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AGENDA ITEM 5: EMISSION SOURCES AND CONTROLS FOR PRIORITY SUBSTANCES

CONCEPT PAPER ON EMISSION CONTROLS

Version 2

*The **first version** of this document was submitted to EAF PS 5(26-27/5/2003) as document EAF(5) - 06/01. This **second version** is a revision of version 1 taking into account the written comments received on version 1, the outcome of the Expert Group Meeting on Emission Controls (2-3/10/2003) and the discussions at the EAF(6) meeting.*

This paper aims to give an overview of the discussions in the Expert Advisory Forum on the way forward in defining emission control options to ensure that the quality standards and phase-out objectives for the priority substances can be reached, and to record the different steps undertaken to identify these measures. The document does not necessarily express the opinion of the European Commission.

It is the intention of DG ENV to publish this report as a background document to the forthcoming proposal on the implementation of Article 16 of Directive 2000/60/EC. Prior to publication additional editing of the text may be required.

The members of the Expert Advisory Forum are invited to:

- ✓ Take note of the concept paper.
- ✓ Submit comments on the content of the report by the agreed deadline.

Concept paper on the control of emissions, discharges and losses of priority substances and priority hazardous substances

Version 2

The aim of the paper is to outline the basic approach used to identify emission controls for the priority substances (PS) and priority hazardous substances (PHS) - including phase-out cessation requirements - with the aim of reaching a common understanding of the key concepts and to outline the steps taken to identify the appropriate measures.

Status of the document

The 1st version of this concept paper was submitted to the Expert Advisory Forum on Priority Substances for comments at its 5th meeting 26-27 May 2003 as document EAF(5) -06/01. The 2nd version has been updated taking into account the comments received after th EAF (5) meeting, the outcome of the Expert Group Meeting on Emission Controls held 2-3 October 2003 and the discussions held at the EAF (6) meeting on the report prepared of the Expert Group Meeting on Emission Controls EAF(6)-02/02.

Contents

1. REQUIREMENTS OF THE WATER FRAMEWORK DIRECTIVE (WFD[1])

1.1. Purpose of the WFD and the initial list of substances

The purpose of the WFD in the field of priority substances is to establish a framework for the protection of inland surface waters, transitional waters, coastal waters and groundwater which (cf **article 1(c) WFD**):

'aims at enhanced protection and improvement of the aquatic environment, inter alia, through specific measures for the progressive reduction of discharges, emissions and losses of priority substances and the cessation or phasing-out of discharges, emissions and losses of the priority hazardous substances'.

By Decision 2455/2001/EC of 20 November 2001[2] the list of priority substances in the field of water policy was established; this Decision amended the WFD Directive by completing Annex X of the Directive. In this 2001 list, three categories of priority substances have been distinguished:

– Priority substances as defined in article 2(30) of the WFD

– Priority hazardous substances as defined in article 2(30) of the WFD

– Priority substances subject to a review for identification as possible "priority hazardous substance"

This paper does not address the final categorisation of the priority substances under review. It focuses on the requirements in the WFD on the control of releases for priority substances (PS) and priority hazardous substances (PHS). A consultative process to identify the PHS among the substances under review is being undertaken in parallel. The substances proposed as PHS in this process, will for the purpose of this document be regarded as PHS, although the final identification has not been completed.

The basic requirements for the establishment of control measures for emissions, losses and discharges of priority substances can be found in Articles 16(1), 16(6), 16(8) and 16(10) of the WFD (see below).

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1 OJ L 327, 22.12.2000, p.1. 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..

2 OJ L 331, 15.12.2001, p.1. Decision N°2455/2001/EC of the European Parliament and of the Council of 20 November 2001 establishing a list of priority substances in the field of water policy and amending Directive 2000/60/EC.

1.2. Objectives for the control of chemical pollution of surface waters

1.2.1. Environmental objectives (WFD Article 4)

The environmental objectives have been described in article 4 of the WFD. In relation to PS and PHS, the surface water section of **article 4(1)** WFD and the sections dealing with possible derogations (articles 4(4), 4(5), 4(6) and 4(7) are most relevant).

Article 4(1)a requires that for surface waters in making operational the programmes of measures specified in the river basin management plans:

– *'Member States shall implement the necessary measures to **prevent deterioration** of the status of all bodies of surface water'*;

– *'Member States shall protect, enhance and restore all bodies of surface water[…].with the aim of achieving **good surface water status**'* and *'Member States shall protect and enhance all artificial and heavily modified bodies of water, with the aim of achieving good ecological potential **and good surface water chemical status**'*;

– *'Member States shall implement the necessary measures …with the aim **of progressively reducing pollution from priority substances** and **ceasing or phasing out emissions, discharges and losses of priority hazardous substances**'*.

Article 4(9) further states that '*new provisions'* must *'guarantee[…] at least the same level of protection as existing Community legislation.'*

Good surface water status is defined in article 2(18) and means both good chemical status and good ecological status, and shall be achieved in 2015. Good surface water chemical status means the quality standards established for the ***priority substances*** under article 16(7) and under other relevant Community legislation, including the existing 'daughter Directives' of 76/464/EEC as listed in Annex IX. Good ecological status is defined in Annex V, and includes the concentrations not in excess of those set by Member States for the ***other substances*** indicative list of main pollutants listed in Annex VIII of the WFD.

The possible derogations from the environmental objectives and related deadlines and the conditions under which derogation is possible, have been described in **article 4(4), 4(5), 4(6) and 4(7)**. Conditions under which deadlines for achieving the objectives might be extended have been described in article 4(4). Conditions under which environmental objectives can be less stringent, have been included in article 4(5). Article 4(6) is dealing with situations in which *'temporary deterioration in the status of bodies of water shall not be in breach of the requirements of the WFD'*. Member States must however provide robust justification as regards the fulfilment of these conditions, and this must be included in the river basin management plans, as outlined in the relevant paragraph. Finally, article 4(7) provides other circumstances where Member States will not be in breach of the WFD.

1.2.2. The combined approach of EQS and emission controls (WFD article 10)

The Water Framework Directive requires that a so called combined approach shall be applied to reach the environmental objectives. **Article 10(1)** requires that Member States *'ensure that all discharges […] into surface waters are controlled according to the combined approach'*. The combined approach according to **articles 10(2) and 10(3)** means that Member States shall establish *'emission controls based on best available technique, relevant emission limit values or in the case of diffuse impacts the controls including, as appropriate, best environmental*

practice' **and** if quality objectives or quality standards *'require stricter conditions than those which would result from paragraph 2, more stringent emission controls shall be set accordingly'*. The concerned discharges referred to in **article 10(2)** includes those regulated by *'directives adopted pursuant to Article 16'* of the WFD and the IPPC Directive(96/61/EC[3]) and any other relevant Community legislation.

This means that emission controls shall at least be targeted to reach the quality standards, and that if measures adopted at Community level are not sufficient the reach the Quality Standard, Member States must establish and/or implement sufficiently stringent emission controls.

1.2.3. Programme of measures (WFD article 11)

Member States are furthermore required to establish a programme of measures to achieve the environmental objectives of article 4(see above), and as regards chemical pollution include emission controls for both priority substances and other main pollutants. These measures shall according to Article **11(3)** include the following **minimum requirements** as **basic measures**:

'(g) for point source discharges liable to cause pollution, a requirement for prior regulation, such as prohibition on the entry of the pollutants into water, or for prior authorisation, or registration based in general binding rules, laying down emission controls for the pollutants concerned, including controls in accordance with Article 10 and 16';

'(h) for diffuse sources liable to cause pollution, measures to prevent or control the input of pollutants.;

(i) for any other significant adverse impact on the status of water identified under Article 5'

These paragraphs provide for periodically reviewed of these controls and where necessary updates. Paragraph (h) and (i) states that '*Controls may take the form of a requirement for prior regulation, such as a prohibition on the entry of pollutants into water, prior authorisation or registration based on general binding rules where such a requirement is not otherwise provided for in Community legislation'*

The basic measures shall also include:

(k) *'measures to eliminate pollution of surface waters'* by priority substances in accordance with article 16, and to *'progressively reduce pollution by other substances'*.

(l) *'any measures required to prevent significant losses of pollutants from technical installations, and to prevent and/or reduce the impact of accidental pollution incidents […]'*

Article **11(4)** and in particular Part B of Annex VI, furthermore outlines **'supplementary' measures** which contains a non-exclusive list of measures to control emission of priority substances :

(i) legislative instruments

(ii) administrative instruments

(iii) economic or fiscal instruments

(iv) negotiated encironmental agreements

[3] Council Directive 96/61/EC of 24 September 1996concerning integrated pollution prevention and control. OJ L 257, 10.10.1996, p.26.

(v) emission controls

(vi) codes of good practice

(vii) recreation and restoration of wetlands areas

(viii) abstraction controls

[(ix) demand management measures, inter alia, promotion of adapted agricultural production such as low water requiring crops in areas affected by drought]

[(x) efficiency and reuse measures, inter alia, promotion of water efficient technologies in industry and water-saving irrigation techniques]

1.2.4. Other requirements of the Water Framework Directive

Article 7(3) on waters identified for the abstraction of drinking water, states that the necessary protection for such water bodies shall aim at *'avoiding deterioration in their quality in order to reduce the level of purification treatment required in the production of drinking water'* and that *'safeguard zones'* may be established for those bodies of water. This has the implication that the emission controls should according to the WFD focus on control at source, rather than focussing on increased application of advanced treatment techniques for the production of drinking water.

Article (5) requires each Member State to undertake *'a review of the impact of human activity on the status of surface waters'*. Annex II.1.4 specifies that this shall include an identification of pressures, that is *'the type and magnitude of the significant anthropogenic pressures'*. This shall include estimation and identification of *'significant'* point source and diffuse source pollution from *'urban, industrial, agricultural, and other installations and activities'*.

In addition, **recital (43) of the WFD** requires to take account of *"all significant sources"*, when drawing up measures to be taken against pollution of water by substances considered for action as a priority. It is therefore important to carry out a sound and comprehensive source screening.

In **recital (11**), Article 174 of the Treaty is recalled where in relation to Community policy on the environment reference is made to amongst others the precautionary principle and the principles that (1) preventive action should be taken, (2) environmental damage should, as a priority, be rectified at source and (3) that the polluter should pay.

1.2.5. Strategies against pollution of water (WFD article 16)

Article 16 WFD concerns strategies against chemical pollution of surface waters. **Article 16(1) and 16(6)** asks for specific measures against pollution of water to be adopted by adoption by the European Parliament and the Council upon the proposal of the Commission, of specific measures against pollution of water for :

– PS, aimed 'at the progressive reduction of discharges, emissions and losses' and,

– PHS, aimed 'at the cessation or phasing-out of discharges, emissions and losses'.

Progressive reduction of PS and cessation of PHS are not further qualified within the WFD. However, the progressive reduction should at least result in the achievement of good chemical status of surface waters.

The Commission shall according to article 16.6 identify *"the appropriate cost-effective and proportionate level and combination of product and process controls for both point and diffuse sources***"**.

This article also suggests that sector-by-sector based process controls may be established. It furthermore states that the Commission *"shall take account of Community wide emission limit values"*.

Each proposal for review shall furthermore *"specify arrangements for their review, updating and for assessment of their effectiveness."*

Article 16.8 also states that "the Commission may prepare strategies against pollution of water by **any other pollutants or group of pollutants**, including any pollution which occurs as a result of accidents."

In **Article 16(10) WFD** it also specified that in preparing its proposals under article 16(6) WFD 'the Commission shall also review all the Directives listed in Annex IX of the WFD (i.e. the Daughter Directives under Directive 76/464/EEC). It shall propose*" a revision of the controls in Annex IX for all those substances which are included in the list of priority substances and shall propose the appropriate measures including the possible repeal of the controls under Annex IX for all other substances"*. Such repeals are proposed be repealed by the date of entry into force of those revisions'.

Member States are required to meet the good status requirements for all pollutants, whether priority substances or not by 2015, and in doing so shall apply the principles and tools as outlined above. Although this document focuses on the establishment of emission controls for priority substances as outlined in Article 16, for certain measures the specific proposals made will however , not be entirely limited to the priority substances.

1.3. Timetable of the WFD

1.3.1. Timetable for achieving the necessary reductions

The following timetable for achieving the necessary reductions is applicable:

– The maximum timetable for **PS and PHS in relation to good status** is included in **Article 4(1)a**: *'good surface water status has to be achieved at the latest by 2015'* with the possibility of extension of the deadline to a maximum of two further updates of a river management plan, i.e. 2x6 years. Reasons for extensions have to be explained by Member States; criteria for derogations can be found in article 4(4).

– In **Article 16(6)** WFD it is specified that the timetable to achieve the objective for the cessation/phase out of emissions, discharges and losses of **PHS** '*shall not exceed 20 years*

after the adoption of the proposals' of the European Commission (on emission controls) by the European Parliament and the Council.

– In the proposals for measures on emission controls, the European Commission has to include an appropriate timeframe – for both PS and PHS, which can be earlier than the maximum timetable.

The Commission shall come forward with such proposals two years after the entry into force of the list of PS (Annex X of WFD) that is in December 2003. Without agreement on emission control measures at Community level by 22 December 2006, Member States shall establish measures by themselves on the principal sources of discharges – at that stage it will be of relevance to have an idea on what is meant by 'principal sources of discharges'.

1.3.2. Timetable for the implementation measures according to the WFD

The following timetable for implementing measures under the WFD applies:

– 2004 : first pressure and impact analysis (Article 5)

– 2006 : monitoring programmes to be operational (Article 8)

– 2009 : establishment of the programme of measures (Article11)

– 2010 : economic analysis (Article9)

– 2012 : the programme of measures to be operational(Article11)

– 2013 : second pressure and impact analysis (Article 5)

– 2013 : repeal date of Article 7 of Directive 76/464/EEC (Article22)T

– 2015 : programme of measures, first review and if necessary update(Article11)

– 2021 : third pressure and impact analysis (Article 5)

– 2021: programme of measures, second review and if necessary update(Article11)

The emission control measures to be developed should as far as possible be implemented in the framework of this schedule.

1.4. Key definitions

Relevant definitions can be found in Article 2 of the WFD - most important are:

– 'Emission controls' are in article 2(41) WFD defined as '*controls requiring a specific emission limitation, for instance an emission limit value, or otherwise specifying limits or conditions on the effects, nature or other characteristics of an emission or operating conditions which affect emissions'*.

– ‚Emission limit value' means (**article 2(40) WFD**) '*the mass, expressed in terms of certain specific parameters, concentration and/or level of an emission, which may not be exceeded during anyone or more periods of time. Emission limit values may also be laid down for certain groups, families or categories of substances, in particular for those identified under*

Article 16 WFD. The emission limit values for substances shall normally apply at the point where the emissions leave the installation, dilution being disregarded when determining them. With regard to indirect releases into water, the effect of a waste-water treatment plant may be taken into account when determining the emission limit values of the installations involved, provided that an equivalent level is guaranteed for protection of the environment as a whole and provided that this does not lead to higher levels of pollution in the environment'.

