

Answers to Frequently Asked Questions

on

Greenhouse Gas Emissions Monitoring and Reporting under the EU Emissions Trading System Pursuant Directive 2003/87/EC

September 2007

Introduction

This document aims to answer a number of frequently asked questions concerning the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC. The two main relevant legal documents are Commission Decision 2004/156/EC of 29 January 2004 (here referred to as “MRG 2004”) and its successor Commission Decision C(2007)3416 of 18 July 2007 (here referred to as “MRG 2007”).

The answers do not constitute a legally binding opinion of the Commission.

I. Legal issues and definitions

1. What is the scope of the EU Monitoring and Reporting Guidelines?

The MRG 2004 are set out in Commission Decision 2004/156/EC, adopted pursuant to Article 14 of the Emissions Trading Directive and were published in the Official Journal (OJ L59 of 26 February 2004). The Commission Decision containing the MRG is addressed to the Member States. Member States must ensure that the provisions of the monitoring guidelines are applied in the monitoring and annual reporting of greenhouse gas emissions of each of the installations covered by the EU greenhouse gas emission allowance trading scheme (referred to as the EU ETS). The MRG thus provide the legally binding rules for the monitoring and reporting of greenhouse gas emissions within the EU-ETS. Member States must choose the appropriate modalities to ensure that these rules are applied by the operators of installations covered under the EU-ETS.

2. What was the scope of the review of the EU-MRG?

The MRG 2004 comprise a clause for review for the second trading period of the EU-ETS i.e. from 2008 to 2012. A revised version of the MRG has been accepted by the EU Climate Change Committee on 31 July 2006. Focus areas for the review included cost-effectiveness, harmonization and user-friendliness. The new Decision will be published in the Community languages in early 2007.

3. How will the transition work from Commission Decision 2004/156/EC to its successor?

The MRG 2007 will take effect from 1 January 2008. The MRG 2004 will be repealed on the same day. Member States, Competent Authorities, Operators and Verifiers have to comply with the requirements of the revised Commission Decision (MRG 2007) from 1 January 2008 onwards. However, for different parts of the compliance cycle slightly different times of phase-in will be required (compare Table 1) in order to provide regulatory stability over the entire first trading period.

Table 1 Overview: Transition between MRG 2004 and MRG 2007 for different parts of the compliance cycle.

Part of Compliance Cycle	Transition
Permits	All permits granted without additional specific conditions on monitoring will remain unaffected. Others may need to be assessed and re-issued. Timing: before 1/1/2008;
Monitoring Plans	Monitoring plans need to be assessed and may need new approval to be in conformity with the MRG 2007. Timing: before 1/1/2008;
Monitoring	Changes of the monitoring methodology based on changes to the monitoring plan reflecting the transition from MRG 2004 to MRG 2007 have to take effect before 1/1/2008. An overlap period may be required during the fourth quarter of 2007.
Reporting	The reporting template of the MRG 2004 shall be used until 31/3/2008 i.e. also for the reporting year 2007.
Verification	Changes of the verification approach during the auditing work for a given reporting year should be avoided. The old provisions on verification shall be used also in 2008 for the purpose of verification for the reporting year 2007.

4. What does the term “source” in the scope of the MRG mean?

Current situation:

For the determination of GHG-emissions as laid down in the MRG, “source” refers to fuel and material streams as well as to physical points of emissions.

Changes from 2008 onwards:

In the MRG 2007 a differentiation is made between “emission source”, which refers to the physical point of emissions and “source stream”, referring to annual flows of fuels, raw materials or products leading to greenhouse gas emissions.

5. What is the purpose and scope of the “monitoring methodology”?

Current situation:

The MRG define “monitoring methodology” as the methodology used for the determination of emissions specifying, how an operator of an installation will carry out the monitoring and reporting of CO₂-emissions for that specific installation. This includes amongst other things the fuel and material streams to be monitored, the choice of tiers for all elements of the emission calculation, a description of metering devices (location, technology, uncertainty), a detailed description of emission measurement systems (if applicable) as well as QA/QC procedures for monitoring and reporting, e.g. for the processes of data collection and emission calculation. The approved documentation of the monitoring methodology (referred to as “monitoring plan”, but not defined as such in the MRG 2004) is part of or connected to the permit of an installation. Once approved, the installation has to implement and execute the monitoring of its greenhouse gas emissions in accordance to the approved “monitoring methodology”. This is checked by the verifier as part of the verification process.

Changes from 2008 onwards:

The definition of monitoring methodology in section 2 of Annex I of the MRG 2007 has been revised to “the sum of approaches used by an operator to determine the emissions of a given installation”. A definition of the monitoring plan as containing the documentation of the monitoring methodology as well as further elements has been added.

Differences between the requirements for the monitoring methodology documented in the monitoring plan in the MRG 2004 and the monitoring plan according to section 4.3 of the MRG 2007 are presented in Table 2.

