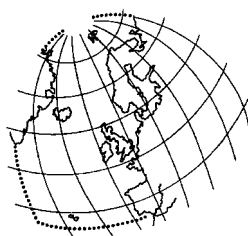


Synergies in Assessment and Monitoring between OSPAR and the European Union

**Analysis of synergies in assessment and monitoring of
hazardous substances, eutrophication, radioactive substances
and offshore industry in the North-East Atlantic**

Volume I



OSPAR Commission

2005

The Convention for the Protection of the Marine Environment of the North-East Atlantic (the “OSPAR Convention”) was opened for signature at the Ministerial Meeting of the former Oslo and Paris Commissions in Paris on 22 September 1992. The Convention entered into force on 25 March 1998. It has been ratified by Belgium, Denmark, Finland, France, Germany, Iceland, Ireland, Luxembourg, Netherlands, Norway, Portugal, Sweden, Switzerland and the United Kingdom and approved by the European Community and Spain.

La Convention pour la protection du milieu marin de l'Atlantique du Nord-Est, dite Convention OSPAR, a été ouverte à la signature à la réunion ministérielle des anciennes Commissions d'Oslo et de Paris, à Paris le 22 septembre 1992. La Convention est entrée en vigueur le 25 mars 1998. La Convention a été ratifiée par l'Allemagne, la Belgique, le Danemark, la Finlande, la France, l'Irlande, l'Islande, le Luxembourg, la Norvège, les Pays-Bas, le Portugal, le Royaume-Uni de Grande Bretagne et d'Irlande du Nord, la Suède et la Suisse et approuvée par la Communauté européenne et l'Espagne.

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contents

Executive Summary	5
Récapitulatif.....	6
1. Introduction	7
1.1 The OSPAR Joint Assessment and Monitoring Programme	7
1.2 Relevant EU policies and legislation	8
1.3 Analysis of synergies.....	10
2. Hazardous Substances.....	11
2.1 Synergies in objectives.....	11
2.2 Synergies in the selection of hazardous substances	13
2.3 Synergies in the monitoring of hazardous substances in the aquatic environment.....	14
2.4 Synergies in monitoring guidelines	17
2.5 Synergies in assessment of hazardous substances in the marine environment	19
2.6 Synergies in source monitoring and assessment	24
2.7 Synergies in reporting schedules	25
2.8 Conclusions.....	26
3. Eutrophication	27
3.1 Synergies in objectives.....	27
3.2 Synergies in the definition of eutrophication	28
3.3 Synergies in monitoring for eutrophication.....	31
3.4 Synergies in monitoring guidelines for eutrophication	35
3.5 Synergies in eutrophication assessment	35
3.6 Synergies in input and source monitoring for nutrients and related guidelines	39
3.7 Synergies in reporting	41
3.8 Conclusions.....	41
4. Radioactive Substances.....	42
4.1 Synergies in objectives.....	42
4.2 Synergies in monitoring and reporting of discharges and emissions of radioactive substances	42
4.3 Synergies in marine monitoring and related guidelines	45
4.4 Synergies in assessment criteria and assessments	45
4.5 Conclusion.....	46
5. Offshore oil and gas industry	46
5.1 Synergies in objectives.....	46
5.2 Synergies in monitoring.....	48
5.3 Synergies in monitoring guidelines	48
5.4 Synergies in assessment	49
5.5 Synergies in reporting schedules	49
5.6 Conclusion.....	50

Annex 1	Comparative List of Hazardous Substances covered by the OSPAR List of Chemicals for Priority Action and the Annexes IX and X of the Water Framework Directive
Annex 2	Comparison of Monitoring for Hazardous Substances under the OSPAR Convention and the Water Framework Directive
Annex 3	Glossary and References

List of Tables

Table 1	JAMP guidelines for monitoring hazardous substances
Table 2	Assessment products under the JAMP (theme H) for hazardous substances
Table 3	Comparison of OSPAR assessment criteria (EACwater) and environmental quality standards for coastal, transitional and territorial waters (AA-QS) proposed by the material for the development of a WFD Daughter Directive
Table 4	Combined reporting schedule for monitoring and assessment on hazardous substances under the JAMP and EC legislation
Table 5	Comparison of WFD plant-related biological quality elements for the classification of the ecological status as “good” and “moderate”
Table 6	Holistic checklist for the assessment of eutrophication
Table 7	Synergies in monitoring requirements under the OSPAR Eutrophication Strategy and EC legislation
Table 8	Harmonised assessment parameters and related elevated levels
Table 9	Examples of the integration of categorised assessment parameters for an initial classification
Table 10	Ecological quality elements, and their related ecological quality objectives, for eutrophication
Table 11	Assessment products under the JAMP (theme E) for eutrophication
Table 12	Information collected by OSPAR on (groups of) radionuclides
Table 13	Data on determinands covered by Commission Recommendation 2004/2/Euratom
Table 14	Assessment products under the JAMP (theme R) for radioactive substances
Table 15	Assessment products under the JAMP (theme O) for the offshore oil and gas industry

Executive Summary

This report is a stocktaking and comparative analysis of the requirements in the OSPAR and the EU framework for monitoring and assessing hazardous substances, eutrophication, radioactive substances and offshore activities in the marine environment. It aims at identifying overlaps and interactions of, and future possibilities for synergies in, monitoring and assessment activities in both forums. A similar analysis relating to biodiversity is still ongoing, the results of which will be published as Volume II of this report.

OSPAR has set up numerous programmes, activities and tools to monitor and assess the quality of the marine environment and the progress on the implementation of its five thematic Strategies. For a number of monitoring and assessment activities detailed guidance has been developed to harmonise national practices. In particular under the Hazardous Substances Strategy and the Eutrophication Strategy an elaborate and harmonised monitoring and assessment regime exists.

With the Water Framework Directive (WFD) and the development of a European Marine Strategy, the European Community extended and deepened its existing engagement in monitoring and assessment of waters also covered by the OSPAR Convention. Mainly the activities under the Water Framework Directive to implement the monitoring and assessment requirements for the chemical and ecological status of bodies of surface water may overlap with OSPAR activities or give opportunities for synergies in both forums.

The scope of synergy varies considerably for each of the thematic OSPAR Strategies. With regard to radioactive substances and offshore activities, little, if any, monitoring and assessment activities exist in the European Community. On the other hand, monitoring for hazardous substances and eutrophication, and related assessment requirements, are also substantially detailed in the European Community and partly coincide with OSPAR requirements. It is, however, important to recall that any synergy is restricted to the limited overlap in geographical coverage of marine waters to which OSPAR Strategies and EC legislation, in particular the Water Framework Directive, apply.

With regard to hazardous substances, considerable differences exist in monitoring and assessment requirements which rather suggest that activities in OSPAR and the European Community complement each other than overlap. Differences exist for example in the selection of those substances to which the comparable OSPAR and WFD objectives apply; in the monitoring targets which in OSPAR go beyond quality status monitoring by including the analysis of inputs, their trends and their biological effects; or in defining assessment criteria which as environmental quality standards under the WFD serve as operational objectives for the classification of a water body whereas in OSPAR criteria are used to describe the extent to which the environmental quality falls short of the objectives set.

Although monitoring for marine eutrophication is not explicitly mentioned in the Urban Waste Water Treatment Directive, the Nitrates Directive or the Water Framework Directive there is broad agreement with OSPAR on the main parameters for monitoring and for assessment. There are further opportunities for approximating monitoring and assessment methodologies. Co-operation between OSPAR and the European Community in this sector has proved to be efficient in the past and will continue, for example, in the context of OSPAR's work on ecological quality objectives for eutrophication.

Concerning radioactive substances, few monitoring activities exist under the Euratom Treaty. They are restricted to emissions and discharges of radioactive substances from nuclear facilities. Whereas initiatives have been taken to ensure synergies in these specific activities in OSPAR and the EU, no further overlaps exist with OSPAR work relating to monitoring and assessment of emissions, discharges and losses of radioactive substances from other activities such as for example nuclear-fuel fabrication, enrichment plants, or the nuclear research and development facilities.

Finally for the offshore oil and gas industry and its impact on the marine environment, no overlap exists in the European Union with OSPAR monitoring and assessment activities. In the course of the further development and implementation of the Water Framework Directive, a need for synergies might emerge in future with regard to monitoring and assessing the discharge of substances and their effects on the biodiversity in the vicinity of offshore installations.

Récapitulatif

Le présent rapport est une analyse de la situation et une analyse comparative des impératifs de surveillance et d'évaluation des substances dangereuses, de l'eutrophisation, des substances radioactives et des activités offshore dans le milieu marin dans le cadre d'OSPAR et de l'Union européenne. Il a pour but de définir les chevauchements et les interactions entre les activités de surveillance et d'évaluation dans les deux instances, ainsi que les possibilités de synergie entre ces activités. Une analyse analogue est encore en cours dans le domaine de la biodiversité, dont les résultats seront publiés sous la forme du Volume II du présent rapport.

OSPAR a mis sur pied de nombreux programmes et activités et créé de nombreux outils afin de surveiller et d'évaluer la qualité du milieu marin ainsi que la progression de la mise en œuvre de ses cinq stratégies thématiques. Dans le cas de plusieurs activités de surveillance et d'évaluation, des orientations détaillées ont été élaborées afin d'harmoniser les pratiques nationales. Notamment, la Stratégie visant les substances dangereuses et la Stratégie visant l'eutrophisation font l'objet d'un régime harmonisé de surveillance et d'évaluation.

Avec la Directive cadre relative à l'eau et l'élaboration de la Stratégie marine européenne, la Communauté européenne a élargi et approfondi son engagement actuel dans le domaine de la surveillance et de l'évaluation d'eaux qui sont également couvertes par la Convention OSPAR. Surtout, les activités réalisées en vertu de la Directive cadre relative à l'eau afin de concrétiser les exigences de surveillance et d'évaluation de l'état chimique et écologique des corps aquatiques de surface empiètent sur les activités d'OSPAR ou offrent des possibilités de synergie dans les deux instances.

L'ampleur de la synergie varie considérablement selon les stratégies thématiques d'OSPAR. Dans le domaine des substances radioactives et des activités offshore, il n'y a guère, voire aucune, activité de surveillance et d'évaluation qui soit exercée par la Communauté européenne. En revanche, la surveillance des substances dangereuses et de l'eutrophisation, ainsi que les impératifs correspondants d'évaluation, sont très détaillés dans la Communauté européenne et coïncident en partie avec les exigences d'OSPAR. Il est cependant important de rappeler que toute synergie est restreinte au chevauchement limité de la couverture géographique des eaux marines auxquelles s'appliquent les stratégies d'OSPAR et la législation communautaire, notamment la Directive cadre relative à l'eau.

En ce qui concerne les substances dangereuses, il existe des différences considérables entre les exigences de surveillance et d'évaluation, différences qui donnent à penser que les activités d'OSPAR et celles de la Communauté européenne se complètent plutôt qu'empiètent les unes sur les autres. Il existe des différences, par exemple, dans la sélection des substances auxquelles s'appliquent les objectifs pourtant comparables d'OSPAR et de la Directive cadre relative à l'eau ; dans les objectifs de la surveillance qui, chez OSPAR, vont au-delà de la surveillance de la qualité, ceci car ils comportent l'analyse des apports, de leurs tendances et de leurs effets biologiques ; dans la définition des critères d'évaluation qui, comme normes de qualité de l'environnement dans le contexte de la Directive relative à l'eau servent d'objectifs opérationnels de classement d'un corps aquatique tandis que les critères OSPAR servent à décrire la mesure dans laquelle la qualité de l'environnement est inférieure aux objectifs fixés.

Bien que la surveillance de l'eutrophisation du milieu marin ne soit pas explicitement mentionnée dans la Directive relative au traitement des eaux usées urbaines, dans la Directive relative aux nitrates ni dans la Directive cadre relative à l'eau, il existe dans les grandes lignes un accord avec OSPAR sur les principaux paramètres de la surveillance et de l'évaluation. Il existe d'autres possibilités de rapprochement des méthodes de surveillance et d'évaluation. Dans ce secteur, la coopération entre OSPAR et la Communauté européenne s'est avérée efficace par le passé et se poursuivra, par exemple dans le contexte des travaux d'OSPAR sur les objectifs de qualité écologique applicables à l'eutrophisation.

En ce qui concerne les substances radioactives, peu d'activités de surveillance sont exercées en vertu du Traité Euratom. Elles se limitent aux émissions et aux rejets de substances radioactives provenant des installations nucléaires. Bien que des initiatives aient été prises pour parvenir à des synergies dans ces activités spécifiques d'OSPAR et de l'Union européenne, il n'existe pas d'autre chevauchement avec le travail effectué par OSPAR dans le domaine de la surveillance et de l'évaluation des émissions, des rejets et des pertes de substances radioactives dus à d'autres activités, telles par exemple que la fabrication du combustible nucléaire, les usines d'enrichissement, ou les installations de recherche et développement du nucléaire.

Enfin, en ce qui concerne l'industrie pétrolière et gazière offshore et son impact sur le milieu marin, il n'existe pas de chevauchement entre les travaux de l'Union européenne et les activités de surveillance et d'évaluation d'OSPAR. Au fil de la poursuite du développement et de l'application de la Directive cadre relative à l'eau, une nécessité de synergie se fera peut-être jour dans la surveillance et l'évaluation des rejets de substances et de leurs effets sur la biodiversité au voisinage des installations offshore.

1. Introduction

This analysis provides a factual guide to synergies in assessment and monitoring in the OSPAR and EU framework for all those involved in these activities in OSPAR Contracting Parties. It also shows opportunities for further synergies where these do not yet exist. Subject to this analysis are monitoring and assessment requirements in OSPAR instruments (in particular under the JAMP) and EC legislation which may overlap or interact.

1.1 The OSPAR Joint Assessment and Monitoring Programme

The main objective of the 2003 OSPAR Strategy for a Joint Assessment and Monitoring Programme (JAMP) is to provide arrangements for preparing periodic assessments of the environmental quality status of the OSPAR Convention area and for progress assessments on the implementation of the five thematic OSPAR Strategies (reference number: 2003-21):

- a. the Biological Diversity and Ecosystems Strategy;
- b. the Eutrophication Strategy;
- c. the Hazardous Substances Strategy;
- d. the Offshore Oil and Gas Industry Strategy, and;
- e. the Radioactive Substances Strategy.

The JAMP provides the framework for OSPAR Contracting Parties to meet their obligations under Annex IV to the OSPAR Convention. This is to cooperate in carrying out monitoring programmes, developing quality assurance methods, enhancing scientific knowledge and understanding by research, ensuring data collection and providing assessment tools. To this end, it encompasses the repeated measurement and assessment of the marine environment and each of its compartments, of natural and anthropogenic inputs which may affect the quality of the marine environment, and of the effects of such activities and inputs.

OSPAR may be considered to take an “integrated approach” to monitoring in terms of comprising monitoring of substances in water, sediments and biota, as well as the measurement of biological effects of contaminants and other substances such as nutrients, and monitoring of impacts on the marine environment due to other human activities.

OSPAR has set up the following three general monitoring programmes for selected hazardous substances and nutrients which form part of the wider JAMP and are of particular importance to the present analysis:

- a. the *Coordinated Environmental Monitoring Programme (CEMP)* can be described as that part of monitoring under the JAMP where the national contributions overlap and are co-ordinated. It covers temporal trend and spatial monitoring programmes for concentrations of selected chemicals and nutrients and for biological effects;
- b. the *Comprehensive Atmospheric Monitoring Programme (CAMP)*, first adopted in 1989, covers monitoring at coastal stations of the concentrations of selected contaminants (including nitrogen) in precipitation and air and their depositions in order to annually assess the atmospheric inputs of these contaminants to the OSPAR Convention area and to determine long-term trends of such inputs. The programme makes a distinction between the mandatory monitoring of certain substances and the voluntary monitoring of other selected substances.
- c. the *Comprehensive Study on Riverine Inputs and Direct Discharges (RID)*, first adopted in 1988, was set up to assess, on an annual basis, all riverborne and direct inputs of selected contaminants (including nutrients) to the OSPAR Convention area and to determine the long-term trends of such inputs. The programme distinguishes between substances to be monitored on a mandatory basis and those recommended for voluntary monitoring.

In addition to these general programmes, Contracting Parties are committed to report data under specific OSPAR measures (Decisions or Recommendations), and to submit data under specific monitoring agreements which exist under the five thematic OSPAR Strategies. The latter category includes for example:

- a. for *hazardous substances*, the Agreement on Monitoring Strategies for Substances on the OSPAR List of Chemicals for Priority Action (reference number: 2004-14);
- b. for *eutrophication*, the Agreement on a Eutrophication Monitoring Programme (reference number: 2005-4), or;

- c. for *radioactive substances*, the Agreement on a Monitoring Programme for Concentrations of Radioactive Substances in the Marine Environment (reference number: 2005-8).

The assessment of the data collected under OSPAR monitoring programmes and activities is co-ordinated by the JAMP. It outlines a number of assessment products and their timeframe for each thematic OSPAR Strategy. These products support the overall assessment, in 2010, of the quality of the OSPAR maritime area and of its regions (JAMP product AA-2).

The OSPAR Convention area is defined as “extending westwards to the East coast of Greenland, eastwards to the continental North Sea coast, South to the Straits of Gibraltar and northwards to the North Pole” (see Figure 1). This area is basically the North-East Atlantic Ocean and does not include the Baltic Sea or the Mediterranean Sea. It has been divided into five regions for assessment purposes: Arctic Waters (Region I), Greater North Sea (Region II), the Celtic Seas (Region III), the Bay of Biscay and the Iberian Coast (Region IV) and the Wider Atlantic (Region V).

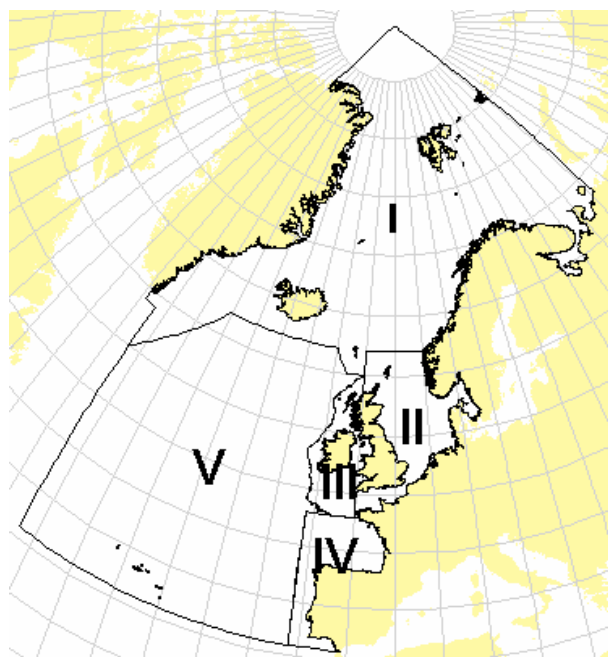


Figure 1 OSPAR maritime area and regions: I: Arctic waters, II: Greater North Sea, III: Celtic Seas, IV: Bay of Biscay, V: Wider Atlantic

1.2 Relevant EU policies and legislation

1.2.1 EU water policies

Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishes a framework for Community action in the field of water policy (the “Water Framework Directive”/WFD). It successively repeals and supersedes a number of acts previously adopted under EU water policies such as for example the “Dangerous Substances Directive” (76/464/EEC) or the “Shellfish Water Directive” (79/923/EEC) which are relevant for the present analysis.

Other existing Directives continue to cover some aspects of the protection of the water environment and to complement the Water Framework Directive under which they act as instruments for implementing measures set by the WFD. These include for example the following Community acts with relevance for synergies in monitoring and assessment of marine waters: source-related legislation such as the “Urban Waste Water Treatment Directive” (91/271/EEC) or the “Nitrates Directive” (91/676/EEC) or legislation on the quality of specific water bodies like the “Bathing Water Directive” (76/160/EEC). The Water Framework Directive requires the European Parliament and the Council to adopt further specific measures against the pollution of surface water by individual (groups of) pollutants. Currently, a proposal for a “WFD Daughter Directive” on priority substances for surface water is presently under preparation by the European Commission.

Finally, new policies are being developed in order to bring together under a European Marine Strategy the current piecemeal approach to the protection of the marine environment set out in a variety of policies, legislation, programmes and action plans.

a. Water Framework Directive

Monitoring and assessment under the Water Framework Directive aims at evaluating progress made towards the objective to achieve, by 2015, “good surface water status”. This is the status obtained by a surface water body when both its ecological status and its chemical status are at least “good” in accordance with Annex V to the WFD. To this end, the monitoring is designed to provide a coherent and comprehensive overview of the ecological and chemical status within each river basin and to enable classification of water bodies into five assessment classes for defined biological components and two classes for hazardous substances. The WFD identifies three types of monitoring:

- a. *Surveillance monitoring*: This is intended to provide information for the assessment of the status of a river basin and information for the development of future monitoring programmes, and serves to monitor long-term changes in natural conditions and anthropogenic changes resulting from human activities.

- b. *Operational monitoring*: This is undertaken to assess the status of water bodies that are “at risk of failing to meet the environmental objectives” and to assess changes resulting from programmes of measures.
- c. *Investigative monitoring*: This should be carried out if reasons for failure to meet the objective of good status cannot be determined by surveillance and operational monitoring alone.

Member States are required to adopt surveillance and operational monitoring programmes; investigative monitoring programmes need to be established only in certain cases. By this three-tiered approach to monitoring, the WFD ensures that monitoring efforts correlate to the status of a water body. This means that more polluted water bodies require more monitoring, and water bodies without anthropogenic pressures require less monitoring.

The river basin district, or international river basin district, is the central reporting unit for Member States. For management purposes, as well as for monitoring and assessment, river basins are split into a succession of sub-units: the categories (groundwater, rivers, lakes, transitional and coastal waters), which are subdivided into ecologically relevant “types” of waters. These types can be further subdivided for management purposes into “water bodies”. Surveillance monitoring is required for each water body. Operational monitoring shall be carried out for all those bodies of surface water which are identified as being at risk of failing to meet their environmental objectives, and for those bodies of surface water into which priority list substances are discharged. The extent of the WFD’s geographical coverage of territorial waters (up to 12 nm seaward of the baseline) for the purpose of monitoring progress towards achieving “good surface water chemical status” is disputed beyond the seaward boundary of coastal waters (1 nm seaward of the baseline).¹

Under the Common Implementation Strategy (CIS) set up to support the implementation of the Water Framework Directive, various activities have been launched by the European Commission which are relevant for monitoring and assessment and partly have already produced first results. These include, for example:

- a. Working Group on “Typology and classification of transitional and coastal waters” (COAST) which, by 2002, had developed guidance on the typology, reference conditions and classification systems for transitional and coastal waters under the WFD (the “COAST Guidance”);
- b. Working Group on “Monitoring” which had developed, by 2003, guidance on monitoring of water bodies under the WFD (the “WFD Monitoring Guidance”);
- c. Under Working Group A, a “eutrophication activity” is entrusted with the elaboration of guidance on the assessment of the eutrophication status of water bodies under the WFD;
- d. Working Group D “Reporting” which, based on the EC’s concept paper on “Reporting for water – Concept Report: Towards a Shared Water Information System for Europe (WISE)”, has the mandate, in a first step, to prepare guidelines on the transmission and processing of information and data gathered in the frame of the WFD and, in a second step, to extend this approach to other reporting obligations under EU water policies;
- e. the recently founded Working Group “Chemical Monitoring Activity” which will operate under the umbrella of both the Working Group C (Groundwater) and the future Working Group E (Priority Substances) (currently Expert Advisory Forum on Priority Substances) and will link to the EMS Working Group EMMA with the purpose of ensuring coherent monitoring of the chemicals status of surface and groundwater under the WFD and its future “WFD Daughter Directives”. This includes coordination of information collection and the development of guidelines and technical guidance for monitoring.

b. European Marine Strategy

Following-on the commitment of the EU’s 6th Environment Action Programme, the European Commission adopted in 2002 Communication COM(2002) 539 final “Towards a strategy to protect and conserve the marine environment”. This forms the starting point for a Thematic Strategy for the Protection and Conservation of the European Marine Environment (the “European Marine Strategy”) with the overall aim “to promote sustainable use of the seas and conserve marine ecosystems”. The Strategy, which is to be seen within the broader context of the development of a new EU Maritime Policy, is presently under preparation in the European Commission with a view to its adoption later in 2005. For the analysis, therefore, only the

¹ The baseline for measuring the breadth of the territorial waters and the coastal waters under the Water Framework Directive is normally the low-water line along the coast, unless straight baselines, cutting across the open water of river mouths, bays, or indented coastlines, may be employed in accordance with the United Nations Convention on the Law of the Sea.

material presented by the European Commission for discussion at the Second Stakeholder Conference on the Development of a European Marine Strategy held in Rotterdam, 11-12 November 2004 (hereinafter referred to as the “EMS material”) was available for consideration.

