European Commission

Guidance Document for EPER implementation

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According to Article 3 of the Commission Decision

of 17 July 2000 (2000/479/EC)

on the implementation of an European Pollutant Emission Register (EPER)

according to Article 15 of Council Directive 96/61/EC concerning

Integrated Pollution Prevention and Control (IPPC)

European Commission

Directorate-General for Environment

November 2000

A great deal of additional information on the European Union is available on the Internet.
It can be accessed through the Europa server (http://europa.eu.int).

Cataloguing data can be found at the end of this publication.

Luxembourg: Office for Official Publications of the European Communities, 2000

ISBN 92-894-0279-2

Printed in Belgium (restricted number of copies)

PRINTED ON WHITE CHLORINE-FREE PAPER

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INTRODUCTION

On 25 January 2000 the Committee referred to in Article 19 of Council Directive 96/61/EC (IPPC Directive) gave a favourable opinion on a draft Commission Decision on the implementation of a European Pollutant Emission Register (EPER) according to Article 15 of the IPCC Directive (Ref. 1). The Commission Decision, to be referred to as the EPER Decision, was adopted on 17 July 2000 and published in the Official Journal of the European Communities under reference 2000/479/EC (Ref. 2).

Article 3 of the EPER Decision states that the Commission will facilitate preparatory national workshops and prepare a "Guidance Document for EPER implementation" by December 2000 with the involvement of industrial representatives and in consultation with the Committee referred to in Article 19 of Directive 96/61/EC. The Guidance Document will address details on reporting formats and particulars, including interpretation of definitions, data quality and data management, reference to emission estimation methods and sector-specific sub-lists of pollutants for source categories.

The current document represents this "Guidance Document for EPER implementation". The Guidance Document is the official guideline of the European Commission that facilitates Member States to interpret and fulfil the reporting requirements of the EPER Decision 2000/479/EC without changing any of the actual requirements of the EPER Decision. For this, the Guidance Document addresses details of the EPER Decision on reporting requirements and formats, sector-specific sub-lists of pollutants for source categories and reference to emission estimation methods. The Guidance Document has been developed with involvement of stakeholders from industry and in consultation with the members of the IPPC Article 19 Committee. The consultation of the IPPC Article 19 Committee took place in two meetings: the draft framework of the Guidance Document was discussed in April 2000 and the final draft of the Guidance Document was discussed in September 2000. After that, written comments were received and taken into account in this final text.

Part I of the Guidance Document - General explanation - describes the background and the objectives of the IPPC emission inventory, as well as the selected pollutants to be reported and the reporting unit and discusses data management and data quality. Part I gives the context of the EPER in relation to international agreements and developments with respect to other emission inventories and registers.

Part II - Reporting requirements - focuses on the interpretation of the requirements of the EPER Decision. This part explains the mandatory reporting aspects and provides guidance to the Member States in order to facilitate and harmonise the EPER reporting to the Commission.

Part III - Specifications - provides appendices with more detailed information on subjects referred to in Parts I and II. The appendices include the EPER Decision 2000/479/EC and its Annexes, detailed explanatory examples, reference to standardised emission determination methods, and detailed sector-specific sub-lists of pollutants released from IPPC Annex I activities, both for air and water.

SUMMARY

According to Article 1 of the Commission Decision 2000/479/EC - further quoted as EPER Decision - Member States shall report to the Commission on emissions to air and water from all individual facilities with one or more activities as mentioned in Annex I to Council Directive 96/61/EC (Ref. 1). The provided data will be made publicly accessible and disseminated on the Internet. The mandatory reporting of emissions according to the requirements of the EPER Decision is a stepwise process with the following key elements:

- Identifying and selecting the facilities with Annex I activities. Article 1, sub 1 of the EPER Decision requires Member States to report emissions from all individual facilities with one or more activities as mentioned in Annex I of the IPPC Directive. These activities are identified by the source categories as specified in Annex A3 of the EPER Decision.

- Determining pollutant specific emissions from all individual facilities with Annex I activities. Article 1, sub 2 of the EPER Decision requires Member States to include in the report the emissions to air and water for all pollutants for which the threshold values are exceeded. Both pollutants and threshold values are specified in Annex A1 of the EPER Decision.

- Reporting the emissions for individual facilities with Annex I activities. The emission data shall be reported for each facility according to the format of Annex A2 of the EPER Decision (Article 1, sub 3). Member States are required to provide this report on CD-ROMs.

- Reporting aggregated emission data for all pollutants of Annex A3 of the EPER Decision in an overview report. This overview report includes the national totals of all individually reported emissions for both each of the source categories and the NOSE-P codes as specified in Annex A3 of the EPER Decision (Article 1, sub 4). Member States shall provide this overview report on paper and on CD-ROMs.

- Disseminating all reported data by the Commission. The Commission will make the facility specific data as well as the aggregated data provided by each Member State publicly accessible on the Internet (Article 4).

The Guidance Document facilitates Member States and gives the official interpretation of the reporting requirements of the EPER Decision. It addresses details on reporting formats and particulars including the interpretation of definitions, data quality and data management. Furthermore it provides references to emission determination methods as well as sector-specific sub-lists of pollutants that are likely to be emitted by the source categories as specified in Annex A3 of the EPER Decision.

Identification and selection of facilities with Annex I activities

Member States shall identify all facilities with Annex I activities with the NACE code, identifying the economic sector of the facility. The source categories, as mentioned in Annex A3 of the EPER Decision, should be selected for each of the Annex I activities within the facility. Each source category corresponds with a NOSE-P code for processes according to Annex A3 of the EPER Decision.

For each facility Member States shall identify the main Annex I activity and corresponding main NOSE-P code. In general the main Annex I activity is identified as the main economic activity of the facility. In exceptional cases, when the economic activity is not characteristic for the processes of the facility, the main Annex I activity can be associated with the most polluting activity of the facility. The corresponding NOSE-P code is the main NOSE-P code for the facility.

A facility is defined as an industrial complex with one or more installations on the same site, where one operator carries out one or more Annex I activities. Member States shall report for a facility, when the emission of one or more pollutants exceeds the threshold value of Annex A1. The only exception to facility specific reporting can occur when several facilities at the same industrial location are combined by technical and organisational links and make all use of an off-site wastewater treatment plant (WWTP). Only in that specific case the emissions from the individual facilities are not reported as indirect releases to the WWTP, but are reported as direct release from the WWTP with reference to the facilities involved.

The identification steps will result in a list of all facilities with Annex I activities where one or more pollutants exceed the threshold values of Annex A1. The facilities are identified according to the format of Annex A2. The main Annex I activity is identified by its source category and corresponding NOSE-P code according to Annex A3 of the EPER Decision.

Determination of pollutant specific emissions

For each identified facility Member States shall select all pollutants of Annex A1 of the EPER Decision, for which the threshold values are exceeded. The Guidance Document provides sector-specific sub-lists of pollutants as indication to check which pollutants will likely be emitted

from a specific source category of Annex I activities. The Guidance Document gives also reference to applicable emission determination methods.

For each pollutant the total facility releases from both point and diffuse/ non-point sources should be determined and include usually emissions from non-Annex I activities. The emissions from non-Annex I activities within the facility can be excluded, when it is possible to quantify and separate the non-Annex I contributions. Pollutant specific releases shall be reported when a facility release exceeds the pollutant specific threshold value as specified in Annex A1 of the EPER Decision. Emissions are reported as releases to air, direct releases to water or as indirect releases to water.

Each of the emission data shall be accompanied by a one-letter code, referring to the methodology of emission determination. “M” stands for data based on measurements, “C” for data based on calculations and “E” for data based on non-standardised estimates. These codes indicate only transparency and do neither refer to accuracy nor to preference for a methodology.

The emission determination results in pollutant specific emission data for separate releases to air, direct releases to water and indirect releases to water for each pollutant of Annex A1 of the EPER Decision exceeding the threshold value. Each individual emission data shall be accompanied by a one-letter code (M, C, E) referring to its emission determination method, expressed in kg/year and rounded off to three significant digits.

Reporting of emission data for individual facilities

Member States shall report emission data to the Commission for each facility selected and must use the electronic format of Annex A2 of the EPER Decision.

The first part of the reporting format identifies the individual facility. In the second part of the format all source categories of Annex I activities are listed, starting with the source category of the main Annex I activity. Each source category and corresponding NOSE-P code must be specified according to Annex A3 of the EPER Decision.

The third part of the format gives the emission data for each pollutant exceeding its threshold value according to Annex A1 of the EPER Decision. Releases to air, direct releases to (surface) water and indirect releases to water (by transfer to an off-site wastewater treatment plant) are listed separately.

The fourth part of the reporting format requires Member States to enter the date of submission and the identification of the co-ordinates of the responsible contact person of the Member State. Members States shall submit the facility specific reports on CD-ROMs to the Commission with a copy to the European Environment Agency.

Reporting of aggregated emission data in a national overview report

Member States shall provide a national overview report with the total reported emission data that are aggregated for each of the source categories with main Annex I activities and corresponding NOSE-P codes as specified in Annex A3 of the EPER Decision.

Aggregation of the releases refers to the sum of all reported emissions for all pollutants of Annex A1 as reported for the individual facilities. The national totals of reported emissions have to be reported both by Annex A3 source category and by NOSE-P code separately.

The national overview report should be submitted to the Commission as hard copy as well as on CD-ROMs with a copy to the European Environment Agency. The electronic report can be on the same CD-ROMs as the ones with the individual reporting.

Dissemination of reported data by the Commission

The Commission will make all reported emission data for individual facilities publicly accessible on the Internet. None of the reported data will be treated as confidential.

After each reporting cycle the Commission will publish the aggregated results of the reporting by Member States in a review report with recommendations for the further improvement of the quality of the reported data as well as the reporting process.

Part I

General Explanation

1. BACKGROUND OF THE IPPC EMISSION INVENTORY

1.1 Relation with Pollutant Release and Transfer Registers (PRTR)

An integrated database with emission data or pollutant releases is often called a Pollution Release and Transfer Register (PRTR) or a Pollutant Emission Register (PER). Important characteristics of a national PRTR/ PER include:

- facilities periodically send a mandatory report to the competent authorities on their releases to air, water, soil and wastes;

- emission data of specific pollutants from individual facilities are accessible to the public.

In Agenda 21 of the UN/ECE Conference in Rio de Janeiro (1992), individual countries were encouraged to reduce and control their releases to the environment and monitor their achievements in this area. The OECD introduced the Pollutant Release and Transfer Register (PRTR) both as a useful monitoring tool and a suitable instrument for public dissemination of emission data (1996). The European Pollutant Emission Register (EPER) intends to establish a European register with comparable data on the releases (emissions) from individual facilities with activities covered by the Council Directive 96/61/EC on Integrated Pollution Prevention and Control (IPPC Directive, 1996). The registered data will then be made publicly accessible via the Internet. The activities to be considered for reporting are mentioned in the IPPC Directive as Annex I activities or source categories (see Appendix 1, Annex A3). The deadline for reporting under the EPER Decision is not related to the deadline for permitting according to the IPPC Directive.

According to Article 21, the IPPC Directive should be brought into effect by the end of 1999. At that time Member States should have adopted national regulations to comply with the IPPC Directive, including a national inventory of emission data to be reported to the Commission. Article 15 of the IPPC Directive (Council Directive 96/61/EC) refers to the public access to information on environmental releases (Ref. 1). Art.15 (2) explicitly mentions that the results of monitoring of releases shall be made publicly available. Art.15 (3) states that an inventory of principal emissions and sources responsible shall be published by the Commission every three years based on data supplied by the Member States. The Commission, assisted by the Art.19 Committee, shall establish the format and particulars needed for the transmission of emission inventory information. The Commission has noted that data of the emission inventory requires inter-comparability with data from other registers and sources of data on emissions.

The EPER should also be viewed in the perspective of the 1998 UN/ECE Aarhus Convention on “Access to Information, Public Participation in Decision-making and Access to Justice in Environmental Matters” (Ref. 3). Of special interest is Article 5 on the collection and dissemination of environmental information, which includes the disclosure of site-specific information of relevant polluting sources by using public networks. In the Aarhus Convention all Parties agreed to disseminate emission data to the public and to use PRTRs as a tool for the monitoring of the environmental policy progress. It is the intention to develop under the Aarhus Convention a legally binding instrument on PRTRs and formulate the minimum requirements of such a mandatory PRTR system for all UN/ECE Parties involved.

1.2 Relation with environmental management systems

The EPER will be a publicly accessible register with emission data that enables the Commission and national governments to monitor the trends in annual emissions of large industrial activities covered by Annex I of the IPPC Directive. Also, the EPER will enhance the awareness of the public to influence the performance of industry. As has been demonstrated in the USA, an important result of the Toxics Release Inventory (TRI) is a decline of the annual industrial pollution by approximately 4% per year during the last decade. Although the register itself is not the cause of the emission reduction, it does trigger industry to improve processes and responsible care. The register enables to monitor the emission reduction due to improvements and changes of industrial processes.

The number of facilities submitting reports to the USA TRI of about 21,600 in 1995 and 19,200 in 1996 is comparable with the total number of facilities with IPPC Annex I activities in the European Community. Based upon available data from Member States and estimations made by the Commission, reported data for approximately 20,000 facilities are expected to be included in the EPER register.

Reporting of emission data in the EPER format will require additional workload for the facilities and national governments involved. In case a facility has an environmental management system (EMS) based on ISO 14001, the environmental aspects of the facility are already documented and reported within the system. Although ISO 14001 does not include a public reporting requirement, many companies publish annual company reports communicating their environmental performance to stakeholders, customers and the general public. For companies with an EMS it is a limited additional effort to provide information on emissions in the EPER format. This reporting procedure may also stimulate the process of the development environmental reporting by facilities.

Facilities with an EMAS registration already publish a validated public environmental statement, including a summary of pollutant emissions. Some Member States have begun experimenting with ‘regulatory relief’, which implies that an EMAS registered facility is expected to comply with its permits and may benefit of less frequent inspections by the regulatory bodies.

The additional effort to meet the EPER requirements will be limited when an environmental management system is already in place, especially when this system has been ISO 14001 certified or has an EMAS registration.

2. OBJECTIVES AND BENEFITS OF A NATIONAL POLLUTANT EMISSION REGISTER

The general purpose of the IPPC Directive is to achieve integrated prevention and control of pollution arising from industrial activities listed in Annex I of the Directive. These activities, referred to as 'Annex I activities', concern larger industrial facilities that are required to report the emissions or releases. A Pollutant Emission Register is considered to be an effective tool for monitoring the releases from these facilities and to compare the releases from similar industrial sources or sectors.

The establishment of a national Pollutant Emission Register - according to the experience of countries with existing registers - can have the following objectives and benefits:

- it is an integrated database with information suitable for environmental management both by government in developing environmental policy and by industry in improving eco-efficiency;

- it is a public instrument for government to monitor the progress of environmental policies; the emission data can be used to verify achievements with regard to environmental targets in international agreements or goals in national policy plans;

- it is a tool to enhance public awareness of environmental pollution, to inform the public on emissions from individual sources and to enable the public to compare emissions from different sources at different locations as the occasion arises;

- it enables individual facilities to compare their environmental performance to that of other facilities with similar industrial activities, thus facilitating the environmental management by these facilities and industry in general;

- it offers the possibility to harmonise reporting requirements by Member States and to avoid duplicative reporting by industry;

- it provides additional information to prioritise enforcement of permit compliance.

3. GOAL AND USE OF THE EUROPEAN POLLUTANT EMISSION REGISTER

According to Art. 15 of the IPPC Directive the main purpose of a European emission inventory will be to collect and store comparable emission data of individual polluting industrial sources and activities into an integrated database or register and to provide public accessibility to the registered data. Only emissions to air and water are considered. Neither releases to land nor wastes are part of the EPER decision.

The name for this register will be “European Pollutant Emission Register” (EPER). Data in the EPER shall be delivered to the Commission by the national governments of the Member States and will be updated periodically. Every three years the Commission will publish a report on the inventoried emissions and their individual sources. The EPER will be used as a public register to provide environmental information on industrial activities covered by the IPPC Directive and has the following objectives related to different groups of users:

- to enhance awareness for environmental pollution and to compare emissions by individual facilities or industrial sectors. Making the data accessible on an Internet site will increase the public use of the EPER data by non-governmental organisations and research organisations or interested citizens **(public use)**.

- to trigger industry in improving environmental performance and innovating industrial processes. The achievements by industry will result into emission reductions that can be monitored and demonstrated in the EPER register **(industry use)**.

- to evaluate the progress of achievements in meeting environmental targets in national or international agreements; the EPER enables the Commission to identify principal emissions and industrial sources, assess the reported data of Member States with respect to some international agreements and to publish the results periodically **(government use)**.

The anticipated public use of the EPER data may have consequences for the reporting frequency of industry and national governments. Since both public and government request recent data about the current status of industrial emissions, it will be of particular interest to users to have periodic updates.

4. SELECTED POLLUTANTS AND REPORTING THRESHOLD VALUES

Annex III of the IPPC Directive lists the relevant pollutants to be considered. This list is not comprehensive and makes a distinction between air and water pollutants. In Annex A1 to the EPER Decision (see Appendix 1, Part III) the 50 pollutants selected for reporting are listed both for air and water, of which 37 are for air and 26 for water. The selection criteria for putting substances to Annex A3 are based on the environmental significance of industrial emissions of pollutants and are as follows:

- considering the Annex III list of the IPPC Directive and making a differentiation between air and water;
- including pollutants for which international reporting requirements already exist;
- having a combination of individual chemicals and groups of substances;
- limiting the number of pollutants for both air and water.

Although a differentiation has been suggested for air and water it is important to have consistency between both media to prevent transfers from one media to another. A number of pollutants - especially the heavy metals and some organic substances - appear therefore for both air and water.

The pollutants of existing international inventories of CLRTAP/EMEP (Long Range Transboundary Air Pollution), UNFCCC (United Nations Framework Convention on Climate Change), CORINAIR (European air emission programme of the EEA), the Water Framework Directive (proposed list of priority substances), and the OSPARCOM and HELCOM lists of hazardous substances have been taken into consideration. This enhances harmonisation of international reporting requirements for the Member States and benefits the comparability of emission data in different national inventories.

In addition to the list of pollutants, a threshold value for each of the substances has been specified (see Table 1, Part II). The purpose for applying these threshold values is to avoid the need for industry to report insignificant emissions while, at the same time, the reporting will cover at least 90 % of total industrial emissions in Europe. The threshold values are meant for reporting purposes only: all emissions of each pollutant of a facility exceeding the threshold value must be reported. The actual numbers of the proposed threshold values have taken into account current data in the Netherlands, Germany and the United Kingdom (England and Wales) and the comments of various Member States. It will be necessary to review and, if required, adjust the list of pollutants and their reporting threshold values every three years.

In general, a facility will usually exceed threshold values for a limited number of pollutants, so that the reporting burden for industry in practice will not be excessive. An overview of sector-specific sub-lists for all aggregated source categories of Annex A3, containing only the most important pollutants that are likely to be released by facilities in these sectors, is included in Part III of this Guidance Document. These sector-specific sub-lists are only indicative and should be considered as checklists for reporting. However, Member States are assumed to use the complete pollutant list of Annex A3 for verifying, whether a pollutant needs to be reported for a facility in a specific source category.

5. FACILITY AS REPORTING UNIT

According to the IPPC Directive, Member States should report on Annex I activities and their principal emissions and responsible sources. Principal emissions refer to the magnitude of the emissions exceeding the specified threshold values. The responsible source can either be an industrial complex or an individual installation within the site, depending on the exact interpretation of an IPPC installation. For the purposes of the EPER it is sufficient to report the emissions for the facility without a unique relation to the individual processes or installations. Therefore, the facility will be the reporting unit for the EPER, similar to the reporting approach in the national inventories of industrial emissions in the United States and Canada.

The definition of a **facility** is given in Annex A4 of the Commission Decision as an industrial complex with one or more installations on the same site, where one operator carries out one or more Annex I activities (see Appendix 1, Part III). The definition of an **operator** is given in the IPPC Directive as any natural or legal person, who operates or controls an installation or to whom decisive economic power over the technical functioning of the installation has been delegated.

The advantage of this choice is that industry is allowed to report the total emission of each pollutant released by a facility and exceeding its threshold value, and hence, the reporting burden will be minimised by omitting detailed data per activity. To simplify the reporting obligations for the EPER, it is only required to report the total of the industrial emissions of the facility for all pollutants for which the threshold values are exceeded. However, Member States may request more specific and detailed emission data from industry. Besides the reporting obligation for the EPER, the reporting of combustion emissions by large combustion plants (LCPs) under the LCP Directive will remain mandatory. This will imply a reporting requirement for industry additional to EPER.