Other definitions not included in Article 2 of the WFD may be defined as (see EAF(2) – 07/03/ENV):

– "**Discharges**": **'***shall mean the release of priority substances from individual or diffuse sources in the installation through effluent directly or indirectly into surface waters as defined under Article 2(1) of Directive 2000/60/EC'*

– **"Emissions": '***shall mean the direct or indirect release of priority substances from individual or diffuse sources in the installation into air, water or land including 'discharges' as defined above'*

– **"Losses" :** *' shall mean any intentional or unintentional release or transfer of priority substances, other than discharges, emissions or the result of accidents, directly or indirectly into surface waters as defined under Article 2(1) of Directive 2000/60/EC'*

– **"Installation" :** *shall mean a stationary technical unit where one or more industrial activities are carried out, and any other directly associated activities which have a technical connection with the activities carried out on that site and which could have an effect on emissions and pollution' (Based on IPPC definition)*

2. PROCESS TO DEVELOP MEASURES

2.1. Required steps

In summary, the process proposed to develop the appropriate mix of emission controls has the following steps.

(1) inventory of all generic sources that result in releases and their pathways – **source screening** (cf chapter 3 and annex I)

(2) identify existing control measures at EU level (chapter 4 and annex III),

(3) identify appropriate sources where measures could be taken **under the WFD and possibly other EU legislation**(taking into account the effect of the present measures and changes in releases that will take place irrespective of existing and new reduction measures) (cf chapter 4)

(4) set priorities (cf chapter 5)

(5) develop the measure (cf chapter 6)

The work done by Haskoning provides building blocks for steps 1, 2 and 3, and the first steps have been developed in subsequent consultation of the Expert Advisory Forum on Prioirty substances.

2.2. External stakeholder consultation

Version 1 of the Concept Paper (EAF (5) – 06/01), which was based on the work carried out by Haskoning in particular the Haskoning Fact Sheets, was presented and discussed at the EAF (5) meeting together with the overview tables on sources of emissions, discharges and losses of the priority substances (EAF (5) –06/02 - source screening sheets -version 1). Member States were invited to provide written comments on the source screening sheets based on guidance provided by the Commission.

The methodology to be used for the source screening and the development of measures was further discussed at the Expert Group Meeting on Emissions, which took place in Brussels 2-3 October 2003. The Expert Group consisted of experts nominated by the Member States and representatives from industry, NGO and the Commission. Four papers were prepared for the Expert Group Meeting: EG EC(1) – discussion document on source screening; EG EC(2) - version 2 of the source screening sheets; EG EC (3) – discussion document on measures and EG EC(4) – measures tables. A report of the Expert Group Meeting on Emissions (EAF (6) – 02/02) was produced, which was sent to the Members of the Expert Group and the Member States for comments and the revised report was discussed at the EAF(6) meeting. A version 3 of the source screening sheets has been circulated for consultation following the inclusion of information from the EPER website, and are now included in annex I as version 3.

This second draft of the Concept Paper takes into account the comments received on the Expert Group Meeting Report and the discussions at the EAF (6) meeting and internal consultation between the different Units of the Commission.

[Following the discussions in the Expert Advisory Forum on Priority Substances on the draft proposed way forward, this chapter will be completed.]

3. IDENTIFICATION OF ALL SOURCES OF PS/PHS AND PATHWAYS TO THE ENVIRONMENT – SOURCE SCREENING

3.1. Background to the source screening

As part of the consultation it was agreed that the source screening should be a process driven and semi-quantitative approach, as for many sources/pathways of the different priority substances insufficient detailed data are available.

The aim of the source screening is to identify those sources, which are of concern and may require measures at the European Union (EU) level to meet the objectives of the WFD but also those that require no additional measures to achieve the objectives of the WFD and those for which insufficient data are available to assess whether they are of concern. However, not all sources and routes/pathways identified for the different substances as posing a risk to the aquatic environment may automatically require additional measures as many sources/ pathways may already be sufficient controlled under existing legislation to achieve the objectives of the WFD or it may not be of EU relevance.

3.2. Systematic presentation of sources and pathways

Sources and pathways have been coded and listed in detail by Haskoning (as presented in Annex 1). In summary, the following pathways and underlying sources can be distinguished:

Losses to surface water by diffuse sources:

S1 : Atmospheric deposition on the water surface
S2 : Via Drainage and deep ground water
S3 : due to agricultural activities (via leaching, erosion, spills, direct drainage discharges)
S4 : Due to transport and infrastructure without connection to canalisation/sewers (ships, trains, automobiles and airplanes and their respective infrastructures outside the urban area)
S5 : Accidental spills
S6 : Release from materials and constructions in non urban area

Discharges to surface waters by point sources:

S7 : Discharges in sewage effluents or storm water as a result of un off from buildings and constructions in paved urban area including run off from agricultural fields connected to sewer system

S8 Discharges in sewage effluents or storm water as a result of household, consumer use)

S9 : Due to industrial activities
S9.1: Small and medium enterprises (SME), direct or via STP (non-IPPC installations including run of from farm yards
S9.2: Large industrial point sources, direct or via STP (IPPC installations)

S10: Solid waste management
S10.1 Landfills
S10.2 Incineration

S11: Historical pollution
S11.1 Historical pollution from sediments
S11.2 Historical pollution from contaminated land

S12: Natural sources

AEmissions to atmosphere
A1 From agriculture and forestry
A2 From traffic and infrastructure
A3 From buildings
A4 From households and other consumer use
A5 From industry IPPC categories including municipal waste incineration
A6 From industry SME and other non-IPPC categories
A7 From waste disposal/treatment areas (land fill and others)
A8 From contaminated land (historical pollution)
A9 From other sources

The list above shows all possible releases for a specific substance from point and diffuse sources and their pathways to the aquatic environment. The nature of a substance will determine which sources and routes are of relevance.

3.3. Categorisation of importance of sources and pathways

To effectively identify key sources and pathways a stepwise approach for source screening has been developed Table 3.1. The first step is the identification of potential sources and the second step assesses whether the source/pathway can contribute to a failure of the objectives of the WFD. The final steps 3 and 4 of the methodology deal with the development of measures. The key outcome of the source screening process is to identify Category 1 sources/pathways, which may potentially require additional measures for their control. The methodology to establish whether and which additional measures are required for the control of the emissions, discharges and losses of the Category 1 sources is discussed in Section 4.

The different Categories (1, 2 and 3) were defined as:

- **Category 1:** The available information indicates that the source/pathway contributes to the concentration of the substance in the aquatic environment, which may lead to a risk of failing to meet the objectives of the WFD[4].

[4] A main objective of the WFD is to achieve good ecological or good ecological potential and chemical status for each water body. Therefore a single source/pathway or when considered collectively with other sources/pathways may have the potential to result in the failure of the objective if it contributes to a concentration in excess of the EQS set in the aquatic environment for a specific priority substance (chemical status) and/or if it contributes to the failure of meeting the ecological status. It is also important to note that under Article 16 of the WFD there is a requirement to achieve the progressive reduction of discharges, emissions and

- **Category 2:** All other sources and pathways that have not been identified as Category 1 or 3, in particular those where insufficient information is available.
- **Category 3:** The available information shows that the source/pathway does not have a potential for the release of the substance directly or indirectly to the aquatic environment.

Table 3.1 Key steps involved in the identification of Category 1 sources

Source screening		
Step 1	Potential for release from this source/pathway?	No – no further consideration Category 3
	Yes – move to step 2	
Step 2	Checking against WFD objectives	-EQS -cessation/phase-out
	*Check if an **individual** source/pathway on its own, or in **aggregation** with other sources/pathways contributes to the concentrations of a substance in **a river basin or water body.***	
	Data availability sufficient	No – category 2
	Yes – category 1	
Measures discussion		
Step 3	Is the source of EU relevance	No- control at MS level
	Are there sufficient controls in place?	Yes- no further action
Step 4	Which are the appropriate measures?	

A process diagram indicating how a Category 1 source could be identified is provided in Figure 3 .1. This diagram accounts for Steps 1 and 2 in Table 3.1.

losses of priority substances and cessation or phasing out of emissions, discharges and losses of priority hazardous substances. A further objective of the WFD is the "no deterioration" requirement. These objectives need to be taken into account when assessing the different sources/pathways.

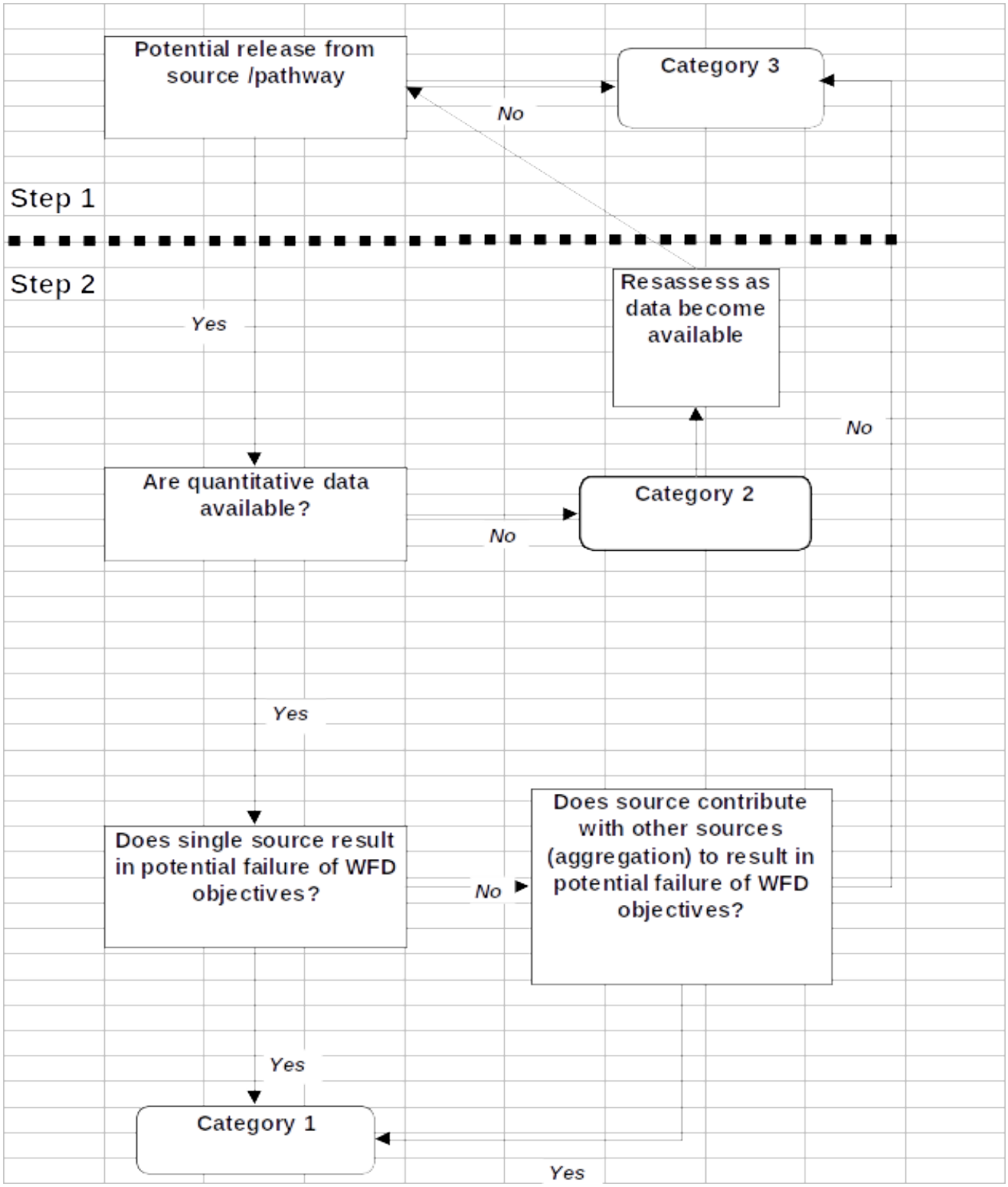


Figure 3.1 Source screening process diagram

More detailed definitions of the categories of sources is given in Table 3.2

Table 3.2 Detailed definitions of categories of sources

Category 1	Category 2	Category 3
Losses to surface waters by diffuse sources		
S1 Atmospheric deposition		
S1 is considered as category 1 if the available information shows that there are Category 1 anthropogenic emissions of the substance to air and the substance is persistent in air and/or if significant concentrations have been measured in rain water (e.g. cadmium).		S1 will be a category 3 source/route if the available information shows that there are no significant discharges to air and only a small percentage of the total amount released to the environment is to air and/or if the substance has a short-half life in air so that deposition is not a problem (e.g. the concentrations in rain water are below the detection limit).
S2 Via drainage and ground water		
S2 is considered as category 1 if there are significant depositions of the substance on the soil either by direct input (e.g. as pesticide) or indirect (e.g. in sewage sludge or as aerial deposition) and the substance is mobile in soil and/or significant concentrations of the substance have been reported in ground waters.		S2 will be a category 3 if the input to soils of the substance is small and/or the data show that the substance is not mobile in soils (e.g. even if SCCPs would be disposed of to soil they would not enter ground waters as they are strongly adsorbed on soils).
S3 Due to agricultural and forestry activities (via leaching, erosion, spills and losses, direct drainage discharges, tillage and ploughing etc)		
S3 will be category 1 if the use of the substance in agriculture (e.g. pesticides) or the deposition of the substance on agricultural land (e.g. with sewage sludge, fertilisers but excluding atmospheric deposition covered by A1) leads to known increases in concentration in the aquatic environment for instance if they are not degraded rapidly in soils and if they run off soils or if monitoring data are available e.g. the use of pesticides even if they are applied according to the prescribed rules.		S3 will be a category 3 if the substance is not used in agricultural activities and if it is not disposed to agricultural land (e.g. in sewage sludge, in fertilisers).
S4 Due to transport and infrastructure without connection to collection and treatment (ships, trains, automobiles and airplanes and their respective infrastructures outside the urban area)		

