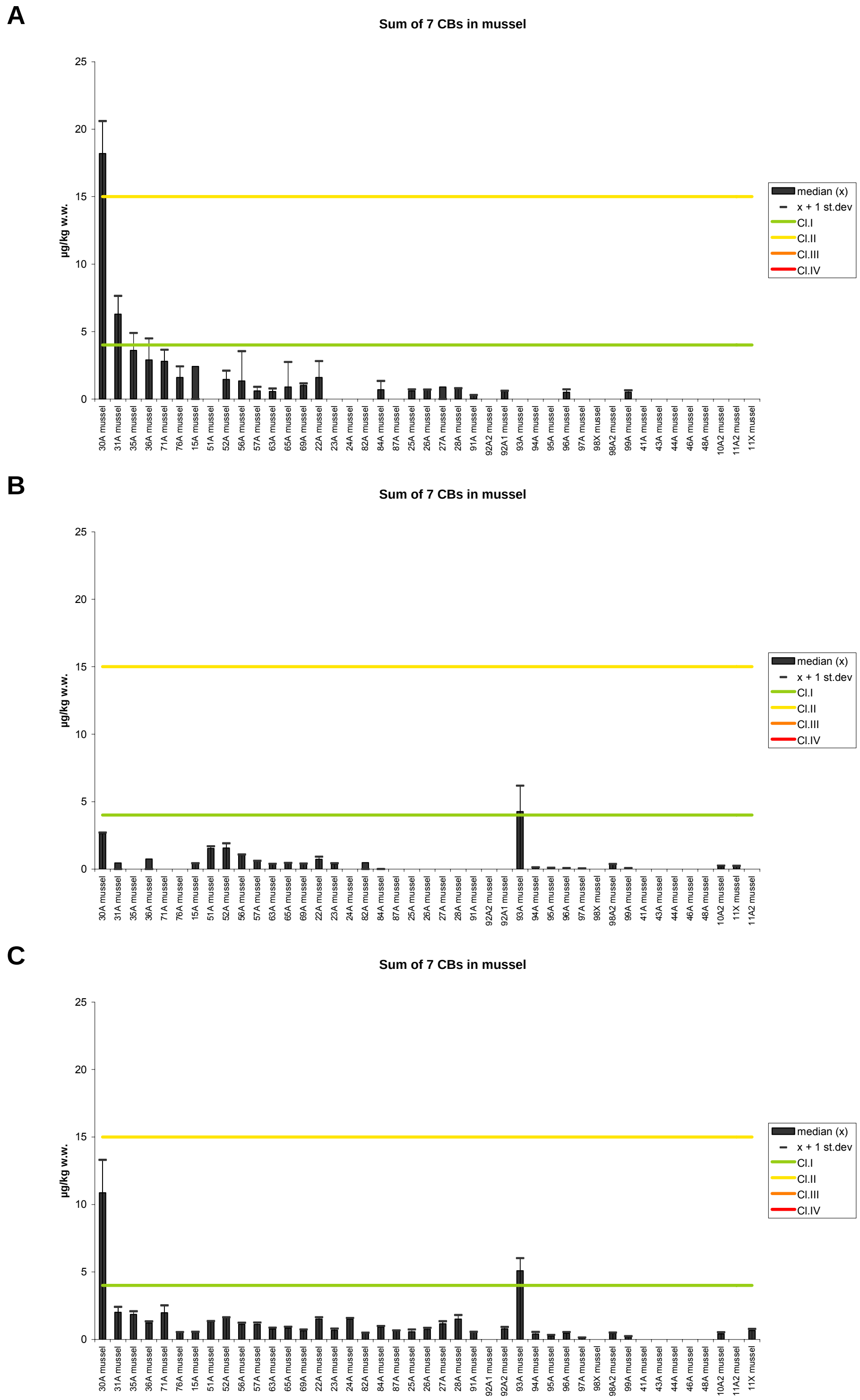


Figure 27. Median, standard deviation and provisional "high background" concentration for sum of 7 PCBs (CB-28, -52, 101, -118, -138, -153 and -180) in blue mussel (*Mytilus edulis*) 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppb (µg/kg) wet weight (see maps in Appendix F).

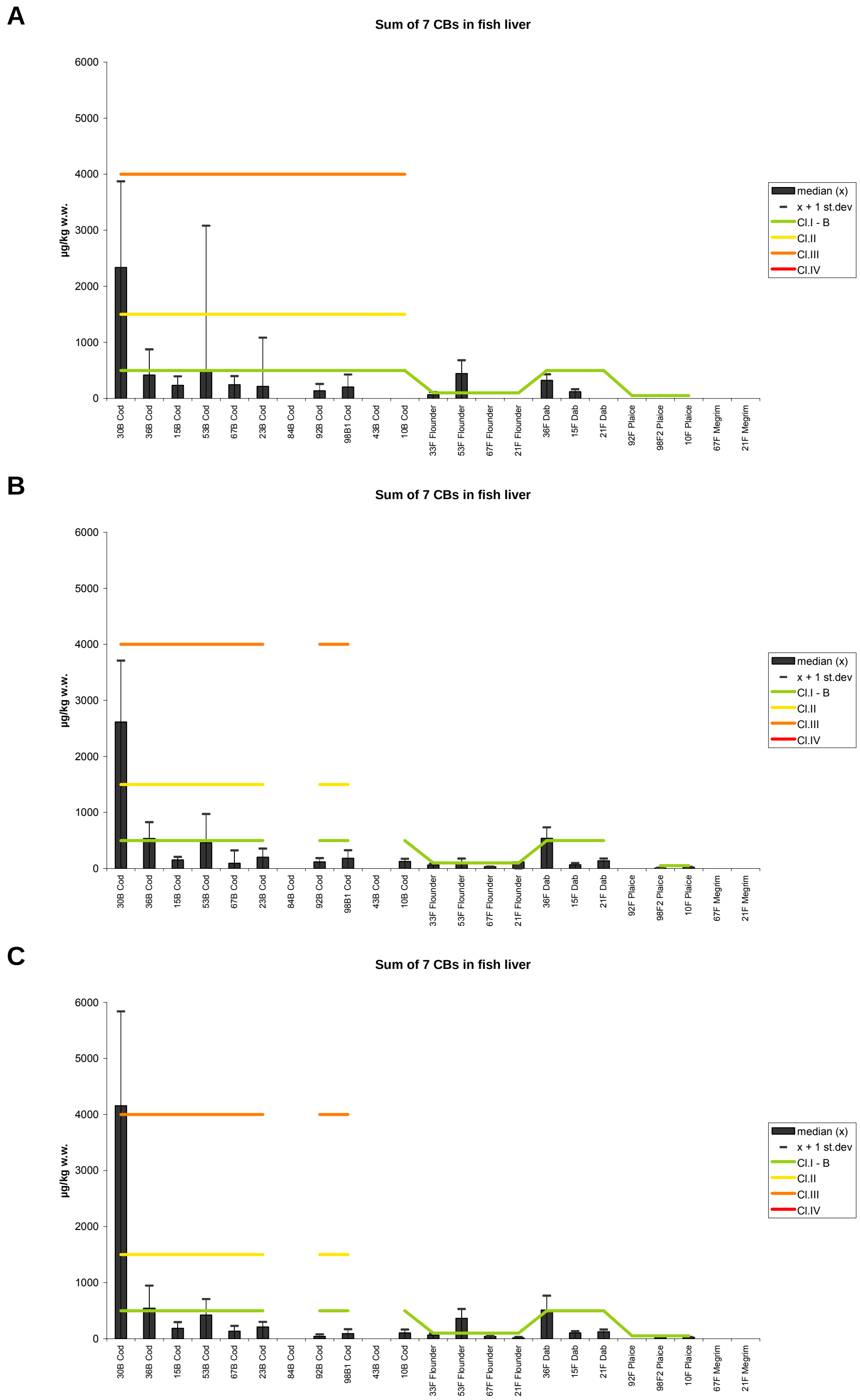


Figure 28. Median, standard deviation and provisional "high background" concentration for sum of 7 PCBs (CB-28, -52, 101, -118, -138, -153 and -180) in fish liver 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppb (µg/kg) wet weight, “Cl. – B” indicates that only provisional high back ground concentration is indicated for flatfish, (see maps in Appendix F). **Note: for some stations the standard deviation is off-scale in figures A-C.**

