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# Subpart G - Ammonia Manufacturing

 A printer-friendly version (pdf) (21 pp, 3,533K) of GHG reporting instructions for this subpart

Please select a help topic from the list below:

- Using e-GGRT to Prepare Your Subpart G Report
  - Subpart G Summary Information for this Facility
  - Subpart G Process Unit Information for Units NOT Monitored by CEMS
  - Subpart G Process Unit Information for Units Monitored by CEMS
  - Subpart G Emissions Information for Process Units NOT Monitored by CEMS
  - Subpart G Emissions Information for Process Units Monitored by CEMS
- Using Subpart G Calculation Spreadsheets
- Carry forward of data from previous submissions into RY2012 forms
- Subpart G Rule Guidance
- Subpart G Rule Language (eCFR)

Additional Resources:

- Part 98 Terms and Definitions
- Frequently Asked Questions (FAQs)
- Webinar Slides

## Using e-GGRT to Prepare Your Subpart G Report

This page provides an overview of sub-topics that are central to Subpart G reporting:

- Summary Information for this Facility
- Process Unit Information
- Emissions Information
- Validation Report

The end of this page contains links you can use for more information on these topics

The image below displays the Subpart G Overview page

If you previously reported for Reporting Year (RY) 2011, the Agency has carried some of your RY2011 data forward and entered it in your RY2012 forms to reduce the reporting burden. It is still your responsibility to review and ensure that all of the information in your submission is correct, but the Agency believes that most of the data which is carried forward is unlikely to change significantly from year to year. For more information about carry forward data, please see the [Carry forward of data from previous submissions into RY2012 forms help content](#).

Click image to expand



**OVERVIEW OF SUBPART REPORTING REQUIREMENTS**

Subpart G requires affected facilities to report carbon dioxide (CO<sub>2</sub>) process emissions from each ammonia manufacturing process unit. First, use this page to identify each ammonia manufacturing process unit and then enter Greenhouse gas (GHG) data required by Subpart G for each ammonia manufacturing process unit and for your facility. For additional information about Subpart G reporting, please use the e-GGRT Help link(s) provided.

**Subpart G: View Validation**

**SUBPART G SUMMARY INFORMATION FOR THIS FACILITY**

Annual Urea Prod. (metric tons)      Quantity of CO<sub>2</sub> used to produce urea (metric tons)

**UNIT SUMMARY**

Unit Name/Identifier	Feedstock	CO <sub>2</sub> (metric tons)	Status <sup>1</sup>	Delete
No units have been added				

**UNIT SUMMARY (Units monitored by CEMS)**

Unit Name/Identifier	Feedstock	Status <sup>1</sup>	Delete
No units have been added			

<sup>1</sup> A status of "Incomplete" means that one or more required data elements are incomplete. For details, refer to the Data Completeness validation messages in your Validation Report by clicking the "View Validation" link above (Note: if there are no validation messages for this subpart you will not see this link).

## Summary Information for this Facility

Subpart G requires you to report the following data about your facility (ammonia process unit as defined in §98.76 reporting requirements):

- The annual urea production (in metric tons) by the facility
- The method used to determine that annual production
- The quantity of CO<sub>2</sub> used to produce urea from the steam reforming of a hydrocarbon or the gasification of solid and liquid raw material (in metric tons) by the facility
- The method used to determine that CO<sub>2</sub> quantity

## Process Unit Information

For each process unit at your facility, the following unit information is required:

- A unique name or identifier for the unit, plus optional description for this facility (see also [About Unique Unit Names](#))
- The feedstock type used by the unit (gaseous, liquid, or solid)

For each process unit monitored by CEMS at your facility, the following supplemental unit information is also required:

- The quantity of feedstock consumed by the unit during the reporting year
- The method used for determining the quantity of feedstock consumed

## Emissions Information

The required emissions information and the manner by which required emissions information is entered into e-GGRT is different for units that are monitored by a Continuous Emissions Monitoring System (CEMS) and units that are NOT monitored by a CEMS

As a result, separate help content has been created in this subpart for entering emissions information for units monitored by CEMS and units NOT monitored by CEMS

**For each process unit that is NOT monitored by CEMS at your facility, the following emissions information is required on a monthly basis:**

- The annual CO<sub>2</sub> process emissions
- The method used for determining the quantity of feedstock consumed
- An indication if the quantity of feedstock consumed is a substitute data value
- The basis for feedstock carbon content values
- An indication if the carbon content of the feedstock is a substitute data value
- An indication if molecular weight of the gaseous feedstock is a substitute data value (only applicable for units accepting gaseous feedstock)

Do not leave any of the entry fields blank. If you did not use substitute data values for a particular month, leave the check box unchecked.

Also, the measured carbon content of the feedstock is required if one or more monthly carbon content values that the facility has indicated is based upon supplier reports

**For each CEMS Monitoring Location, provide the following information:**

- A unique unit name or identifier for the CML (see also [About Unique Unit Names](#))
- An optional description or label for the CML
- The configuration of processes or process units that are monitored by the CML:
  - Single process or process unit that exhausts to a dedicated stack
  - Multiple processes or process units that share a common stack
  - Process or process unit that shares a common stack with one or more stationary fuel combustion units
- The name of each fuel combusted in the unit(s) monitored by the CEMS
- The Tier 4/CEMS methodology start and end dates
- The cumulative total of hourly CO<sub>2</sub> mass emissions for each quarter of the reporting year (metric tons) (*Do not cumulate emissions data between quarters*)
- The total annual CO<sub>2</sub> mass emissions measured by the CEMS (metric tons)
- An indication whether emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS
- The total annual biogenic CO<sub>2</sub> emissions from the combustion of all biomass fuels combined (metric tons) (*if applicable*)
- The total annual non-biogenic CO<sub>2</sub> emissions which includes fossil fuel, sorbent, and process CO<sub>2</sub> emissions (metric tons)
- The total annual CH<sub>4</sub> and N<sub>2</sub>O emissions associated with the combustion of all [Table C-2](#) fuels combusted in all processes/process units monitored by the CEMS derived from application of [Equation C-10](#) (metric tons) (*if there are no combustion emissions in this CML, please enter zero*)
- The total number of source operating hours in the reporting year
- The total operating hours in which a substitute data value was used in the emissions calculations for the CO<sub>2</sub> concentration parameter

- The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter
- If moisture correction is required and a continuous moisture monitor is used, the total operating hours in which a substitute data value was used in the emissions calculations for the stack gas moisture content parameter
- An indication of the process units monitored by the CML

Do not leave any of these fields blank. If, for example, your facility has no biogenic CO<sub>2</sub> emissions, enter 0.

