



Frequently Asked Questions

Regarding Annual Emissions Reporting issues

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Status of this document:

This document is part of a series of documents provided by the Commission services for supporting the implementation of Commission Regulation (EU) No. 601/2012 of 21 June 2012 on the monitoring and reporting of greenhouse gas emissions pursuant to Directive 2003/87/EC of the European Parliament and of the Council¹.

The guidance represents the views of the Commission services at the time of publication. It is not legally binding.

This document takes into account the discussions within meetings of the informal Technical Working Group on the Monitoring and Reporting Regulation under the WGIII of the Climate Change Committee (CCC), as well as written comments received from stakeholders and experts from Member States.

All guidance documents and templates can be downloaded from the Commission's website at the following address:

http://ec.europa.eu/clima/policies/ets/monitoring/documentation_en.htm.

For this FAQ document the “Template No. 4: Annual emissions report of stationary source installations” is of particular relevance. All guidance provided in this FAQ document is dedicated to support correct reporting in that template. Where Member States use different templates also the required reporting procedures may be different.

¹ <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2012:181:0030:0104:EN:PDF>

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1 ANNUAL EMISSIONS REPORT ISSUES

1.1 How does the GHG concentration, flue gas flow etc. for measurement-based approaches (CEMS) have to be determined and reported in the annual emissions report?

The annual emissions of the emitted GHG are calculated by the equation provided in Annex VIII, Section 3, equation 1 of the MRR):

$$Emissions_{annual} [t] = \sum_i GHG\ conc_{hour\ i} [g / Nm^3] \cdot flue\ gas\ flow_i [Nm^3 / h] \cdot 10^{-6} [t / g]$$

where:

GHG conc_{hour i}..... concentrations of GHG in the flue gas flow measured during operation hour i

Flue gas flow_i..... flue gas flow determined for each hour i

For reporting corresponding total annual emissions in the Annual Emissions Report template Annex X, clause 1(9)(b) of the MRR requires to report “*the measured greenhouse gas concentrations and the flue gas flow expressed as an annual hourly average, and as an annual total value*”.

The template therefore requires to enter those values and calculates the annual amount of the GHG emitted by:

$$Emissions_{annual} [t] = GHG\ conc_{annual\ hourly\ average} [mg / Nm^3] \cdot flue\ gas\ flow_{annual\ hourly\ average} [Nm^3 / h] \cdot hours_{operation} [h] \cdot 10^{-9}$$

In order to obtain the same results from both equations above, averages have to be calculated on a weighted basis (each hourly average weighted against the corresponding hourly flue gas flow, before obtaining the overall average for the whole year).

The following example helps to explain how to determine and enter data.

Example:

An installation is only emitting N₂O and determines emissions by means of CEMS. For simplicity reasons it is assumed that the installation is only operating for four hours during the reporting year with the following values for concentration and flue gas flow for each hour:

hour	N ₂ O conc. [mg/Nm ³]	Flow [kNm ³ /h]	Resulting N ₂ O emissions [kg]
1	60	250	15.00
2	100	280	28.00
3	45	270	12.15
4	50	260	13.00
Sum (= total N ₂ O emitted)			68.15

Data in the Annual Emissions Report has to be entered as follows:

Flue gas flow [annual hourly average, kNm³/h]:

$$flue\ gas\ flow_{annual\ hourly\ average} = \frac{\sum_i flow_{hour\ i}}{hours_{operation}} = \frac{1,060}{4} = 265.00\ kNm^3/h$$

The annual hourly average of concentration [mg/Nm³] then has to be determined as the average weighted against the flue gas flow²:

$$GHG\ conc_{annual\ hourly\ average} = \frac{\sum_i conc_i \cdot flow_i}{\sum_i flow_i} = \frac{68,150 \cdot 10^3 [mg/year]}{1,060 \cdot 10^3 [Nm^3/year]} = 64.29\ mg/Nm^3$$

Hours of operation: 4 h

The annual emissions, expressed as tonnes of N₂O, are calculated by the following equation to obtain the same results as in the table above:

$$Emissions = 64.29 \cdot 10^{-9} \cdot 265 \cdot 10^3 \cdot 4 = 0.06815\ t\ N_2O (= 68.15\ kg)$$

1.2 How does the biomass fraction for measurement-based approaches (CEMS) have to be determined and reported in the annual emissions report?