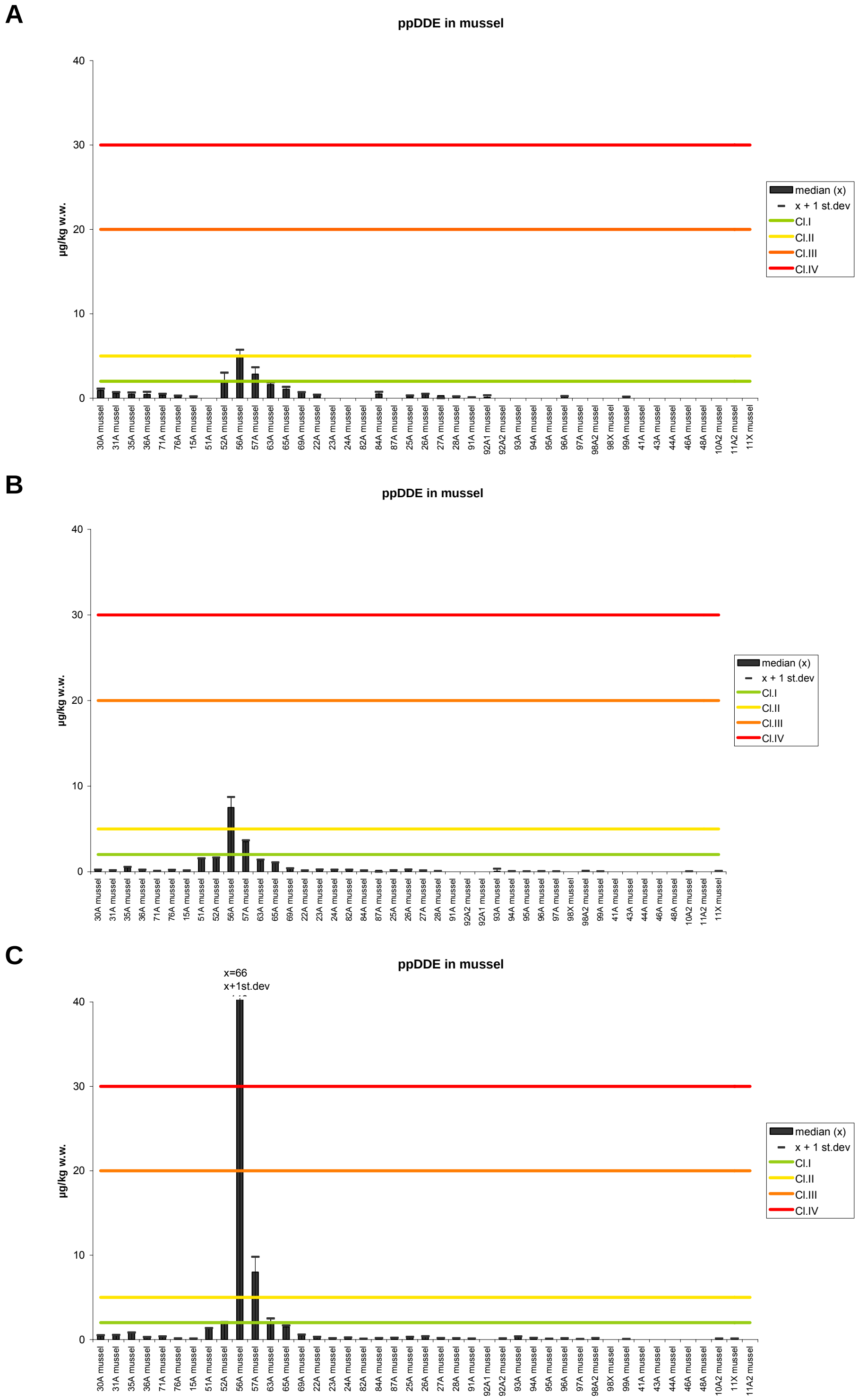
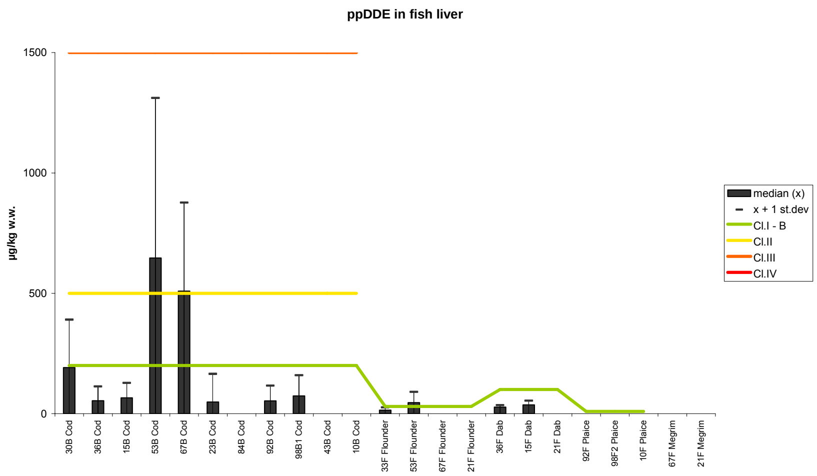
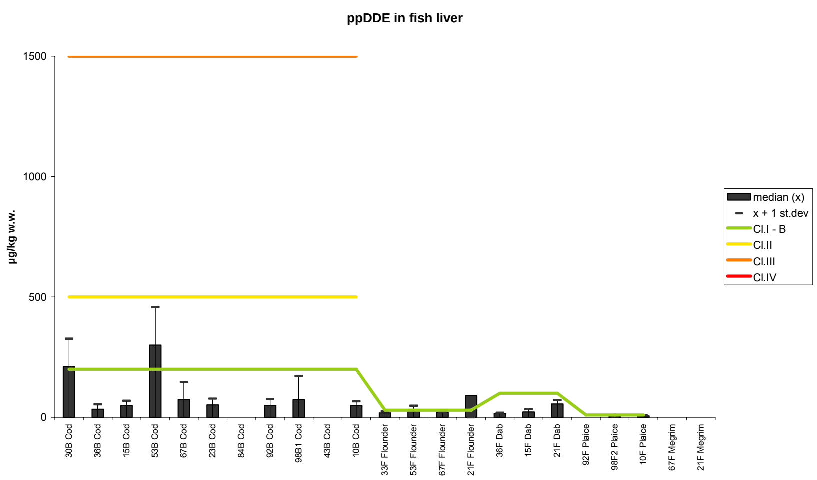


Figure 29. Median, standard deviation and provisional "high background" concentration for ppDDE (DDEPP) in blue mussel (*Mytilus edulis*) 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppb (µg/kg) wet weight (see maps in Appendix F). (See also footnote in Table 7). **Note: for some stations the standard deviation is off-scale in figure B.**

A



B



C

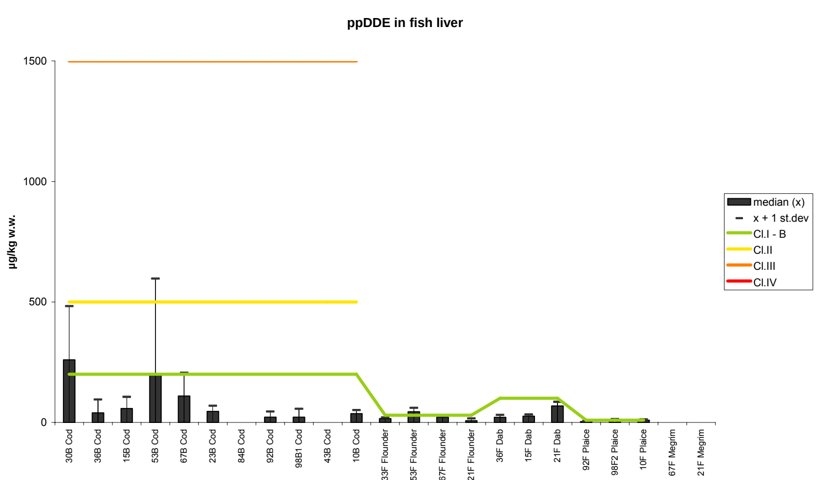


Figure 30. Median, standard deviation and provisional "high background" concentration for ppDDE (DDEPP) in fish liver 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppb (µg/kg) wet weight, “Cl. – B” indicates that only provisional high back ground concentration is indicated for flatfish, (see maps in Appendix F). (See also footnote in Table 7).