Table 2 Comparison of contents of monitoring plans according to MRG 2004 and MRG 2007

MRG 2004	MRG 2007
- the exact definition of the installation and activities carried out by the installation to be monitored;	(a) the description of the installation and activities carried out by the installation to be monitored;

- information on responsibilities for monitoring and reporting within the installation;	(b) information on responsibilities for monitoring and reporting within the installation;
- a list of sources for each activity carried out within the installation; - a list of fuel and material streams to be monitored for each activity	(c) a list of emissions sources and source streams to be monitored for each activity carried out within the installation;
-	(d) a description of the calculation based methodology or measurement based methodology to be used;
- a list of tiers to be applied for activity data, emission factors, oxidation and conversion factors for each of the activities and fuels types / materials;	(e) a list and description of the tiers for activity data, emission factors, oxidation and conversion factors for each of the source streams to be monitored;
- a description of the type, specification and exact location of the metering devices to be used for each of the sources and fuels types / materials;	(f) a description of the measurement systems, and the specification and exact location of the measurement instruments to be used for each of the source streams to be monitored;
	(g) evidence demonstrating compliance with the uncertainty thresholds for activity data and other parameters (where applicable) for the applied tiers for each source stream;
- a description of the approach to be used for the sampling of fuel and materials for the determination of net calorific value, carbon content, emission factors, and biomass content for each of the sources and fuel types / materials	(h) if applicable, a description of the approach to be used for the sampling of fuel and materials for the determination of net calorific value, carbon content, emission factors, oxidation and conversion factor and biomass content for each of the source streams;
- a description of the intended sources or analytical approaches for the determination of the net calorific values, carbon content or biomass fraction for each of the sources and fuels types / materials;	(i) a description of the intended sources or analytical approaches for the determination of the net calorific values, carbon content, emission factor, oxidation factor, conversion factor or biomass fraction for each of the source streams;
	(j) if applicable, a list and description of non-accredited laboratories and relevant analytical procedures including a list of all relevant quality assurance measures e.g. interlaboratory comparisons as described in section 13.5.2;
- a description of continuous emission measurement systems to be used for the monitoring of a source, i.e. the points of measurement, frequency of measurements, equipment used, calibration procedures and data collection and storage procedures (if applicable);	(k) if applicable, a description of continuous emission measurement systems to be used for the monitoring of an emission source, i.e. the points of measurement, frequency of measurements, equipment used, calibration procedures, data collection and storage procedures and the approach for corroborating calculation and the reporting of activity data, emission factors and alike. ;
	(l) if applicable, where the so-called "fall-back approach" (section 5.3) is applied: a comprehensive description of the approach and the uncertainty analysis, if not already covered by items a) to k) of this list;
- a description of the quality assurance and quality control procedures for data management;	(m) a description of the procedures for data acquisition and handling activities and control activities as well as a description of the activities (see section 10.1-3);
- where applicable, information on relevant links with activities undertaken under the Community eco-management and audit scheme (EMAS).	(n) where applicable, information on relevant links with activities undertaken under the Community eco-management and audit scheme (EMAS) and other environmental management systems (e.g. ISO 14001:2004), in particular on procedures and

6. May an operator change the monitoring methodology?

Current situation:

Yes, if the accuracy of the methodology is improved and the competent authority has approved the change. Details on the conditions of changes of methodologies can be found e.g. in sections 4.2 and 4.2.2.1.4 of Annex I of the MRG 2004.

Substantial changes to the monitoring methodology as part of the monitoring plan shall be subject to the approval of the competent authority if it concerns a change of the categorisation of the installation, a change between calculation or measurement, or an increase of the uncertainty. It is in line with the requirements of sections 4.2 and 4.2.2.1.4 of Annex I of the MRG 2004, if changes improving the accuracy of the monitoring methodology without effect on the choice of tier levels are notified to the competent authority rather than submitted for approval.

It is recommended that Member States take a cautious approach in approving significant changes to monitoring methodologies in order to maintain consistency between emission reports from one year to the other.

Changes from 2008 onwards:

Respective provisions for changes of the monitoring plan and/or methodology can be found in section 4.3 and 5.2. of Annex I of MRG 2007:

The monitoring methodology has to be changed if this improves the accuracy of the reported data, unless this is technically not feasible or would lead to unreasonably high costs.

The operator has to propose changes to the tiers applied when:

- accessible data has changed, allowing for higher accuracy in the determination of emissions;
- previously non-existent emission has started;
- the range of fuels or relevant raw materials has substantially changed;
- errors were detected in data resulting from the monitoring methodology;
- the competent authority has requested a change.

The competent authority has to check and approve the monitoring plan again after any substantial changes to the monitoring methodology applied to an installation, if it concerns:

- a change of the categorisation of the installation as laid down in table 1,
- a change between the calculation based or the measurement based methodology used to determine emissions,
- an increase of the uncertainty of the activity data or other parameters (where applicable) which implies a different tier level.