Article 43(4) of the MRR states: “Where relevant, the operator shall determine separately any CO₂ amount stemming from biomass using calculation-based monitoring methodologies and subtract it from the total measured CO₂ emissions”

Therefore, for biomass source streams the biogenic emissions are determined by:

$$Emissions_{bio} = FQ \cdot NCV \cdot EF_{pre} \cdot OF \cdot (1 - FF)$$

where:

FQ..... Quantity of fuel [t]

NCV.... Net calorific value [TJ/t]

EF..... Preliminary emission factor [t CO₂/TJ]³

OF..... Oxidation factor

FF..... Fossil fraction

The same tier requirements have to be followed for those biomass source streams as specified for this specific installation category (A, B or C) and source stream category (de-minimis, minor or major). Note that for exclusive biomass this source stream may always be de-minimis since no fossil carbon is emitted.

² Note where concentrations and gas flows are available for shorter reference period (half-hours, minutes,..) appropriate weighting already has to be done to obtain hourly averages

³ The preliminary emission factor is the emission factor if biomass carbon was not counted as zero

Annex X, section 1(9)(a) of the MRR does not require the operator to provide all of the calculation factors listed above but only details (including factors) in relation the annual fossil CO₂ emissions and the annual CO₂ emissions from biomass use. Therefore, the Annual Emissions Report template requires the entry of a biomass fraction. This fraction will simply be calculated as the ratio of “CO₂ emissions from biomass use (as determined by abovementioned formula)” and the “total CO₂ emissions (sum of fossil and biogenic CO₂ emitted)”. This ratio will then be entered as the biomass fraction in section 9.1.a.ii in sheet D of the template.

Please note that the calculation steps applied for the determination of the CO₂ emissions from biomass do not have to be provided in the template unless stated otherwise by your Competent Authority. However, it is recommended to add the calculation steps and parameters used in the comment boxes for each emission source. In any event, those have to be made available to the verifier for the verification procedure.

In no case should the calculation-based determination of biomass emissions be determined by defining a dedicated source stream and entering relevant data in sheet C. This would lead to double counting of emissions and is therefore not allowed.

1.3 How do corroborating calculations for measurement-based approaches (CEMS) have to be determined and reported in the annual emissions report?

Article 46 of the MRR states: *“The operator shall corroborate emissions determined by a measurement-based methodology, with the exception of nitrous oxide (N₂O) emissions from nitric acid production and greenhouse gases transferred to a transport network or a storage site, by calculating the annual emissions of each considered greenhouse gas for the same emission sources and source streams. The use of tier methodologies shall not be required.”*

This is to be understood as a requirement to carry out corroborating calculations for each emission source and source stream instead of just on installation-level. Those corroborating calculations do not have to be based on tier compliant methodology. However, in many cases default values or metering of source streams will be available anyway. In such cases it is already recommended in section 4 of Guidance Document 7 on CEMS to use, to the extent possible, the standard or mass balance methodology pursuant to Articles 24 and 25 of the MRR. Article 46 is further supported by point (iii) of Article 62(1)(c) which requires the internal review and validation of data associated with the comparison of the results obtained by CEMS and corroborating calculations to be covered by a written procedure pursuant to Article 58(3)(d). A summary of this procedure has to be included in the monitoring plan.

Annex X does however not mention any obligation to report the results from corroborating calculations in the Annual Emissions Report. Still, the template provided by the European Commission allows for entering corresponding results, expressed as tonnes of CO₂ in section 9 in sheet D_MeasurementBasedApproaches. Also the corroborating calculation steps do not have to be provided in the template unless stated otherwise by your Competent Authority.

Nevertheless, it is recommended to add for each emission source the calculation steps and parameters used in the annual emissions report in the comment boxes or reference external documents attached to the report containing those calculations.

In any event, corroborating calculations have to be made available to the verifier for the purpose of data verification in accordance with Article 16(2)(g) of the AVR⁴.

1.4 How does data for reporting emissions from catalytic cracking in refineries have to be reported in the annual emissions report?

This can either be done by reporting emissions under a measurement-based approach, where this is applied, or by entering appropriate data under a mass balance (calculation-based approach).

Fluid catalytic cracking is used in refineries to convert high-boiling hydrocarbons into lower-molecular weight but higher value products. During this catalytic reaction part of the carbon-containing feedstock forms carbonaceous deposits on the catalyst that causes its inactivation. Therefore, the catalyst has to be regenerated by burning off the deposited carbon using air in a separated reactor, called the regenerator. The carbon in the flue gas formed from this regeneration is converted into CO₂ either already during the regeneration or during a subsequent post-combustion.