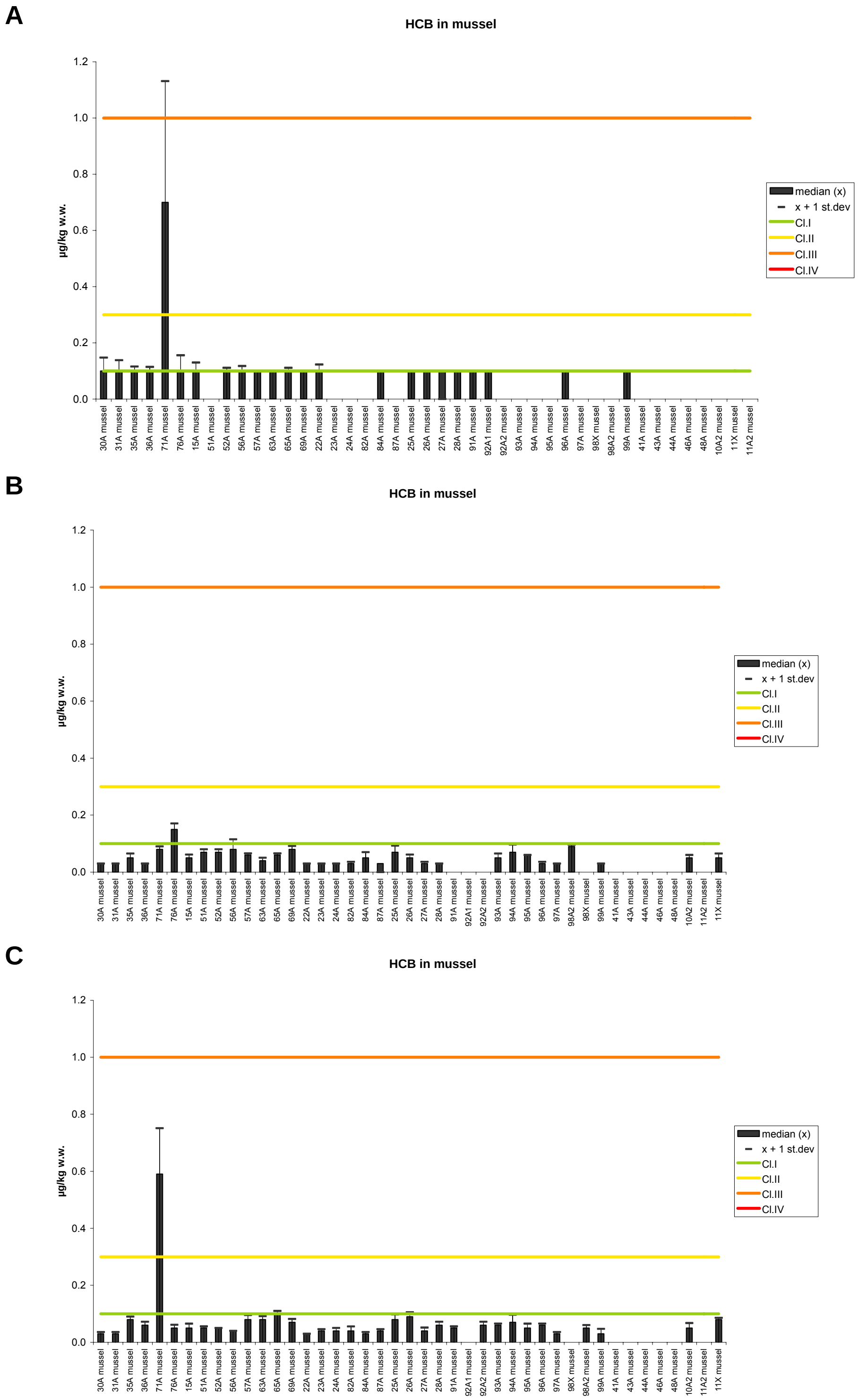


Figure 31. Median, standard deviation and provisional "high background" concentration for HCB in blue mussel (*Mytilus edulis*) 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppb (µg/kg) wet weight (see maps in Appendix F).

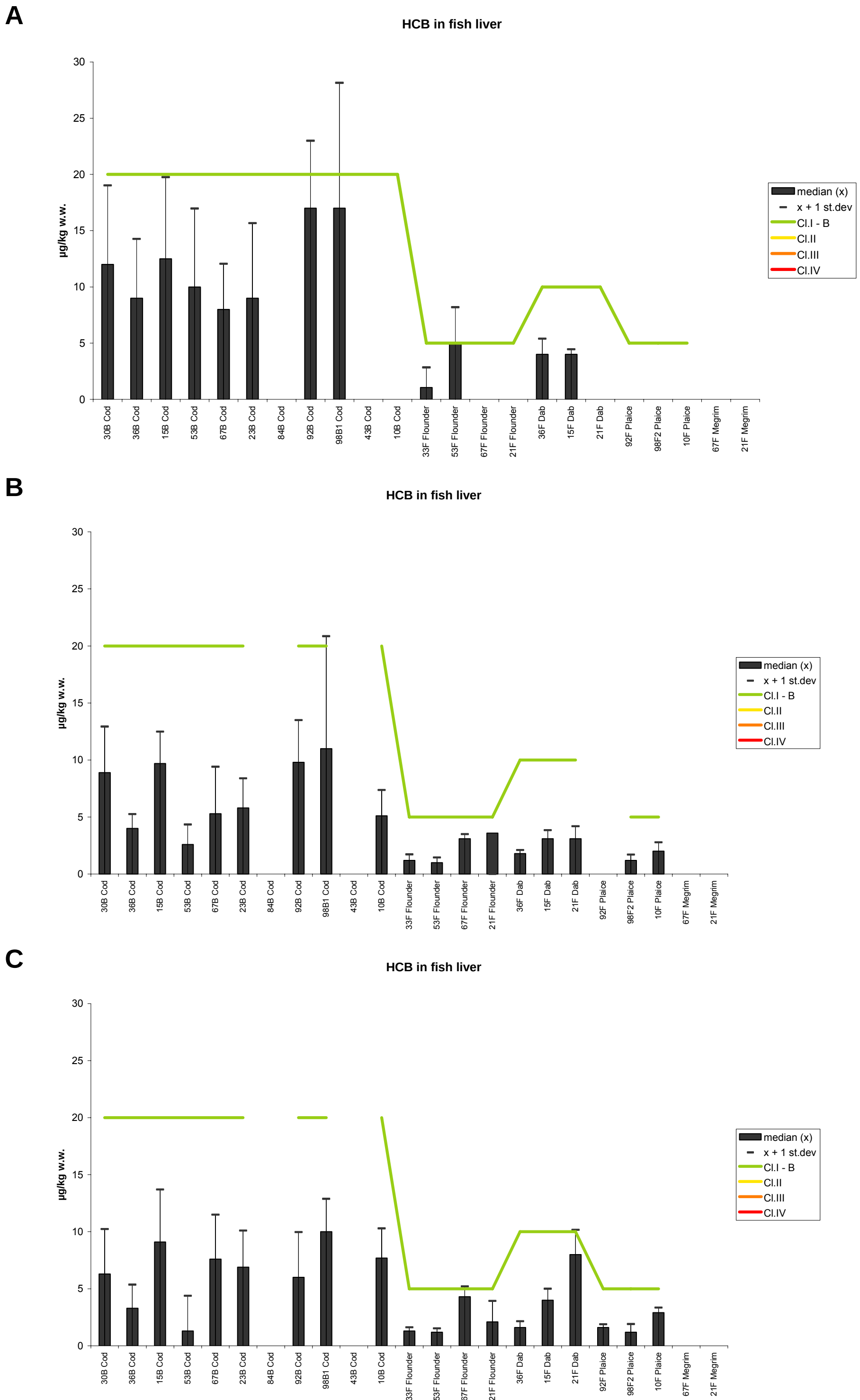
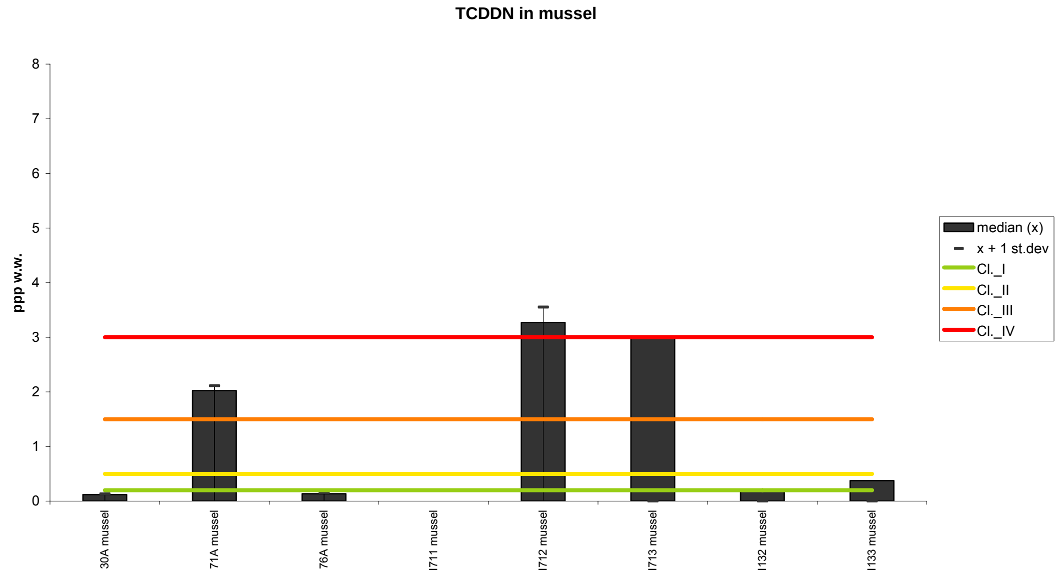


Figure 32. Median, standard deviation and provisional "high background" concentration for HCB in fish liver 1990-1993 (**A**), 2004 (**B**) and 2005 (**C**), ppb (µg/kg) wet weight, "Cl. – B" indicates that only provisional high back ground concentration is indicated for all fish, (see maps in Appendix F).