7. Are there differences in how Member States approach monitoring in the permitting process?

Current situation:

Most Member States have decided to have the installation-specific “monitoring methodology” agreed by the competent authority as part of the permitting procedure for each installation. Other Member States use “general binding rules” in order to specify the monitoring and reporting obligations for the definition of the monitoring methodology by an operator for his installation. Such “general binding rules” must be anchored in the permit and the combination of the permit and the general binding rules must either constitute or mandate the preparation of the monitoring plan containing the elements specified in section 4.2 of Annex I of the MRG 2004.

Changes from 2008 onwards:

The principle options remain unchanged. However, it is strongly recommended that for each installation an approved monitoring plan exists at the start of the new trading period comprising all elements of section 4.3 of Annex I of MRG 2007.

II. The tier system

8. How does the “tier system” work?

Current situation:

The tier system (section 4.2.2.1.4 of Annex I of MRG 2004) provides a set of building blocks to determine the appropriate monitoring methodology for each installation. The tier system defines a hierarchy of different ambition levels for activity data, emission factors and oxidation or conversion factors. The higher the number of the tier chosen, the higher the level of accuracy or the more site-specific the monitoring system becomes. The operator must, in principle, apply the highest tier level, unless he can demonstrate to the competent authority that this is technically not feasible or would lead to unreasonably high costs.

Changes from 2008 onwards:

The requirement to apply the highest tiers is reinforced in the MRG 2007 in section 5.2 of Annex I for all major source streams of installations with emissions of more than 50 ktonnes of fossil CO₂ per year (i.e. category B and C installations). Subject to approval by the competent authority these installations may apply a next lower tier if the highest tier is technically not feasible or would lead to unreasonable costs down to the tier thresholds of Table 1 (see answer to question on Table 1 for further details).

9. What is the objective of the “tier system”?

The tier system forms the backbone of greenhouse gas emissions monitoring of installations covered under the EU ETS. It balances the need for flexibility to accommodate different sectors and technologies with the need for a level playing field for operators across the EU. It furthermore provides a transparent way to improve the quality of the monitoring system over time to reach the required tier level.

10. What is the purpose of Table 1 of Annex I of the MRG?

Current situation:

By means of Table 1 of Annex I the MRG 2004 provide temporary support to competent authorities and operators to find appropriate tier levels balancing costs against gains in overall accuracy and robustness of results. The MRG 2004 require “that during the period 2005-2007, Member States should apply as a minimum the tiers as set out in table 1 below, unless this is technically not feasible.” The word “should” (used here instead of “shall”) implied the theoretical possibility to accept tier levels below the prescribed levels set out in Table 1. The excessive use of this option has led to a large diversity of applied tier levels for comparable installations in and across Member States. It is recommended that Member States accept deviations below the requirements of Table 1 only in exceptional situations.

Changes from 2008 onwards:

As a consequence, a modified Table 1 in Annex I has become part of the MRG 2007 without any time restriction. Its role to facilitate the implementation of common standards across the EU has been strengthened. Except for small emitters (i.e. installations with average verified reported emissions of less than 25,000 tonnes of CO₂ per year during the previous trading period) it is now required “that Member States shall ensure that operators apply for all major source streams, as a minimum the tiers as set out in table 1 below, unless this is technically not feasible.” It is important to note that the approval of tier levels below the thresholds given in Table 1 based solely on “unreasonable costs” is thus not acceptable for major source streams (also see question on “technically feasible”).

11. What if an operator cannot meet the lowest tier requirements?**Current situation:**

Derogation from the requirement to meet the lowest tier is acceptable only in the case of “de minimis” sources, for which an operator might estimate emissions using a no-tier approach (e.g. an output based approach for the determination of combustion emissions). “De minimis” sources are a combination of sources that emit 0.5 ktonnes or less per year or that contribute less than 1 % of total annual emissions of an installation.

Changes from 2008 onwards:

In cases where it is not technically feasible or would lead to unreasonable costs for the operator of an installation to reach even Tier 1 for at least one of the (non-de-minimis) source streams, a fall-back approach can be applied: the operator is allowed to use a fully customized monitoring approach, but has to prove to the competent authority that by applying such an approach the overall specific uncertainty thresholds for the installation category (A, B or C) as laid down in the MRG are met.

The thresholds for de-minimis source streams have been doubled: “De-minimis source streams” means a group of minor source streams selected by the operator and jointly emitting 1 ktonnes of fossil CO₂ or less per year or that contribute less than 2% (up to a total maximum contribution of 20 ktonnes of fossil CO₂ per year) of total annual emissions of fossil CO₂ of that installation before subtraction of transferred CO₂, whichever is the highest in terms of absolute emissions.

Derogations from the tier requirements have also been provided for source streams of pure biomass (also see questions on “pure” and “monitoring of biomass”).