For the monitoring of emissions stemming from catalytic cracker regeneration section 2 of Annex IV states: “[..] by way of derogation from Article 24 and 25, emissions from catalytic cracker regeneration, other catalyst regeneration and flexi-cokers shall be monitored using a mass balance, taking into account the state of the input air and the flue gas. All CO in the flue gas shall be accounted for as CO₂, applying the mass relation: $t\ CO_2 = t\ CO \cdot 1,571$. The analysis of input air and flue gases and the choice of tiers shall be in accordance with the provisions of Articles 32 to 35. The specific calculation methodology shall be approved by the competent authority.” This provision clarifies that the determination of emissions from catalytic cracker regeneration in general requires the use of appropriate analytical standards and accredited laboratories following the provisions in Articles 32 to 35.

Option 1 (application of CEMS)

One way to satisfy those criteria can be by application of continuous emissions monitoring systems (CEMS) following the rules set out in Articles 40 to 46 of the MRR. For such approach emissions are to be reported in sheet D of the Annual Emissions Report template, accordingly.

It has to be noted that the mass balance mentioned in Annex IV, section 2 is not a ‘real’ mass balance as defined in Article 25 but rather a flue gas volume balance according to Article 43(5)(a). According to Annex IV, section 2, the determination of the annual emissions from the regeneration of catalytic converters from cracking and reforming processes shall be monitored using a balance, taking into account the CO₂, CO, NO_x and SO₂ contents in the flue gas from the regeneration and in the amount of air supplied in accordance with Article 43(5)(a). In the subsequent processes, a complete conversion of CO to CO₂ is assumed:

$$E_{total, Coke} = GHG_{conc} \cdot V_{flue, dry}$$

$$GHG_{conc} = (a_{CO_2} + b_{CO}) \cdot \frac{44}{22.4 \cdot 1000}$$

$E_{total, coke}$ overall CO₂ emissions from coke burned off in t CO₂

GHG_{conc} greenhouse gas (CO₂) concentration in the dry flue gas in g/Nm³

⁴ Article 16(2)(g) AVR: “where a measurement based methodology referred to in Article 21(1) of Regulation (EU) No 601/2012 is applied by an operator, the measured values using the results of the calculations performed by the operator in accordance with Article 46 of that Regulation”

$V_{flue,dry}$calculated annual volume of the dry flue gas (see calculation below) in Nm^3

a_{CO_2} measured carbon dioxide content in dry flue gas in % by volume

b_{CO} measured carbon monoxide content in dry flue gas in % by volume

The volume flow rate of the flue gas to be used in the equation above is usually not measured, thus it must be calculated by a balance. In the regeneration, the coke-loaded catalyst is regenerated by an air supply and all combustible constituents are converted to CO_2 , CO , H_2O , NO_x and SO_2 . The calculation of the amount of dry flue gas from the amount of air supplied is done according to the following formula, assuming a constant inert gas content of 79.07% by volume:

$$V_{flue,dry} = \frac{79.07}{100 - a_{CO_2} - b_{CO} - c_{O_2} - d_{NO_x} - e_{SO_2}} \cdot V_{air,dry}$$

$V_{air,dry}$ volume of dry air supplied in Nm^3

a_{CO_2} measured carbon dioxide concentration in dry flue gas in % by volume

b_{CO} measured carbon monoxide concentration in dry flue gas in % by volume

c_{O_2} measured oxygen concentration in dry flue gas in % by volume

d_{NO_x} measured NO_x concentration in dry flue gas in % by volume

e_{SO_2} measured SO_2 concentration in dry flue gas in % by volume

A prerequisite for the balance shown is that coke contains hardly any nitrogen compounds or they are converted into NO_x (which is usually the case). Furthermore, if NO_x and SO_2 cannot be determined individually in the flue gas at reasonable cost, conservative estimates for those concentrations should be assumed.

In any case, the necessary 'balancing', according to the equations above, has to be done outside the AER template in a separate document. Nevertheless, it is recommended to provide relevant calculation steps in a comment box in the AER template. The values to be entered in sheet D of the template for the calculation of emissions are:

- GHG_{conc} as the 'annual hourly average concentration' under a), letter i., and
- $V_{flue,dry}$, expressed as the 'annual hourly average flue gas flow' (converted to the average flow in Nm^3/h) under a), letter v.