A



B

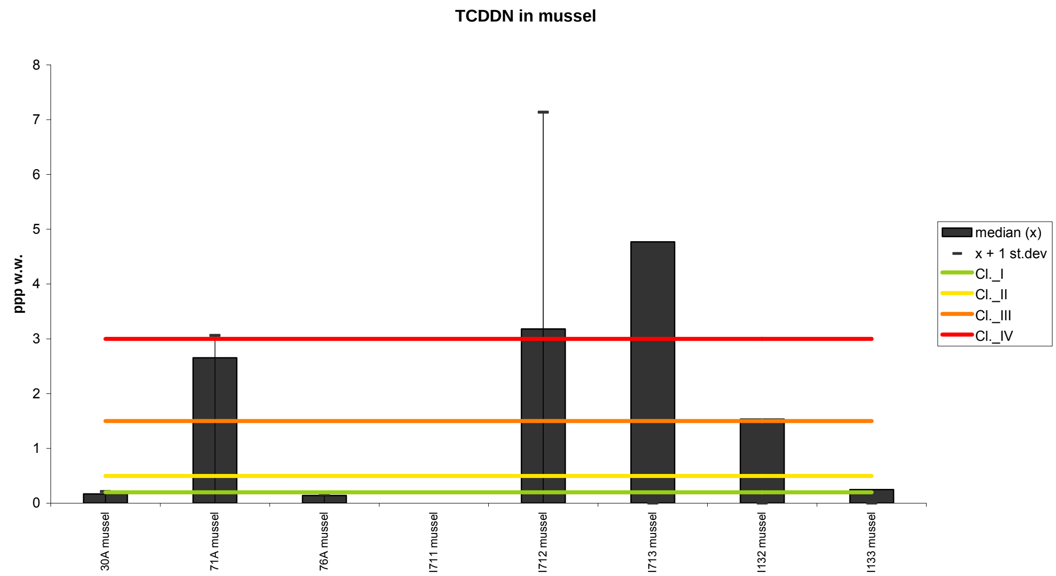


Figure 33. Median, standard deviation and provisional "high background" concentration for dioxin TCDD-toxicity equivalents after nordic model (TCDDN) in blue mussel 2004 (**A**) and 2005 (**B**), ppp (ng/kg) wet weight (see maps in Appendix F). NB: TCDDN is a sum of specific dioxin compounds of which may include compounds of uncertain quantification.

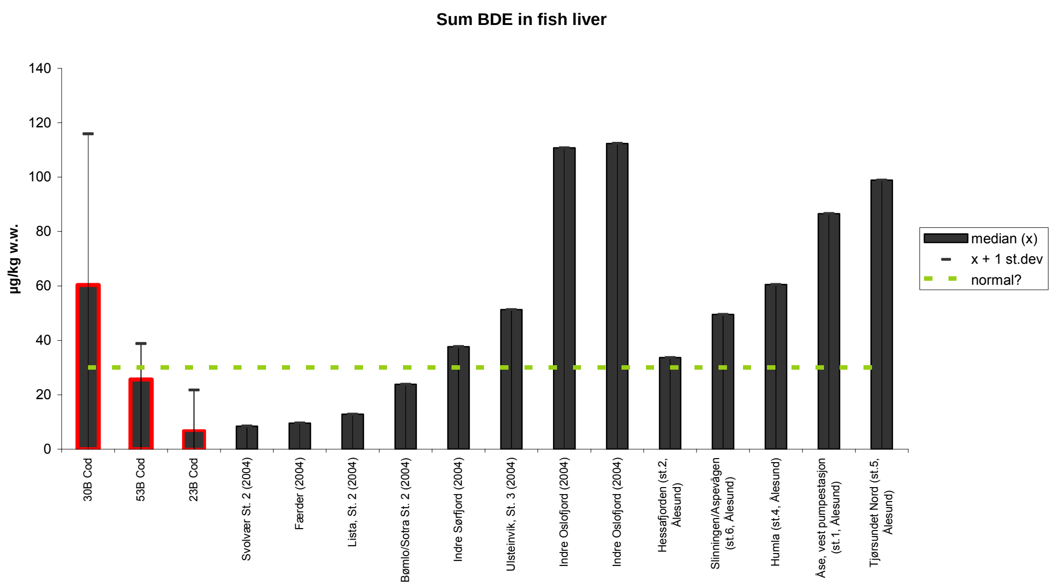


Figure 34. Median, standard deviation and provisional "high background" concentration for brominated flame retardent in cod liver 2005 (µg/kg) wet weight for three JAMP stations (inner Oslofjord - st.30B, inner Sørfjord - st.53B and Karihavet - st.23B) (see maps in Appendix F), and from two other investigations (see text).

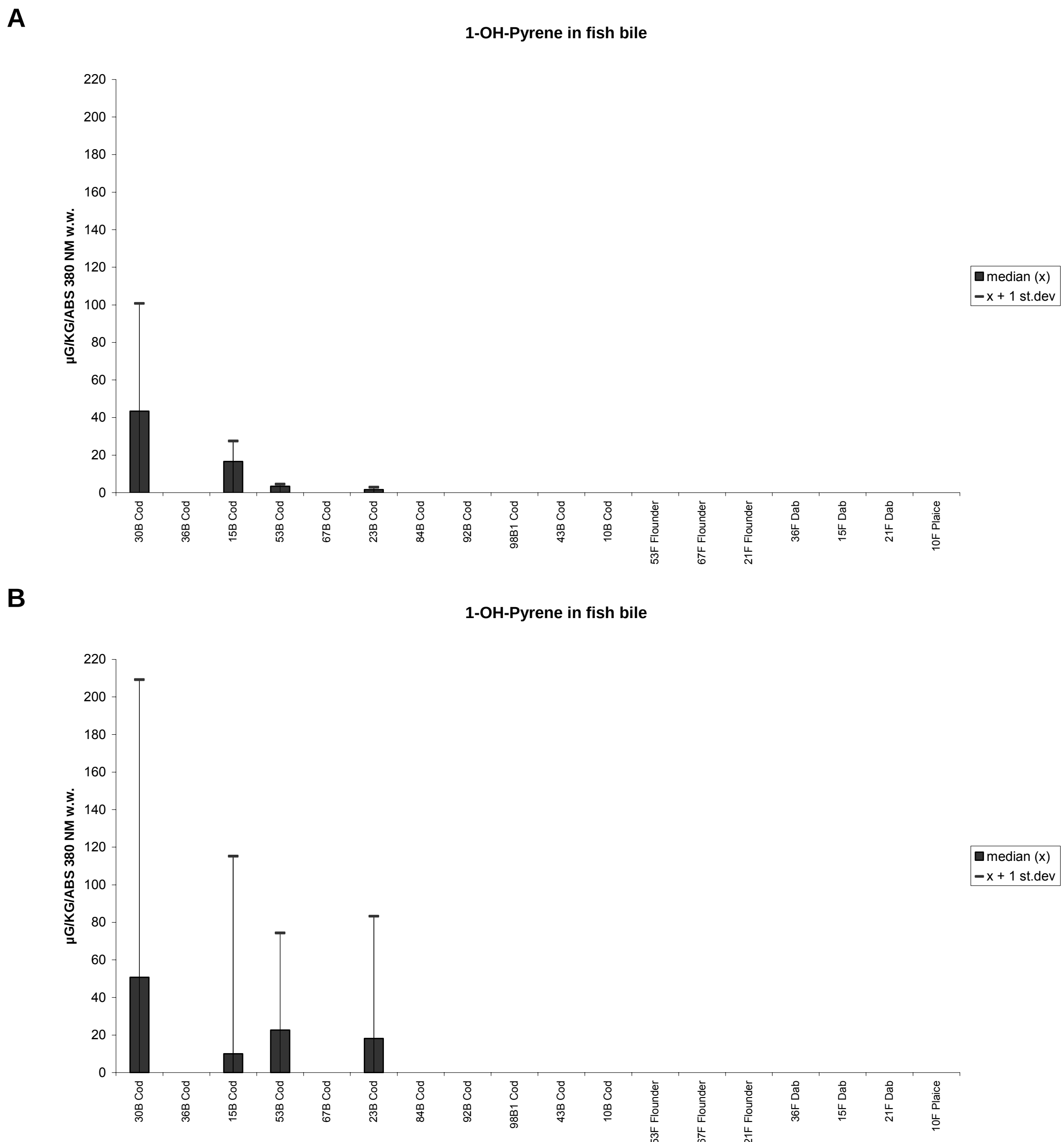
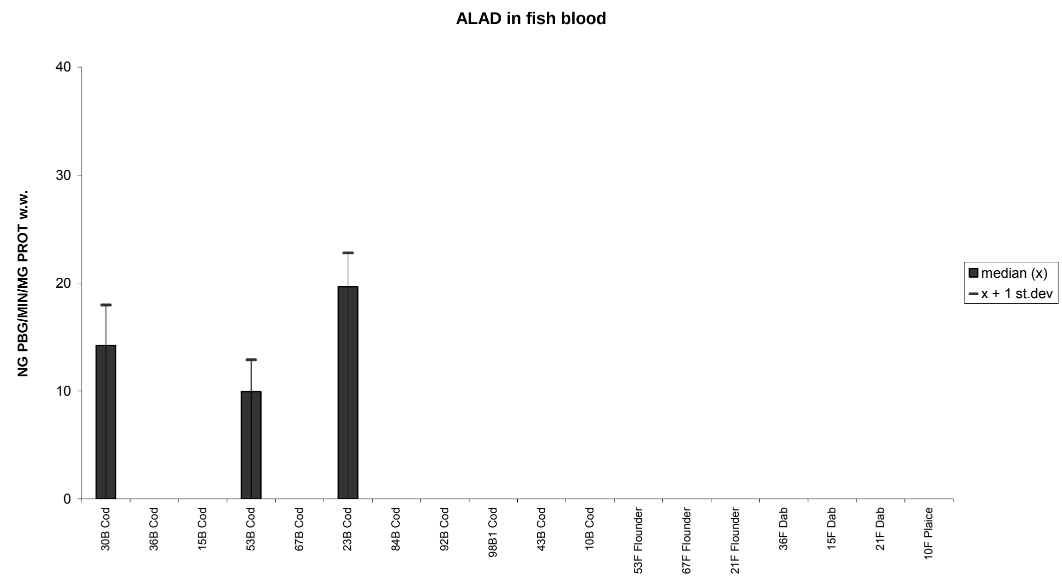