To identify and compare the different processes or activities within a facility it will be necessary to report these activities by their individual sources and corresponding source code. This source category code is associated with the NOSE-P source code with a detail of five digits. Annex A3 of the Commission Decision shows the required split of the source categories with Annex I activities and the NOSE-P source nomenclature for the aggregated level of reporting (see Appendix 1, Part III). Also, the main economic activity of the site will be given by the NACE-code (four digits) of the facility. For harmonisation purposes it is necessary to report according to the format specified in Annex A2 of the Commission Decision, mentioning all source categories of Annex I activities of the facility (see Appendix 1, Part III). The use of the uniform and aggregated five-digit NOSE-P source code for all source categories of Annex I activities is important for the inter-comparability and aggregation of the reported data into a meaningful and limited set of source categories as specified in Annex A3 of the Commission Decision.

6. DATA MANAGEMENT

In order to collect the emission data in the EPER national governments shall provide data to the Commission with a copy to the European Environment Agency. To maximise inter-comparability and harmonisation between the Member States a fixed format for reporting is necessary and is specified in Annex A2 of the EPER Decision (see Appendix 1, Part III). This format must be used to report to the Commission. The Member States are responsible for the identification of all their facilities with IPPC Annex I activities. Further, they shall report on all principal emissions, defined as the total emissions of facilities for each pollutant exceeding the threshold value as specified in Annex A1 of the EPER Decision. For emissions to water a further specification is necessary to indicate whether it concerns a direct release to surface water or an indirect release by transfer (via sewer) to an off-site wastewater treatment plant.

In addition to the reported data for individual facilities, Member States shall add an aggregated overview with the national totals of all reported emissions as required in Article 1, sub 4 of the EPER Decision. These overviews of national totals for industrial sectors will enable the Commission to compare, monitor and publish the achievements of the aggregated source categories with Annex I activities and compare these results with information provided in other emission reporting requirements. The reports with aggregated national totals for industrial sectors can be used for other international protocols and will reduce duplication of efforts.

Therefore, industry will report to the Member States, and the reported data shall be provided by the Member States to the Commission and will be stored in the EPER becoming the European database with emission data for activities as reported according to the requirements of the EPER Decision. The European Environment Agency (EEA) will be involved in the data collection, consistency checks and data dissemination and should receive a copy of the data sent by the Member States to the Commission in an electronic format according to Annex A2 of the EPER Decision. A limited validation can be done for certain aspects by the EEA using trend analysis, consistency checking and comparing emission data of similar industrial activities or sectors. However, a more complete verification data will not be a task of the EEA, this is the responsibility of the Member States.

Every three years the Commission, assisted by the EEA, will publish the results and trends of the emissions from facilities with Annex I activities in a report. Also, the Commission, assisted by the EEA, will disseminate the reported emission data of individual facilities on the Internet. In addition, the Commission will evaluate the complete reporting process including the collection, quality, management and dissemination of the reported data. After each reporting cycle the Commission will review the results and recommend improvements in both the efficiency and effectiveness of the EPER, based on the experiences of all parties.

7. QUALITY ASPECTS

Quality assurance is the responsibility of the Member States and the reporting industries; quality control is a task for the national governments. The Commission and the European Environment Agency will only perform a limited check on some quality aspects considering completeness and consistency of the reported data. The quality of the reported data is the integral result of the seven following aspects.

Timeliness

The EPER will only be a valuable register for public information when it offers recent and updated data, which demands a tight time schedule for reporting by all parties involved. Timely reporting is only possible when all stakeholders are committed to a fixed time schedule. This starts with the obligation for facilities to report their emissions to the local or national government, followed by the submission of validated data to the Commission and ends with the public dissemination of the data on the Internet. A possible time schedule for reporting emissions in the year T-1 is beginning with reporting by industry to the regulatory bodies in April of the year T and aiming at dissemination of the reported data by the Commission to the public by the end of the year T+1.

Completeness

The reported data should cover all Member State IPPC installations and provide the emissions of all pollutants exceeding thresholds for all facilities with Annex I activities. EPER aims to cover at least 90 % of the total industrial emissions in Europe. The goal of the reporting threshold values is to minimise the reporting burden, although reporting of releases lower than the thresholds is also allowed. When the emissions from all Annex A3 source categories are reported and registered in the EPER, an analysis can be made for the relevant industrial sectors in the different Member States.

Uncertainty

The uncertainty is especially important in view of the envisaged function of the EPER to enable monitoring of trends, and in view of the possible future function in emission trading between individual facilities. Emission data supplied for the EPER will be of variable uncertainty due to the various methods that can be applied to determine the emissions. To reflect this uncertainty all values of reported emission data shall be given and rounded off to three significant digits.

Comparability

It is important that the information in the EPER is comparable to allow an objective and reliable comparison of emissions from different sources in different countries. Therefore, the data provided by the Member States must be reported according to the standardised format. For the inter-comparability of industrial sectors in different Member States the industrial sectors should be identified using a harmonised source nomenclature. The aggregated level of the different industrial sectors is expected to include a sufficient number of facilities to represent the complete industrial sector. Standardised reporting formats, agreed estimation techniques and the use of accepted methodologies and emission factors, as for instance has been described for air in the second edition of the Atmospheric Emission Inventory Guidebook (2000) or the IPCC Guidelines (1997), will improve the comparability of the reported emission data.

Consistency

Data consistency requires unambiguous and uniform definitions, source identification and methodologies for the estimation of emissions over several years to allow trend analysis. By receiving the national emission data in standardised formats, the EEA will be able to compare the reported data with previous emission data of the reporting facilities or with data of similar sources in other countries.

Transparency

For the interpretation of the emission data, it is important to know how the data collection was performed, how the emissions were measured or estimated, which methodology and emission factors were used to estimate emissions, what the units of the reported data are and confirmation that validation was done by the competent authorities. It is the responsibility of the Member States to establish the reporting requirements for industry and the methodologies to be used. The Commission will assist Member States with this Guidance Document that includes information on available releases estimation techniques and agreed methodologies.

Emission Determination Methodology

The reported emission data must include an index, referring to the estimation methodology used for the reported emission data. For the reported emission data in the EPER a simplified coding system with only three classes identified with a letter code is required, referring to the methodology used to determine the data.

- **Class M:** emission data are based on measurements using standardised or accepted methods; often additional calculations are needed to convert the results of measurements into annual emission data.

- **Class C:** emission data are based on calculations using nationally or internationally accepted estimation methods and emission factors, which are representative for the industrial sectors.

- **Class E:** emission data are based on non-standardised estimations derived from best assumptions or expert guesses.

8. TIMETABLE

The Commission adopted the final EPER Decision in July 2000 and published it in the Official Journal of the European Communities under reference 2000/479/EC. The Member States shall submit their first reporting to the Commission in June 2003 on industrial releases in 2001. If necessary, the option is offered to report in the first year the releases for the year 2000 (or equally 2002), when the data on releases for 2001 are not available in a timely manner for a Member State.

At the beginning, the reporting system will proceed with a three-yearly reporting frequency and encourages the introduction of an annual reporting frequency after review and evaluation of the second reporting cycle in 2006. Therefore, Member States shall report according to the following time schedule:

- First reporting by Member States in June 2003 on releases from Annex I activities in 2001 or optionally 2000 or 2002;

- Second reporting by Member States in June 2006 on releases in 2004;

- After review and evaluation in 2006 a decision can be taken on subsequent annual reporting by Member States in December of the year T on releases in the year T-1;

- From 2008 onwards, the Member States are encouraged to have regular reporting system in place and send annual reports to the Commission in December of year T, instead of June a year later (T+1). As many international protocols require emission reporting in December, a future reporting in December will enable member States to synchronise the EPER reporting with other international reporting requirements such as those under the protocols of the UNFCCC (Climate Change) or UN/ECE (long-range transboundary air pollution).

9. IMPLEMENTATION AND FACILITATION

Member States are asked to anticipate the preparation of their first IPPC report to the Commission in June 2003 and start with the collection of the requested information. This Guidance Document is meant as a tool to facilitate Member States in implementing the EPER. The Commission will assist Member States in organising national workshops to explain the usefulness of the EPER and the process of collecting and reporting data. For this purpose the suggested national workshops should be completed by the end of the year 2001. The Commission will encourage Member States to obtain the required data in mandatory environmental reports from facilities with IPPC Annex I activities, using the required reporting formats. It is the intention of the Commission, assisted by the European Environmental Agency, to develop software tools for the electronic data transfer as facilitation to the Member States. With the publication of the Guidance Document on EPER implementation in December 2000 both industry and government should be able to meet the requirements of the EPER Decision and provide emission data to the EPER register.

10. REVIEWS AND FUTURE DEVELOPMENTS

Member States shall report the emission data for the EPER for the first time in June 2003. The reporting to the Commission may reveal some difficulties with respect to the different quality aspects of the emission data provided to the EPER. Therefore, the first results will be reviewed carefully to learn about the reporting process and to improve the quality of the next reporting cycle. After each reporting cycle it will be necessary to review and to adjust specific elements of the EPER to meet the intended purposes and increase the benefits. Some of the EPER elements for review will include the scope of the register, the list of pollutants and reporting threshold values, reporting formats and the frequency of reporting by Member States. Furthermore, the Guidance Document for EPER implementation and other facilitating instruments of the Commission can be part of the reviews. Also, other elements of the EPER reporting can be part of the periodic review.

Future scope of the EPER

The scope of the EPER may be expanded into a fully integrated pollutant emission register or PRTR, according to the corresponding requirements of the Aarhus Convention. Future developments of the EPER will be based upon the reviews in 2004 and 2006 after the first and second reporting by Member States respectively. Depending on the feasibility of broadening the scope of the EPER it may be appropriate to include wastes in the register. Another possibility is to include production data to the reporting format in order to improve inter-comparability and information exchange on eco-efficiency of industrial sectors or source categories. Furthermore, the usefulness of the EPER data can be considered in relation to the (air) emissions trading between facilities.

List of pollutants and reporting threshold values

After each review of a reporting cycle the list of pollutants and the reporting threshold values will be adjusted if needed.

Reporting units

The Commission may consider expanding the range of reporting units beyond the current Annex I activities of the IPPC Directive by including other industrial facilities such as small and medium-sized enterprises. The extension of the range of facilities included in the EPER register should aim

at covering at least 90 % of the total industrial emission in Europe. However, a future extension of polluting source categories may require a modification of the IPPC Directive and the EPER Decision.

Reporting format

After each review, the (electronic) formats to facilitate the reporting by Member States will be optimised for an efficient data transfer.

Reporting frequency

In order to have recently updated data available in the EPER register, the Commission will examine the possibility for annual reporting by Member States. It is the intention of the Commission to introduce an annual update of the reported emissions from the year 2008 onwards; such a decision may be taken after the review of the second reporting in 2006.

Procedure for modifications

All future reporting particulars mentioned in this paragraph are no obligatory requirements at present. Future developments for the EPER reporting and its guidelines can only appear as an outcome of the reviews after each reporting cycle and will be discussed in the Committee as referred to in Article 19 of the IPPC Directive 96/61/EC. Only after consultation of the Article 19 Committee adjusted reporting details and particulars will be included in the EPER Decision and the Guidance Document as new mandatory requirements for the Member States.

Part II

Reporting requirements

1. IDENTIFICATION OF A FACILITY WITH ANNEX I ACTIVITIES

A Member State may have information on operators of facilities, based on an economic classification and could start identification and selection of the facilities based on this information. Table 1 indicates in which economic sectors each of the Annex I activities of the IPPC Directive occur. Member States have information available enabling them to assign NACE[1] codes to the economic sectors. If Member States wish to establish a link between on the one hand the source categories of Annex I activities with corresponding IPPC codes and on the other hand the economic sectors and sub-sectors with NACE codes of 4 digits or more, they can consult national statistical agencies and national experts.

Annex I of the IPPC Directive lists the activities that are covered by the Directive. For a number of these Annex I activities a minimum value for the production capacity is given. The IPPC Directive does not cover activities with a production capacity below this value. When no minimum value is given, all activities under this category are covered. Table 1 presents the source categories of Annex I activities and the minimum values for the production capacity in combination with the corresponding economic sectors.

If one operator carries out several activities falling under the same Annex I activity of the same facility on the same site, the capacities of such activities are added together. The production capacities of the individual activities should be summed at the Annex I activities level. The sum of the capacities is then compared with the minimum production capacity for the specific Annex I activities as listed in Annex I of the IPPC Directive.

1 The NACE nomenclature (National Classification of Economic Activities) is the European classification of economic activities. It is based on economic sectors and is composed of four digits (there is a fifth one for national use). The first two-digit codes indicate the divisions, the third-digit codes indicate the groups, the fourth-digit codes indicate the classes.

Example

- If an operator has a facility with two boilers of 40 and 25 MW_{th} respectively, the capacities of these two boilers should be summed, resulting in a 65 MW_{th} IPPC Directive Annex I category 1.1 activity above the minimum capacity.

The efforts to be undertaken by Member States in order to identify the facilities with Annex I activities and to meet the reporting obligations in the framework of the EPER Decision are:

- Identify all facilities with Annex I activities, taking into account the production capacities of all industrial activities as mentioned in Annex I of the IPPC Directive;
- Identify all Annex I activities of the IPPC Directive for each of the facilities selected in the corresponding source category as specified in Annex A3 of the EPER Decision.

Table 1 Source categories of Annex I activities in economic sectors according to Annex A3 of the EPER Decision

IPPC code	Source categories (Annex I Activities)	Production capacity	Economic sectors	NACE code[1]
1.	**Energy industries**			
1.1	Combustion installations	> 50 MW_{th}	Combustion processes in power plants and industry; Electricity, steam and hot water supply in public and industrial facilities in various sectors	11-40
1.2	Mineral oil and gas refineries	All	Manufacture of refined petroleum products and coke	23
1.3	Coke ovens	All	Manufacture of Basic Metals	27
1.4	Coal gasification and liquefaction plants	All	Power plants, Chemical Industry	24, 40
2.	**Production and processing of metals**			
2.1/2.2/ 2.3/2.4/ 2.5/2.6	Metal industry and metal ore roasting or sintering installations; installations for the production of ferrous and non-ferrous metals. *These include:*			27, 28
	Metal ore roasting or sintering installations	*All*	*Manufacture of Basic Metals*	*27*
	Installations for the production of pig iron or steel including continuous casting	*> 2.5 tonnes/hour*	*Manufacture of Basic Metals*	*27*
	Installations for production of ferrous metals		*Manufacture of Basic Metals*	*27*
	Hot rolling mills	*> 20 tonnes/hour*		
	Smitheries	*> 50kJ/hammer; > 20MW_{th}*		
	Protective fused metal coating	*> 2 tonnes crude steel/ hour*		
	Ferrous metal foundries	*> 20 tonnes/day*	*Manufacture of Basic Metals*	*27*
	Non-ferrous metals		*Manufacture of Basic Metals*	*27*
	Production from ore, concentrates or secondary raw materials	*All*		
	Smelting including alloyage, including recovered products	*> 4 tonnes/day (Pb, Cd) >20 tonnes/day (other metals)*		
	Installations for surface treatment of metals and plastic materials	*>30 m^3 treatment vat volume*	*Manufacture of Fabricated Metal Products*	*28*

1 The table only presents the first two digits of the code (representing the different divisions). Indication of the different four digits codes in this table is not feasible because of the vast number of possibilities. However, Member States must report four digit codes.

Table 1 Source categories of Annex I activities in economic sectors according to Annex A3 of the EPER Decision (Continued)

IPPC code	Source categories (Annex I Activities)	Production capacity	Economic sectors	NACE code[1]
3.	**Mineral Industry**			
3.1/3.3/ 3.4/3.5	Installations for the production of cement, klinker, lime, glass, mineral substances and ceramic products:		Manufacture of Non-metallic Mineral Products	26
	cement klinker	*> 500 tonnes/day*		
	lime	*> 50 tonnes/day*		
	Installations for the production of glass including glass fibre	*> 20 tonnes/day*	*Manufacture of Non-metallic Mineral Products*	*26*
	Installations for the melting of mineral sub-stances including production of mineral fibres	*> 20 tonnes/day*	*Manufacture of Non-metallic Mineral Products*	
	Installations for the manufacturing of ceramic products by firing	*> 75 tonnes/day and/or > 4 m^3 kiln capacity and density > 300 kg/m^3/kiln*	*Manufacture of Non-metallic Mineral Products*	*26*
3.2	Installations for the production of asbestos or asbestos-based products	All	Manufacture of Non-metallic Mineral Products	26
4.	**Chemical industry and chemical installations for the production of:**			
4.1	Basic organic chemicals	All	Manufacture of Chemicals	24
4.2/4.3	Basic inorganic chemicals or fertilizers	All	Manufacture of Chemicals	24
4.4/4.6	Biocides and explosives	All	Manufacture of Chemicals	24
4.5	Pharmaceutical products	All	Manufacture of Chemicals	24
5.	**Waste management**			
5.1/5.2	Installations for the disposal or recovery of hazardous waste	> 10 tonnes/day	Waste Processing and Disposal	90
	Installations for the incineration of municipal waste	> 3 tonnes/hour	Waste Processing and Disposal	90
5.3/5.4	Installations for the disposal of non-hazardous waste	> 50 tonnes/day	Waste Processing and Disposal	90
	Landfills excluding landfills of inert waste	> 10 tonnes/day received, or > 25000 tonnes total capacity	Waste Processing and Disposal	90

1 The table only presents the first two digits of the code (representing the different divisions). Indication of the different four digits codes in this table is not feasible because of the vast number of possibilities. However, Member States must report four digit codes.

Table 1 Source categories of Annex I activities in economic sectors according to Annex A3 of the EPER Decision (Continued)

IPPC code	Source categories (Annex I Activities)	Production capacity	Economic sectors	NACE code[1]
6.	**Other Annex I activities**			
6.1	Industrial plants for production of:		Manufacture of Pulp, Paper and Paper Products	21
	Pulp from timber or other fibrous materials	All		
	Paper and board	> 20 tonnes paper/day		
6.2	Plants for the pre-treatment or dyeing of fibres or textiles	> 10 tonnes/day	Manufacture of Textiles	17
6.3	Plants for tanning of hides and skins	> 12 tonnes/day	Tanning and Dressing of Leather	19
6.4	Slaughterhouses	> 50 tonnes/day	Manufacture of Food Products	15
	Animal raw materials (non-milk)	> 75 tonnes/day		
	Vegetable raw materials	> 300 tonnes/day		
	Treatment and processing of milk	> 200 tonnes/day		
6.5	Installations for the disposal or recycling of animal carcasses and animal waste	> 10 tonnes/day	Production and Processing of Meat and Meat Products, Manufacture of Animal Feeds	15
6.6	Installations for intensive rearing of:		Agriculture, Farming of Animals	01.2
	Poultry	> 40 000 places		
	Pigs (over 30 kg)	> 2 000 places		
	Sows	> 750 places		
6.7	Installations for surface treatment or products using organic solvents (dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning, impregnating)	> 150 kg/hour, or > 200 tonnes/day	Manufacture of Textiles, wearing apparel, wood products and paper products; Publishing and printing. Manufacture of chemicals, rubber and plastic products, other non-metallic mineral products, basic metals, metal products, machinery and equipment	17-22; 24-36
6.8	Installations for the production of carbon (hard-burnt coal) or graphite	All	Manufacture of Chemicals	24

1 The table only presents the first two digits of the code (representing the different divisions). Indication of the different four digits codes in this table is not feasible because of the vast number of possibilities. However, Member States must report four digit codes.

2. IDENTIFICATION OF SOURCE CATEGORIES AND NOSE-P CODES

The source categories of Annex I activities used for EPER reporting are listed in Annex A3 of the EPER Decision. These Annex A3 source categories are identical to or aggregations of the Annex I activities as listed in the IPPC Directive. In Annex A3 of the EPER Decision the source categories of Annex I activities are given with the corresponding source nomenclatures: NOSE-P[1] and SNAP. Essentially, these nomenclatures have a technical nature. As indicated in Annex A3, more than one NOSE-P code can apply for the same source category, and also the same NOSE-P code can apply for different source categories of Annex I activities.

The NOSE-P code, associated with each of the source categories of Annex I activities could be derived from Annex A3 of the EPER Decision and is expressed in 5 digits. If further specification is requested by the regulatory bodies one can use the NOSE-P classification as published by Eurostat. In case a certain facility operates more than one Annex I activity, one of these activities has to be selected as the main Annex I activity. The determination of the main Annex I activity and the corresponding main NOSE-P code is explained in Chapter 3.

As an illustration of the selection of facilities, source categories of Annex I activities and NOSE-P codes, Figure 1 presents the Annex A3 source categories and NOSE-P codes, which are identified for the facilities P, Q, R, S and T from the example of Appendix 2.

According to the format of Annex A2 of the EPER Decision, Member States must report the corresponding NOSE-P codes at a 5-digit level for each source category of Annex I activities. For this purpose Member States shall:

- Identify the NOSE-P code with 5 digits, corresponding with each of the source categories of Annex I activities of the selected facilities, according to Annex A3 of the EPER Decision.