Option 2 (alternative application of a mass balance)

As an alternative, where other methods or standards than those mentioned in Article 42 of the MRR are applied and subject to the Competent Authorities approval of this approach, emissions may be reported in the Annual Emissions Report under mass balance source streams in sheet C. By this, it is assumed that e.g. the flue gas is a source stream, expressed as the annual amount of kNm^3 with a carbon content determined by following the provisions of Articles 32 to 35.

1.5 How can a distinction be made between fuels used for combustion and fuels used as process input in the annual emissions report?

This can be done by selecting the appropriate source streams in sheet B of the Annual Emissions Report template.

For some activities fuels are used in combustion processes as well as for input for processes, e.g. in ammonia production, part of the natural gas consumed is combusted to produce heat for the process and the other part is fed into the steam reforming reactor, i.e. process input. For inventory purposes and for the Member States' reporting requirements under Article 21 of the EU ETS Directive a clear distinction between those two types of fuel use is necessary.

To reflect this situation in the Annual Emissions Report, both source stream types can be selected from the drop-down list in section 7.b of sheet "B_InstallationDescription", as shown in the following screen shot (for the example of natural gas in ammonia production).

B		C		D		E		F		G		H		I		J		K		L		M		N	
2		B.		Navigation area:		Table of contents		Previous sheet		Next sheet															
3		Installation		Top of sheet		Activities		Monitoring approach		Source Streams															
4		Description		End of sheet		Measurement points																			
		ID	Source stream type	Source stream category				Source stream Name				error													
66		F01	Cement clinker: Kiln input based (Method A)	Raw meal																					
67		F02	Combustion: Other gaseous & liquid fuels	Heavy fuel oil																					
68		F03	Combustion: Other gaseous & liquid fuels	Other gases				Process waste gas																	
69		F04	Iron & steel: Mass balance	Scrap Iron																					
70		F1	Combustion: Other gaseous & liquid fuels	Gaseous - Natural Gas																					
71		F2	Ammonia: Fuel as process input	Gaseous - Natural Gas																					
72			Combustion: Commercial standard fuels																						
73			Combustion: Other gaseous & liquid fuels																						
74			Combustion: Solid fuels																						
75			Combustion: Gas Processing Terminals																						
76			Combustion: Flares																						
77			Combustion: Scrubbing (carbonate)																						
78			Combustion: Scrubbing (gypsum)																						
79			Ammonia: Fuel as process input																						
80		F10																							
81		F11																							
82		F12																							
83		F13																							
84		F14																							

The Annual Emissions Report template will list both selections as emissions from "combustion" activities in sheet "I_Summary". Therefore, in order to extract distinct emissions data for combustion and process input data they have to be extracted from sheet "C_SourceStreams".

Please note that for a correct and consistent monitoring methodology the monitoring plan should be updated accordingly to reflect this approach.

1.6 How can the import and export of inherent CO₂ be reported in the Annual Emissions Report template?

Articles 3(40) and 48 of the MRR lay down that any CO₂ contained in a fuel is to be considered part as the fuel and to be taken into account in its emission factor. Furthermore, Annex X, clause 1(8)(f) of the MRR requires the following information to be reported as memo item in the Annual Emissions Report: "inherent CO₂ transferred to an installation or received from an installation, where Article 48 is applicable, expressed in t CO₂".

The Annual Emissions Report template allows for entry of appropriate data where inherent CO₂ transferred between installations is monitored by an measurement-based methodology. However, this is in many cases not the approach taken, e.g. where blast furnace gas from a steel installation is exported to connected power plants, and the emissions are most commonly covered by a mass balance ap-

proach. For such an approach fuels containing inherent CO₂ received from or exported to other installations is usually a distinct source stream, with positive associated emissions for ingoing and negative associated emissions for outgoing fuels.

Therefore, transferred inherent CO₂ can be annotated by adding appropriate comments in the comment field in sheet C for each relevant source stream. Such comment should contain:

- the name of the transferring and receiving installations and identification codes of these installations and
- inherent CO₂ imported or transferred expressed in t CO₂.