Figure 35. Median and standard deviation concentration for OH-pyrene (Pyrene metabolite) in fish bile 2004 (**A**) and 2005 (**B**), µg/kg/ABS (absorbance) 380 nm (see maps in Appendix F).

A



B

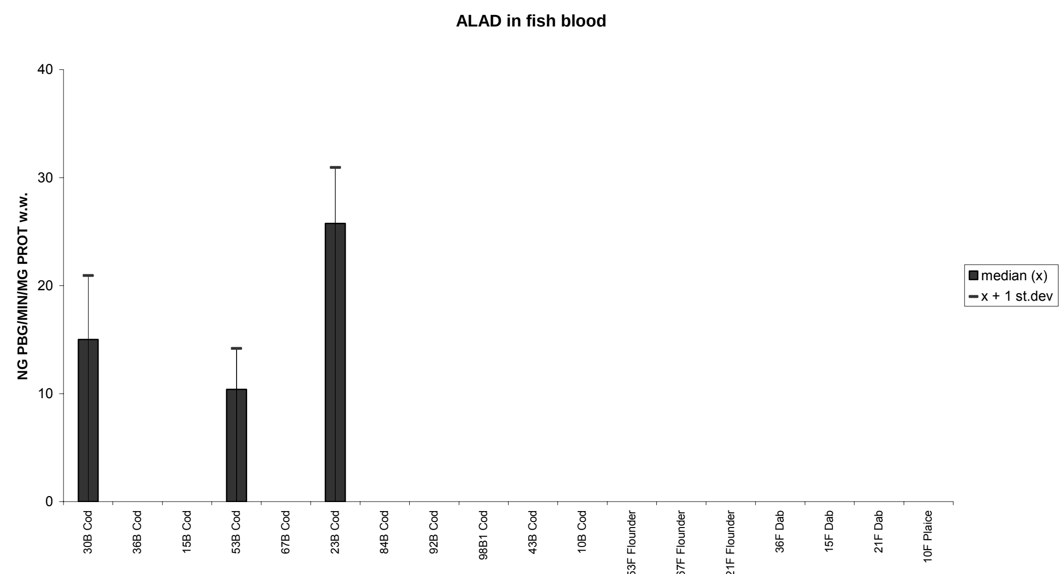


Figure 36. Median and standard deviation activity for ALA-D (δ-amino levulinic acid dehydrase inhibition) in fish liver 2004 (**A**) and 2005 (**B**), ng PBG (porphobilinogen)/min/mg protein (see maps in Appendix F).

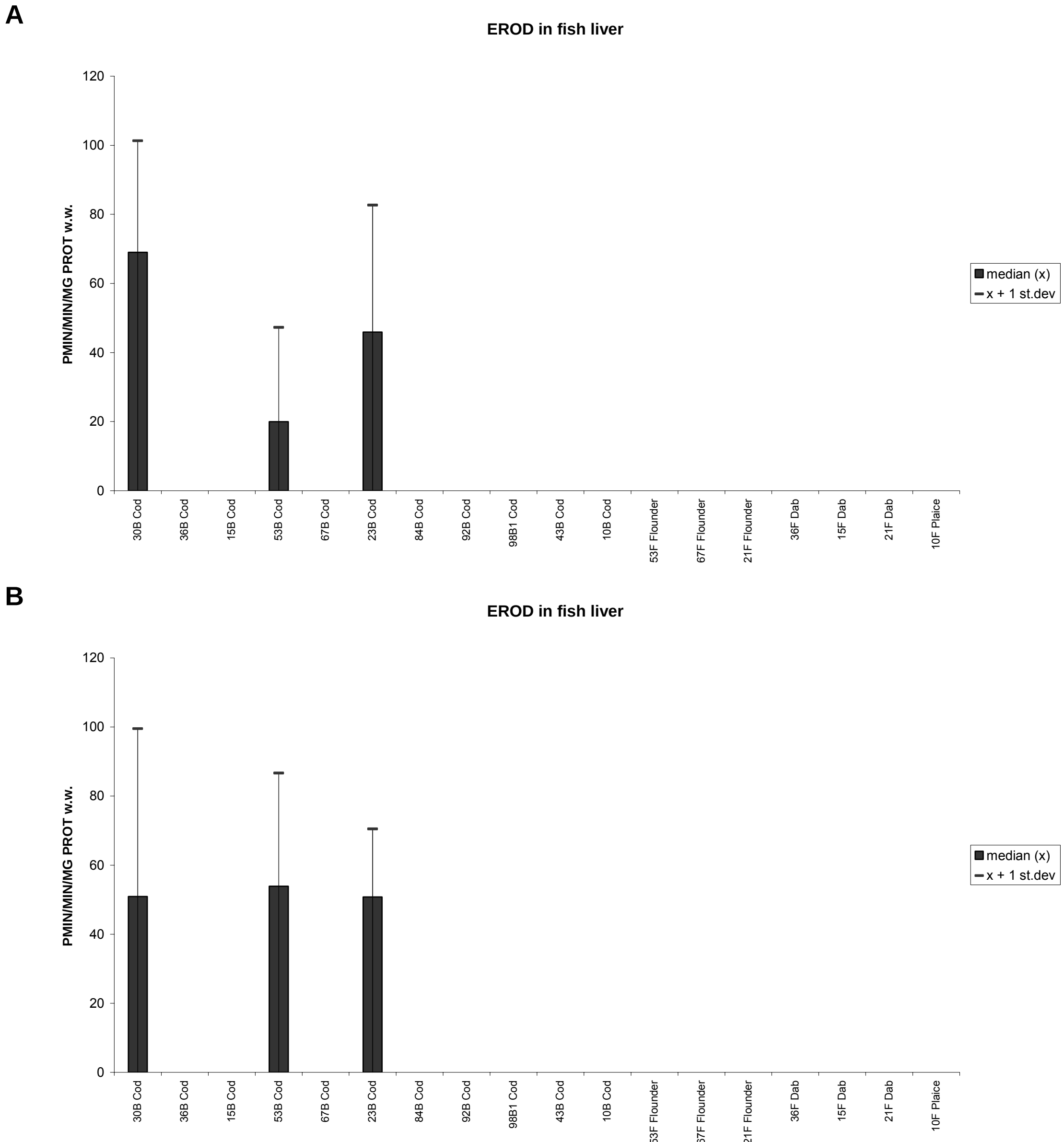
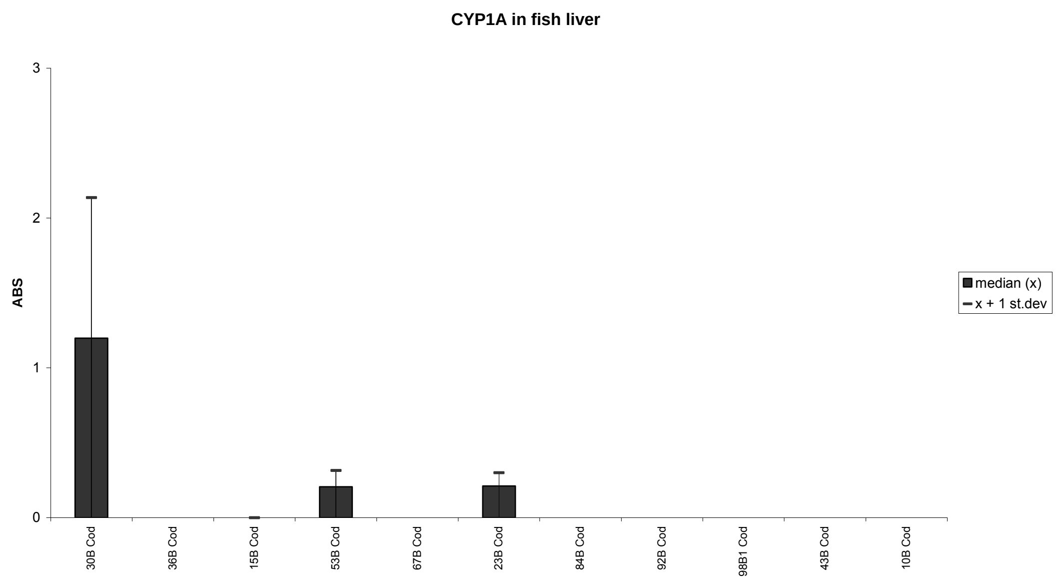