S4 will be a category 1 source/route if the use of the substance (e.g. biocides in antifouling paints on ships) or if the substance released as part of the activity (e.g. benzene in car exhausts) leads to measured (known) increases in the concentration of the substance in the aquatic environment (e.g. if monitoring data show that benzene is present in run off water discharged to surface waters or in rain water).		S4 will be a category 3 if the information available shows that the substance is not used in this sector and may not be released as a result of these activities (e.g. the pesticide alachlor is only used in agriculture and in no other activities).
S5 Accidental spills		
S5 will be a category 1 source/route if information is available on frequent accidental spills, which have a significant impact on the concentration of the substance in the aquatic environment.		S5 will be a category 3 source/route unless the available information shows that accidents involving this particular substance are frequent.
S6 Release from materials, constructions household and consumer use in non urban area (or not connected to collection and treatment)		
S6 will be a category 1 source/route if the available information shows that this will have an impact on the concentration of the substance in the aquatic environment (e.g. if data are available on the concentration of the substance in surface run off).		S6 will be a category 3 source/route if the substance is not used in these activities and/or if the available information shows that any run off does not contain the substance.
Discharges to surface waters by point sources		
S7 Run off buildings, constructions and transport infrastructure in paved urban areas (connected to collection and treatment canalisation)		
S7 will be a category 1 source/route if the available information shows that this will have an impact on the concentration of the substance in the aquatic environment (e.g. if data are available on the concentration of the substance in storm water discharged to surface waters and/or storm water run off discharged to sewer and the substance is not removed by sewage treatment)).		S7 will be a category 3 source/route if the substance is not used in these activities and/or if the available information shows that any run off does not contain the substance.
S8 Due to households, consumer use (with connection to collection and treatment)		
S8 will be a category 1		S8 will be a category 3 source route

source/route if the substance is used in the home and enters the water environment through the sewer system, especially if it is not removed in the sewage treatment plant (e.g. a substance used in domestic detergents will be a major source if it is not completely removed in the sewage treatment plant).		if the substance is not used in the home or in consumer products or if it is incorporated in the product and only insignificant amounts are released as a result of their presence in the home or their use and are well removed in sewage treatment plants (e.g. SCCPs will not be a major source if they are used as flame retardants for textiles in the home as they will enter the sewage system only in water used for the cleaning of floors which will be small volumes and contain very low levels of the substance. In addition they are well removed in sewage treatment plants).
S9 Due to industrial activities **S9.1** Small and medium enterprises (non-IPPC) direct or via STP **S9.2** Large industrial point sources, direct or via STP (IPPC installations)		
S9.1 and S9.2 are considered as category 1 if there are direct discharges to the aquatic environment or to sewer, which have an impact on the local concentration of the substance in the aquatic environment. It is proposed that in this assessment the number of discharges from a particular sector are not taken into account and that this is only considered when deciding on the specific measures (e.g. a decision could be made that EU measures may only be required if there are more than 2 discharges of the same sector in the EU either in the same country or different countries).		S9 will be a category 3 source if all plants from the same sector operate without aqueous effluent discharges (e.g. if no effluent is produced or if the effluent is incinerated or disposed off as waste, in which case they need to be considered under the appropriate source/route (e.g. S10, A7) unless they are destroyed by this activity (e.g. by incineration).
S10 Solid waste management		
S10 will be a category 1 source if the activity results in aqueous effluents containing the substance (e.g. if incineration of waste results in an aqueous effluent containing the substance for instance as a result of stack gas cleaning).		S10 will be a category 3 source if no aqueous effluent is produced or if the substance is not present in the effluent (e.g. a pesticide would not be found in FGD effluents)
Losses from historically contaminated soils		
S11 Historical pollution		
S11 will be a category 1 source if monitoring data show that		S11 is category 3 if is not present in sediment or if it is not released in

this pathway results in increased concentrations in the aquatic environment		detectable concentrations to the aquatic environment or if it is biodegraded in sediments (e.g. half life less than 180 days)

These Haskoning fact sheets (and related documentation) have been used as the starting point for the identification of all relevant sources for a particular substance. Possible sources that can result in losses, emissions and discharges to the environment of the PS/PHS and the related pathways to the environment are described in Annex 1. As outlined above a semi-quantitative approach supported by expert judgement has been applied for the source screening. Once the Member States have completed their pressure and impact assessment as part of the implementation of the WFD sufficient quantitative data may be available to refine the source screening made and in particular also to address the Category 2 sources/pathways.

Besides the Haskoning fact sheets further information sources (partially already considered by Haskoning), have been consulted to obtain additional information for the source screening:

- EU Risk assessments for existing chemicals (ECB, industry)
- Report on the review of the Daughter Directives (82/176/EEC, 83/513/EEC, 84/156/EEC, 84/491/EEC, 86/280/EEC) of the Discharge of Dangerous Substances Directive (76/464/EEC)
- Assessments under the directives for pesticides and biocides, pesticide manufacturing + use data
- Reporting under the Urban Waste Water Directive
- European Pollutant Emission Register (EPER),
- BREF documents (IPPC Information Excahnge)
- Progress report to the 5th North Sea Ministerial Conference – chapter 5 on hazardous substances
- OSPAR background documents on priority substances with the necessary actions/plans to reach cessation target (especially chapters 1 and 2 in the documents)
- (National) product registers and emission inventory registers
- National pilot studies for the reporting for the WFD
- EMEP database, OSPAR RID database
- Studies by non European authorities (such as US EPA)
- UNEP –POPs convention (for Hexachlorobenzene)

The pressure and impact assessments carried out by the Member States for their river basins under the WFD will form important part for future action once they have been completed
In the source screening sheets the sources of the data are shown but not the individual data to keep the sheets short. MSs were invited to assess the different sources both in terms of the relevance to their own country and to the EU.

3.4. Use of the source screening sheets

The use of the source screening sheets is foreseen to be twofold.

(1) In the first instance it will help prioritise the setting of measures in the first proposal based on article 16 of the WFD, where the Expert Advisory Forum reached consensus that a "semi-quantitative" approach is needed in the first instance, in the absence of complete monitoring results. In this process the Category 1 sources will not automatically require measures but these sources should be assessed further taking into account whether they are a PS or PHS. Category 2 measures may also be covered by generic measures as well as measures designed to increase the knowledgebase about a specific source or pathway. In particular an assessment needs to be made whether the individual Category 1 sources/pathways are of EU relevance and if so whether they are already sufficiently controlled and if not what additional measures are required (e.g. limit values, marketing and use restrictions, BEP etc). These issues are discussed in the next section.

(2) In the longer perspective, the source screening can be used for the regular review of the effectiveness of measures, required by Article 16, and should therefore be updated as more information becomes available and as the programme of measures and other pieces of legislation give the desired effect on pollution reduction. For this purpose, the Member States can use the forms for the inventory of emissions, losses and discharges required by article 5 of the WFD. Eventually the updated source screening sheets should be used for the development of future legislation.

4. IDENTIFICATION OF POSSIBLE CONTROL MEASURES

4.1. Background to the development of measures

In order to achieve the requirements of Article 16(6) of the WFD (2000/60/EC) the Commission is required to submit proposals for measures/controls to achieve the progressive reduction/phasing out of the emissions, discharges and losses of the Priority Substances.

The aim of this concept paper is therefore to outline the steps required to prepare a legislative proposal laying down emission controls for priority substances. Given the existing requirements already placed upon Member States, it is important that the proposal is complementary to such WFD requirements as outlined above and that these are to be implemented in accordance with the procedures of implementing the WFD as far as possible.

From the other perspective, it is also important to identify the clusters of measures already controlling the different sources and pathways of release of priority substances to the surface waters. Existing legislative instruments e.g. IPPC Directive (96/61/EC), Marketing and Use Directive (Directive 76/769/EC) etc which are already controlling priority substances from specific sources/pathways and to assess where these may need to be strengthened and where specific new measures would be required to be included in the new legislative proposal under

Article 16 of the WFD. This part of the process represents the second step, a logical follow on from the source-screening process.

A summary of the step-wise process agreed for determining appropriate measures for a Category 1 sources/pathways is provided in Figure 4 .2. This represents the final steps in the source assessment process (see Table 3.2).

Step 3

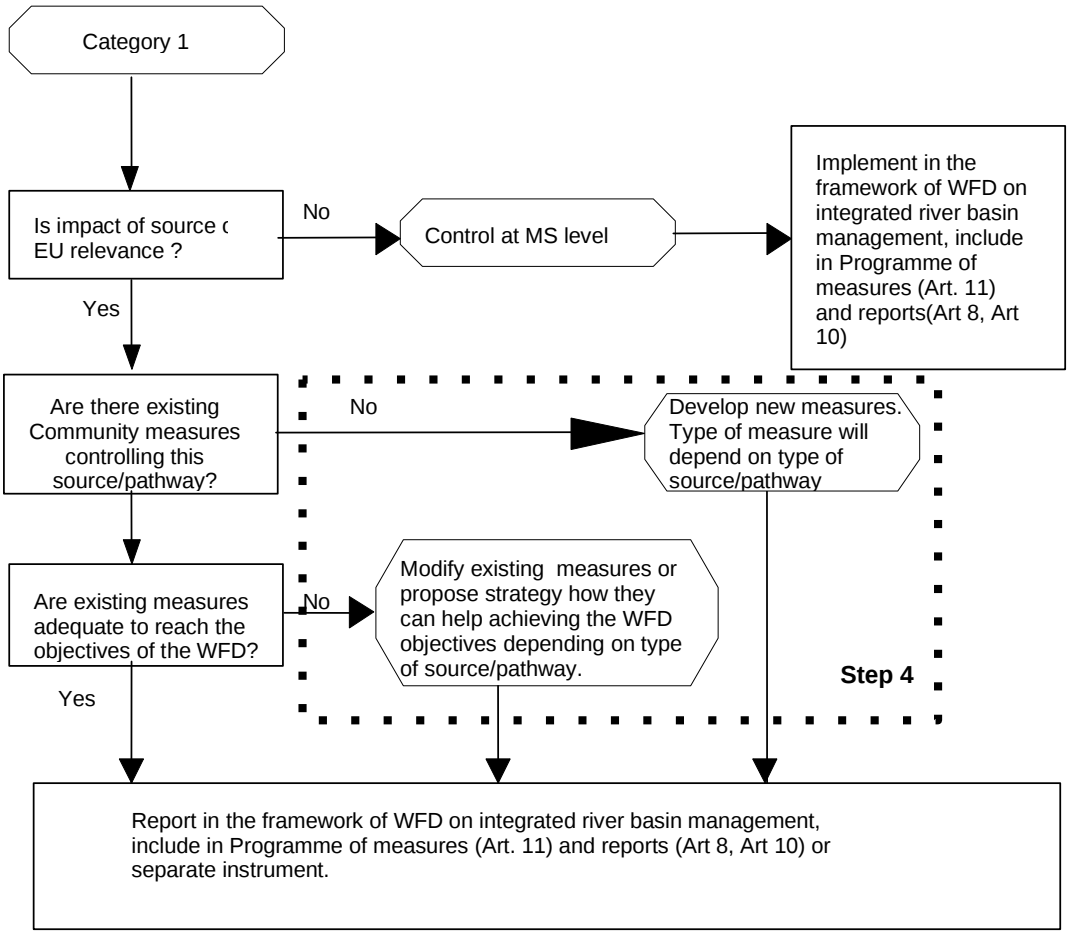


Figure 4.2 Step-wise approach to determine appropriate measures for a Category 1 source (Step 3 and 4)

The first step in the process is to assess whether the source/ pathway is of EU relevance. Given the environmental objective and that all sources/pathways are in principle covered by the scope of the Water Framework Directive, and that for some measures at national or river basin level and for others at Community level, all Category 1 sources are of EU relevance. An example of a source, which may not be of EU relevance, may include a single plant discharging into a water body. However, if this plant should result in a downstream country being unable to meet the objectives of the WFD it may become of EU significance. If a source is not of EU significance Member States have to develop appropriate measures which need to be included in the Programme of Measures of the RBM plan.

4.2. Types of technical/legal control options available

Once it has been established that the source/pathway is of EU relevance a risk reduction strategy needs to be developed. Some possible regulatory measures are included in article 11(3) and (4) as well as Annex VI part B of the WFD. Possible technical measures depend on the type of source, the substance and the process used.

As an example, Chapters 4 and 5 of the Technical Guidance Document on Development of Risk Reduction Strategies under Council Regulation 793/93/EEC on existing chemicals provide useful guidance for the identification of measures. This requires:

a. to review agreed EC, other international and national measures including, if available, information on the effectiveness of these measures;

b. to consider the development of appropriate actions, new/additional strategies and legal acts at EU or MS level. A non exclusive list of type of tools to be considered according to the TGD, and annex VI part B of the WFD, in this process are:

1. the development of descriptions of BAT and BEP (including equipment standards, substitution, closed loop processing) and resulting emission limit values and marketing and use restrictions/ban;
2. voluntary agreements with target groups;
3. economic and fiscal instruments;
4. to approach other international bodies with a view to establishing necessary programmes and measures;
5. to consider means for improved enforcement and implementation of existing measures
6. Authorisation schemes (by River Basin Managers and /or via the Pesticide and Biocide Directives and the new EU REACH system);
7. Codes of good practice;
8. Recreation and restoration of wetland areas;
9. Abstraction controls;
10. Education

4.3. Identifying existing relevant EU legislation

Besides the daughter directive on emission controls to be adopted under the WFD, existing pieces of EU legislation must be addressed to achieve the emission reduction targets for PS and PHS to ensure that the WFD objectives will be reached.

- The **first step** was to develop an **indicative** list of relevant pieces of Community legislation, and to identify an indicative generic list of gaps in that legislation where new

legislation under the WFD or other pieces of Community legislation could be envisaged. This table is included in annex 2 to this document.

- The **second step** of the process was to develop substance specific measure sheets to enable a comprehensive identification of existing Community measures. The tables follow the systematic presentation of the source screening sheets were developed and sent to the Expert Advisory Forum on Priority substances, in the first instance for information. These tables are included as annex 3 to this document.
- The **third step** of the process is then to identify which substances and sectors could relevant for a specific source/pathway for which specific control measures can be applied. This has been done for the a number of ”clusters” and the results are included as a number of tables in Annex 4, where the results of the source screening has been analysed and synthesized into such clusters.
- A **fourth step** is to identify for which relevant sources/pathways there are still gaps. The outcome of this analysis is to be further developed.