No specific provisions exist for entire installations falling below the threshold of 1 ktonnes in addition to those for small emitters set out in section 16 of Annex I of the MRG.

12. How can the “fall-back approach” be used starting from 2008?

If the application of at least tier 1 for one or more source streams (excluding de-minimis source streams) is technically not feasible or would lead to unreasonable costs a fall-back approach can be applied (Section 5.3 of Annex I of MRG 2007). Using this approach the operator may use a fully customized monitoring approach, but has to prove to the competent authority that by applying such an approach, overall specific uncertainty thresholds are met.

The approval of the use of the fall-back approach requires a detailed description of the monitoring methodology for the entire installation and a full uncertainty calculation for the annual level of emissions for each relevant greenhouse gas. Data from the previous year are to be used for this analysis and to be updated annually.

13. How is the principle of cost-effectiveness implemented?

Current situation:

The principle of cost-effectiveness aims to balance resources expended for a measure with the respective benefits achieved through this measure. The MRG 2004 in section 4.2.2.1.4 of Annex I accordingly have different requirements for the monitoring of major and minor sources. Table 1 in Annex I of MRG 2004, intended to apply only for 2005-2007, sets minimum requirements for cost-effective monitoring for different activities, sizes of installations and fuel types that Member States should apply in permitting the installations. Minor sources, being sources which jointly emit 2.5 ktonnes or less per year or that contribute 5 % or less to an installation’s annual emissions can be monitored using lower tiers. The same applies to pure biomass. Minor sources which jointly emit 0.5 ktonnes or less per year or that contribute less than 1 % of total annual emissions of an installation can be monitored using a no-tier estimation method.

Changes from 2008 onwards:

In the MRG 2007, the objective of cost-effectiveness has been further developed, for example through additional differentiation between installation sizes, fuel types, etc.

The following changes will apply:

- Definitions of “unreasonable costs” and “technically feasible” have been added, which will help to minimise the need for negotiations between operators and competent authorities.
- Table 1 now only applies to emissions from fossil fuels. Non-tier approaches may be used for the monitoring of pure biomass streams
- Category A installations (installations with emissions less than or equal to 50 ktonnes CO₂ per year) have to meet the tier requirements of Table 1, and of the

respective Tier 1 if qualifying as an installation with low emissions (i.e. less than 25 ktonnes fossil CO₂ per year) according to section 16 of Annex I.

- Regarding the combustion of commercial standard fuels (among others gas oil, light fuel oil, gasoline, lamp oil, kerosene, ethane, propane and butane) Table 1 of Annex I foresees tier 2 for all installation categories both for the net calorific value and the emission factor
- In cases where it is technically not feasible or would lead to unreasonable costs for the operator of an installation to reach Tier 1 for one or more of the non de-minimis source streams, a fall-back approach can be applied: the operator is allowed to use a fully customized monitoring approach, but has to prove to the competent authority that by applying such approach overall specific uncertainty requirements are met.
- The thresholds for minor source streams and de-minimis source streams have been increased but also been capped: "Minor source streams" are the source streams selected by the operator to jointly emit 5 ktonnes of fossil CO₂ or less per year or to contribute less than 10% (up to a total maximum contribution of 100 ktonnes of fossil CO₂ per year), to the total annual emissions of fossil CO₂ of an installation before subtraction of transferred CO₂, whichever is the highest in terms of absolute emissions. "De-minimis source streams" means a group of minor source streams selected by the operator and jointly emitting 1 ktonne of fossil CO₂ or less per year or that contribute less than 2% (up to a total maximum contribution of 20 ktonnes of fossil CO₂ per year) of total annual emissions of fossil CO₂ of that installation before subtraction of transferred CO₂, whichever is the highest in terms of absolute emissions; "
- Installations emitting less than 25 ktonnes CO₂ per year are granted reduced requirements, e.g. general use of lower tiers, simplified monitoring plans, simpler requirements regarding the use of laboratories accredited against EN ISO 17025, etc.

14. How is technically feasible defined?

Current situation:

The MRG 2004 neither provide a definition of "technically feasible" nor of "technically not feasible".

A definition of "technically feasible" is included in the MRG 2007. It is recommended that Member States start to use it already in 2007 to simplify the choice of tiers for installations.

Changes from 2008 onwards:

According to section 2 of Annex I of the MRG (2007) "technically feasible" means that "technical resources capable of meeting the needs of a proposed system can be acquired by the operator in the required time." The term "can" in this context refers to availability of the technical resources as well as to the economic ability of the operator to acquire them, taking into account a typical budget for improved process control, automation and process retrofit.

15. Can thresholds of “unreasonable costs” be calculated?

Current situation:

The MRG 2004 do not provide a definition of unreasonable costs and thus do not allow for a calculation of a discrete threshold.

A definition of “unreasonable costs” is included in the MRG 2007. It is recommended that Member States start to use these more detailed provisions already in 2007 to simplify the choice of tiers for installations.