According to the EMS material, implementation plans containing programmes for monitoring and assessment should be developed within 5 years of the adoption of the Strategy. This includes monitoring and assessment, for example, of contaminants and nutrients in the marine environment. Currently, the EMS Working Group on Marine Monitoring and Assessment (EMMA) is preparing a roadmap for the development of these monitoring and assessment programmes. In the development of this roadmap, the monitoring and assessment programmes and activities carried out under the regional marine conventions such as OSPAR are taken into account.

1.2.2 Integrated pollution prevention and control

Among other EC measures relevant for monitoring and assessment of the pollution of the marine environment is Council Directive 96/61/EC concerning integrated pollution prevention and control (the “IPPC Directive”). It includes reporting obligations relating to point source emissions of pollutants and nutrients to air and water. For the purpose of collecting such data and establishing an inventory of emissions from large industrial installations, the European Pollutant Emission Register (EPER) was set up by Commission Decision 2000/479/EC. The reported data will be made accessible through this public register. The EPER can be considered as first step towards the development of a fully integrated pollutant release and transfer register (PRTR) for Europe which is expected to go online in 2009. Thereby, the European Community will ensure implementation of its commitments under the UNECE Protocol on Pollutant Release and Transfer Registers adopted under the Aarhus Convention in 2003. The Protocol is the first legally binding international instrument on inventories of pollution from industrial sites and other sources.

1.3 Analysis of synergies

In the period 2003–2005, an analysis was prepared by OSPAR and its subsidiary bodies on synergies in assessment and monitoring between the OSPAR Joint Assessment and Monitoring Programme (JAMP), on the one hand, and EC legislation, on the other hand.

The results of the analysis are presented in:

- chapter 2 for hazardous substances (JAMP theme H)
- chapter 3 for eutrophication (JAMP theme E)
- chapter 4 for radioactive substances (JAMP theme R)
- chapter 5 for the offshore industry (JAMP theme O)

Work on the analysis of synergies in monitoring and assessment relating to biodiversity will continue in the 2005–2006 intersessional period. Its results will be published as Volume II of this synergy analysis.

All thematic chapters analyse synergies by following the same structure addressing:

- Objectives
- Monitoring (in the marine environment)
- Monitoring guidelines
- Assessment
- Monitoring of sources/discharges
- Reporting schedules

In addition, chapter 2 on hazardous substances also addresses synergies in the selection of hazardous substances. Chapter 3 on eutrophication also addresses synergies in definitions of eutrophication.

In each chapter, the thematically relevant OSPAR instruments and EU requirements are described and, subsequently, compared.

The glossary at Annex 3 gives the definition of terms specifically used in the context of OSPAR or EU instruments and provides references, and direct web links, to key documents referred to in this analysis.

2. Hazardous Substances

2.1 Synergies in objectives

2.1.1 OSPAR objectives with regard to hazardous substances

The 2003 OSPAR Hazardous Substances Strategy sets out the Commission's objectives with regard to hazardous substances as follows:

"In accordance with the general objective, the objective of the Commission with regard to hazardous substances is to prevent pollution of the maritime area by continuously reducing discharges, emissions and losses of hazardous substances, with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.

OSPAR will implement the Hazardous Substances Strategy progressively by making every endeavour to move towards the target of the cessation of discharges, emissions and losses of hazardous substances by the year 2020."

2.1.2 EC objectives with regard to hazardous substances

There are a number of policies and legislation at Community level which address, and set objectives for, hazardous substances such as: Council Directive 76/769/EEC on the approximation of the laws, regulations and administrative provisions of the Member States relating to restrictions on the marketing and use of certain dangerous substances and preparations; or Council Directive 91/414/EEC concerning the placing of plant protection products on the market. The following analysis focuses, however, on policies and legislation which directly address hazardous substances in the aquatic environment.

The EC's objectives with regard to hazardous substances in the aquatic environment are mainly detailed in:

- a. Council Directive 76/464/EEC on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (the "Dangerous Substances Directive");
- b. Directive 2000/60/EC establishing a framework for Community action in the field of water policy (the "Water Framework Directive"/WFD);
- c. the EMS material for the development of a European Marine Strategy.

a. *Dangerous Substances Directive*

The Dangerous Substances Directive is the first Community instrument to set objectives relating to hazardous substances in the aquatic environment. It sets up two lists of substances at its Annex. 17 of the "List I substances" are regulated by specific Directives (the "daughter Directives"). The quality standards for "List II substances" are not harmonised at Community level; no specific legislation was adopted for them.

Directive 76/464/EEC will be repealed by the Water Framework Directive with effect from 2013. According to Annex IX to the WFD, the emission limit values and quality objectives established by the daughter Directives for the "List I substances" shall be considered as emission limit values and environmental quality standards for the purposes of the WFD (cf. Articles 2(24), 4(1), 16(10) and 22(4) of the WFD). The 17 (groups of) substances addressed in the daughter Directives are listed in the fourth column of the table at Annex 1 to this document. The requirements set by Directive 76/464/EEC for "List II substances" are/will be covered by the WFD. The WFD requires that the environmental objectives established under river basin management plans shall, as a minimum, give effect to quality standards at least as stringent as those required to implement Directive 76/464/EEC (cf. transitional provisions in WFD, Articles 22(2), 22(3), 22(4), 22(6)).

b. *Water Framework Directive*

The Water Framework Directive establishes a framework for the protection of all European waters, including inland surface waters, transitional waters, coastal waters and groundwater. Its environmental objectives are, *inter alia*:

- a. the prevention of further deterioration of the present status of all surface and ground water bodies;
- b. a good chemical and good ecological status for all surface and ground water bodies within 15 years (2015). This includes:
 - (i) coastal waters (1 nm): good ecological status;

- (ii) territorial waters (12 nm): good chemical status²;
- c. a good chemical status and maximum ecological potential for all artificial and “heavily modified water bodies” within 15 years (2015);
- d. a progressive reduction of emissions, discharges and losses of “Priority Substances” (PS) (listed in Annex X);
- e. the phasing out of emissions, discharges and losses of “Priority Hazardous Substances” (PHS) (substances identified in accordance with Article 16(3) and (6) for which measures have to be taken in accordance with Article 16(1) and (8) of the WFD);
- f. the progressive reduction of pollution of ground water and prevention of its further pollution;
- g. to achieve compliance with any standards and objectives for protected areas established under Community legislation by 2015, and;
- h. several less stringent objectives or time schedules in specific cases.

The WFD’s objective of a “good chemical status” refers to all substances for which environmental quality objectives have been or are being formulated at Community level. These include the substances on the list of priority substances (Annex X to the WFD, see Annex 1 of this document) and “List I substances” at the Annex to the Dangerous Substances Directive for which environmental quality standards have been set by its daughter Directives (listed at Annex IX to the WFD see Annex 1 of this document).

The WFD’s objective of a “good ecological status” also requires certain chemical conditions. The chemical requirements include the achievement of environmental quality objectives for discharged priority substances and for any other substances liable to cause pollution and identified as being discharged in significant quantities. These other “pollutants” are referred to in the indicative list of main pollutants of Annex VIII to the WFD. According to generally accepted interpretations, these pollutants do not refer to the priority substances and the substances of Annex IX to the Directive (for which quality objectives are/will be set at Community level), but any other substances that may be important to a Member State or river basin authority, potentially including the “List II substances” of Directive 76/464/EEC. Within this scope, substances may be considered “important” if significant quantities are discharged into (sub-)basins. The river basin authorities are responsible for selecting relevant substances in each river basin district.

The European Commission is presently preparing a first proposal for a WFD Daughter Directive on priority substances for surface water concerning the substances listed in Annex X of the WFD with the aim to progressively reduce discharges, emissions and losses of priority substances and to cease or phase-out discharges, emissions and losses of priority hazardous substances. The goal is to achieve these objectives within 20 years from the adoption of the WFD Daughter Directive and to achieve “good chemical status” for surface water by 2015. The WFD Daughter Directive will set up environmental quality standards for priority substances but it is not clear whether it will also include measures to control their emissions.

c. *European Marine Strategy*

Finally, the EMS material presented by the European Commission for the development of a European Marine Strategy states the following strategic goal for pollution:

“To phase out pollution in the marine environment so as to ensure that there are no significant impacts or risk to human and/or on ecosystem health and/or on uses of the sea.”

To achieve this strategic goal for pollution, a set of objectives has been proposed – one of the objectives (*i.e.* proposed objective 5) relates directly to hazardous substances. It reads as follows:

“To progressively reduce discharges, emissions and losses of substances hazardous to the marine environment with the ultimate aim to reach concentrations of such substances in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.”

2.1.3 Comparison of objectives

The objectives set by OSPAR for substances on the OSPAR List of Chemicals for Priority Action, by the WFD for the priority hazardous substances at its Annex X, and by the EMS material relating to hazardous

² According to Article 2(1) of the Water Framework Directive and the related monitoring guidance for territorial waters, a combination of Articles 2(24) and 2(10) of the WFD implies that territorial waters are not part of a water body and therefore not addressed by the requirement of good surface water chemical status. So far, no monitoring obligations have been specified for territorial waters.

substances are comparable where they relate to releases to, and concentrations in, the marine environment. Differences exist, however, with regard to the selection of substances to which these objectives shall apply (see section 2.2 below).

2.2 Synergies in the selection of hazardous substances

2.2.1 OSPAR selection process

In response to its Hazardous Substances Strategy, the OSPAR Commission established a dynamic selection and prioritisation mechanism (DYNAMEC) in 2000 to select those hazardous substances which should be given priority in OSPAR work. Hazardous substances are defined as substances (or groups of substances) that are persistent, liable to bioaccumulate and toxic (PBT), or give rise to an equivalent level of concern e.g. through synergistic effects or degradation into hazardous substances. The selection is based on the intrinsic properties of substances. The PBT criteria, as well as the related cut-off values used for the selection of chemicals for priority action, are laid down in the OSPAR Agreement on cut-off values. The chemicals selected so far by OSPAR can be found in the OSPAR List of Chemicals for Priority Action and are presented in the second column of the table in Annex 1 to this document.

OSPAR also agreed on a methodology for marine risk assessment. This was developed in cooperation with the EC and is now part of the EC Technical Guidance on Risk Assessment (the "Technical Guidance Document"/TDG). In addition, OSPAR agreed on guidance with respect to the role of risk assessment within OSPAR which, in a nutshell, can be summarised as follows: The results of risk assessments do not determine whether a substance is a hazardous substance (as this is only based on PBT criteria) but they are a tool for setting priorities in actions/measures to be taken.

2.2.2 EC selection processes

Within the EU system, various assessment processes exist with regard to hazardous substances and their intrinsic properties. The relevant EC initiatives include:

- a. the Combined Monitoring-based and Modelling-based Prioritisation Setting (COMMPS) procedure used for the purposes of the Water Framework Directive;
- b. the EC Existing Substances Regulation (EEC/793/93);
- c. the EC Interim PBT Strategy and the proposal for a Regulation on Registration, Evaluation and Authorisation of Chemicals (REACH) procedure for the purposes of the EC Chemicals Strategy;
- d. the EC Directives on cosmetics (76/768/EEC), biocides (98/8/EC), pesticides (91/414/EEC), pharmaceuticals (2001/83/EC) and veterinary medicines (2001/82/EC).

The progress in developing a European Marine Strategy has not yet resulted in a proposal for a selection methodology or a selection of hazardous substances to which the objective 5 of the EMS material referred to under section 2.1.2 (c) would be applicable.

None of the assessment and selection processes within the EU are fully equal to the OSPAR PBT assessment. In some instances, the PBT criteria are defined in the same way and only the cut-off values differ from the OSPAR PBT assessment. In other cases, the specific needs of the marine environment are not taken into account in EU assessments.

The substances so far selected as priority, or priority hazardous, substances under the WFD on the basis of the COMMPS procedure (Annex X) are listed in the third column of the table in Annex 1 to this document. According to Article 16 of the WFD, the list of priority substances at its Annex X shall be reviewed at the latest four years after the entry into force of the WFD and at least every four years thereafter. The first review started in 2005.

2.2.3 Comparison of selection processes

In the 2003/2004 intersessional period, OSPAR undertook a study on the extent to which risk assessments under the EC Directives on cosmetics, biocides, pesticides, pharmaceuticals and veterinary medicines take account of risks to the marine environment. This study resulted in an overview of overlaps and gaps which existed with regard to various selection and assessment processes in the framework of OSPAR and the EC. The study addressed especially the extent to which the assessments do take into account the special needs of the marine environment defined by the OSPAR PBT criteria. Further actions had been identified by OSPAR 2004 to address the gaps and to improve coordination and cooperation in this area between OSPAR and the EC. These were confirmed and brought forward by OSPAR 2005.

As the selection processes are different in both forums, the resulting lists of hazardous substances to which the agreed objectives apply, differ as well. The table in Annex 1 compares the present OSPAR List of Chemicals for Priority Action with the present WFD list of priority substances and of priority hazardous substances.

2.3 Synergies in the monitoring of hazardous substances in the aquatic environment

2.3.1 Monitoring of hazardous substances under the OSPAR Convention

a. General

The purpose of monitoring hazardous substances under the JAMP is to contribute to the assessment of the health of the marine environment and to measure progress towards the objectives of the Hazardous Substances Strategy with the ultimate aim of achieving concentrations of hazardous substances in the marine environment near background or zero. Monitoring may be undertaken either for the purposes of ensuring compliance with the OSPAR Convention, including making assessments of the quality status of the whole maritime area (or parts of it), or with the objective of identifying patterns and trends, or for research purposes.

OSPAR monitoring activities relating to hazardous substances are mainly carried out in the framework of the three general monitoring programmes: CEMP, CAMP and RID (further explained in section 1.1). Only a very limited number of the substances on the OSPAR List of Chemicals for Priority Action are presently covered by these OSPAR monitoring programmes. In order to assess whether the objectives of the Hazardous Substances Strategy have been achieved for priority chemicals, relevant information is necessary on the use of, pathways to, and concentrations and effects of, these chemicals in/to the marine environment. Therefore, OSPAR 2003 agreed that monitoring strategies for the substances (or groups of substances) on the OSPAR List of Chemicals for Priority Action should be developed. The term “monitoring strategy” is not focused solely on what Annex IV to the OSPAR Convention defines as “monitoring” (the repeated measurement of aspects of the marine environment), but covers all other forms of information collection that are relevant to assessing progress towards the cessation target of the OSPAR Hazardous Substances Strategy.

A first set of monitoring strategies for 19 substances was agreed by OSPAR 2004, followed by a second set of monitoring strategies for five substances in 2005. Monitoring strategies for the remaining chemicals on the list will be developed in the following years. To implement these monitoring strategies, OSPAR 2004 adopted the Agreement on Monitoring Strategies for OSPAR Chemicals for Priority Action which was updated by OSPAR 2005. The agreement addresses the full range of monitoring, encompassing monitoring of production, use, point and diffuse sources, inputs and concentrations and effects in the marine environment.

b. Monitoring programmes in detail

The general monitoring programmes comprise the monitoring for selected hazardous substances:

- a. the Co-ordinated Environmental Monitoring Programme (CEMP) requires mandatory annual data on concentrations, trends and biological effects of selected substances in the marine environment including heavy metals, PAHs, PCBs and organotins;
- b. the Comprehensive Atmospheric Monitoring Programme (CAMP) collects mandatory annual data from a network of coastal stations on atmospheric inputs of selected heavy metals and lindane to the marine environment;
- c. the Comprehensive Study on Riverine Inputs and Direct Discharges (RID) requires mandatory annual data on the waterborne inputs of selected heavy metals and lindane to the marine environment.

The hazardous substances covered by the different OSPAR monitoring programmes are presented in Annex 2.

In addition to chemical parameters, the following “biological effect parameters” are monitored under the CEMP: PAH-specific and metal-specific biological effects; TBT-specific biological effects (mandatory); whole sediment bioassays; sediment pore-water and elutriate bioassays; water bioassays; lysosomal stability; liver neoplasia/ hyperplasia/ nodules; externally visible fish diseases; and reproductive success in fish.

In contrast to the chemical parameters of the CEMP, the majority of these biological effect parameters have a voluntary status. The only mandatory parameter to measure is TBT-specific biological effects.

In principle the CEMP covers and addresses all maritime waters within the OSPAR Convention area (see Figure 1).

Up to now, OSPAR has not set up criteria for the selection of monitoring stations or other guidance with respect to the spatial coverage of its monitoring programmes. With the exception of some guidance on the spatial resolution for monitoring in the vicinity of oil and gas installations, decisions regarding appropriate levels of monitoring are left to Contracting Parties. Similarly, no special guidance exists in OSPAR relating to the frequency of monitoring for hazardous substances. Thus, both the spatial and temporal coverage in monitoring programmes lies in the responsibility of individual Contracting Parties. OSPAR has, however, initiated work to develop guidance by 2006 for determining the frequency of monitoring, and for the selection of monitoring locations in order to secure an adequate geographical coverage, taking into account the resources available, for parameters that are or will be monitored under the JAMP.

c. Monitoring strategies for individual substances

The Agreement on monitoring strategies for OSPAR chemicals for priority action sets out how OSPAR will implement the suite of the 24 agreed monitoring strategies for substances and groups of substances on the OSPAR List of Chemicals for Priority Action. The Agreement will be up-dated by OSPAR in the light of experience gained and of the adoption of new monitoring strategies. These strategies cover a wide range of approaches focused on the use of substances in the OSPAR catchments and their main routes towards the marine environment. With regard to the monitoring of inputs and quality status monitoring (as opposed to trend analysis), the agreement sets out the following monitoring actions:

- a. continuation of the monitoring in the framework of the CEMP. In the light of the assessment of CEMP data carried out in 2004/2005, OSPAR 2005 arranged for a review of the CEMP in 2005/2006. This covers considerations whether to add hexachlorocyclohexane isomers (HCH, including lindane) and certain brominated flame-retardants to the monitoring programme;
- b. continuation of the monitoring in the framework of the RID study;
- c. continuation of the monitoring in the framework of the CAMP. In 2005/2006, the addition of endosulphan to the monitoring programme will be considered;
- d. for several substances, one-off surveys will be carried out as a collective action by the OSPAR Contracting Parties. The surveys consist of a literature survey, and if, based on the latter's conclusions, considered necessary, followed-up by a field survey. One-off surveys for concentration of substances in environmental matrices will be carried out for clotrimazole, dioxins and furans, endosulphan, musks, short-chained chlorinated paraffins, tetrabromobisphenol-A and 2,4,6, tri-tert-butylphenol. For butyltin components, a riverine input survey will be carried out.

The Agreement also sets out actions for the monitoring of the use of chemicals and of discharges and emissions. An overview of these aspects of the Agreement is presented in section 2.6.1.

For the implementation of the Agreement the following time schedule is envisaged:

- a. the establishment by 2005 of a series of information collection systems necessary to implement the monitoring strategies;
- b. the initial implementation in 2006/2007 of information collection systems.

2.3.2 Monitoring of hazardous substances under the Water Framework Directive

The monitoring of hazardous substances under the WFD is carried out to assess the progress made towards the "good chemical status" and the "good ecological status" of surface water by 2015.

The three types of monitoring set up by the WFD, also referred to in section 1.1, require monitoring for hazardous substances as follows:

- *Surveillance monitoring:* In principle, surveillance monitoring should be carried out for all listed priority (hazardous) substances which are discharged into the river basin or sub-basin, and for "other pollutants" discharged in significant quantities in the river basin or sub-basin. The list of priority substances that should be covered for surveillance monitoring, if they are discharged into the river basin or sub-basin, are presented in Annex 2. The "other pollutants" to be monitored cannot be presented in a general list since they should be selected specifically for each river basin.
- *Operational monitoring:* No general list of substances that require operational monitoring can be given because operational monitoring requires to be specifically designed for each water body at risk.

- *Investigative monitoring*: Investigative monitoring may also be appropriate to examine the impact of a pollution incident. If investigative monitoring is considered necessary, it should be specifically designed for a certain water body ("case study").

Discussions are still continuing to establish how the necessary monitoring of the coastal waters will be carried out. As indicated in section 2.1.2 (footnote 1), different interpretations exist on whether the requirement to achieve good surface water chemical status is applicable to territorial waters (up to 12 nm seaward of the baseline). The WFD Monitoring Guidance and the material brought forward for the development of a proposal for a WFD Daughter Directive on priority substances for surface water, presently under preparation by the European Commission, assume that the requirement of good surface water chemical status also applies in territorial waters. However, so far the WFD has not set out monitoring obligations for territorial waters.

a. *Spatial approach to monitoring under the Water Framework Directive*

The spatial aspect of monitoring is inherent in the WFD. For assessment as well as for management purposes, all coastal waters are allocated to river basins which are the relevant reporting units for Member States.

Currently, the Water Framework Directive does not state a minimum number of stations required per coastal area. The Directive implies, however, that an adequate number (i) of water body types must be monitored and (ii) of monitoring stations for each water body must be established, in order to obtain a coherent and comprehensive overview of the surface water status within each river basin district (and associated coastal waters). Thus, Member States will have to determine the number of types of transitional waters and coastal waters they have and subsequently the number of monitoring stations adequate to assess their chemical status.

b. *Temporal approach to monitoring under the Water Framework Directive*

The Water Framework Directive makes recommendations for minimum monitoring frequencies. If Member States choose to monitor less frequently, they must give a scientific justification and demonstrate that an acceptable level of confidence and precision exists. This system, although prescriptive, allows some flexibility. More specifically, the following minimum monitoring frequencies are recommended for the different types of monitoring:

- Surveillance monitoring* needs to be carried out during a period of at least one year in every six year cycle (period covered by river basin management plan) to enable the design of the future monitoring programme, unless the previous surveillance monitoring exercise showed that the water body concerned had reached good status and that there was no evidence from the review of impact of human activity that the impacts on the water body had changed. During the period of surveillance monitoring, sampling should take place once every month for priority substances and once every three months for other pollutants.
- Operational monitoring*: The frequency of monitoring required for any parameter shall be determined by Member States so as to provide sufficient data for a reliable assessment of the status of the relevant substance. Operational monitoring should take place at a higher frequency than surveillance monitoring. During the year of monitoring, a sampling frequency of once a month for priority substances and once every three months for other pollutants may be applied (guideline for minimal frequency).
- Investigative monitoring*: There is no requirement relating to the frequency of monitoring.

c. *Monitoring compartments*

According to the WFD, contaminants can be monitored in water, sediments or biota. Presently, environmental quality standards (EQSs) are being developed mainly for the water compartment. However, for lipophilic substances and metals, EQSs for the other compartments need to be developed. This is particularly important in the marine environment where it is logistically more difficult to collect water samples.