Examples of fey **existing EU legislation** identified in the first stage are for instance:

- The Integrated Pollution Prevention Control (IPPC) Directive (Directive 96/61/EC): Best Available Technology and Emission Limit Values – eventually more sectors and not only large plants, more attention for prevention and addressing PHS and PS;
- Discharge of Dangerous Substances Directive (76/464/ EEC)
- Drinking Water Directive (80/778/EEC) as amended by Directive (98/8/EC)
- Marketing and Use Directive (Directive 76/769/EC) and related regulations on existing substances, the new REACH system,
- Directives on Plant Protection Products (Directive 91/414/EEC) and Biocides (Directive 98/8/EC) (use restrictions and BEP) – inclusion of substances/applications not yet addressed in these directives;
- Directives related to emissions to air: Air Quality Framework, Large Combustion Plants, National Emission Ceilings, Waste Incineration, Volatile Organic Compounds – attention for WFD PS and PHS;
- Urban Waste-water Treatment Directive (91/271/EEC) (more attention for connected industries, inclusion of more parameters, improvement of the collection system, attention for quality of storm water overflows and households not connected to the sewer system), (revised) Sewage Sludge Directive;
- Directives on Waste including on Landfills, Incineration, Industrial Chemical Waste, Waste of electrical and electronic equipment, collection of batteries – attention for the needs of WFD for PS and PHS;
- Accidental pollution: The Major Accidents (Seveso) Directive (96/82/EC);
- Legislation on the import of goods from outside EU
- Proposed Groundwater Directive
- New Chemicals Policy, the proposed REACH Regulation for registration, authorisation, restriction and evaluation of substances that in the future will replace the present instruments for existing substances on the internal market;

Relevant EU Strategies

When developing the measures for the emission controls, the following strategies (that are still partly in development) will need to be taken into account:

- EC Communication ‘Towards a thematic strategy on the sustainable use of pesticides’;

- EC Communication 'Towards a European Marine Strategy';
- EC development towards a strategy on the protection of the soil;
- Mercury strategy
- Thematic strategy on Health and Environment
- Thematic strategy on Air (CAFÉ)
- Strategies on "Endocrine Disruption" and on "PCB, dioxins furans"

4.4. Initial consultation on possible control measures – outcome of the Expert Group on Emission Controls

The Table in Annex 2 showed an overview of (a framework for) possible measures at EU level per source category and pathway as has been described in chapter 3.

From Annex 2, it can be concluded that the WFD Daughter Directive on emission controls may focus on:

- Emission Limit Values (ELVs) and BAT for industrial sectors in relation to discharges to water, also including the review of the Daughter Directives under Directive 76/464/EEC;
- Best environmental practice for the use of plant protection products;
- Storm water overflows and management of street run off.

The main conclusions from the Expert Group on Emission Controls, and subsequently endorsed by the EAF PS were:

(1) there was a general agreement that a semi-quantitative approach for the source screening was the most appropriate;

(2) the aim was to apply a process driven approach;

(3) the views related to the use of ELVs was divided, a discussion document has been prepared by a number of countries (EAF(6)-06/01), which will be discussed later;

(4) BAT should play a key role with the IPPC directive having a crucial role;

(5) general agreement that marketing and use restrictions should be based on RAs including targeted RAs;

(6) it was agreed that BEP for the control of pesticides should be closely linked to the *strategy on the sustainable use of pesticides;*

(7) for the control of sewage effluents and storm water the emphasis was on control at source rather then end-of-pipe;

(8) the categories major minor and negligible were replaced by category 1,2,3. Extensive comments have been received on the definitions of these categories and the individual source definitions, which have been incorporated into the report, Annex 1.

(9) Annex 3 gives potential areas for marketing and use restrictions and for Annex 4 a new structure of the table into IPPC categories has been adopted.

5. PRIORITISATION FOR DEVELOPING CONTROL MEASURES WILL BE DEVELOPED

In practice, it will not be possible to develop measures for all sources at the same time and priority setting will be necessary. The Water Framework Directive furthermore requires a regular review of the effectiveness of measures, which would allow for a stage-wise development of measures.

5.1. Initial ideas for principles of prioritisation

In a first instance, measures should be developed for significant sources. The resulting tables of the source screening as referred to in chapter 4 provides the basis to find significant sources. As a complete **quantitative** picture of all sources will not exist for all substances, an indication of significance will at least partly be based on expert judgement, which will ensure a **qualitative** judgement. The categories of significance used in the source screening tables referred to in chapter 4 are 'Category 1, 2 and 3. The classes should only be considered as a first qualitative indication of the contribution of a source category and/or pathway to the total releases of a PH/PHS to the water environment.

Other criteria that could be used in determining priorities for developing measures by the European Commission are:

- Measures at EU level for sources that are widespread (e.g. many installations) and of relevance in many (i.e. 3 or more) countries
- Also the nature of the measure (e.g. environment based or marketing and use based (latter generally applicable to the use of chemicals)) will determine whether there is scope to leave it to Member States or the need to establish it at EU level.
- The availability of technically possible/feasible options to achieve further reductions – more research might be necessary.
- Short term measures preferred above long term measures
- As cost effective as possible
- Preferably within existing policy/legislation
- Measures as close to the source as possible, preferably no end-of-pipe measures
- Measures where appropriate supported by and in cooperation with stakeholders/sector can be expected.

In addition the WFD Article 16 requires that a cost-effective and proportionate mix of product and process measures are proposed.

5.2. Proposed way forward

Based on the vast number of different pieces of Community legislation regulating the different sources, as well as the high number of Category 2 pathways indicating a need for further information about the potential importance of a pathway, it is proposed to proceed in two stages.

In the first stage, a package of measures would be proposed mid-2004 as required by the WFD including the following key components:

A. A legal acts establishing chemical status, accompanying measures for analysis and monitoring, repeal of existing "daughter Directives", PHS review and emission control measures of the following nature:

(1) laying down general principles further specifying requirements already existing in the WFD

(2) proposing a general framework of in the form of a "pollution reduction programmes" to be included in the programme of measures under the WFD

(3) addressing some sources where "framework" control measures, such as:

(a) point source discharge control further specification for IPPC installations

(b) point source discharge control harmonisation of requirements for non IPPC installations

(c) Best environmental practice for agricultural and non-agricultural use of PPP

(d) General requirement to set up specific pollution reduction programme for diffuse/multiple sources

(e) Links to the legislation on authorisation and restriction of then use of chemicals, notably REACH;

B. A Communication for the Commission addressing other Community legislation and initiatives, explaining the links with the WFD and how they could/are helping to achieve the WFD objectives, and possibly to identify concrete proposal for action. Progress to achieve the WFD targets through other measures should be regularly reviewed by the Commission. Such a Communication could also identify some areas where thee are real gaps in the Community legislation and initiate discussion on the way forward.

In the **second stage,** is proposed to take place in 2008 in line with the second review of the list of priority substances in annex X of WFD. This could include measures identified in the Communication, as well as in pressure and impact analysis, etc

Chapter 6 of this document will include further background to the development of ideas for specific measures.

6. PROPOSED CHOICE FOR CONTROL MEASURES ON PRIORITY SUBSTANCES AND PRIORITY HAZARDOUS SUBSTANCES

[To be completed following EAF 7.]

7. ECONOMIC IMPACT STUDY

[To be completed following EAF 7 and progress of the impact study.]

ANNEX 1 RESULTS OF SOURCE SCREENING AND TYPOLOGY OF SOURCES ANS RELEASE ROUTES

[Source screening sheets for each substance is attached in a zip-file].

Fig. 1: Point, municipal and diffuse sources with main routes of release to environment

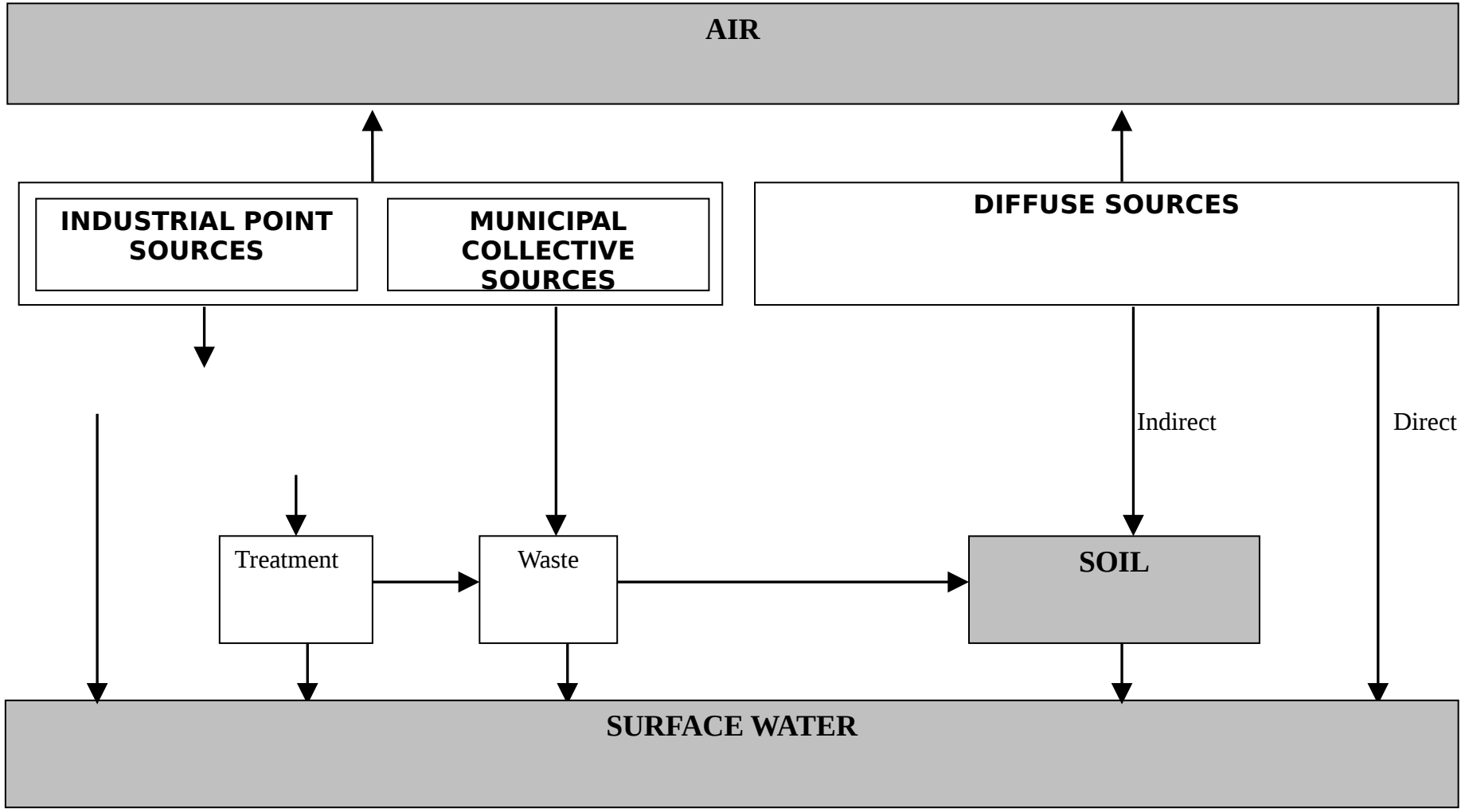


Fig. 2: Various types of point, municipal and diffuse sources with a proposal coding.

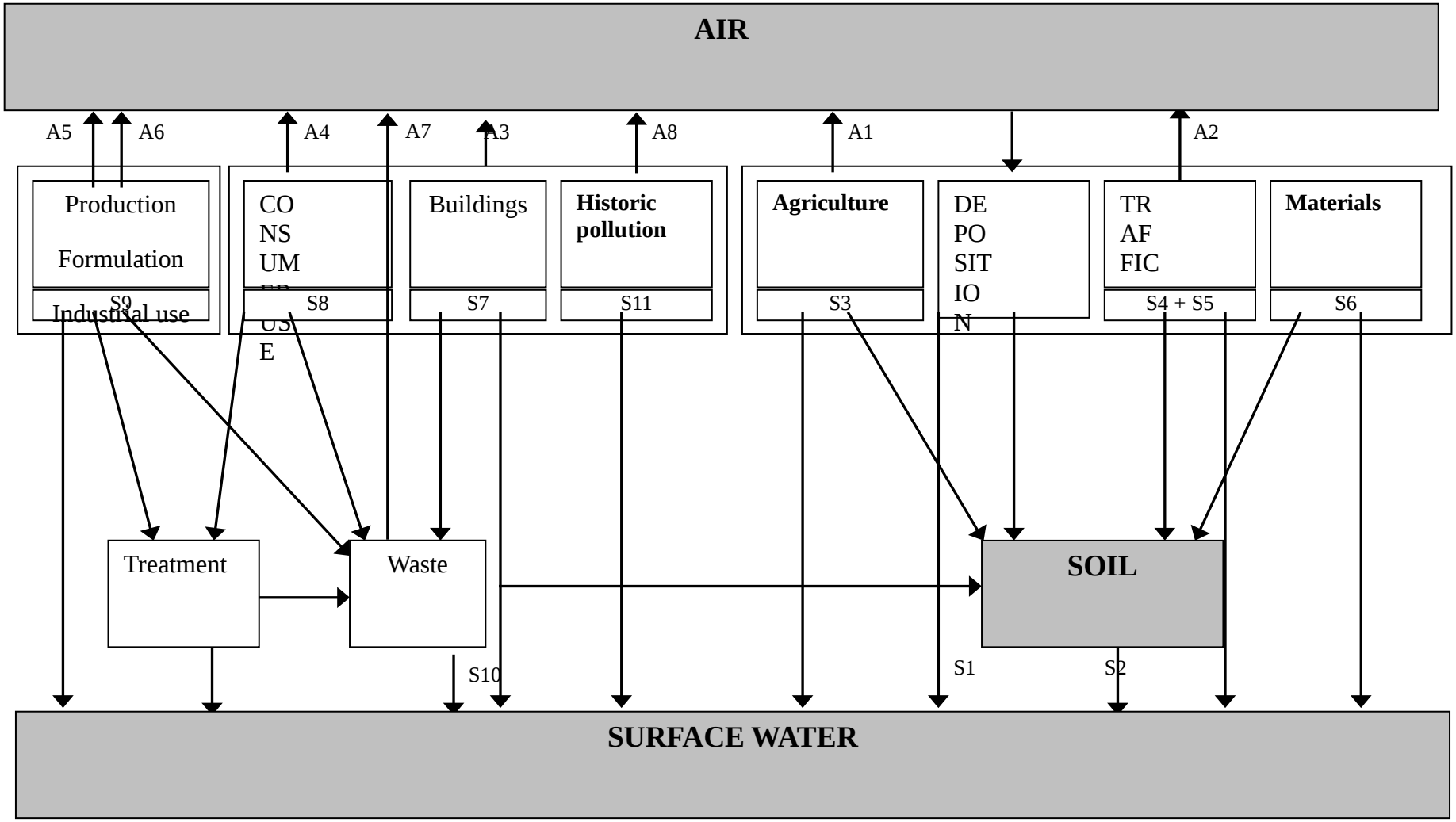
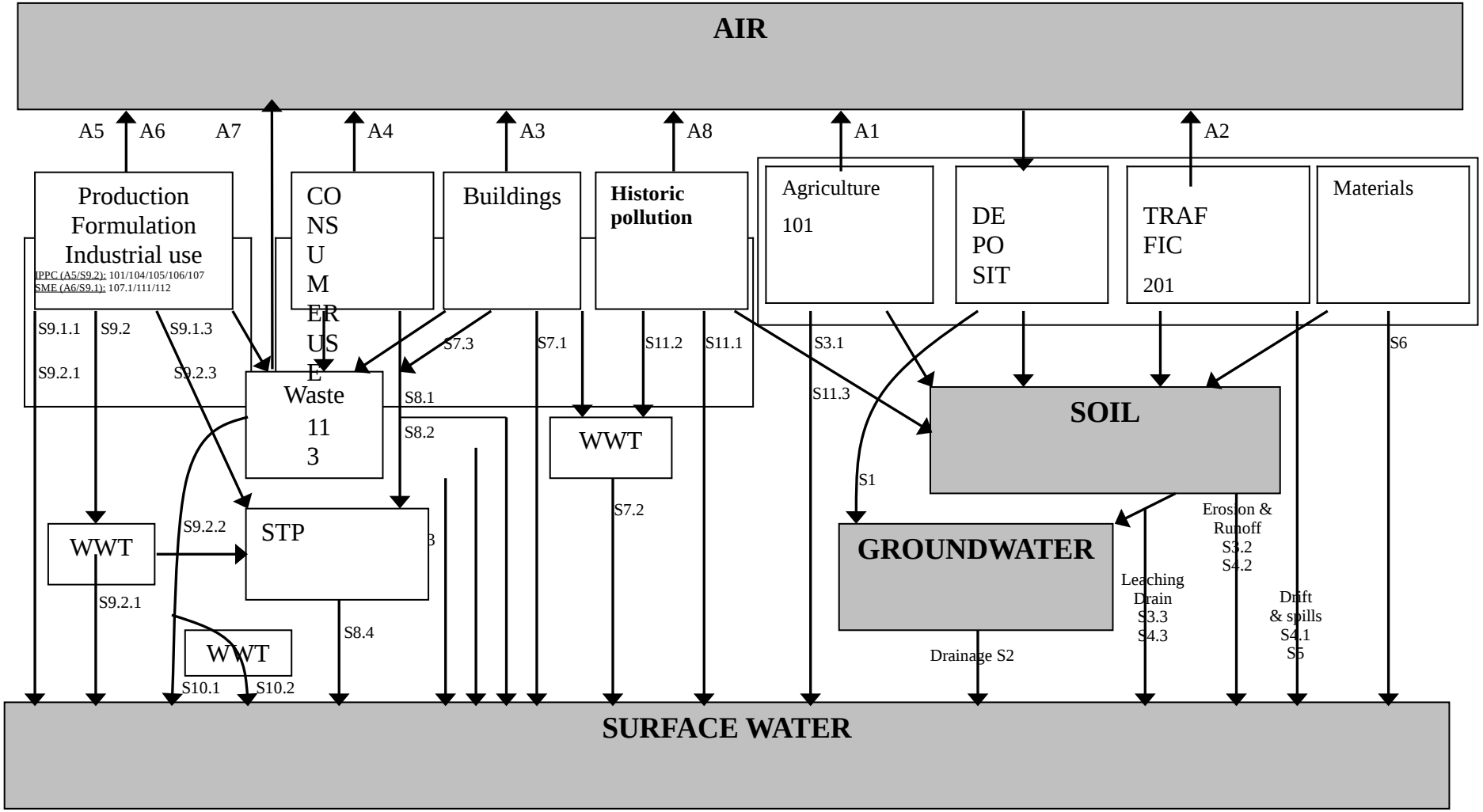