## Validation Report

The Validation Report assists with the completeness and quality of your reporting data.

We strongly encourage you to use the Validation Report to check your work. The Validation Report performs two types of checks:

- Data Completeness: Data required for reporting that are missing or incomplete.
- Data Quality: Data that are outside of the expected range of values.

You may view the Validation Report at any time.



Note that the Validation Report is intended to assist users in entering data, but it is not an indication that the reporter has entered all necessary information, nor is it an indication that the reporter is in compliance with part 98. Furthermore a negative finding on the validation report is not a guarantee that a data element was entered incorrectly.

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## See Also

[Screen Errors](#)

[Using e-GGRT to Prepare Your Subpart G Report](#)

[Subpart G Summary Information for this Facility](#)

[Subpart G Process Unit Information for Units NOT Monitored by CEMS](#)

[Subpart G Process Unit Information for Units Monitored by CEMS](#)

[Subpart G Emissions Information for Process Units NOT Monitored by CEMS](#)

[Subpart G Emissions Information for Process Units Monitored by CEMS](#)

[Subpart Validation Report](#)

## Subpart G Summary Information for this Facility

This page provides a description of how to enter Subpart G Ammonia Manufacturing summary information about this facility.

### Adding or Updating Summary Information for this Facility

To add or update Subpart G Summary Information for this Facility, locate the FACILITY SUMMARY table on the Subpart G Overview page and click OPEN.

*Click image to expand*

Subpart G requires you to report the following data about your facility (ammonia process unit as defined in §98.76 reporting requirements):

- The annual urea production (in metric tons) by the facility
- The method used to determine that annual production
- The quantity of CO<sub>2</sub> used to produce urea from the steam reforming of a hydrocarbon or the gasification of solid and liquid raw material (in metric tons) by the facility
- The method used to determine that CO<sub>2</sub> quantity

These values must be input to e-GGRT.

When you have entered the required information, click SAVE.

*Click image to expand*

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## See Also

- [Screen Errors](#)
- [Using e-GGRT to Prepare Your Subpart G Report](#)
- [Subpart G Summary Information for this Facility](#)
- [Subpart G Process Unit Information for Units NOT Monitored by CEMS](#)
- [Subpart G Process Unit Information for Units Monitored by CEMS](#)
- [Subpart G Emissions Information for Process Units NOT Monitored by CEMS](#)
- [Subpart G Emissions Information for Process Units Monitored by CEMS](#)
- [Subpart Validation Report](#)

## Subpart G Process Unit Information for Units NOT Monitored by CEMS

This page provides step-by-step instructions on how to enter and edit Subpart G Ammonia Manufacturing process unit information

### Step 1: Add a unit

To add a unit that is NOT monitored by a CEMS, find the UNIT SUMMARY table on the Subpart Overview page and click the link titled "ADD a Unit"

To edit a unit, click the edit icon or the Name/ID link located in the first column of the table

To delete a unit, click the delete icon located in the last column of the table

Click image to expand

ABC Petroleum  
**Subpart G: Ammonia Manufacturing (2011)**  
Subpart Overview

**OVERVIEW OF SUBPART REPORTING REQUIREMENTS**  
Subpart G requires affected facilities to report carbon dioxide (CO<sub>2</sub>) process emissions from each ammonia manufacturing process unit. First, use this page to identify each ammonia manufacturing process unit and then enter Greenhouse gas (GHG) data required by Subpart G for each ammonia manufacturing process unit and for your facility. For additional information about Subpart G reporting, please use the e-GGRT Help link(s) provided.

EPA has finalized a rule that defers the deadline for reporting certain data elements used as inputs to emission equations for direct emitters until March 31, 2015. See 78 FR 52657 (published August 28, 2011), in accordance with the rule, e-GGRT is not currently collecting this subset of inputs to emission equations.

**Subpart G: View Validation**

**SUBPART G SUMMARY INFORMATION FOR THIS FACILITY**

Annual Urea Prod. (metric tons)      Quantity of CO<sub>2</sub> used to produce urea (metric tons)      **OPEN**

**UNIT SUMMARY**

Unit Name-Identifier	Feedstock	CO <sub>2</sub> (metric tons)	Status <sup>1</sup>	Delete
No units have been added				

**ADD a Unit**

**UNIT SUMMARY (Units monitored by CEMS)**

Unit Name-Identifier	Feedstock	Status <sup>1</sup>	Delete
No units have been added			

**ADD a Unit Monitored by CEMS**

**Facility Overview**

<sup>1</sup>A status of "Incomplete" means that one or more required data elements are incomplete. For details, refer to the Data Completeness validation messages in your Validation Report by clicking the "View Validation" link above (note: if there are no validation messages for this subpart you will not see this link).

## Step 2: Indicate CEMS utilization for a unit

For each process unit, confirm whether or not the process unit utilizes CEMS

Note that when adding a new unit you are prompted to answer the CEMS question immediately (the answer to this question will default to "No" for units added using the "ADD a Unit" link and will default to "Yes" for units added using the "ADD a Unit Monitored by CEMS" link)

The CEMS response may be changed here and the unit information will be relocated to the appropriate table on the Subpart Overview page

When finished, click SAVE

Click image to expand

ABC Petroleum  
**Subpart G: Ammonia Manufacturing (2011)**  
Subpart Overview • **Add/Edit a Unit**

**CONTINUOUS EMISSIONS MONITORING SYSTEMS (CEMS)**  
Please indicate whether or not the emissions for this ammonia manufacturing unit are measured by a CEMS. For additional information about reporting CEMS emissions, please use the e-GGRT Help link(s) provided. \* denotes a required field

**CONTINUOUS EMISSIONS MONITORING**

Is this unit's emissions monitored using a CEMS?  Yes  No

**CANCEL SAVE**

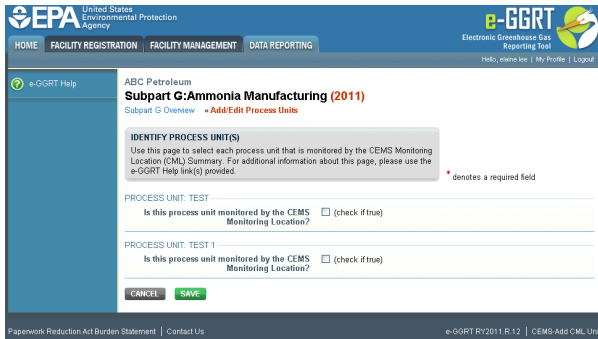
## Step 3: Enter required information for a unit

For each process unit at your facility, report the following required information:

- A unique name or identifier for the unit, plus optional description for this facility (see also [About Unique Unit Names](#))
- The feedstock type used by the unit (gaseous, liquid, or solid)

When finished, click SAVE

Click image to expand



#### Step 4: Repeat Steps 1-3

Repeat Steps 1-3 until all process units have been added for your facility

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#### See Also

- [Screen Errors](#)
- [Using e-GGRT to Prepare Your Subpart G Report](#)
- [Subpart G Summary Information for this Facility](#)
- [Subpart G Process Unit Information for Units NOT Monitored by CEMS](#)
- [Subpart G Process Unit Information for Units Monitored by CEMS](#)
- [Subpart G Emissions Information for Process Units NOT Monitored by CEMS](#)
- [Subpart G Emissions Information for Process Units Monitored by CEMS](#)
- [Subpart Validation Report](#)

## Subpart G Process Unit Information for Units Monitored by CEMS

This page provides step-by-step instructions on how to enter and edit Subpart G Ammonia Manufacturing process unit information for units that are monitored by a Continuous Emissions Monitoring System (CEMS).

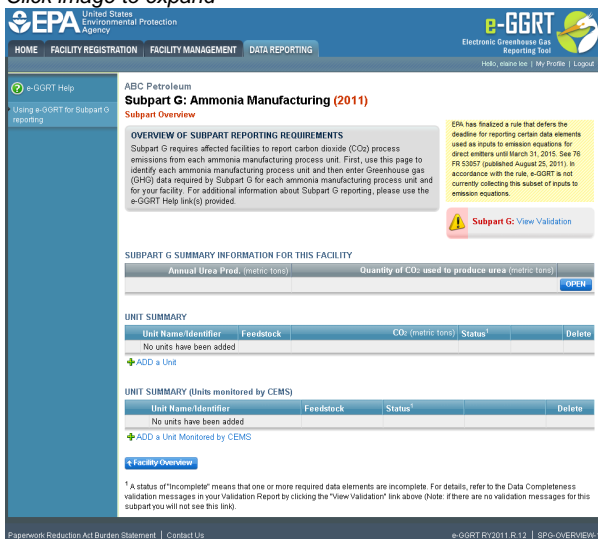
#### Step 1: Add a unit

To add a unit that is monitored by a CEMS, find the UNIT SUMMARY (Units monitored by CEMS) table on the Subpart Overview page and click the link titled "ADD a Unit Monitored by CEMS"

To edit a unit, click the edit icon or the Name/ID link located in the first column of the UNIT SUMMARY (Units monitored by CEMS) table

To delete a unit, click the delete icon located in the last column of the UNIT SUMMARY (Units monitored by CEMS) table

*Click image to expand*



## Step 2: Indicate CEMS utilization for a unit

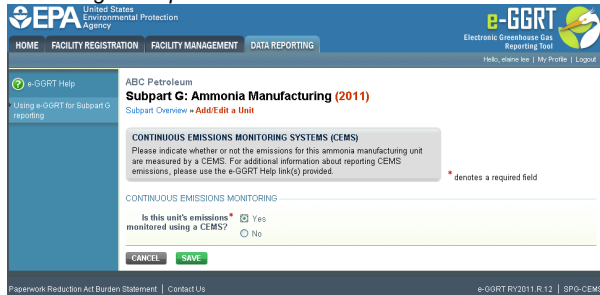
For each process unit, confirm whether or not the process unit utilizes CEMS

*Note that when adding a new unit you are prompted to answer the CEMS question immediately (the answer to this question will default to “No” for units added using the “ADD a Unit” link and will default to “Yes” for units added using the “ADD a Unit Monitored by CEMS” link)*

The CEMS response may be changed here and the unit information will be relocated to the appropriate table on the Subpart Overview page

When finished, click SAVE

*Click image to expand*



The screenshot shows the EPA e-GGRT interface for 'ABC Petroleum' and 'Subpart G: Ammonia Manufacturing (2011)'. The 'CONTINUOUS EMISSIONS MONITORING SYSTEMS (CEMS)' section is active, with a message: 'Please indicate whether or not the emissions for this ammonia manufacturing unit are measured by a CEMS. For additional information about reporting CEMS emissions, please use the e-GGRT Help link(s) provided.' Below this, the 'CONTINUOUS EMISSIONS MONITORING' section has a question: 'Is this unit's emissions monitored using a CEMS?' with radio buttons for 'Yes' (selected) and 'No'. 'CANCEL' and 'SAVE' buttons are at the bottom.

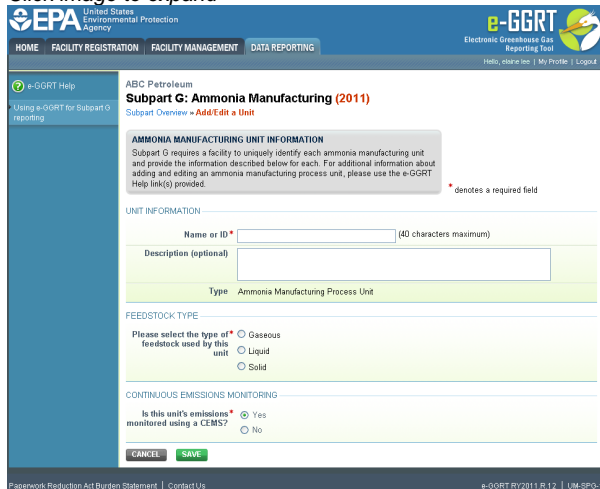
## Step 3: Enter required information for a unit

For each process unit monitored by a CEMS, report the following required information:

- A unique name or identifier for the unit, plus optional description for this facility (see also About Unique Unit Names)
- The feedstock type used by the unit (gaseous, liquid, or solid)

When finished, click SAVE

*Click image to expand*



The screenshot shows the EPA e-GGRT interface for 'ABC Petroleum' and 'Subpart G: Ammonia Manufacturing (2011)'. The 'AMMONIA MANUFACTURING UNIT INFORMATION' section is active, with a message: 'Subpart G requires a facility to uniquely identify each ammonia manufacturing unit and provide the information described below for each. For additional information about adding and editing an ammonia manufacturing process unit, please use the e-GGRT Help link(s) provided.' Below this, the 'UNIT INFORMATION' section has a 'Name or ID' field (40 characters maximum) and a 'Description (optional)' field. The 'Type' is set to 'Ammonia Manufacturing Process Unit'. The 'FEEDSTOCK TYPE' section has a question: 'Please select the type of feedstock used by this unit' with radio buttons for 'Gaseous' (selected), 'Liquid', and 'Solid'. The 'CONTINUOUS EMISSIONS MONITORING' section has a question: 'Is this unit's emissions monitored using a CEMS?' with radio buttons for 'Yes' (selected) and 'No'. 'CANCEL' and 'SAVE' buttons are at the bottom.

