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PRTR Guidance Manual

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TABLE OF CONTENT

Table of Content	3
Abbreviations	4
Executive Summary	5
Part I: Generalities	7
1. Definitions	8
2. Implementing scheme and system	9
Part II: Guidelines	10
3. Scope of PRTR.....	10
4. Identification of the facility.....	11
5. Pollutants	11
6. Releases and off-site transfers.....	13
7. Data submission	16
8. Quantification and assessment of releases and off-site transfers.....	17
9. Selection of methodology ‘M’, ‘C’ or ‘E’.....	19
10. Measurement methods (code ‘M’)	20
11. Calculation methods	22
12. Estimation methods	23
13. Quality assessment	24
14. Confidentiality	25
Part III: Questionnaire	28
15. General information.....	28
15.1 Declaration	28
15.2 Identification	28
15.3 Activities.....	30
15.4 Resources and energy	30
15.5 Permits	31
15.6 Inspections	31
16. Releases to air, water and land - Off-site transfers in wastewater	32
16.1 Releases to Air.....	32
16.2 Releases to Water	33
16.3 Releases to Land.....	33
16.4 Off-site transfer in wastewater.....	34
17. Off-site transfers of waste	34

ABBREVIATIONS

CAS	Chemical Abstracts Service
CEMS	Continuous Emission Monitoring System
CEN	Comité Européen de Normalisation (European Committee for Standardisation)
CRM	Certified Reference Materials
CORINAIR	Core Inventory of Air Emissions
EEA	European Environment Agency
EMAS	Eco-Management and Audit Scheme
EMEP	Co-operative programme for monitoring and evaluation of the long range transmission of air pollutants in Europe
EN	European Norm
EPER	European Pollutant Emission Register
E-PRTR	European Pollutant Release and Transfer Register
IMPEL	European Network for the Implementation and Enforcement of Environmental Law
IPCC	Intergovernmental Panel on Climate Change
IPPC	Integrated Pollution Prevention and Control
ISO	International Organization for Standardization
ISO 14001	The International Standard for Environmental management systems – Requirements with guidance for use, 2004
MoEFWA	Ministry of Environment, Forestry and Water Administration
NACE-code	Code according to Commission Regulation 29/2002/EC of 19December 2001 amending Council Regulation (EEC) No 3037/90 on the statistical classification of economic activities in the European Community
NEA	National Environmental Agency
PEM	Predictive Emission Monitoring
REA	Regional Environmental Agency
UNECE	United Nations Economic Commission for Europe
US EPA	Environmental Protection Agency (U.S.A.)

EXECUTIVE SUMMARY

The Draft Decision Council of Ministers for PRTR (Draft 3 Final of 28 January 2010) prepared by INPAEL Project – hereafter referred to as the Decision - concerns the implementation of pollutant release and transfer register in the Republic of Albania.

The Decision is in line with the EC Regulation 166/2006 of the European Parliament and of the Council (hereafter referred to as the 'E-PRTR Regulation') concerning the establishment of a European Pollutant Release and Transfer Register and amending Council Directives 91/689/EEC and 96/61/EC" implementing at the EU level the UNECE PRTR (or Kiev) protocol.

The present document provides guidance on the various reporting processes to be followed for PRTR reporting as set out in the Decision.

The Decision aims to enhance public access to environmental information in the form of a publicly accessible electronic database. The establishment of a coherent and integrated PRTR at the State level will thereby contribute to the prevention and reduction of pollution, by delivering data for policy makers and facilitating public participation in environmental decision-making. It will give the public, industry, scientists, insurance companies, local authorities, non-governmental organisations and other decision-makers a solid database for comparisons and future decisions in environmental matters.

The Decision includes specific information on releases of pollutants to air, water and land and off-site transfers of waste and of pollutants in wastewater. Those data have to be reported by operators of facilities carrying out specific activities.

THE PRTR REPORTING OBLIGATIONS AS PRESCRIBED IN THE DECISION AND DETAILED IN THE PRESENT DOCUMENT DO NOT REPLACE AND/OR REPEAL THE OTHER REPORTING OBLIGATIONS SUCH AS THOSE INDICATED IN THE ENVIRONMENTAL PERMIT DELIVERED BY THE COMPETENT AUTHORITIES.

Article 29 of the Decision provides that "*The detailed instruments and methodologies for the proper implementation of the PRTR shall be endorsed by the Minister and shall include:*

- a. *reporting procedures;*
- b. *monitoring procedures;*
- c. *the data to be reported;*
- d. *quality assurance and assessment;*
- e. *indication of type of withheld data and reasons why they were withheld in the case of confidential data;*

- f. reference to internationally approved release determination and analytical methods and sampling methodologies;*
- g. coding of activities according to Annex I to this Decision.”*

In accordance with the provisions of the PRTR Decision, facility operators to whom the Decision applies have to report specific data to the competent authority(ies) i.e. the NEA. The NEA transmits those data to the MoEFWA and other frontline Ministries and also has the obligation to make them publicly accessible in an electronic database and to forward them to the EU/EEA.

The present document provides instructions on the various reporting processes as set out in the PRTR Decision. A first chapter is dedicated to the overall structure and to the related organisational aspects of the scheme set up for implementing the PRTR Decision. The present document is divided into three parts:

- Generalities and background information: definition of terms, PRTR scope and implementing scheme.
- Questionnaire: this part describes of the obligations to be followed by the facilities in reporting.

Additional supporting information is provided in Appendixes.

The competent authorities may review, and where necessary amend this guidance document and the associated appendices.

Remark

The term "Annex" is used for the annexes of the Decision while the term "Appendix" applies to the annexes to the present document.

PART I: GENERALITIES

1. DEFINITIONS

CAS (Chemical Abstracts Service) Registry Numbers¹ are universal and precise identifiers of individual chemical compounds. The second column of Annex 1 to the PRTR Decision indicates the CAS number of each pollutant, when available.

Determination limit means the limit of quantification defined as the minimum concentration or amount of a substance for which specified requirements for a given set of relevant quality criteria are fulfilled.

Diffuse sources means the many smaller or scattered sources from which pollutants may be released to land, air or water, whose combined impact on those media may be significant and for which it is impractical to collect reports from each individual source.

Disposal means any of the operations defined in local ref. Law.

Facility means one or more installations on the same site that are operated by the same natural or legal person.