Fig. 3: Detailed scheme of sources with codes for various direct and indirect routes to the aquatic environment



ANNEX 1 continued

Codes

In this Annex the sources and routes to the environment are specified with tentative working definitions. Each source is coded by an **S and number.** Diffuse sources are coded **S1 – S6.** Sources to municipal sewers and industrial point sources are coded **S 7 – S 11.**

Point sources are further divided into municipal and industrial dependent of the collection and treatment in a communal treatment system or in a separate industrial treatment with a separate discharge to surface water.

Routes to the environment are separated in **A routes to atmosphere, DS S diffuse routes to surface water,** and **PS S point sources to surface water.** Different subroutes are numbered with a second number e.g. PS 7.1 and PS 7.2 etc.

According to the existing substances regulation the producer or importer has the full responsibility for the emissions of a substance in the lifecycle. In practice the downstream users have there own responsibility for emissions.

Typology of routes

Routes are distinguished in the following groups: Atmospheric (A), diffuse sources to surface water (DS S 1 -6) and (municipal) point sources to surface water (PS S 7 -11)

A Emissions to atmosphere

A1 From agriculture
A2 From traffic and infrastructure
A3 From buildings
A4 From households and other consumer use
A5 From industry IPPC categories
A6 From industry SME and other non IPPC categories
A7 From waste disposal areas (land fill and others)
A8 From contaminated land (historical pollution)
A9 From other sources

The emissions A(1 – 9) to atmosphere are subjected to dilution and dispersion, photodegradation, transport and wet or dry deposition. The separation between point source, network source or diffuse source is less pronounced in comparison to the route to surface water.

A1-2 can be considered diffuse because the emission is not via a collection system, vent or chimney and cannot be controlled by end of pipe treatment.

Part of the emission A3 and A4 may be considered diffuse, part may be considered point sources e.g. if released via chimneys or confined vents.

Emission A5-6 can be considered mainly as point source.

Emission A7 and A8 can be controlled by covering and venting with adequate treatment and thus could be considered as point source.

DS S (1-6) Diffuse routes to surface water

S1 *Atmospheric deposition*

Only direct deposition on the water surface.

S2 *Indirect drainage of deep groundwater reservoirs*

Filtered, retarded and degraded (months-years). It is evident that the deep groundwater S2 collects some of the emissions via soil of the sources agriculture, traffic/infrastructure and

deposition, and will discharge a mixture from that sources with a retardation of several years. In the case of accidental pollution from traffic and in the case of historical pollution, the route of spilled liquids to deep groundwater can be highly relevant on a local scale.

S3 *From agriculture to surface water*

S3.1 Direct discharges during or after application (hours)from agriculture via drifting and spills not via ground or soil

S3.2 From agricultural land via erosion.
Occasional release following heavy rain fall after application (hours- days-weeks)

S3.3 From Agriculture via leaching and superficial drainage
Filtered and retarded by soil after application (days-weeks)

S4 *From traffic and non urban infrastructure*
These emissions hold for ships, trains, automobiles and airplanes and their respective infrastructures outside the urban area.

S4.1 *Direct losses through leakage, spills and drift.*

S4.2 *Indirect via runoff from paved surface, corrosion, wearing, losses and small leakage* This emission is mainly to soil and only a small part will enter the surface water **without** a passage to soil.

S4.3 *Indirect leaching and drainage of soil on road bank*
The substances are filtered, retarded and degraded by the material of the road bank.

Indirect traffic emissions are mainly associated to particles and will in general not reach deep groundwater reservoirs.

S 5 *Accidental spills.* These emissions may be split in direct to surface water, via run off and via soil.

S 6 *Release from materials.* Materials not yet included as non urban infrastructure are for example sediment, dredged sediment, accumulated debris, oil scum, eroded road banks. These emission routes can be direct and indirect via soil.

<u>From Point sources to surface water</u>

Routes from point sources to surface water differ mainly because of the various possibilities of canalisation and treatment.

S7 *Run off from roofs and paved area*

S7-1 directly or via separate rainwater sewer, untreated

S7-2 via separate system with simple treatment (WWT, reservoirs for withholding, settling) and release of sediment to STP.

S7-3 via a combined municipal sewer in combination with S 8

S8 *Discharges from households*

S 8.1 Direct discharge not connected to municipal sewer, possibly in combination with some kind of treatment.

S 8 2 Sewered, but not treated by STP

S 8.3 Sewered but occasional emission via bypass of STP via storm water overflow

S 8.4 Sewered and treated by STP (various options)

S 9 *Emissions from SME (S9.1) or IPPC(S9.2) industry before treatment*

The connections of industrial wastewater to any collection and/or treatment system can vary according to the following possibilities.

S 9.1.1 or 9.2.1 Direct discharge to surface water without treatment
S 9.2.1 Discharge via industrial treatment (WWT) to surface water
S 9.2.2 Discharge via industrial treatment (WWT) to municipal sewer
S 9.1.3 or 9.2.3 Discharge without treatment to communal sewer in combination with all options of S 8

S10 *Discharges from waste deposit/landfill*
S 10.1 without treatment
S 10.2 with WWT

S 11 *Discharge from historically contaminated land*
S 11.1 Without treatment
S 11.2 Idem after WWT or STP
S 11.3 Indirect release via soil

8.

9. ANNEX 2 PRELIMINARY OVERVIEW TABLE POSSIBLE MEASURES AT EU LEVEL PER SOURCE CATEGORY/PATHWAY

S1 (atmospheric deposition on the water surface)
Measures to be found close to the primary source
WFD Daughter Directive on emission controls:
-None
Use of other existing instruments:
- The measures on emissions to air from point and diffuse sources that are described at the bottom of this table in categories A1-A9

S2 (losses to surface water via drainage and deep ground water to surface water)
Measures to be found at the sources that result in contamination of soil and deep ground water
WFD Daughter Directive on emission controls:
-None
Use of other existing instruments:
- WFD Daughter Directive on Groundwater
- Existing Directive on Groundwater
- Sewage Sludge Directive
- Directive on landfills

S3 (losses to surface water due to agricultural activities (via leaching, erosion, spills, direct drainage discharges))
WFD Daughter Directive on emission controls:
- Further development or specification of BEP on the use of pesticides

Use of other existing instruments:
- Common agricultural policy
- Plant Protection Products Directive (91/414/EC)
- EC Communication 'Towards a thematic strategy on the sustainable use of pesticides'

S4 (losses to surface water due to transport and infrastructure without connection to canalisation (ships, trains, automobiles and aircraft and their respective infrastructures outside the urban area)
WFD Daughter Directive on emission controls:
-None
Use of other existing instruments:
- Directive 76/769 for regulations on antifouling, wood preservation, de-icing liquids
- Regulation 782/2003 on the prohibition of organotin compounds on ships
- Biocides Directive (98/8/EC)
- The UN/IMO convention on antifouling
- Legislation on the transport of dangerous goods

S5 (losses to surface waters due to accidental spills)
WFD Daughter Directive on emission controls:
-None
Use of other existing instruments:
- IPPC Directive (96/61/EC)
- The Major Accidents (Seveso) Directive (96/82/EC)
- Legislation on the transport of dangerous goods
- Legislation on Maritime Safety

S6 (losses to surface waters due to release from materials and constructions in non urban area without collection systems)

WFD Daughter Directive on emission controls:

- Street run-off management

Use of other existing instruments:

- 76/769 Directive, REACH scheme

S7 (discharges due to run off buildings and constructions in paved urban area)
S7.1 (directly or via separate rainwater sewer, untreated)
S7.2 (via separate system with simple treatment (WWT, reservoirs for withholding, settling) and release of sediment to STP (communal sewage treatment plant).
S7.3 (via a combined municipal sewer in combination with S 8)

WFD Daughter Directive on emission controls:

- Storm water overflows

Use of other existing instruments:

- Marketing and Use Directive 76/769/EC , REACH scheme
- if collected in sewer system: improvement of collection system or improvement in waste water treatment – Urban Wastewater Directive

S8 (discharges due to households, consumer use)
S 8.1 : Direct discharge not connected to municipal sewer, possibly in combination with some kind of treatment.
S 8.2 : Sewered, but not treated by STP
S 8.3 : Sewered but occasional emission via bypass of STP via storm water overflow
S 8.4 : Sewered and treated by STP (various options)

WFD Daughter Directive on emission controls:

- Storm water overflows (for pathway 8.3)

Use of other existing instruments:

- Marketing and Use Directive 76/769 EC and related regulations on existing substances, Directives on Plant Protection Products and Biocides (use restrictions and BEP), REACH scheme
- if collected in sewer system: improvement of collection system or improvement in waste water treatment – Urban Wastewater Directive 91/271/EC, the Sewage Sludge Directive.
- Waste legislation in relation to collection of waste

S9 (discharges due to industrial activities)
S9.1: Small and medium enterprises (SME), direct or via STP

WFD Daughter Directive on emission controls:

- Emission Limit Values (ELV) or Best Available Technology (BAT)
- Review of 76/464

Use of other existing instruments:

- More elaboration of the industrial part of the Urban Waste Water Directive
- Waste legislation, Directive on incineration of waste
- Marketing and Use Directive 76/769 EC and related regulations on industrial production and use of existing substances, REACH

S9.2: Large industrial point sources, direct or via STP

WFD Daughter Directive on emission controls:

- ELV or BAT
- Review of 76/464

Use of other existing instruments:

- IPPC-directive
- Waste legislation, directive on the incineration of waste
- Marketing and Use Directive 76/769 EC and related regulations on industrial production and use of existing substances, REACH

S10 (discharges due to solid waste treatment)

WFD Daughter Directive on emission controls:

-None

Use of other existing instruments:

- IPPC-Directive
- Waste legislation

S11 (discharges/losses due to historical pollution)

WFD Daughter Directive on emission controls:

-None

Use of other existing instruments:

- Explore the possibilities for establishing a strategy at EU level on contaminated sediments and links with the Thematic Strategy on Soil protection.

A1 (emissions to atmosphere from agriculture)

WFD Daughter Directive on emission controls:

- Further development or specification of BEP on the use of pesticides

Use of other existing instruments:

- Plant Protection Products Directive (91/414/EC), revision foreseen.
- EC Communication 'Towards a thematic strategy on the sustainable use of pesticides'

A2 (emissions to atmosphere from traffic and infrastructure)

WFD Daughter Directive on emission controls:

-None

Use of other existing instruments:

- Air Quality Framework Directive
- Marketing and Use Directive (petrol)

A3 (emissions to atmosphere from buildings)

WFD Daughter Directive on emission controls:

- None

Use of other existing instruments

- Air quality standards for various combustion installations
- Marketing and Use Directive (76/769/EC)
- Directive on Volatile Organic Compounds

A4 (emissions to atmosphere from households and other consumer use)

WFD Daughter Directive on emission controls:

-None

Use of other existing instruments:

- Marketing and Use Directive 76/769 EC and related regulations on existing substances, Biocides Directive (use restrictions and BEP), REACH
- Waste legislation in relation to collection of waste
- Directive on volatile organic compounds

A5 (emissions to atmosphere from industry IPPC categories)

WFD Daughter Directive on emission controls:

-None

Use of other existing instruments:

- IPPC-directive
- Air Quality Framework Directive
- Directive on the incineration of waste, Directive on large combustion plants

- Marketing and Use Directive 76/769 EC and related regulations on industrial production and use of existing substances, REACH
- Directive on Volatile Organic Compounds

A6 (emissions to atmosphere from industry SME and other non IPPC categories)

WFD Daughter Directive on emission controls:

-None

Use of other existing instruments:

- Air Quality Framework Directive
- Directive on the incineration of waste,
- Marketing and Use Directive 76/769 EC and related regulations on industrial production and use of existing substances, REACH
- Directive on Volatile Organic Compounds

A7 (emissions to atmosphere from waste disposal areas (land fill and others))

WFD Daughter Directive on emission controls:

-None

Use of other existing instruments:

- Waste legislation, Directive on landfills
- IPPC Directive

A8 (emissions to atmosphere from contaminated land (historical pollution))

WFD Daughter Directive on emission controls:

-None

Use of other existing instruments:

- Directive on landfills

ANNEX 3 : TABLES WITH EXISTING MEASURES

[Substance specific tables are attached in Zip format]

ANNEX 4: SUBSTANCES, SECTORS AND SOURCES/PATHWAYS RELATED TO POTENTIAL SPECIFIC CONTROL MEASURES

Table 1a Category (1) and (2) (as identified in the source screening sheets) IPPC activities with discharges to water which may result in or contribute to a potential failure of the WFD objectives.