## Step 4: Enter supplemental unit information

To select a unit for which to enter supplemental unit information, find the unit in the UNIT SUMMARY (Units Monitored by CEMS) table and click OPEN

*Click image to expand*



For each unit monitored by CEMS, enter the following required supplemental unit information:

- The quantity of feedstock consumed by the unit during the reporting year
- The method used for determining the quantity of feedstock consumed

When finished, click **SAVE**.

*Click image to expand*

## Step 5: Repeat Steps 1-4

Repeat Steps 1-3 until all process units monitored by a CEMS have been added for your facility

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## See Also

[Screen Errors](#)

[Using e-GGRT to Prepare Your Subpart G Report](#)

[Subpart G Summary Information for this Facility](#)

[Subpart G Process Unit Information for Units NOT Monitored by CEMS](#)

[Subpart G Process Unit Information for Units Monitored by CEMS](#)

[Subpart G Emissions Information for Process Units NOT Monitored by CEMS](#)

[Subpart G Emissions Information for Process Units Monitored by CEMS](#)

[Subpart Validation Report](#)

# Subpart G Emissions Information for Process Units NOT Monitored by CEMS

This page provides step-by-step instructions on how to enter and edit Subpart G Ammonia Manufacturing emissions information for process units that are NOT monitored by a Continuous Emissions Monitoring System (CEMS).

## Step 1: Select a unit

To select a unit for which to enter emissions data, find the unit in the UNIT SUMMARY table and click OPEN

Click image to expand

The screenshot displays the EPA e-GBRT interface for Subpart G: Ammonia Manufacturing (2011). The page is titled 'Facility ABC' and 'Subpart G: Ammonia Manufacturing (2011)'. It includes a navigation menu with 'HOME', 'FACILITY REGISTRATION', 'FACILITY MANAGEMENT', and 'DATA REPORTING'. The main content area is divided into several sections: 'OVERVIEW OF SUBPART REPORTING REQUIREMENTS', 'SUBPART G SUMMARY INFORMATION FOR THIS FACILITY', and two 'UNIT SUMMARY' tables. The summary information shows 'Annual Ammonia Prod, (metric tons): 45.0' and 'Quantity of CO2 used to produce urea (metric tons): 40'. The unit summaries are currently empty, with 'No units have been added' for both. A green checkmark and the text 'Subpart G: No Validation Messages' are visible. The footer contains 'Paperwork Reduction Act Burden Statement | Contact Us' and 'e-GBRT RY2011 R.12 | SPG-OVERVIEW-1'.

## Step 2: Equation Summary and Result

For each ammonia manufacturing process unit, enter the annual process CO<sub>2</sub> emissions for the unit in metric tons:

- For units accepting a gaseous feedstock, this value will be the output of Equation G-1
- For units accepting a liquid feedstock, this value will be the output of Equation G-2
- For units accepting a solid feedstock, this value will be the output of Equation G-3

For assistance in calculating process CO<sub>2</sub> emissions for a unit, access the calculation spreadsheets for this subpart by clicking the link located below the red emissions data entry box and follow the provided instructions:

- For gaseous feedstock, the link will read "Use G-1 spreadsheet to calculate"
- For liquid feedstock, the link will read "Use G-2 spreadsheet to calculate"
- For solid feedstock, the link will read "Use G-3 spreadsheet to calculate"

## Step 3: Monthly substitute data values

For each ammonia manufacturing process unit accepting a gaseous feedstock and for each month, provide the following:

- The method used for determining the quantity of gaseous feedstock consumed (Flow meter or Other) [98.76(b)(3)]
- An indication if the quantity of gaseous feedstock is a substitute data value [98.3(c)(8)]
- An indication if the carbon content of the gaseous feedstock is a substitute data value [98.3(c)(8)]
- An indication if the molecular weight of the gaseous feedstock is a substitute data value [98.3(c)(8)]

For each ammonia manufacturing process unit accepting a liquid feedstock and for each month, provide the following:

- The method used for determining the quantity of liquid feedstock consumed (Flow meter or Other) [98.76(b)(3)]
- An indication if the quantity of liquid feedstock is a substitute data value [98.3(c)(8)]
- An indication if the carbon content of the liquid feedstock is a substitute data value [98.3(c)(8)]

For each ammonia manufacturing process unit accepting a solid feedstock and for each month, provide the following:

- The method used for determining the quantity of solid feedstock consumed (Company records or Other) [98.76(b)(3)]
- An indication if the quantity of solid feedstock is a substitute data value [98.3(c)(8)]
- An indication if the carbon content of the solid feedstock is a substitute data value [98.3(c)(8)]

For each monthly carbon content value provided for gaseous, liquid, or solid feedstocks, provide an indication of the basis for the carbon content value from the following list [98.76(b)(5)]:

- Supplier records
- ASTM D1945-03
- ASTM D1946-90 (Reapproved 2006)
- ASTM D2502-04 (Reapproved 2002)
- ASTM D2503-92 (Reapproved 2007)
- ASTM D3238-95 (Reapproved 2005)
- ASTM D5291-02 (Reapproved 2007)
- ASTM D3176-89 (Reapproved 2002)
- ASTM D5373-08

If any of the carbon content values are based on supplier reports, provide the measured carbon content of the feedstock (in kg C per kg of

feedstock) as determined for QA/QC of supplier data under §98.74(e) [98.76(b)(6)]

When finished, click SAVE

If you don't have all the data, you can enter some now, save it, then finish it later

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CO<sub>2</sub> process emissions for a unit, rounded to the nearest 0.1 of a metric ton. The value displayed is for informational purposes only

Note: The screenshot below is provided as an example and is for Equation G-1. Screens for Equation G-2 and G-3 will differ slightly.

Click image to expand

#### Step 4: Repeat Steps 1-3

Repeat Steps 1-3 until emissions data have been entered for all process units NOT monitored by a CEMS

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#### See Also

[Screen Errors](#)

[Using e-GGRT to Prepare Your Subpart G Report](#)

[Subpart G Summary Information for this Facility](#)

[Subpart G Process Unit Information for Units NOT Monitored by CEMS](#)

[Subpart G Process Unit Information for Units Monitored by CEMS](#)

[Subpart G Emissions Information for Process Units NOT Monitored by CEMS](#)

[Subpart G Emissions Information for Process Units Monitored by CEMS](#)

[Subpart Validation Report](#)

## Subpart G Emissions Information for Process Units Monitored by CEMS

This page provides step-by-step instructions on how to enter and edit Subpart G Ammonia Manufacturing emissions information for process units that are monitored by a Continuous Emissions Monitoring System (CEMS).