Hazardous waste means any waste which is defined by separate regulations and which has one or more of the properties that are hazardous to human health and to the environment due to its origin, composition or concentration, as well as the waste in waste list which is specified as hazardous and regulated by local ref. Law.

Installation: means a stationary technical unit where one or more activities listed in Annex 1 as having PRTR reporting obligations, 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. Several "technical units" on the same site should be considered as one installation if one of the activities is directly associated with the other or both units are served by the same activity (located on the same site). The 'same site' means the same location and is a question of judgement for each facility.

Off-site transfer means the transfer outside the boundaries of the site of waste designated for disposal or recovery and of pollutants in wastewater designated for wastewater treatment via sewer or other transport mechanism.

¹ <http://www.cas.org/expertise/cascontent/registry/regsys.html> (as on 03/3/2011)

Operator means a natural or legal person who is the responsible person or the manager of the facility and has the authority for the day-to-day management of the facility and the ability to ensure compliance with the permit. The operator may be the owner of the site.

Pollutant means a substance or a group of substances that may be harmful to the environment or to human health on account of its properties and of its introduction into the environment.

Recovery: means any of the operations defined in ref. Law.

Reporting year: means the calendar year for which data on releases and transfers of pollutants outside the site must be collected.

Release means any introduction of pollutants into the environment as a result of any human activity, whether deliberate or accidental, routine or non-routine, including spilling, emitting, discharging, injecting, disposing or dumping, or through sewer systems without final wastewater treatment.

Reporting year means the calendar year for which data on releases of pollutants and off-site transfers must be gathered.

Site means the geographical location of the facility.

Substance means any chemical element and its compounds, with the exception of radioactive substances.

Waste means any substance or objects that the holder disposes or intends to dispose or is required to dispose pursuant to one of the waste categories listed in ref. Law.

Wastewater means urban, domestic and industrial used water containing pollutants.

Water treatment, and any other used water, which is subject, because of the substances or objects it contains, to regulation by Community law.

2. IMPLEMENTING SCHEME AND SYSTEM

The scheme implemented for fulfilling PRTR requirements is visualised in the following figure.

PRTR organisational scheme

Facilities are responsible for measuring, calculating or estimating overall emissions in accordance with the provisions laid down in the PRTR Decision and the obligations stipulated in their integrated environmental permit.

Reporting on emissions and releases must be done **by 1 April** of the year following the reporting year and according to the rules contained in the present document (art.19).

Reports on releases and emissions from facilities are **transmitted directly to the NEA at the national level**. In parallel, the same reports may be sent to the REAs when relevant. **For reporting to the NEA, the operator will use the computerised input module**. The NEA will also produce, as a separate document, a user manual on how to operate the input module.

The NEA will process the standardised files received from the facilities. Main responsibilities of the NEA are:

- validate the data and information received;
- insert information and data received from the facilities within the central national database;
- manage this database and produce summary reports addressed to policy and decision makers as well as to the public;
- ensure web access to the database to the public by end December of the year following the reporting year as well as
- generate reports and fulfil international data reporting obligations by end December of the year following the reporting year.

PART II: GUIDELINES

3. SCOPE OF PRTR

The Decision concerns facilities carrying out one or more activities listed in its Annex 1.

The PRTR activities are grouped in 9 activity sectors:

1. energy,
2. production and processing of metals,
3. mineral industry,
4. chemical industry,
5. waste and wastewater management,
6. paper and wood production and processing,
7. intensive livestock production and aquaculture,
8. animal and vegetable products from the food and beverage sector and
9. other activities.

The activities include in particular activities covered by Directive 96/61/EC (the "IPPC" Directive), as well as thermal power stations, mining, quarrying and metalworking industries, chemical plants, paper and timber industries and also waste and wastewater treatment plants.

Facility means one or more installations on the same site that are operated by the same natural or legal person (see definition). The same site means the same location. A site does not become two sites merely because two parcels of land are separated by a physical barrier such as a road, a railway or a river.

If one operator carries out several activities at the same facility at the same site, the capacities of such activities will be added together. The production capacities of the individual activities should be aggregated at the Annex 1 level. The sum of the capacities is then compared with the capacity threshold for the specific Annex 1 PRTR activity.

When the capacity threshold is exceeded, there is an obligation for the facility's operator to report releases and off-sites transfer of the pollutants and substances specified in Annex 2 of the PRTR Decision where 91 pollutants are listed. These pollutants are of concern for one or more of the three environmental sectors of interest (air, water and land).

Facilities must report **on all pollutants** for which monitoring provisions are **specified in their environmental permit** as well **on all other relevant sector specific pollutants** listed in Appendixes 1 (for air) and 2 (for water) to the present Guidance

with the additional condition that certain release threshold values or threshold values for off-site transfer of pollutants in waste water destined for wastewater treatment or threshold values for waste must also be exceeded. For releases of pollutants to air, water and land and for off-site transfers of pollutants in wastewater the corresponding threshold values are specified for each pollutant in Annex II of the PRTR Decision.

4. IDENTIFICATION OF THE FACILITY

The NEA will attribute a **unique identifying code to each facility**. This code, specified in the environmental permit, will be used by the facility for reporting to the NEA. Identification code should not be changed unless there is an overriding need to do so.

In case of changes occurring at the facility such as closure, relocation, severance or merger of facilities, the operator will inform the NEA. The NEA will evaluate the necessity to attribute a new identification code. If deemed necessary, a new code will be communicated to the facility.

In general the following recommendations apply in respect of any change of identification numbers:

- in the case of relocation of a facility, the facility will be identified with a new code;
- if a facility changes only its operator name or parent company, the identification number will remain the same;
- if a facility merges with another facility at the same site, a new identification number shall be issued. A new reporting facility shall, when reporting, indicate a new identification number with a reference to previous identification numbers of merged facilities;
- in case the reporting facility is divided into two or more facilities out of which only one remains a reporting facility, the identification number shall remain the same for that facility.
- in case the reporting facility is divided into two or more new reporting facilities, a new identification number shall be issued for each new reporting facility. All the new reporting facilities shall, when reporting indicate new identification number with a reference to identification number of divided facility.

It would be helpful if, for every reporting year, the facility reports in the "Textual information" field of the facility report any changes to the "history" of the facility for the last ten years.

5. POLLUTANTS

Annex 2 of the Decision lists the 91 pollutants that are relevant for reporting under PRTR. A sequential number, the CAS number and the abbreviation are given for each pollutant.