2.3.3 Other EC requirements for monitoring hazardous substances

Other Community water legislation which requires monitoring of hazardous substances in the marine environment includes the following:

- Directive 76/160/EEC concerning the quality of bathing water: It requires sampling operations with a minimum frequency specified for each quality parameter on the list of the relevant chemical quality parameters at its Annex. The European Commission has adopted a proposal for a revised Directive which proposes changes in the monitoring requirements.

- b. Directive 79/923/EEC on the quality required of shellfish waters will be repealed in 2013 by the WFD (Article 22(2)). Until then it requires sampling operations with a minimum frequency specified for each quality parameter on the list of the relevant chemical quality parameters at its Annex.

2.3.4 Comparison of monitoring hazardous substances under the WFD and OSPAR monitoring programmes

Both the WFD and OSPAR aim at

- a. monitoring the levels of contaminants in coastal and transitional waters,
- b. describing their spatial or temporal trends, and;
- c. using this information to develop, or improve, programmes of action or to advise decision-makers.

The WFD does, however, not require monitoring in territorial waters. The monitoring of temporal trends and spatial distribution of hazardous substances under the CEMP is comparable to the surveillance monitoring under the WFD. OSPAR currently does not require monitoring equivalent to operational monitoring under the WFD.

The monitoring requirements of the WFD are restricted to the monitoring of the status of surface (and ground) waters. Monitoring of direct discharges (into the sea), riverine inputs and atmospheric deposition is covered by the RID and CAMP monitoring programmes of OSPAR, while this is not explicitly required by the WFD.

With respect to monitoring riverine inputs, the OSPAR Working Group on Inputs to the Marine Environment (INPUT) concluded at its 2005 meeting that, at present, the overlap between RID and WFD monitoring was not clear, because

- a. the requirements for monitoring under RID and the WFD are targeted at different outcomes, as follows:
 - (i) monitoring under the WFD is focussed upon classifying the ecological and chemical status of water bodies (e.g. rivers);
 - (ii) monitoring under RID is focussed upon the assessment of waterborne inputs to the marine environment (riverine inputs and direct discharges);
- b. different sets of determinants are required and need to be reported at different timescales for a different geographical coverage.

INPUT 2005 recommended that, in planning their activities for monitoring under RID, Contracting Parties should seek to ensure that they are complementary and supportive to the monitoring of the chemical and ecological status of water bodies under the WFD.

In contrast to monitoring of biological effects of contaminants (the application of bioassays) under OSPAR monitoring programmes, these parameters are not explicitly required by the WFD.

The adjustment of requirements of marine monitoring under Community actions (the WFD, the emerging European Marine Strategy) on the one hand, and under marine conventions on the other hand, is currently dealt with by the EMS Working Group EMMA as part of its task to prepare a roadmap for the development of monitoring and assessment programmes for European seas, a process to which OSPAR contributes.

2.4 Synergies in monitoring guidelines

2.4.1 OSPAR monitoring guidelines

OSPAR has developed and adopted monitoring guidelines related to hazardous substances as presented in table 1 below.

Table 1: JAMP guidelines for monitoring hazardous substances

Title	Date adopted	Dates revised	Comments ³
JAMP guidelines for monitoring contaminants in biota	ASMO 1997		Status - Category I
Technical Annex 1 – determination of organic contaminants	ASMO 1997		Status - Category I
Technical Annex 2 – determination of metals	ASMO 1997		Status - Category I
Technical Annex 3 – determination of PAHs	ASMO(1) 1999		Status - Category I
JAMP guidelines for monitoring contaminants in sediments	ASMO 1997		Status - Category I
Technical Annex 1 – statistical aspects	ASMO 1997		
Technical Annex 2 – determination of CBs	ASMO 1997		Status - Category I
Technical Annex 3 – determination of PAHs	ASMO 1998		Status - Category I
Technical Annex 4 – determination of TBT	ASMO(1) 1999		Status - Category I
Technical Annex 5 – normalisation of contaminant concentrations	ASMO 2002		Status - Category I
Technical Annex 6 – Determination of metals – analytical methods	ASMO 2002		Status - Category I
JAMP guidelines for general biological effects monitoring	ASMO 1997		Status - Category II
Technical Annex 1 – whole sediment bioassays	ASMO 1997		Status - Category II
Technical Annex 2 – sediment pore-water bioassays	ASMO 1997		Status - Category II
Technical Annex 3 – sediment sea water elutriates	ASMO 1997		Status - Category II
Technical Annex 4 – water bioassays	ASMO 1997		Status - Category II
Technical Annex 5 – CYP1a	ASMO 1997		Status - Category II
Technical Annex 6 – lysosomal stability	ASMO 1997		Status - Category II
Technical Annex 7 – liver neoplasia / hyperplasia	ASMO 1997		Status - Category I
Technical Annex 8 – liver nodules	ASMO 1997		Status - Category I
Technical Annex 9 – externally visible fish diseases	ASMO 1997		Status - Category I
Technical Annex 10 – reproductive success in fish	ASMO 1997		Status - Category II
JAMP guidelines for contaminant-specific biological effects monitoring	ASMO 1997		Status - Category II
Technical Annex 1 – metal-specific biological effects monitoring	ASMO 1997		Status - Category II
Technical Annex 2 – PAH-specific biological effects monitoring	ASMO 1997		Status - Category II
Technical Annex 3 – TBT-specific biological effects monitoring	ASMO 1997	ASMO 1998 ASMO 2002 ASMO 2003	Status - Category I
JAMP guidelines for the sampling and analysis of mercury in air and precipitation	ASMO 1997		
JAMP guidelines for the estimation of riverine PAH inputs to the North Sea and the North-East Atlantic	ASMO 2002		
JAMP guidelines on methods and criteria for harmonised sampling and analysis of PAHs in air and precipitation	ASMO 2003		
Guidance note on the sampling and analysis of PCBs in air and precipitation	ASMO 1997		
JAMP guidance on input trend assessment and the adjustment of loads	ASMO 2003	ASMO 2005	Adopted on a trial basis for two years until 2005 – revised and adopted by ASMO 2005

³ Category I guidelines are those for which quality assurance procedures are in place. Category I guidelines may be used for monitoring and the data obtained are appropriate for Convention-wide assessments. Category II guidelines are those for which quality assurance procedures are not yet in place. Category II guidelines may be used for monitoring although caution should be exercised when making comparisons of the data obtained between different Contracting Parties.

2.4.2 Guidance on monitoring for the Water Framework Directive

A requirement of the WFD is that all monitoring shall conform to the relevant standards on the national, European or international scale to ensure the provision of data of an equivalent scientific quality and comparability. Therefore, all biological and physico-chemical assessment systems must comply with the relevant international and national standards where these exist.

Under the WFD Common Implementation Strategy (CIS), guidance on the monitoring for the WFD has been developed. This WFD Monitoring Guidance gives suggestions and recommendations for monitoring under the WFD, but has no formal status. It recommends that appropriate standards need to be developed as a matter of priority and urgency for those aspects of monitoring for which there are no internationally agreed standards or techniques/methods. Recently, the European Commission initiated a "Chemical Monitoring Activity" under the CIS process which intends to address the technical guidance on monitoring.

2.4.3 Comparison of monitoring guidelines

In contrast to the European Community, OSPAR has developed a variety of monitoring guidelines. The mechanisms established under the WFD and those for the development of a European Marine Strategy provide, however, opportunities for synergies by taking account of existing OSPAR monitoring guidelines.

2.5 Synergies in assessment of hazardous substances in the marine environment

2.5.1 Assessment relating to hazardous substances under the OSPAR JAMP

a. General

Under its theme H for hazardous substances, the OSPAR Joint Assessment and Monitoring Programme (JAMP) commits OSPAR to undertake a number of assessments related to hazardous substances in the period leading up to the quality status report in 2010, as summarised in table 2 below.

Table 2: Assessment products under the JAMP (theme H) for hazardous substances

Year	JAMP product reference	Assessment title
2005	HA-1	An assessment of temporal trends and (where relevant/feasible) spatial distribution for the hazardous substances where periodic sampling and analysis is undertaken, in particular under CAMP, CEMP and RID.
2005	HA-2	An initial assessment of biological effects of hazardous substances in the maritime area.
2008	HA-3	An assessment every 5 years of emissions, discharges and losses of chemical identified for priority action. The first assessment will be finalised by 2008.
2009	HA-4	A more elaborated assessment by 2009 of biological effects of hazardous substances in the maritime area.
2009	HA-5	An assessment of temporal trends and (where relevant/feasible) spatial distribution for the hazardous substances where periodic sampling and analysis is undertaken, in particular under CAMP, CEMP and RID.
2009	HA-6	A general assessment of the development in the quality status of the maritime area in relation to hazardous substances that could account the results of the assessments under HA-1 and HA-5, HA-2 and HA-4 and HA-3, and the results of any screening of levels of substances in the marine environment covered by HM-3.

The assessments under products HA-1 and HA-5 cover the North-East Atlantic and its regions and sub-regions (see Figure 1) to consider temporal trends and (where relevant/feasible) spatial distribution of:

- a. levels of contaminants in biota, sediments and the water column, and relevant biological effects;
- b. riverine inputs and direct discharges;
- c. atmospheric deposition of contaminants.

JAMP product HA-1 was delivered in the meeting cycle 2004/2005. Long-term trend assessments of data reported under RID, CAMP and CEMP were adopted by OSPAR 2005 and are published on the OSPAR website (publication numbers: 233, 234 and 235 (2005), respectively).

Products HA-2 and HA-4 provide for assessments of the impact of hazardous substances on marine organisms in areas where biological effects may occur because of potential levels of contamination.

JAMP product HA-3 provides for recurrent assessments of inputs of chemicals for priority action into the marine environment to monitor progress towards achieving the 2020 cessation target set by the Hazardous Substances Strategy.

Product HA-6 comprises the overall assessment of the impact of discharges, emissions and losses of hazardous substances as a contribution to the next Quality Status Report of the OSPAR Convention area in 2010.

b. CEMP assessment relating to hazardous substances and their biological effects

OSPAR 1997 adopted Background/Reference Concentrations (BRCs) for contaminants in sea water, biota and sediment (reference number: 1997-14) and Ecotoxicological Assessment Criteria (EACs) for trace metals, PCBs, PAHs, TBT and some organochlorine pesticides (reference number: 1997-15) as assessment tools for preparing the QSR 2000. Assessments of hazardous substances and their specific biological effects which are monitored under the CEMP have been carried out by application of these BRCs and EACs.

BRCs are statistical tools defined in relation to the background concentrations (BCs), which enable testing of whether mean observed concentrations can be considered to be near background concentrations. They are tools for assessment and, hence, do not represent target values and should not be used as such.

EACs are equally tools for assessing the significance of concentrations of hazardous substances in the marine environment. They are used to assess whether there are grounds for concern about the presence of those substances and to establish priorities for action. In an integrated chemical and biological effects programme, EACs may also be used to diagnose which compounds may be responsible for detected biological effects. However, EACs are not firm standards or a trigger for remedial action.

This set of BRCs/EACs covers the majority of the mandatory substances under the current CEMP, but not the majority of the substances on the OSPAR List of Chemicals for Priority Action. In preparation for an assessment in 2005 of the data gathered under the CEMP, OSPAR and the International Council for the Exploration of the Sea (ICES) put in place a process to up-date the BRCs and EACs. Based on the outcome of an OSPAR/ICES Workshop on the Evaluation and Update of BRCs and EACs (February 2004), the OSPAR Environmental Assessment and Monitoring Committee (ASMO) agreed a procedure for revising EACs, renamed into Environmental Assessment Criteria, and BRCs, renamed into Background (Assessment) Concentrations (BCs/BACs).

This process has resulted in a proposal for an agreement on Environmental Assessment Criteria for trace metals, PAHs, TBT, PBDE and some organochlorine pesticides in 2004. The revised EACs in this proposal were developed with reference to the Environmental Quality Standards under the Water Framework Directive. For the derivation/adjustment of BACs an exchange of information on the work on Background Reference Concentrations took place between OSPAR and the Expert Group for Analysis and Monitoring of Priority Substances (AMPS) under the Common Implementation Strategy of the Water Framework Directive. The proposal identifies two types of EAC:

- a. "EACs (lower)" – concentrations below which it is reasonable to expect that there will be an acceptable level of protection of marine species (including sensitive species) from chronic effects from the hazardous substances concerned. EACs (lower) should be used to identify potential areas of concern and to identify substances whose concentrations in the marine environment cause potential concern for marine species. EACs (lower) should not be used as firm standards or as triggers for remedial action;
- b. "EACs (higher)" – concentrations above which it is reasonable to expect acute toxic effects on marine species. The proposed agreement does not (yet) contain values for this type of EAC.

For the assessment of contaminant-specific biological effects monitored under the CEMP, no assessment criteria have yet been formally set. However, the OSPAR Workshop on the Harmonisation of Criteria for the Assessment of TBT-specific Biological Effects in 2003 proposed harmonised criteria for the assessment of TBT-specific biological effects for five gastropod species. The criteria relate to some extent to the requirements set by the WFD, with respect to good ecological status, for biological quality elements for benthic fauna in coastal waters. ASMO 2004 endorsed these criteria, on a provisional basis, for the purpose of the assessment of CEMP data in 2005, and pending the outcome of the ongoing work on the revision of B(A)Cs and EACs and the review by ICES of OSPAR ecological quality objectives (EcoQOs).

While work on updating the EACs agreement continues, OSPAR 2005 adopted an updated Agreement on Background Concentrations in Seawater, Biota and Sediment (reference number: 2005-6).

c. *RID and CAMP assessment: riverine inputs, direct discharges and atmospheric inputs*

To assess the progress made towards achieving the objectives set by the OSPAR Hazardous Substances Strategy, trend analysis are carried out for data gathered under the RID and CAMP programmes. A first assessment was undertaken in 2004/2005, the results of which are published on the OSPAR website. For the purpose of the assessment of trends of riverine inputs, OSPAR 2003 adopted the JAMP Guidance on Input Trend Assessment and the Adjustment of Loads on a trial basis for two years (reference number: 2003-9). The Guidance was revised in 2005 and finally adopted.

2.5.2 Assessment of hazardous substances under the Water Framework Directive

The WFD requires an “assessment of the pressures and impacts” for surface waters, once every six years. An initial assessment should be finalised by Member States by December 2004. Pressures and impacts analyses have a central role in the river basin management planning process. Their principal aim is to identify where, and to what extent, human activities may put at risk the achievement of the Directive’s environmental objectives. In undertaking the analysis of pressures and impacts, Member States must use information collected on the type and magnitude of pressures to which water bodies are liable to be subject to, and on the characteristics of those water bodies, together with any other relevant information, including existing environmental monitoring data. The results of the analyses will be used in targeting the monitoring programmes, setting objectives and designing targeted and proportionate measures to achieve the Directive’s objectives (see 2002 Analysis of Pressures and Impacts).

Under the WFD, hazardous substances are assessed in order to determine the “chemical status” of water bodies. In the assessment of the chemical status, two classes are distinguished: good chemical status and failing to achieve good chemical status. For surface waters, a good chemical status is achieved if all Environmental Quality Standards (EQSs), set at Community level, are met. These standards include:

- a. EQSs for chemicals of “List I Substances” of the Dangerous Substances Directive (Annex IX to the WFD, included in Annex 1 of the present document);
- b. EQSs for Priority Substances (Article 16 and Annex X of the WFD, included in Annex 1 of the present document), and;
- c. EQSs set under other relevant Community legislation.

According to Article 16(7) and (8) of the WFD, the European Commission shall submit proposals for environmental quality standards (EQSs) applicable to the concentrations of the priority substances in surface water, sediments or biota to the European Parliament and the Council for adoption within two years of the inclusion of the substance concerned on the list of priority substances. Following the inclusion of the first list of substances as Annex X to the WFD by Decision No. 2455/2001/EC of the European Parliament and Council, this was due in December 2003. For substances included in the first list of priority substances, Member States shall establish environmental quality standards for these substances for all surface waters affected by discharges of those substances if no agreement has been reached at Community level six years after the date of entry into force of the Directive (December 2006).

For other pollutants referred to in Annex VIII of the WFD, Member States may set quality standards themselves, as appropriate, based on a prescribed methodology.

In 2001, the European Community commissioned the Fraunhofer-Institute (FHI) to develop a risk-assessment concept for deriving overall Quality Standards (QS) for the substances on the list of 33 priority substances/groups of substances at Annex X to the WFD, and to elaborate proposals for such QS. In September 2002, the FHI proposed QS values for priority substances based on considerations of direct ecotoxicological effects in different habitats (water, sediment), indirect ecotoxicological effects occurring after bioaccumulation in biota (secondary poisoning of top predators) and effects on human health by oral uptake of water and food, including long-term toxicity and carcinogenic, mutagenic and reprotoxic (CMR) mechanisms. QS values are expressed as concentrations in water, and for hydrophobic chemicals, additionally as concentrations in suspended particular matter (SPM). The concept for setting quality standards was built, as far as possible, on the elements used for effect assessment in the EU risk assessment procedures, as laid down, for example, in the Technical Guidance Document for new and existing substances.

In 2002, the Community established the Expert Advisory Forum for Priority Substances (EAF-PS), represented by experts from the EU Member States. The forum has the task, amongst others, to advise the European Commission on the QS for priority substances, taking into account the proposals of the FHI.

At the moment, the European Commission is developing propositions for QSs for priority substances under the WFD. These are expected to form part of the proposal for a WFD Daughter Directive on priority

substances for surface water, presently under preparation by the European Commission. During this preparation process, in spring 2004, the Commission engaged in a consultation process with stakeholders and Member States. The material brought forward contained QS values based on the advice of the FHI and the EAF-PS. The Commission also launched a consultation of the Scientific Committee on Toxicity, Ecotoxicity and the Environment (CSTEE) with regard to the QS values. This consultation is still ongoing and may result in the revision of the proposed QS values. At present, it is not clear when the European Commission will present and adopt its proposal for a WFD Daughter Directive on priority substances for surface water.

2.5.3 Considerations for assessments of hazardous substances under a European Marine Strategy

According to the EMS material brought forward by the European Commission, implementation plans should be developed within 5 years of the adoption of the Strategy. This plan should be based on an assessment of the pressures and impacts in the region and should aim at achieving the strategic goals and objectives of the Strategy by 2025. Each implementation plan should contain a programme for monitoring and assessment. Currently, the EMS Working Group EMMA is preparing a roadmap for the development of these programmes.

In order to ensure coherence and consistency of the different monitoring and assessment programmes across Europe, EMMA has developed the following basic principles which should underpin the assessments of the status of the marine environment undertaken by the different organisations involved in protecting the marine environment:

- Principle I: Where objectives, targets and benchmarks set for the protection and conservation of the marine environment are comparable, assessments should address them in a comparable way.
- Principle II: Different assessments covering (parts of) a sea region should be consistent for that region.
- Principle III: Assessments should be scientifically sound and aimed at the broadest level of acceptability possible in such a way that they can be used by other organisations.
- Principle IV: Information on the marine environment should, to the fullest extent possible, be shared to facilitate the production of assessments.

2.5.4 Assessments of hazardous substances under other Community legislation

Member States are required to assess marine (coastal) waters and/or transitional waters with regard to chemicals under the following Community legislation:

- a. Directive 76/160/EEC concerning the quality of bathing water: Member States have to set limit values for all their bathing waters or for each individual water. Only for phenols, a limit value is set by the Directive itself: $\pm 0,005$ mg/l.
- b. Directive 79/923/EEC on the quality required of shellfish waters: Member States have to set limit values.

2.5.5 Comparison of assessments of hazardous substances under OSPAR and the WFD

Assessments of the levels of hazardous substances in coastal and transitional waters are carried out under both the OSPAR JAMP and the WFD. However, the substances selected for assessment differ in both forums.

In contrast to the WFD, OSPAR performs assessments of riverine and atmospheric inputs of substances into the marine environment (RID and CAMP assessments). Although these assessments may be classified as “pressure analyses”, the “assessment of the pressures and impacts” under the WFD does not explicitly prescribe these types of input assessments.

An assessment of “biological effects of contaminants” carried out under the OSPAR JAMP is not explicitly required by the WFD. However, in the assessment of the “ecological status” of water bodies under the WFD, biological effects of contaminants may be taken into account.

In table 3 below, OSPAR assessment criteria are compared with WFD environmental quality standards. These criteria/standards have different characters: the WFD environmental quality standards are operational objectives for the WFD’s “chemical status”, while the OSPAR assessment criteria are used to assess the “distance” between the current environmental status and the OSPAR objectives relating to hazardous substances.

Table 3: Comparison of OSPAR assessment criteria (EACwater) and environmental quality standards for coastal, transitional and territorial waters (AA-QS) proposed by the material for the development of a WFD Daughter Directive.

	EAC(water) ¹	AA-QS ² coastal, transitional and territorial waters
	µg l ⁻¹	µg l ⁻¹
Trace metals		
Arsenic	0,1 (f)	n.a.
Cadmium	0,21 (f)	0,2
Chromium	4,2 (f)	n.a.
Copper	0,476 (f)	n.a.
Mercury	0,055 (p)	n.a.
Nickel	1 (f)	1,7
Lead	0,13 (f)	0,4
Zinc	3,0 (f)	n.a.
Organochlorine pesticides		
DDE	0,000001 (f)	n.a.
Dieldrin	0,000023 (f)	0,01 (Directive 76/464)
Lindane	0,002 (f)	0,002
TBT	0,0001 (f)	0,0001
PBDE	0,00018 (f)	0,0002
Σ group PAHs		
2 ring: naphthalene	2,4 (p)	1,2
3 ring: phenanthrene	0,17 (p)	n.a.
3 ring: anthracene	0,17 (p)	0,01
4 ring: fluoranthene	0,69 (p)	0,09
4 ring: pyrene,	0,69 (p)	n.a.
4 ring: benz[a]anthracene	0,69 (p)	n.a.
4 ring: chrysene	0,69 (p)	n.a.
5 ring: benzo[k]fluoranthene	0,03 (p)	0,03
5 ring: benzo[a]pyrene	0,03 (p)	0,05
6 ring: benzo[ghi]perylene	0,016 (p)	0,016
6 ring: indeno[123-cd]pyrene	0,016 (p)	0,016 (124-cd variant)

f = firm, p = provisional

¹ EACs for metals and pesticides refer to annual averages for dissolved concentrations in water; EACs for TBT, PBDE and PAH refer to annual averages for total concentrations in water. EACs for water are taken from the proposal for an agreement on environmental assessment criteria for trace metals, PAHs, TBT, PBDE and some organochlorine pesticides (ASMO 2004).