### Step 1: Add a CEMS Monitoring Location (CML)

To add a CML, click the “Add a CEMS Monitoring Location” link below the CEMS MONITORING LOCATION (CML) SUMMARY table on the Subpart Overview page



The screenshot below is from Subpart G and is displayed as an example. The screen for other subparts may differ slightly.

Click image to expand

The screenshot displays the EPA e-GGRT interface for Subpart G reporting. The main heading is "Subpart G: Ammonia Manufacturing (2011)". Below this, there is an "OVERVIEW OF SUBPART REPORTING REQUIREMENTS" section. A yellow callout box states: "EPA has finalized a rule that defers the deadline for reporting certain data elements used as inputs to emission equations for direct emitters until March 31, 2015. See 76 FR 53957 (published August 20, 2011). In accordance with the rule, e-GGRT is not currently collecting this subset of inputs to emission equations." Below the overview, there is a "SUBPART G SUMMARY INFORMATION FOR THIS FACILITY" section with a table showing "Annual Urea Prod. (metric tons)" as 45.0 and "Quantity of CO<sub>2</sub> used to produce urea (metric tons)" as 40. There are two "UNIT SUMMARY" sections, one for units monitored by CEMS and another for units monitored by CEMS, both showing "No units have been added".

## Step 2: Define a CML and report emissions information

For each CEMS Monitoring Location, provide the following information:

- A unique unit name or identifier for the CML (see also [About Unique Unit Names](#))
- An optional description or label for the CML
- The configuration of processes or process units that are monitored by the CML:
  - Single process or process unit that exhausts to a dedicated stack
  - Multiple processes or process units that share a common stack
  - Process or process unit that shares a common stack with one or more stationary fuel combustion units
- The types of fuel combusted in the unit(s) monitored by the CEMS
- The Tier 4/CEMS methodology start and end dates
- The quarter total of hourly CO<sub>2</sub> mass emissions for each quarter of the reporting year (metric tons) (*Do not cumulate emissions data between quarters*)
- The total annual CO<sub>2</sub> mass emissions measured by the CEMS (metric tons)
- An indication whether emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS
- The total annual biogenic CO<sub>2</sub> emissions from the combustion of all biomass fuels combined (metric tons) (*if not applicable, enter '0'*)
- The total annual non-biogenic CO<sub>2</sub> emissions which includes fossil fuel, sorbent, and process CO<sub>2</sub> emissions (metric tons)
- The total annual CH<sub>4</sub> and N<sub>2</sub>O emissions associated with the combustion of all [Table C-2](#) fuels combusted in all processes/process units monitored by the CEMS derived from application of [Equation C-10](#) (metric tons) (*if there are no combustion emissions in this CML, please enter '0'*)
- The total number of source operating hours in the reporting year
- The total operating hours in which a substitute data value was used in the emissions calculations for the CO<sub>2</sub> concentration parameter
- The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter
- If moisture correction is required and a continuous moisture monitor is used, the total operating hours in which a substitute data value was used in the emissions calculations for the stack gas moisture content parameter
- The total annual CO<sub>2</sub> emissions from the CEMS Monitoring Location (CML) Summary attributable to combustion (metric tons)

Do not leave any of these fields blank. If, for example, your facility has no biogenic CO<sub>2</sub> emissions, enter '0'.

For assistance in calculating annual CH<sub>4</sub> and N<sub>2</sub>O emissions using [Equation C-10](#), access the optional calculation spreadsheet by clicking one of the links titled "[Use Equation C-10 spreadsheet to calculate](#)" located below each of the red emissions information data entry boxes and follow the provided instructions

## Step 3: Identify process units monitored at a CML

To identify the process units monitored at a CML, first click the link titled "ADD/REMOVE a process unit that exhausts to this CEMS Monitoring Location" at the bottom of the page



The screenshot below is from Subpart G and is displayed as an example. The screen for other subparts may differ slightly.

Click image to expand

**Facility ABC**  
**Subpart G: Ammonia Manufacturing (2011)**  
 Subpart G Overview • Add/Edit CEMS Monitoring Location

**CONTINUOUS EMISSION MONITORING SYSTEM (CEMS) MONITORING LOCATION (CML) INFORMATION**  
 Use this page to uniquely identify each CEMS Monitoring Location (CML) Summary and provide the annual GHG emissions and other information described below. Use the "ADD/REMOVE a Process Unit" link at the bottom of the page to identify the process unit(s) monitored by this CEMS Monitoring Location (CML) Summary. For additional information about the data collected on this page, please use the e-GGRT Help link(s) provided.

**CONFIGURATION**  
 CEMS Monitoring Location Name/ID: (40 characters maximum)  
 Description (optional):  
 Configuration Type: Select  
 Types of fuel combusted in the unit(s) monitored by the CEMS: (200 characters maximum)

**TIER 4 METHODOLOGY INFORMATION**  
 Calculation Methodology Start Date: 01/01/2011  
 Calculation Methodology End Date: 12/31/2011

**QUARTERLY CO<sub>2</sub> EMISSIONS**  
 Quarter 1: (metric tons)  
 Quarter 2: (metric tons)  
 Quarter 3: (metric tons)  
 Quarter 4: (metric tons)

**ANNUAL CO<sub>2</sub> EMISSIONS**  
 Total annual CO<sub>2</sub> mass emissions (biogenic and non-biogenic) measured by the CEMS: (metric tons)  
 Check this box to indicate that the emissions reported for the CEMS include emissions calculated according to 40 CFR 60.140(i)(ii) for a dipstream that bypassed the CEMS.  
 Total annual biogenic CO<sub>2</sub> mass emissions: (metric tons)  
 Total annual non-biogenic CO<sub>2</sub> mass emissions (includes fossil fuel, sorbent, and process CO<sub>2</sub> emissions): (metric tons)

**EQUATION C-10 SUMMARY AND RESULTS**  

$$CH_4 \text{ or } N_2O = 0.001 * (F) * EF$$
 Hover over an element in the equation above to reveal a definition of that element.  
 Enter CH<sub>4</sub> and N<sub>2</sub>O emissions from only combustion of Table C-2 Fuels directly below. If there are no combustion emissions from Table C-2 Fuels in this CEMS Monitoring Location, please enter 0.  
 Total CH<sub>4</sub> emissions: (metric tons) [Use Equation C-10 spreadsheet to calculate]  
 Total N<sub>2</sub>O emissions: (metric tons) [Use Equation C-10 spreadsheet to calculate]