1 The NOSE nomenclature (Nomenclature of Sources of Emission), or more specifically NOSE-P, has been developed by Eurostat, European Environment Agency and DG Environment. NOSE provides a classification for emissions sources directly linked to NACE Revision 1 (Ref 4).

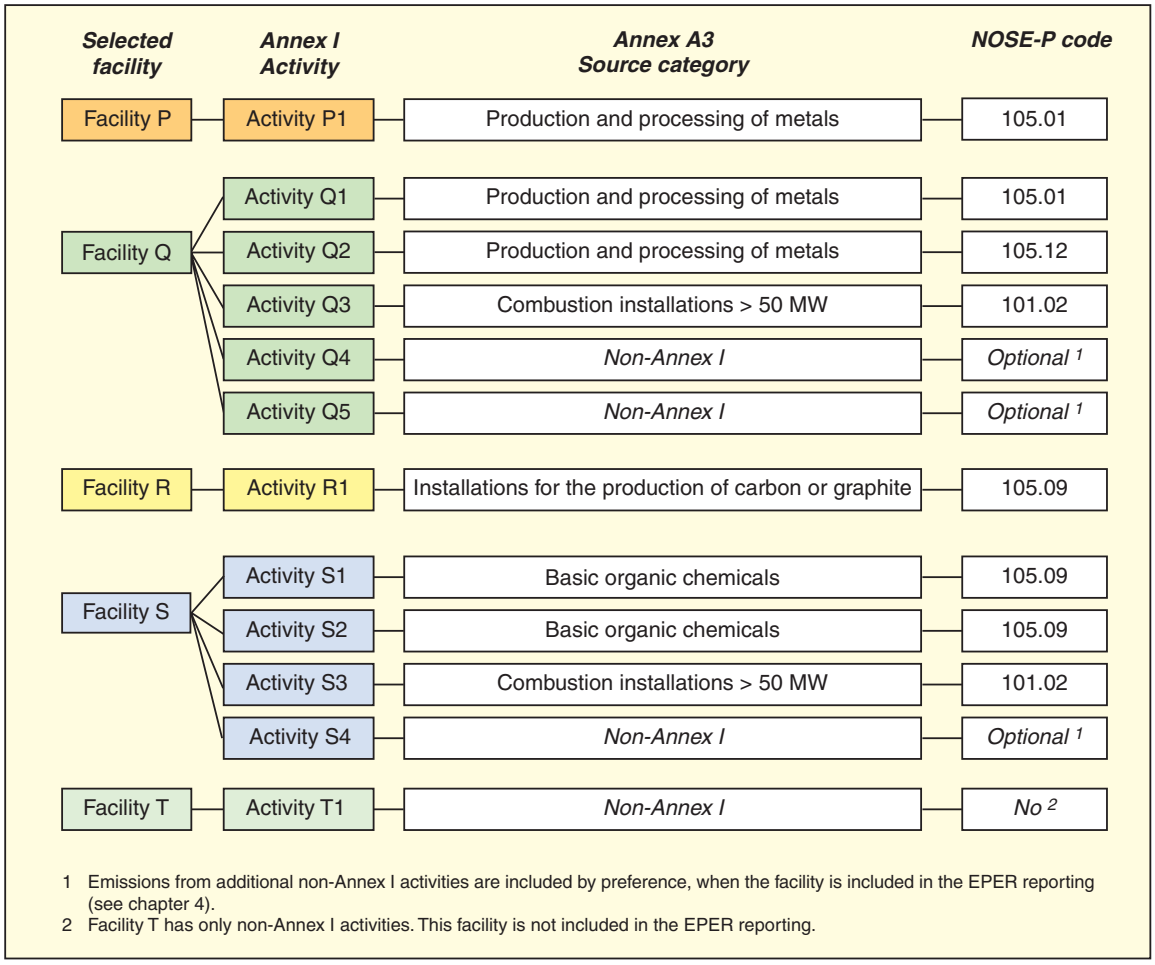

Figure 1 *Identification of source categories of Annex I activities and NOSE-P codes according to Annex A3 (based on the example from Appendix 2)*

3. IDENTIFICATION OF THE MAIN ANNEX I ACTIVITY OF A FACILITY

In case a facility operates more than one Annex I activity it is required to determine the main Annex I activity of the facility and the corresponding main NOSE-P code according to Annex A3 of the EPER Decision. A Member State could determine the main Annex I activity as follows:

1 In general the main Annex I activity is identified as the main economic activity of the facility. Doing this, national experts and competent authorities can determine most of the main Annex I activities of a facility. In some cases where the determination is difficult and no consent amongst experts is achieved, Member States can also follow the alternative procedure under 2.

2 Exceptionally the main Annex I activity can be identified as the most polluting activity of a facility, consulting national experts or competent authorities.

To identify the main Annex I activity of a facility, Member States could use the following procedures:

- Identify in general the main Annex I activity of the facility as the main economic activity, which is usually known for a facility.
- In exceptional cases when the economic activity is not characteristic for the facility, the main Annex I activity can be identified as the most polluting activity of the facility, in consultation with national experts and/or competent authorities.

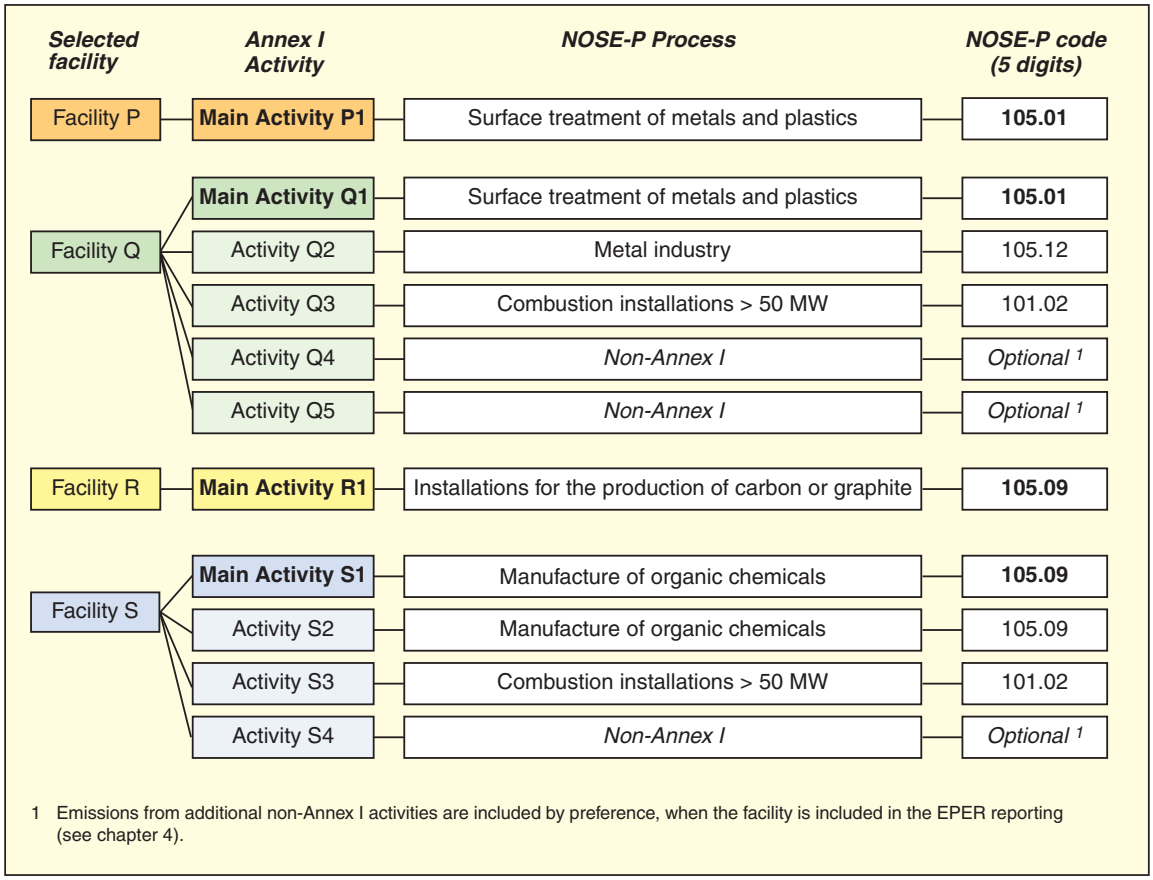

Figure 2 Identification of the main Annex I activity and main NOSE-P code and process of a facility

4. INTERPRETATION OF A FACILITY AS REPORTING UNIT

Operators with a permit for Annex I activities are usually obliged to report the emissions to the competent authorities. If an operator has various activities in one or more installations on a given site this cluster is defined as one facility. A facility can include both Annex I activities and non-Annex I activities, but only the Annex I related emissions are obligatory for reporting in the framework of the EPER Decision. The reporting obligation concerns all sources of a facility including non-point or diffuse sources.

In general, national experts and competent authorities will be able to identify the reporting unit. On large-scale industrial areas an operator may have different facilities where the emissions of each must be reported separately. Multi-operator situations may occur where several operators share certain activities or installations at the same industrial location or even the same site (e.g. joint ventures). Such a jointly operated complex may include a common wastewater treatment plant (WWTP) or a common energy production facility.

Identifying the reporting unit needs special attention in complex cases, especially with respect to the (direct and indirect) releases to water. Therefore, several examples for complex situations are presented in Appendix 2. These examples focus on the releases to surface water, but the reports for the facilities must also include air emissions. Multi-operated installations on the site of a facility must be part of the facility specific report.

Releases to air

The releases to the air should be reported per facility as emission data to air. If in exceptional cases the releases to air (from different facilities) occur from a jointly operated abatement installation, the reporting of the releases to the air should follow the procedure as explained in Appendix 2.

Releases to water

Two types of releases to water must be reported for a facility, namely:

- Direct releases to surface water: they must be included in the EPER reporting for the facility and indicated as direct releases to water;

- Indirect releases to an off-site WWTP: they must be included in the EPER reporting for the facility and indicated as indirect releases to water.

Indirect releases to an on-site wastewater treatment plant (WWTP) are excluded from the EPER reporting for the facility. Reporting of indirect releases from "combined" facilities to an off-site WWTP can be omitted in specified circumstances. Under exceptional conditions the emissions of the off-site WWTP can be reported separately as direct releases to water with reference to the emitting facilities (see Appendix 2).

Example

- Appendix 2 presents two examples of complex situations with a combination of facilities with different activities, both with an on-site WWTP and with an off-site WWTP.

General guidelines for reporting emission data of a facility are as follows:

- The emissions from all (both point and non-point) sources in a facility with Annex I activities have to be reported for all pollutants for which the threshold values – as specified in Annex A1 of the EPER Decision – are exceeded.
- The emissions from non-Annex I activities are usually included in the reported emission data, which is preferable when these emissions contribute more than 10% to the total emissions of the facility.
- However, the emissions from non-Annex I activities can be excluded from the reported emission data, when it is possible to quantify and separate the contribution of these non-Annex I activities of the facility.

As exception to these general guidelines for reporting it can be allowed to report in a different way for an industrial complex of several combined facilities at the same industrial location. This exceptional reporting should not exceed 1-2 % of all facility specific reports.

- An exception to facility-specific reporting may occur when several facilities at the same industrial location are combined by technical and organisational links and make all use of an off-site wastewater treatment plant (WWTP).
  This WWTP is not a part of any facility and not operated by one of the operators of these facilities, but independently operated under a joint service contract between all facilities involved.
  Only then, the emissions from the individual facilities are not reported as indirect releases to the WWTP, but are reported as direct release from the WWTP with reference to both the identification of all facilities involved and the main Annex I activity of the industrial complex (see also Appendix 2).

5. INTERPRETATION OF THE REPORTING THRESHOLDS FOR POLLUTANTS

5.1 Pollutants to air

Table 2 reproduces the list of pollutants for emissions to air from Annex A1 of the EPER Decision. The second column in this table further identifies the pollutants and indicates how they should be reported. All emissions should be expressed in kg/year with three significant digits.

For a facility with one or more Annex I activities, the total emission is determined as the sum of the emissions from all Annex I activities, including both point sources and diffuse/non-point sources. Whenever this total emission of the facility, expressed as indicated in the second column, exceeds the threshold value as listed in Annex A1 of the EPER Decision, the emission must be reported. The emissions of non-Annex I activities are allowed to be included in the report.

Table 2 Identification of pollutants to air from Annex A1 of the EPER Decision

Pollutant/Substances	Description and identification
1. Environmental Themes	
CH_4	Total mass of methane
CO	Total mass of carbon monoxide
CO_2	Total mass of carbon dioxide (according to IPCC guidelines used by UNFCCC[1])
HFCs	Total mass of hydrogen fluorocarbons: sum of HFC23, HFC32, HFC41, HFC4310mee, HFC125, HFC134, HFC134a, HFC152a, HFC143, HFC143a, HFC227ea, HFC236fa, HFC245ca
N_2O	Total mass of nitrous oxide
NH3	Total mass of ammonia
NMVOC	Total mass of volatile organic compounds, excluding methane
NO_x	Total mass of nitrogen monoxide + nitrogen dioxide, expressed as nitrogen dioxide
PFCs	Total mass of perfluorocarbons: sum of CF4, C2F6, C 3F8, C4F10, c-C4F8, C5F12, C6F14
SF_6	Total mass of sulphur hexafluoride
SO_x	Total of sulphur dioxide and sulphur trioxide, expressed as sulphur dioxide
2. Metals and compounds	
As and compounds	Total inorganic and organic arsenic compounds, expressed as elementary arsenic
Cd and compounds	Total inorganic and organic cadmium compounds, expressed as elementary cadmium
Cr and compounds	Total inorganic and organic chromium compounds, expressed as elementary chromium
Cu and compounds	Total inorganic and organic copper compounds, expressed as elementary copper
Hg and compounds	Total inorganic and organic mercury compounds, expressed as elementary mercury
Ni and compounds	Total inorganic and organic nickel compounds, expressed as elementary nickel
Pb and compounds	Total inorganic and organic lead compounds, expressed as elementary lead
Zn and compounds	Total inorganic and organic zinc compounds, expressed as elementary zinc

Table 2 Identification of pollutants to air from Annex A1 of the EPER Decision (Continued)

Pollutant/Substances	Description and identification
3. Chlorinated organic substances	
Dichloroethane-1,2 (DCE)	Total mass
Dichloromethane (DCM)	Total mass
Hexachlorobenzene (HCB)	Total mass
Hexachlorocyclohexane(HCH)	Total mass
PCDD+PCDF (dioxins+furans)	Total as Toxic equivalents (Teq) [2]
Pentachlorophenol (PCP)	Total mass
Tetrachloroethylene (PER)	Total mass
Tetrachloromethane (TCM)	Total mass
Trichlorobenzenes (TCB)	Total mass
Trichloroethane-1,1,1 (TCE)	Total mass
Trichloroethylene (TRI)	Total mass
Trichloromethane	Total mass
4. Other organic compounds	
Benzene	Total mass
Polycyclic Aromatic Hydrocarbons	Sum of 6 Borneff PAH[3]
5. Other compounds	
Chlorine and inorganic compounds	Total inorganic chlorine compounds, expressed as HCl
Fluorine and inorganic compounds	Total inorganic fluorine compounds, expressed as HF
HCN	Total expressed as HCN
PM10	Total mass of particulate matter with particle diameters below 10 μm[4]

1 IPCC 2000 revised Guidelines exclude CO_2 emissions from biomass and bunkers (Ref. 6)
2 TEq: Toxicity Equivalents, the emission of 17 isomers of PCDD and PCDF related to the most toxic isomer 2,3,7,8-CDD
3 Benzo(a)pyrene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Benzo(b)fluoranthene
4 According to definition of Council Directive 199/30/EC of 22 April 1999

In Appendix 3 an indicative list is given of measurement methods for relevant air pollutants covered by CEN or ISO standards. This list is presented as guidance to the Member States regarding the availability of existing standardised measurement methods.

5.2 Pollutants to water

Table 3 shows the list of pollutants for emissions to water from Annex A1 of the EPER Decision. The second column in this table further identifies the pollutants and indicates how they should be reported. All emissions should be reported in kg/year.

For a facility with one or more Annex I activities, the total emission is determined as the sum of the emissions from all Annex I activities, including both point sources and diffuse/non-point sources. The threshold for the water emission is applicable to the sum of the direct and indirect emissions of a facility. Whenever this total emission for the facility expressed as indicated in the second column exceeds the threshold value as listed in Annex A1 of the EPER Decision, this emission must be reported. The emissions of non-Annex I activities are allowed to be included in the report.

Table 3 Identification of pollutants to water from Annex A1 of the EPER Decision

Pollutants/Substances	Description and identification
1. Environmental Themes	
Total - Nitrogen	Total , expressed as nitrogen
Total - Phosphorus	Total , expressed as phosphorus
2. Metals and compounds	
As and compounds	Total inorganic and organic arsenic compounds, expressed as elementary arsenic
Cd and compounds	Total inorganic and organic cadmium compounds, expressed as elementary cadmium
Cr and compounds	Total inorganic and organic chromium compounds, expressed as elementary chromium
Cu and compounds	Total inorganic and organic copper compounds, expressed as elementary copper
Hg and compounds	Total inorganic and organic mercury compounds, expressed as elementary mercury
Ni and compounds	Total inorganic and organic nickel compounds, expressed as elementary nickel
Pb and compounds	Total inorganic and organic lead compounds, expressed as elementary lead
Zn and compounds	Total inorganic and organic zinc compounds, expressed as elementary zinc
3. Chlorinated organic substances	
Chloro-alkanes (C10-13)	Total mass
Dichloroethane-1,2 (DCE)	Total mass
Dichloromethane (DCM)	Total mass
Halogenated organic compounds	Total, expressed as AOX
Hexachlorobenzene (HCB)	Total mass
Hexachlorobutadiene (HCBD)	
4. Other organic compounds	
Benzene, toluene, ethylbenzene, xylenes	Total, as BTEX (mass of sum of individual components)
Brominated diphenylether	Total,expressed as Br
Organotin – compounds	Total, expressed as Sn
Phenols	Total, expressed as C
Polycyclic Aromatic Hydrocarbons	Sum of 6 Borneff PAH[1]
Total organic carbon (TOC)	Total, expressed as C or COD/3
5. Other compounds	
Chlorides	Total, expressed as Cl
Cyanides	Total, expressed as CN
Fluorides	Total, expressed as F

1 Benzo(a)pyrene, Benzo(ghi)perylene, Benzo(k)fluoranthene, Fluoranthene, Indeno(1,2,3-cd)pyrene, Benzo(b)fluoranthene

In Appendix 3 an indicative list is given of measurement methods for relevant pollutants to water. This list is presented as guidance to the Member States with regard to the availability of standardised measurement methods. Member States should collect the emissions for all pollutants, for which the threshold values are exceeded, as follows:

- Determine the pollutants of Annex A1 of the EPER Decision, which are released from all (both point and non-point) sources/activities in a facility with Annex I activities (also taking into account the non-Annex I activities according to chapter 4).
- Determine for each pollutant the total emission from all sources/activities of the facility and verify, whether the threshold value as specified in Annex A1 of the EPER Decision is exceeded. The threshold values apply to the sum of the emissions.
- Report the total emissions for the facility, for all pollutants exceeding the threshold values, either as release to air, direct release to water or indirect release to water.

6. SECTOR-SPECIFIC SUB-LISTS OF POLLUTANTS FOR ANNEX I ACTIVITIES

Each individual source category as listed in IPPC Directive Annex I emits a different set of pollutants. This chapter presents an overview of the pollutants for which emissions can be expected to be above the reporting thresholds for each of the Annex I activities. Whether or not a pollutant is emitted above the threshold value depends on the specific characteristics of the facility.

The pollutants are indicated in the sector-specific sub-lists in Tables 4 and 5, for air and for water, respectively. These sector-specific sub-lists are presented merely as guidance for Member States and other interested parties in identifying the pollutants that are likely to be emitted by a specific source category of Annex A3 of the EPER Decision. The given sub-lists for the source categories of Annex I activities are to be considered as checklists for reporting according to the EPER requirements. However, Member States are required to use the complete list of pollutants as specified in Annex A1 of the EPER Decision for verifying, whether a pollutant needs to be reported.

The identification of pollutants per source category of Annex I activities is based on experiences with emission inventories from a limited number of Member States and is presented in more detail in Appendices 4 and 5. Table 4 and Table 5 have to be considered as aggregations of the information given in both Appendices.

A facility can operate different Annex I activities. For the determination the pollutants that are likely to be emitted from a facility, one should consider all identified source categories of Annex I activities. In other situations, not all pollutants expected for a specific source category of Annex I activities are emitted. For instance in the chemical industry, where a variety of processes are used for the production of very different products, the set of pollutants that is actually emitted can differ from the ones indicated in the sub-lists.

- Member States have to report on all pollutants listed in Annex A1 of the EPER Decision and for which the threshold values are exceeded.
- Member States can use the sector-specific sub-lists of pollutants as an indication to check which pollutants are likely to be emitted from a specific source category of Annex I activities as specified in Annex A3 of the EPER Decision.