² QS refer to annual averages for total concentrations in water. For organics, QS refer to total concentrations in the "whole water phase" (= sum of dissolved/non-dissolved phase). For metals, QS refer to MPA-values (Maximum Permissible Addition = so called "added value", QS = MPA + BC). QS are expressed as dissolved concentrations in the "whole water phase". AA-QS values are taken from the material brought forward by the Commission for the development of a proposal for a WFD Daughter Directive on priority substances for surface water. These values may be revised prior to the proposal for a WFD Daughter Directive being formally adopted by the European Commission.

The table shows that the majority of the EACs are reasonably comparable to the QS values (max. a factor 2 difference). Values for lead, dieldrin, anthracene and fluoranthene, however, differ to a larger extent (between a factor 2 and 500).

2.6 Synergies in source monitoring and assessment

2.6.1 OSPAR source monitoring and assessment

So far, OSPAR has adopted 24 monitoring strategies for chemicals for priority action which set out the appropriate source monitoring for the substance concerned depending on its features and those of the related source. It is the purpose of the monitoring strategies to assess progress made towards the cessation target for releases, from various sources, of hazardous substances on the OSPAR List of Chemicals for Priority Action by 2020. Based on these strategies, the OSPAR Agreement on monitoring strategies includes, *inter alia*, monitoring requirements for source-related discharges and emissions, and information collection activities necessary to pursue the monitoring strategies.

Accordingly, with regard to releases from **large industrial installations**, OSPAR 2005 established an approach to collect and evaluate information from the European Pollutant Emissions Register (EPER) in respect of discharges of the following six substances to air and water from installations subject to the IPPC Directive (96/61/EC): cadmium, lead and organic lead compounds, mercury and organic mercury compounds, organic tin compounds (including tributyl tin), PAHs, and short-chained chlorinated paraffins.

In respect of discharges to water of cadmium, lead, mercury, and polycyclic aromatic hydrocarbons, which are not covered by the IPPC Directive, voluntary activities have been agreed to collect information.

OSPAR 2005 also established an approach to collect and evaluate information reported under the United Nations Economic Commission for Europe (UNECE) Convention on Long-Range Transport of **Air Pollution** (LRTAP) and held in the European Monitoring and Evaluation Programme (EMEP) database in respect of three heavy metals and PAHs.

In accordance with the arrangements agreed by OSPAR on reporting dumping operations at sea (reference number: 2004-5), reporting is required on concentrations of five chemicals for priority action in **dredged materials disposed** to the OSPAR maritime area.

OSPAR will also need to take into account information on the **implementation of Community legislation and OSPAR measures** which regulate the marketing and/or use, or the emission and/or discharge, of one of the OSPAR chemicals identified for priority action when assessing in 2008 the emissions, discharges and losses of chemicals against the cessation target.

Contracting Parties are required to regularly report on mercury losses from the **chlor-alkali industry**, in accordance with the arrangements agreed by OSPAR (reference number: 2003-5).

Contracting Parties with **offshore oil and gas industries** are required to report data which they have collected in the past on the amounts or proportions of cadmium, mercury and lead in produced water discharged from offshore installations under their jurisdiction. Contracting Parties with offshore oil and gas industries should also report on discharges of polycyclic aromatic hydrocarbons as part of the implementation reporting on OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations. On the presence of octylphenol and 2,4,6 tri-tert-butylphenol in resins, an exchange of information will be organised between OSPAR and offshore operators.

With the assistance of the European Council of Federations of Chemical Industries (CEFIC) and (where relevant) the European Crop Protection Association (ECPA), information should be collected on the **quantities of five substances produced and/or sold** in the countries of the OSPAR Convention area. In addition, estimates should be made of quantities of such substances **imported into, or exported from**, the European Community/European Economic Area where these seem likely to be sufficiently large to affect the interpretation of the production/sales figures.

A general one-off survey should be carried out by Switzerland of levels of **musk xylene and other musks** in discharges and losses to water based on the sewage sludge and effluents of selected sewage treatment plants. France is committed to carry out a one-off survey on **clotrimazole** in domestic and household effluents.

Belgium and Germany, as lead countries, will organise an overview of emissions, discharges and losses of **polychlorinated biphenyls** from the various point and diffuse sources in the Community on the basis of the inventory to be prepared under the EC Strategy for dioxins, furans and polychlorinated biphenyls.

2.6.2 EC source monitoring and assessment

a. Water Framework Directive

Under the WFD an initial report on the characteristics of river basin districts is required by December 2004 (Article 5). The report includes an assessment of the pressures and impacts on the status of surface waters.

In this context, Member States would need to address the sources of releases of hazardous substances to the aquatic environment. The analyses shall be reviewed at the latest by 2013 and every six years thereafter. In addition, the WFD requires the establishment by 2009 of river basin management plans (Article 13). They shall be reviewed and updated at the latest by 2015 and every six years thereafter. The WFD does not make provision for a common emission inventory at Community level.

b. EPER

A triennial publication of an inventory of principal emissions and their sources of pollutants, including various hazardous substances, is required by Article 15 of the IPPC Directive (96/61/EC) as a tool for monitoring the Directive's effectiveness in terms of reductions in emissions to air and water. This requirement is implemented by EC Commission Decision 2000/479/EC on the implementation of a European Pollutant Emission Register (EPER) which specifies the reporting obligations of the Member States. Accordingly, Member States shall report to the European Commission on emissions from all individual facilities falling into the source categories listed in Annex 1 to the IPPC Directive (96/61/EC) and for the pollutants emitted to air or discharged to water which exceed the threshold values set at Annex A1 of Decision 2000/479/EC. From the OSPAR List of Chemicals for Priority Action, the following substances are covered by data reporting: cadmium, dioxins and furans, lead and organic lead compounds, mercury and mercury organic compounds, organic tin compounds, PAHs, short-chained chlorinated paraffins, and trichlorobenzenes. The reported data is made accessible in the public register EPER. Member States were due to deliver their first national reports in 2003 and shall report every three years thereafter. The new Member States are required to deliver their first reports in 2006.

c. Emissions to air

Details on the information that is collected under other Community legislation dealing with air pollution and information on emissions to air of hazardous substances can be found in the report on atmospheric nitrogen in the OSPAR Convention area and agreed international reduction measures, adopted by OSPAR 2005 for publication on the OSPAR website (see publication number: 232 (2005)).

2.6.3 Comparison of OSPAR and EC source monitoring and assessment

The design of OSPAR monitoring strategies for chemicals identified for priority action is such as to ensure that use is made of information available from the European Community on data and assessments relating to the sources and the releases/emissions of hazardous substances. However, various areas/activities exist that are not covered by EU initiatives.

2.7 Synergies in reporting schedules

2.7.1 Timetables for OSPAR monitoring and assessment activities

Monitoring data related to hazardous substances are reported annually under the Comprehensive Atmospheric Monitoring Programme (CAMP), the Co-ordinated Environmental Monitoring Programme (CEMP) and the Comprehensive Study on Riverine Inputs and Direct Discharges (RID). Further reports are prepared for the thematic and general assessments scheduled under the JAMP (see table 2 in section 2.5.1).

2.7.2 Timetables for EC monitoring and assessment activities

a. Water Framework Directive

Under the WFD an initial report on characteristics of river basin districts is required by December 2004 (Article 5). The report includes an assessment of the likelihood that surface water will fail to meet the environmental quality objectives set for the relevant water body. The analyses shall be reviewed at the latest by 2013 and every six years thereafter.

In addition, the WFD requires the production of river basin management plans by 2009 (Article 13). They shall be reviewed at the latest by 2015 and every six years thereafter.

The list of priority substances established by means of application of the selection procedure COMMPS shall be reviewed at the latest four years after the entry into force of the WFD, this is for the first time in 2004, and at least every four years thereafter (Article 16).

b. EPER

EU Member States were required to submit their first report for EPER in June 2003; these reports covered data on emissions/discharges in 2001. The next report is due in June 2006 and will cover data for 2004. This will be the first reporting to EPER for the new EU Member States.

2.7.3 Comparison of EC and OSPAR reporting of hazardous substances

In table 4, a comparative overview of the timetables for reporting requirements under the OSPAR JAMP and the WFD is given. This shows where possibilities can be found for synergies with regard to an exchange of relevant information for the preparation of assessment reports.

Table 4: Combined reporting schedule for monitoring and assessment of hazardous substances under the JAMP and the EC legislation

	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013
OSPAR monitoring	CEMP, RID, CAMP	CEMP, RID, CAMP	CEMP, RID, CAMP	CEMP, RID, CAMP	CEMP, RID, CAMP	CEMP, RID, CAMP	CEMP, RID, CAMP	CEMP, RID, CAMP	CEMP, RID, CAMP	CEMP, RID, CAMP
OSPAR assessment		HA-1 HA-2			HA-3	HA-4 HA-5 HA-6	AA-2 (QSR)			
EC WFD	Characterisation	Review of list of priority substances. (originally planned for 2004)		Monitoring programmes in place	Draft RBMP. Review of list of priority substances.				Review of list of priority substances.	Review of characterisation
EC IPPC			EPER Report on emissions to air and water			EPER Report on emissions to air and water			EPER Report on emissions to air and water	

2.8 Conclusions

The principle objectives of the OSPAR Hazardous Substances Strategy and related monitoring and assessment requirements under the JAMP, and of Community measures relating to hazardous substances are well comparable. However, the list of substances selected for monitoring and assessment purposes differ substantially in both forums. OSPAR has identified actions necessary to progress towards an adjustment of selection processes for chemicals for priority action.

Regarding monitoring of hazardous substances, substantial differences exist between WFD and OSPAR approaches. However, for source monitoring, information gathered by the EC is currently used by OSPAR. Further, the OSPAR and WFD approaches with respect to the monitoring of levels of substances in coastal and (if appropriate) territorial waters show parallels. An approach to monitoring under the emerging European Marine Strategy is still under development.

With regard to the assessment of hazardous substances in the marine environment, substantial differences exist between the approach taken in OSPAR and the WFD. Although OSPAR has adjusted the development of environmental assessment criteria to the development of environmental quality standards under the WFD, it should be stressed that these criteria/standards have a different character: the WFD environmental quality standards are operational objectives for the WFD "chemical status", while the OSPAR assessment criteria are used to assess the "distance" between the current environmental status and the OSPAR objective for hazardous substances.

3. Eutrophication

3.1 Synergies in objectives

3.1.1 OSPAR objectives with regard to eutrophication

The 2003 OSPAR Eutrophication Strategy states the objective with regard to eutrophication as follows:

“In accordance with the general objective, OSPAR’s objective with regard to eutrophication is to combat eutrophication in the OSPAR maritime area, in order to achieve and maintain a healthy marine environment where eutrophication does not occur.”

The time scale set by the Strategy is to meet this objective by 2010. The Strategy comprises both a target-oriented approach and a source-oriented approach.

By adopting PARCOM Recommendation 88/2 on the reduction in inputs of nutrients to the Paris Convention Area (part of the source-oriented approach of the OSPAR Eutrophication Strategy), Contracting Parties agreed:

- to take effective national steps in order to reduce nutrient inputs into areas where these inputs are likely, directly or indirectly, to cause pollution;
- to aim to achieve a substantial reduction (in the order of 50%) in inputs of phosphorus and nitrogen into these areas between 1985 and 1995, or earlier if possible.

The Recommendation does not specify the type of inputs it addresses. One might consider riverine inputs, discharges/losses to surface water, atmospheric deposition and related emissions to air.

3.1.2 EC objectives with regard to eutrophication

The Water Framework Directive does not specifically mention eutrophication. Yet, the “good ecological status”, one of the two elements of “good water status” to be achieved, is primarily concerned with the biological balance of organisms which is also relevant in the eutrophication context.

There are other EC Directives that specifically address eutrophication and the release of nutrients to the environment. These are:

- the Urban Waste Water Treatment Directive (UWWT Directive) (91/271/EEC);
- the Nitrates Directive (91/676/EEC);
- the IPPC-Directive (96/61/EC) – addressing the abatement of releases of nutrients to air and water by large industrial installations, and;
- various Directives with regard to ambient air quality and emissions to air. An overview of commitments and objectives is given in the report on atmospheric nitrogen in the OSPAR Convention area and agreed international reduction measures, adopted by OSPAR 2005 for publication on the OSPAR website (see publication number: 232 (2005)).

a. *Urban Waste Water Treatment Directive*

The objective of the UWWT Directive is set out in its Article 1 as follows:

“This Directive concerns the collection, treatment and discharge of urban waste water treatment and the treatment and discharge of waste water from certain industrial sectors. The objective of the Directive is to protect the environment from the adverse effects of the above mentioned waste water discharges.”

The UWWT Directive seeks to reduce the pollution of freshwater, estuarine waters and coastal waters by domestic sewage, industrial waste water and surface water runoff. It sets minimum standards for the collection, treatment and discharge of urban waste water and establishes time tables for achieving these standards. The Directive requires Member States to identify “sensitive areas”, including estuaries and coastal waters, which are found to be eutrophic or which in the near future may become eutrophic. Generally, discharges into sensitive areas will require a higher level of treatment.

b. Nitrates Directive

The objective of the Nitrates Directive is outlined in its Article 1 as follows:

“This Directive has the objective of reducing water pollution caused or induced by nitrates from agricultural sources and preventing further such pollution.”

The Nitrates Directive seeks to control the inputs of nitrates into waters by controlling discharges from agriculture. The Directive applies to waters that are either already eutrophic due to excess nitrates from agricultural sources or are at risk of becoming so. Areas of land that drain to these designated waters and thereby contribute to their nitrate pollution, will be designated as nitrate “vulnerable zones”. In these zones, the competent authorities are able to enforce restrictions on agricultural activities.

c. IPPC Directive

The purpose of the IPPC Directive is

“to achieve integrated prevention and control of pollution arising from the activities listed in Annex I. It lays down measures designed to prevent or, where that is not practicable, to reduce emissions in the air, water and land from the abovementioned activities [...]”.

The point sources listed in Annex I, include large industrial installations relevant for nutrient releases as follows: intensive livestock farming, large combustion plants, refineries and large volume inorganic chemicals (ammonia, acids and fertilisers). For these activities, the Directive sets common requirements and procedures for authorization which must be based on the concept of Best Available Techniques (BAT). Guidance on what is considered as BAT is agreed in Reference Documents on Best Available Techniques (BREF) for various activities. The emission inventory (EPER) established under the IPPC Directive covers releases of nutrients to surface waters and to air, data which Member States are required to report.

d. European Marine Strategy

The EMS material for the development of a European Marine Strategy envisages including a strategic goal with regard to eutrophication

“to put in place by 2010 measures to control all sources of nutrients required to reduce human induced eutrophication to acceptable levels. Where these measure address agriculture within the EU, they will be considered in the forthcoming review of the Common Agricultural Policy.”

3.1.3 Comparison of objectives

Eutrophication as a risk for the marine environment is specifically targeted in the OSPAR Eutrophication Strategy as well as in the UWWT Directive, the Nitrates Directive and the EMS material for the development of a European Marine Strategy. The Water Framework Directive addresses eutrophication only indirectly through the requirement of “good ecological status” for surface water. Under the OSPAR Convention and all above-mentioned EC measures, including the IPPC Directive, releases of nutrients from point sources to the environment are addressed.

3.2 Synergies in the definition of eutrophication

3.2.1 OSPAR definition

For the purpose of the OSPAR Eutrophication Strategy, eutrophication means:

“the enrichment of water by nutrients causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned, and therefore refers to the undesirable effects resulting from anthropogenic enrichment by nutrients as described in the Common Procedure.”

This definition in Appendix 1 of the OSPAR Strategy is refined, in the same Appendix, by the classification of maritime waters **into three area categories** according to their eutrophication status: problem areas, potential problem areas, and non-problem areas. These categories are defined as follows:

Problem areas with regard to eutrophication are defined as “those areas for which there is evidence of an undesirable disturbance to the marine ecosystem due to anthropogenic enrichment by nutrients”. This means that these areas show an increased degree of nutrient enrichment accompanied by direct and/or indirect or other possible eutrophication effects.

Potential problem areas with regard to eutrophication are defined as “those areas for which there are reasonable grounds for concern that the anthropogenic contribution of nutrients may be causing or may lead in time to an undesirable disturbance to the marine ecosystem due to elevated levels, trends

and/or fluxes in such nutrients". This means that these areas show an increased degree of nutrient enrichment, but that data are not sufficient, or not fit for the purpose, for assessing direct, indirect or other possible eutrophication effects.

Non-problem areas with regard to eutrophication are defined as "those areas for which there are no grounds for concern that anthropogenic enrichment by nutrients has disturbed or may in the future disturb the marine ecosystem."

The assessment and classification of maritime areas is detailed in the Common Procedure for the Identification of the Eutrophication Status of the OSPAR Maritime Area (the "Common Procedure") which is an integral part of the OSPAR Eutrophication Strategy. According to the Common Procedure, the category of problem areas includes "transboundary affected" problem areas. These are areas which show no evident increase in nutrient levels, but exhibit direct effects and/or indirect effects or other possible effects caused by nutrient transport from other parts of the maritime area. This classification takes account of the fact that despite large anthropogenic nutrient inputs by, and high nutrient concentrations in, one OSPAR Contracting Party, the area concerned by such inputs may exhibit itself few, if any, direct and/or indirect effects, but that there is a risk that such nutrient inputs may be transferred to adjacent areas where they can cause detrimental environmental effects, and may contribute significantly to so-called "transboundary affected" problem areas and potential problem areas under the jurisdiction of another OSPAR Contracting Party.

3.2.2 Definitions under EC measures

Definitions of eutrophication are given in the UWWT Directive and the Nitrates Directive which both explicitly deal with eutrophication.

Article 2(11) of the UWWT Directive defines eutrophication as:

"the enrichment of water by nutrients, especially compounds of **nitrogen and/or phosphorus**, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned." (emphasis added)

The Nitrates Directive defines eutrophication in its Article 2(i) as:

"the enrichment of water by **nitrogen compounds**, causing an accelerated growth of algae and higher forms of plant life to produce an undesirable disturbance to the balance of organisms present in the water and to the quality of the water concerned." (emphasis added)

3.2.3 Comparison of definitions on eutrophication

In order to be classified as eutrophic, under all above-mentioned definitions, water bodies must show:

- a. enrichment by nutrients;
- b. accelerated growth of algae and higher forms of plant life, and;
- c. an undesirable disturbance to the balance of organisms present and to the quality of water concerned.

Eutrophic areas are described as "problem areas" under OSPAR Eutrophication Strategy, "polluted areas" under the Nitrates Directive and "sensitive areas" under the UWWT Directive.

The OSPAR Eutrophication Strategy, the Nitrates Directive and the UWWT Directive alike recognise that there is an intermediate stage between eutrophic and non-eutrophic areas.

Under the OSPAR Eutrophication Strategy, these areas are described as "potential problem areas". The Common Procedure classifies an area as potential problem area if the area shows an increased degree of nutrient enrichment but where data on direct and/or indirect/other possible effects are not sufficient to enable an assessment or are not fit for this purpose (as indicated by '?' in Table 9). In such a situation section 3.2(b) of the OSPAR Eutrophication Strategy applies. It requires urgent implementation of monitoring and research in order to enable a full assessment of the eutrophication status of the area concerned within five years of its classification as potential problem area. In addition, it calls for preventive measures to be taken in accordance with the precautionary principle.

Under the Nitrates Directive and the UWWT Directive, the precautionary approach applies to identify “polluted areas” and “sensitive areas” respectively. This involves the following criteria for classification:

- a. Section A(3) of Annex I of the Nitrates Directive requires that, for the purposes of Article 3(1) of the Directive, waters affected by pollution, or waters which could be affected by pollution, shall be identified by

“making use, *inter alia*, of the following criteria: whether natural freshwater lakes, other freshwater lakes, estuaries, coastal waters and marine waters are found to be eutrophic **or in the near future may become eutrophic** if action pursuant to Article 5 is not taken.” (emphasis added)
- b. Section A(a) of Annex II of the UWWT Directive requires that

“[a] water body must be identified as a sensitive area if it falls into one of the following groups: natural freshwater lakes, other freshwater bodies, estuaries and coastal waters which are found to be eutrophic **or which in the near future may become eutrophic** if protective action is not taken.” (emphasis added)

Under the Water Framework Directive a distinction is made in the classification of the “ecological status” of surface water between a “good” and a “moderate” status. The main difference of the two status classes is linked to the criteria of “accelerated growth” and “undesirable disturbance” as set out in Annex V to the Water Framework Directive (see table 5).

Table 5: Comparison of WFD plant-related biological quality elements for the classification of the ecological status as “good” and “moderate” (Extract from the definitions for high, good and moderate status in coastal waters in section 1.2.4 of Annex V to the Water Framework Directive; emphasis added)

Biological quality elements	Definition of good status	Definition of moderate status
Phytoplankton	The composition and abundance of phytoplanktonic taxa show slight signs of disturbance. There are slight changes in biomass compared to type specific conditions. Such changes do not indicate any accelerated growth of algae resulting in an undesirable disturbance to the balance of organisms present in the water body or to the physico-chemical quality of the water. A slight increase in the frequency and intensity of type specific planktonic blooms may occur.	The composition and abundance of planktonic taxa show signs of moderate disturbance. Algal biomass is substantially outside the range associated with type-specific reference conditions and is such as to impact on other biological quality elements. A moderate increase in the frequency and intensity of planktonic blooms may occur. Persistent blooms may occur in summer months.
Macroalgae and angiosperms	Most disturbance-sensitive macroalgal and angiosperm associated with undisturbed conditions are present. The level of macroalgal cover and angiosperm abundance show slight signs of disturbance.	A moderate number of disturbance-sensitive macroalgal and angiosperm associated with undisturbed conditions are absent. Macroalgal cover and angiosperm abundance is moderately disturbed and may be such as to result in an undesirable disturbance in the balance of organisms present in the water body.

The systematics of the “ecological status” assessment under the Water Framework Directive imply that, by definition, the water status of a eutrophic water body cannot qualify as “good”. The WFD applies a “one out – all out” principle with regard to the quality elements which need to be assessed for establishing the ecological status of a water body. This means that the failure of a water body to meet one of the quality elements for “good status” will automatically prevent the water body from being classified as “good status” irrespective of whether it meets the “good status” criteria for the other quality elements. Accordingly, a water body would fail to meet “good ecological status” if it either exhibits undesirable disturbance relating to macroalgae and angiosperms or shows accelerated growth of phytoplankton resulting in an undesirable disturbance of the balance of organisms. At this stage, classification tools for each of these quality elements are still under development.

Recently, the European Community launched a “eutrophication activity” under the Common Implementation Strategy for the Water Framework Directive with a view to developing common guidance for the assessment of eutrophication in fresh waters and marine waters throughout Europe and to harmonising and co-ordinating the assessment of the eutrophication status of water bodies under the Water Framework Directive, the Nitrates Directive, the UWWT Directive and under a European Marine Strategy. For the development of such guidance, the Common Procedure developed by OSPAR for the assessment of the eutrophication status of its Convention area, served as a starting point. OSPAR also contributed to this process through an analysis of synergies between the OSPAR Common Procedure, OSPAR Ecological Quality Objectives for eutrophication and the Water Framework Directive. This analysis was adopted by OSPAR 2005 for publication on the OSPAR website (see publication number: 231 (2005)).

It should be noted that the assessment under the WFD of the “ecological status” goes beyond quality elements specifically relating to eutrophication. For example, chemical contamination may alter the status that was assigned to an area with regard to eutrophication in accordance with the Common Procedure. Thus, a non-problem area under the OSPAR Eutrophication Strategy, may still be of a moderate, poor or even bad ecological status under the Water Framework Directive due to its physico-chemical elements (for example, effects of hazardous substances).