The Pollutants that are mainly focused on in the PRTR list include greenhouse gases, acid rain pollutants, ozone-depleting substances, heavy metals and certain carcinogens such as dioxins.

As mentioned under 3., facilities must report **on all pollutants** for which monitoring provisions are **specified in their environmental permit** as well **on all other relevant sector specific pollutants** listed in Appendixes II (for air) and III (for water) to the present Guidance with the additional condition that certain release threshold values or threshold values for off-site transfer of pollutants in waste water destined for wastewater treatment or threshold values for waste must also be exceeded. For releases of pollutants to air, water and land and for off-site transfers of pollutants in wastewater the corresponding threshold values are specified for each pollutant in Annex 2 of the PRTR Decision.

Any activity within a facility is usually related to a typical pollutant release spectrum. The Appendices I and II of the present document contain two tables giving lists of pollutants for air and water potentially released in the performance of a specified PRTR-relevant activity. Where a facility that performs a PRTR-relevant activity releases additional pollutants not specified for that activity in the tables, but contained in Annex 2 to the PRTR Decision, the pollutants have to be reported.

Both tables are **indicative only** and should not be interpreted as a standard list of parameters. To decide which parameters are relevant to each specific activity, Appendices I and II should be referred to together with information contained in permit applications, site inspection reports, process flow sheets, material balances, read-across of similar operations elsewhere, engineering judgements, published and peer-reviewed literature and the results of previous measurement exercises. As a result, it might be – this is often the case – that for a certain activity fewer or possibly more pollutants than indicated have to be considered.

In practice, the PRTR Decision Annex 1 pollutants that are relevant for reporting purposes will be decided for each facility on a case-by-case basis. To decide which parameters are relevant to each specific installation, Appendices I and II should be referred to, together with information contained in Environmental Impact Assessments (EIAs), permit applications, site inspection reports, process flow sheets, material balances, read-across of similar operations elsewhere, engineering judgments, published and peer-reviewed literature and the results of previous measurement exercises. As a result, it might be that for a certain activity fewer or possibly more pollutants than indicated have to be considered. Extensive release monitoring campaigns should be avoided. However, in case of doubt, a representative measurement might result in more certainty. In most cases plausibility checks will be sufficient to determine whether a certain pollutant could be released.

The **background load** of a certain pollutant in water may be taken into account when assessing releases. For example, if water is collected at the site of the facility from a neighbouring river, lake or sea as process or cooling water, and afterwards released from the site of the facility **into the same river, lake or sea**, the “release” caused by the background load of that pollutant can be subtracted from the total release of the facility. The sampling of water and measurements of pollutants in collected inlet and released outlet water must be carried out in a way ensuring representativeness of the conditions occurring over the reporting period. If the additional load results from the use of extracted groundwater or drinking water, it should not be subtracted since it increases the load of the pollutant in the river, lake or sea.

If concentrations in releases are **below quantification or detection limits** this does not always allow conclude that emissions are not significant. This can happen when pollutants are “diluted” below the determination limit e.g. in large wastewater or exhaust air volumes generated by facilities. Possible procedures to determine releases in such cases include measurement closer to the source (e.g. measurement in part streams before entering a central treatment plant) and/or estimation of releases e.g. on the basis of pollutant elimination rates in the central treatment plant.

6. RELEASES AND OFF-SITE TRANSFERS

The total releases to air, water and land shall include all releases from all sources included in Annex 1 to the PRTR decision at the site of the facility (there are special considerations for land releases - art. 9²).

Reported **releases and off-site transfers** are totals of releases and off-site transfers from all **deliberate, accidental, routine and non-routine** activities of the facility. It covers both fugitive and diffuse emissions

Non-routine activities are **extraordinary activities** that are carried out under controlled operation of Annex 1 activities and that may lead to increased releases of pollutants. For example: shut-down and start-up processes before and after maintenance operations.

Accidental releases are defined as all releases which are **not deliberate, routine or non-routine, and resulting from uncontrolled developments** in the course of the operation of Annex 1 activities on the site of the facility. Operators are obliged to specify any data that relate to accidental releases.

² Waste which is subject to ‘land treatment’ or ‘deep injection’ disposal operations shall be reported as a release to land only by the operator of the facility originating the waste.

As mentioned above, the quantity of accidental releases has to be included in the total quantity of releases. Usually it is possible to quantify accidental releases. Quantification might, for example, be possible on the basis of determination of residual quantities in tubes or tanks or by considering the duration of an accidental release and relating this to assumed flow rates. In particular cases it might, however, be impossible to evaluate quantities for all relevant pollutants particularly when accidental releases to air also occur.

Fugitive and diffuse emissions, mostly relating to air, are emissions that are not released via one point source, like vents or stacks. Examples of fugitive emissions include exhaust emissions from vehicles, evaporative emissions from vehicle fuel tanks, volatilisation from vats and other storage tanks, open vessels, material handling, etc. Emissions from ridgeline roof vents, louvers and open doors of a building, equipment leaks and flanges are other examples of fugitive emissions.

An **off-site transfer of pollutants in wastewater** means the movement beyond the boundaries of a facility of pollutants in wastewater destined for wastewater treatment including industrial wastewater treatment. In other words, it comprises all relevant substances transferred outside the facility to wastewater treatment plant via sewer or other means, for example, by tanker.

An **off-site transfer of waste** means the movement of wastes arising from process-related activities and transferred beyond the boundaries of a facility for disposal or recovery.

Releases and off-site transfers originating from remediation measures (for example decontamination of polluted soil or groundwater) on the site of the facility shall be reported if the original contamination is related to an ongoing Annex 1 activity.

Releases and off-site transfers of wastewater have to be reported in terms of the quantity of pollutants released in kg/year with three significant digits. The rounding 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 examples.

Original result of the release determination in kg/year	Results to be reported in kg/year (with three significant digits)
0,0123456	0,0123
1,23789	1,24
123,45	123
1.023,789	1.020
10.009 kg/year	10.000

Similarly off-site transfers of waste have to be reported with three significant digits.

Information on the method used to derive the information for reporting on these pollutants, the type of waste (hazardous, non-hazardous) and the intended waste treatment (recovery, disposal), as well as institutions/companies that will perform treatment or final disposal have to be reported. The waste destination(s) (name and address of recoverer/disposer and the address of the actual site of recovery/disposal) are required.