Table 4 Sector-specific checklist for pollutants likely to be emitted to air by source categories of Annex I activities

	Source categories of Annex I activities (according to Annex A3 of the EPER Decision)	CH_4	CO	CO_2	HFCs	N_2O	NH_3	NMVOC	NO_x	PFCs	SF_6	SO_x	As and compounds	Cd and compounds	Cr and compounds	Cu and compounds	Hg and compounds	Ni and compounds	Pb and compounds	Zn and compounds	Dichloroethane-1,2 (DCE)	Dichloromethane (DCM)	Hexachlorobenzene (HCB)	Hexachlorocyclohexane(HCH)	PCDD+PCDF (dioxins+furans)	Pentachlorophenol (PCP)	Tetrachloroethylene (PER)	Tetrachloromethane (TCM)	Trichlorobenzenes (TCB)	Trichloroethane-1,1,1 (TCE)	Trichloroethylene (TRI)	Trichloromethane	Benzene	Polycyclic Aromatic Hydrocarbons	Chlorine and inorganic compounds	Fluorine and inorganic compounds	HCN	PM10	Number of pollutants (of total 37)
1.1	Combustion installations > 50 MW	●	●	●		●			●			●	●	●	●			●	●						●									●	●	●		●	16
1.2	Mineral oil and gas refineries		●	●				●	●			●	●	●	●	●	●	●	●	●													●	●	●		●	18
1.3	Coke ovens	●	●	●			●	●	●			●	●	●	●	●	●	●	●													●	●		●		●	18
1.4	Coal gasification and liquefaction plants		●						●			●																				●					●	4
2.1/2.2/2.3 2.4/2.5/2.6	Metal industry and metal ore roasting or sintering installations; installations for the production of ferrous and non-ferrous metals		●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●			●		●								●	●	●	●	●	●	24
3.1/3.3/ 3.4/3.5	Installations for the production of cement klinker (>500t/d), lime (>50t/d), glass (>20t/d), mineral substances (>20t/d) or ceramic products (>75t/d)		●	●	●		●	●	●			●	●	●	●	●	●	●	●	●					●								●	●	●	●		●	21
3.2	Installations for the production of asbestos or asbestos-based products																																				●	1
4.1	Chemical installations for the production of basic organic chemicals		●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	34
4.2/4.3	Chemical installations for the production of basic inorganic chemicals or fertilisers		●	●		●	●	●	●			●					●				●	●	●	●	●	●	●	●	●	●	●	●			●			●	22
4.4/4.6	Chemical installations for the production of biocides and explosives						●	●	●																													●	4
4.5	Chemical installations for the production of pharmaceutical products						●	●	●													●					●	●			●							●	8
5.1/5.2	Installations for the disposal or recovery of hazardous waste (>10t/d) or municipal waste (>3t/h)		●	●			●	●	●			●	●	●	●	●	●	●	●	●			●		●								●	●	●		●	20
5.3/5.4	Installations for the disposal of non-hazardous waste (>50t/d) and landfills (>10t/d)	●		●		●			●			●											●		●			●		●								9
6.1	Industrial plants for pulp from timber or other fibrous materials and paper or board production (>20t/d)		●	●				●	●			●																									●	6
6.2	Plants for the pre-treatment of fibres or textiles (>10t/d)			●			●	●	●			●																									●	6
6.3	Plants for tanning of hides and skins (>12t/d)			●					●																													2
6.4	Slaughterhouses (>50t/d), plants for the production of milk (>200t/d), other animal raw materials (>75t/d) or vegetable raw materials (>300t/d)	●		●	●		●		●																												●	6
6.5	Installations for the disposal or recycling of animal carcasses and animal waste (>10t/d)			●			●		●			●													●								●				●	7
6.6	Installations for poultry (>40000), pigs (>2000) or sows (y>750)	●				●	●																														●	4
6.7	Installations for surface treatment or products using organic solvents (>200t/y)							●					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●					●	23
6.8	Installations for the production of carbon or graphite							●	●			●																					●		●			●	6
	Number of source categories by individual pollutants	**5**	**10**	**14**	**3**	**5**	**12**	**13**	**18**	**2**	**2**	**14**	**8**	**8**	**8**	**7**	**8**	**8**	**8**	**6**	**3**	**4**	**6**	**3**	**9**	**3**	**4**	**5**	**3**	**4**	**4**	**3**	**6**	**9**	**7**	**6**	**2**	**19**	

Table 5 Sector-specific checklist for pollutants likely to be emitted to water by source categories of Annex I activities

	Source categories of Annex I activities (according to Annex A3 of the EPER Decision)	Total - Nitrogen	Total - Phosphorus	As and compounds	Cd and compounds	Cr and compounds	Cu and compounds	Hg and compounds	Ni and compounds	Pb and compounds	Zn and compounds	Dichloroethane-1,2 (DCE)	Dichloromethane (DCM)	Chloro-alkanes (C10-13)	Hexachlorobenzene (HCB)	Hexachlorobutadiene (HCBD)	Hexachlorocyclohexane(HCH)	Halogenated organic compounds	Benzene, toluene, ethylbenzene, xylenes	Brominated diphenylether	Organotin – compounds	Phenols	Polycyclic Aromatic Hydrocarbons	Total organic carbon (TOC)	Chlorides	Cyanides	Fluorides	Number of pollutants (of total 26)
1.1	Combustion installations > 50 MW	●	●		●	●	●	●	●	●	●								●				●	●	●		●	14
1.2	Mineral oil and gas refineries	●		●	●	●	●	●	●	●	●							●	●			●	●	●	●	●	●	17
1.3	Coke ovens	●	●																			●	●	●		●		6
1.4	Coal gasification and liquefaction plants	●																				●	●	●				4
2.1/2.2/2.3/ 2.4/2.5/2.6	Metal industry and metal ore roasting or sintering installations; installations for the production of ferrous and non-ferrous metals	●	●	●	●	●	●	●	●	●	●							●			●	●	●	●	●	●	●	18
3.1/3.3/ 3.4/3.5	Installations for the production of cement klinker (>500t/d), lime (>50t/d), glass (>20t/d), mineral substances (>20t/d) or ceramic products (>75t/d)	●	●	●	●	●	●	●	●	●	●								●					●			●	13
3.2	Installations for the production of asbestos or asbestos-based products					●												●						●				3
4.1	Chemical installations for the production of basic organic chemicals	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	●	25
4.2/4.3	Chemical installations for the production of basic inorganic chemicals or fertilisers	●	●		●	●	●	●	●	●	●							●	●					●		●	●	14
4.4/4.6	Chemical installations for the production of biocides and explosives	●	●	●	●	●	●	●	●	●	●						●	●	●		●	●		●				16
4.5	Chemical installations for the production of pharmaceutical products	●	●								●							●	●			●		●				7
5.1/5.2	Installations for the disposal or recovery of hazardous waste (>10t/d) or municipal waste (>3t/h)	●	●	●	●	●	●	●	●	●	●							●					●	●	●	●	●	16
5.3/5.4	Installations for the disposal of non-hazardous waste (>50t/d) and landfills (>10t/d)	●	●	●	●	●	●	●	●	●	●							●						●	●	●		14
6.1	Industrial plants for pulp from timber or other fibrous materials and paper or board production (>20t/d)	●	●				●	●	●	●	●							●			●			●				11
6.2	Plants for the pre-treatment of fibres or textiles (>10t/d)	●	●		●	●	●	●	●	●	●							●	●	●		●	●	●	●			16
6.3	Plants for tanning of hides and skins (>12t/d)	●	●	●		●	●											●						●	●			8
6.4	Slaughterhouses (>50t/d), plants for the production of milk (>200t/d), other animal raw materials (>75t/d) or vegetable raw materials (>300t/d)	●	●																					●	●			4
6.5	Installations for the disposal or recycling of animal carcasses and animal waste (>10t/d)	●	●			●	●				●							●						●				7
6.6	Installations for poultry (>40000), pigs (>2000) or sows (>750)	●	●				●				●													●				5
6.7	Installations for surface treatment or products using organic solvents (>200t/y)	●	●	●	●	●	●		●	●	●		●	●				●			●	●	●	●		●	●	18
6.8	Installations for the production of carbon or graphite																						●	●				2
	Number of source categories by individual pollutants	**19**	**17**	**9**	**11**	**14**	**15**	**11**	**12**	**12**	**15**	**1**	**2**	**2**	**1**	**1**	**2**	**14**	**8**	**2**	**5**	**9**	**10**	**21**	**8**	**8**	**8**	

7. EMISSION DETERMINATION METHODS AND OTHER QUALITY ASPECTS

All emission data reported per facility should be accompanied by a code that indicates how it has been determined. The used codes do not pretend to refer to the accuracy of the emission data, because there is no uniform relation between the method used (code) and the accuracy of the resulting emission figure. There are three possible codes to indicate the emission determination method for the reported emission data:

- **Code M:** emission data are based on measurements using standardised or accepted methods; often additional calculations are needed to convert the results of measurements into annual emission data.

- **Code C:** emission data are based on calculations using nationally or internationally agreed estimation methods and emission factors, which are representative for the industrial sectors.

- **Code E:** emission data are based on non-standardised estimations derived from best assumptions or expert guesses.

"**M**" is used when the emissions of a facility are derived from direct monitoring results for specific processes at the facility, based on actual measurements of pollutant concentrations for a given discharge route. "M" refers to results of standardised or accepted (continuous) measurement methods (such as listed in Appendix 3), "M" should also be used when the annual emissions are calculated based on the results of short term and spot measurements.

"**C**" is used when the emissions are based on calculations using activity data (fuel used, production rate, etc.) and emission factors. In some cases more complicated calculation methods can be applied, using variables like temperature, global radiance etc. These cases should also be marked "C". Also, calculations based on a mass balance approach should be marked ad "C". Furthermore, the indication "C" is used, when the emission calculation method is obtained from published references (see Chapter 8 for an overview of publications, software and web sites).

"**E**" is used when the emissions are determined by expert judgement, not based on publicly available references. The indication of "E" applies also for guesses of the emissions in case of absence of recognised emission estimation methodologies or good practice guidelines.

Emissions are considered to be releases of pollutants due to the different activities of a facility. In the cases when a large intake of groundwater or other imported water supplies as cooling water it is allowed to subtract the contribution of the imported pollutant already present in the inlet water, from the amount of pollutant in the effluent water. In most cases the reported emission of a pollutant is the sum of the releases from more than one source within a facility. The emissions from each contributing source – both point sources and diffuse/non-point sources – may be determined with different methods. The one-letter code that indicates the method used to determine the greatest proportion of the emission should be given at each individual emission data in the report.

All emission data have to be expressed in kg/year and with three significant digits. The rounding off to three significant digits does not refer to the statistical or scientific uncertainty, but reflects only the accuracy of the reported data as is shown in the following example.

Example

Original result of the emission calculation	**Result to be reported** (in three significant digits)
0.0000123456 kg/year	0.0000123 kg/year
0.0512495 kg/year	0.0512 kg/year
0.4591 kg/year	0.460 kg/year
1.23456 kg/year	1.23 kg/year
12.3456 kg/year	12.3 kg/year
123.456 kg/year	123 kg/year
1 234.567 kg/year	1 230 kg/year
12 345.678 kg/year	12 300 kg/year
1 234 567 890.0000 kg/year	1 230 000 000 kg/year

Member States should indicate the M, C, E letter code for the emission determination method and the data quality of the reported emission data as follows:

- Assign the letter code “M”, “C” or “E” to each individual emission data reported, indicating its determination method.
- Express all emission data in kg/year and round off to exactly 3 significant digits.

8. REFERENCE TO AVAILABLE EMISSION DETERMINATION METHODS

This chapter lists a number of emission factor collections, both on paper, on publicly accessible Internet sites and emission determination methods. The commission assisted by the European Environment Agency will consider the development of a website ("clearinghouse") with links to other relevant sites and information sources on existing emission determination methods. This clearinghouse can also play an important role in sharing the information on this subject between the Commission and Member States.

8.1 Emissions to air

- Within the UN/ECE's EMEP programme a Task Force on Emission Inventories is maintaining the Atmospheric Emission Inventory Guidebook (Ref 5). The Guidebook is a joint activity of UN/ECE / EMEP and the European Environment agency. The guidebook contains chapters for specific source sectors, where all available emission factors and emission calculation methods are collected. The Task Force maintains a working web site, where drafts for new chapters and modifications of existing ones are available.

  http://www.aeat.co.uk/netcen/airqual/TFEI/unece.htm

- The 2nd edition of the Atmospheric Emission Inventory Guidebook itself can be found at the website of the European Environment Agency. Paper copies are only limited available.

  http://themes.eea.eu.int/toc.php/state/air?doc=39186&l=en

- The European topic Centre on Air emissions supports member states in making tools available for determining, collecting and reporting air emission data. These tools are still under development. Within the existing tools, however, emission estimation methods and default emission factors are available.

  http://etc-ae.eionet.eu.int/etc-ae/index.htm

- The Intergovernmental Panel on Climate Change (IPCC) has produced guidelines for the establishment of emission inventories of greenhouse gases within its National Greenhouse Gas Inventory Programme (NGGIP). The revised IPCC guidelines (1996) for national greenhouse gas inventories contain emission factors and emission estimation methods for all sectors as defined in the United Nations Framework convention on Climate Change. Furthermore, the IPCC developed a report on "Good practice guidance and uncertainty management in national greenhouse gas inventories" (Ref. 6). Both documents are available and can be downloaded from the IPCC-NGGIP website.

  http://www.ipcc-nggip.iges.or.jp/

- The US EPA Office of Air Quality Planning & Standards maintains a comprehensive web site where all material on available emission factors and emission estimation methods in the United States can be viewed and, in many cases, downloaded. Below a number of useful products are listed.

  http://www.epa.gov/ttn/chief/

  – Compilation of Air Pollutant Emission Factors AP-42, Fifth Edition, Volume I: Stationary Point and Area Sources.

    http://www.epa.gov/ttn/chief/ap42.html

  – Volume II: Mobile Sources (AP-42), pending 5th edition (Last updated: 06 April 1998).

    http://www.epa.gov/oms/ap42.htm

  – Factor Information REtrieval (FIRE) Data System.

    http://www.epa.gov/ttn/chief/fire.html

  – TANKS 4.07 for Windows®

    http://www.epa.gov/ttn/chief/tanks.html

- The National atmospheric emissions inventory of the United Kingdom calculated general emission factors. The information can be accessed via the Internet.

  http://www.aeat.co.uk/netcen/airqual/emissions

- The Australian emission estimation technique manuals are available on the Internet.

  http://environment.gov.au/epg/npi/eet_manuals.html

- The OECD maintains a comprehensive web site where material related to emission inventories can be viewed and documents can be downloaded.

  http://www.oecd.org/env/

- The “OECD’s Database on Use and Release of Industrial Chemicals” comprises three modules which contain the following information sources:
  1 Emission Scenario Documents
  2 Sources of Information on Uses and Releases of Specific Chemicals
  3 Sources of Information on Uses and Releases of Chemicals on Specific Use/Industry Categories

  http://appli1.oecd.org/ehs/urchem.nsf/

8.2 Emissions to water

The web sites of the OSPARCOM and the project “Harmonised Quantification and Reporting Procedures for Hazardous Substances (HARP)” contain general information on the relevant releases and pollutants to water covered by these agreements.

http://www.ospar.org/

http://www.sft.no/english/harphaz/

The literature on establishing the emissions to water is much more limited than in then case of air. The following references are available:

1 Estimation methods of Industrial Wastewater Pollution in the Meuse Basin, Comparison of approaches, LIFE study ENV/F/205, Agence de l’eau, RIZA, Landesumweltamt Nordrhein Westfalia, Office International de l’eau, Ministère de la Region Walonne, Vlaamse Milieumaatschappij. *August 1998, Agence de l’eau, Paris France.*

2 Dutch Notes on Monitoring of Emission to Water, Document dealing with aspects related to monitoring of emissions into water for TWG Monitoring, within the framework of IPPC, Institute for Inland Water Management and Waste Water Treatment/RIZA. *February 2000, RIZA, Lelystad, The Netherlands*.

8.3 Other relevant information

European IPPC Bureau and BREF Documents

Within the framework of the IPPC Directive, the conditions of the permits that Member States issue to Annex I activities must be based upon the Best Available Techniques (BAT) to achieve a high level of protection of the environment as a whole. The European IPPC Bureau in Seville collects information from a number of sources and drafts reference documents for the Commission to be published as a means of disseminating information to the permitting authorities, industry and other interested people.

The Bureau intends to develop in co-operation with Members States and industry a series of reference documents over a period of at least 5 years so as to cover, as far as practicable, the Annex I activities. These documents are called BAT Reference Documents abbreviated as BREFs. Among others, they contain information on production processes and techniques, current emission levels, emission reduction measures and techniques to consider in the determination of BAT. The work program consists of a number of work sectors each year as determined by the

Information Exchange Forum (IEF). The IEF consists of representatives from Member States, industry and environmental non-governmental organisations. The BREF Documents produced so far and planned for the coming years are included in Table 6. Updated information on published BREF documents can be found on the website of the European IPPC Bureau.

http:// eippcb.jrc.es/exe/FActivities.htm

Table 6 Available and expected BREF documents (October 2000)

Industrial Sectors	Document status	Date
Cement & Lime	Final document	March 2000
Ceramics	None	2003
Chloralkali	Final draft	August 2000
Common wastewater/waste gas treatment/ management	First draft	May 2000
Cooling and Vacuum	Final draft	September 2000
Economic and Cross Media	None	2002
Emissions from storage of bulk or dangerous materials	None	2002
Ferrous Metals Processing	final draft	August 2000
Food and Milk	None	2002
Glass Processes	final draft	August 2000
Intensive Livestock Farming	None	2001
Iron & Steel	final document	March 2000
Landfills	None	2004
Large Combustion Plants	None	2002
Large Volume Organic Chemicals	first draft	July 2000
Large Volume Gaseous and Liquid Inorganic	None	2003
Large Volume Solid Inorganic Chemicals	None	2003
Monitoring	Draft	January 1999
Non-Ferrous Metals Processes	final document	May 2000
Organic Fine Chemicals	None	2004
Polymers	None	2003
Pulp & Paper	final document	July 2000
Refineries	first draft	February 2000
Slaughterhouse/animal Carcases	None	2002
Smitheries and Foundries	None	2001
Speciality Inorganic Chemicals	None	2004
Surface Treatment of Metals	None	2003
Surface Treatments using Solvents	None	2003
Tanneries	second draft	June 2000
Textile Processes	None	2002
Waste Incineration	None	2003
Waste Recovery/disposal	None	2004

9. VALIDATION OF DATA AND HANDLING OF CONFIDENTIALITY

9.1 Validation

The recent IPCC report on Good Practice and Management of Uncertainties in emission inventories (Ref. 6) defines validation as follows.

- "Validation is the establishment of sound approach and foundation. In the context of emission inventories, validation involves checking to ensure that the inventory has been compiled correctly in line with reporting instructions and guidelines. It checks the internal consistency of the inventory. The legal use of validation is to give an official confirmation or approval of an act or product."

The validation is the responsibility of the Member State. Before submitting the data to the Commission the Member State should ensure that the inventory is complete, consistent and reported according to the requirements of the EPER Decision and the Guidance Document. Member States have the obligation to report to the Commission on all facilities with Annex I activities, also for those facilities that do not provide data to the national government. In such cases Member States have to report to the Commission by providing emission estimates by the national government.

9.2 Confidentiality

The IPPC Directive and the EPER Decision require Member States to report facility specific emissions by individual pollutants. None of the reported emission data can be or will be confidential; all additional and contextual information provided to the Commission will be publicly accessible taking into account Council Directive 90/313/EC on the freedom of access to information on the environment (1990) (Ref. 7). Therefore, neither the reported emission data nor other accompanying information delivered by the Member States and required according to Annex A2 of the EPER Decision will be deemed confidential.

10. REPORTING OF EMISSION DATA OF INDIVIDUAL FACILITIES BY MEMBER STATES

Article 1 sub 3 requests Member States to report the emission data for each individual facility with one or more Annex I activities, indicating corresponding source categories and NOSE-P codes as specified in Annex A3 of the EPER Decision. The reports should be prepared according to the format of Annex A2 of the EPER Decision. This format consists of four parts and should be completed for all facilities with Annex I activities covered by the IPPC Directive. The four parts concern all activities of a facility and are described as follows:

1 **Identification part:**
includes the name of the parent company of the facility, name of the facility, address of the facility, co-ordinates of the location, NACE-code, main economic activity and a number of optional data on the facility;

2 **Annex I activities:**
lists all Annex I activities as identified by the source categories of Annex A3 of the EPER Decision and the associated NOSE-P codes for the source categories of Annex A3;

3 **Emission data:**
report annual emission data (in kg/year, with M, C or E code and rounded of to three significant digits) as releases to air, direct releases to water and indirect releases to water, for all pollutants for which the threshold values of Annex A1 are exceeded;

4 **Additional information:**
refers to the date of submission of the report and the co-ordinates of the contact person for the Member State.