Figure 37. Median and standard deviation activity for EROD (Cytochrome P4501A-activity) in fish liver 2004 (**A**) and 2005 (**B**), pmol/min/mg protein (see maps in Appendix F).

A



B

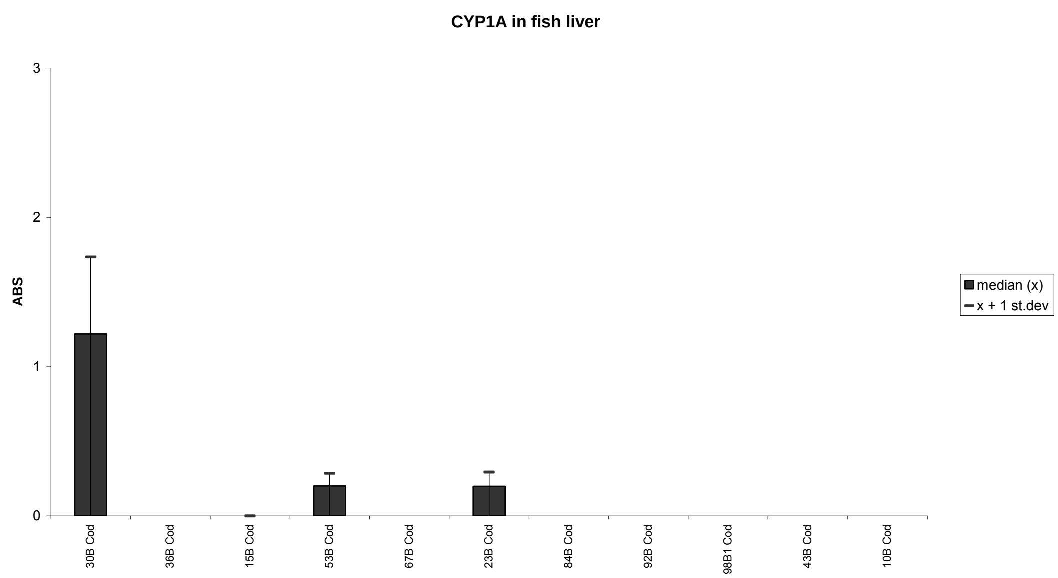
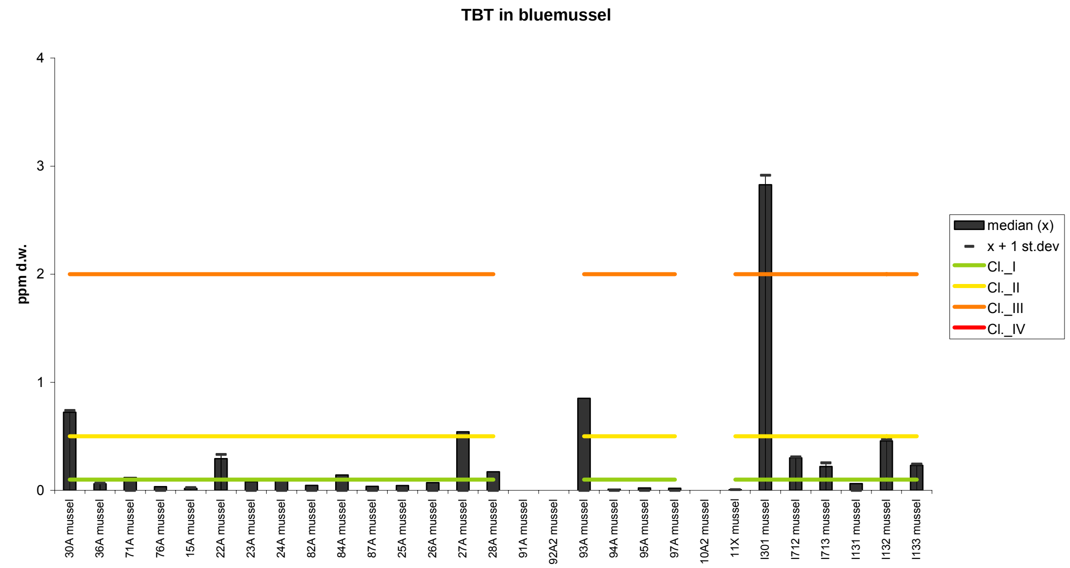


Figure 38. Median and standard deviation activity for CYP1A (relative amount of Cytochrome P4501A-protein) in fish liver 2004 (**A**) and 2005 (**B**), pmol/min/mg protein (see maps in Appendix F).

A



B

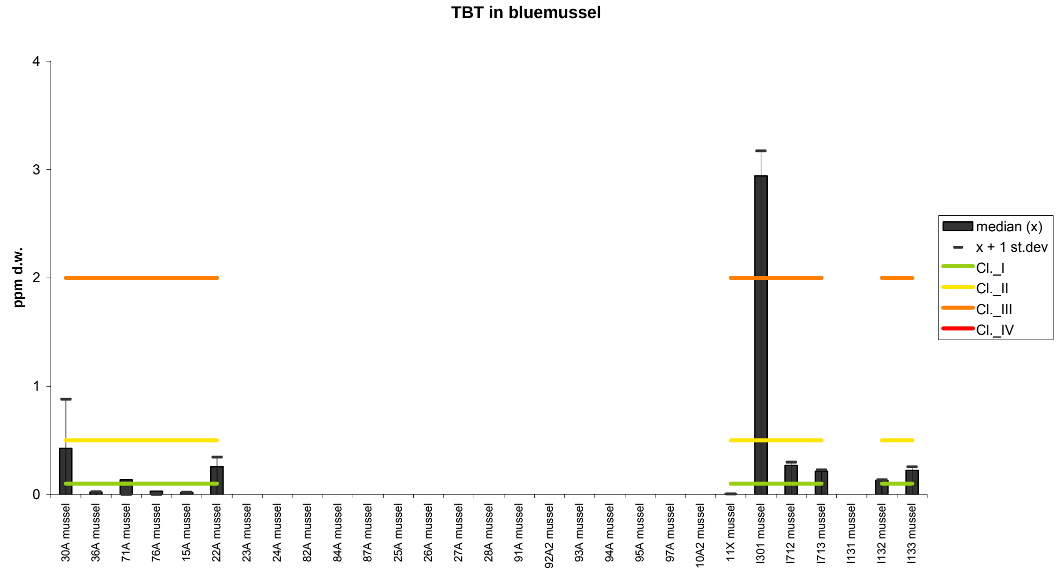
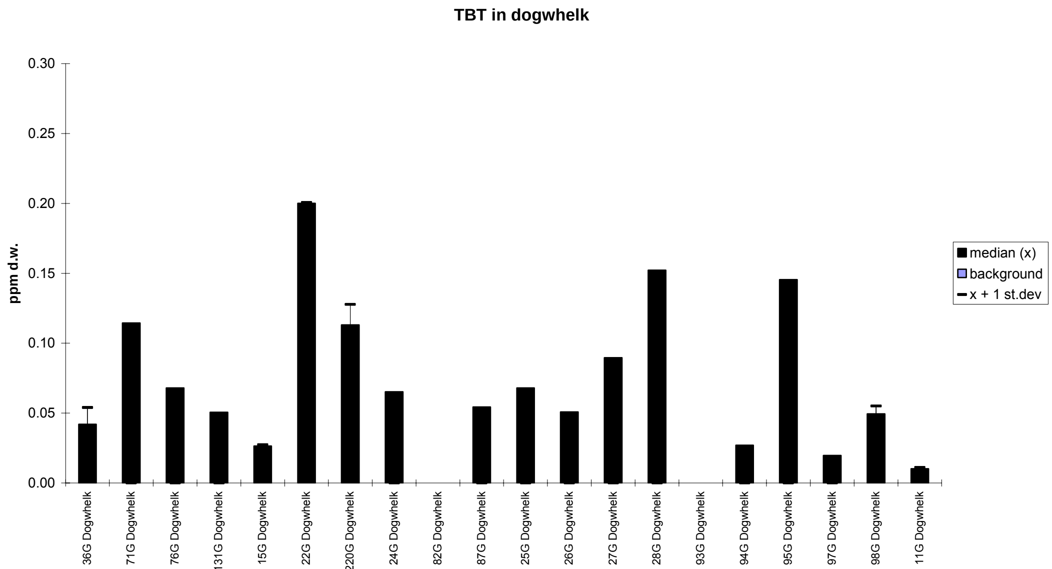


Figure 39. Median, standard deviation and provisional "high background" concentration for tributyl tin (TBT-concentration on a formulation basis) in blue mussel 2004 (**A**) and 2005 (**B**), ppm (2.44* mg Sn/kg) dry weight (see maps in Appendix F).