If a facility carries out **both Annex 1 and non-Annex 1 activities**, the releases and off-site transfers from non-Annex 1 activities are excluded from the reported data. However, when it is not possible to separate and quantify the contributions of the non-Annex 1 activities, e.g. where no sampling point for the non-Annex 1 activity exists (e.g. in the case of highly interlaced sewer systems), it might be practical and cost effective to report the releases from non-Annex 1 activities together with those from Annex 1 activities.

The following table gives an overview of the specifications corresponding to the reporting requirements for facilities in accordance with the PRTR Decision.

Releases	Medium	Quantity ¹	M/C/E ³	Method used ⁴		
	to air	kg/year ²	✓	✓		
	to water	kg/year ²	✓	✓		
	to land	kg/year ²	✓	✓		
Off site transfers	Handling	Quantity ¹	M/C/E ³	Method used ⁴	Recoverer/disposer: name & address	Actual site address
pollutants in wastewater ⁵		kg/year ²	✓	✓		
non-hazardous waste	for disposal	t/year	✓	✓		
	for recovery	t/year	✓	✓		
hazardous waste within the country	for disposal	t/year	✓	✓		
	for recovery	t/year	✓	✓		
hazardous waste transboundary	for disposal	t/year	✓	✓	✓	✓
	for recovery	t/year	✓	✓	✓	✓

- 1 quantities are totals of releases from all deliberate, accidental, routine and non-routine activities at the site of the facility or of off-site transfers.
- 2 the total quantity of each pollutant; in addition, any data that relate to accidental releases have to be reported separately whenever available.

- 3 it has to be indicated whether the reported information is based on measurement (M), calculation (C) or estimation (E). See chapters 9-12 of this document.
- 4 Where data are measured or calculated, the method of measurement and/or the method for calculation shall be indicated.
- 5 Off-site transfer of each pollutant destined for wastewater treatment.

7. DATA SUBMISSION

Reports on releases and emissions from PRTR facilities are submitted directly to the NEA. In parallel, the same reports will also be sent to the local REA when prescribed in the environmental permit. **Reports on releases and emissions from PRTR facilities do not replace any other reporting obligations prescribed in the environmental permit.**

The NEA will provide the operator with a **data input module**. This module, covering all requirements laid down in the PRTR Decision and its Annexes, allows operators to input all necessary data and generates both *pdf* and *xml* files. Both files are automatically transmitted by email to the NEA (predefined addresses). In case of any change to the input module or in case the operator was not provided with the input module when obtaining the environmental permit, the NEA shall inform the operator of the facility obliged to report on how the input module may be obtained.

Before forwarding the data to the NEA, the operator shall ensure an appropriate quality of the data by ensuring that the information is complete, consistent and credible (see chapter 13).

If an operator of a facility has justifiable reasons that specific information concerning releases or off-site transfers should be kept confidential, he shall inform the competent authorities thereof (see chapter 14). The input module allows indicate for which data confidentiality is requested.

In case the operator, either upon request of the NEA or on voluntary basis, wants to modify, correct or complete a report already submitted, the operator will resubmit the **complete updated report**. The resubmitted report will replace the previously submitted one and will be considered as the official report.

Operators are obliged to keep records of the data from which the reported information was derived and a description of the methodology used for data gathering for a period of five years.

Reporting concerning releases and transfers for a year (X) must be communicated by 1 April of the following year (X+1). For example, reporting on emissions in 2012 (reporting year) will be reported by 1 April June 2013 at the latest.

8. QUANTIFICATION AND ASSESSMENT OF RELEASES AND OFF-SITE TRANSFERS

Reporting shall be carried out based on measurement, calculation or estimation of releases and off-site transfers.

Measured

Release data are based on measurements (class 'M'). Additional calculations are needed to convert the results of measurements (concentration) into annual release data (mass). For these calculations the results of flow determinations are needed. 'M' is used when the releases of a facility are derived from direct monitoring results for specific processes at the facility, based on actual continuous or discontinuous measurements of pollutant concentrations for a given release route. 'M' should also be used when the annual releases are determined based on the results of short term and spot measurements.

More details are given in chapter 10.

Calculated

Release data are based on calculations (class 'C') using activity data (fuel used, production rate, etc.) and emission factors or mass balances. In some cases more complicated calculation methods need to be applied, using variables like temperature, global radiance etc.

More details are given in chapter 11.

Estimated

Release data are based on non-standardised estimations (class 'E') when the releases are determined by best assumptions or expert guesses that are not based on publicly available references or in case of absence of recognised emission estimation methodologies or good practice guidelines.

More details are given in chapter 12.

Data collection will be done in accordance with **internationally approved methodologies** where such methodologies are available. The following methodologies are considered as internationally approved:

Measurement 'M'

- CEN and ISO standards as measurement methodologies,

Calculation 'C'

- "Guidelines for the monitoring and reporting of greenhouse gas emissions under Emission Trading Scheme",
- the "IPCC Guidelines" and

- the “UN-ECE/EMEP Atmospheric Emission Inventory Guidebook” as calculation methodologies.

The operator may use **"equivalent" methodologies** other than internationally approved methodologies, even when available, if one or more of the following conditions are fulfilled:

- The operator uses one or more measurement, calculation or estimation methodologies already prescribed by the competent authority in a licence or an operating permit for that facility (method code to be reported: **'PER'**).
 - A national or regional binding measurement, calculation or estimation methodology is prescribed by legal act for the pollutant and facility concerned (method code to be reported: **'NRB'**).
 - The operator has shown that the alternative measurement methodology used is equivalent to existing CEN/ISO measurement standards (method code to be reported: **'ALT'**).
 - The operator uses an equivalent methodology and demonstrated its performance equivalence by means of Certified Reference Materials (CRMs) according to ISO 17025 and ISO Guide 33 together with an acceptance by the competent authority (method code to be reported: **'CRM'**).
 - The calculation is a mass balance method (e.g. the calculation of NMVOC releases into air as difference from process input data and incorporation into product) and is accepted by the competent authority (method name to be reported: **'MAB'**).
 - The methodology is a European-wide sector specific calculation method, developed by industry experts, which has been delivered to relevant international organisations.
(e.g. <http://www.ipcc-nggip.iges.or.jp/mail>;
<http://www.unece.org/env/lrtap/TaskForce/tfeip/welcome.htm>).
- The methodology could be used unless it is rejected by the international organisation (method name to be reported: **'SSC'**).
- Other calculation methods shall only be used if internationally approved or equivalent methodologies are not available (method name to be reported: **'OTH'**).