Figure 3 below illustrates the reporting requirements according to Article 1 sub 3 based on the example of Appendix 2. Member States shall report the emissions for each individual facility with one or more Annex I activities, in this case being the facilities P, Q, R and S. The emissions to be reported for a specific facility are the summed emissions from all source categories at that facility, for all pollutants listed in Annex A1 of the EPER Decision for which the threshold values are exceeded. Emissions from non-Annex I activities are usually included, but are not obligatory to be reported. For instance, for facility Q the emissions to be reported are derived by summing the emissions from activities Q1, Q2 and Q3 and comparing the totals with the threshold values for each pollutant. The emissions from non-Annex I activities Q4 and Q5 are allowed to be excluded from the report, if it is possible to quantify and omit the emissions of the non-Annex I activities separately. If the sum of the emissions of a specific pollutant exceeds the threshold value, it has to be reported.

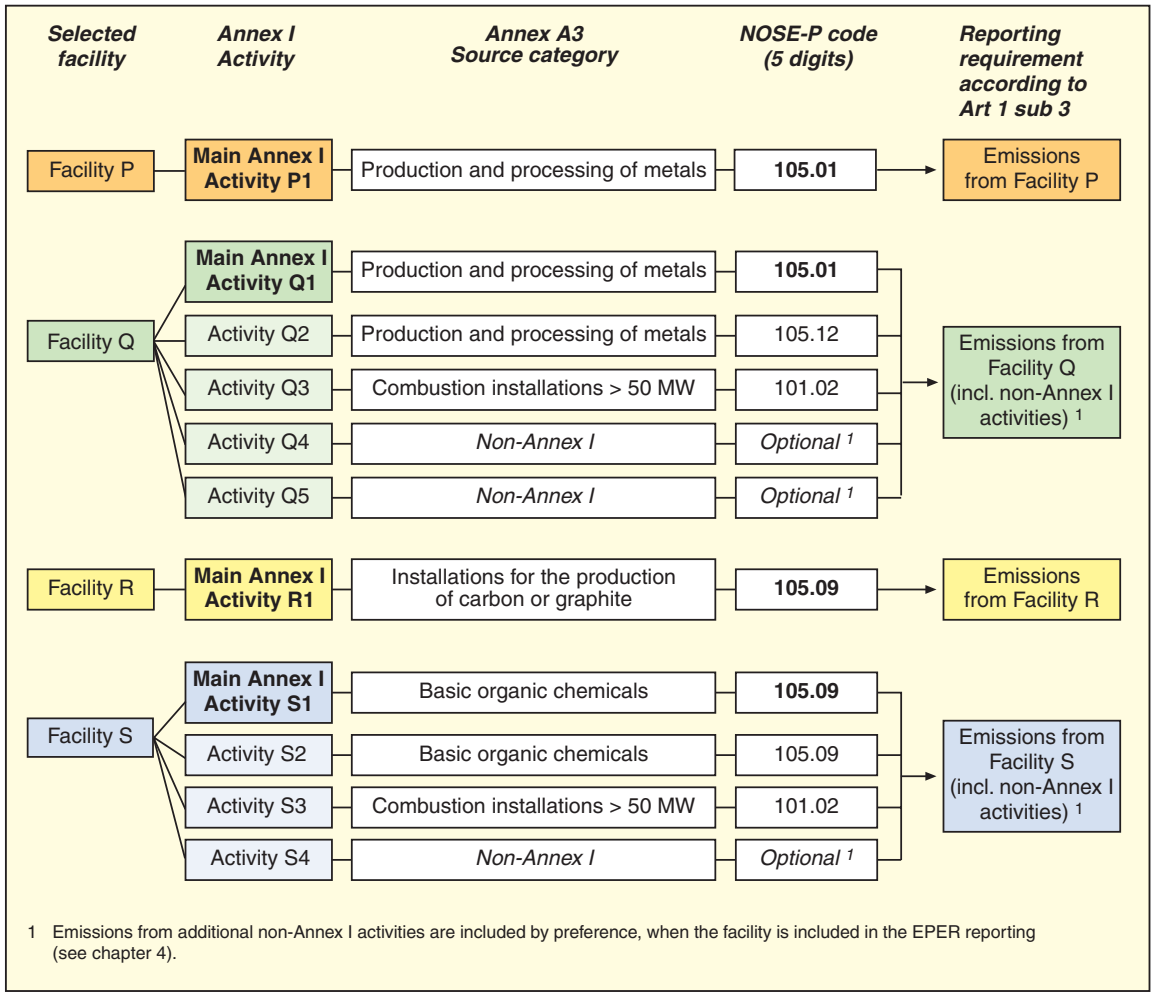

Figure 3 Reporting by facility (based on the example of Appendix 2)

10.1 Identification part

Obligatory fields

The “Name of parent company” refers to the operator of the facility. In case of a company with only one facility, the names of the parent company and of the facility can be equal.

The address and co-ordinates should represent the site where the facility is located. So street, number and ZIP-code should be given. The co-ordinates should be expressed in longitude and latitude co-ordinates (to be read from a topographic map in degrees and minutes, giving a precision of the order of one kilometre and referring to the geographical centre of the site of the facility.

The NACE code and main economic activity should be identical to the economic classification of the facility used by the national statistics service.

Optional fields

The optional fields further indicate the size of the facility and its production volume.

10.2 Source categories of Annex I activities

This part of the format should list all Annex I activities within the facility. The list should contain a sequential number and the (IPCC) code and description of the source category as specified in the first and second column of Annex A3 of the EPER Decision. The first item in this list of activities should be the main Annex I activity as determined following Chapter 3 of Part II. For each of the listed source categories of Annex I activities, the corresponding NOSE-P code should be mentioned in the third column (see Chapter 2 of Part II). The Main NOSE-P code of the facility is the NOSE-P code corresponding with the source category of the main Annex I activity as specified in Annex A3 of the EPER Decision. Following the example in Figure 3, the activities of facility Q to be included in the Annex A2 form are given in Table 7.

Table 7 Reporting of activities for facility Q (see Figure 3)

Annex I activities of the facility according to Annex A3 of the EPER Decision			**Activity codes and Processes** NOSE-P, 5 digits, according to Annex A3 of the EPER Decision	
Annex I activity		**Annex A3 Source Category**	**NOSE-P code**	**NOSE-P process**
Main Annex I activity and main NOSE-P codes	2.6	Production and processing of metals	105.01	Surface treatment of metals and plastics
Other Annex I activities and NOSE-P codes	2.3	Production and processing of metals	105.12	Characteristic processes in the manufacture of metals and metal products
	1.1	Combustion installations > 50 MW_{th}	101.02	Combustion processes > 50 and < 300 MW_{th}

10.3 Emission data

This part of the format contains the actual emission data by facility. It consists of a list with emission data to air and a list with emission data to water. These lists should contain the information as indicated in Tables 8 and 9 when following the example for facility Q.

Table 8 Emissions to air for facility Q

Facility name		Facility Q		
Main Annex I activity		2	Production and processing of metals	
Main NOSE-P code		105.01	Surface treatment of metals and plastics	
Nr	**Pollutant**	**M/C/E**	**Release quantity**	**Unit**
1	Cr and compounds	C	116	kg/year
2	Zn and compounds	E	214	kg/year
3	NO_x	M	123 000	kg/year

The second column in Table 9 identifies the pollutant. The third column indicates the data determination method (choose 'M', 'C' or 'E' for Measured, Calculated or Estimated, respectively). The fourth column gives the release quantity, required to be presented in three significant digits. The last column expresses the unit for the release quantity and this should always be kg/year. The release quantity is the sum of the emissions from all sources and all Annex I activities of the facility and, if included, from non-Annex I activities. Release quantities have only to be listed only for pollutants that exceed the threshold values as specified in Annex A1 to the EPER Decision.

Table 9 Emissions to water for facility Q

Facility name		Facility Q				
Main Annex I activity		2	Production and processing of metals			
Main NOSE-P code		105.01	Surface treatment of metals and plastics			
		Direct releases To surface water		**Indirect releases** by transfer to an off-site wastewater treatment plant		
Nr	**Pollutant**	**M/C/E**	**Emission data**	**M/C/E**	**Emission data**	**Unit**
1	Cr and compounds	E	35.0	C	45.0	kg/year
2	Zn and compounds	E	10.0	C	230	kg/year
3	Halogenated organic compounds			M	2 000	kg/year

Table 9 is essentially analogous to the one for air pollutants, with the exception that for emissions to water a distinction has to be made between direct and indirect releases. Specific situations with direct and indirect releases from industrial complexes with different facilities are discussed in Appendix 2. The release quantity is the sum of the emissions from all Annex I activities of the facility and, if included, from non-Annex I

activities. Release quantities have only to be listed for pollutants that exceed the threshold values as indicated in Annex A1 to the EPER Decision. It is required to present the release quantities in three significant digits.

The threshold values for emissions to water apply for the sum of the direct and indirect releases of a pollutant. In Table 10 the example shows that for 'Cr and compounds' both the direct and indirect releases to water are below the threshold value of 50 kg/year (according to Annex A1 of the EPER Decision). The total release to water, however, amounts to 35.0 + 45.0 = 80.0 kg/year. This value exceeds the threshold value and, therefore, the release of 'Cr and compounds' from facility Q has to be reported.

Non-Annex I activities

Strictly, emissions from non-Annex I activities do not have to be reported according to the EPER requirements. However, the emissions from non-Annex I activities are preferentially included in the reported emission data, when these emissions contribute more than 10 % to the total emissions of the facility. This means that for a facility with both Annex I and non-Annex I activities the emissions from non-Annex I activities are only allowed to be excluded from the reported emission data, if it is possible to quantify and separate the contribution of these non-Annex I activities.

10.4 Additional information

To identify the focal point or contact (person) for further information on the report of a Member State, the name of the contact person with phone and fax numbers and e-mail address have to be included.

In order to provide the Commission with the required facility specific reports the Member States should:

- Use the format of Annex A2 of the EPER Decision to identify each individual facility with Annex I activities.
- List the source categories of all Annex I activities and specify the main Annex I activity of the facility and the corresponding NOSE-P code according to the specifications of Annex A3 of the EPER Decision.
- Report the total facility emission data for all pollutants of Annex A1 of the EPER Decision exceeding the threshold values.
- Reported emission data are never confidential; specific confidential information can be excluded from the report.

11. REPORTING OF AGGREGATED EMISSION DATA FOR SOURCE CATEGORIES BY MEMBER STATES

Article 1 sub 4 of the EPER Decision requires Member States to provide an overview report, including the national totals of all reported emissions for each of the source categories of the main Annex I activities and corresponding main NOSE-P codes as specified in Annex A3 of the EPER Decision. In other words, the emission data reported per individual facility (see chapter 10) must be aggregated and summed to produce national totals. This must be done for each pollutant as specified in Annex A1 of the EPER Decision.

The aggregated emission data must be sorted by source categories and corresponding NOSE-P codes as specified in Annex A3 of the EPER Decision. For each combination of source category, NOSE-P code and pollutant, the total releases to air, total direct releases to water and total indirect releases to water must be calculated and aggregated. 'Total' refers to the sum of the emissions of each specific pollutant as released from each of the source categories of main Annex I activities and main NOSE-P codes. National total emissions must be reported for each of the source categories of Annex A3 of the EPER Decision and each NOSE-P code respectively. Table 10 shows the format that the Member States could use to report the national total emissions.

Example

- In Figure 4 the example from Appendix 2 is shown again, now including the reporting of the aggregated national total emissions. It is assumed that this example covers all source categories of Annex I activities existing in a country. The total emissions from facility P and the total emissions from facility Q are summed to produce the national total emission for (main) NOSE-P code 105.01 and Annex A3 source category 2.6 referring to 'Production and processing of metals'. Similar to facilities P and Q, the main Annex I activities of facility R and facility S also have identical corresponding main NOSE-P codes. However the total emissions from these two facilities are not summed to produce the national total for NOSE-P 105.09, because Annex A3 source categories differ for the main Annex I activities. The reporting is performed for each unique Annex A3 source category as well as NOSE-P code.

To provide the Commission with the required overview reports the Member States should aggregate the reported individual emissions into national totals by using the emission data as reported for the individual facilities and perform the following activities:

- Present for each of the pollutants: (1) releases to air, (2) direct releases to water, and (3) indirect releases to water for each of the source categories of main Annex I activities as aggregated totals for all facilities;
- Sum the emissions of each specific pollutant for each of the main Annex I activities, identified by (1) the Annex A3 source category, and (2) the corresponding NOSE-P code separately;
- Report the total national emissions of all pollutants by both the Annex A3 source categories and the NOSE-P codes respectively.

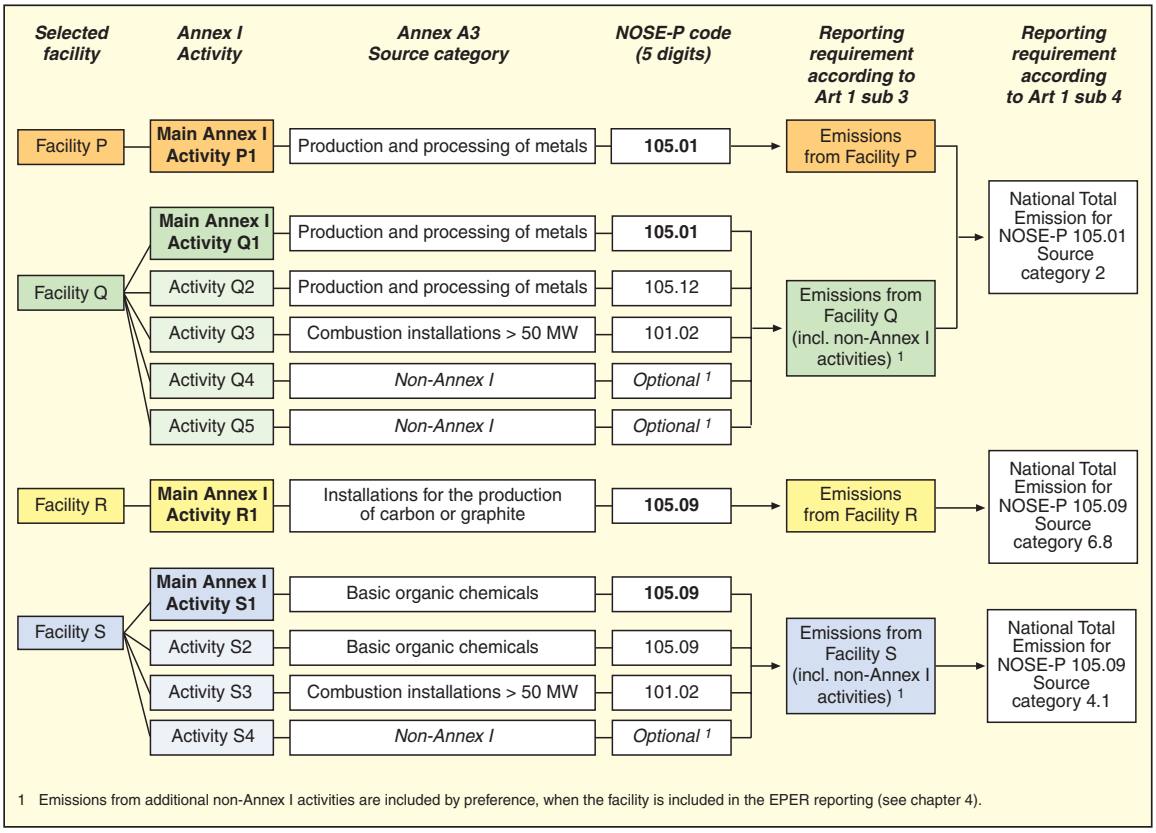

Figure 4 *Reporting of aggregated emissions by main NOSE-P Code and Annex A3 source category (based on the example in Appendix 2)*

Table 10 Format for reporting national totals of reported emissions by Annex A3 source category and NOSE-P code (based on the example in Appendix 2)

Annex A3 Source category with Annex I activities	Main NOSE-P code	Pollutant	Emissions reported according to Article 1 sub 4 of the EPER Decision			Unit
			To air	Direct to water	Indirect to water	
Production and processing of metals	105.01	Pollutant a	121 000	5 000	2 150	kg/year
		Pollutant b				kg/year
		Pollutant c	223 000			kg/year
Chemical installations for the production of basic organic chemicals	105.09	Pollutant d			1 150	kg/year
		Pollutant r	360 000 000			kg/year
		Pollutant f	0.00234			kg/year
Installations for the production of carbon or graphite	105.09	Pollutant t	768	56.3		kg/year
		Pollutant r	560 000 000			kg/year

12. REPORTING FORMATS AND SOFTWARE TOOLS TO STREAMLINE DATA TRANSFER

The transfer of data within the Member State and from the Member State to the Commission should be properly organised to ensure that all quality aspects are met. This means, that the allocation of responsibilities to the involved organisations should be based on a transparent framework of agreements. Streamlining the data transfer can be encouraged in several ways and on different levels of aggregation. In general four levels can be distinguished: the facility level, the competent authority level, the national government level and the European Commission level.

Each Member State is responsible for organising its national emission inventory and registration activities, taking into account the requirements of the EPER Decision. Within the Member State it is the responsibility of the competent authorities to collect the emission reports of the individual facilities under their area of authority. These authorities can be national or regional and the Commission expects that they perform quality assurance, validation and verification with regard to the collected emission data.

On a national level the Member State will collect and register the emission data per facility and prepare a report that meets the reporting requirements to the European Commission under the EPER Decision. If individual facilities with Annex I activities do not report to the national government, it is obligatory for the national government to estimate emission data for these facilities and include those non-reporting facilities in the report to the Commission.

The European Commission will receive the EPER emission reports from the Member States (both emission data by facility and the aggregated data), check them on consistency and make them publicly accessible on the Internet.

The Commission, assisted by the European Environment Agency, has the intention to develop software tools to facilitate Member States and streamline the data transfer from the Member States to the Commission. These software tools could also offer a format to aggregate the national totals of all reported emissions from the individual facilities.

13. SUBMISSION OF REPORTED DATA TO THE COMMISSION

Member States shall submit two reports to the European Commission with copies to the European Environment Agency:

- a report with emission data for each facility with Annex I activities according to Article 1 sub 2 and 3 of the EPER Decision;

- an overview report with national totals of the reported emissions according to Article 1 sub 4 of the EPER Decision.

The report with emission data for the individual facilities should be submitted electronically on (a set of) CD-ROMs and will give information on the emissions from the facilities according to the format of Annex A2 of the EPER Decision.

The overview report should be submitted electronically on a CD-ROM and also as hard copy. The report should include tables with the national total emissions aggregated for each of the source categories of main IPPC Annex I activities and the corresponding main NOSE-P code as specified in Annex A3 of the EPER Decision.

Member States shall submit their first reporting to the Commission in June 2003 on emissions for the year 2001. If necessary, the option is offered to report in the first year the releases for the year 2000 (or equally 2002), when the data on releases for 2001 is not available in a timely manner. The reported data for both the emissions to air and to water (as direct or indirect releases) should consider the same year of emission. Member States can use their national language for reporting, although the use of English is encouraged.

Initially, the reporting system will proceed with a three-yearly reporting frequency and will encourage the introduction of an annual reporting frequency after review and evaluation of the second reporting cycle in 2006. Member States shall report according to the time schedule of Article 2 of the EPER Decision. The Commission will, in close co-operation with the European Environment Agency, facilitate the Member States in the use of standard formats for reporting and harmonised data transfer.

Member States shall submit to the Commission the following reports:

- CD-ROMs with detailed report including emission data for all individual facilities with one or more Annex I activities.
- CD-ROMs with tables of the national totals of all reported emissions by AnnexA3 source category of (main) Annex I activities as well as by (main) NOSE-P code.
- Paper report including overview tables with the pollutant specific totals of individually reported emission data both by Annex A3 source category and by NOSE-P code.

14. DISSEMINATION OF REPORTED DATA BY THE COMMISSION

The Commission, assisted by the European Environmental Agency (EEA), will make all reported emission data for individual facilities publicly accessible on the Internet. None of the reported data will be treated as confidential. In addition the Commission, assisted by the EEA and in co-operation with Member States, will encourage links through the EIONET, European Information and Observation Network to other related national and international web sites providing information on Pollutant Emission Registers.

After each reporting cycle the Commission will publish the results of the reporting by Member States. The Commission will process the information for the compilation of EU total emissions by pollutant, by country and by Annex A3 source category and corresponding NOSE-P code. The aggregated results will be published in a review report together with an evaluation of the reporting process. This review report will include recommendations for the continuous improvement of the quality of the reported data, the harmonisation of emission determination methods and the streamlining and facilitation of the reporting process. The Commission will publish the review reports in English and will send it to all Member States.