Table 1b Non-IPPC activities with discharges to water which may result in or contribute to a potential failure of the WFD objectives (for the assessment of the non-IPPC installations involved in activities covered for the larger installations by the IPPC Directive the assessments for the IPPC installations have been used).

Table 2 Existing and potential future areas for marketing and use restrictions (except pesticides)

- **2a**. Existing legislation with marketing and use restrictions
- **2b.** Possible extension/strengthening of existing legislation with marketing and use restrictions
- **2c**. Possible new areas for legislation with marketing and use restrictions (also indicating already existing initiatives on these areas)

Table 3a Substances relevant for the application of Best Environmental Practice - Plant Protection Products for agricultural and non-agricultural use

Table 3b Substances for which pesticide use has been banned

Table 4 Atmospheric emissions, and possible subsequent wet or dry deposition:

- **Table 4a** Substances for which atmospheric deposition (pathway S1) has been assessed as category 1 – list of activities/sectors where emissions to air contribute to this atmospheric deposition (1) or where emissions to air are relatively small and their impact is unknown (2).
- **Table 4b** List of substances where atmospheric deposition (pathway S1) has been assessed as category 2 (which indicates that at the moment there is insufficient information available to assess whether the atmospheric deposition source/pathway may result in or contribute to a potential failure of WFD objectives)
- **Table 4c**: Overview of measures addressing (prevention of) atmospheric deposition and emissions to air of priority substances

Table 5 Substances for which there is some indication that historical contaminated sites and sediments might serve as a source for releases to the aquatic environment (categories 1 and 2 of the source screening) - need to be further assessed.

Table 6a Solid waste management, which might result in releases to the aquatic environment

Table 6b Overview of existing measures in relation to landfills, incineration and other solid waste management

Table 7 Substances for which the results of the source screening of the sources/pathways S4, S6, S7, S8 and S9 indicate that these substances are category (1)/might be (2) present in sewage treatment plants, street run off and storm overflows

Table 8 Substances for which the use as a biocide has been classified as a relevant source/pathway – in the right columns is indicated whether existing measures exist and/or whether the use is subject to assessment under the Biocides Directive 98/8

TABLE 1A : CATEGORY (1) AND (2) (AS IDENTIFIED IN THE SOURCE SCREENING SHEETS) IPPC ACTIVITIES WITH DISCHARGES TO WATER, WHICH MAY RESULT IN OR CONTRIBUTE TO A POTENTIAL FAILURE OF THE WFD OBJECTIVES

Industrial sector	(1) alachlor	(2) anthracene	(3) Atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphtalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
Large combustion plants (IPPC category 1.1, above IPPC threshold of 50 MW)		(1)		(1)		(1)	(1)			(2)					(1)					(1)	(1)	(1)	(1)					(1)					
Mineral oil and gas refineries (IPPC category 1.2, no thresholds)		(1)		(1)	(1)	(1)	(1)			(2)					(1)	(1)	(1)	(1)		(1)	(1)	(1)	(1)					(1)		(1)			
Coke ovens (IPPC category 1.3, no thresholds)				(1)																	(2)												
Coal gasification and liquefaction plants (IPPC category 1.4, no thresholds)				(1)		(2)															(2)												
Iron and steel, IPPC (IPPC category 2.2, above IPPC threshold for production capacity)						(1)														(1)	(1)												

Industrial sector	(1) alachlor	(2) anthracene	(3) Atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphtalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
Electric arc furnace steel works (IPPC category 2.2, above IPPC threshold for production capacity)						(1)																	(1)										
Ferrous metals / foundries (IPPC categories 2.3/2.4, above IPPC threshold for production capacity)				(1)		(1)				(2)						(2)				(1)	(1)									(1)			
Non-ferrous metals (a.o. aluminium production) (IPPC category 2.5, above IPPC threshold for production capacity)		(1)				(1)				(2)						(2)				(1)	(1)	(1)	(1)					(1)		(1)			
Surface treatment of metals (IPPC category 2.6, above IPPC threshold for the volume of treatment vats)						(1)	(1)			(1)													(1)	(1)									
Mining (no formal IPPC category,						(1)														(1)	(2)		(1)										

Industrial sector	(1) alachlor	(2) anthracene	(3) Atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphtalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
however BREF is in development)																																
Cement (IPPC category 3.1, above IPPC threshold for production capacity)						(1)														(1)	(1)		(1)										
Glass (IPPC category 3.3, above IPPC threshold for production capacity)						(1)														(1)	(1)		(1)										
Ceramics (IPPC category 3.5, above IPPC threshold for production capacity)						(1)															(1)												
Large volume organic chemicals (IPPC category 4.1, no thresholds) (a.o. production of creosote and other coal tar distillates)		(1)		(1)		(1)				(1)					(1)	(1)	(1)	(2)		(1)	(1)	(1)	(1)	(1)	(1)			(1)		(1)	(1)	(1)	
Organic fine chemicals (IPPC categories 4.1 and 4.5, no thresholds) (e.g.		(1)		(1)	(1)	(1)	(1)			(1)		(1)			(1)	(1)				(1)	(1)	(1)	(1)	(1)	(1)			(1)			(1)	(1)	

Industrial sector	(1) alachlor	(2) anthracene	(3) Atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphtalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
adhesives, pharmaceuticals, paint strippers, dyes/paints, pyrotechnical equipment, detergents, flame retardants, ion exchanger, heat transfer medium)																																
Polymers/PVC (IPPC category 4.1, no thresholds)										(1)		(1)				(1)				(1)				(1)	(1)				(1)		(1)	
Chlor-alkaline plants (IPPC category 4.2, no thresholds)																(1)					(1)											
Fertilisers and inorganic chemicals (IPPC category 4.3, no thresholds)						(1)	(1)											(1)		(1)	(1)		(1)									
Production of pesticides and biocides (IPPC category 4.4, no thresholds)	(1)		(1)	(1)				(1)	(1)	(2)				(1)					(1)	(1)	(2)	(1)	(1)	(1)					(1)	(1)		(1)
Waste incineration with flue gas cleaning (IPPC category 5, above IPPC threshold for		(1)		(1)	(1)	(1)									(1)					(1)	(1)	(1)	(1)					(1)		(2)		

Industrial sector	(1) alachlor	(2) anthracene	(3) Atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphtalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
capacity)																																
Solvent recovery (waste treatment) (IPPC category 5, above IPPC threshold for capacity)										(1)																					(1)	
Pulp and paper (IPPC category 6.1, above IPPC threshold for production capacity)						(1)														(1)	(1)		(1)	(1)	(1)				(1)		(1)	
Textiles (IPPC category 6.2, above IPPC threshold for production capacity)		(1)				(1)			(1)						(1)					(1)	(2)	(1)	(1)	(1)	(1)		(1)	(1)		(1)		
Tanning (IPPC category 6.3, above IPPC threshold for production capacity)							(1)																	(1)	(1)					(1)		
Slaughterhouses, production of milk/food (IPPC category 6.4, above IPPC		(1)				(1)				(2)					(1)					(1)	(2)	(1)	(1)					(1)				

Industrial sector	(1) alachlor	(2) anthracene	(3) Atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphtalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
threshold for production capacity)																																
Surface treatment using solvents (IPPC category 6.7, solvents consumption capacity above IPPC threshold)		(1)		(1)	(1)	(1)				(1)					(1)					(1)		(1)	(1)					(1)		(1)		(1)	
Disinfection of cooling water /effluents (addressed by IPPC in horizontal BREF on cooling systems (available) and in BREF on effluent treatment (in development))																																(1)	

TABLE 1B : NON-IPPC ACTIVITIES WITH DISCHARGES TO WATER, WHICH MAY RESULT IN OR CONTRIBUTE TO A POTENTIAL FAILURE OF THE WFD OBJECTIVES (FOR THE ASSESSMENT OF THE NON-IPPC INSTALLATIONS INVOLVED IN ACTIVITIES COVERED FOR THE LARGER INSTALLATIONS BY THE IPPC DIRECTIVE THE ASSESSMENTS FOR THE IPPC ACTIVITIES HAVE BEEN USED)

Industrial sector	(1) alachlor	(2) anthracene	(3) atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphthalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
Non-IPPC installations in general		X		X	X	X				X		X			X					X		X		X				X				?	
Large combustion plants (below threshold for IPPC category 1.1 of 50 MW)		X		X		X	X			X					X					X	X	X	X					X					
Iron and steel, (below IPPC category 2.1 threshold for production capacity						X									X					X	X	X							X					
Electric arc furnace steel works (below IPPC category 2.2 threshold for production capacity						X																	X										

Industrial sector	(1) alachlor	(2) anthracene	(3) atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphthalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
Ferrous metals / foundries (below IPPC categories 2.3/2.4 threshold for production capacity)				X		X										X				X	X									X			
Non-ferrous metals (a.o. aluminium production) (below IPPC category 2.5 threshold for production capacity		X				X									X	X				X	X	X	X					X		X			
Surface treatment of metals (below IPPC category 2.6 threshold for the volume of treatment vats)						X	X			X													X	X	X								
Mining (no formal IPPC category, however BREF is in						X														X	X		X										

Industrial sector	(1) alachlor	(2) anthracene	(3) atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphthalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
development)																																
Cement (below IPPC category 3.1 threshold for production capacity)						X														X	X		X									
Glass (below IPPC category 3.3 threshold for production capacity)						X														X	X		X									
Ceramics (below IPPC category 3.5 threshold for production capacity						X															X											
Wood treatment		X													X			?				X				x?	X	x		x			
Formulation of pesticides and biocides (not covered by IPPC)	X		X					X	X									?	X			X		X					X	X			X

Industrial sector	(1) alachlor	(2) anthracene	(3) atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphthalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
Waste incineration with flue gas cleaning (below IPPC category 5 threshold for capacity)		X		X	X	X									X					X	X	X	X					X		?		
Solvent recovery (waste treatment) (below IPPC category 5 threshold for capacity)										X																						X	
Pulp and paper (below the IPPC category 6.1 threshold for production capacity)						X														X	X		X	X	X					X		X	
Textiles (below the IPPC category 6.2 threshold for production capacity)		X				X		X							X					X	X	X	X	X	X		X	X	X			
Tanning (below the IPPC																																	

Industrial sector	(1) alachlor	(2) anthracene	(3) atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphthalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
category 6.3 threshold for production capacity)							X																	X	X					X			
Slaughterhouses , milk and food production (below the IPPC category 6.4 threshold for production capacity)		X				X				X					X					X	X	X	X					X				
Surface treatment using solvents (below the IPPC category 6.7 Threshold)		X		X	X	X				X					X					X		X	X					X		X		
Disinfection of cooling water /effluents for installations not addressed by IPPC Directive																															X	
Application of flame retardants in various types of IPPC and non-IPPC processes (not specifically					X																											

Industrial sector	(1) alachlor	(2) anthracene	(3) atrazine	(4) benzene	(5) brom. diphenylethers	(6) cadmium	(7) C10-C13 chloroalkanes	(8) chlorfenvinphos	(9) chlorpyrifos	(10) 1,2 dichloroethane	(11) dichloromethane	(12) DEHPhtalate	(13) diuron	(14) endosulfan	(15) fluoranthene	(16) hexachlorobenzene	(17) hexachlorobutadiene	(18) hexachlorocyclohexane	(19) isoproturon	(20) lead	(21) mercury	(22) naphthalene	(23) nickel	(24) nonylphenols	(25) octylphenols	(26) pentachlorobenzene	(27) pentachlorophenol	(28) PAH	(29) simazine	(30) Tributyltin compounds	(31) trichlorobenzenes	(32) trichloromethane	(33) trifluralin
addressed in IPPC Directive)																																	
Car repair		X		X	X	X									X					X		X	X	X				X				X	
Laboratories				X																X	x			X								x	
Shipyards																														X			
Dentists																					X												
Farmyards and glasshouses	X							X	X										X									X				X

TABLE 2 EXISTING AND POTENTIAL FUTURE AREAS FOR MARKETING AND USE RESTRICTIONS (EXCEPT PESTICIDES)

i.e. those areas that are related to the sources and pathways S4, S6, S7, S8, S9 and where at least one of these sources/pathways have been classified in category 1 in the source screening of a particular substance.