Beside the codes **'M'** or **'C'** indicating that values are either measured or calculated, the codes indicated in the following table corresponding to the above mentioned cases will also be reported.

Method used for determination of releases/off-sites transfers	Designation of the method used
Measurement	
Internationally approved measurement standard	short designation of the relevant standard (e.g. EN

	14385:2004)
Measurement methodology already prescribed by the competent authority in a licence or an operating permit for that facility	PER
National or regional binding measurement methodology prescribed by legal act for the pollutant and facility concerned	NRB
Alternative measurement method in accordance with existing CEN/ISO measurement standards	ALT
Measurement methodology the performance of which is demonstrated by means of certified reference materials and accepted by competent authority	CRM
Other measurement methodology OTH	OTH
Calculation	
Internationally approved calculation method	short designation of the method used: ETS, IPCC, UNECE/EMEP
Calculation methodology already prescribed by the competent authority in a licence or an operating permit for that facility	PER
National or regional binding calculation methodology prescribed by legal act for the pollutant and facility concerned	NRB
Mass balance method which is accepted by the competent authority	MAB
European-wide sector specific calculation method	SSC
Other calculation methodology	OTH

The method used must not be reported when values are estimated ('E').

9. SELECTION OF METHODOLOGY 'M', 'C' OR 'E'

The operator of the facility has to decide before collecting the data which quantification methodology ('M', 'C' or 'E') for a certain pollutant would provide "best available information" for the reporting. Where data are measured or calculated, the method of measurement and/or the method for calculation shall also be indicated.

The Method Code section of the releases worksheets provide for only a single methodology for each Pollutant parameter. However, it may be anticipated that, for some Pollutants, a combination of different methodologies will have been used to quantify the total emission. This may be because the same Pollutant was released from several emission points in respect of which different quantification methods were used. More probably, the total may include a measured quantity released as a routine permitted emission and a calculated or estimated quantity arising from accidental or fugitive emissions.

In such cases, the methodology capturing the highest percentage of the pollutant should be ascribed to the total quantity released.

Example

A release to air of carbon dioxide is established from different air emission points using different methodologies:

Stack 1: emission sampled using international monitoring standard Code 'M' 75%

Stack 2: emission calculated using IPCC guidelines Code 'C' 20%

Stack 3: emission estimated from standby boiler Code 'E' 5%

In this instance, the overall emissions should be designated under code 'M', as the highest percentage of the pollutant was quantified by measurement.

In summary, the operator of the facility has to decide, before collecting the data, which determination methodology for a certain pollutant, whether this be a Measurement, Calculation or Estimation methodology, results in "best available information" for the reporting of the annual release of that pollutant.

10. MEASUREMENT METHODS (CODE 'M')

The method covers both periodic (discontinuous) sampling and continuous monitoring and is based on measured concentrations of the substance in a process or waste stream and volume or flow rate of that stream.

Additional calculations are needed to convert the results of measurements into annual loads.

One commonly used method is the Continuous Emission Monitoring System (**CEMS**), mainly used for pollutants emitted in air. It provides a continuous record of emissions over time, usually by reporting pollutant concentration. Once the pollutant concentration is known, emission rates are obtained by multiplying the pollutant concentration by the volumetric gas or the discharged the gases in the stack or in the duct.

It is important to note that prior to using stack testing to estimate air emissions, a protocol for collecting and averaging the data should be developed in order to ensure that the estimate is representative and satisfy the relevant environmental requirements for emission estimates.

The annual quantities should be determined with a frequency and duration of data collection sufficient over the year to give reasonably representative and comparable data. When determining the frequency, it is important to balance the requirements with emission characteristics, risk to the environment, practicalities of sampling and the costs.

Both continuous and discontinuous measurements, such as weekly / quarterly spot samples are included in class M. Often, additional calculations will be required to convert the results of spot sample measurements into annual emission data, but class M remains appropriate in such instances.

Two common formulae for calculating mass flow from discrete or spot sample results are provided below. Further common conversion equations and relevant calculation examples are provided in Appendix 3.

Calculate Mass flow mg/m³ to kg/year

To convert a normalised gas or liquid spot sample results in mg/m³ to the required Annual Mass Flow in kg per year

the concentration in mg/m³ has to be multiplied by a flow rate in m³/hr

Conc. * hourly rate

1,000,000

=

mass flow in kg per hour * hours per year

=

mass flow in kg per year

Example: (150 mg/m³ x 4000 m³/hr)/1,000,000 = 0.6 kg/hr x 8760 = 5,256 kg/yr

Calculate Mass flow mg/litre to kg/year

To convert a liquid spot sample result in **mg/litre** to the required Annual Mass Flow in **kg per year**

the concentration in **mg/litre** has to be multiplied by a volume in litres/day

Conc. * litres per day

1,000

=

mass flow in kg per day * days per year

=

mass flow in kg per year

Example: $(20 \text{ mg/litres} \times 5000 \text{ litres/day})/1,000 = 100 \text{ kg/day} \times 365 = 36,500 \text{ kg/yr}$

Data on releases and off-site transfers of pollutants in wastewater may be based on measurements. In the case of off-site transfers of waste the annual data reported are usually obtained by weighing wastes.

A list of internationally approved measurement methods for the release of pollutants into air, water and off-site transfer of wastewater is given in Appendix IV. The list covers CEN and ISO standards and provides guidance on the availability of standardised measuring methods for air and water pollutants.

11. CALCULATION METHODS

These methods are based on calculations using activity data (fuel used, production rate, etc.) and emission factors or mass balances.

Emission factors

Emission factors relate the quantity of substances emitted from a source to the activity associated with those emissions.

Emission factors are usually expressed as the weight of the substance emitted by the unit weight, volume, distance, or duration of the activity emitting the substance (for example, kilograms of Total VOCs per cubic metre of paint or ink produced).

The equation for the calculation of emissions before emission reduction controls are applied is:

$$E_x = AR \times EF_x$$

and for emissions after reduction controls are applied:

$$E = AR \times EF_x \times (1-ER/100)_x$$

where

E_x	Emission of contaminant x (in kg)
AR	Activity rate (weight, volume, distance or duration)
EF_x	Emission factor of contaminant x, in kg per unit of weight, volume, distance or duration (AR)
ER_x	Overall emission reduction efficiency of contaminant x, in %

Emission factors are available for many emission source categories and are generally based on the results of source sampling tests performed at one or more facilities within a specific industry.