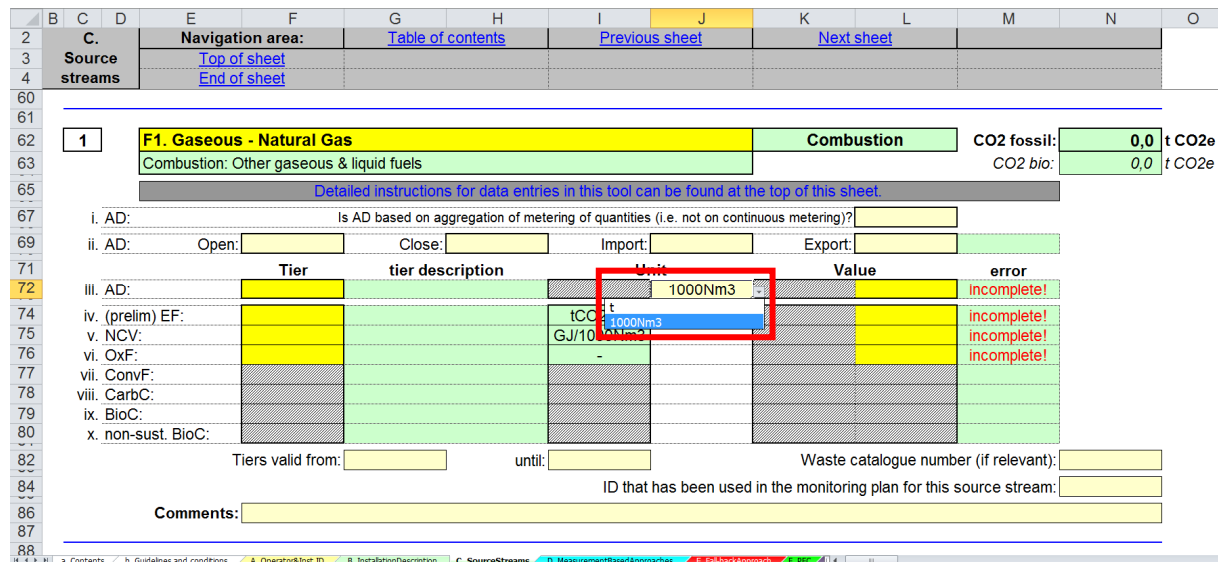
1.7 How can activity data for gaseous fuels be entered as “1000Nm³” instead of “t” in sheet C of the Annual Emissions Report template?

There are two ways to enter activity data in “1000Nm³”⁵:

1. Select “1000Nm³” from the drop-down list in the source stream box in sheet C (this has to be done by each operator), OR
2. Make “1000Nm³” the default option for each gaseous fuel (this has to be done by each CA but only once)

Option 1:

The operator has to select “1000Nm³” from the drop down list in the source stream box in sheet C of the Annual Emissions Report template. For the example of natural gas, this procedure is displayed in the screenshot below.



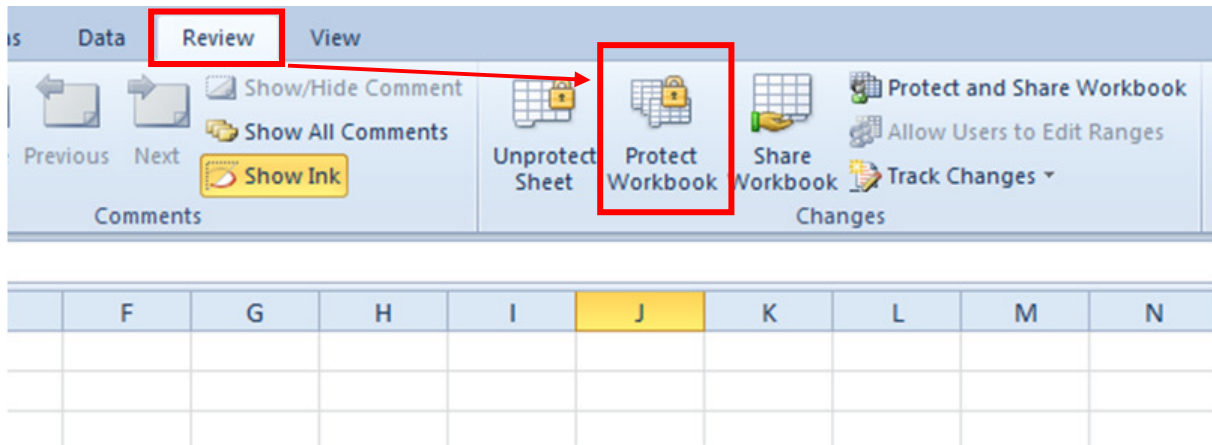
Please note that the operator can use the Annual Emissions Report from the previous year as template for emissions reporting for the current year, unless a Member State has set out specific requirements for using templates from previous years. Therefore, the operator has to do make this

⁵ Please note that entry of data as volumes (i.e. 1000Nm³) implies that the NCV default values from Annex VI MRR are no longer automatically displayed for tier 1, since these are provided there as “per mass” values (e.g. 48 Tj/Gg for natural gas) and not “per volume”.

selection only once per source stream and the correct unit will then already be used for all subsequent years.