3.3 Synergies in monitoring for eutrophication

3.3.1 Monitoring for eutrophication under the OSPAR Convention

The requirements for monitoring eutrophication in the OSPAR framework have been historically laid out in the Nutrient Monitoring Programme. This was further developed through the Common Procedure and was recently revised by OSPAR 2005, including its renaming into Eutrophication Monitoring Programme (reference number: 2005-4). It forms an integral part of the OSPAR Eutrophication Strategy and is part of the Co-ordinated Environmental Monitoring Programme (CEMP) under which data on nutrient concentrations and eutrophication effects monitored in accordance with Eutrophication Monitoring Programme are reported on an annual basis. Work is still ongoing in OSPAR with regard to the guidance on the spatial and temporal coverage of the Eutrophication Monitoring Programme and the relevant related JAMP Guidelines. The requirements for monitoring may differ for each sea area concerned in accordance with the underlying principle that areas which are problem areas or potential problem areas will require more intensive monitoring than non-problem areas.

The qualitative assessment parameters applied in the “Comprehensive Procedure” of the Common Procedure, which therefore are of relevance for monitoring, are summarised in table 6 below:

Table 6: Holistic checklist for the assessment of eutrophication

All areas not being identified as non-problem areas with regard to eutrophication through the Screening Procedure are subject to the Comprehensive Procedure which comprises a checklist of qualitative parameters for a holistic assessment.

The qualitative assessment parameters are as follows:

- a. Category I. the causative factors:
the degree of nutrient enrichment
 - with regard to inorganic/organic nitrogen
 - with regard to inorganic/organic phosphorus
 - with regard to silicate
taking account of:
 - sources (differentiating between anthropogenic and natural sources)
 - increased/upward trends in concentration
 - elevated concentrations
 - increased N/P, N/Si, P/Si ratios
 - fluxes and nutrient cycles (including across boundary fluxes, recycling within environmental compartments and riverine, direct and atmospheric inputs)
- b. the supporting environmental factors, including:
 - light availability (irradiance, turbidity, suspended load)
 - hydrodynamic conditions (stratification, flushing, retention time, upwelling, salinity, gradients, deposition)
 - climatic/weather conditions (wind, temperature)
 - zooplankton grazing (which may be influenced by other anthropogenic activities);
- c. Category II. the direct effects of nutrient enrichment:
 - i. phytoplankton:
 - increased biomass (e.g. chlorophyll a, organic carbon and cell numbers)
 - increased frequency and duration of blooms
 - increased annual primary production
 - shifts in species composition (e.g. from diatoms to flagellates, some of which are nuisance or toxic species)
 - ii. macrophytes, including macroalgae:
 - increased biomass
 - shifts in species composition (from long-lived species to short-lived species, some of which are nuisance species)
 - reduced depth distribution
 - iii. microphytobenthos:
 - increased biomass and primary production
- d. Category III. the indirect effects of nutrient enrichment:
 - i. organic carbon/organic matter:
 - increased dissolved/particulate organic carbon concentrations
 - occurrence of foam and/or slime
 - increased concentration of organic carbon in sediments (due to increased sedimentation rate)
 - ii. oxygen:
 - decreased concentrations and saturation percentage
 - increased frequency of low oxygen concentrations
 - increased consumption rate
 - occurrence of anoxic zones at the sediment surface ("black spots")
 - iii. zoobenthos and fish:
 - mortalities resulting from low oxygen concentrations
 - iv. benthic community structure:
 - changes in abundance
 - changes in species composition
 - changes in biomass
 - v. ecosystem structure:
 - structural changes
- e. Category IV. other possible effects of nutrient enrichment:
 - i. algal toxins (still under investigation - the recent increase in toxic events may be linked to eutrophication).

3.3.2 Monitoring for eutrophication under EC measures

a. Water Framework Directive

The WFD requires EU Member States to monitor phytoplankton, macroalgae, angiosperms, benthic invertebrate fauna and supporting physico-chemical quality elements like nutrients, turbidity, salinity etc. as part of the determination of the “ecological status” of a water body. As a minimum requirement, surveillance monitoring programmes for eutrophication need to be established. Operational and investigative monitoring for eutrophication is only required in cases in which a water body is at risk of failing to meet a “good ecological status”. For the surveillance monitoring, the WFD sets out requirements on the frequency of sampling. For additional operational and investigative monitoring, the frequency depends on the degree of risk that a water body will fail to meet a “good ecological status”.

b. UWWT Directive and Nitrates Directive

Neither the UWWT Directive nor the Nitrates Directive set out specific criteria for monitoring the trophic status of a water body. A number of EU Member States, however, adopted national guidelines which outline the kind of monitoring and the assessment criteria that could be used. Many of these include criteria similar to those defined under the OSPAR Eutrophication Strategy.

It follows from the Reasoned Opinion issued by the European Commission to the UK under Article 226 of the EC Treaty for the failure of the UK to fulfil its obligations under the UWWT Directive, that the Commission appears to consider the OSPAR checklist in table 6 to provide a key summary of the practical criteria that should be used under the UWWT Directive for the assessment of the trophic status of waters. A number of infringement proceedings initiated by the European Commission against several Member States are presently pending before the Court of Justice of the European Communities (ECJ) which concern the alleged failure to designate, or short-comings in designating, sensitive areas under the UWWT Directive and vulnerable zones under the Nitrates Directive. In its recent judgment in the infringement proceedings Case C-280/02 Commission v France (not yet published) concerning the failure by France to designate sensitive areas under the UWWT Directive, the ECJ set out guidance on the interpretation of the UWWT Directive's definition of, and related assessment criteria for, eutrophication of waters.

c. Other measures

A further potential for synergies in algal toxin monitoring is provided by Council Directive 91/492/EEC of 15 July 1991 laying down the health conditions for the production and the placing on the market of live bivalve molluscs (Shellfish Hygiene Directive). Although the Shellfish Hygiene Directive is to ensure public health and consumer protection by laying down the health conditions for the production and the placing on the market of live bivalve molluscs, Chapter VI of the Annex to the Directive outlines requirements for monitoring to detect changes in the composition of the plankton containing toxins and their geographical distribution. Countries with interest in shellfish production, may have in place substantial phytoplankton monitoring programmes. Typically, these programmes monitor for specific toxin producing species like *Alexandrium* spp. or *Dinophysis* spp. Given the sampling frequencies (typically monthly during the winter period, increasing to at least fortnightly during the spring season and at a high incidence during periods of bloom conditions), these are valuable sampling sets on which further analysis and identification could be performed on.

Finally, the eutrophication activity launched under the WFD to develop guidance for the assessment of eutrophication in fresh waters and marine waters envisages including recommendations on the monitoring for eutrophication.

3.3.3 Comparison of eutrophication monitoring

Although the monitoring for marine eutrophication has not been as clearly defined under the UWWT Directive or the Nitrates Directive as this has been done under the OSPAR Eutrophication Strategy, it is clear that there is broad agreement on the main parameters for monitoring. A summary of the synergies in monitoring is outlined in the Table 7.

Table 7: Synergies in monitoring requirements under the OSPAR Eutrophication Strategy and EC legislation

	OSPAR	EC Directives			
Monitoring requirement		Water Framework Directive	Nitrates Directive	UWWT Directive	Shellfish Hygiene Directive
Category I Degree of Nutrient Enrichment					
Riverine inputs	√	√ (as a pressure)	√	√	
Winter nutrient concentrations	√	Physico-chemical quality element	√	√	
Increased N/P ratio	√	Physico-chemical quality element	√	√	
Category II Direct Effects of Nutrient Enrichment (during growing season).					
Chlorophyll a concentration	√	√ (phytoplankton biomass)	NS	NS	
Phytoplankton indicator species	√	√	NS	NS	√
Macrophytes including macroalgae	√	√	NS	NS	
Category III Indirect Effects of Nutrient Enrichment (during growing season)					
Degree of oxygen deficiency	√	√	NS	√	
Changes/kills in zoobenthos	√	√	NS	NS	
Fish kills	√	Transitional waters only	NS	NS	
Organic carbon / organic matter	√	NS but implied as suitable supporting det.	NS	NS	
Category IV Other possible effects of Nutrient Enrichment (during growing season)					
Algal toxins (DSP/PSP)	√	NS	NS	NS	√

NS – not specified

3.4 Synergies in monitoring guidelines for eutrophication

3.4.1 OSPAR monitoring guidelines for eutrophication

A number of monitoring guidelines have been developed through the OSPAR process to assist in eutrophication monitoring and assessment. These are:

- a. JAMP Eutrophication Monitoring Guidelines: Nutrients (reference number: 1997-02)
- b. JAMP Eutrophication Monitoring Guidelines: Oxygen (reference number: 1997-03)
- c. JAMP Eutrophication Monitoring Guidelines: Chlorophyll a in Water (reference number: 1997-04)
- d. JAMP Eutrophication Monitoring Guidelines: Phytoplankton Species Composition (reference number: 1997-05)
- e. JAMP Eutrophication Monitoring Guidelines: Benthos (reference number: 1997-06)
- f. JAMP Guidelines for General Biological Effects Monitoring (reference number: 1997-07).

3.4.2 EC monitoring guidelines for eutrophication

There are no EC monitoring guidelines under the UWWT Directive. For the Nitrates Directive, the EC has produced guidelines (final version 2004) which so far have not been formally agreed and adopted. Many EU Member States have also developed their own monitoring guidelines under these Directives.

A WFD Monitoring Guidance was produced through the Common Implementation Strategy process supporting the implementation of the Water Framework Directive.

In addition, the Water Framework Directive also makes recommendations for monitoring standards. In Section 1.3.6 of Annex V to the WFD, the standards for monitoring of quality elements are set out as follows:

“Methods used for the monitoring of type parameters shall conform to the international standards listed below or such other national or international standards which will ensure the provision of data of an equivalent scientific quality and comparability.”

The methods listed in this part of the WFD do not cover marine quality elements. There are, however, “other international standards” currently available and covered by the Directive’s reference, which have been developed for marine monitoring methods by the International Organisation for Standardisation (ISO) and the European Committee for Standardization (CEN). These are the **standards on marine sediment sampling** (EN ISO 5667-19:2004) and the **sampling of marine soft bottom macrofauna** (prEN ISO 16665: under preparation; approved in June 2005).

3.4.3 Comparison

The ISO/CEN methodology standards are identical to the OSPAR equivalents. Discussions are currently underway between the European Commission (DG Environment) and ISO/CEN to agree a way forward for the development of standards for marine monitoring. Under the WFD Common Implementation Strategy, the Working Group COAST, who developed the “Guidance on Typology, Reference Conditions and Classification Systems for Transitional and Coastal Waters” (the “COAST Guidance”), recommended that no new monitoring guidelines should be developed under the WFD as this may invalidate long-term biological data sets available for national assessments or for the marine conventions.

3.5 Synergies in eutrophication assessment

3.5.1 OSPAR eutrophication assessment criteria

Over several years, OSPAR has developed a set of common assessment parameters and their corresponding area-specific assessment levels (reference number: 2002-20) to complement the Common Procedure for the identification of the eutrophication status of the OSPAR maritime area (reference number: 1997-11). Following their first application in the assessment of the eutrophication status of the OSPAR maritime area in the meeting cycle 2002/2003, the need for further refinement of the guidance became apparent. This process resulted in the adoption of an updated Common Procedure by OSPAR 2005 (reference number: 2005-3) which supersedes the previous agreements. The revised common assessment parameters are summarised in Table 8 but must be read in the context of the whole Common Procedure. Most of the nutrient and physico-chemical parameters are well defined by the common assessment parameters which are integrated to combine parameters for nutrient enrichment with parameters for eutrophication effects for an initial assessment of the eutrophication status of OSPAR maritime waters (see Chapter 5 of the Common Procedure). This process is summarized in Table 9. A final classification of marine

waters is carried out in an overall assessment as described in Chapter 6 of the Common Procedure. Work on the development of additional assessment parameters and their assessment levels continues in OSPAR.

Table 8: Harmonised assessment parameters and related elevated levels

Note: Parameters found at levels above the assessment level are considered as “elevated levels” and entail scoring of the relevant parameter category as (+) (cf. ‘score’ table at Annex 5 of the Common Procedure). For concentrations, the “assessment level” is defined as a justified area-specific % deviation from background not exceeding 50%.

Assessment parameters	
Category I	Degree of nutrient enrichment Riverine inputs and direct discharges⁴ (area-specific) Elevated inputs and/or increased trends of total N and total P (compared with previous years) Nutrient concentrations (area-specific) Elevated level(s) of winter DIN and/or DIP N/P ratio (area-specific) Elevated winter N/P ratio (Redfield N/P = 16)
Category II	Direct effects of nutrient enrichment (during growing season) Chlorophyll a concentration (area-specific) Elevated maximum and mean level Phytoplankton indicator species (area-specific) Elevated levels of nuisance/toxic phytoplankton indicator species (and increased duration of blooms) Macrophytes including macroalgae (area-specific) Shift from long-lived to short-lived nuisance species (e.g. <i>Ulva</i>). Elevated levels (biomass or area covered) especially of opportunistic green macroalgae.
Category III	Indirect effects of nutrient enrichment (during growing season) Oxygen deficiency Decreased levels (< 2 mg/l: acute toxicity; 2 - 6 mg/l: deficiency) and lowered % oxygen saturation Zoobenthos and fish Kills (in relation to oxygen deficiency and/or toxic algae) Long-term area-specific changes in zoobenthos biomass and species composition Organic carbon/organic matter (area-specific) Elevated levels (in relation to III.1) (relevant in sedimentation areas)
Category IV	Other possible effects of nutrient enrichment (during growing season) Algal toxins Incidence of DSP/PSP mussel infection events (related to II.2)

⁴ Principles of the Comprehensive Study on Riverine Inputs and Direct Discharges (RID).

Table 9 Examples of the integration of categorised assessment parameters for an initial classification.

Category I	Category II	Categories III and IV	Initial Classification
Degree of nutrient enrichment	Direct effects	Indirect effects/other possible effects	
Nutrient inputs	Chlorophyll <i>a</i>	Oxygen deficiency	
Winter DIN and DIP	Phytoplankton indicator species	Changes/kills in zoobenthos, fish kills	
Winter N/P ratio	Macrophytes	Organic carbon/matter	
		Algal toxins	
a	+	+	problem area
	+	-	problem area
	-	+	problem area
b	+	+	problem area ⁵
	+	-	problem area ⁵
	-	+	problem area ⁵
c	-	-	non-problem area ⁶
	?	?	potential problem area
	?	-	potential problem area
	-	?	potential problem area
d	-	-	non-problem area

(+) = Increased trends, elevated levels, shifts or changes in the respective assessment parameters in Table 1

(-) = Neither increased trends nor elevated levels nor shifts nor changes in the respective assessment parameters in Table 1

? = Not enough data to perform an assessment or the data available is not fit for the purpose

Note: Categories I, II and/or III/IV are scored '+' in cases where one or more of its respective assessment parameters is showing an increased trend, elevated level, shift or change.

3.5.2 Ecological Quality Objectives

In their Ministerial Declaration (the "Bergen Declaration") at the Fifth North Sea Ministerial Conference, held at Bergen, Norway, on 21-22 March 2002, the Ministers responsible for the protection of the environment of the North Sea and the European Community agreed to implement an ecosystem approach for the management of the North Sea by identifying, and taking action on, influences which are critical to the health of the North Sea ecosystem. As part of this, the Ministers made a commitment to use Ecological Quality Objectives (EcoQOs) as a tool for setting clear operational environmental objectives directed towards specific management and serving as indicators for the ecosystem health.

Ecological quality was defined as "[a]n overall expression of the structure and function of the marine ecosystem taking into account the biological community and natural physiographic, geographic and climatic factors as well as physical and chemical conditions including those resulting from human activities". Within this overall framework, an ecological quality element was defined as "an individual aspect of overall ecological quality". For each ecological quality element, an ecological quality objective (EcoQO) would be set, which was consequently defined as "the desired level of an ecological quality". The definition added that "[s]uch a level may be set in relation to a reference level". Ministers agreed on a pilot project for the North Sea to implement the agreed set of EcoQOs.

Such pilot EcoQOs for nutrients and eutrophication effects have been developed through OSPAR with advice from ICES for five issues including "Nutrient budgets and production", "Phytoplankton communities", "Oxygen consumption", and "Benthic communities". The five EcoQOs for eutrophication were developed in parallel with, and were derived from, the assessment parameters and their assessment levels set out in the Common Procedure. Accordingly, for the purpose of eutrophication, the desired levels of ecological quality (the EcoQOs) are referred to as "assessment levels". The five EcoQOs for eutrophication form an integrated set and are strongly interlinked along a cause/effect chain from nutrient enrichment to direct effects

⁵ For example, caused by transboundary transport of (toxic) algae and/or organic matter arising from adjacent/remote areas.

⁶ The increased degree of nutrient enrichment in these areas may contribute to eutrophication problems elsewhere.

(chlorophyll *a* and phytoplankton nuisance and toxic indicator species) and indirect effects (oxygen deficiency and benthos kills). The set of EcoQOs for eutrophication are closely linked to human activities, namely those resulting in elevated inputs of nutrients. They form an integral part of the target-oriented approach of the OSPAR Eutrophication Strategy.

OSPAR 2005 evaluated and reviewed the EcoQOs identified by the Fifth North Sea Conference, including those for eutrophication. OSPAR 2005 adopted a Background Document on EcoQOs for eutrophication (publication number: 229 (2005)) and agreed that they were brought in line with the updated Common Procedure. The ecological quality elements and their EcoQOs for eutrophication, as revised by OSPAR 2005, are summarised in table 10.

Table 10: Ecological quality elements, and their related ecological quality objectives, for eutrophication

Ecological quality element	Ecological quality objective
<i>Category I: degree of nutrient enrichment</i> Winter nutrient concentrations (Dissolved inorganic nitrogen (DIN) and dissolved inorganic phosphate (DIP))	Winter DIN and/or DIP should remain below a justified salinity-related and/or area-specific % deviation from background not exceeding 50%.
<i>Category II: direct effects</i> Phytoplankton chlorophyll <i>a</i>	Maximum and mean chlorophyll <i>a</i> concentrations during the growing season should remain below a justified area-specific % deviation from background not exceeding 50%.
<i>Category II: direct effects</i> Phytoplankton indicator species for eutrophication	Area-specific phytoplankton eutrophication indicator species should remain below respective nuisance and/or toxic elevated levels (and there should be no increase in the average duration of blooms)
<i>Category III: indirect effects</i> Oxygen	Oxygen concentration, decreased as an indirect effect of nutrient enrichment, should remain above region-specific oxygen deficiency levels, ranging from 4-6 mg oxygen per liter
<i>Category III: indirect effects</i> Changes/kills in zoobenthos in relation to eutrophication	There should be no kills in benthic animal species as a result of oxygen deficiency and/or toxic phytoplankton species.

3.5.3 EC eutrophication assessment criteria

The UWWT Directive and the Nitrates Directive do not define criteria for the assessment of eutrophication.

Under the Water Framework Directive, assessments of biological, physico-chemical and hydromorphological quality elements are combined to determine a water body's "ecological status". Currently, Member States are developing metrics to describe the quality elements including metrics to describe benthic invertebrate fauna, macroalgae, angiosperms and phytoplankton. The focus of the WFD is on the biological quality elements, with physico-chemical and hydromorphological elements as supporting determinands. There is currently ongoing work across Europe on the development of biological classification tools for each of the quality elements.

The COAST Guidance developed under the CIS – "Guidance on Typology, Reference Conditions and Classification Systems for Transitional and Coastal Waters" – cites the OSPAR Common Procedure, in particular its assessment tools available for phytoplankton, other aquatic flora and other benthic invertebrate fauna.

As described in more detail in section 3.2.3, the European Commission launched a process to develop an EC guidance on eutrophication assessment which attempts to harmonize the assessment methodologies throughout Europe, using the OSPAR Common Procedure as a starting point.

3.5.4 Comparison

The OSPAR parameter for phytoplankton includes maximum and mean chlorophyll *a* concentrations as a surrogate for algal biomass, and the presence/concentration of nuisance/toxic algae species as one way of measuring composition and abundance of species. This is not fully compatible with the WFD in that it

focuses on nuisance and toxic algae rather than on the whole phytoplanktonic taxa as does the WFD. However, the COAST Guidance suggests that the “Comprehensive Procedure” of the Common Procedure may have to be adapted for region-specific circumstances, but clearly could be used as a framework for further development of classification tools under the WFD. As phytoplankton classification tools are developed by Member States under the WFD processes, these could be used to supplement the existing set of common assessment parameters in the Comprehensive Procedure.

The OSPAR parameters for other aquatic flora, such as macroalgae and angiosperms, require that their population should not shift from long-lived (for example eel grass) to short-lived nuisance species (for example *Ulva*). As assessment tools relating to macroalgae and angiosperm are developed by Member States under the WFD processes, these could be used to supplement the existing set of common assessment parameters in the Comprehensive Procedure.

The OSPAR parameters use benthic invertebrate fauna as criterion to measure the indirect effects of eutrophication. The OSPAR criteria make a distinction between acute toxicity (directly related to oxygen deficiency and/or toxic blooms), and long-term changes in the composition of zoobenthos species as a result of long-term increased eutrophication. As assessment tools relating to benthic invertebrate fauna are developed by Member States under the WFD processes, these could be used to supplement the existing set of common assessment parameters in the Comprehensive Procedure.

The differences and overlaps between OSPAR and the WFD will be further considered by OSPAR in its continuous work relating to common assessment parameters under the Common Procedure and synergies between the OSPAR Comprehensive Procedure, OSPAR Ecological Quality Objectives for eutrophication and the WFD (see publication number: 231 (2005)). The differences and overlaps are also considered by the EC’s “eutrophication activity” under the CIS when developing guidance on the assessment of eutrophication.

3.6 Synergies in input and source monitoring for nutrients and related guidelines

3.6.1 OSPAR input and source monitoring

The Comprehensive Study on Riverine Inputs and Direct Discharges (RID) provides annual data on the waterborne inputs of, amongst others, total nitrogen and total phosphorus to the marine environment. The Comprehensive Atmospheric Monitoring Programme (CAMP) collects on an annual basis data on atmospheric inputs of contaminants from a network of coastal stations, amongst others for nutrients (in gaseous phase: NO₂, HNO₃ and NH₃; in aerosol phase⁷: ammonium (NH₄⁺) and nitrate (NO₃⁻)).

The implementation reporting on PARCOM Recommendation 88/2 on the reduction in inputs of nutrients to the Paris Convention area requires the submission of information on nutrient inputs. To this end, OSPAR has developed a set of guidelines to enable Contracting Parties to quantify and report in a harmonised and transparent way discharges and losses of nitrogen and phosphorus from point and diffuse sources into inland surface waters and the OSPAR maritime area. These are the OSPAR Guidelines for Harmonised Quantification and Reporting Procedures for Nutrients (the “HARP-NUT Guidelines”) which have been established for a variety of point and diffuse sources. They contain guidance on aquaculture, industrial releases, urban waste water, households not connected to public sewerage, diffuse sources/agriculture, riverine inputs (based on RID), retention and source apportionment. For industry and urban waste water, the guidelines were brought in line with requirements of the UWWT Directive and those for data reporting to EPER. The Guideline on agriculture (HARP-NUT draft Guideline No. 6) are still under development – the results of the EUROHARP project (co-financed by the EU under the 5th EC Research Framework Programme) will be the basis for finalising the Guideline to provide the tools for a harmonised and transparent way to quantify losses of nutrients from agriculture. An OSPAR workshop will be held in September 2005 to assist the finalisation of this Guideline.