In the case of off-site transfers of waste the calculation of the annual quantity of waste(s) may use factors agreed on international, national or sectoral level which, for example, indicate the waste amount in relation to the material produced or the input of raw material.

Mass balance

The general form quoted for a mass balance is: the mass that enters a system must, by conservation of mass, either leave the system or accumulate within the system.

In the absence of a chemical reaction the amount of any chemical species flowing in and out will be the same. However if there is a reaction then the mass balance equation must be amended to allow for the generation or depletion (consumption) of each chemical species.

When calculating emissions, the general equation for a mass balance is:

$$M_{\text{emitted}} = M_{\text{in}} - M_{\text{product}} - M_{\text{accumulated/depleted}}$$

where

M_{in}	Mass of compound in the raw material feed
M_{product}	Mass of compound in the finished product
$M_{\text{accumulated/depleted}}$	Mass of compound accumulated or depleted in the system

Pollution control equipment should be accounted for when mass balance calculations are performed.

An indicative list of internationally approved calculation techniques is given in Appendix V.

12. ESTIMATION METHODS

In those relatively rare cases where measurement and calculation methods are not available, or in the case of accidents, emissions data can be assessed on the basis of

engineering principles and judgment, i.e. on non-standardised estimations derived from mass balances and best assumptions.

Releases can be estimated by using knowledge of the chemical and physical processes involved, the design features of the source and an understanding of the applicable physical and chemical laws. The reliability of these estimates depends on the complexity of the process and the level of understanding of its physical-chemical properties.

To apply an engineering assessment method, four basic principles will be followed:

- Review all data pertaining to the specific source and to the industrial sector in general.
- Revise and refine the approximation as more accurate or additional data become available.
- Whenever possible, estimations should be crosschecked by using alternate methods of estimation or calculation.
- Employ good record keeping by documenting all related information for further refinement when more accurate data become available.

Predictive Emission Monitoring (**PEM**) is another type of alternative that could be used. PEM is based on developing a correlation between pollutant emission rates and process parameters. Correlation tests must be performed to develop the relationship between contaminant emission rates and process parameters. After the verification, it can be used along with operating data to estimate annual emissions from the source.

The difference between CEMS and PEM is that PEM does not need actual pollutant monitoring analyzers. However, some sensors (e.g., temperature, pressure, flow rate) and data recording systems are still needed.

An indicative list of internationally approved estimation techniques is given in Appendix VI.

13. QUALITY ASSESSMENT

Operators are responsible for the quality and validity of the information and data that they report.

If a quality assurance system such as ISO 9001:2008 ("Quality management systems – Requirements") or an environmental management system such as EMAS ("EU Eco-Management and Audit Scheme" - Regulation (EC) No 1221/2009) or ISO 14001:2004 ("Environmental management systems -- Requirements with guidance for use") or other similar/analogous national system is already being used by the facility, the reporting of the PRTR data might be included within that system to help to ensure the highest possible quality of the data.

The ISO 14000 environmental management standards exist to help organizations:

- minimize how their operations (processes etc.) negatively affect the environment (i.e. cause adverse changes to air, water, or land);

- comply with applicable laws, regulations, and other environmentally oriented requirements, and
- continually improve in the above.

ISO 14000 is similar to ISO 9000 quality management in that both pertain to the process of how a product is produced, rather than to the product itself.

Operators are obliged to use the “best available data” when preparing their reports. In accordance with article 23 of PRTR Decision, data reported by operators should be of high quality in particular as regards its completeness, consistency and credibility as defined below:

Completeness means that the reported data should cover all releases and off-site transfers of all pollutants and wastes. Completeness means also that all additionally information on the identity of the facility/activities and necessary for the assessment of the data is fully reported.

Consistency means that data shall be reported on the basis of unambiguous and uniform definitions, source identification and reliable methodologies for the determination of releases over several years to allow trend analysis. Consistent reporting will enable comparison of the reported data with previous release data of reporting facilities or with data of similar sources in other countries. In this respect a consistent use of the identification number of facilities, including the indication of changes of the identification number, is essential.

Credibility refers to the trustworthiness, authenticity or reliability of the data. If the approaches and data sources used in an inventory development project are considered consistent, then users will have an acceptable degree of confidence in the releases data developed from those techniques..

Another important issue is **transparency**. Transparency is used to represent the condition of being clear and reflecting the reality. For the interpretation of the data on releases and transfers of pollutants, it is important to know how the data collection was performed, how the releases and transfers of pollutants 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.

Operators must be able to provide evidence that their data and information meet the quality criteria detailed above.

The NEA, with the technical support of the Reference, have the duty to assess the quality of information provided by operators.

14. CONFIDENTIALITY

The decision as to which data will be kept confidential is taken by the NEA upon an indication to that effect by the operator. The data that the NEA classifies as confidential will not be transmitted to other third parties. All decisions on confidentiality taken by the MoE will be in accordance with the provisions of the PRTR Decision.

In general, all grounds of confidentiality of article 17 of the PRTR Decision can be invoked to withhold any type of information reported by operators.

Information provided by the operator shall not be published where publication or transfer to third persons might adversely affect on:

- international relations,
- national defence, public security,
- the course of justice, a court procedure, a person's right to fair trial, and/or
- criminal, administrative or disciplinary investigations.

Also, the operator may request the following information to be kept confidential:

- information that would reveal personal data and the interests of those concerned would thus be significantly affected;
- information on intellectual property rights, especially copyrights, that would be violated by making information accessible;
- information that would make commercial or industrial secrets accessible.

When considering the confidentiality of a particular type of information, the NEA shall evaluate the grounds for confidentiality and should weigh the public interest served by disclosure against the interest served by confidentiality.

In practice, confidentiality means that in the case of data regarding releases and off-site transfers of pollutants in wastewater only the name of the pollutant should be kept confidential and instead should be replaced by the name of a group of pollutants, the method of measurement/calculation could not be reported. The aggregation is done by the NEA, the facility reporting individually for each pollutant.

Groups of pollutants applying for confidential data

Groups of pollutants	Pollutant ref. number (PRTR Decision)
Greenhouse gases	1, 3, 4, 5, 9, 10
Other gases	2, 6, 7, 8, 11, 14, 15, 16, 80, 84, 85
Heavy metals	17 - 24
Pesticides	25 - 30, 32, 33, 36 39, 41, 44 - 46, 51, 59, 67, 74, 75, 77, 89
Chlorinated organic substances	31, 34, 35, 40, 42, 43, 47 - 50, 52 - 58, 60, 63, 90

Other organic substances	61, 62, 64 – 66, 68 – 73, 76, 78, 87, 88, 91
Inorganic substances	12, 13, 79, 81 – 83,

In case of confidentiality requested for waste transfers, the quantities will be kept confidential.