**ADDITIONAL EMISSIONS INFORMATION**  
 Total number of source operating hours in the reporting year: (hours)  
 The total operating hours in which a substitute data value was used in the emissions calculations for CO<sub>2</sub> concentration: (hours)  
 The total operating hours in which a substitute data value was used in the emissions calculations for stack gas flow rate: (hours)  
 The total operating hours in which a substitute data value was used in the emissions calculations for stack gas moisture content (if moisture correction is required and a continuous moisture monitor is used): (hours)

**CEMS MONITORING LOCATION PROCESS UNITS**  
 Process Unit Name/Identifier: [There are no process units monitored by CEMS available for selection.]  
 ADD/REMOVE/EDIT a process unit that exhausts to this CEMS Monitoring Location  
 CANCEL SAVE

On the CML Process Units Selection page, use the check boxes to select the process unit(s) monitored at this CML. This will indicate that the unit(s) selected vent emission through the stack monitored by this CML.



The screenshot below is from Subpart G and is displayed as an example. The screen for other will differ slightly depending on the number of units with emissions monitored by a single CML at your facility.

Click image to expand

**SUBG 4 (2011)**  
**Subpart G: Ammonia Manufacturing**  
 Subpart G Overview • Buster Ammonia • Add/Edit Process Units

**IDENTIFY PROCESS UNITS(S)**  
 Use this page to select each process unit that is monitored by the CML. For additional information about this page, please use the e-GGRT Help link(s) provided. \* denotes a required field

**PROCESS UNIT: GASEOUS CEMS**  
 Is this process unit monitored by the CEMS Monitoring Location?  (check if true)

CANCEL SAVE

Subpart Y also collects the CO<sub>2</sub> emissions from this CEMS Monitoring Location that are attributable to process CO<sub>2</sub> emissions from this process

unit (metric tons).

*Click image to expand*

The screenshot shows the EPA e-GGRT interface for Facility ABC (2010) Subpart Y: Petroleum Refineries. The main heading is "IDENTIFY PROCESS UNITS". Below this, there is a brief instruction: "Use this page to select each process unit that is monitored by the CEMS Monitoring Location (CML) Summary. For additional information about this page, please use the e-GGRT Help link(s) provided." A red asterisk indicates a required field. The form contains three sections for process units:

- PROCESS UNIT: CEMS1**: "Is this process unit monitored by the CEMS Monitoring Location?"  (check if true). "CO<sub>2</sub> emissions from this CEMS Monitoring Location that are attributable to process CO<sub>2</sub> emissions from this process unit"  (metric tons).
- PROCESS UNIT: CEMS3**: "Is this process unit monitored by the CEMS Monitoring Location?"  (check if true). "CO<sub>2</sub> emissions from this CEMS Monitoring Location that are attributable to process CO<sub>2</sub> emissions from this process unit"  (metric tons).
- PROCESS UNIT: CEMS2**: "Is this process unit monitored by the CEMS Monitoring Location?"  (check if true).

At the bottom of the form are "CANCEL" and "SAVE" buttons. The footer includes "Paperwork Reduction Act/Burden Statement | Contact Us" and "e-GGRT RV2010 R.00 | CEMS-Add CML Unit".

When finished selecting process unit for the CML and entering additional required information (if applicable), click SAVE. You should then be directed back to the Add/Edit a CML Location form and see the units you selected listed in the CEMS MONITORING LOCATION (CML) PROCESS UNITS table.

#### Step 4: Save entered data for a CML

When you have finished entering data for a CML, click SAVE. You will then return to the Subpart Overview page. You will see the status of data entry for the CML updated to "Complete" in the Status column in the CEMS MONITORING LOCATION (CML) SUMMARY table.

If you don't have all the data, you can enter some now, save it, and finish later by clicking on the hyperlinked name of the CML in the CEMS MONITORING LOCATION (CML) SUMMARY table.

After you save the data on this page, the next time you open the page, the calculator on the top of the page will display the CO<sub>2</sub> process emissions for the CML, rounded to the nearest 0.1 of a metric ton. The value displayed is for informational purposes only.



Note: the screenshot below is from Subpart G and is displayed as an example. The screen for other subparts will differ slightly.

*Click image to expand*

**Facility ABC**  
**Subpart G: Ammonia Manufacturing (2011)**  
 Subpart G Overview • Add/Edit CEMS Monitoring Location

**CONTINUOUS EMISSION MONITORING SYSTEM (CEMS) MONITORING LOCATION (CML) INFORMATION**  
 Use this page to uniquely identify each CEMS Monitoring Location (CML) Summary and provide the annual GHG emissions and other information described below. Use the "ADD/REMOVE" or "Process Unit" link at the bottom of the page to identify the process unit(s) monitored by this CEMS Monitoring Location (CML) Summary. For additional information about the data collected on this page, please use the e-GGRT Help link(s) provided.

**CONFIGURATION**  
 CEMS Monitoring Location Name/ID (40 characters maximum)  
 Description (optional)  
 Configuration Type \* Select  
 Types of fuel combusted in the unit(s) monitored by the CEMS (200 characters maximum)

**TIER 4 METHODOLOGY INFORMATION**  
 Calculation Methodology \* 01/01/2011 Start Date  
 Calculation Methodology \* 12/31/2011 End Date

**QUARTERLY CO<sub>2</sub> EMISSIONS**  
 Quarter 1 (metric tons)  
 Quarter 2 (metric tons)  
 Quarter 3 (metric tons)  
 Quarter 4 (metric tons)

**ANNUAL CO<sub>2</sub> EMISSIONS**  
 Total annual CO<sub>2</sub> mass emissions (biogenic and non-biogenic) measured by the CEMS (metric tons)  
 Check this box to indicate that the emissions reported for the CEMS include emissions calculated according to 40 CFR 60.1304(k)(viii) for a dipstream that bypassed the CEMS.  
 Total annual biogenic CO<sub>2</sub> mass emissions (metric tons)  
 Total annual non-biogenic CO<sub>2</sub> mass emissions (includes fossil fuel, sorbent, and process CO<sub>2</sub> emissions) (metric tons)

**EQUATION C-10 SUMMARY AND RESULTS**  

$$CH_4 \text{ or } N_2O = 0.001 * (F) * EF$$
 Hover over an element in the equation above to reveal a definition of that element.  
 Enter CH<sub>4</sub> and N<sub>2</sub>O emissions from only combustion of Table C-2 Fuels directly below. If there are no combustion emissions from Table C-2 Fuels in this CEMS Monitoring Location, please enter 0.  
 Total CH<sub>4</sub> emissions (metric tons) Use Equation C-10 spreadsheet to calculate  
 Total N<sub>2</sub>O emissions (metric tons) Use Equation C-10 spreadsheet to calculate