Changes from 2008 onwards:

In the MRG 2007 the following definition of “unreasonable costs” has been added: “In respect to the choice of tier levels the benefit may correspond to the value of the allowances corresponding to an improvement of the level of accuracy. For measures increasing the quality of reported emissions but not having a direct impact on accuracy, the benefit may correspond to a fraction exceeding an indicative threshold of 1% of the average value of the allowances allocated to the installation for the previous trading period. For installations without this history, data from representative installations carrying out the same or comparable activities can be used as reference and scaled according to their capacity.”

This definition addresses the cost-benefit relation of a measure. The costs are incurred by the individual operator while benefits are harvested by all market participants. The definition is indicative as it is not clear how individual costs and societal benefits are to be balanced for each specific case. Therefore the ultimate responsibility for this decision rests with the competent authority.

There are no agreed rules on how to calculate costs. Because of the indicative nature of these calculations it is recommended to keep the approach simple and divide investment costs over the full length of a trading period (i.e. 5 years) with an interest rate of zero.

The following three examples for an analysis regarding the level of unreasonable costs may provide guidance for the application of the approach.

Example I:

- Plant with emissions of 1.5 Million tonnes of CO₂ p. yr. from Coal
- Status quo: Use of tier 2 emission factor and tier 3 with non-accredited labs for NCV
- Request: Use tier 3 for emission factor and NCV
- Assumption: Costs for analyses of emission factor and NCV by accredited laboratory would cost 365 x 60 € = 21,900 €

Is this cost unreasonable?

Analysis:

- No direct impact on uncertainty from use of accredited labs for daily mixed samples
- MRG Value of 1% corresponds to 15,000 tonnes of CO₂ p. yr.
- Current average value: 15 € per tonne
- Equivalent value: 225,000 € per year

Result:

⇒ Additional running costs are reasonable

Example II:

- Ceramics Plant with a source stream of clay leading to 1,200 tonnes of CO₂ p. yr. of emissions
- Status quo: Use of tier 1 factors from Annex X of MRG 2007
- Request: Move to tier 3
- Assumption: Costs for analyses of emission factor for mixed quarterly clay samples would be 4 x 150 € = 600 €

Is this cost unreasonable?

Analysis

- Direct impact on uncertainty from use of higher tier
- A reduction of the uncertainty of the emission factor from 35% to 5% equals 360 tonnes of CO₂ p. yr.
- Current average value: 15 € per tonne
- Equivalent value: 5,400 € per year

Result

⇒ Additional running costs are reasonable

Example III:

- Plant with emissions of 40 ktonnes of CO₂ p. yr. from a source stream of liquid production wastes
- Status quo: Use of tier 2 for mass flow of the relevant source stream
- Request: Move to tier 3
- Assumption: Costs for purchase and installation of radar level measurement system for a storage tank for 100,000 €, which are divided over the 5 years of the trading period: 20,000 € per year

Is this cost unreasonable?

Analysis

- Direct impact on uncertainty from use of higher tier
- Reduced uncertainty of annual amount of consumed liquid waste used from 5% to 2.5 % corresponds to 1 ktonne of CO₂ p. yr.
- Current average value: 15 € per tonne of CO₂
- Equivalent value: 15,000 € per year

Result

⇒ Investment costs are unreasonable

16. Into which size class does an installation fall in which pure biomass is used or in which several activities are carried out?

Current situation:

The size thresholds “A” (less than/equal 50 ktonnes CO₂ per year), “B” (greater 50 and less than/equal 500 ktonnes CO₂ per year) and “C” (above 500 ktonnes CO₂ per year) in section 4.2.2.1.4 and Table 1 of Annex I of the MRG refer to the total annual greenhouse gas emissions of the installation including CO₂ from biomass and CO₂ subsequently to be transferred out of an installation. The emissions refer to total CO₂ i.e. the reported amount of fossil CO₂ plus biogenic CO₂ for which respective activity data are reported as memo item. The size classification and tier requirements apply to all the activities carried at that installation.

Changes from 2008 onwards:

In the MRG 2007 the emission thresholds of the installation categories solely apply to all (potential) emissions from fossil fuels before subtraction of transferred CO₂. Emissions from biomass are not taken into consideration for the determination of the installation category.

17. Are car tyres biomass?

Current situation:

No. Like other mixed fuels such as domestic waste, car tyres commonly contain varying contents of biomass which have to be established according to the provisions of section 10.4 of Annex I.

Changes from 2008 onwards:

The MRG 2007 in Table 4 of section 11 of Annex I provide a tier 1 emission factor which does not consider the potential biomass content of tyres. Section 13.4 of Annex I provides the detailed requirements for the determination of the biomass fraction of tyres.