PART III: QUESTIONNAIRE

Remark: information marked with an asterisk (*) will be treated as confidential upon accepted confidentiality request and in accordance with the provisions given in chapter 14.

15. GENERAL INFORMATION

15.1 Declaration

1. Reporting year

The calendar year for which data on releases of pollutants and off-site transfers must be gathered.

2. Identification code of the facility

Code attributed by the Entity's MoE.

3. Report filled in by

Name and position (e.g. "head of laboratory") of the person who has filled in the questionnaire.

4. Report validated by

Name and position (e.g. "production manager") of the person who has validated the data and information included in the report.

5. Date

Date of report validation

15.2 Identification

6. Name of the parent company

A parent company is a company that owns or controls the company operating the facility (for example by holding more than 50% of the company's share capital or a majority of voting rights of the shareholders or associates).

7. Name of the facility

The operator or owner name plus location if necessary.

8. Address of the facility

Street, municipality, Canton, Entity

9. Contact person

Name and position of the person to be contacted for administrative or public enquiries.

10. Geographical coordinates

Longitude and latitude co-ordinates giving a precision of the order of at least 500 meters and referring to the geographical centre of the site of the facility. To be expressed in degree decimals.

11. River basin district

- (a)
- (b)
- (c)
- (d)
- (e)
- (f)
- (g)

12. Main economic activity name – NACE

Indicate the NACE activity name according to EU Commission Regulation 29/2002/EC of 19 December 2001 amending Council Regulation N° 3037/90 on the statistical classification of economic activities in the European Community (list in Appendix I).

13. Actual production for the reported year*

Identify the main product of the main activity carried out at the facility, the quantity produced and the relevant units of measurement.

- (h) *Product name*
- (i) *Production volume **
- (j) *Production units*

14. Number of installations at the site of the facility*

15. Number of operating hours for the reported year *

Can not exceed 24 * 365 or 366.

16. Number of employees *

In full time equivalent.

17. NUTS code

Not existing yet for BiH; **to be left at blank.**

18. Website address

Website of the facility when existing; if not, website of the parent company when existing.

19. Information on public access

Textual information.

Specific information such as email address for public enquiries, links to websites of interest etc.

20. Description of facility's activities and technical processes *

Textual information.

For first reporting year, in few short sentences description the production process (basic raw materials used, the ways of processing toward the final product, final product produced).

21. History of the facility *

Textual information.

For subsequent reporting years, information on all changes to the process and in the characteristics and types of equipment in the technological process or emission control equipment that could affect emission limits.

22. Confidentiality requested

Indicate whether confidentiality of mandatory information is requested.

23. Confidentiality justification

Indicate the reason for which confidentiality is requested.

15.3 Activities

All PRTR activities (list in Annex 1) carried out at the facility have to be listed:

- | | |
|---|-------------------------------|
| Indicate sequential number. | 24. <u>Activity number</u> |
| Give the name of the activity. | 25. <u>Activity – Annex 1</u> |
| Indicate whether this activity was in operation during the reported year. | 26. <u>Operational status</u> |

15.4 Resources and energy

27. Total annual consumption of surface water

The annual quantity of surface water directly used in the facility. To be expressed in cubic meter per year (m³/year).

28. Total annual consumption of groundwater

The annual quantity of groundwater (borehole) directly used in the facility. To be expressed in cubic meter per year (m³/year).

29. Total annual consumption of mains water

The annual quantity from mains water supply directly used in the facility. To be expressed in cubic meter per year (m³/year).

30. Total annual water consumption of the facility

Equal to surface water consumption + groundwater consumption + mains water consumption. To be expressed in cubic meter per year (m³/year).

31. Energy resources: consumption

Indicate the consumption in the indicated unit for each of the following resource when appropriate:

- Electric power in MWh
- Natural gas from public utility in GJ
- Coal in t
- Light distillate oil in t
- Heavy distillate oil in t
- Diesel in t
- Wood in t
- Biomass in t
- LPG in GJ
- Coke gas in GJ
- Bottled gas (in reservoirs) in GJ
- Other in GJ

To this end it may be need to convert fuel masses and volumes into energy equivalents using appropriate calorific values (CV, usually given as kJ or MJ per tonne or m³). The fuel's net CV (or lower heating value) rather than gross CV (or higher heating value) will be used as the basis of calculation. Net CV measures the actual energy value

of the fuel after subtraction of the energy required to vaporize the fuel's water content. Net CV is determined by subtracting the heat of vaporisation of water content in a fuel from the gross CV.

These data can be found in or calculated from the bills for monthly consumption of electric power and natural gas, or purchase of wood and other fuels.

32. Gross total raw materials consumption *

This is the annual quantity of **materials directly used** in the manufacturing process: this includes virgin raw materials, manufactured materials, wastes, by-products or recovered materials. Data have to be expressed in tonnes/year.

Calculate tonnage of raw materials as gross rather than net, i.e. include all manufacturing materials received whether or not they are contained in the final commercial product and/or by-products. It includes materials removed from the feedstock consignment on site prior to the main manufacturing process (e.g. packaging).

If deriving total tonnage of raw materials from a detailed inventory of all materials is unduly burdensome, then estimate the tonnage by scaling up from the main materials, e.g. scale up from the first 80%. This could be done by sampling the quantities of other materials to estimate their proportion of total materials, then applying this factor to the total.

15.5 Permits

For each permit, indicate:

33. Type of permit

Environmental, water, urban, construction, waste.

34. Date of application

Date on which application for obtaining the permit has been submitted to the responsible authorities.

35. Date of permit issuance

Date on which permit was issued by the competent authorities.

36. Permit number

37. Validity period

Indicate the validity end date.

15.6 Inspections

For each inspection:

38. Type of inspection

Environmental, water, forestry.

39. Date of inspection

Last date of inspection.

40. Inspector's name

41. Fulfilment

Indicate whether all permit's obligations have been fulfilled.

42. Dead line for modifications / changes requested

Indicate the date by which all modifications / changes have to be done.

43. Description of the inspection

Textual information.

44. Description of requested changes

Textual information.