The overall assessment report on the implementation of PARCOM Recommendation 88/2 published in 2003 (see publication number: 191 (2003)) was the first OSPAR report that has been produced based on the application of the above-mentioned HARP-NUT Guidelines.

Although Recommendation 88/2 does not explicitly distinguish between aquatic inputs and inputs via the atmosphere, in practice, the implementation reporting only addresses waterborne inputs. Besides the CAMP, no OSPAR activities exist to collect information on nutrient emissions to air. Instead, OSPAR carried out an assessment of data and information collected, and made available, by other international frameworks, in particular data collected under the UNECE Convention on Long-range Transboundary Air Pollution (see

⁷ As an alternative total nitrate (sum of gaseous HNO₃ and particulate NO₃) and total ammonium (sum of gaseous NH₃ and particulate NH₄) can be measured.

EMEP), relating to the emission of nitrogen to air and its deposition to the marine environment (see publication number: 232 (2005)).

3.6.2 EC input and source monitoring

a. Water Framework Directive

Under the WFD, Member States are required to submit an initial report on the characterisation of their river basin districts covered by the WFD by December 2004 (Article 5). The characterisation report includes an assessment of the pressures and impacts of human activities on the status of surface waters. It is obvious that Member States will also address the sources for the release of nutrients to the aquatic environment. This characterisation process shall be reviewed by 2013 at the latest, and every six years thereafter. In addition to the characterisation reports, EU Member States are required to produce river basin management plans by 2009 (Article 13). These shall be reviewed in 2015 at the latest, and every 6 years thereafter. The WFD does not make provision for a common input inventory at EU level.

b. Urban Waste Water Treatment Directive

Under the UWWT Directive, Member States are required to report on the loads of organic substances and on the availability of the required tertiary treatment at waste water treatment plants to remove nitrogen and/or phosphorus. It requires information on both urban waste water treatment plants and biodegradable industrial waste water from plants belonging to the agro-food processing sectors (listed in Annex III of the UWWT Directive) which discharge directly into surface waters (Article 13 of the UWWT Directive). The most recent third synthesis report on the implementation of the Directive has been published by the European Commission in April 2004 (see COM(2004) 248 final).

c. Nitrates Directive

The Nitrates Directive does not explicitly require reporting on quantified losses of nitrogen from agriculture. However, the EUROHARP project as referred to in section 3.6.1 above is also meant to support the quantification of nutrient losses for the purposes of the Nitrates Directive.

d. IPPC Directive (EPER)

Under the IPPC Directive, and the European Pollutant Emission Register (EPER) set up for its purposes, national governments of all EU Member States are required to maintain inventories of emission data from specified industrial sources and to report discharges to water, and emissions to air, from individual facilities to the European Commission. The inventory includes amongst others emissions to air of N₂O, NH₃ and NMVOC, as well as NO_x discharges to water of total nitrogen and total phosphorus. Member States were due to deliver their first national reports in 2003 and shall report every three years thereafter. The new Member States are required to deliver their first reports in 2006.

e. Emissions to air

Details on the information that is generated under other EU Directives dealing with air pollution can be found in publication number: 232 (2005)).

3.6.3 Comparison

Only OSPAR is dealing with the assessment of atmospheric inputs of nitrogen, and riverine inputs of nutrients, to the marine environment. Monitoring for the WFD in rivers might coincide with monitoring necessary for the RID.

OSPAR is not dealing with the collection of data on emissions of nitrogen to air. Within the EU various initiatives exist of which OSPAR can make use when assessing emissions of nitrogen to air and its atmospheric deposition.

Within OSPAR, in principle, all nutrient releases to water, from point sources and diffuse sources, are assessed. Within the present EU system, not all point sources for nutrient releases are assessed (for example, aquaculture, households not connected to public sewerage, specific industrial releases, or specific nutrient releases from urban waste water treatment plants are not covered). Definitions of the sectors for which reporting is required have been harmonised between the EU (see IPPC Directive and UWWT Directive) and OSPAR by means of the HARP-NUT Guidelines and their revision in 2004.

3.7 Synergies in reporting

3.7.1 OSPAR reporting schedule and reporting format

Under its eutrophication theme, the 2003 Strategy on a Joint Assessment and Monitoring Programme (JAMP) committed OSPAR to carry out a number of assessments which are summarised in Table 11 and feed into the 2010 OSPAR quality status report. Work in OSPAR to synchronize reporting and eutrophication assessments with relevant EU reporting obligations and assessment schedules will continue in the meeting cycle 2005/2006.

Table 11: Assessment products under the JAMP (theme E) for eutrophication

Year	JAMP product reference	Assessment title
2004	EA-1	Assessments of atmospheric emissions and modeled depositions of nutrients
2005	EA-2 EA-3	Assessments of temporal trends and (where relevant/possible) spatial distribution for the nutrients where periodic sampling and analysis is undertaken, in particular under CAMP, CEMP and RID An assessment of the pilot project on ecological quality objectives for the North Sea
2006	EA-4 EA-5	An assessment of the achievement of the 50% reduction target using information obtained through implementation reporting on PARCOM Recommendations 88/2 and 89/4 – reporting formats attached to the measures An assessment of the expected eutrophication status of the OSPAR maritime area following the implementation of agreed measures
2008	EA-6	An assessment of the eutrophication status of areas identified under the Common Procedure as problem areas and potential problem areas, and of any non-problem areas where there have been changes, which give grounds for concern

3.7.2 EC reporting schedule

a. Water Framework Directive

Under the WFD, Member States are required to submit an initial report on characterisation of the river basin districts covered by the Directive by December 2004 (Article 5). The characterisation report includes an assessment of the pressures and impacts of human activity on the status of surface waters, as well as the likelihood that surface water bodies will fail to meet the environmental quality objectives set for the water body concerned. The characterisation process shall be reviewed by 2013 at the latest, and every six years thereafter. In addition to the characterisation reports, Member States are required to produce river basin management plans (Article 13) by 2009. These shall be reviewed by 2015 at the latest, and every 6 years thereafter. All these reports under the WFD will incorporate information on the trophic status of surface waters and the pressures and impacts they are exposed to.

b. Urban Waste Water Treatment Directive

Under the UWWT Directive, the identification of sensitive areas shall be reviewed at intervals of no more than four years from the date of their first identification. This was in December 1993 (Article 5). Accordingly, sensitive area must be assessed for review in 1997, 2001, 2005, 2009 and 2013 etc.

c. Nitrates Directive

An assessment schedule similar to that of the UWWT Directive exists under the Nitrates Directive. The designation of vulnerable zones, which is based on the trophic status of estuarial and coastal waters, shall be reviewed every four years following the second year of the notification of the Directive. This means that a review is due in 1997, 2001, 2005, 2009, and 2013 etc.

d. IPPC Directive (EPER)

EU Member States were required to submit their first report on emissions of nitrogen to air and inputs of nutrients to water to EPER in June 2003. The first reporting year was 2001 although Member States had the option to report data for 2000 and 2002. The next report will be delivered in June 2006 and will cover emissions in 2004.

3.8 Conclusions

In conclusion of the results of the comparison of OSPAR and EU monitoring and assessment requirements with regard to nutrients and eutrophication effects, there is scope for continued work in OSPAR on synergies

between the OSPAR Common Procedure, EcoQOs for eutrophication and the Water Framework Directive. Under the CIS for the WFD, in particular its eutrophication activity, the development of guidance on eutrophication assessment gives additional opportunities for synergies in future eutrophication assessment tasks. For point sources, the EUROHARP project provides a chance to approximate the quantification methods for losses of nutrients from agriculture in the framework of OSPAR and the EU.

4. Radioactive Substances

4.1 Synergies in objectives

The objective of OSPAR with regard to radioactive substances, including waste, is set out in the 2003 OSPAR Radioactive Substances Strategy as follows:

“to prevent pollution of the maritime area from ionising radiation through progressive and substantial reductions of discharges, emissions and losses of radioactive substances, with the ultimate aim of concentrations in the environment near background values for naturally occurring radioactive substances and close to zero for artificial radioactive substances. In achieving this objective, the following issues should, *inter alia*, be taken into account:

- a. legitimate uses of the sea;
- b. technical feasibility;
- c. radiological impacts on man and biota.”

This Strategy will be implemented in accordance with the Programme for More Detailed Implementation of the Strategy with Regard to Radioactive Substances (reference number: 2001-3) in order to achieve by the year 2020 that the Commission will ensure that discharges, emissions and losses of radioactive substances are reduced to levels where the additional concentrations in the marine environment above historic levels, resulting from such discharges, emissions and losses, are close to zero.

At present, no such objective has been formally set in the EU. The present EMS material for the development of a European Marine Strategy comprises an objective that is similar to the OSPAR objective:

“to prevent pollution from ionising radiation through progressive and substantial reductions of discharges, emissions and losses of radioactive substances, with the ultimate aim to reach concentrations in the marine environment near background values for naturally occurring radioactive substances and close to zero for artificial radioactive substances.”

This objective, and all other material for the European Marine Strategy relating to the impact on the marine environment of radioactive substances, will have to find its treaty-basis in the Euratom Treaty.

The objective consists of two components: (1) discharges/emissions/losses and (2) concentrations in the marine environment. To enable assessment of progress towards achieving the objective, both components need to be addressed and monitored. In the OSPAR framework, the necessary assessment products, tools and processes are set out under the Radioactive Substances Theme (theme R) of the JAMP.

4.2 Synergies in monitoring and reporting of discharges and emissions of radioactive substances

4.2.1 Monitoring and reporting arrangements under the OSPAR Convention

Since 1986, OSPAR has collected and published information on liquid discharges of radioactive substances from nuclear installations. Initially, this covered nuclear power stations and nuclear-fuel reprocessing plants. It has since been extended to cover also nuclear-fuel fabrication and enrichment plants and nuclear research and development facilities. An expert panel regularly compiles and assesses the annual data on liquid discharges of radioactive substances from nuclear installations, including trend assessments.

Table 12 gives an overview of the information collected by OSPAR on radionuclides and groups of radionuclides.

Table 12: Information collected by OSPAR on (groups of) radionuclides

Nuclear power stations	Nuclear-fuel fabrication and enrichment plants	Nuclear-fuel reprocessing plants	Nuclear research and development facilities
Total-α; total-β; tritium; Co 58; Co 60; Zn 65; Sr 90; Zr95 + Nb 95; Ru 106; Ag 110m; Sb 125; Cs 134; Cs 137; Ce 144.	Total-α; total-β; tritium; total β-emitting and γ-emitting radionuclides; uranium (all isotopes); uranium daughter- radionuclides; α-emitting radionuclides other than uranium; Tc 99; Th 230; Th 232; Np 237.	total-α; total-β; tritium C 14; S 35; Mn 54; Fe 55; Co 57; Co 58; Co 60; Ni 63; Zn 65; Sr 89; Sr 90; Sr 90 + Cs 137; Zr 95 + Nb 95; Tc 99; Ru 103; Ru 106; Ru 106 + Rh 106; Ag 110m; Sb 124; Sb 125; I 129; Cs 134; Cs 137; Ce 144; Ce144 + Pr144; Pm 147; Eu 152; Eu 154; Eu 155; Np 237; Plutonium-a; Pu 241; Am 241; Cm 242; Cm 243 + Cm242	total-α; total-α excluding Cm 242; total-β; total β-emitting and γ-emitting radionuclides; tritium; Be 7; Na 22; S 35; Cr 51; Mn 54; Co 57; Co 58; Co 60 Zn 65 Sr 90 Nb 95 Zr 95 Zr 95 + Nb 95 Ru 106 Ag 110m Sb 124 Sb 125 I 125 I 131 Cs 134 Cs 137 Ce 144 Gd 153 Eu 154 Pu 239 U 234 + U 238 Pu 238 + Am 242 Pu 239 + Pu240 Pu 241 Cm 242

In OSPAR, discussions are under way to see if the handling of data collected under this system can be managed together with the handling of data to be collected under the system to be set up under Commission Recommendation 2004/2/Euratom of 18 December 2003 on standardised information on radioactive airborne and liquid discharges into the environment from nuclear power reactors and reprocessing plants in normal operation. The intention is that the outcome of such discussion should be embodied in a Memorandum of Understanding between the European Commission and OSPAR on the management of discharge data.

In 2004, OSPAR agreed reporting procedures for discharges of radioactive substances from non-nuclear sectors which were amended in 2005 (reference number: 2005-7). A monitoring programme is being established for inputs of radioactive substances from the non-nuclear sector.

Moreover, OSPAR is in the process of establishing and applying a baseline for all radioactive discharges, in order to enable evaluation of the progress towards achieving its objective relating to radioactive substances, including waste.

4.2.2 Monitoring and reporting arrangements under the Euratom Treaty

Under Commission Recommendation 2004/2/Euratom of 18 December 2003 on standardised information on radioactive airborne and liquid discharges into the environment from nuclear power reactors and reprocessing plants in normal operation, EU Member States are required to submit data to the European Commission for the purpose of the drafting of periodic public reports on radioactivity in the EU. The data on determinands covered by Commission Recommendation 2004/2/Euratom are summarised in Table 13.

Table 13: Data on determinands covered by Commission Recommendation 2004/2/Euratom

Nuclear power plants		Nuclear-fuel reprocessing plants	
Air emissions	Liquid discharges	Air emissions	Liquid discharges
Noble gases	Tritium H-3 1E +05	Noble gases	Tritium*
Ar-41	Other radionuclides	Kr-85*	Beta/gamma-emitters
Kr-85*	(excluding H-3)	Beta/gamma-emitting	(excluding H-3)
Kr-85m	S-35*	particulates (excluding	C-14
Kr-87	Cr-51	iodines)	S-35 (1)
Kr-88	Mn-54	Co-60*	Mn-54
Kr-89	Fe-55	Sr-90*	Fe-55
Xe-131m	Fe-59	Ru-106*	Co-57
Xe-133*	Co-58	Sb-125	Co-58
Xe-133m	Co-60*	Cs-134	Co-60*
Xe-135	Ni-63	Cs-137*	Ni-63
Xe-135m	Zn-65	Pu-241	Zn-65
Xe-137	Sr-89	Alpha-emitting	Sr-89
Xe-138	Sr-90*	particulates	Sr-90*
Sulphur-35*	Zr-95	Pu-238	Zr-95 +Nb-95
Particulates (excluding	Nb-95	Pu-239 +Pu-	Tc-99
iodines)	Ru-103	240*	Ru-103
Cr-51	Ru-106	Am-241	Ru-106
Mn-54	Ag-110m	Cm-242*	Ag-110m
Co-58	Sb-122	Cm-243	Sb-124
Fe-59	Te-123m	Cm-244	Sb-125
Co-60*	Sb-124	Iodines	I-129*
Zn-65	Sb-125	I-129*	Cs-134
Sr-89	I-131	Tritium*	Cs-137*
Sr-90*	Cs-134	Carbon-14*	Ce-144
Zr-95	Cs-137*		Pm-147
Nb-95	Ba-140		Eu-152
Ag-110m	La-140		Eu-154
Sb-122	Ce-141		Eu-155
Sb-124	Ce-144		Pu-241
Sb-125	Pu-238		Alpha-emitters
Cs-134	Pu-239 + Pu-		Np-237
Cs-137*	240*		Pu-238
Ba-140	Am-241*		Pu-239 +Pu-
La-140	Cm-242		240*
Ce-141	Cm-243		Am-241
Ce-144	Cm-244		Cm-242*
Pu-238	Total-alpha*		Cm-243
Pu-239 +Pu-			Cm-244
240*			Uranium
Am-241*			
Cm-242			
Cm-243			
Cm-244			
Total-alpha *			
Iodines			
I-131*			
I-132			
I-133			
I-135			
Tritium*			
Carbon-14			

* key nuclides

4.2.3 Comparison of monitoring and reporting arrangements under OSPAR and the Euratom Treaty

The main differences of the reporting requirements under Commission Recommendation 2004/2/Euratom from those under the OSPAR Convention are that:

- a. the Recommendation covers emissions to air as well as liquid discharges;
- b. the Recommendation does not cover nuclear-fuel fabrication and enrichment plants and nuclear research and development facilities;
- c. the aggregation of a number of radionuclides into the group “total-β” has been dropped; separate reports on the individual radionuclides are recommended instead;
- d. “key nuclides” are identified on which more information is required, and which can serve as indicators for groups of radionuclides.

No structural arrangements exist within the EU to collect and assess data on radioactive discharges on non-nuclear installations. However, the EC MARINA II study, updating the project on the radiological exposure of the European Community from radioactivity in North European marine waters, produced some data on the non-nuclear sector for the North-East Atlantic.

4.3 Synergies in marine monitoring and related guidelines

OSPAR has agreed on a baseline for the concentrations of radioactive substances in the marine environment and on a baseline for the resultant doses to the members of the public. OSPAR 2005 adopted a Monitoring Programme for Concentrations of Radioactive Substances in the Marine Environment (reference number: 2005-8). OSPAR is presently developing monitoring guidelines for radionuclides in the marine environment and structured reporting by Contracting Parties of the relevant monitoring data⁸.

No equivalent developments exist in the EU. The Water Framework Directive does not explicitly address environmental monitoring of radioactive substances. The EC MARINA II study provides some information on existing marine monitoring data.

4.4 Synergies in assessment criteria and assessments

OSPAR regularly examines information from the European Community and the International Atomic Energy Agency (IAEA) on the progress in other international forums on the development of environmental quality criteria with respect to radioactive substances. At the moment, no further OSPAR work is done in this area.

The assessments to be produced by OSPAR, which support the general assessment in 2010 of the quality status of the OSPAR maritime area and its sub-regions, are set out in table 14.

Table 14: Assessment products under the JAMP (theme R) for radioactive substances

Year	JAMP product reference	Assessment Title
2006	RA-1	First Periodic Evaluation of Progress towards the Objective of the Radioactive Substances Strategy (concerning progressive and substantial reductions in discharges of radioactive substances, as compared with the agreed baseline)
2007	RA-2	Second Periodic Evaluation of the Progress towards the Objective of the Radioactive Substances Strategy (concerning concentrations in the environment as compared with the agreed baseline and including an assessment (for those regions where information is available) of the exposure of humans to radiation from pathways involving the marine environment)
2008	RA-3	An assessment (for those regions where information is available) of the impact on marine biota of anthropogenic sources (past, present and potential) of radioactive substances
2009	RA-4	Third Periodic Evaluation of the Progress towards the Objective of the Radioactive Substances Strategy (being an overall assessment of radionuclides in the OSPAR maritime area)

No such comprehensive assessments are yet foreseen in the EU.

⁸ Linked to the proposals for assessment and monitoring included in, or associated with, national plans for achieving the objective of the Strategy, in the context of the Programme for a More Detailed Implementation of the Strategy with regard to Radioactive Substances (reference number: 2001-3).

4.5 Conclusion

Where overlaps in monitoring and assessment activities relating to radioactive substances exist between OSPAR and the EU, initiatives have been taken to gain efficiency. This is mainly valid for discharges from nuclear facilities. The differences are described in section 4.2.3 above. For the remaining activities, no overlaps exist (yet).

5. Offshore oil and gas industry

5.1 Synergies in objectives

5.1.1 OSPAR objectives with regard to the offshore oil and gas activities

a. *OSPAR Offshore Oil and Gas Industry Strategy*

The main objective of OSPAR with regard to offshore oil and gas activities is outlined in the 2003 OSPAR Offshore Oil and Gas Industry Strategy as follows:

“In accordance with the general objective, the objective of the Commission with regard to the setting of environmental goals for the offshore oil and gas industry and the establishment of improved management mechanisms to achieve them is to prevent and eliminate pollution and take the necessary measures to protect the maritime area against the adverse effects of offshore activities so as to safeguard human health and to conserve marine ecosystems and, when practicable, restore marine areas which have been adversely affected.” “Offshore activities” are defined by the OSPAR Convention as “activities carried out in the maritime area for the purposes of the exploration, appraisal or exploitation of liquid and gaseous hydrocarbons”.

OSPAR is committed to implement this objective progressively, following on, and consistent with, the commitments made in other OSPAR Strategies. To this end, OSPAR will take the intermediate steps set out in paragraph 4.1 of the Strategy. These include establishing by 2005 and 2006 environmental goals in respect of the protection and conservation of the maritime area against adverse effects from offshore activities, including activities other than pollution. The most relevant OSPAR Strategies linking to offshore activities which need to be taken account of in the implementation of the Offshore Oil and Gas Industry Strategy are the Hazardous Substances Strategy and the Biological Diversity and Ecosystems Strategy. The Radioactive Substances Strategy may have an increasing importance in the years to come. Finally, the Eutrophication Strategy is regarded as less important in relation to offshore oil and gas activities.

b. *Specific OSPAR instruments*

The objectives of the Offshore Oil and Gas Industry Strategy are further detailed for their implementation by various OSPAR instruments. Three OSPAR instruments are of particular relevance with regard to monitoring and assessment: OSPAR Decision 2000/2 and OSPAR Recommendations 2001/1 and 2005/2, as further explained below.

The purpose and scope of OSPAR Decision 2000/2 on a Harmonised Mandatory Control System for the Use and Reduction of the Discharge of Offshore Chemicals (HMCS) is laid down in its §§ 2.1 and 2.2 as follows:

“2.1 The purpose of this Decision is that by application of the management mechanisms set out in this Decision, authorities shall ensure and actively promote the continued shift towards the use of less hazardous substances (or preferably non-hazardous substances) and, as a result, the reduction of the overall environmental impact resulting from the use and discharge of offshore chemicals.

2.2 This Decision shall be applied to any regulatory action, such as the granting of permits or approvals by authorities, concerning the use of, or the discharge of, chemicals from offshore sources. In the territory of those Contracting Parties where the use and discharge of offshore chemicals are regulated by frame permits based on internal (in-company) environmental control and where specific elements of the procedures required by the programmes and measures stipulated below are carried out by the companies themselves, the authorities shall be responsible for effective enforcement and control by a system of regular auditing, inspection or monitoring.”

The purpose and scope of OSPAR Recommendation 2001/1 for the Management of Produced Water from Offshore Installations is laid down in §§ 2.1 – 2.3 as follows:

“2.1 The purpose of this Recommendation is to prevent and eliminate pollution by oil and other substances caused by discharges of produced water into the sea.

2.2 This Recommendation applies only to those offshore installations that discharge produced water to the maritime area.

2.3 This Recommendation is in addition to the controls on the use and discharge of chemicals established by OSPAR Decision 2000/2 on a Harmonised Mandatory Control System for the Use and Reduction of the Discharge of Offshore Chemicals.”

The overall goal of this Recommendation is to:

- a. reduce the input of oil and other substances into the sea resulting from produced water from offshore installations, with the ultimate aim of eliminating pollution from those sources;
- b. ensure that an integrated approach is adopted, so that reduction in oil discharge is not achieved in a way that causes pollution in other areas and/or other environmental compartments;
- c. ensure that effort is made to give priority to actions related to the most harmful components of produced water.

The ultimate long-term goal of Recommendation 2001/1 is that by 2020 Contracting Parties should achieve:

- a. a reduction of oil in produced water discharged into the sea to a level which will adequately ensure that each of those discharges will present no harm to the marine environment;
- b. in accordance with the objective and the timeframe of the OSPAR Strategy with regard to Hazardous Substances, a continuous reduction in discharges of hazardous substances *via* produced water, by making every endeavour to move towards the target of cessation of discharges of hazardous substances with the ultimate aim of achieving concentrations in the marine environment near background values for naturally occurring substances and close to zero for man-made synthetic substances.