A



B

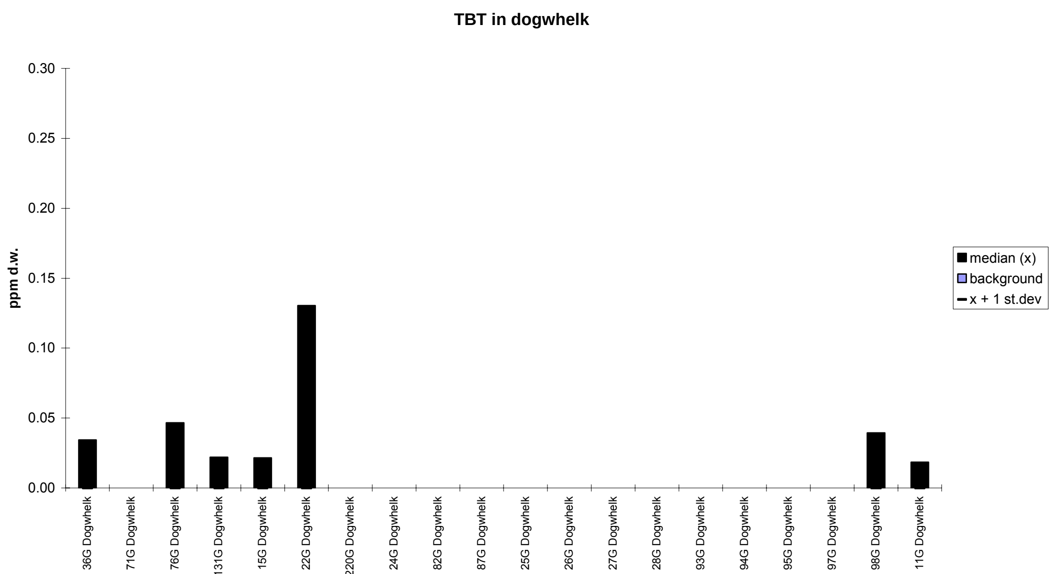
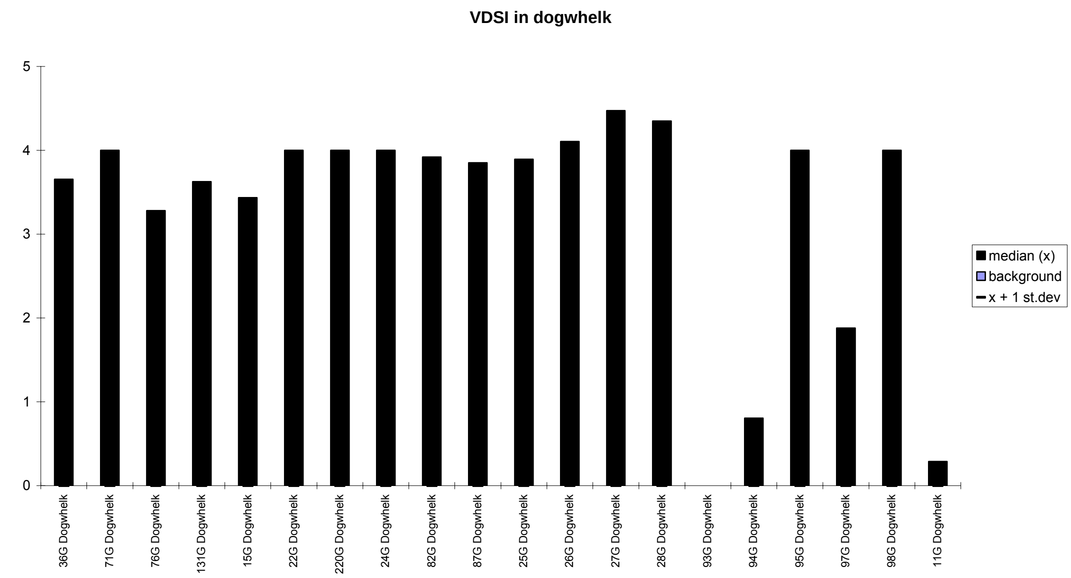


Figure 40. Median, standard deviation and provisional "high background" concentration for tributyl tin (TBT-concentration on a formulation basis) in dogwhelk 2004 (**A**) and 2005 (**B**), ppm (2.44* mg Sn/kg) dry weight (see maps in Appendix F).

A



B

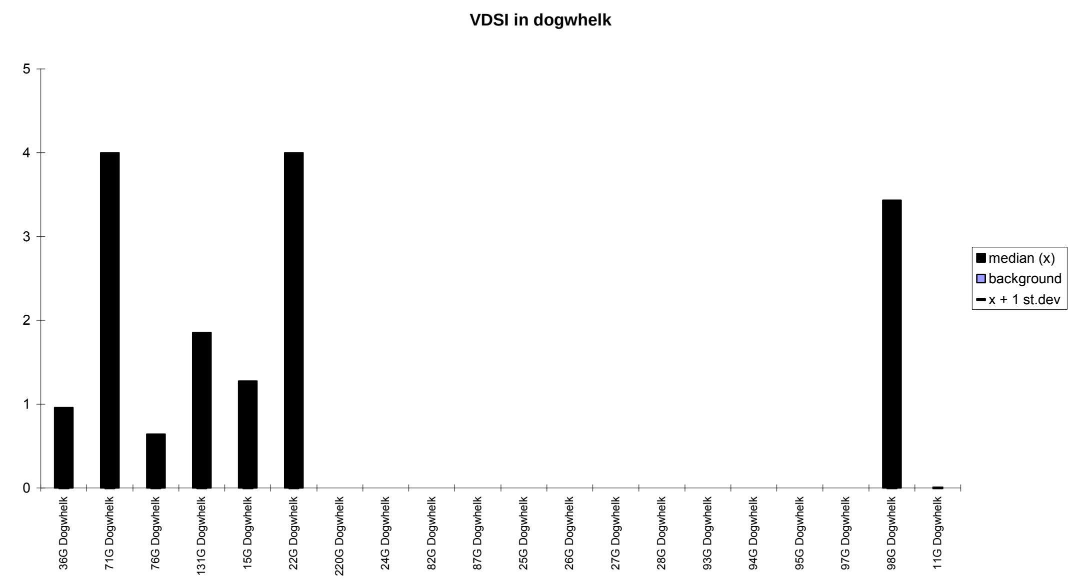


Figure 41. Average VDSI in dogwhelk 2004 (**A**) and 2005 (**B**) (see maps in Appendix F).

Appendix J
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 J1).

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 J2 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 J2. "Dioxins" were only investigated in 1995-96, but reinstated for some stations in 2002-2003. 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 J2). 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 J4 and Appendix J5). 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. For this report PAH_Σ was calculated, also for previous years. As a result, the classification may be different by a Class from what has been previously reported. "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 (slightly 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 used since 1995 based on contaminant concentrations in blue mussel from 14-19 areas (cf. Green *et al.* 2004). 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 http://www.miljostatus.no/templates/themepage____2699.aspx . Comparison of the two methods for 2002 and 2003 has been done earlier (Green *et al.* 2004a, 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 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 2005 was 3.1** compared to 3.4 for 2004 (Table 9, Appendix J4). A value between 3 and 4 would be termed by the SFT system as "Severe" and between 2 and 3 "Marked". The index decreased one class for both Sørfjorden and Byfjord, because of lower concentrations of lead and PCBs, respectively, but increased one class for Saudafjorden because of PAHs. Statistical analyses did not reveal any significant temporal trends for these contaminants in blue mussel from the relevant stations in these fjords/areas.