16. RELEASES TO AIR, WATER AND LAND - OFF-SITE TRANSFERS IN WASTEWATER

Reporting on releases to air, water and soil/land as well as off-site transfer in wastewater will be done as described below:

For each pollutant

45. Pollutant

Select the pollutant. Provide the following information for the selected pollutant.

46. Method *

Indicate the assessment method used (measurement 'M', calculation 'C' or estimation 'E').

47. Method details *

Give details on the method used, see also chapter 9-12. Not to be reported when values are estimated ('E').

48. Total quantity *

Indicate the total quantity of the pollutant released to medium from all sources of the facility. **The total includes "routine" and "non-routine" releases, accidental releases and releases from diffuse sources.** All quantities have to be expressed in **kg/year** and with three significant digits.

49. Total accidental release *

Indicate the quantity of the pollutant accidentally released.

50. Total diffuse release (only for air) *

Indicate the quantity of the pollutant emitted by diffuse/fugitive sources.

51. Confidentiality requested

Indicate whether confidentiality is requested for the provided data.

52. Confidentiality justification

53. Comments

Textual information.

Any relevant comments such as type of accident ...

Medium specific considerations are given below.

16.1 Releases to Air

Appendix III to this guide contains an indicative sector specific sub-list of air pollutants. The list contains those air pollutants that are likely to be emitted and aids the

identification of relevant pollutants at a given facility for all PRTR activities specified in its Annex 1. A total of 60 pollutants are specified as relevant air pollutants.

'Air' includes both the inside and outside of a building in the context of total substances released. However, when quantifying the amounts released from a given point as part of the overall mass contribution, care must be taken not to double count.

Operators are obliged to specify any data that relate to accidental and diffuse releases whenever such data is available.

Fugitive and diffuse emissions are emissions that are not released via vent or stacks. Examples of fugitive emissions include exhaust emissions from vehicles, evaporative emissions from vehicle fuel tanks, volatilisation from vats and other storage tanks, open vessels, material handling, etc. Emissions from ridgeline roof vents, louvers and open doors of a building, equipment leaks and flanges are other examples of fugitive emissions.

In the case of data indicated as being based on measurement or calculation, the analytical method and/or the method of calculation shall be reported. The method has not to be indicated in case of estimation.

More details on assessment methods (measurement '**M**', calculation '**C**' and estimation '**E**') as well as standards are given in Chapters 9-12.

16.2 Releases to Water

Appendix IV of this guide contains an indicative sector specific sub-list of water pollutants. The list contains shows those water pollutants which might be emitted and aids the identification of relevant pollutants at a specific facility for all PRTR activities specified in its Annex 1.. A total of 64 pollutants are specified as relevant water pollutants.

Operators are obliged to specify any data that relate to accidental releases whenever such data is available.

In the case of data indicated as being based on measurement or calculation, the analytical method and/or the method of calculation shall be reported. The method has not to be indicated in case of estimation.

More details on assessment methods (measurement '**M**', calculation '**C**' and estimation '**E**') as well as standards are given in Chapters 9-12.

16.3 Releases to Land

The reporting on "releases into land" applies only to waste containing pollutant(s) listed in Annex 1 of the PRTR Decision, which is subject to the disposal operations "land treatment" or "deep injection". If waste is treated in such a way, this shall only be reported by the operator of the facility generating the waste.

According to column 1c, a total of 53 pollutants are specified as relevant land pollutants.

The relevant disposal operations according are mainly land treatment of oily sludges and deep injection of saline solutions underground. The off-site transfer (e.g. via pipeline) which often precedes the release to land for those cases need not be reported. Sludge and manure spreading are recovery operations and therefore shall not be reported as releases to land.

Accidental releases to land are theoretically possible (for example due to the leakage of a pipeline at the location of deep injection) but it is expected that they will only occur in very rare cases. Operators are obliged to specify any data that relate to accidental and diffuse releases whenever such data is available. However, accidental releases of pollutants onto the soil on the site of a facility (for example spillages) do not have to be reported.

In the case of data indicated as being based on measurement or calculation the analytical method and / or the method of calculation should be reported. The method has not to be indicated in case of estimation.

More details on assessment methods (measurement 'M', calculation 'C' and estimation 'E') as well as standards are given in Chapters 9-12.

16.4 Off-site transfer in wastewater

An off-site transfer of pollutants in wastewater means the movement beyond the boundaries of a facility of pollutants in wastewater destined for wastewater treatment including industrial wastewater treatment. The off-site transfer may be carried out via a sewer or any other means such as containers or (road) tankers.

Operators shall report off-site transfers of any pollutant specified in Annex 1 of the PRTR Decision (column 1b) in wastewater destined for wastewater treatment.

17. OFF-SITE TRANSFERS OF WASTE

An off-site transfer of waste means the movement beyond the boundaries of a facility of waste destined for disposal or recovery.

Operators shall report off-site transfers of hazardous waste (HW) and non hazardous waste (non-HW) for any operations of recovery or disposal with the exception of the disposal operations of land treatment and deep injection, as these have to be reported as releases to land (see 20.3)

All data have to be expressed **in tonnes/year** of (normal) wet waste and with three significant digits.

The operator has to indicate whether the waste is destined for recovery (code 'R') or for disposal (code 'D'). If the waste is destined for waste treatment which includes both recovery and disposal operations, the treatment operation for which more than 50% of the waste is destined should be reported. In those rare cases where the operator is not able to trace whether more than 50% of the waste is disposed or recovered, code "D" should be used.

For transboundary transports of hazardous waste, the name and address of the recoverer or the disposer of the waste and the actual recovery or disposal site have to be reported.

Operators should indicate whether the amount of waste was measured (e.g. by the method of weighing), calculated (e.g. by emission or release factors) or estimated.

The information to be reported is as follows:

54. Type

Indicate type of waste: non hazardous, hazardous waste - outside country, hazardous waste - inside country.

55. Waste handling operation or treatment

Indicate whether recovered (recycled/reused) or disposed ('R' or 'D').

56. Quantity *

In tons per year.

57. Method *

Indicate the assessment method (measurement 'M', calculation 'C' or estimation 'E').

58. Method details *

Give details on the method used, see also chapter 9-12. Not to be reported when values are estimated ('E').

59. Recoverer or disposer details

Indicate name and address of the disposer or recoverer

60. Location (address) of actual treatment

61. Comments

Textual information.
Any relevant comment.