Finally, as a first step towards setting environmental goals for the offshore industry, OSPAR 2005 adopted Recommendation 2005/2 on Environmental Goals for the Discharge by the Offshore Industry of Chemicals that are, or Contain Added Substances, Listed in the OSPAR List of Chemicals for Priority Action. To give effect to this Recommendation, OSPAR 2005 amended Decision 2000/2 and Recommendation 2000/5 on a Harmonised Offshore Chemical Notification Format (HOCNF) accordingly. The environmental goals set for discharges of offshore chemicals require that

- a. with immediate effect, Contracting Parties should not authorise discharges of new offshore chemicals that are, or contain added substances, listed in the OSPAR List of Chemicals for Priority Action;
- b. by 1 January 2010, Contracting Parties will phase out the discharge into the OSPAR maritime area of offshore chemicals that are, or which contain added substances, listed in the OSPAR List of Chemicals for Priority Action.

Work continues in OSPAR with regard to developing environmental goals for the offshore sector, with a particular focus, in the next step, to address those chemicals that are, or which contain added substances, identified as candidates for substitution.

5.1.2 EC objectives with regard to the offshore oil and gas industry

There is no specific EU policy or legislation addressing the offshore oil and gas industry. Several pieces of EU environmental legislation are also applicable to the offshore oil and gas industry, such as the Habitats Directive (92/43/EEC), the Birds Directives (79/409/EEC), Directives that address air emissions such as the IPPC Directive (91/61/EEC) (but with the exception of the Large Combustion Plants Directive (2001/80/EC), which currently exempts the offshore sector for technical reasons), and Directives on Environmental Impact Assessment (85/337/EEC) and on Strategic Environmental Assessment (2001/42/EC). Discharges from offshore industry are regulated by regional seas conventions such as the OSPAR, HELCOM and the Barcelona Convention.

The present EMS material for the development of a European Marine Strategy addresses the offshore industry more or less directly in its objective 13 as follows:

“To reduce the environmental impact of the exploitation of non-renewable marine resources”.

The key objective of the Water Framework Directive is to achieve good water status for all waters by the WFD by 2015. The WFD does not specifically mention the offshore oil and gas industry and the effects of oil discharges. However, one aspect of “good water status” is related to the “good ecological status” which includes the biological balance of aquatic organisms. Environmental monitoring of the impact of offshore oil

and gas activities, both in sediments and in the water column, are major elements to ensure the control of the environmental status around offshore installations.

However, due to its geographic coverage, the Water Framework Directive has presently only limited relevance for the offshore industry. In the relatively limited area of “coastal waters” (defined to extend to 1 nm seaward of the baseline) to which the requirements for the “ecological status” of surface waters apply, no offshore oil and gas installations exist. In the “territorial waters” which extend up to 12 nm seaward of the baseline and to which the requirements for the “chemical status” of surface waters seem to apply, only a few offshore installations can be found.⁹

5.2 Synergies in monitoring

5.2.1 OSPAR monitoring for the impact of offshore oil and gas activities

OSPAR has agreed Guidelines for Monitoring the Environmental Impact of Offshore Oil and Gas Activities (reference number: 2004-11). This agreement does not pose an obligation to perform such monitoring. It only provides guidance on how to do it.

5.2.2 EC measures on monitoring for oil and gas activities

There are no EC instruments on monitoring in place that can be directly compared to the OSPAR offshore monitoring measures. The IPPC Directive does not contain any monitoring strategies in this regard.

5.3 Synergies in monitoring guidelines

5.3.1 OSPAR monitoring guidelines

A number of monitoring guidelines have been developed by OSPAR in order to assist in monitoring and assessing impacts on the marine environment. Those that are, or can be, relevant for monitoring the effects of offshore oil and gas activities are listed below:

- a. OSPAR Guidelines for monitoring the environmental impact of offshore oil and gas activities (reference number: 2004-11);
- b. JAMP Guidelines on standard methodology for the use of oiled beached birds as indicators of marine oil pollution (reference number: 1995-6);
- c. JAMP Guidelines for monitoring contaminants in sediments (reference number: 2002-16);
- d. JAMP Guidelines for monitoring contaminants in biota (reference number: 1999-2);
- e. JAMP Guidelines for General Biological Effects Monitoring (reference number: 1997-7);
- f. JAMP Guidelines for contaminant-specific biological effects monitoring (reference number: 2003-10), and;
- g. JAMP Guidelines on Quality Assurance for biological monitoring in the OSPAR area (reference number: 2002-15).

Further JAMP products concerning offshore activities are under development within OSPAR. Among these are the following:

- a. Information collection through a harmonised reporting system by 2006 (JAMP product OM-2). This will build on collection of data through (i) a harmonised reporting system which compiles the information collected by Contracting Parties on the basis of existing reporting formats for the submission of data for the annual OSPAR report on discharges, spills and emissions from offshore oil and gas installations and through (ii) reporting formats for the regular submission of national reports on the implementation of OSPAR Decision 2000/2 and OSPAR Recommendations 2000/4 and 2000/5 (chemicals used and discharged), OSPAR Decision 2000/3 (organic phased drilling fluids (OPF) and OPF contaminated cutting) and OSPAR Recommendation 2001/1 (oil in produced waters);
- b. Establishment of a harmonised reporting system to compile environmental monitoring data (JAMP product OT-3). A proposal for a harmonised reporting format to collect data and

⁹ For the different views on the coverage of territorial waters for the purpose of monitoring the “chemical status” of surface water see sections 2.1.2 (footnote 1) and 2.3.2 above.

information on environmental monitoring in relation to offshore oil and gas activities will be presented for discussion at OIC 2006.

5.3.2 EC monitoring guidelines

There are no EC monitoring guidelines under any of the EC Directives mentioned above that are relevant to monitoring oil and gas offshore activities. However, the WFD makes the following recommendations for standards for the monitoring of quality elements (section 1.3.6 of Annex V to the WFD):

“Methods used for the monitoring of type parameters shall conform to the international standards listed below or such other national or international standards which will ensure the provision of data of an equivalent scientific quality and comparability.”

The methods listed in this section of the WFD do not cover marine quality elements. Presently, there are, however, some “other international standards” available and covered by the Directive’s reference which have been developed for marine monitoring methods by the International Organisation for Standardisation (ISO) and the European Committee for Standardisation (CEN). These are the **standards on marine sediment sampling** (EN ISO 5667-19:2004) and the **sampling of marine soft bottom macrofauna** (prEN ISO 16665: in preparation; approved in June 2005). These standards are based on existing Norwegian standards on sampling of marine sediments and soft bottom fauna. They are regularly used in Norwegian inshore and offshore waters and are referred to as ISO/CEN standards in the OSPAR Guidelines for monitoring the environmental impact of offshore oil and gas activities (reference number: 2004-11). Both methodology standards are similar to, and extended versions of, the equivalent OSPAR methodologies.

Currently, discussions are underway between the European Commission (DG Environment) and ISO/CEN in order to agree on a way forward for the development of standards for marine monitoring methods for the purposes of the monitoring requirements under the Water Framework Directive. Some other work relating to monitoring methods for marine water quality is already in preparation through CEN, with Norway in the lead.

5.4 Synergies in assessment

5.4.1 OSPAR assessment criteria

OSPAR’s work relating to tools for the assessment of the impact of hydrocarbons and chemicals from offshore installations is based on existing and available tools rather than on the development of new instruments. In 2005, OSPAR established an initial inventory of assessment tools used by, or available to, OSPAR Contracting Parties for the assessment of the impact of hydrocarbons and chemicals from offshore installations.

5.4.2 EC assessment criteria

The Water Framework Directive provides assessment criteria such as quality standards for the chemical and ecological status. These are, or will become, of relevance for assessing the impacts of the offshore oil and gas industry on the marine environment to the extent that the Water Framework Directive effectively applies to offshore activities (see section 5.1.2).

5.5 Synergies in reporting schedules

5.5.1 OSPAR reporting schedule

Under its Offshore Oil and Gas Industry Theme (theme O), the OSPAR Joint Assessment and Monitoring Programme (JAMP) commits OSPAR to undertake a number of assessments. These need to be based on data to be reported by Contracting Parties for this purpose. The scheduled assessments are set out in table 15.

Table 15 Assessment products under the JAMP (theme O) for the offshore oil and gas industry

Year	JAMP product reference	Assessment title
2007	OA-1	An assessment of the impact on the marine environment of offshore oil and gas activities
2007	OA-2	An assessment of the possible effects of releases of oil and chemicals from any disturbance of cutting piles
2009	OA-3	An assessment of the extent and impact of the offshore oil and gas industry, including the impacts on the marine environment of discharges of hydrocarbons and controlled offshore chemicals, both as they occur and from subsequent remobilization, together with an assessment of the significance for the marine environment of such impacts in relation to the natural changes which are occurring to the OSPAR maritime area.

5.5.2 EC reporting schedule

Presently, no reporting obligations, and related schedules, exist under EC legislation which would specifically address the offshore oil and gas industry or generally cover discharges at sea from offshore installations.

5.6 Conclusion

At the moment, there are no overlaps in monitoring and assessment activities of OSPAR and the EU with regard to the offshore oil and gas industry and its impacts on the marine environment. In the course of the further development and implementation of the Water Framework Directive, a need might emerge in future for synergies in monitoring and assessing discharges of substances and their effects on the biodiversity in the vicinity of offshore installations.

Annex 1

Comparative List of Hazardous Substances covered by the OSPAR List of Chemicals for Priority Action and the Annexes IX and X of the Water Framework Directive

Overview of:

- Second column: chemicals for priority action as identified by OSPAR,
- Third column: priority (hazardous) substances as identified by Annex X to the WFD,
- Fourth column: Substances where emission limit values and quality objectives have been established by daughter Directives under Directive 76/464 and where these objectives and values have to be considered as emission limit values and environmental quality standards for the purpose of the WFD until a review has been carried out (Articles 2(24), 4(1), 16(10) and 22(4) WFD and Annex IX to the WFD)

Group of substances / substances	OSPAR ¹⁰	WFD Annex X ¹¹	WFD Annex IX
Alachlor		PS	
Aldrin			Y
Anthracene	X	PHS under review	
Atrazine		PHS under review	
Benzene		PS	
Brominated flame retardants (Polybrominated diphenylethers, polybrominated biphenyls, hexabromocyclododecane)	X	Only Polybrominated diphenylethers, PS/PHS ¹²	
2,4,6-Bromophenyl 1-2(2,3-dibromo-2-methylpropyl)	NCPUI		
Cadmium	X	PHS	Y
Carbon tetrachloride (CCl ₄)			Y
Chlorfenvinphos		PS	
Chlorpyrifos		PHS under review	
Clotrimazole	X		
Cyclododecane	X (intermediate in closed system)		
1,5,9 Cyclododecatriene	X (intermediate in closed system)		
DDT and its isomers			Y
Dieldrin			Y
1,2-Dichloroethane		PS	Y

¹⁰ NCPUI: no current production or use interest

¹¹ PS: priority substances subject to substantial reduction and EQS; PHS: priority hazardous substance subject to cessation target and EQS; PHS under review: to be decided at a later stage whether it is a PS or PHS

¹² Pentabromodiphenylether is PHS, rest is PS

Group of substances / substances	OSPAR ¹⁰	WFD Annex X ¹¹	WFD Annex IX
Dichloromethane		PS	
Dicofol	X		
4-(dimethylbutylamino)Diphenylamin (6PPD)	X		
3,3'-(ureylenedimethylene)bis(3,5,5-trimethylcyclohexyl) Diisocyanate	NCPUI		
Diosgenin	NCPUI		
Diuron		PHS under review	
Endosulphan	X	PHS under review	
Endrin			Y
Ethyl O-(p-nitrophenyl) phenyl phosphonothionate (EPN)	NCPUI		
Flucythrinate	NCPUI		
Fluoranthene	X (as part of PAHs)	PS	
Heptachloronorbornene	NCPUI		
Hexachlorobenzene		PHS	Y
Hexachlorobutadiene		PHS	Y
Hexachlorocyclohexane isomers (HCH)	X	PHS	Y
Hexamethyldisiloxane (HMDS)	X		
Isodrin	NCPUI		Y
Isoproturon		PHS under review	
Lead and organic lead compounds	X	PHS under review	
Mercury and organic mercury compounds	X	PHS	Y
Methoxychlor	X		
Musk xylene	X		
Naphthalene	X	PHS under review	
Neodecanoic acid, ethenyl ester	X		
Nickel and its compounds		PS	
Nonylphenol/ethoxylates (NP/NPEs) and related substances	X	PHS	
Octylphenol	X	PHS under review	
Organic tin compounds (except stannane, tributyl (1-oxododecyl)oxy)	X	Only TBT (PHS)	
Phthalates: dibutylphthalate, diethylhexylphthalate (DEHP)	X	Only DEHP (PHS under review)	
Pentabromoethylbenzene	NCPUI		
Pentachloroanisole	NCPUI		
Pentochlorobenzene		PHS	
Pentachlorophenol (PCP)	X	PHS under review	Y
Perfluorooctanyl sulphonamide and sulfonyl compounds and derivatives (PFOS)	X		
Polycyclic Aromatic hydrocarbons (PAHs) (except a group of deselected PAHs, cf. annex 7 OSPAR 2004 Summary Record)	X	PHS	

Group of substances / substances	OSPAR ¹⁰	WFD Annex X ¹¹	WFD Annex IX
Polychlorinated biphenyls (PCBs) (except 1,1-biphenyl, 4,4-dichloro-)	X		
Polychlorinated dibenzodioxins (PCDDs) and Polychlorinated dibenzofurans (PCDFs) – dioxins and furans	X		
Polychlorinated naphthalenes	NCPUI		
2-Propenoic acid, (pentabromo)methyl ester	NCPUI		
Simazine		PHS under review	
Short chained chlorinated paraffins (SCCP)	X	PHS	
Tetrabromobisphenol A (TBBP-A)	X		
Tetrachloroethylene (perchloroethylene PER)			Y
Tetrasul	NCPUI		
1,2,3-Trichlorobenzene	X	PHS under review	Y
1,2,4-Trichlorobenzene	X	PHS under review	Y
1,3,5-Trichlorobenzene	X	PHS under review	Y
Trichloroethylene (TRI)			Y
Trichloromethane		PS	Y
Trifluralin	X	PHS under review	
2,4,6-Tri-tert-butylphenol	X		

Annex 2

Comparison of Monitoring for Hazardous Substances under the OSPAR Convention and the Water Framework Directive

- Second column: chemicals for priority action as identified by OSPAR
- Third column: priority (hazardous) substances as identified by Annex X to the WFD; NCPUI: no current production or use interest; PS: priority substances subject to substantial reduction and EQS; PHS: priority hazardous substance subject to cessation target and EQS; PHS under review: to be decided at a later stage whether it is a PS or PHS
- Fourth column: substances monitored under OSPAR. S=sediment, B=biota
- Fifth column: substances to be monitored under WFD (surveillance monitoring)

Group of substances / substances	OSPAR	WFD	OSPAR			WFD
			CEMP (compartment)	RID	CAMP	
Alachlor		PS				X
Aldrin						
Anthracene	X	PHS under review				X
Atrazine		PHS under review				X
Benzene		PS				X
Brominated flame retardants (Polybrominated diphenylethers -PBDEs; polybrominated biphenyls - PBBs, hexabromocyclododecane - HBCD)	X	Only PBDEs – PS/PHS ¹	to be considered 2005/2006			X
2,4,6-Bromophenyl 1-2(2,3-dibromo-2-methylpropyl)	NCPUI					
Cadmium	X	PHS	X (S, B)	X	X	X
Chlorfenvinphos		PS				X
Chlorpyrifos		PHS under review				X
Clotrimazole	X					
Cyclododecaney	X (intermediate in closed systems)					
1,5,9 Cyclododecatrieney	X (intermediate in closed systems)					
1,2-Dichloroethane		PS				X
Dichloromethane		PS				X
Dicofol	X					
4-(dimethylbutylamino)Diphenylamin (6PPD)	X					
3,3'-(ureylenedimethylene)bis(3,5,5-trimethylcyclohexyl) Diisocyanate	NCPUI					
Diosgenin	NCPUI					

Diuron		PHS under review				X
Endosulphan	X	PHS under review			to be considered in 2005	X
Ethyl O-(p-nitrophenyl) phenyl phosphonothionate (EPN)	NCPUI					
Flucythrinate	NCPUI					
Fluoranthene	X (as part of PAHs)	PS				X
Heptachloronorborene	NCPUI					
Hexabromobiphenyl						
Hexachlorobenzene		PHS				X
Hexachlorobutadiene		PHS				X
Hexachlorocyclohexane isomers (HCH)	X	PHS	lindane to be considered 2005/2006	X (lindane)	X (lindane)	X
Hexachloronaphthalene	X					
Hexamethyldisiloxane (HMDS)	X					
Isodrin	NCPUI					
Isoproturon		PHS under review				X
lead and organic lead compounds	X	PHS under review	X (S, B)	X	X	X
Mercury and organic mercury compounds	X	PHS under review	X (S, B ²)	X	X	X
Methoxychlor	X					
Musk xylene	X					
Naphthalene	X	PHS under review				X
Neodecanoic acid, ethenyl ester	X					
Nickel and its compounds		PS				X
Nonylphenol/ethoxylates (NP/NPEs) and related substances	X	PHS				X
Octylphenol	X	PHS under review				X
Organic tin compounds	X	Only TBT: PHS	X (S)			X
Phthalates: dibutylphthalate, diethylhexylphthalate (DEHP)	X	Only DEHP (PHS under review)				X
Pentabromoethylbenzene	NCPUI					
Pentachloroanisole	NCPUI					
Pentachlorobenzene		PHS				X
Pentachlorophenol (PCP)	X	PHS under review				X

Perfluorooctanyl sulphonamide and sulfonyl compounds and derivatives (PFOS)	X					
Polycyclic aromatic hydrocarbons (PAHs)	X	PHS	X (S, B)	X ³	X ³	X
Polychlorinated biphenyls (PCBs)	X		X (S, B)	X ³		
Polychlorinated dibenzodioxins (PCDDs)	X					
Polychlorinated dibenzofurans (PCDFs)	X					
Polychlorinated naphthalenes	NCPUI					
2-Propenoic acid, (pentabromo)methyl ester	NCPUI					
Simazine		PHS under review				X
Short chained chlorinated paraffins (SCCP)	X	PHS				X
Tetrabromobisphenol A (TBBP-A)	X					
Tetrasul	NCPUI					
1,2,3-Trichlorobenzene	X	PHS under review				X
1,2,4-Trichlorobenzene	X	PHS under review				X
1,3,5-Trichlorobenzene	X	PHS under review				X
Trichloromethane		PS				X
Trifluralin	X	PHS under review				X
2,4,6-Tri-tert-butylphenol	X					

- 1 Pentabromodiphenylether is PHS, rest is PS
- 2 Subject to review in 2006 (Agreement on Monitoring Strategies, 2004)
- 3 Voluntary determinant

Annex 3

Glossary and References

2002 Analysis of Pressures and Impacts	“Analysis of Pressures and Impacts – The Key Implementation Requirements of the Water Framework Directive – Policy Summary to the Guidance Document ”, endorsed by the Water Directors, final version of 4 December 2002
5th EC Research Framework Programme	Decision No 182/1999/EC of the European Parliament and of the Council of 22 December 1998 concerning the fifth framework programme of the European Community for research, technological development and demonstration activities (1998-2002) (OJ L 26, 1.2.1999, p. 1)
6th Environment Action Programme	Decision No 1600/2002/EC of the European Parliament and of the Council of 22 July 2002 laying down the Sixth Community Environment Action Programme “Environment 2010: Our Future, Our Choice” (OJ L 242, 10.9.2002, p. 1). It outlines the EC’s environmental policy leading up to 2010.
Aarhus Convention	UNECE Convention on Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters adopted on 25 June 1998 and entered into force on 30 October 2001.
Aerosol	System of solid or liquid particles suspended in a gaseous medium, having a negligible falling velocity.
Agreement on cut-off values	OSPAR Agreement on Cut-off Values for the Selection Criteria of the OSPAR Dynamic Selection and Prioritisation Mechanism for Hazardous Substances, reference number: 2005-9 (latest revision)
Agreement on monitoring strategies	OSPAR Agreement on Monitoring Strategies for Substances on the OSPAR List of Chemicals for Priority Substances, reference number: 2004-14, as amended (for consolidated version click here)
AMPS	Expert Working Group for Analysis and Monitoring of Priority Substances, set up to support DG Environment in the development of a WFD Daughter Directive on priority substances for surface water.
ASMO 2004	Meeting of the OSPAR Assessment and Monitoring Committee in 2004, recorded in the ASMO 2004 Summary Record – ASMO 04/12/1 available on the “Meetings and Documents” section of the OSPAR web site.
Barcelona Convention	Convention for the Protection of the Mediterranean Sea against Pollution adopted in Barcelona on 16 February 1976.
BAT	Best Available Technique defined for the purposes of the IPPC Directive in its Article 2(11) as the most effective and advanced stage in the development of activities and their methods of operation which indicate the practical suitability of particular techniques for providing in principle the basis for emission limit values designed to prevent and, where that is not practicable, generally to reduce emissions and the impact on the environment as a whole.
Bathing Water Directive	Council Directive 76/160/EEC of 8 December 1975 concerning the quality of bathing water (OJ L 31, 5.2.1976, p. 1), as amended (for consolidated version click here)
Bergen Declaration	Ministerial Declaration of the Ministers responsible for the protection of the environment of the North Sea and the European Community, adopted at the Fifth International Conference on the Protection of the North Sea, 20-21 March 2002, Bergen Norway, ISBN-82-457-0361-3

Bioassay	A test used to determine the concentration or biological activity of a substance by comparing its effects with the effects of a standard preparation on a culture of living cells or a test organism.
Birds Directive	Council Directive 79/409/EEC of 2 April 1979 on the conservation of wild birds (OJ L 103, 25.4.1979, p. 1), as amended (for consolidated version click here)
BRC	OSPAR Background/Reference Concentrations (BRCs) agreed for assessment in 1997 (reference number: 1997-14). In the course of their revision in 2005, they were renamed in Background Concentrations and Background (Assessment) Concentrations (BCs/BACs) (reference number: 2005-6).
BREF	EC Reference Documents on Best Available Techniques (BREF) prepared under, and for the purposes of, the IPPC Directive through the European Integrated Pollution Prevention and Control Bureau (see http://eippcb.jrc.es).
CAMP	OSPAR Comprehensive Atmospheric Monitoring Programme, laid down in the CAMP Principles, reference number: 2001-7, as amended (for consolidated version click here)
Case C-280/02	Infringement proceedings under Article 226 of the EC Treaty brought on 30 July 2002 by the European Commission v. France for the failure by France to fulfil their obligations under the UWWT Directive to identify sensitive areas and to implement more stringent treatment of discharges into sensitive areas. See judgment of ECJ of 23 September 2004 at the ECJ website (not yet published in the European Court reports).
CEFIC	European Council of Federations of Chemical Industries
CEMP	OSPAR Coordinated Environmental Monitoring Programme, laid down in the CEMP Principles, reference number: 2005-5 (latest update).
CEN	European Committee for Standardization ("Comité Européen de Normalisation" - CEN) (see http://www.cenorm.be)
Chemical Monitoring Activity	Recently founded activity under the Common Implementation Strategy for the Water Framework Directive.
chemicals for priority action	see OSPAR List of Chemicals for Priority Action
CIRCA	The Communication and Information Resource Centre Administrator is an extranet (http://forum.europa.eu.int) with a publicly accessible domain where information and documents on activities of the European Commission, including documents adopted to implement the Water Framework Directive, are made available.
CIS	see Common Implementation Strategy
CMR	carcinogenic, mutagenic and reprotoxic properties of a substance
COAST	Former Working Group 2.4 "Typology, Classification of Coastal, Transitional Waters" under the Common Implementation Strategy for the Water Framework Directive
COAST Guidance	"Guidance on Typology, Reference Conditions and Classification Systems for Transitional and Coastal Waters", developed by the former Working Group 2.4 (COAST) under the Common Implementation Strategy for the Water Framework Directive and endorsed by Water Directors at their meeting on 21-22 November 2002 (for document download click here).