18. What if the lab doing fuel analyses is not accredited against EN ISO 17025?

Current situation:

Without analyses made by an accredited lab, the monitoring methodology does not meet the full set of criteria given in section 10 of Annex I. A number of Member States have granted transition requirements to companies in the first year of the reporting period 2005-2007 or even the full reporting period in order to allow for higher cost-effectiveness by giving companies more time to adapt to the requirements of using an EN ISO 17025:2000 accredited laboratory. This has been done e.g. by allowing use of non-accredited laboratories if these were in the process of getting an accreditation. The MRG 2007 provide detailed provisions and conditions for the use of non-accredited laboratories and online gas-analysers and gas-chromatographs. Member States are encouraged to consider the requirements of the MRG 2007 in the design and development of their phase-in and transition approaches.

Changes from 2008 onwards:

Preference is for the use of laboratories accredited according to EN ISO 17025:2005. If the operator can demonstrate to the competent authority that the laboratory meets equivalent requirements to those laid out in EN ISO 17025:2005, the requirement to use such a laboratory can be waived. In that case, the operator is required to provide evidence that laboratory is technically competent and able to generate technically valid results using the relevant analytical procedures. Equivalence in respect to quality management can be demonstrated by an accredited certification of the laboratory against EN ISO 9001:2000.

The use of analyses from non-accredited laboratory also requires that the relevant analytical methods carried out in this laboratory have been validated by a laboratory accredited according to EN ISO 17025:2005. Once a year an inter-comparison of the results of analytical methods is to be carried out by a laboratory accredited according to EN ISO 17025:2005. The specific validation measures and the inter-comparison procedure are described in section 13.5 of MRG 2007. Provisions exist in the MRG 2007 on how to address differences between the results obtained in accredited and those in non-accredited laboratories.

19. Are the activity specific methodologies compatible with the accepted industry approaches?

Yes. Where available in 2003, core methodologies were taken from accepted industry protocols such as the GHG Protocols of WBCSD/WRI or the API Compendium for refineries. Because of the inherent differences between voluntary and mandatory monitoring schemes, a number of modifications were necessary.

20. Where do tier 1 factors in the MRG come from?**Current situation:**

The factors for tier level 1 of the MRG are for the most part taken from the IPCC 1996 Guidelines and the 2000 IPCC Good Practice Guidance.

Changes from 2008 onwards:

In the revised MRG, factors for tier 1 with few exceptions originate from the 2006 IPCC Guidelines. The list of factors in Table 4 of section 11 of Annex I has been updated and amended by additional fuel types. The table also comprises tier 1 values for net calorific value. Member States are encouraged to consider additional information from this table starting in 2007.

21. Where does an operator find national factors? What if these are not available from the national inventory?

If the Member State has not published such lists of standard factors, operators have to extract them from their country's latest submission to the UNFCCC Secretariat which can be found at: www.unfccc.int (Home > National Reports > GHG Inventories (Annex I) > National Inventory Submissions). However, to enhance the cost-effectiveness of the ETS it is recommended that each Member State makes available a comprehensive list of emission factors and net calorific values to its operators.

III. Uncertainty and accuracy

22. The Guidelines use the terms “accuracy” and “uncertainty” – what is the difference?

Current situation:

In the technical literature the words accuracy and uncertainty are sometimes interchanged and used with different meanings which depend on the context. In relation to the EU-MRG the difference between them is significant: Accuracy here refers to a qualitative concept. It can be high or low but should not be used quantitatively. It belongs to the set of seven principles defined in section 3 of Annex I of the MRG 2004. Uncertainty on the other hand is quantitative concept, which is elaborated in section 4.3 of Annex I of the MRG 2004 used as compliance criterion for thresholds defined in the tier layers of Annexes II-XI of the MRG 2004.

Changes from 2008 onwards:

For the purposes of the MRG 2007 the terms “accuracy” and “uncertainty” are defined in section 2(3) a and b of Annex I. In order to enhance clarity, the term accuracy is not used any longer in direct relation to the assessment of uncertainty. In general solely the term “uncertainty” is used. The MRG principle of “accuracy”, laid down in section 3 of the MRG 2004, has been renamed into “trueness” in the MRG 2007 to avoid ambiguities.

23. What type of considerations of uncertainty is required?

Current situation:

The calculation of overall uncertainty is useful to understand the quantitative impacts of different sources of uncertainty and usually requires only moderate resources. The MRG 2004 do not require the operator to calculate the overall uncertainty of reported annual emission values. Tables 2 and 3 in Annex I addressing total uncertainty are purely informative. Only the uncertainty of the activity data has to be calculated and must comply with the maximum uncertainty level specified in the respective tiers. This can usually be done on the basis of conservative estimates rather than through a full uncertainty calculation.

Changes from 2008 onwards:

- Tables 2 and 3 of the MRG 2004 providing indicative guidance on specific issues connected to uncertainty have been deleted because of their inconsistent use in different Member States;
- The new section 7.1 of Annex I of the MRG 2007 provide guidance on uncertainty calculations for the specific situations in which they are required;

24. How does the “maximum permissible uncertainty” addressed in the tiers relate to the uncertainty of the actual measurement?