Part III

Specifications

APPENDIX 1 COMMISSION DECISION 2000/479/EC (EPER DECISION)

COMMISSION DECISION

of 17 July 2000

on the implementation of a European Pollutant Emission Register (EPER) according to Article 15 of Council Directive 96/61/EC concerning Integrated Pollution Prevention and Control (IPPC)

(2000/479/EC)

THE COMMISSION OF THE EUROPEAN COMMUNITIES,

Having regard to the Treaty establishing the European Community,

Having regard to Council Directive 96/61/EC of 24 September 1996 concerning integrated pollution prevention and controlr[1], and in particular Article 15(3) thereof,

Whereas:

(1) Article 15(3) of Directive 96/61/EC requires Member States to inventory and supply data on principal emissions and responsible sources.

(2) The Commission will publish the results of the inventory every three years and shall establish the formats and particulars for the transmission of information provided by the Member States in accordance with the procedure of Article 19 of Directive 96/61/EC.

(3) The measures provided for in this Decision are in accordance with the opinion of the Committee referred to in Article 19 of Directive 96/61/EC.

HAS ADOPTED THIS DECISION:

Article 1

(1) Member States shall report to the Commission on emissions from all individual facilities with one or more activities as mentioned in Annex I of Directive 96/61/EC.

(2) The report must include the emissions to air and water for all pollutants for which the threshold values are exceeded; both pollutants and threshold values are specified in Annex A1.

(3) The emission data shall be reported for each facility according to the format of Annex A2, noting a description of all activities as mentioned in Annex I of Directive 96/61/EC with corresponding source categories and NOSE-P codes as specified in Annex A3.

(4) Member States shall provide the Commission with an overview report, which includes the national totals of all reported emissions for each of the source categories with the main Annex I activity and the corresponding NOSE-P code as specified in Annex A3.

1 OJ L 257, 10.10.96, p. 26.

Article 2

(1) Member States shall report to the Commission every three years.

(2) The first report by Member States shall be sent to the Commission in June 2003 providing data on emissions in 2001 (or optionally 2000 or 2002, when data for 2001 are not available).

(3) The second report by Member States shall be sent to the Commission in June 2006 providing data on emissions in 2004.

(4) From the year T=2008 onwards and dependant on the results of the second reporting cycle, Member States are encouraged to send annually the next reports to the Commission in December of the year T providing data on emissions in the year T-1.

Article 3

(1) The Commission will facilitate preparatory national workshops organised by the Member States and prepare a "Guidance Document for EPER implementation" by December 2000 with the involvement of industrial representatives and in consultation with the Committee referred to in Article 19 of Directive 96/61/EC.

(2) The "Guidance Document for EPER implementation" will address details on reporting formats and particulars, including interpretation of definitions, data quality and data management, reference to emission estimation methods and sector-specific sub-lists of pollutants for the source categories as specified in Annex A3.

(3) After each reporting cycle the Commission will publish the results of the reporting by Member States and review the reporting process within six months after the delivery dates for Member States as mentioned in Article 2.

Article 4

(1) Member States shall provide all reported data by electronic data transfer.

(2) The Commission assisted by the European Environment Agency will make the reported data publicly accessible by dissemination on the Internet.

(3) Specific definitions used in relation to the emission reporting are given in Annex A4.

Article 5

This Decision is addressed to the Member States.

Done at Brussels, 17 July 2000.

For the Commission
Margot WALLSTRÖM
Member of the Commission

ANNEX A1 LIST OF POLLUTANTS TO BE REPORTED IF THRESHOLD VALUE IS EXCEEDED

Pollutants / Substances	Identification	Air	Water	Thresholds air in kg/yr	Thresholds water in kg/yr
1. Environmental Themes	**(13)**	**(11)**	**(2)**		
CH_4		x		100 000	
CO		x		500 000	
CO_2		x		100 000 000	
HFCs		x		100	
N_2O		x		10 000	
NH_3		x		10 000	
NMVOC		x		100 000	
NO_x	as NO_2	x		100 000	
PFCs		x		100	
SF_6		x		50	
SO_x	as SO_2	x		150 000	
Total - Nitrogen	as N		x		50 000
Total - Phosphorus	as P		x		5 000
2. Metals and compounds	**(8)**	**(8)**	**(8)**		
As and compounds	total, as As	x	x	20	5
Cd and compounds	total, as Cd	x	x	10	5
Cr and compounds	total, as Cr	x	x	100	50
Cu and compounds	total, as Cu	x	x	100	50
Hg and compounds	total, as Hg	x	x	10	1
Ni and compounds	total, as Ni	x	x	50	20
Pb and compounds	total, as Pb	x	x	200	20
Zn and compounds	total, as Zn	x	x	200	100
3. Chlorinated organic substances	**(15)**	**(12)**	**(7)**		
Dichloroethane-1,2 (DCE)		x	x	1 000	10
Dichloromethane (DCM)		x	x	1 000	10
Chloro-alkanes (C10-13)			x		1
Hexachlorobenzene (HCB)		x	x	10	1
Hexachlorobutadiene (HCBD)			x		1
Hexachlorocyclohexane(HCH)		x	x	10	1
Halogenated organic compounds	as AOX		x		1 000
PCDD+PCDF (dioxins+furans)	as Teq	x		0.001	
Pentachlorophenol (PCP)		x		10	
Tetrachloroethylene (PER)		x		2000	
Tetrachloromethane (TCM)		x		100	
Trichlorobenzenes (TCB)		x		10	
Trichloroethane-1,1,1 (TCE)		x		100	
Trichloroethylene (TRI)		x		2 000	
Trichloromethane		x		500	
4. Other organic compounds	**(7)**	**(2)**	**(6)**		
Benzene		x		1 000	
Benzene, toluene, ethylbenzene, xylenes	as BTEX		x		200
Brominated diphenylether			x		1
Organotin – compounds	as total Sn		x		50
Polycyclic Aromatic Hydrocarbons		x	x	50	5
Phenols	as total C		x		20
Total organic carbon (TOC)	as total C or COD/3		x		50 000
5. Other compounds	**(7)**	**(4)**	**(3)**		
Chlorides	as total Cl		x		2 000 000
Chlorine and inorganic compounds	as HCl	x		10 000	
Cyanides	as total CN		x		50
Fluorides	as total F		x		2 000
Fluorine and inorganic compounds	as HF	x		5 000	
HCN		x		200	
PM10		x		50 000	
Number of pollutants	**50**	**37**	**26**		

Annex A2 FORMAT FOR REPORTING OF EMISSION DATA BY MEMBER STATES

(corrected for printing errors)

Identification of the facility			
Name of parent company Name of the facility Address / City of the facility ZIP Code / Country Co-ordinates of the location NACE-code (4 digits) Main economic activity Production volume (optional) Regulatory bodies (optional) Number of installations (optional) Number of operating hours in year (optional) Number of employees (optional)			
All Annex I Activities/Processes (according to Annex A3)		**Activity codes (NOSE-P, ≥ 5digits, according to Annex A3)**	
Activity 1 (main Annex I activity) “ Activity N		Code 1 (main NOSE-P code) “ Code N	
Emission data to AIR for the facility for each pollutant exceeding threshold value (according to Annex A1)		**Releases to air**	
Pollutant 1 “ Pollutant N	**M**: measured **C** : calculated **E** : estimated	in kg/year	
Emission data to WATER (direct or indirect) for the facility for each pollutant exceeding threshold value (according to Annex A1)		**Direct release to surface water**	**Indirect release by transfer (via sewer) to an off-site wastewater treatment plant**
Pollutant 1 “ Pollutant N	**M**: measured **C** : calculated **E** : estimated	in kg/year	in kg/year
Date of submission to the Commission			
Contact person in Member State Telephone number Fax number E-mail address			

ANNEX A3 SOURCE CATEGORIES AND NOSE-P CODES TO BE REPORTED

IPPC	Annex I Activities *(Source Categories)*	NOSE-P	NOSE-P Processes *(allocation in NOSE-P Groups)*	SNAP 2
1.	**Energy industries**			
1.1	Combustion installations > 50 MW	101.01	Combustion processes > 300 MW *(Whole group)*	01-0301
		101.02	Combustion processes >50 and <300 MW *(Whole group)*	01-0301
		101.04	Combustion in gas turbines *(Whole group)*	01-0301
		101.05	Combustion in stationary engines *(Whole group)*	01-0301
1.2	Mineral oil and gas refineries	105.08	Petroleum product processing *(Manufacture of fuels)*	0401
1.3	Coke ovens	104.08	Coke oven furnaces *(Manufacture of coke, petroleum products and nuclear fuel)*	0104
1.4	Coal gasification and liquefaction plants	104.08	Other solid fuel transformation *(Manufacture of coke, petroleum products and nuclear fuel)*	0104
2.	**Production and processing of metals**			
2.1/2.2/ 2.3/2.4/ 2.5/2.6	Metal industry and metal ore roasting or sintering installations; Installations for the production of ferrous and non-ferrous metals	104.12	Primary and secondary metal production or sinter plants *(Metal industry involving fuel combustion)*	0303
		105.12	Characteristic processes in the manufacture of metals and metal product *(Metal industry)*	0403
		105.01	Surface treatment of metals and plastics *(General purpose manufacturing processes)*	
3.	**Mineral Industry**			
3.1/3.3/ 3.4/3.5	Installations for the production of cement klinker (>500t/d), lime (>50t/d), glass (>20t/d), mineral substances (>20t/d) or ceramic products (>75t/d)	104.11	Manufacture of plaster, asphalt, concrete, cement , glass, fibres, bricks, tiles or ceramic products (Mineral product industry involving fuel combustion)	0303
3.2	Installations for the production of asbestos or asbestos-based products	105.11	Manufacture of asbestos and asbestos-based products (Mineral products industry)	0406
4.	**Chemical industry and chemical installations for the production of:**			
4.1	Basic organic chemicals	105.09	Manufacture of organic chemicals *(Chemical industry)*	0405
		107.03	Manufacture of solvent based organic products *(Solvent use)*	0603
4.2/4.3	Basic inorganic chemicals or fertilisers	105.09	Manufacture of inorganic chemicals or NPK fertilisers *(Chemical industry)*	0404
4.4/4.6	Biocides and explosives	105.09	Manufacture of pesticides or explosives *(Chemical industry)*	0405
4.5	Pharmaceutical products	107.03	Manufacture of pharmaceutical products *(Solvent use)*	0603

ANNEX A3 SOURCE CATEGORIES AND NOSE-P CODES TO BE REPORTED (CONTINUED)

IPPC	Annex I Activities *(Source Categories)*	NOSE-P	NOSE-P Processes *(allocation in NOSE-P Groups)*	SNAP 2
5.	**Waste management**			
5.1/5.2	Installations for the disposal or recovery of hazardous waste (>10t/d) or municipal waste (>3t/h)	109.03	Incineration of hazardous or municipal waste *(Waste incineration and pyrolysis)*	0902
		109.06	Landfills *(Solid waste disposal on land)*	0904
		109.07	Physico-chemical and biological treatment of waste *(Other waste management)*	0910
		105.14	*Regeneration/recovery of waste materials (Recycling industry)*	0910
5.3/5.4	Installations for the disposal of non-hazardous waste (>50t/d) and landfills (>10t/d)	109.06	Landfills *(Solid waste disposal on land)*	0904
		109.07	Physico-chemical and biological treatment of waste (*Other waste management)*	0910
6.	**Other Annex I activities**			
6.1	Industrial plants for pulp from timber or other fibrous materials and paper or board production (>20t/d)	105.07	Manufacture of pulp, paper and paper products *(Whole group)*	0406
6.2	Plants for the pre-treatment of fibres or textiles (>10t/d)	105.04	Manufacture of textiles and textile products *(Whole group)*	0406
6.3	Plants for tanning of hides and skins (>12t/d)	105.05	Manufacture of leather and leather products *(Whole group)*	0406
6.4	Slaughterhouses (>50t/d), plants for the production of milk (>200t/d), other animal raw materials (>75t/d) or vegetable raw materials (>300t/d)	*105.03*	*Manufacture of food products and beverages (Whole group)*	0406
6.5	Installations for the disposal or recycling of animal carcasses and animal waste (>10t/d)	109.03	Incineration of animal carcasses and animal waste *(Waste incineration and pyrolysis)*	0904
		109.06	Landfills *(Solid waste disposal on land)*	0904
		105.14	Recycling of animal carcasses/waste *(Recycling industry)*	0910
6.6	Installations for poultry (>40000), pigs (>2000) or sows (>750)	110.04	Enteric fermentation *(Whole group)*	1004
		110.05	Manure management *(Whole group)*	1005
6.7	Installations for surface treatment or products using organic solvents (>200t/y)	107.01	Paint application *(Solvent use)*	0601
		107.02	Degreasing, dry cleaning and electronics *(Solvent use)*	0602
		107.03	Textile finishing or leather tanning *(Solvent use)*	0603
		107.04	Printing industry *(Solvent use)*	0604
6.8	Installations for the production of carbon or graphite	105.09	Manufacture of carbon or graphite *(Chemical industry)*	0404

ANNEX A4 DEFINITIONS USED IN RELATION TO EPER

Item	Meaning
IPPC Directive	EC Directive 96/61/EC on Integrated Pollution Prevention and Control
Installation	Stationary technical unit, where one or more activities listed in Annex I of the IPPC Directive 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
Annex I activity	Activity listed in Annex I of the IPPC Directive 96/61/EC as aggregated and specified in Annex A3
EPER	European Pollutant Emission Register
Pollutant	Individual substance or group of substances as listed in Annex A1
Substance	Any chemical element and its compounds, with the exception of radioactive substances
Emission	Direct release of a pollutant to air or water as well as the indirect release by transfer to an off-site wastewater treatment plant
Facility	Industrial complex with one or more installations on the same site, where one operator carries out one or more Annex I activities
Site	Geographical location of the facility
Reporting cycle	Cycle of the total reporting process, consisting of the collection, validation, submission, management and dissemination of the reported data
NACE code	Standard nomenclature for economic activities
NOSE-P code	Standard nomenclature for sources of emissions
SNAP code	Nomenclature used in other emission inventories

APPENDIX 2 EXAMPLES OF SITUATIONS WITH VARIOUS SITES, FACILITIES AND ACTIVITIES

Appendix 2 presents two examples of complex situations with various industrial activities on industrial sites and illustrates the determination of the facility as reporting unit in these cases. Figure 1 presents the schematic overview of an industrial complex with two facilities, whereas Figure 2 presents a situation with three facilities.

Both examples especially focus on the releases to water, as the determination for the releases to water is often relatively more complicated than for releases to air. This is because different facilities may share common wastewater treatment and because sewers often connect releases from different facilities. In the figures the releases to water are presented as arrows. The releases to air are not indicated in the figures.

Example 1

- Example 1 in Figure 1 represents an industrial complex with two facilities with Annex I activities, P and Q. Facility Q has an on-site wastewater treatment plant (WWTP A), which also receives wastewater from facility P.

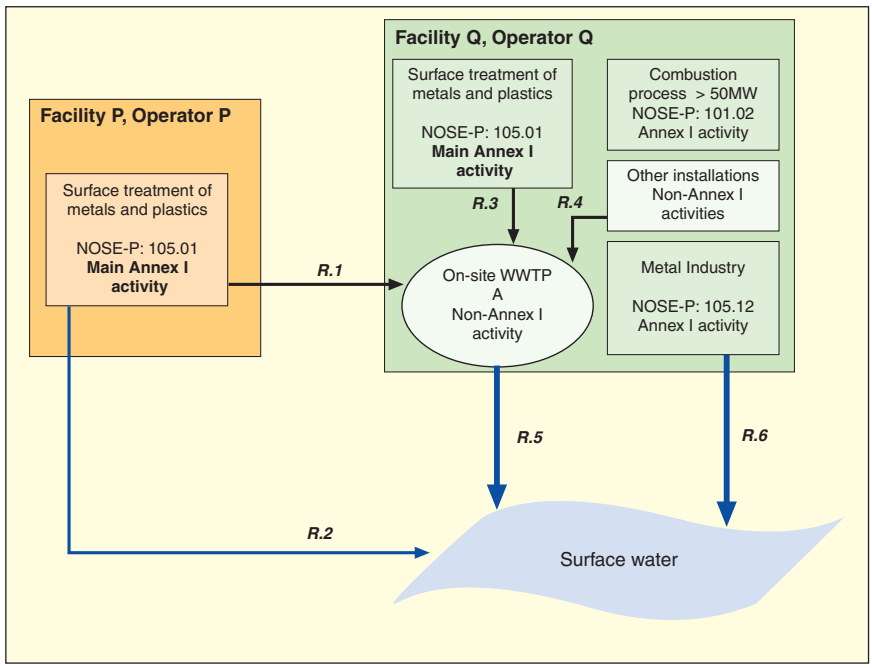

Figure 1 Industrial complex with two facilities

Table 1 presents the releases to water which have to be reported for the two facilities in Example1.

Table 1 Releases to water to be reported for the facilities in Figure 1

Reporting unit	NOSE-P Process	Release	Reporting requirements	Comments
Facility P	Surface treatment of metals and plastics	R.1	To be reported and indicated as indirect release to water	
	Surface treatment of metals and plastics	R.2	To be reported and indicated as direct release to water	
Facility Q	Surface treatment of metals and plastics	R.3	Not to be included in the emission report	
	Other installations	R.4	Not to be included in the emission report	
	On-site WWTP A	R.5	Sum of R.5 plus R.6 to be reported and indicated as direct release to water	Non-Annex I activities are allowed to be excluded.
	Metal industry (characteristic processes in the manufacture of metals and metal products)	R.6		

Facility P

Part of the wastewater from the facility P is discharged as release R1 into WWTP A (non- Annex I activity), which is situated on the premises of facility Q and operated by operator Q. As facility P is an Annex I activity, the release R.1 into WWTP A should be reported as indirect release. Another part of facility P's wastewater is discharged directly into the surface water without treatment (R.2) and should therefore be reported as a direct release. A prerequisite for reporting the emissions to water from facility P is that the sum of R.1 and R.2 exceeds the threshold value of the pollutants considered.

Facility Q

Facility Q has a direct release to surface water from the installation for production of metal products, which is an Annex I activity (release R.6). Facility Q also has its own wastewater treatment plant, WWTP A, which receives wastewater from several facility Q installations (releases R.3 and R.4) and from an external source (R.1 from facility P). The combined effluent of WWTP A is released into the surface water (R.5).

In the example WWTP A is part of the facility Q. In general, this is the case when both organisational and technical integration exists between WWTP A and the other installations of facility Q, or when the operator Q is responsible for the operation of WWTP A. In these cases facility Q is the reporting unit for the direct release to water. The report on facility Q should mention the total direct release to surface water from the facility (sum of R.5 and R.6).
The releases R.3 and R.4 and the individual releases R.5 and R.6 are not reported.

Reporting of releases to air

The facilities P and Q have reporting requirements for the emissions to the atmosphere because they comprise one or more Annex I activities. For each facility the total emissions from all activities have to be reported for the pollutants exceeding the threshold values from Annex A1 of the EPER Decision. The emissions from non-Annex I activities are allowed to be excluded from the report.

In Table 2 the releases to air are presented which have to be reported for the different releases of the various facilities in Example1.

Table 2 Releases to air to be reported for the facilities in Figure 1

Reporting unit	NOSE-P Process	Releases to the air	Reporting requirements	Comments
Facility P	Surface treatment of metals and plastics	All [1]	To be reported	
Facility Q	Combustion process; metal industry; Surface treatment of metals and plastics	All [2]	To be reported as the sum of emissions from combustion process, metal industry and surface treatment of metals and plastics	
	Other installations	Optional	Can be excluded from the emission report	Non-Annex I activities are allowed to be excluded.

1 The total of all releases from all activities exceeding the threshold values from Annex A1 of the EPER Decision
2 The total of all releases from all activities (in this example from the NOSE-P codes 105.01, 105.12 and 101.02) exceeding the threshold values from Annex A1 of the EPER Decision

The emission per facility will be attributed to the main Annex I activity for that facility (as explained in Chapter 3).

The releases to the air from joint abatement installations used by two or more facilities with Annex I activities have to be reported for the individual facilities. The contribution by a facility to the release to air from the abatement installation is calculated for that facility and the calculated partial emission is included in the facility report.

Example 2

Example 2 shown in Figure 2 concerns an industrial complex with two facilities with Annex I activities (facilities R and S) and one facility operating a non-Annex I activity (facility T). Facility T is an independent wastewater treatment plant in which wastewater from facilities R and S is treated.