Substance	Area
2a. Existing legislation with marketing and use restrictions	
Benzene (4)	**Directive 98/70/EC** relating to the quality of **petrol** and diesel fuels (including restrictions with regard to benzene). **Directive 76/769 >Directive 89/677/EC** (annex I, issue 5) with the following restrictions for benzene: • < 5mg/kg in toys • < 0.1% weight of chemicals and materials except for fuels, waste and industrial chemicals/matter
PBDEs (5)	**Directive 76/769 > Directive 2003/11/EC** (annex I, issues 44 and 45): pentabromodiphenylether and octabromodiphenylether may not be placed on the market or used as a **substance** or constituent of preparations in concentrations equal or higher than 0.1% by mass. **Articles** may not be placed on the market if they, or flame-retarded parts thereof, contain these substances in concentrations higher than 0.1% by mass. **Directive 2002/95/EC** on the restrictions of the use of certain hazardous substances in electrical and electronic equipment – from 1 July 2006, **new electrical and electronic equipment** put on the market may not contain polybrominated biphenyls or polybrominated diphenyl ethers.
Cadmium (6)	**Directive 76/116** restricts the cadmium content in fertilisers. **Directive 76/769 > Directive 91/338/EC** (annex I, issue 24) restricts the use of cadmium as pigment, stabiliser and for electroplating with certain exemptions. **Directive 84/500/EEC and 88/500/EEC** restrict the cadmium in PVC packaging and toys respectively. **Directive 2002/95/EC** restricts the cadmium content in electronic and electrical equipment **Directive 2000/53/EC on end of life vehicles** requires that materials and components of vehicles put on the market after 1 July 2003 do not contain cadmium **Directive 94/62/EC** limits the cadmium content in packaging and packaging waste **Directive 91/157** regulates the collection and disposal of batteries and accumulators containing more than 0.025% by weight of cadmium
C10-C13 Chloroalkanes (7)	**Directive 76/769 > Directive 2002/45/EC** (annex I, issue 42) restricts the use in metal working fluids and in leather applications by 2004;

Substance	Area
2a. Existing legislation with marketing and use restrictions	
Lead (20)	**Directive 76/769 > Directive 89/677/EEC** (annex I, issues 17 and 18): lead carbons and lead sulphates may not be used as substances and constituents of preparations intended for use as paints. **Directive 91/157** regulates the collection and disposal of batteries and accumulators containing more than 0.4% of lead by weight. **Directive 2002/95/EC** on the restrictions of the use of certain hazardous substances in **electrical and electronic equipment** – from 1 July 2006, new electrical and electronic equipment put on the market may not contain lead. **Directive 2000/53/EC on end-of life vehicles** requires that materials and components of vehicles put on the market after 1 July 2003 do not contain lead with certain exemptions. **Directive 98/70/EC** relating to the **quality of petrol** and diesel fuels, setting a limit value on the content of lead in fuel of 0.005 g/l.
Mercury (21)	**Directive 76/769 > Directive 89/677/EEC** (annex I, issue 19) prohibits the use of mercury-based biocides for boats, cages etc in fish farms, preservation of wood and textiles and treatment of industrial waters. **Directive 91/157 on batteries and accumulators** restricts the content of mercury in certain alkaline manganese batteries and regulates the collection and disposal of batteries and accumulators containing more than 25 mg of mercury per cell except mercury manganese batteries. **Directive 2002/95/EC** on the restrictions of the use of certain hazardous substances in **electrical and electronic equipment** – from 1 July 2006, new electrical and electronic equipment put on the market does not contain mercury. **Directive 2000/53/EC on end-of life vehicles** requires that materials and components of vehicles put on the market after 1 July 2003 do not contain mercury with certain exemptions.
Nickel (23)	. **Directive 76/769 > Directive 94/27/EC** (annex I, issue 28): nickel may not be used in products intended to come into direct and prolonged contact with the skin with various specifications and exceptions. **Directive 91/157** on batteries and accumulators containing certain dangerous substances calls for measures to reduce the content of dangerous substances in batteries and to reduce the amount of batteries with dangerous substances.
Nonylphenols (24)	**Directive 76/769 >Directive 2003/53/EC** (annex I, issue 46): nonyl and nonylphenol ethoxylates may not be placed on the market or used as a substance or constituent of preparations in concentrations equal or higher than 0.1% by mass for the purpose of **cosmetic products an other personal care products** except spermicides, **domestic cleaning, industrial and institutional cleaning** (some exceptions), **textiles and leather processing** (some exceptions), **metal working**, **manufacturing of pulp and paper.**
PCP (27)	**Directive 76/769 >Directive 91/173/EC** restricts the

Substance	Area
2a. Existing legislation with marketing and use restrictions	
	concentration of PCP and its salts and esters to 0.1% with certain exceptions (e.g. wood and heavy textile treatment) in various products. **Directive 76/769 >Directive 99/51/EC** requires the phase out of the use of PCP by December 2008.
PAH (28) (and anthracene (2), fluoranthene (15), naphthalene (22))	**Directive 76/769 > Directive 2001/90/EC** (annex I, issue 32): creosote, creosote oil, distillates (coal tar, naphthalene oils), creosote oil (acenaphtene fraction), upper distillates coal tar, anthracene oil, tar acids (coal, crude), creosote (wood) and low temperature tar oil (alkaline) may not be used in the treatment of wood and that wood so treated may not be placed on the market. Some derogations are valid. **Directive 98/70/EC** relating to the **quality of petrol and diesel fuels**, setting a limit value on the content of PAHs in diesel fuel of 11% w/w from 2005.
Tributyltin (30)	**Directive 76/769 > Directive 2002/62/EC** (annex I, issue 21): organostannic compounds 1. may not be placed on the market for use as substances and constituents of preparations when acting as biocides in free association paints; 2. may not be placed on the market for use as substances and constituents of preparations which act as biocides to prevent the fouling of micro-organisms, plants or animals of all craft irrespective of their length intended for use in marine, coastal, estuarine and inland waterways and lakes; cages, floats, nets and any other appliances of equipment used for fish of shellfish farming; any totally or partly submerged appliance or equipment. 3. May not be used as substances and constituents of preparations intended for use in the treatment of industrial waters.
Chloroform (32)	**Directive 76/769 > Directive 96/55/EC** (annex I, issue 33): may not be used in concentrations equal to or greater than 0,1 % by weight in substances and preparations placed on the market for sale to the general public and/or in diffuse applications such as in surface cleaning and cleaning of fabrics.

Substance	Area
2b. Possible extension/strengthening of existing legislation with marketing and use restrictions	
PBDE (5)	Eventual results of ongoing risk assessment of Deca BDE to be included in **Directive 2002/95/EC** on electric and electronic equipment and **Directive 76/769** (those parts that address restrictions for other PBDE's)
Cadmium (6)	Existing restrictions on use as pigments, stabilisers, in batteries, electroplating, glass and ceramics and allowable concentration in fertilisers need to be reviewed.
C10-C13 Chloroalkanes (7)	Use in rubber, paints and sealants (and the use of longer chain CCPs (MCCPs) as substitute) can still lead to the discharge of some SCCPs – these uses are subject to a review in 2003/2004 under directive 2002/45/EC
Lead (20)	Existing restrictions - to be extended for paints (with lead chromates, red lead and lead naphthenate) - to be reviewed for batteries, petrol
Mercury (21)	Existing restrictions to be reviewed - Batteries - Dentists (follow up in EU to International Standard for the Dental Unit (ISO 7494, 1990) and PARCOM Recommendation 93/2)
Nickel (23)	Further restrictions on use of products with nickel/stainless steel other than those already addressed in the present Directive 76/769. To extend the existing area of restrictions on batteries with NiCd- and NIMH-batteries.
Nonylphenols (24)	. Extend existing restrictions to all industrial uses
Octylphenols (25)	Extend existing restrictions to NP/NPEs also to octylphenols
PAH (28)	To review existing restrictions with a view to address impregnating oils, bitumes (e.g. on ship hulls), roof paints and other PAH-containing coatings, creosote, diesel, extender oils used to make tyres
Chloroform (32)	To review existing restrictions on the use as solvent

Substance	Area
2c. Possible new areas for (legislation on) marketing and use restrictions (also indicating already existing initiatives related to these new areas)	
DEHP (12)	Use as plasticizer in PVC – is subject of risk assessment under regulation 793/93 and of proposals for marketing and use restrictions.
Hexachlorobenzene (16)	Subject to general prohibitions on production, placing on the market and use in UN POP Convention and Protocol and as such part of the proposed EU regulation for implementation.
Hexaclorocyclohexane (18)	Subject to general prohibitions on production, placing on the market and use in UN POP Protocol and as such part of the proposed EU regulation for implementation.
Lead (20)	- Use as ammunition, fishing weights (study already initiated by EC) - lead sheets as building material, - water pipes with lead, - PVC with lead stabilisers; - assessment whether use of fertilisers is a significant

	source
Nickel (23)	Assessment whether use of fertilisers is a significant source
Nonylphenols (24)	Paints
Octylphenols (25)	varnishes, printing inks, paints
PAH (28)	Subject to requirements relating to the UN POP Convention and Protocol and as such part of the proposed EU regulation on implementation in relation to release reduction, minimisation and elimination
Tributyltin (30)	Use as stabilisers (in PVC) – subject of present targeted risk assessment
Trichlorobenzenes (31)	Use as dye carrier, process solvent, corrosion inhibitor, lubricant, adhesive additive and heat transfer medium. Only used as intermediary.
Chloroform (32)	Restriction of the use of chlorine and hypochlorite for disinfection of cooling water and waste water (being assessed in EU risk assessment on hypochlorite)

TABLE 3A SUBSTANCES RELEVANT FOR THE APPLICATION OF BEST ENVIRONMENTAL PRACTICE - PLANT PROTECTION PRODUCTS FOR AGRICULTURAL AND NON-AGRICULTURAL USE

Pesticide in use	Status of assessment under Directive 91/414 (assessment will lead to a decision whether or not pesticide is allowed on the market and if so, under which conditions)	Area of application (if use is allowed)	Nature of possible reduction measures
Herbicides			
(1) Alachlor (Use is at the moment only allowed in some MS)	Alachlor is on the 1st assessment list. The final assessment is pending (Spain RMS)	Application: herbicide to control annual grasses and many broad-leaved weeds in e.g. maize, radish and sugar cane.	Withdrawal of approval. Prohibition of use near water courses and in groundwater protection areas. BEP indicating alternatives and guidelines for safe use with a minimum of losses on the field and when cleaning/filling equipment. Mechanical alternatives to remove weeds. Disconnection from sewer system. Additional techniques at wastewater treatment plants when run off from fields and discharges from farmyards are collected.
(3) Atrazine (Use as plant protection product is at the moment authorised in the majority of the EU MS)	Atrazine is on the 1st assessment list. The final assessment is pending (UK RMS). Indication at EAF(6) that use will be banned.	Application: herbicide in maize and sorghum.	
(13) Diuron (Use as PPP is at the moment authorised in most EU MS).	Diuron is on the 2nd assessment list. The assessment is on going (DK RMS)	Application: systemic herbicide, total control of weeds and mosses on non-crop-areas, selective control of germinating grass and broad-leaved weeds in many crops.	
(19) Isoproturon	Assessment finalised. By Commission Directive 2002/18, isoproturon has been placed on annex I of Directive 91/414 with specific provisions under which use is allowed. Entry into force: 1 January 2003. Evaluation of inclusion after 10 years	Only allowed use: herbicide	
(29) Simazine (Use as plant protection product is at the moment authorised in most EU MS).	Simazine is on the 1st assessment list. The final assessment is pending (UK RMS). Indication at EAF(6) that use will be banned.	Application: non-selective, systemic pre-emergence herbicide in maize, beans, citrus and pomes fruit.	
(33) Trifluralin (Use as plant protection product is at the moment authorised in	Trifluralin is on the 2nd assessment list. The assessment is on going (EL RMS)	Application: pre-emergence soil-incorporated herbicide in horticulture, fruit, vegetables, vineyards; key herbicide in oil seed rape and	

most EU MS)		sunflower, fodder peas and small grains	
Insecticides/acaricides			
(9) Chlorpyrifos (Use as PPPis at the moment authorised in most EU MS).	Chlorpyrifos is on the 1st assessment list. The final assessment is pending (Spain RMS)	Application: non-systematic insecticide in over 100 crops.	Withdrawal of approval. Prohibition of use near water courses and in groundwater protection areas. BEP indicating alternatives and guidelines for safe use with a minimum of losses on the field and when cleaning/filling equipment. Recommendations in relation to spraying (weather conditions, wind, spray equipment) Biological alternatives to substituteinsecticides. Disconnection from sewer system. Additional techniques at wastewater treatment plants when run off from fields and discharges from farmyards are collected
(14) Endosulfan (Use as plant protection product is at the moment authorised in many EU MS)	Endosulfan is on the 1st assessment list. The final assessment is pending (Spain RMS)	Application: non-systematic insecticide and acaricide –control of sucking, chewing and boring insects and mites on a very wide range of crops.	
(22) Naphthalene (Use is only authorised in Ireland and UK)	Naphthalene is on the 4th assessment list.	(at the moment, use of mothballs with naphthalene is the only existing authorisation)	

TABLE 3B SUBSTANCES FOR WHICH PESTICIDE/AGRICULTURAL USE HAS BEEN BANNED

Pesticide	Instrument with which the use has been banned
(2) Anthracene	Use of anthracene oil in agriculture banned by 2004 under regulation 2076/2002 of Directive 91/414 – some exceptions until 2007.
(8) Chlorfenvinphos	Use banned by 2004 under regulation 2076/2002 of Directive 91/414. Some exceptions for DK, D, Ire, Fr, NL and ES until 2007
(11) Dichloromethane	Use already banned under Directive 79/117/EEC prohibiting the placing on the market and use of plant protection products containing certain active substances
(16) hexachlorobenzene	Use already banned under Directive 79/117/EEC prohibiting the placing on the market and use of plant protection products containing certain active substances
(18) hexachlorocyclohexane (including lindane)	Use banned by June 2002 under Commission Decision 2000/801/EC under Directive 91/414.
(21) Mercury	Use already banned under Directive 79/117/EEC prohibiting the placing on the market and use of plant protection products containing certain active substances including mercury oxide, mercurous chloride, other inorganic mercury compounds, alky mercury and alkoxylalkyl and aryl mercury compounds.
(24) nonylphenols	Use as ingredient of plant protection products banned by 2004 by regulation 2076/2002 under Directive 91/414. Directive 76/769 > Directive 2003/53/EC (annex I, issue 46): nonyl and nonylphenol ethoxylates may not be placed on the market or used as a substance or constituent of preparations in concentrations equal or higher than 0.1% by mass for the purpose of co-formulation in pesticides and biocides and emulsifier in agricultural teat dips.
(26) pentachlorobenzene	Pentachlorobenzene could be present as impurity in quintozene (as it is used as in intermediate in this production of quintozene) and as impurity in hexachlorobenzene. However, both the use of quintozene as pesticide (Directive 00/816/EC under Directive 91/414, not allowed on the market since June 2002) and the use of hexachlorobenzene (Directive 79/117/EEC) has been banned
(30) tributyltin	Use banned by 2004 by regulation 2076/2002 under Directive 91/414

TABLES ON ATMOSPHERIC EMISSIONS, AND POSSIBLE SUBSEQUENT WET OR DRY DEPOSITION

Table 4a Substances for which atmospheric deposition (pathway S1) has been assessed as category 1 – list of activities/sectors where emissions to air contribute to this atmospheric deposition (1) or where emissions to air are relatively small and their impact is unknown (2).