Option 2:

The CA has to start from an empty latest version of the Annual Emissions Report template published on their website. As a first step, open this template and click on the “Review” ribbon and then “unprotect the workbook” (see screenshot below).



Unhide and unprotect sheet “MSPParameters” and change the activity data units for Tier 2a from “n.a.” to “1000Nm³” (e.g. in cell L113 for natural gas) for each relevant gaseous fuel, as shown in the screenshot below.

	A	L	M	N	O	P	Q	R	S
71									
72		Tier 2a							
73		Factors for Articles 31 (b) and (c)							
74	Fuel/material type description	AD	NCV		EF		Ox F	Conv F	
75		Unit	Value	Unit	Value	Unit	Value (-)	Value (-)	Valu
109	Gaseous - Gas Works Gas	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
110	Gaseous - Coke Oven Gas	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
111	Gaseous - Blast Furnace Gas	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
112	Gaseous - Oxygen Steel Furnace Gas	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
113	Gaseous - Natural Gas	1000Nm ³	n.a.	GJ/1000Nm ³	n.a.	tCO2/TJ	1	1	n.a.
114	Waste - Industrial Wastes	t	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
115	Liquid - Waste Oils	1000Nm ³	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
116	Solid - Peat	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
117	Solid - Wood (non-waste)	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
118	Solid - Wood (waste)	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
119	Solid - Other solid biomass	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
120	Solid - Charcoal	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
121	Liquid - Biogasoline	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
122	Liquid - Biodiesels	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
123	Liquid - Other liquid biomass	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.
124	Gaseous - Landfill Gas	n.a.	n.a.	n.a.	n.a.	tCO2/TJ	1	1	n.a.

Subsequently, protect sheet „MSPParameters“ again, hide the sheet and protect again the whole „workbook“ under the „Review“ section. The default unit for activity data is now “1000Nm³” for each of the gaseous fuels changed in “MSPParameters” (see screenshot below).

	B	C	D	E	F	G	H	I	J	K	L	M	N	O
2		C.		Navigation area:		Table of contents		Previous sheet		Next sheet				
3		Source		Top of sheet										
4		streams		End of sheet										
60														
61														
62	1	F1. Gaseous - Natural Gas					Combustion		CO2 fossil:	0,0	t CO2e			
63		Combustion: Other gaseous & liquid fuels							CO2 bio:	0,0	t CO2e			
65		Detailed instructions for data entries in this tool can be found at the top of this sheet.												
67		i. AD: Is AD based on aggregation of metering of quantities (i.e. not on continuous metering)?												
69		ii. AD:	Open:	Close:	Import:	Export:								
71			Tier	tier description	Unit	Value	error							
72		iii. AD:			1000Nm3		incomplete!							
74		iv. (prelim) EF:			tCO2/TJ		incomplete!							
75		v. NCV:			GJ/1000Nm3		incomplete!							
76		vi. OxF:			-		incomplete!							
77		vii. ConvF:												
78		viii. CarbC:												
79		ix. BioC:												
80		x. non-sust. BioC:												
82		Tiers valid from:		until:		Waste catalogue number (if relevant):								
84		ID that has been used in the monitoring plan for this source stream:												
86		Comments:												
87														
88														

Please note that this approach implies that a new version of the annual emissions report template is produced, requiring to label it with a new version number in the hidden sheet “VersionDocumentation”. Moreover, this new version has to be “rolled out”, i.e. operators can no longer directly start preparing the emissions report starting from the previous year’s report.

1.8 How can the reporting of CRF (Common Reporting Format) be rendered mandatory by a Competent Authority in the Annual Emissions Report?

This can be done by changing cell B6 in the sheet “MSPParameters” from FALSE to TRUE. As a first step, open the AER template and click on the “Review” ribbon and then “unprotect the workbook” (see screenshot in question 1.7). Unhide sheet “MSPParameters” and then unprotect this sheet. Then change the value in cell B6 to TRUE.

Subsequently, protect sheet „MSPParameters“ again, hide the sheet and protect again the whole „workbook“ under the „Review“ section.

Please note that this approach implies that a new version of the annual emissions report template is produced, requiring to label it with a new version number in the hidden sheet “VersionDocumentation”. Moreover, this new version has to be “rolled out”, i.e. operators can no longer directly start preparing the emissions report starting from the previous year’s report.