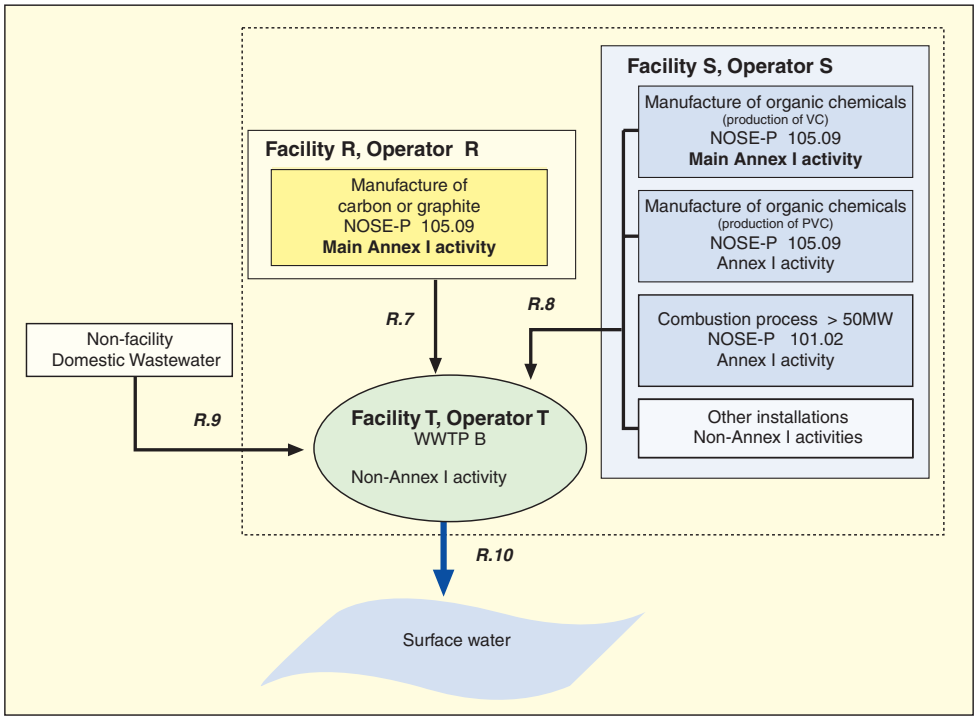

Figure 2 Industrial complex with three combined facilities

Table 3 presents the releases to water which have to be reported for the different facilities in example 2.

Table 3 Releases to water to be reported for the facilities in Figure 2

Reporting unit	NOSE-P Process	Release	Reporting requirements	Comments
Facility R	Manufacture of carbon or graphite	R.7	To be reported and indicated as indirect release to water	
Facility S	Manufacture of organic chemicals; Other installations	R.8	To be reported and indicated as indirect release to water	The contribution from 'Other installations' to release R.8 is allowed to be excluded in the reporting for facility S.
Facility T	WWTP B	R.10	Not to be included in the emission report	Is a non-Annex I activity

Facility R

The release R.7 from facility R is discharged into WWTP B that does not belong to the facility. The emissions to water by facility R should be reported as indirect release (R.7).

Facility S

The releases from facility S are combined into release R.8 and subsequently discharged into WWTP B that is not a part of the facility and is also a non-Annex I activity. The total release to water from the Annex I activities of facility S (for the pollutants exceeding the threshold values from Annex A1 of the EPER Decision) have to be reported as indirect release (R.8). It is allowed to exclude the indirect emissions from the non-Annex I activities of facility S.

Facility T (WWTP B, non-Annex I activity)

Facility T operates a non-Annex I activity and hence there is no reporting obligation.

Exception to example 2

Exceptionally, the facilities R, S and T can be considered as belonging to one site and could therefore be identified as one reporting unit for the releases to water. This is the case if the following exceptional conditions are met:

- Wastewater treatment plant WWTP (facility T) has a service contract with both facility R and S and operates as an organisational and technical unit with facilities R and S;

- This service contract mandates facility T to report on behalf of facility R and facility S the transfers/releases to water from those facilities.

Under these restricted circumstances, a Member State can decide by exception to report the direct release R.10 from facility T instead of reporting the indirect releases R.7 and R.8 from facilities R and S as transfer to facility T. If the Member State decides to report R.10 then this should be done in the facility report of facility T. The main Annex I activity and corresponding NOSE-P code for facility T will be the main Annex I activity of either facility R or S, depending on which of these facilities contributes the most to the release R.10. The emissions R.7 and R.8 are not included in the national overview report.

For the release R.9 (non facility domestic wastewater) no reporting obligation exists. The Member States are free to decide to exclude the contribution of release R.9 to R.10.

Table 4 Releases to water to be reported in the exceptional case of a complex with combined facilities

Reporting unit	NOSE-P Process	Release	Reporting requirements	Comments
Facility T	WWTP B	R.10	To be reported and indicated as direct release to water	Use main Annex I activity and corresponding NOSE-P code of the facility (R or S) which contributes the most to R10 in the report on facility T.

Reporting of releases to air

The facilities R and S have reporting requirements for the emissions to the atmosphere because they comprise one or more Annex I activities. For each facility the total emissions from all activities have to be reported for the pollutants exceeding the threshold values from Annex A1 of the EPER Decision. The emissions from non-Annex I activities are allowed to be excluded from the report. The emission of a facility will be attributed to the main Annex I activity for that facility (as explained in Chapter 3).

In Table 5 the releases to air are presented which have to be reported for the different releases of the various facilities in Example 2.

Table 5 Releases to air to be reported by the facilities in Figure 2

Reporting unit	NOSE-P Process	Releases to the air	Reporting requirements	Comments
Facility R	Manufacture of carbon or graphite	All [1]	To be reported	
Facility S	Manufacture of organic chemicals; Combustion process > 50 MW	All [2]	To be reported as the sum of emissions from basic organic chemicals and combustion process	
	Other installations	Optional	Can be excluded from the emission report	Non-Annex I activities are allowed to be excluded.

1 The total of all releases exceeding the threshold values from Annex A1 of the EPER Decision
2 The total of all releases from all activities (in this example both NOSE-P 105.09 installations and NOSE-P 101.02) exceeding the threshold values from Annex A1 of the EPER Decision

The releases to the air from joint abatement installations used by two or more facilities with Annex I activities have to be reported for the individual facilities. The contribution by a facility to the release to air from the abatement installation is calculated for that facility and the calculated partial emission is included in the facility report.

APPENDIX 3 INDICATIVE LIST OF MEASURING METHODS FOR AIR AND WATER POLLUTANTS

Table 1 Indicative list of measuring methods for relevant air pollutants covered by CEN or ISO (National standards, may be equivalent to the presented methods)

No.	Parameter	Measuring Methods/Procedure
Environmental Themes (4)		
1	Carbon monoxide	Work in progress in CEN/TC 264 WG 16
2	Volatile organic compounds not including methane (NMVOC)	*EN 12619 – 99* Stationary source emission – Determination of the mass concentration of ***total gaseous organic carbon*** at low concentrations in flue gases – Continuous flame ionisation detector method *PrEN 13526 (draft)* Stationary source emission - Determination of the mass concentration of ***total gaseous organic carbon*** at high concentrations in flue gases – Continuous flame ionisation method *Both methods include total gaseous VOC as the name indicates. Measurement results from these methods, corrected for the (expected) methane content represent the NMVOC content.* *A new standard, including measurement of specific hydrocarbons, is being prepared (PrEN 13649).*
3	Nitrogen monoxides and Nitrogen dioxide expressed as Nitrogen dioxide	ISO 10849/04.96 Stationary source emission – Determination of the mass concentration of nitrogen oxides – Performance characteristics of automated measuring methods. *CEN/TC 264/WG9 "QA of AMS" is working on the quality assurance aspects of automated measuring systems.* ISO 11564/04.98 Stationary source emission – Determination of the mass concentration of nitrogen oxides – Naphthylethylenediamine photometric method. *CEN/TC 264/WG16 is working on a new standard for NO_x.*
4	Sulphur oxides as sulphur dioxide	ISO 7934/08.89 and draft 11.97 (amendment) Stationary source emission – Determination of the mass concentration of sulphur dioxide ISO 7935/12.92 Stationary source emission - Determination of the mass concentration of sulphur dioxide - Performance characteristics of automated measuring methods. *CEN/TC 264/WG9 "QA of AMS" is working on the quality assurance aspects of automated measuring systems.* ISO 11632/03.98 Stationary source emission – Determination of the mass concentration of sulphur dioxide – Ion chromatography method. *This standard and ISO7934 provide background for a new CEN-standard for SO_2.*

Table 1 Indicative list of measuring methods for relevant air pollutants covered by CEN or ISO (National standards, may be equivalent to the presented methods) (Continued)

No.	Parameter	Measuring Methods/Procedure
Metals and compounds (5)		
5	Arsenic and arsenic compounds expressed as arsenic	Work in progress in CEN/TC 264 WG 10
6	Lead and lead compounds expressed as lead	Work in progress in CEN/TC 264 WG 10
7	Cadmium and cadmium compounds expessed as cadmium	Work in progress in CEN/TC 264 WG 10
8	Nickel and nickel compounds expressed as nickel	Work in progress in CEN/TC 264 WG 10
9	Mercury and mercury compounds expressed as mercury	*prEN 13211 (draft)* Stationary source emission – Determination of the concentration of total mercury
Chlorinated organic substances (1)		
10	Dioxins and Furanes	*EN 1948 Parts 1/2/3-1996* Stationary source emission – Determination of the mass concentration of PCDDs/PCDFs
Other organic compounds (1)		
11	Polycyclic aromatic hydrocarbons	*ISO 11338-2/07.99 (draft)* Stationary source emission – Determination of gas and particle-phase polycyclic aromatic hydrocarbons from stationary sources ***Part 2: Sample preparation, clean-up and determination*** *Also see ISO/DIS 11338-1/07.00(draft)*
Other compounds (3)		
12	Chlorine and inorganic chlorine compounds as HCl	EN 1911 Parts 1/2/3 – 1996 Stationary source emission – Manual method of determination of HCl
13	Fluorine and inorganic fluorine compounds as HF	Standard in progress : ISO/CD 15713-06/99
14	Total dust *(as a basis for calculating PM10)*	PrEN 13284 (draft) Stationary source emission –Determination of the mass concentration of total dust at low concentration (< 20mg/m^3) ISO 9096/06.92 (standard is under revision) Stationary source emission – Determination of concentration and mass flow rate of particulate material is gas-carrying ducts – Manual gravimetric method (> 50 mg/m^3) ISO 10155/04.95 Stationary source emission – Automated monitoring of mass concentration of particles – performance characteristics, test methods and specifications. *A new CEN document on automated measurement systems is in progress.*

Table 2 Indicative list of measuring methods for relevant pollutants to water (National standards, may be equivalent to the presented methods)

Name	Standard	Analytical method	Working range
1. Environmental Themes (2)			
Total – Nitrogen	DIN 38409-27 EN V 12260 EN ISO 11905-1	Oxid. or Red./Chemolumin, Oxidation / Chemolumin. Oxidation with Peroxodisulfat	over 0,5 mg/l 0,5 - 200 mg/l 0,02 - 5 mg/l
Total - Phosphorus	E DIN 38405-30 EN 1189	Peroxodisulfat /FIA, CFA	0,1 - 10 mg/l
2. Metals and compounds (8)			
As and compounds [1]	ASTM D5673 EN ISO 11969 DIN 38406-29 EN ISO 11885	ICP-MS Hydrid-AAS ICP-MS ICP-AES	over 1 µg/l 1 -10 µg/l over 1 µg/l over 0.08 mg/l
Cd and compounds [1]	ASTM D5673 EN ISO 5961 DIN 38406-16 DIN 38406-29 EN ISO 11885	ICP-MS ET-AAS Voltammetry ICP-MS ICP-AES	over 0,1 µg/l 0,3 - 3 µg/l 0,1 µg/l - 50 mg/l over 0,5 µg/l over 0.01 mg/l
Cr and compounds [1]	ASTM D5673 EN 1233 DIN 38406-29 EN ISO 11885	ICP-MS ET-AAS ICP-MS ICP-AES	over 0,1 µg/l 5 - 100 µg/l over 1 µg/l over 0,001 mg/l
Cu and compounds [1]	ASTM D5673 DIN 38406 -7 DIN 38406-16 DIN 38406-29 EN ISO 11885	ICP-MS ET-AAS Voltammetry ICP-MS ICP-AES	over 0,1 µg/l 2 - 50 µg/l 1 - 50 µg/l over 1 µg/l over 0,01 mg/l
Hg and compounds [1]	EN 1483 EN12338	Cold vapour-AAS CV-AAS with amalgamation	0,1 - 10 µg/l 0,01- 1 µg/l
Ni and compounds [1]	ASTM D5673 DIN 38406-11 DIN38406-16 DIN 38406-29 EN ISO 11885	ET-AAS ET-AAS Voltammetry ICP-MS ICP-AES	over 0.2 µg/l 5 - 100 µg/l 0,1 - 10 µg/l over 1 µg/l
Pb and compounds [1]	ASTM D5673 DIN 38406-6 DIN 38406-16 DIN 38406-29 EN ISO 11885	ICP-MS ET-AAS Voltammetry ICP-MS ICP-AES	over 0,1 µg/l 5 - 50 µg/l 0,1 µg/l - 50 mg/l over 0,1 µg/l over 0,07 mg/l
Zn and compounds [1]	ASTM D5673 DIN 38406-16 DIN 38406-29 EN ISO 11885	ICP-MS Voltammetry ICP-MS ICP-AES	over 0.2 µg/l 1 - 50 µg/l over 1 µg/l over 0,005 mg/l

1 Work in progress in ISO/TC 147/SC WG 32

Table 2 Indicative list of measuring methods for relevant pollutants to water (National Standards, may be equivalent to the presented methods) (Continued)

Name	Standard	Analytical method	Working range
3. Chlorinated organic substances (7)			
1.2-Dichloroethane	EN ISO 10301	GC or Headspace-GC	over 5 or over 100 µg/l
Dichloromethane	EN ISO 10301	GC or Headspace-GC	over 50 µg/l
C10-13-chlorobenzene	-		
Hexachlorobenzene	EN ISO 6468	GC/ECD	over ca. 10 ng/l
Hexachlorobutadiene	EN ISO 10301	GC after Extraction	over 0,01 µg/l
Hexachlorocyclohexane	EN ISO 6468	GC/ECD	over ca. 10 ng/l
Halogenated organic compounds	DIN 38409-22 EN 1485 ISO 9562	SPE-AOX AOX AOX	over 10 µg/l over 10 µg/l over 10 µg/l
4. Other organic compounds	**(6)**		
BTEX	DIN 38407-9	Headspace-GC/FID	over 5 µg/l
Brominated diphenylether	-		
Organotin-compounds	DIN V 38407-13	GC/MS	5 - 1000 ng/l
Polyaromatic Hydrocarbons (PAH's)	ISO/CD 17993	HPLC/Fluorescence	over 0,005 µg/l
Phenols	EN 12673 ISO DIS 8165-2 CNR-IRSA 5060	GC/ECD/MS after derivatisation GC/ECD after derivatisation Destillation/Photometry	0,1 - 1000 µg/l over 1 µg/l
Total organic carbon (TOC)	DIN EN 1484 ISO 8245 Italian Standard Method 5310C	TOC/DOC TOC/DOC TOC/DOC	0,3 - 1000 mg/l 0,3 - 1000 mg/l
5. Other compounds	**(3)**		
Chlorides	DIN 38405-31 EN ISO 10304-1* EN ISO 10304-2* EN ISO 10304-4* CNR-IRSA 4070 CNR-IRSA (book 2000 in publication)	FIA/CFA IC IC IC Potentiometric titration IC	1 - 1000 mg/l 0,1 - 50 mg/l 0,1 - 50 mg/l 0,1 - 50 mg/l over 0.7 mg/l 0,1 - 100 mg/l
Cyanides	PrEN ISO 14403 DIN 38405-14	UV-Digestion/CFA Destillation/Photometry	over 3 µg/l 0,01 - 1 mg/l
Fluorides	DIN EN ISO 10304-1[1] ISO 10359-1 CNR-IRSA (book 2000 in publication)	IC Elektrochemical technique IC	0,01 - 10 mg/l 0,2 - 2 mg/l 0,2 - 20 mg/l

1 These methods are developed for drinking-water analysis but can under certain conditions be used for wastewater

APPENDIX 4 INDICATIVE SECTOR SPECIFIC SUB-LISTS OF AIR POLLUTANTS

Table 1 Indicative sector specific sub-lists of air pollutants (page 1 of 3)

IPPC	Source categories of Annex I activities (according to Annex A3 of the EPER Decision)	CH_4	CO	CO_2	HFCs	N_2O	NH_3	NMVOC	NO_x	PFCs	SF_6	SO_x	As and compounds	Cd and compounds	Cr and compounds	Cu and compounds	Hg and compounds	Ni and compounds	Pb and compounds	Zn and compounds	Dichloroethane-1,2 (DCE)	Dichloromethane (DCM)	Hexachlorobenzene (HCB)	Hexachlorocyclohexane(HCH)	PCDD+PCDF (dioxins+furans)	Pentachlorophenol (PCP)	Tetrachloroethylene (PER)	Tetrachloromethane (TCM)	Trichlorobenzenes (TCB)	Trichloroethane-1,1,1 (TCE)	Trichloroethylene (TRI)	Trichloromethane	Benzene	Polycyclic Aromatic Hydrocarbons	Chlorine and inorganic compounds	Fluorine and inorganic compounds	HCN	PM10	Number of pollutants
1.1	Combustion installations with a rated thermal input exceeding 50 MW	●	●	●		●			●			●	●	●	●			●	●						●									●	●	●		●	16
1.2	Mineral oil and gas refineries		●	●				●	●			●	●	●	●	●	●	●	●	●													●	●	●	●		●	18
1.3	Coke ovens	●	●	●			●	●	●			●	●	●	●	●	●	●	●	●													●	●			●	●	18
1.4	Coal gasification and liquefaction plants		●						●			●																					●	●				●	4
2.1	Metal ore (including sulphide ore) roasting or sintering installations		●					●	●			●	●	●	●	●	●	●	●	●					●										●	●		●	17
2.2	Installations for the production of pig iron or steel (primary or secondary fusion) including continous casting, with a capacity exceeding 2,5 tonnes per hour		●	●				●	●			●	●	●	●	●	●	●	●	●					●								●	●	●			●	18
2.3 (a)	Ferrous metals hot-rolling mills with a capacity exceeding 20 tonnes of crude steel per hour		●						●			●	●	●	●	●	●	●	●	●			●															12
2.3 (b)	Ferrous metals smitheries with hammers the energy of which exceeds 50 kilojoule per hammer, where the calorific power used exceeds 20 MW		●						●			●																										3
2.3 (c)	Ferrous metals application of protective fused metal coats with an input exceeding 2 tonnes of crude steel per hour		●						●			●	●	●	●	●	●	●	●	●					●										●	●			14
2.4	Ferrous metal foundries with a production capacity exceeding 20 tonnes per hour		●	●			●	●	●	●		●		●	●	●		●	●	●					●								●	●	●	●	●	●	20
2.5 (a)	Installations for the production of non ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes		●	●			●	●	●	●	●	●	●	●	●	●	●	●	●	●					●										●	●		●	20
2.5 (b)	Installations for the melting, including the alloyage, of non-ferrous metals, including recovered products, (refining, foundry casting, etc.) with a melting capacity exceeding 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals		●	●			●	●	●	●		●	●	●	●	●	●	●	●	●			●		●									●	●	●		●	21
2.6	Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30 m³								●						●			●																		●			4
3.1	Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 Tonnes per day or lime in rotary kilns with a production capacity exceeding 50 tonnes per day or in other furnaces with a production capacity excee		●	●				●	●			●	●	●	●	●	●	●	●	●					●								●	●	●	●		●	19
3.2	Installations for the production of asbestos and the manufacture of asbestos-based products																																				●	1
3.3	Installations for the manufacture of glass including glass fibre with a melting capacity exceeding 20 tonnes per day		●	●				●	●			●	●	●	●	●	●	●	●																●	●		●	15
3.4	Installations for melting mineral substances including the production of mineral fibres with a melting capacity exceeding 20 tonnes per day		●	●			●	●	●			●	●	●	●	●	●	●	●	●															●	●		●	17
3.5	Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tonnes per day, and/or with a kiln capacity exceeding 4 m³ and		●	●	●				●			●	●	●	●	●	●	●	●	●															●	●		●	16
4.1 (a)	Chemical installations for the production of basic organic chemicals, such as simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic)		●	●	●		●	●	●												●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	21
4.1 (b)	Chemical installations for the production of basic organic chemicals, such as oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters, acetates, ethers, peroxides, epoxy resins		●	●	●		●	●	●												●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	21

Table 1 Indicative sector specific sub-lists of air pollutants (page 2 of 3)