**ADDITIONAL EMISSIONS INFORMATION**  
 Total number of source operating hours in the reporting year (hours)  
 The total operating hours in which a substitute data value was used in the emissions calculations for CO<sub>2</sub> concentration (hours)  
 The total operating hours in which a substitute data value was used in the emissions calculations for stack gas flow rate (hours)  
 The total operating hours in which a substitute data value was used in the emissions calculations for stack gas moisture content (if moisture correction is required and a continuous moisture monitor is used) (hours)

**CEMS MONITORING LOCATION PROCESS UNITS**  
 Process Unit Name Identifier  
 There are no process units monitored by CEMS available for selection.  
 ADD/REMOVE/EDIT a process unit that exhausts to this CEMS Monitoring Location  
 CANCEL SAVE

## Step 5: Repeat Steps 1-4

Repeat Steps 1-4 until emissions information has been entered for all CMLs. If you have missed something, the validation report messages will help you identify any incomplete entries.

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## See Also

- Screen Errors
- Using e-GGRT to Prepare Your Subpart G Report
- Subpart G Summary Information for this Facility
- Subpart G Process Unit Information for Units NOT Monitored by CEMS
- Subpart G Process Unit Information for Units Monitored by CEMS
- Subpart G Emissions Information for Process Units NOT Monitored by CEMS
- Subpart G Emissions Information for Process Units Monitored by CEMS
- Subpart Validation Report

# Using Subpart G Calculation Spreadsheets



These optional spreadsheets are provided to assist reporters in calculating emissions and in keeping records of these calculations.

Reporters are required to keep records of these calculations under 40 CFR 98.3(g) and additional subpart-specific provisions, but are not required to use these spreadsheets or to submit any spreadsheets to EPA.

Spreadsheets may include inputs to emission equations, reporting some of which EPA deferred until 2015. (See 76 FR 53057, published August 25, 2011, <http://www.gpo.gov/fdsys/pkg/FR-2011-08-25/pdf/2011-21727.pdf>).

## Overview

This help page provides guidance for working with the supplemental Subpart G spreadsheet tools. The guidance provides step-by-step instructions for the following tasks:

- [Selecting the appropriate spreadsheet tool](#)
- [Downloading a spreadsheet tool](#)
- [General Information on using a spreadsheet tool](#)
- [Using the G-1 Spreadsheet Tool](#)
- [Using the G-2 Spreadsheet Tool](#)
- [Using the G-3 Spreadsheet Tool](#)

Specific information on each of the spreadsheet tools is provided below.

## Selecting the appropriate spreadsheet tool

Subpart G requires a facility to report annual CO<sub>2</sub> process emissions from each process unit used to produce ammonia. To calculate the annual CO<sub>2</sub> emissions from each process unit, users must use one of three equations based on the unit feedstock. Users may use different spreadsheet tools for different process units as required by the feedstock type for each unit. Users may use more than one spreadsheet tool for a process unit if the unit has more than one type of feedstock.

For each process unit with a gaseous feedstock, users should calculate annual CO<sub>2</sub> process emissions using Equation G-1 and the G-1 Spreadsheet Tool. Equation G-1 is provided below:

(Equation G-1)

$$\text{CO}_{2,G,k} = \left( \sum_{n=1}^{12} \frac{44}{12} * \text{Fdstk}_{n,k} * \text{CC}_n * \frac{\text{MW}}{\text{MVC}} \right) * 0.001$$

For each process unit with a liquid feedstock, users should calculate annual CO<sub>2</sub> emissions using Equation G-2 and the G-2 Spreadsheet Tool. Equation G-2 is provided below:

(Equation G-2)

$$\text{CO}_{2,L,k} = \left( \sum_{n=1}^{12} \frac{44}{12} * \text{Fdstk}_{n,k} * \text{CC}_n \right) * 0.001$$

For each process unit with a solid feedstock, users should calculate annual CO<sub>2</sub> emissions using Equation G-3 and the G-3 Spreadsheet Tool. Equation G-3 is provided below:

(Equation G-3)

$$\text{CO}_{2,S,k} = \left( \sum_{n=1}^{12} \frac{44}{12} * \text{Fdstk}_{n,k} * \text{CC}_n \right) * 0.001$$



## Downloading a spreadsheet tool

Spreadsheet tools for Subpart G may be downloaded by clicking one of the links in the first column of the table below. Users may also jump to instructions for each spreadsheet tool by clicking one of the links in the third column.

### Spreadsheet Tools

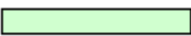



Spreadsheet Tools (click to download)	Selection Criteria: Feedstock Type	Instructions (click to view)
<a href="#">Equation G-1 Calculation Spreadsheet.xls</a>	Gaseous	<a href="#">G-1 Help</a>
<a href="#">Equation G-2 Calculation Spreadsheet.xls</a>	Liquid	<a href="#">G-2 Help</a>
<a href="#">Equation G-3 Calculation Spreadsheet.xls</a>	Solid	<a href="#">G-3 Help</a>

### Using a spreadsheet tool to make calculations

The guidance provided in this section applies to each of the spreadsheet tools for Subpart G. Additional guidance is provided for each individual spreadsheet tool in the sections below.

#### Color coding

The calculation spreadsheets contain green input cells, gray informational cells, and red-bordered results cells filled with yellow or white. Users should use green input cells to enter all data specific to their facility, unit, or process. Gray informational cells contain parameter names, column and row headings, equation constants and subtotals. Calculation results are displayed in red-bordered results cells filled with yellow or white. For red-bordered, yellow-filled results cells, the values in these cells should be entered in the appropriate and separate calculation spreadsheet (as directed below cell) where additional calculations will be made. For red-bordered, white filled results cells, the values in these cells should be entered in e-GGRT for the appropriate process units. All cells that are not green input cells are locked and cannot be modified.

	Green input cell (data entry)
	Gray informational cells (locked)
	Red-bordered, yellow-filled results cells (enter in appropriate and separate calculation spreadsheet)
	Red-bordered, white filled results cells (enter in e-GGRT)

#### Stop and Warning Messages

The calculation spreadsheets will display a stop message if the user enters a value that is invalid or a warning message if the user enters a value outside the EPA estimated range for a particular data element. For invalid data entries, the stop messages will not allow a user to proceed and the user must reenter valid data before moving forward. For data entries that are outside the EPA estimated range for a particular data element, the warning messages will allow a user to proceed if the user deems the entered value to be accurate.