Current situation:

The stated threshold values within the tier system refer to the uncertainty associated to the value of activity data for one reporting year.

Changes from 2008 onwards:

- For commercially traded fuels or materials (according to the definition in Section 2 of the revised MRG), competent authorities may allow the annual fuel/material flow by the operator to be determined solely based on the invoiced amount without further individual proof of associated uncertainties (Section 7.1 of Annex I).
- Installations with emissions below 25 ktonnes CO₂ per year may
 - use invoiced amounts for the determination of annual fuel/material flows, without further uncertainty considerations
 - use information given by the supplier of the measurement instruments, without further uncertainty considerations

IV. Other monitoring issues

25. When can a continuous emissions monitoring systems (CEMS) be applied?

Current situation:

Operators who wish to use continuous emissions monitoring systems (CEMS) need to seek approval of their competent authority when submitting their monitoring plans as part of the permitting process. To obtain this permission they need to demonstrate that the achieved accuracy is higher than the accuracy from calculation. In parallel to measuring the emissions, the operator must also calculate the emissions.

Changes from 2008 onwards:

- The MRG 2007 contain a new Annex XII specifying approaches for emission determination with continuous emission monitoring systems.
- For the corroborating calculation lower tiers or approaches laid down in the IPCC 2006 Guidelines may be used. The chosen approach is to be described in the monitoring methodology.
- The existence of systematic deviations between measurement and calculation approach are acknowledged and the operator is to analyse the relation between the two approaches in order to provide an explanation for deviations. In case of excessive deviations, the operator is to use substitution values as described under Section 6 of Annex I of MRG 2007.

26. Is there an obligation to monitor and report the fuel consumption for each source of an installation?

Reporting under the EU-ETS takes place on the level of installations and activities as defined in the GHG permit. Therefore no source-by-source monitoring is required. Frequently the determination of fuel consumption and composition for an installation will effectively be done by the fuel supplier rather than by the operator. There are circumstances - which commonly require additional monitoring efforts - in which the scope of activities of the EU-ETS Directive leads to a different definition of installation than under the license to operate. These differences need to be visible from the permit and the monitoring plan.

27. How to account for the varying moisture content of certain solid fuels?

Current situation:

The method to determine net calorific value corrects for the moisture content of fuels. Section 10.1 of Annex I of MRG 2004 states that the net calorific value must be representative for the batch of fuel combusted. This means that the moisture content of fuels must always be considered in a way which ensures consistency with the conditions for which the emission factor and the amount of fuel was derived. Wherever possible the amount of fuel, its calorific value and carbon content should therefore be determined at the same time. Most frequently this will be done by the fuel supplier rather than by the operator. The tier 1 factors given in the MRG are generally quoted “as received” (i.e. moist) unless specified differently.

Changes from 2008 onwards:

Requirements regarding the determination of net calorific values can be found in section 13.1 in combination with 13.6 (Sampling Methods and Frequency of Analyses) of the MRG 2007.

28. How is the combusted amount of biomass monitored?

Current situation:

If it is pure biomass, low tier methodologies can be applied. However, even with low tier methodologies, the activity data, i.e. the volume or mass of the fuel consumed, needs to be measured. The calculation of biomass emissions from energy output is not acceptable. Details on how to determine the biomass fraction of a fuel can be found in section 10.4 of Annex I of MRG 2004.

Changes from 2008 onwards:

Pursuant to section 5.2 of Annex I of the MRG 2007, the monitoring of emissions from pure biomass is simplified by accepting no-tier approaches (including the energy balance method) for respective installations or technically identifiable parts thereof. According to section 13.4 of Annex I of the MRG 2007 the operator may base the determination of the biomass fraction on a mass-balance of fossil and biomass carbon entering and leaving the process for fuels or materials originating from a production process with defined and traceable input streams.

29. Are international or national standards available for the determination of biomass fractions of fuels or materials?

A number of relevant standards are or will soon become available. These should be considered for application where suitable and if combined with appropriate quality assurance measures.

The CEN Technical Committee 343 has published the following:

“CEN/TS 15440:2006 Solid recovered fuels - Method for the determination of biomass content”

The CEN Technical Committee 343 is developing:

“prCEN/TR 15591 Solid recovered Fuels - Determination of the biomass content based on the 14C method”

Until publication of relevant CEN standards the following North American standards could be of relevance:

“ASTM D 6866 – 05: Standard Test Methods for Determining the Biobased Content of Natural Range Materials Using Radiocarbon and Isotope Ratio Mass Spectrometry Analysis.”

ASTM D 7026 – 04: Standard Guide for Sampling and Reporting of Results for Determination of Biobased Content of Materials via Carbon Isotope Analysis,

ASTM D 6852 – 02: Standard Guide for Determination of Biobased Content, Resources Consumption, and Environmental Profile of Materials and Products,

30. How can the batch size be defined for different fuels and materials? What does this imply for the frequency of sampling and analyses?