1.9 How are relevant CRF (Common Reporting Format) categories to be reported in the Annual Emissions Report?

Article 73 of the MRR requires that “each activity listed in Annex I to Directive 2003/87/EC that is carried out by an operator or aircraft operator shall be labelled using the codes, where applicable, from the following reporting schemes: (a) the Common Reporting Format for national greenhouse gas inventory systems as approved by the respective bodies of the United Nations Framework Convention on Climate Change; [..]”

This is reflected in section 6 of the Annual Emissions Report template. For reporting annual emissions the template re-endorsed in December 2015 is based on the 2006 IPCC guidelines for CRF reporting . Guidance on how to find the appropriate categories for energy (category 1) and process emissions (category 2) can be found on the IPCC website⁶. Please make sure that reporting here is consistent with the reporting of economic activities (e.g. NACE codes) and other reporting obligations for national statistics.

1.10 Are non-carbonate process emissions (e.g. urea) also to be monitored and reported and if yes, how?

Yes, they are. Although the MRR only mentions process material for flue gas desulphurisation, i.e. carbonates input/gypsum output, according to the EU ETS Directive any kind of carbon containing material used for the flue/waste gas scrubbing has to be considered as part of the combustion, i.e. it needs to be monitored and reported. Article 3(t) of the EU ETS Directive states:

“‘combustion’ means any oxidation of fuels, regardless of the way in which the heat, electrical or mechanical energy produced by this process is used, and any other directly associated activities, including waste gas scrubbing;”

The Guidance Document for the Interpretation of Annex I is also explicit, the guidance on page 9 stating: “This clarifies that process emissions may occur as part of combustion activities, especially CO₂ emissions from desulphurisation, from deNO_x units (e.g. when urea is used as reductant) etc.”.

Monitoring and reporting of such non-carbonate process emissions should however follow the same approaches and apply the same tier requirements as carbonate-based process emissions.

How should urea consumption be reported in the AER?

For the reasons given above and although urea is not explicitly listed in the MRR or the AER template as waste gas scrubbing material, it is most appropriate to fill in the AER in a similar way as for e.g. limestone used for waste gas scrubbing. This is achieved by selecting “Combustion: Scrubbing (carbonate)” → “Material – Other materials” → “Urea” in section 7(b):

ID	Source stream type	Source stream category	Source stream Name	error
F1	Combustion: Scrubbing (carbonate)	Material - Other materials	Urea	

In the corresponding source stream box in sheet C, data for activity data and the emission factor need to be entered. As stated in Annex IV, section 1(C) of the MRR, the emission factor related to input materials for flue gas scrubbing is to be determined by application of method A, i.e. based on stoichio-

⁶ Guidance on categorisation can be downloaded from <http://www.ipcc-nggip.iges.or.jp/public/2006gl/>

metric ratios (0.7328 t CO₂ / t urea⁷) and amount of urea in the input material to be determined using best industry practice guidelines.

1	F1. Material - Other materials; Urea	Process Emissions	CO2 fossil:	513,0	t CO2e
	Combustion: Scrubbing (carbonate)		CO2 bio:	0,0	t CO2e
Detailed instructions for data entries in this tool can be found at the top of this sheet.					
i. AD:	Is AD based on aggregation of metering of quantities (i.e. not on continuous metering)?				WAHR
ii. AD:	Open:	2.000,00	Close:	2.100,00	Import: 800,00 Export: 0,00
iii. AD:	1	± 7,5%	t	700,00	error
iv. (prelim) EF:	1	Type I & best practice	tCO2/t	0,73	
v. NCV:					
vi. OxF:					
vii. ConvF:					
viii. CarbC:					
ix. BioC:					
x. non-sust. BioC:					
	Tiers valid from:		until:	Waste catalogue number (if relevant):	
	ID that has been used in the monitoring plan for this source stream:				
Comments:					

1.11 How can further fuels be considered commercial standard fuels and how do they qualify as such?

This can be done by changes to the sheet “MSPParameters” and should only be done by the Competent Authority.

There are two reasons that justify such amendment:

- A fuel satisfies the criteria for a commercial standard fuel as defined in Article 3(31)⁸
- A fuel satisfies the criteria in Article 31(4)⁹

The identification of further commercial standard fuels in accordance with Article 3(31) can be difficult for the Competent Authority, in particular to take this decision that it is an “internally standardised fuel”. Therefore, it may be more common to identify fuels that can be treated like commercial standard fuels in accordance with Article 31(4) where the criteria of this Article are satisfied on a regional or even national level (for further details see question 1.8 of the FAQ Monitoring and Reporting document which can be downloaded from the Commission’s website).