IPPC	Source categories of Annex I activities (according to Annex A3 of the EPER Decision)	CH_4	CO	CO_2	HFCs	N_2O	NH_3	NMVOC	NO_x	PFCs	SF_6	SO_x	As and compounds	Cd and compounds	Cr and compounds	Cu and compounds	Hg and compounds	Ni and compounds	Pb and compounds	Zn and compounds	Dichloroethane-1,2 (DCE)	Dichloromethane (DCM)	Hexachlorobenzene (HCB)	Hexachlorocyclohexane(HCH)	PCDD+PCDF (dioxins+furans)	Pentachlorophenol (PCP)	Tetrachloroethylene (PER)	Tetrachloromethane (TCM)	Trichlorobenzenes (TCB)	Trichloroethane-1,1,1 (TCE)	Trichloroethylene (TRI)	Trichloromethane	Benzene	Polycyclic Aromatic Hydrocarbons	Chlorine and inorganic compounds	Fluorine and inorganic compounds	HCN	PM10	Number of pollutants
4.1 (c)	Chemical installations for the production of basic organic chemicals, such as sulphurous hydrocarbons		●	●	●		●	●	●			●									●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	22
4.1 (d)	Chemical installations for the production of basic organic chemicals, such as nitrogenous hydrocarbons such as amines, amides, nitrous compounds, nitro compounds, or nitrate compounds, nitriles, cyanides, isocyanides		●	●	●	●	●	●	●												●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	22
4.1 (e)	Chemical installations for the production of basic organic chemicals, such as phosphorus-containing hydrocarbons		●	●	●		●	●	●												●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	21
4.1 (f)	Chemical installations for the production of basic organic chemicals, such as halogenic hydrocarbons		●	●	●		●	●	●								●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●	2
4.1 (g)	Chemical installations for the production of basic organic chemicals, such as organometallic compounds		●	●	●		●	●	●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	29
4.1 (h)	Chemical installations for the production of basic organic chemicals, such as basic plastic materials (polymers synthetic fibres and cellulose-based fibres)		●	●	●		●	●	●												●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	21
4.1 (i)	Chemical installations for the production of basic organic chemicals, such as synthetic rubbers		●	●	●		●	●	●												●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	21
4.1 (j)	Chemical installations for the production of basic organic chemicals, such as dyes and pigments		●	●	●		●	●	●				●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	29
4.1 (k)	Chemical installations for the production of basic organic chemicals, such as surface-active agents and surfactants		●	●	●		●	●	●												●	●	●	●	●	●	●	●	●	●	●	●	●	●			●	21
4.2 (a)	Chemical installations for the production of basic inorganic chemicals, such as gases, such as ammonia, chlorine or hydrogen chloride, fluorine or hydrogen fluorides, carbon oxides, sulphur compounds, nitrogen oxides, hydrogen, sulphur dioxide, carbonyl c						●	●	●			●					●				●	●	●	●	●	●	●	●	●	●	●	●			●			●	19
4.2 (b)	Chemical installations for the production of basic inorganic chemicals, such as acids, such as chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid, oleum, sulphurous acids					●	●	●	●			●					●				●	●	●	●	●	●	●	●	●	●	●	●			●			●	20
4.2 (c)	Chemical installations for the production of basic inorganic chemicals, such as bases, such as ammonium hydroxide, potassium hydroxide, sodium hydroxide						●	●	●			●					●				●	●	●	●	●	●	●	●	●	●	●	●			●			●	19
4.2 (d)	Chemical installations for the production of basic inorganic chemicals, such as salts, such as ammonium chloride, potassium chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate						●	●	●			●					●				●	●	●	●	●	●	●	●	●	●	●	●			●			●	19
4.2 (e)	Chemical installations for the production of basic inorganic chemicals, such as non-metals, metal oxides or other inorganic compounds such as calcium carbide, silicon, silicon carbide		●	●			●	●	●												●	●	●	●	●	●	●	●	●	●	●	●						●	18
4.3	Chemical installations for the production of phosphorous-, nitrogen- or potassium-based fertilisers (simple or compound fertilisers)						●		●			●					●																					●	5
4.4	Chemical installations for the production of basic plant health products and of biocides						●	●	●																													●	4
4.5	Installations using a chemical or biological process for the production of basic pharmaceutical products						●	●	●													●					●	●			●							●	8
4.6	Chemical installations for the production of explosives						●	●	●																													●	4

Table 1 Indicative sector specific sub-lists of air pollutants (page 3 of 3)

IPPC	Source categories of Annex I activities (according to Annex A3 of the EPER Decision)	CH_4	CO	CO_2	HFCs	N_2O	NH_3	NMVOC	NO_x	PFCs	SF_6	SO_x	As and compounds	Cd and compounds	Cr and compounds	Cu and compounds	Hg and compounds	Ni and compounds	Pb and compounds	Zn and compounds	Dichloroethane-1,2 (DCE)	Dichloromethane (DCM)	Hexachlorobenzene (HCB)	Hexachlorocyclohexane(HCH)	PCDD+PCDF (dioxins+furans)	Pentachlorophenol (PCP)	Tetrachloroethylene (PER)	Tetrachloromethane (TCM)	Trichlorobenzenes (TCB)	Trichloroethane-1,1,1 (TCE)	Trichloroethylene (TRI)	Trichloromethane	Benzene	Polycyclic Aromatic Hydrocarbons	Chlorine and inorganic compounds	Fluorine and inorganic compounds	HCN	PM10	Number of pollutants
5.1	Installations for the disposal or recovery of hazardous waste as defined in the list referred to in Article 1 (4) of Directive 91/689/EEC, as defined in Annexes II A and II B (operations R1, R5, R6, R8 and R9) to Directive 75/442/EEC and in Council Direct		●	●					●			●	●	●	●	●	●	●	●	●			●		●									●	●	●		●	18
5.2	Installations for the incineration of municipal waste as defined in Council Directive 89/369/EEC of 8 June 1989 on the prevention of air pollution from new municipal waste incineration plants (3) and Council Directive 89/429/EEC of 21 June 1989 on the red		●	●			●	●	●			●	●	●	●	●	●	●	●	●	●			●		●								●	●	●		●	20
5.3	Installations for the disposal of non-hazardous waste as defined in Annex II A to Directive 75/442/EEC under headings D8 and D9, with a capacity exceeding 50 tonnes per day	●				●																	●		●			●		●								6
5.4	Landfills receiving more than 10 tonnes per day or with a total capacity exceeding 25.000 tonnes, excluding landfills of inert waste	●		●					●			●																										4
6.1 (a)	Industrial plants for the production of pulp from timber or other fibrous materials		●	●				●	●			●																									●	6
6.1 (b)	Industrial plants for the production of paper and board with a production capacity exceeding 20 tonnes per day		●	●				●	●			●																									●	6
6.2	Plants for the pre-treatment (operations such as washing, bleaching, mercerisation) or dyeing of fibres or textiles where the treatment capacity exceeds 10 tonnes per day			●			●	●	●			●																									●	6
6.3	Plants for the tanning of hides and skins where the treatment capacity exceeds 12 tonnes of finished products per day			●					●																													2
6.4 (a)	Slaughterhouses with a carcase production capacity greater than 50 tonnes per day	●		●	●		●		●																												●	6
6.4 (b)	Treatment and processing intended for the production of food products from:			●					●																													2
	- animal raw materials (other than milk) with a finished product production capacity greater than 75 tonnes per day																																					0
	- vegetable raw materials with a finished product production capacity greater than 300 tonnes per day (average value on a quarterly basis)																																					0
6.4 (c)	Treatment and processing of milk, the quantity of milk received being greater than 200 tonnes per day (average value on an annual basis)			●					●																													2
6.5	Installations for the disposal or recycling of animal carcases and animal waste with a treatment capacity exceeding 10 tonnes per day			●			●		●			●													●									●			●	●	7
6.6 (a)	Installations for the intensive rearing of poultry or pigs with more than 40.000 places for poultry	●				●	●																														●	4
6.6 (b)	Installations for the intensive rearing of poultry or pigs with more than 2.000 places for production pigs (over 30 kg)	●				●	●																														●	4
6.6 (c)	Installations for the intensive rearing of poultry or pigs with more than 750 places for sows	●				●	●																														●	4
6.7	Installations for the surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating, with a consumption capacity of more th							●					●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●				●	23
6.8	Installations for the production of carbon (hard-burnt coal) or electrograhite by means of incineration or graphitization							●	●			●																						●		●	●	6

APPENDIX 5 INDICATIVE SECTOR SPECIFIC SUB-LISTS OF WATER POLLUTANTS

Table 2 Indicative sector specific sub-lists of water pollutants (page 1 of 3)

IPPC	Source categories of Annex I activities (according to Annex A3 of the EPER Decision)	Total - Nitrogen	Total - Phosphorus	As and compounds	Cd and compounds	Cr and compounds	Cu and compounds	Hg and compounds	Ni and compounds	Pb and compounds	Zn and compounds	Dichloroethane-1,2 (DCE)	Dichloromethane (DCM)	Chloro-alkanes (C10-13)	Hexachlorobenzene (HCB)	Hexachlorobutadiene (HCBD)	Hexachlorocyclohexane(HCH)	Halogenated organic compounds (AOX)	Benzene, toluene, ethylbenzene, xylenes	Brominated diphenylether	Organotin – compounds	Phenols	Polycyclic Aromatic Hydrocarbons	Total organic carbon (TOC)	Chlorides	Cyanides	Fluorides	Number of pollutants
1.1	Combustion installations with a rated thermal input exceeding 50 MW	●	●		●	●	●	●	●	●	●								●				●	●	●		●	14
1.2	Mineral oil and gas refineries	●		●	●	●	●	●	●	●	●							●	●			●	●	●	●	●	●	17
1.3	Coke ovens	●	●																			●	●	●		●		6
1.4	Coal gasification and liquefaction plants	●																				●	●	●				4
2.1	Metal ore (including sulphide ore) roasting or sintering installations				●	●	●	●	●	●	●										●		●	●	●	●	●	13
2.2	Installations for the production of pig iron or steel (primary or secondary fusion) including continous casting, with a capacity exceeding 2,5 tonnes per hour	●	●		●	●	●			●	●										●		●	●	●	●	●	13
2.3 (a)	Ferrous metals hot-rolling mills with a capacity exceeding 20 tonnes of crude steel per hour	●	●		●	●	●			●	●										●		●	●	●	●	●	13
2.3 (b)	Ferrous metals smitheries with hammers the energy of which exceeds 50 kilojoule per hammer, where the calorific power used exceeds 20 MW				●			●		●	●										●		●	●	●		●	9
2.3 (c)	Ferrous metals application of protective fused metal coats with an input exceeding 2 tonnes of crude steel per hour				●			●		●	●										●		●	●	●		●	9
2.4	Ferrous metal foundries with a production capacity exceeding 20 tonnes per hour		●	●	●	●	●		●	●	●							●			●	●	●	●	●	●	●	16
2.5 (a)	Installations for the production of non ferrous crude metals from ore, concentrates or secondary raw materials by metallurgical, chemical or electrolytic processes			●	●	●	●	●	●	●	●							●			●		●	●	●	●	●	15
2.5 (b)	Installations for the melting, including the alloyage, of non-ferrous metals, including recovered products, (refining, foundry casting, etc.) with a melting capacity exceeding 4 tonnes per day for lead and cadmium or 20 tonnes per day for all other metals			●	●	●	●	●	●	●	●							●			●		●	●	●	●	●	15
2.6	Installations for surface treatment of metals and plastic materials using an electrolytic or chemical process where the volume of the treatment vats exceeds 30 m³	●	●	●	●	●	●		●	●	●							●			●		●	●	●	●	●	16
3.1	Installations for the production of cement clinker in rotary kilns with a production capacity exceeding 500 Tonnes per day or lime in rotary kilns with a production capacity exceeding 50 tonnes per day or in other furnaces with a production capacity excee																											0
3.2	Installations for the production of asbestos and the manufacture of asbestos-based products					●												●						●				3
3.3	Installations for the manufacture of glass including glass fibre with a melting capacity exceeding 20 tonnes per day			●					●	●														●			●	5
3.4	Installations for melting mineral substances including the production of mineral fibres with a melting capacity exceeding 20 tonnes per day	●	●		●	●	●	●	●	●	●								●					●			●	12
3.5	Installations for the manufacture of ceramic products by firing, in particular roofing tiles, bricks, refractory bricks, tiles, stoneware or porcelain, with a production capacity exceeding 75 tonnes per day, and/or with a kiln capacity exceeding 4 m³ and	●	●		●	●	●	●	●	●	●								●					●			●	12
4.1 (a)	Chemical installations for the production of basic organic chemicals, such as simple hydrocarbons (linear or cyclic, saturated or unsaturated, aliphatic or aromatic)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.1 (b)	Chemical installations for the production of basic organic chemicals, such as oxygen-containing hydrocarbons such as alcohols, aldehydes, ketones, carboxylic acids, esters, acetates, ethers, peroxides, epoxy resins	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24

Table 2 Indicative sector specific sub-lists of water pollutants (page 2 of 3)

IPPC	Source categories of Annex I activities (according to Annex A3 of the EPER Decision)	Total - Nitrogen	Total - Phosphorus	As and compounds	Cd and compounds	Cr and compounds	Cu and compounds	Hg and compounds	Ni and compounds	Pb and compounds	Zn and compounds	Dichloroethane-1,2 (DCE)	Dichloromethane (DCM)	Chloro-alkanes (C10-13)	Hexachlorobenzene (HCB)	Hexachlorobutadiene (HCBD)	Hexachlorocyclohexane(HCH)	Halogenated organic compounds (AOX)	Benzene, toluene, ethylbenzene, xylenes	Brominated diphenylether	Organotin – compounds	Phenols	Polycyclic Aromatic Hydrocarbons	Total organic carbon (TOC)	Chlorides	Cyanides	Fluorides	Number of pollutants
4.1 (c)	Chemical installations for the production of basic organic chemicals, such as sulphurous hydrocarbons	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.1 (d)	Chemical installations for the production of basic organic chemicals, such as nitrogenous hydrocarbons such as amines, amides, nitrous compounds, nitro compounds, or nitrate compounds, nitriles, cyanides, isocyanides	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.1 (e)	Chemical installations for the production of basic organic chemicals, such as phosphorus-containing hydrocarbons	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.1 (f)	Chemical installations for the production of basic organic chemicals, such as halogenic hydrocarbons	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.1 (g)	Chemical installations for the production of basic organic chemicals, such as organometallic compounds	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.1 (h)	Chemical installations for the production of basic organic chemicals, such as basic plastic materials (polymers synthetic fibres and cellulose-based fibres)	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.1 (i)	Chemical installations for the production of basic organic chemicals, such as synthetic rubbers	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.1 (j)	Chemical installations for the production of basic organic chemicals, such as dyes and pigments	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.1 (k)	Chemical installations for the production of basic organic chemicals, such as surface-active agents and surfactants	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●	●		●		●	●	24
4.2 (a)	Chemical installations for the production of basic inorganic chemicals, such as gases, such as ammonia, chlorine or hydrogen chloride, fluorine or hydrogen fluorides, carbon oxides, sulphur compounds, nitrogen oxides, hydrogen, sulphur dioxide, carbonyl c	●	●		●	●	●	●	●	●	●							●	●					●		●	●	14
4.2 (b)	Chemical installations for the production of basic inorganic chemicals, such as acids, such as chromic acid, hydrofluoric acid, phosphoric acid, nitric acid, hydrochloric acid, sulphuric acid, oleum, sulphurous acids	●	●		●	●	●	●	●	●	●							●	●					●		●	●	14
4.2 (c)	Chemical installations for the production of basic inorganic chemicals, such as bases, such as ammonium hydroxide, potassium hydroxide, sodium hydroxide	●	●		●	●	●	●	●	●	●							●	●					●		●	●	14
4.2 (d)	Chemical installations for the production of basic inorganic chemicals, such as salts, such as ammonium chloride, potassium chlorate, potassium carbonate, sodium carbonate, perborate, silver nitrate	●	●		●	●	●	●	●	●	●							●	●					●		●	●	14
4.2 (e)	Chemical installations for the production of basic inorganic chemicals, such as non-metals, metal oxides or other inorganic compounds such as calcium carbide, silicon, silicon carbide	●	●		●	●	●	●	●	●	●							●	●					●		●	●	14
4.3	Chemical installations for the production of phosphorous-, nitrogen- or potassium-based fertilisers (simple or compound fertilisers)	●	●		●			●		●														●		●	●	8
4.4	Chemical installations for the production of basic plant health products and of biocides	●	●	●	●	●	●	●	●	●	●						●	●	●		●	●		●				16
4.5	Installations using a chemical or biological process for the production of basic pharmaceutical products	●	●								●							●	●			●		●				7
4.6	Chemical installations for the production of explosives	●	●	●	●	●	●	●	●	●	●						●	●			●	●		●				15

Table 2 Indicative sector specific sub-lists of water pollutants (page 3 of 3)

IPPC	Source categories of Annex I activities (according to Annex A3 of the EPER Decision)	Total - Nitrogen	Total - Phosphorus	As and compounds	Cd and compounds	Cr and compounds	Cu and compounds	Hg and compounds	Ni and compounds	Pb and compounds	Zn and compounds	Dichloroethane-1,2 (DCE)	Dichloromethane (DCM)	Chloro-alkanes (C10-13)	Hexachlorobenzene (HCB)	Hexachlorobutadiene (HCBD)	Hexachlorocyclohexane(HCH)	Halogenated organic compounds (AOX)	Benzene, toluene, ethylbenzene, xylenes	Brominated diphenylether	Organotin – compounds	Phenols	Polycyclic Aromatic Hydrocarbons	Total organic carbon (TOC)	Chlorides	Cyanides	Fluorides	Number of pollutants
5.1	Installations for the disposal or recovery of hazardous waste as defined in the list referred to in Article 1 (4) of Directive 91/689/EEC, as defined in Annexes II A and II B (operations R1, R5, R6, R8 and R9) to Directive 75/442/EEC and in Council Direct	●	●	●	●	●	●	●	●	●	●							●					●	●	●	●		15
5.2	Installations for the incineration of municipal waste as defined in Council Directive 89/369/EEC of 8 June 1989 on the prevention of air pollution from new municipal waste incineration plants (3) and Council Directive 89/429/EEC of 21 June 1989 on the red	●	●	●	●	●	●	●	●	●	●							●					●	●	●		●	15
5.3	Installations for the disposal of non-hazardous waste as defined in Annex II A to Directive 75/442/EEC under headings D8 and D9, with a capacity exceeding 50 tonnes per day	●	●	●	●	●	●	●	●	●	●							●						●	●	●		14
5.4	Landfills receiving more than 10 tonnes per day or with a total capacity exceeding 25.000 tonnes, excluding landfills of inert waste	●	●		●	●	●	●	●	●	●							●						●		●		12
6.1 (a)	Industrial plants for the production of pulp from timber or other fibrous materials	●	●		●	●	●	●	●	●	●							●			●			●				12
6.1 (b)	Industrial plants for the production of paper and board with a production capacity exceeding 20 tonnes per day	●	●		●	●	●	●	●	●	●							●			●			●				12
6.2	Plants for the pre-treatment (operations such as washing, bleaching, mercerisation) or dyeing of fibres or textiles where the treatment capacity exceeds 10 tonnes per day	●	●		●	●	●	●	●	●	●							●	●	●		●	●	●	●			16
6.3	Plants for the tanning of hides and skins where the treatment capacity exceeds 12 tonnes of finished products per day	●	●	●		●	●											●						●	●			8
6.4 (a)	Slaughterhouses with a carcase production capacity greater than 50 tonnes per day	●	●																					●	●			4
6.4 (b)	Treatment and processing intended for the production of food products from: - animal raw materials (other than milk) with a finished product production capacity greater than 75 tonnes per day - vegetable raw materials with a finished product production capacity greater than 300 tonnes per day (average value on a quarterly basis)	●	●																					●	●			4
6.4 (c)	Treatment and processing of milk, the quantity of milk received being greater than 200 tonnes per day (average value on an annual basis)	●	●																					●	●			4
6.5	Installations for the disposal or recycling of animal carcases and animal waste with a treatment capacity exceeding 10 tonnes per day	●	●			●	●				●							●						●				7
6.6 (a)	Installations for the intensive rearing of poultry or pigs with more than 40.000 places for poultry	●	●				●				●													●				5
6.6 (b)	Installations for the intensive rearing of poultry or pigs with more than 2.000 places for production pigs (over 30 kg)	●	●				●				●													●				5
6.6 (c)	Installations for the intensive rearing of poultry or pigs with more than 750 places for sows	●	●				●				●													●				5
6.7	Installations for the surface treatment of substances, objects or products using organic solvents, in particular for dressing, printing, coating, degreasing, waterproofing, sizing, painting, cleaning or impregnating, with a consumption capacity of more th	●	●	●	●	●	●		●	●	●		●	●				●			●	●	●	●		●	●	18
6.8	Installations for the production of carbon (hard-burnt coal) or electrograhite by means of incineration or graphitization																						●	●				2

APPENDIX 6 REFERENCES

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European Commission

“Guidance Document for EPER implementation”

Luxembourg: Office for Official Publications of the European Communities

2000— 95 pp. — 21,0 x 29,7 cm

ISBN 92-894-0279-2
CATALOGUE NUMBER : KH-33-00-106-EN-C