Current situation:

Under the definition of batch as “an amount of fuel or material [...] transferred as one shipment or continuously over a specific period of time” much freedom is left in the MRG 2004 for Member States to lay down national requirements regarding the definition of batch sizes.

Changes from 2008 onwards:

The MRG 2007 in section 13.6 of Annex I specify the batch size through requirements regarding the analysis frequency. The sampling procedure and analysis frequency shall be designed to ensure that the emission factor, the net calorific value and the other parameters mentioned in section 13.6, exhibit an uncertainty of less than 1/3 of the approved uncertainty threshold for the annual mass flow of the respective source stream. In cases where operators are not able to meet this threshold or to demonstrate compliance, minimum analysis frequencies (see Table 3) are to be applied. In all other cases the competent authority shall define the frequency of analyses.

According to section 13.6, the operator shall provide evidence that the derived samples are representative and free of bias. The respective value shall be used only for the delivery period or batch for which it was intended to be representative.

As these provisions from the MRG 2007 further elaborate general provisions text of the MRG 2004, it is recommended that Member States start to apply them in 2007 already.

Table 3 Minimum Analysis Frequencies

Fuel/material	Frequency of Analyses
Natural gas	At least weekly
Process gas (refinery mixed gas, cokes oven/gas coke, blast-furnace gas and convertor gas)	At least daily - using appropriate procedures at different parts of the day
Fuel oil	Every 20,000 tonnes and at least six times a year
Coal, coking coal, petroleum coke	Every 20,000 tonnes and at least six times a year
Solid waste (pure fossil or mixed biomass fossil)	Every 5,000 tonnes and at least four times a year
Liquid waste	Every 10,000 tonnes and at least four times a

	year
Carbonate minerals (e.g. limestone and dolomite)	Every 50,000 tonnes and at least four times a year
Clays and shales	Amounts of material corresponding to 50,000 tonnes of CO ₂ and at least four times a year
Other input and output streams in the mass balance (not applicable for fuels or reducing agents)	Every 20,000 tonnes and at least once every month.
Other materials	Amounts of material corresponding to 50,000 tonnes of CO ₂ and at least four times a year

31. How to account for CO₂ transferred out of an installation?

Current situation:

Guidance on the treatment of “transferred CO₂” is given in section 4.2.2.1.2 of Annex I of MRG 2004. During the first trading period (2005-2007) it is generally possible for a list of agreed applications to deduct any CO₂ which is transferred out of an installation participating in the EU ETS. The amount is to be reported as a memo item.

Changes from 2008 onwards:

Section 5.7 of Annex I of MRG 2007 deals with the issue of “transferred CO₂”. The original provisions have been strengthened in making the role of the competent authority in approving a subtraction of “transferred CO₂” explicit, in mandating the notification of respective installations to the EU Commission, and in restricting the subtraction to situations in which the transfer of CO₂ is also reflected in the national inventory. The latter criterion could preclude the eligibility of several short-term uses of transferred CO₂.

32. What is the definition of “pure”

Current situation:

Currently, the MRG do not define thresholds of how pure biomass has to be in order to qualify as “pure”.

Changes from 2008 onwards:

The MRG 2007 in section 2 of Annex I define this term as: “relating to a substance means that a material or fuel consists of at least 97% (related to mass) of the specified substance or element - corresponding to the commercial classification of “purum”. For biomass this relates to the fraction of biomass carbon in the total amount of carbon in the fuel or material.”

As this new provision is more specific than those of the MRG 2004, it is recommended that Member States start to apply it already in 2007.

V. Verification

33. Where do I find EU guidance on verification?

Current situation:

The basic requirements for verification in the EU-ETS are set out in Article 15 and Annex V of the ETS-Directive. The MRG 2004 provide additional practical guidance on the relation to monitoring and reporting in sections 2 and 7.4 of Annex I.

Changes from 2008 onwards:

Section 10 of Annex I of MRG 2007 on control and verification has been reviewed and revised in order to improve conceptual and linguistic consistency with guidance developed by the European Cooperation for Accreditation (EA), the European Committee for Standardisation (CEN), and the International Standardisation Organisation (ISO). This section now provides guidance regarding the execution of the strategic analysis including materiality levels, the risk analysis, the verification, the internal verification report and the external verification report.

34. For how long do I have to store raw data and supporting material?

In accordance with section 6 of Annex I of the MRG 2004 and section 9 of Annex I of the MRG 2007 this type of information must be stored for at least 10 years from the date of submission of the annual emissions report to which it has contributed.

35. Can an accredited verifier from one Member State verify emissions reports in other Member States?

There are currently no harmonised criteria for accreditation of verifiers and accreditation requirements differ between Member States. It is recommended that Member States take the necessary steps to accept verifiers accredited in other Member States.