SECTORS/ACTIVITIES	PAHs (2, 15, 22, 31)	Atrazine (3)	BDE's (5)	Cadmium (6)	Chlorfenvinphos (8)	DEHP (12)	Diuron (13)	Endosulfan (14)	Isoproturon (19)	Lead (20)	Mercury (21)	Nickel (23)	Simazine (29)	Trifluralin (33)
IPPC installations														
Combustion installations >50MV	(1)			(1)						(1)	(1)	(1)		
Metal industry and metal ore roasting or sintering installations; Installations for the production of ferrous and non ferrous metals (IPPC categories 2.1-2.6)	(1)			(1)						(1)	(1)	(1)		
Electric arc furnace steel works												(1)		
Coke ovens												(1)		
Production of basic inorganic chemicals or fertiliser	(1)			(1)						(1)	(1)	(1)		
Installations for the production of cement clinker (>500t/d), lime (>50t/d), mineral substances (>20t/d) or ceramic products (>75t/d)				(1)						(1)	(1)	(1)		
Production of basic organic chemicals	(1)		(1)	(1)		(1)				(1)	(1)	(1)		
Installations for the production of pesticides and biocides													(1)	(1)
Installations for the disposal of hazardous waste (>10t/d) and municipal waste (>3t/h)	(1)		(1)	(1)		(1)				(1)	(1)	(1)		

SECTORS/ACTIVITIES	PAHs (2, 15, 22, 31)	Atrazine (3)	BDE's (5)	Cadmium (6)	Chlorfenvinphos (8)	DEHP (12)	Diuron (13)	Endosulfan (14)	Isoproturon (19)	Lead (20)	Mercury (21)	Nickel (23)	Simazine (29)	Trifluralin (33)
Mineral oil and gas refineries	(1)			(1)						(1)	(1)	(1)		
Installations for the disposal of non-hazardous waste (>50t/d) and landfill (>10t/d)	(1)		(1)	(1)		(1)				(1)	(1)	(1)		
Industrial plants for pulp from timber or other fibrous materials and paper and board (> 20t/d)				(1)						(1)	(1)	(1)		
Slaughterhouses (>50t/d), plants for the production of milk (>200t/d), other animal raw material (>75t/d) or vegetable raw materials (>300t/d)				(1)							(1)	(1)		
Installations for surface treatment or products using organic solvents (>200t/y)	(1)			(1)						(1)	(1)	(1)		
Installations for the production of carbon or graphite	(1)									(1)	(1)			
Non-IPPC installations and activities														
Metal industry and metal ore roasting or sintering installations; Installations for the production of ferrous and non ferrous metals below IPPC thresholds categories 2.1-2.6	(1)			(1)							(1)			
PVC application as building materials and consumer uses by households						(1)								
Crematoria											(1)			
Industrial use of basic inorganic chemicals	(1)			(1)							(1)			
Installations for the production of cement clinker (<500t/d), lime (<50t/d), mineral substances (<20t/d) or ceramic products (<75t/d)				(1)							(1)			
Industrial use of basic organic chemicals	(1)		(1)	(1)		(1)					(1)			
Installations for the disposal of hazardous waste (<10t/d) and municipal waste (<3t/h)	(1)		(1)	(1)		(1)					(1)			

SECTORS/ACTIVITIES	PAHs (2, 15, 22, 31)	Atrazine (3)	BDE's (5)	Cadmium (6)	Chlorfenvinphos (8)	DEHP (12)	Diuron (13)	Endosulfan (14)	Isoproturon (19)	Lead (20)	Mercury (21)	Nickel (23)	Simazine (29)	Trifluralin (33)
Installations for the disposal of non-hazardous waste (<50t/d) and landfill (<10t/d)	(1)		(1)	(1)		(1)					(1)			
Industrial plants for pulp from timber or other fibrous materials and paper and board (< 20t/d)				(1)							(1)			
Slaughterhouses (<50t/d), plants for the production of milk (<200t/d), other animal raw material (<75t/d) or vegetable raw materials (<300t/d)				(2)							(1)			
Installations for surface treatment or products using organic solvents (<200t/y)	(1)			(2)							(1)			
Combustion plants <50MV	(1)										(1)			
Mining											(1)			
Use as pesticide in agriculture		(1)			(1)		(1)	(1)	(1)				(1)	(1)
Stubble burning/forest fires	(1)													
Traffic	(1)									(1)				
Domestic combustion of wood, oil, coal and peat	(1)													
Losses from non IPPC installations due to releases via electric/electronic equipment			(1)											

Table 4b Substances for which atmospheric deposition (pathway S1) has been assessed as category 2 (which indicates that at the moment there is insufficient information available to assess whether the atmospheric deposition source/pathway may result in or contribute to a potential failure of WFD objectives)

Substances where atmospheric deposition has been assessed as category 2
Alachlor (1)
Chlorpyrifos (9)
1,2 dichloroethane (10)
Hexachlorobenzene (16)
Hexachlorocyclohexane (18)
Pentachlorobenzene (26)
Pentachlorophenol (27)
Trichlorobenzenes (31)
Trichloromethane (32)

Table 4c: Overview of measures addressing (prevention of) atmospheric deposition and emissions to air of priority substances

Legislation	Substances in Table 4a addressed by this measure (atmospheric deposition cat.1)	Substances in Table 4b addressed by this measure (atmospheric deposition cat.2)
Directive 2001/81/EC on national emission ceilings for certain atmospheric pollutants, amongst others Volatile Organic Carbons (VOC) (emission ceiling country by country to be reached by 2010) total for EC 15 5581 VOC kilo tonnes.		1,2 dichloroethane (10) Trichloromethane (32)
Council directive 96/62/EC on **ambient air quality** assessment and management with consequent directives relating to limit values for various substances in ambient air, amongst others : ➢ **Directive 1999/30/EC** relating to limit values for sulphur dioxide, nitrogen dioxide and oxides of nitrogen, particulate matter and lead in ambient air ➢ **Directive 2000/69/EC** relating to limit values for benzene and carbon monoxide in ambient air ➢ **Proposal for a directive relating to arsenic, cadmium, mercury, nickel and PAHs in ambient air** (COM(2003)423 final 16.7.2003)	Anthracene (2) Cadmium (6) Fluoranthene (15) Lead (20) Mercury (21) Naphthalene (22) Nickel (23) PAH (28)	
Directive 1999/13/EC on the limitation of emissions of volatile organic compounds (**VOC**) due to the use of organic solvents in certain activities and installations		1,2 dichloroethane (10) Trichloromethane (32)
Directive 98/70/EC relating to the quality of petrol and diesel fuels,	Anthracene (2) Fluoranthene (15) Lead (20) Naphthalene (22) PAH (28)	
Directive 96/61 on integrated pollution prevention control of large industrial installations	Addresses generally all emissions of substances to air by large industrial installations (cf first part of Table 4a) by the requirement for the application of BAT. Not all relevant BAT reference documents address the WFD priority substances in a specific way.	

Directive 2001/80/EC on the limitation of emissions of certain pollutants into the air from large combustion plants	is likely to have some impact on heavy metals emissions as it sets limit values for total dust emissions: Cadmium (6), Lead (20), Mercury (21), Nickel (23)	
Directive 2000/76/EC on the incineration of waste	Cadmium (6), Lead (20), Mercury (21), Nickel (23)	
Domestic combustion of wood, oil, coal and peat: **CEN** standards have been agreed for four **residual solid fuel burning appliances** (CEN/TC 295); these standards have been harmonised in support of the **Construction Products Directive (89/106/EEC).** Six further Harmonised European **Standards for small and solid fuel combustion appliances**, willbe developed by CEN	Anthracene (2) Fluoranthene (15) Naphthalene (22) PAH (28)	
Directives on marketing and use of pesticides – cf tables 3a and 3b (no EU instruments exist on the formulation of pesticides and related emissions to air, IPPC Directive 96/61 addresses production of pesticides and related emissions to air)	Atrazine (3), Diuron (13), Endosulfan(14), Isoproturon (19), Simazine (29), Trifluralin (33)	Alachlor (1), Chlorpyrifos (6), Hexachlorocyclohexane, (18) Pentachlorobenzene (26)

Table 5 substances for which there is some indication that historical contaminated sites and sediments might serve as a source for releases to the aquatic environment

(S11, categories 1 and 2 of sourcescreening)

Substance where further assessment is needed on historically contaminated sediments/sites
Anthracene (2), Fluoranthene (15), Naphthalene (22), PAHs (28)
Atrazine (3)
Benzene (4)
Cadmium (6)
C10-C13 chloroalkanes (7)
Hexachlorobenzene (16)
Hexachlorobutadiene (17)
Hexachlorocyclohexane (18)
Lead (20)
Mercury (21)
Nickel (23)
Pentachlorobenzene (26)
Pentachlorophenol (27)
Simazine (29)
TBT (30)
Trichlorobenzene (31)

Table 6a Solid waste management (Source/pathway S10) which might result in releases to the aqautic environment[5]

Substance	Landfill (S10.1)	Incineration (S10.2)
Anthracene (2), fluoranthene (15), naphthalene (22), PAHs (28)	(1)	(1)
Benzene (4)	(1)	(1)
PBDE's (5)	(1)	(1)
Cadmium (6)	(1)	(1)
DEHP (12)	(1)	(1)
Hexachlorobenzene (16)	(2)	
Hexachlorobutadiene (17)	(2)	(2)
Hexachlorocyclohexane (18)	(2)	
Lead (20)	(1)	1
Mercury (21)	(1)	(1)
Nickel (23)	(1)	(1)
Pentachlorobenzene (26)	(2)	(2)
Pentachlorophenol (27)	(2)	
Trichlorobenzene (31)	(2)	(2)

5 (1): source may contribute to a potential failure of WFD objective; (2): not enough information whether source might contribute to a potential failure of WFD objective;

Table 6b Overview of existing measures in relation to landfills, incineration and other solid waste management

Measure in relation to solid waste management
Directive 75/442/EEC on waste, Directive 91/689/EEC on hazardous waste and the related Decisions 2000/532 and 2001/118.Various waste streams relevant for WWFD substances are particularly mentioned in the list of (hazardous) waste that falls under the Directives and where measures have to be taken to ensure that waste is disposed without harming the environment.
Directive 1999/31/EC on the landfill of waste with general provisions with regard to the control of discharges.
Directive 2000/76/EC on waste incineration contains specific provisions with regard to emissions to air and water of - Cadmium (6), - Lead (20), - Mercury (21) - Nickel (23).
Waste management is also covered by the **IPPC Directive 96/61**, category 5 (with specific thresholds for the various processes of waste treatment).
Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment and **Directive 2002/96/EC on waste electrical and electronic equipment:** - PBDE (5) - Cadmium (6) - Lead (20) - Mercury (21)
Directive 2000/53/EC on end-of life vehicles. An important provision in the Directive is that Member States shall ensure that materials and components of vehicles put on the market after 1 July 2003 do not contain - Cadmium (6) - Lead (20), - Mercury (21). The Directive also has provisions on reuse, recovery and collection of en-of life vehicle materials
Directive 91/157 on batteries and accumulators containing certain dangerous substances – this directive calls for measures to reduce the content of - Cadmium (6) - Lead (20) - Mercury (21) - Nickel in batteries and to reduce the amount of batteries with lead.

Table 7 Substances for which results of the source screening for sources/pathways S4, S6, S7, s8 and S9 indicated that these substances are (1)/might be (2) present in Sewage treatment plants, street run off and storm overflows

- S4/S6/S7 in second column: releases to water due to (run off from) transport, infrastructure, materials and constructions where these can be considered as street run off (in sewered and non-sewered areas), including biocide use on pavements.
- S7 in third column: run off from buildings and constructions in sewered area and/or run off from agricultural fields connected to sewer system.
- S8 in fourth column: discharges to sewer system due to application and use of various products by households/consumers.
- S9 in fifth column: industrial discharges to sewer system (mainly smaller IPPC and non-IPPC-installations).

Substances	indication of street run off potential S4/S6/S7	Indication of potential presence in sewage treatment plants and overflows		
		S7 Discharges to sewer from buildings, agricultural field run off etc	S8 Discharges to sewer from household, consumer use	S9 Discharges to sewer from industry
Atrazine (1), alachlor (3), chlorfenvinphos (8), chlorpyrifos (9), diuron (13), isoproturon (19), simazine (29), trifluralin (33)	(1)	(1)		
Anthraacene (2), fluoranthene (15), naphthalene (22), PAHs (28)	(1)	(1)	(1)	(1)
Benzene (4)			(1)	(1)
BDE(5)		(1)	(1)	(1)
Cadmium (6)	(1)	(2)		(1)
C10-C13 chloroalkanes (7)		(2)	(2)	(1)
1,2 dichloroethane (10)				(1)
DEHP (12)	(1)	(1)	(1)	(1)
Hexachlorobenzene (16)				(2)
Hexachlorobutadiene (17)				(2)
Hexachlorocyclohexane (18)		(2)	(2)	(2)
Lead (20)	(1)	(1)	(1)	(1)
Mercury (21)		(2)		(1)
Nickel (23)	(1)	(1)	(1)	(1)

Nonylphenols (24), octylphenols (25)			(1)	(1)
Pentachlorophenol (27)		(2)	(2)	(1)
TBT (30)	(1)	(1)	(1)	(1)
Trichlorobenzene (31)				(2)
Trichloromethane (32)		(2)	(2)	(1)

Table 8 Substances for which the use as a biocide has been classified as a relevant source/pathway

In the right columns it is indicated whether existing measures exist and/or whether the use is subject to assessment under the biocides Directive 98/8.

Substance/application	Existing (proposed) legislation	Subject to assessment under Directive 98/8.
Anthracene (2), Fluoranthene (15), Naphthalene (22), PAHs (28) – wood treatment/creosote	**Directive 76/769 > Directive 2001/90/EC** (annex I, issue 32): creosote, creosote oil, distillates (coal tar, naphthalene oils), creosote oil (acenaphtene fraction), upper distillates coal tar, anthracene oil, tar acids (coal, crude), creosote (wood) and low temperature tar oil (alkaline) may not be used in the treatment of wood and that wood so treated may not be placed on the market. Some derogations are valid.	
Atrazine (3) - weed control		
Chlorpyrifos (9) – pest control		Yes
Diuron (13) – weed control / antifouling		Yes
Endosulfan (14) – pest control		Yes
Hexachlorocyclohexane (18) – wood treatment	(Subject to general prohibitions on production, placing on the market and use in UN POP Protocol and as such part of the proposed EU regulation for implementation).	
Isoproturon (19) – weed control		Yes
Pentachlorobenzene (26) – wood and textile treatment ?		
Pentachlorophenol (27) – wood and textile treatment	**Directive 76/769 >Directive 91/173/EC** restricts the concentration of PCP and its salts and esters to 0.1% with certain exceptions (e.g. wood and heavy textile treatment) in various products. **Directive 76/769 >Directive 99/51/EC** requires the phase out of the use of PCP for wood and textile treatment by December 2008..	
Simazine (29) - weed control		Yes
TBT (30) – antifouling, wood/textile/leather treatment	**Directive 76/769 > Directive 2002/62/EC** (annex I, issue 21): organostannic compounds 1. May not be placed on the market for use as substances and constituents of preparations when acting as biocides in free association paints; 2. May not be placed on the market for use as substances and constituents of preparations which act as biocides to prevent the fouling of micro-	

Substance/application	Existing (proposed) legislation	Subject to assessment under Directive 98/8.
	organisms, plants or animals of all craft irrespective of their length intended for use in marine, coastal, estuarine and inland waterways and lakes; cages, floats, nets and any other appliances of equipment used for fish of shellfish farming; any totally or partly submerged appliance or equipment. 3. May not be used as substances and constituents of preparations intended for use in the treatment of industrial waters.	