Coastal waters	Term of the Water Framework Directive defined in its Article 2(7) as surface water on the landward side of a line, every point of which is at a distance of one nautical mile on the seaward side from the nearest point of the baseline from which the breadth of territorial waters is measured, extending where appropriate up to the outer limit of transitional waters.
COM(2002) 539 final	Communication from the Commission to the Council and the European Parliament "Towards a strategy to protect and conserve the marine environment"
COM(2004) 248 final	Third synthesis report of the European Commission on the implementation of the UWWT Directive.
Common Implementation Strategy	Common Implementation Strategy was developed to support the implementation of the Water Framework Directive (implementation strategy documents are available at the WFD library section of CIRCA).
Common Procedure	Common Procedure for the Identification of the Eutrophication Status of the OSPAR Maritime Area, reference number: 2005-3 (superseding agreements, reference numbers: 1997-11 and 2002-20)
COMPPS	Combined monitoring-based and modeling-based priority setting (COMPPS) scheme for the selection of priority substances for the purposes of the EC Water Framework Directive (c.f. Decision No 2455/2001/EC of the European Parliament and of the Council of 20 November 2001 (OJ L 331, 15.12.2001, p. 1)).
Comprehensive Procedure	The second phase of the Common Procedure which follows the initial Screening Procedure and in which maritime areas are assessed in a three-step approach for the classification of their trophic status.
contaminants	Any undesirable physical, chemical, biological, or radiological substance or matter not normally present in water, or an unusually high concentration of a naturally occurring substance.
CSTEE	The Scientific Committee on Toxicity, Ecotoxicity and the Environment has been set up to advise the European Commission on scientific and technical questions relating to examination of the toxicity and ecotoxicity of chemical, biochemical and biological compounds whose use may have harmful consequences for human health and the environment. According to Article 16(5) WFD, the CSTEE shall be consulted in the process of preparing proposals for Community-wide environmental quality standards and emission control for priority substances (Article 16 (6) and (7) WFD).
Dangerous Substances Directive	Council Directive 76/464/EEC of 4 May 1976 on pollution caused by certain dangerous substances discharged into the aquatic environment of the Community (OJ L 129, 18.5.1976, p. 23), as amended (for consolidated version click here)
daughter Directives	Five specific Directives regulating List I substances under the Dangerous Substances Directives addressing discharges by the chlor-alkali electrolysis industry, discharges of cadmium, mercury, hexachlorocyclohexane and of certain other dangerous substances (see http://europa.eu.int/comm)
DG Environment	Directorate General Environment of the European Commission (see http://europa.eu.int/comm/environment/index_en.htm)
Directive on biocides	Directive 98/8/EC of the European Parliament and of the Council of 16 February 1998 concerning the placing of biocidal products on the market (OJ L 123, 24.4.1998, p. 1), as amended (for consolidated version click here)

Directive on cosmetics	Council Directive 76/768/EEC of 27 July 1976 on the approximation of the laws of the Member States relating to cosmetic products (OJ L 262, 27.9.1976, p. 169), as amended (for consolidated version click here)
Directive on pesticides	Council Directive 91/414/EEC of 15 July 1991 concerning the placing of plant protection products on the market (for consolidated version click here)
Directive on pharmaceuticals	Directive 2001/83/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to medicinal products for human use (OJ L 311, 28.11.2001, p. 67), as amended (for consolidated version click here)
Directive on veterinary medicines	Directive 2001/82/EC of the European Parliament and of the Council of 6 November 2001 on the Community code relating to veterinary medicinal products (OJ L 311, 28.11.2001, p. 1), as amended (for consolidated version click here)
DYNAMEC	OSPAR Dynamic Selection and Prioritisation Mechanism for identifying chemicals for priority action based on their properties relating to persistence, bioaccumulation and toxicity (publication number: 146 (2002)).
EAC	OSPAR Ecotoxicological Assessment Criteria (EACs) agreed for assessment in 1997 (reference number 1997-15). In the course of their review in 2005, which is still ongoing, they were renamed in Environmental Assessment Criteria (EACs).
EAF-PS	Expert Advisory Forum on Priority Substances set up in the framework of the implementation of the Water Framework Directive to ensure consultation under Article 16(5) WFD in the process of preparing proposals for environmental quality standards and emission control for priority substances (Article 16(6) and (7) WFD). It groups EU Member States, candidate countries and main stakeholders such as European industry associations and environmental NGOs.
EC	European Community
EC Chemicals Strategy	Commission Communication COM(2001) 88 final of 27 February 2001 on the White Paper Strategy for a future Chemicals Policy (see web site of DG Environment http://europa.eu.int/comm/environment)
EC Existing Substances Regulation	Council Regulation (EEC) No 793/93 of 23 March 1993 on the evaluation and control of the risks of existing substances (OJ L 84, 5.4.1993, p. 1), as amended (for consolidated version click here)
EC Interim PBT Strategy	Until the REACH Regulation, and its requirement of the authorization of PBT and vPvB substances and an accelerated restriction of their use, enter into force, the Interim PBT Strategy was agreed to identify PBT criteria, PBTs and vPvBs among both new and existing substances, and to evaluate an accelerated risk management process. For latest version see the EC Chemicals Bureau at website http://ecb.jrc.it/REACH/
EC legislation	Binding Community acts of secondary legislation (regulations, directives, and decisions; see Article 249 of the Treaty Establishing the European Community). Texts, including consolidated versions, of EC legislation and preparatory documents are available at http://europa.eu.int/eur-lex/lex/en/index.htm .
ECJ	The Court of Justice of the European Communities is an institution of the European Community to ensure that the law is observed in the interpretation and application of the Treaties establishing the European Communities and of the provisions laid down by the competent Community institutions (see http://curia.eu.int).

ECPA	European Crop Protection Association
EMEP	Co-operative Programme for Monitoring and Evaluation of the Long-range Transmission of Air Pollutants in Europe set up under the UNECE Convention on Long-range Transboundary Air Pollution (LRTAP) and held by UNECE (see http://www.emep.int)
EMMA	Working Group on European Marine Monitoring and Assessment set up under the initiative for the development of a European Marine Strategy. For related documents see CIRCA.
EMS	see European Marine Strategy
EMS material	Preparatory material for a proposal of a European Marine Strategy presented by the European Commission at the Second Stakeholder Conference on the Development of a European Marine Strategy held in Rotterdam, 11-12 November 2004 (for conference material click here)
Environmental Impact Assessment Directive	Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment (OJ L 175, 5.7.1985, p. 40), as amended (for consolidated version click here)
EPER	European Pollutant Emissions Register, established by Commission Decision 2000/479/EC on the implementation of a European Pollutant Emission Register (EPER) (http://www.eper.cec.eu.int)
EQO(s)	OSPAR Ecological Quality Objective(s) which define the desired level of ecological quality for an individual aspect of the overall ecological quality.
EQS(s)	Environmental quality standard(s) under Water Framework Directive defined in its Article 2(35) as the concentration of a particular pollutant or group of pollutants in water, sediment or biota which should not be exceeded in order to protect human health and the environment.
EU	European Union; here used interchangeably with EC.
Euratom Treaty	Treaty establishing the European Atomic Energy Community (1957)
EUROHARP	Project co-ordinated by the Norwegian Institute for Water Research (NIVA) under the 5 th EC Research Framework Programme for the development of harmonized methodologies/tools to quantify nutrient losses from diffuse sources by means of comparing nine quantification tools applied on a large number of European-wide catchments, located in a network of 17 catchments throughout Europe (see http://euroharp.org).
European Marine Strategy	“Thematic Strategy for the Protection and Conservation of the European Marine Environment” which forms part of the 6 th Environmental Action Programme. At the time of finalizing the present analysis, the Strategy was still under preparation based on the initial Commission Communication COM(2002) 539 final “Towards a strategy to protect and conserve the marine environment” (for document download click here)
Eutrophication Activity	Activity under Working Group A of the Common Implementation Strategy for the Water Framework Directive set up in 2004 to develop guidance on the assessment of the trophic status of surface water bodies under the Water Framework Directive.
Eutrophication Monitoring Programme	Agreement on the Eutrophication Monitoring Programme, reference number: 2005-4 (updating and superseding the Nutrient Monitoring Programme, reference number: 1995-5)

FHI	Fraunhofer-Institut Molecular Biology and Applied Ecology which produced a study report , commissioned by the European Community, “Towards the derivation of quality standards for priority substances in the context of the Water Framework Directive” (September 2002).
good (surface water) chemical status	Term of the Water Framework Directive defined in its Article 2(24) as the chemical status required to meet the environmental objectives for surface waters established under Article 4(1)(a), that is the chemical status achieved by a body of surface water in which concentrations of pollutants do not exceed the environment quality standards established in Annex IX and under Article 16(7), and under other relevant Community legislation setting environmental quality standards at Community level.
good (surface) water status	Term of the Water Framework Directive defined in its Article 2(18) as the status achieved by a surface water body when both its ecological status and its chemical status are at least “good”.
good ecological status	Term of the Water Framework Directive defined in its Article 2(22) as the status of a body of surface water, so classified in accordance with the relevant provision of Annex V. The Annex defines the ecological status by means of biological, physico-chemical or hydromorphological quality elements for each of the surface water categories (for example lakes, rivers, transitional or coastal waters) to identify the quality of the structure and functioning of its aquatic ecosystem.
Habitats Directive	Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora (OJ L 206, 22.7.1992, p. 7), as amended (for consolidated version click here)
HARP-NUT Guidelines	Nine Guidelines adopted by OSPAR as tool for Contracting Parties to report, in a harmonized manner, their different commitments with regard to nutrients under the OSPAR Convention and in particular with regard to the Eutrophication Strategy (reference number: 2004-2a – 2004-2i). These include Guidelines for a framework and approach of harmonized quantification and reporting procedure for nutrients (Guideline 1) and for the quantification and reporting of nitrogen and phosphorus discharges from specific sources: aquaculture (Guideline 2), industrial plants (Guideline 3), waste water treatment plants and sewerage (Guideline 4), households not connected to public sewerage (Guideline 5), diffuse sources and natural background losses (draft Guideline 6), riverine load including flow normalization procedures (Guideline 7), diffuse sources by riverine load apportionment (Guideline 8) and retention of nitrogen and phosphorus in river catchments (Guideline 9). All Guidelines are available at the “Decisions, Recommendations and Agreements” section of the eutrophication section of the OSPAR website (http://www.ospar.org).
heavily modified water bodies	Term of the Water Framework Directive defined in its Article 2(9) as a body of surface water which as a result of physical alterations by human activity is substantially changed in character, as designated by the Member State in accordance with the provisions of Annex II.
HELCOM Convention	Convention on the Protection of the Marine Environment of the Baltic Sea Area, 1992 which entered into force on 17 January 2000; (see http://www.helcom.fi)
IAEA	The International Atomic Energy Agency is a special organization of the United Nations system for nuclear co-operation and the safe, secure and peaceful use of nuclear technologies (see http://www.iaea.org).
ICES	International Council for the Exploration of the Sea which coordinates and promotes marine research in the North Atlantic (see http://www.ices.dk)
impact	The environmental effect of a pressure.

INPUT 2005	Meeting of the Working Group on Inputs to the Marine Environment, recorded in the INPUT 2005 Summary Record – INPUT 05/8/1, published in the “Meetings and Documents” section of the OSPAR website (http://www.ospar.org)
IPPC Directive	Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and control (OJ L 257, 10.10.1996, p. 26), as amended (for consolidated version click here)
ISO	International Organisation for Standardization (ISO) (see http://www.iso.org)
JAMP	OSPAR Strategy for a Joint Assessment and Monitoring Programme, OSPAR reference number: 2003-22, as amended (for consolidated version click here)
JAMP product	The JAMP process envisages the delivery of results from activities (products) divided into three groups: the development of assessment tools, or the adoption of those developed by other international bodies or other sources; the specification and execution of information collection programmes; and the delivery of assessments. Each product is defined and set for a specified deadline.
Large Combustion Plants Directive	Directive 2001/80/EC of the European Parliament and of the Council of 23 October 2001 on the limitation of emissions of certain pollutants into the air from large combustion plants (OJ L 309, 27.11.2001, p. 1), as amended (for consolidated version click here)
List I substances	List I in the Annex of the Dangerous Substances Directive identifies those (groups of) substances the pollution by which shall be progressively eliminated and which is accordingly regulated at Community level (see daughter Directives) by the establishment, for example, of emission limit values and quality standards.
List II substances	List II in the Annex of the Dangerous Substances Directive identifies those (groups of) substances the pollution by which shall be reduced; quality standards for List II substances are not required to be harmonized at Community level.
LRTAP	UNECE Convention on Long-range Transboundary Air Pollution adopted in Geneva on 13 November 1979; the Convention has been extended by eight Protocols that identify specific measures to be taken by Parties to the Convention (see http://www.unece.org/env/lrtap/).
MARINA II	Update of the MARINA project on the radiological exposure of the European Community from radioactivity in North European marine waters, final report published in 2002 (see DG Energy and Transport http://europa.eu.int/comm/energy/nuclear).
Nitrates Directive	Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (OJ L 375, 31.12.1991, p.1), as amended (for consolidated version click here)
nm	nautical mile
NMVOC	non methane volatile organic compounds
OIC	OSPAR Offshore Industry Committee
OSPAR 2004	Meeting of the OSPAR Commission in Reykjavik (Iceland), 28 June – 1 July 2004 recorded in the OSPAR 2004 Summary Record – OSPAR 04/23/1, published in the “Meetings and Documents” section of the OSPAR website (http://www.ospar.org).

OSPAR 2005	Meeting of the OSPAR Commission in Malahide (Ireland), 27 June – 1 July 2005 recorded in the OSPAR 2005 Summary Record – OSPAR 05/21/1, published in the “Meetings and Documents” section of the OSPAR website (http://www.ospar.org).
OSPAR Commission	Forum set up by the OSPAR Convention through which OSPAR Contracting Parties co-operate, supported by six main committees (for each OSPAR Strategy) and their working groups.
OSPAR Contracting Parties	Belgium, Denmark, the European Community, Finland, France, Germany, Iceland, Ireland, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom of Great Britain and Northern Ireland
OSPAR Convention	Convention for the Protection of the Marine Environment of the North-East Atlantic opened for signature at the Ministerial Meeting of the Oslo and Paris Commissions, Paris, 21-22 September 1992; entered into force on 25 March 1998 (published at http://www.ospar.org)
OSPAR Convention area	The maritime area consisting of the internal waters and the territorial seas of the OSPAR Contracting Parties, the sea beyond and adjacent to the territorial sea under the jurisdiction of the coastal state to the extent recognised by international law, and the high seas, including the bed of all those waters and its sub-soil, situated within the following limits: (1) those parts of the Atlantic and Arctic Oceans and their dependent seas which lie north of 36 north latitude and between 42 west longitude and 51 east longitude, but excluding: (a) the Baltic Sea and the Belts lying to the south and east of lines drawn from Hasenore Head to Griben Point, from Korshage to Spodsbjerg and from Gilbjerg Head to Kullen, (b) the Mediterranean Sea and its dependent seas as far as the point of intersection of the parallel of 36 north latitude and the meridian of 5° 36' west longitude; (2) that part of the Atlantic Ocean north of 59 north latitude and between 44 west longitude and 42 west longitude.
OSPAR List of Chemicals for Priority Action	List of substances selected to be given priority in OSPAR's work, reference number: 2004-12, as amended (for consolidated version click here)
publication number: 229 (2005)	OSPAR Background Document on Eutrophication - Ecological Quality Objectives for the Greater North Sea with Regards to Nutrients and Eutrophication Effects, OSPAR Commission, 2005.
publication number: 231 (2005)	Synergies between the OSPAR Comprehensive Procedure, the integrated set of OSPAR Ecological Quality Objectives (EcoQOs) for eutrophication and the EC Water Framework Directive, OSPAR Commission, 2005.
publication number: 232 (2005)	Atmospheric Nitrogen in the OSPAR Convention Area and Agreed International Reduction Measures, OSPAR Commission, 2005.
PBT	persistent, bioaccumulative and toxic properties of a substance
PHS	see Priority Hazardous Substance
pollutant	For the purposes of the Water Framework Directive defined as any substance liable to cause pollution, in particular those listed in Annex VIII to the WFD (in its Article 2(31)).
pressure	Term used by the Water Framework Directive to identify an anthropogenic activity which has a direct impact on the environment.

Priority Hazardous Substances	Priority substances under the Water Framework Directive identified as priority hazardous substances in accordance with Article 16(3) and (6); see “Priority Substances”.
Priority Substances	Term of the Water Framework Directive defined in its Article 2(30) as substances identified in accordance with Article 16(2) and listed in Annex X. Among these substances are “priority hazardous substances” which means substances identified in accordance with Article 16(3) and (6) for which measures have to be taken in accordance with Article 16(1) and (8).
PRTR	Pollutant Release and Transfer Registers are integrated public inventories of pollution from industrial sites and other sources which Contracting Parties to the UNECE Protocol on Pollutant Release and Transfer Registers, adopted under the Aarhus Convention on 21 May 2003, are required to establish (see UNECE website).
PS	see Priority Substance
publication number	Reference to OSPAR publications other than agreements, decisions or recommendations which can be found in the “publications” section of the OSPAR website (http://www.ospar.org).
QS	Quality standards for priority substances at Annex X of the WFD.
RBMP	River Basin Management Plans which Member States shall set up under Article 13 of the Water Framework Directive for each river basin district.
REACH	Commission Communication COM(2003) 644 final of 23 October 2003 on a Proposal for a Regulation of the European Parliament and of the Council concerning the Registration, Evaluation, Authorisation and Restriction of Chemicals (REACH), establishing a European Chemicals Agency and amending Directive 1999/45/EC and Regulation (EC) {on Persistent Organic Pollutants} and a Proposal for a Directive of the European Parliament and of the Council amending Council Directive 67/548/EEC in order to adapt it to Regulation (EC) of the European Parliament and of the Council concerning the registration, evaluation, authorisation and restriction of chemicals
reference number	Reference number of OSPAR agreements other than recommendations and decisions which can be found in the “Decisions, Recommendations and other Agreements” section on the relevant thematic Strategy page of the OSPAR website (http://www.ospar.org).
RID	OSPAR Comprehensive Study of Riverine Inputs and Direct Discharges, laid down in the RID Principles, OSPAR reference number: 1998-5 , as amended (for consolidated version click here)
river basin	Term of the Water Framework Directive defined in its Article 2(13) as area of land from which all surface run-off flows through a sequence of streams, rivers and, possibly, lakes into the sea at a single river mouth, estuary or delta.
river basin district	Term of the Water Framework Directive defined in its Article 2(15) as the area of land and sea, made up of one or more neighbouring river basins together with their associated groundwaters and coastal waters, which is identified under Article 3(10) as the main unit for management of river basins.

Shellfish Hygiene Directive	Council Directive 91/492/EEC of 15 July 1991 laying down the health conditions for the production and the placing on the market of live bivalve molluscs (OJ L 268, 24.9.1991, p. 1), as amended (for consolidated version click here)
Shellfish Water Directive	Council Directive 79/923/EEC of 30 October 1979 on the quality required of shellfish waters (OJ L 281, 10.11.1979, p. 47), as amended (for consolidated version click here)
SPM	suspended particular matter
Strategic Environmental Assessment Directive	Directive 2001/42/EC of the European Parliament and of the Council of 27 June 2001 on the assessment of the effects of certain plans and programmes on the environment (OJ L 197, 21.7.2001, p. 30)
surface water	Term of the Water Framework Directive defined in its Article 2(1) as inland waters, except groundwater, transitional waters and coastal waters, except in respect of chemical status for which it shall also include territorial waters.
Technical Guidance Document	Technical Guidance Document on Risk Assessment in support of Commission Directive 93/67/EEC on Risk Assessment for new notified substances, Commission Regulation (EC) No 1488/94 on Risk Assessment for existing substances, and Directive 98/8 of the European Parliament and of the Council concerning the placing of biocidal products on the market (2003) published by the European Commission/Joint Research Centre (publication reference: EUR 20418 EN/1-4) and presently under revision. (see the European Chemicals Bureau at http://www.ecb.jrc.it)
territorial waters	Sea waters of a littoral state which, in accordance with public international law as codified by the United Nations Convention on the Law of the Sea, may extend up to 12 nautical miles from baselines (see there) and over which the littoral state exercises sovereign rights.
TGD	see Technical Guidance Document
thematic OSPAR Strategies	The 2003 Strategies of the OSPAR Commission for the Protection of the Marine Environment of the North-East Atlantic (reference number: 2003-21) comprise five Strategies which direct the further work of the OSPAR Commission in the fields of biodiversity, eutrophication, hazardous substances, offshore gas and oil industry and radioactive substances in order to work towards the objectives by the OSPAR Convention.
transitional waters	Term of the Water Framework Directive defined in its Article 2(6) as bodies of surface water in the vicinity of river mouths which are partly saline in character as a result of their proximity to coastal waters but which are substantially influenced by freshwater flows.
UNECE	United Nations Economic Commission for Europe (see http://www.unece.org)
Urban Waste Water Treatment Directive	Council Directive 91/271/EEC of 12 May 1991 concerning urban waste water treatment (OJ L 135, 30.5.1991, p. 40), as amended (for consolidated version click here)
UWWT Directive	see Urban Waste Water Treatment Directive
vPvB	very persistent and very bioaccumulative
water body	Term of the Water Framework Directive defined in its Article 2(10) as a discrete and significant element of surface water such as a lake, a reservoir, a stream, river or canal, part of a stream, river or canal, a transitional water or a stretch of coastal water.

Water Framework Directive	Directive 2000/60/EC of the European Parliament and of the Council of 23 October 2000 establishing a framework for Community action in the field of water policy (OJ L 327, 22.12.2000, p.1), as amended (for consolidated version click here)
WFD	see Water Framework Directive
WFD Daughter Directive	A directive on priority substances for surface water, presently under preparation by the European Commission under Article 16 of the Water Framework Directive, in order to adopt specific measures against pollution of water by individual (groups of) pollutants for implementing the objectives for pollutants to reduce and, for priority hazardous substances, to cede or phase-out, discharges, emissions and losses. A first draft for consultation was brought forward in June 2004.
WFD Monitoring Guidance	“ Guidance on Monitoring for the Water Framework Directive”, final version 23 January 2003, developed by Working Group 2.7 (Monitoring) set up under the Water Framework Directive Common Implementation Strategy
WISE	See concept paper on “Reporting for water – Concept Report: Towards a Shared Water Information System for Europe (WISE) of November 2003.