For the amendment of the commercial standard fuel list in the AER template the Competent Authority has to take the following steps: as a first step, open the AER template and click on the “Review” ribbon and then “unprotect the workbook” (see screenshot in question 1.7). Unhide sheet “MSPParameters” and then unprotect this sheet.

Unprotect sheet „MSPParameters“ and add further commercial standard fuels to the table in row 18 (cell R18) by entering the fuel’s name (e.g. “Gaseous – Natural gas”), as shown in the screenshot below.

⁷ Note that for EF the template is only displaying two digits after the decimal point. However, calculation of emissions is done using the same accuracy as data is entered (in this case the four digits in 0.7328 t CO₂ / t urea).

⁸ Article 3(31): “commercial standard fuel” means the internationally standardised commercial fuels which exhibit a 95 % confidence interval of not more than 1 % for their specified calorific value, including gas oil, light fuel oil, gasoline, lamp oil, kerosene, ethane, propane, butane, jet kerosene (jet A1 or jet A), jet gasoline (Jet B) and aviation gasoline (AvGas)”

⁹ Article 31(4): “Upon application by the operator, the competent authority may allow that the net calorific value and emission factors of fuels are determined using the same tiers as required for commercial standard fuels provided that the operator submits, at least every three years, evidence that the 1 % interval for the specified calorific value has been met during the last three years”

	A	L	M	N	O	P	Q	R
7	Production details mandatory?							
8	Batch reporting mandatory?	andatory. Default value is "FALSE" = "optional"						
9								
10	Source stream category list for each source stream type							
11	Please note: When this list is amended, please update the list in the following sheet:		Name of this sheet: MSPParameters					
12	For each "source stream type" select a source stream category".							
13	1. Only cells in the grey area below should be used.		CHECK if there are empty cells:			<input type="checkbox"/>		
14	2. If the list is too short, cells containing "n.a." should be used.							
15	3. Consider to also add those additional categories if relevant.							
16	4. As a final step it should be checked if the list is complete.							
17								
18	1	Liquid - Gasolin	Liquid - Lamp	Liquid - Keros	Liquid - Jet ker	Liquid - Jet gas	Liquid - Aviat	= Translations!
19	2	Gaseous - Bio	Gaseous - Slu	Gaseous - Lar	Gaseous - Car	Gaseous - Met	Gaseous - Ott	Gaseous - Ott
20	3	Solid - Coking	Solid - Sub-Bit	Solid - Other B	Solid - Gas Co	Solid - Paraffin	Solid - Black liq	Solid - Firewod
21	4	Gaseous - Col	Gaseous - Bla	Gaseous - Ox	Gaseous - Bio	Gaseous - Slu	Gaseous - Lar	Gaseous - Car
22	5	Gaseous - Bio	Gaseous - Slu	Gaseous - Lar	Gaseous - Car	Gaseous - Met	Gaseous - Eth	Gaseous - Pro
23	6	Material - CaC	Material - MgC	Material - Na2d	Material - BaC	Material - Li2C	Material - K2C	Material - SrC
24	7	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
25	8	Gaseous - Ox	Gaseous - Bio	Gaseous - Slu	Gaseous - Lar	Gaseous - Car	Gaseous - Met	Gaseous - Eth
26	9	Gaseous - Ox	Gaseous - Bio	Gaseous - Slu	Gaseous - Lar	Gaseous - Car	Gaseous - Met	Gaseous - Eth
27	10	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
28	11	Gaseous - Bio	Gaseous - Slu	Gaseous - Lar	Gaseous - Car	Gaseous - Met	Gaseous - Eth	Gaseous - Pro

If the added fuel was part of another category (e.g. other gaseous and liquid fuels) you may want to simply copy the reference to the translation sheet (e.g. "Translations!\$B\$999") to row 18 and remove the same fuel from the other list to avoid any confusion. The fuel will then be on the drop-down list in column "source stream category" in section 7(b) of sheet B where "Combustion: commercial standard fuel" is selected as source stream type.

Subsequently, protect sheet „MSPParameters“ again, hide the sheet and protect again the whole „workbook“ under the „Review“ section.

Please note that this approach implies that a new version of the annual emissions report template is produced, requiring to label it with a new version number in the hidden sheet "VersionDocumentation". Moreover, this new version has to be "rolled out", i.e. operators can no longer directly start preparing the emissions report starting from the previous year's report.