Only 5 fjords/areas were monitored for the Reference Index for 1998-2005 compared to 7 for 1997 and 8 for 1995-1996 (Table 10, Appendix J5). However, only four of these provided a common basis (cf., Table 10). 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 2005 was 1.4**, unchanged from 2004 (Table 10, Appendix J5). All five fjords/areas included the TBT analyses. A value between 1 and 2 would be termed by the SFT system as “Moderate”. The index decreased one class for the mid/outer Oslofjorden, Bømlo-Sotra area, and the Lofoton area primarily because of a decrease in TBT. No statistically significant temporal trends were found for TBT from stations in these fjords/areas. The index increased at Lista because of PAH and HCB. However, a statistical analysis on the PAH-concentrations since 1995 revealed a significant downward trend for one of the two stations from this area, due to a particularly high concentration found in 1995 (cf. Green, *et al.* 2004).

Table 9. Maximum environmental classification for fjords selected for Pollution INDEX. (See text and Appendix J4).

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]
Hvaler/Singlefjord	2	2	2	3	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
Frierfjord, Grenlandsfjords	3	4	3	3	3	3	3	5 [6]	5	3 [6]	5	5	5
Inner Kristiansandsfjord	5	5	5	5	5	4	3	3	3	4	4	4	4
Saudafjord	4	5	5	3	4	3	3	4	4	2	2	3	2
Sørfjord	5	4	3	3	4	4	3	4	4	5	5	4	4
Byfjorden, Bergen [3]	3	3	3	2	2	2	2	3	3	4	4	3	3
Sunndalsfjord	3	3	3 [4]	2	3	4	2	3	3	1 [6]	1	1	1
Orkdalsfjord	-	-	-	-	-	-	-	-	-	-	-	-	-
Inner Ranfjord	5	3	3 [5]	4	2	2	3	3 [6]	3	3 [8]	5	5	3
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**

[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.

Table 10. Maximum environmental classification for fjords selected for Reference INDEX. (See text and Appendix J5).

Index Area	1995	1996	1997	1998	1999	2000	2001	2002	2002 new 5)	2003	2003 new 5)	2004 new 5)	2005 new 5)
Mid and outer Oslofjord 1)	2	2	2	1	1	1	2	1	1	1	2	1	1
Lista	1	1	1	1	2	2	2	2	2	1	1	2	2
Bømlo-Sotra	1	1	1	1	1	2	2	1	2	1	3	2	2
Outer Ranfjord, Helgeland 2)	(1)	(1)	-	-	-	-	-	-	-	-	-	(1)	-
Lofoten 3)	(2)	(2)	(1)	(2)	(2)	(1)	(2)	(2)	2	(2)	2	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
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) 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 J1
INDEX - Sampling and analyses for 1995-2005

Appendix J1. Blue mussel samples planned or used in INDEX and other purposes besides JAMP 1995-2005, 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 J2. See Walday *et al.* (1995) for discussion of selection of stations and analyses.

JAMP	st.	STATION	INDEX	+	A	B	C	D	E	F	G	H	I	J	K	CM
		HVALER/SINGLEFJORD AREA														
	021	Kjøkø, south	P	.	3	.	.	.	.	.	.	.	.	.	.	
	024	Kirøy, north west	P	.	3	.	.	.	.	.	.	.	.	.	.	
	022	West Damholmen	P	.	3	.	.	.	.	.	.	.	.	.	.	
	023	Singlekalven, south	P	.	3	.	.	.	.	.	.	.	.	.	.	
		IDDEFJORD														
	01A	Sponvikskansen	P	.	.	3	.	.	.	.	.	.	.	.	.	
	011	Kråkenebbet	P	.	.	3	.	.	.	.	.	.	.	.	.	
		OSLOFJORD, inner														
	30A	Gressholmen	P	+	3	.	.	.	.	.	.	3	.	2	2	
	301	Akershuskaia	P	.	.	.	3	.	.	.	.	.	.	.	2	
	304	Gåsøya	P	.	.	.	3	.	.	.	.	.	.	.	.	
	307	Ramtonholmen	P	.	.	.	3	.	.	.	.	.	.	.	.	
	306	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														
	712	Gjermundsholmen	P	.	.	.	.	3	.	.	.	.	.	2	2	
	713	Strømtangen	P	.	.	.	.	3	.	.	.	.	.	1	2	
	71A	Bjørkøya	P	+	3	.	.	.	.	.	.	.	.	2	1	
	76A	Risøy	R	+	3	.	.	.	.	.	.	.	.	2	1	
		INNER KRISTRIANSANDSFJORD														
	132	Fiskåtangen	P	.	.	.	.	.	3	.	.	.	.	2	2	
	133	Odderø, west	P	.	.	.	.	.	3	.	.	.	.	1	2	
		LISTA AREA														
	15A	Gåsøya	R	+	3	.	.	.	.	.	.	.	.	.	2	
	131	Lastad	R	.	.	.	3.	.	.	.	.	.	.	.	.	g
		SAUDAFJORD														
	201	Ekkjegrunn (G1)	P	.	.	.	.	.	.	3	.	.	.	.	.	
**	205	Bølsnes (G5)	P	.	.	.	.	.	.	3	.	.	.	.	.	
		[HAUGESUND AREA not related to INDEX investigation]														
	227	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 J1 (cont'd)

JAMP	st.	STATION	INDEX	+	A	B	C	D	E	F	G	H	I	J	K	CM
		BYFJORDEN, BERGEN														
	242	Valheimsneset	P	.	.	.	.	.	.	.	3	.	.	.	.	
	241	Nordnes	P	.	.	.	.	.	.	.	3	.	.	.	.	
	243	Hagreneset	P	.	.	.	.	.	.	.	3	.	.	.	.	
		SUNNDALSFJORD														
	912	Honnhammer	P	.	.	.	.	.	.	.	.	3	.	.	.	
	913	Fjøseid	P	.	.	.	.	.	.	.	.	3	.	.	.	
	914	Flåøya, southeast	P	.	.	.	.	.	.	.	.	3	.	.	.	
	915	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														
	962	Koksverkkaien (B2)	P	.	.	.	.	.	.	.	.	.	3	.	.	c
	964	Toraneskaien	P	.	.	.	.	.	.	.	.	.	3	.	.	
	965	Moholmen (B5)	P	.	.	.	.	.	.	.	.	.	3	.	.	
	969	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	.	.	.	.	.	.	.	.	.	.	
	10A	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 J2
INDEX - Key to analysis codes and sample counts
(Used in Appendix J1)

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 J3
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 J4
INDEX - Summary table "Pollution index"
2004-2005

Pollution index 2004-new (with supplementary analyses and stations)

Average of Max E.C is 3.4

Index areaname (Pollution area) **2004**	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	3.51	i	1.57	i	i	0.21	i	i	i	i	i	<0.36	0.06	<0.10	1.89	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	2.16	i	i	0.15	i	i	i	626.62	4	1.83	0.11	<0.05	6.6	<0.12	2.83	IV
Frierfjorden	3	4	i	i	i	i	i	i	i	i	i	i	i	i	0.52	0.47	<0.05	<2.49	3.25	0.3	V
Inner Kristiandsfjord	2	3	i	i	i	i	i	i	i	i	i	i	375.54	15	<0.18	0.44	<0.11	<1.41	<0.38	0.46	IV
Saudafjord	2	2	i	3.33	i	1.02	i	i	i	i	i	i	378.27	6.8	i	i	i	i	i	i	III
Sørfjord	2	2	i	42.23	i	5.37	i	i	0.3	i	i	i	i	i	3.38	0.07	<0.05	<1.57	i	i	IV
Byfjorden	3	3	i	i	i	i	i	i	i	i	i	i	i	i	1.89	0.13	<0.05	39.76	i	i	III
Sunndalsfjord	3	4	i	i	i	i	i	i	i	i	i	i	<37.19	0.39	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	13.12	i	1.9	i	i	i	i	i	i	1706.59	44	i	i	i	i	i	i	V

I	24
II	13
III	10
IV	3
V	2

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

Appendix J5
INDEX - Summary table "Reference Index"
2004-2005

Reference index 2004-new (with supplementary analyses and stations)

Average of Max E.C is 1.3

Index areaname (Reference area) **2004**	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	0.96	w	1.4	i	w	0.11	w	i	w	w	w	0.86	0.05	<0.05	<0.75	w	0.06	I
Lista area	2	2	w	0.86	w	1.34	i	w	0.1	w	i	w	<191.16	1.2	<0.32	0.29	<0.05	<0.79	w	0.06	II
Bømlo-Sotra area	1	1	w	1.79	w	1.18	i	w	0.16	w	i	w	w	w	<0.23	0.03	<0.05	<0.73	w	0.29	II
Outer Ranfjord, Helgeland	1	2	w	0.49	w	0.72	i	w	0.04	w	i	w	w	w	<0.15	0.03	<0.05	<0.05	w	w	I
Lofoten area	1	3	w	1.09	w	1.07	i	w	0.08	w	i	w	w	w	<0.18	0.09	<0.05	<0.35	w	0.05	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	1.02	w	1.59	i	w	0.05	w	i	w	w	w	<0.15	0.05	<0.05	<0.18	w	w	I

I	44
II	4
III	0
IV	0
V	0

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