#### Multiple process units

Users with multiple process units should use separate spreadsheet tools for each process unit. Users should not aggregate data for multiple process units when using these spreadsheet tools.

### Using the G-1 Spreadsheet Tool

Use the G-1 Spreadsheet Tool to calculate the annual CO<sub>2</sub> process emissions from a process unit with a gaseous feedstock. A separate spreadsheet is to be used for each process unit. Calculations for process units with liquid and solid feedstocks should be performed using different spreadsheet tools and different equations. The G-1 Spreadsheet Tool performs the calculation using Equation G-1, provided below.

(Equation G-1)

$$CO_{2,G,k} = \left( \sum_{n=1}^{12} \frac{44}{12} * Fdstk_{n,k} * CC_n * \frac{MW}{MVC} \right) * 0.001$$

Begin by entering the facility name, your name, the process unit name or identifier, process unit description, and any additional comments in the green input cells of the General Information table located immediately below the equation in the spreadsheet tool. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Ammonia Manufacturing Process Unit

Next, enter the requested information in the green input cells in the table titled G-1 Input Data.

**G-1 Input Data**

Month	[Fdstk] = Volume of the Gaseous Feedstock Used (scf)	[CC] = Carbon Content of the Gaseous Feedstock (kg C per kg of feedstock)	[MW] = Molecular Weight of the Gaseous Feedstock (kg/kg-mole)	[MVC] = Molar Volume Conversion Factor (scf per kg-mole)
January				849.5
February				849.5
March				849.5
April				849.5
May				849.5
June				849.5
July				849.5
August				849.5
September				849.5
October				849.5
November				849.5
December				849.5

The spreadsheet tool will calculate the Annual CO<sub>2</sub> process emissions from a unit with a gaseous feedstock. This calculated value will be displayed in the red-bordered cell in the G-1 Results table at the bottom of the spreadsheet. This value should be entered in e-GGRT for this process unit.

**G-1 Results**

Month	[CO <sub>2,e,k</sub> ] - Calculated Monthly CO <sub>2</sub> Emissions for the Unit
January	0.00000
February	0.00000
March	0.00000
April	0.00000
May	0.00000
June	0.00000
July	0.00000
August	0.00000
September	0.00000
October	0.00000
November	0.00000
December	0.00000

[ΣCO <sub>2,e,k</sub> ] - Annual CO <sub>2</sub> Process Emissions from Unit with Gaseous Feedstock (metric tons)	0.00000
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 Enter this value in e-GGRT

**Using the G-2 Spreadsheet Tool**

Use the G-2 Spreadsheet Tool to calculate the annual CO<sub>2</sub> process emissions from a process unit with a liquid feedstock. A separate spreadsheet is to be used for each process unit. Calculations for process units with gaseous and solid feedstocks should be performed using different spreadsheet tools and different equations. The G-2 Spreadsheet Tool performs the calculation using Equation G-2, provided below.

(Equation G-2)

$$CO_{2,L,k} = \left( \sum_{n=1}^{12} \frac{44}{12} * Fdstk_{n,k} * CC_n \right) * 0.001$$

Begin by entering the facility name, your name, the process unit name or identifier, process unit description, and any additional comments in the green input cells of the General Information table located immediately below the equation in the spreadsheet tool. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Ammonia Manufacturing Process Unit

Next, enter the requested information in the green input cells in the table titled G-2 Input Data.

### G-2 Input Data

Month	[Fdstk] = Volume of the Liquid Feedstock Used (gallons)	[CC] = Carbon Content of the Liquid Feedstock (kg C per gallon of feedstock)
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

The spreadsheet tool will calculate the Annual CO<sub>2</sub> process emissions from a unit with a liquid feedstock. This calculated value will be displayed in the red-bordered cell in the G-2 Results table at the bottom of the spreadsheet. This value should be entered in e-GGRT for this process unit.

### G-2 Results

Month	[CO <sub>2,L,k</sub> ] - Calculated Monthly CO <sub>2</sub> Emissions for the Unit
January	0.00000
February	0.00000
March	0.00000
April	0.00000
May	0.00000
June	0.00000
July	0.00000
August	0.00000
September	0.00000
October	0.00000
November	0.00000
December	0.00000

[ΣCO <sub>2,L,k</sub> ] - Annual CO <sub>2</sub> Process Emissions from Unit with Liquid Feedstock (metric tons)	0.00000
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 Enter this value in e-GGRT

## Using the G-3 Spreadsheet Tool

Use the G-3 Spreadsheet Tool to calculate the annual CO<sub>2</sub> process emissions from a process unit with a solid feedstock. A separate spreadsheet is to be used for each process unit. Calculations for process units with gaseous and liquid feedstocks should be performed using different spreadsheet tools and different equations. The G-3 Spreadsheet Tool performs the calculation using Equation G-3, provided below.

(Equation G-3)

$$CO_{2,S,k} = \left( \sum_{n=1}^{12} \frac{44}{12} * Fdstk_{n,k} * CC_n \right) * 0.001$$

Begin by entering the facility name, your name, the process unit name or identifier, process unit description, and any additional comments in the green input cells of the General Information table located immediately below the equation in the spreadsheet tool. This is for your records.

Facility Name:	
Reporter Name:	
Unit Name or Identifier:	
Unit Description:	
Comments:	
Unit Type:	Ammonia Manufacturing Process Unit

Next, enter the requested information in the green input cells in the table titled G-3 Input Data.

### G-3 Input Data

Month	[Fdstk] = Volume of the Solid Feedstock Used (gallons)	[CC] = Carbon Content of the Solid Feedstock (kg C per gallon of feedstock)
January		
February		
March		
April		
May		
June		
July		
August		
September		
October		
November		
December		

The spreadsheet tool will calculate the Annual CO<sub>2</sub> process emissions from a unit with a solid feedstock. This calculated value will be displayed in the red-bordered cell in the G-3 Results table at the bottom of the spreadsheet. This value should be entered in e-GGRT for this process unit.

### G-3 Results

Month	[CO <sub>2, s,s</sub> ] - Calculated Monthly CO <sub>2</sub> Emissions for the Unit
January	0.00000
February	0.00000
March	0.00000
April	0.00000
May	0.00000
June	0.00000
July	0.00000
August	0.00000
September	0.00000
October	0.00000
November	0.00000
December	0.00000

[ΣCO <sub>2, s,s</sub> ] - Annual CO <sub>2</sub> Process Emissions from Unit with Solid Feedstock (metric tons)	0.00000
--	---------

 Enter this value in e-GGRT

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