Greenhouse Gas Reporting Program

XML Reporting Instructions for Subpart H - Cement Production

United States Environmental Protection Agency
Climate Change Division
Washington, DC

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These instructions explain how to report the required data for the applicable regulations. Owners and operators of units should refer to the applicable regulations for information about what data are required to be reported.

EPA has finalized a rule that defers the deadline for reporting data elements used as inputs to emission equations for direct emitters. (See http://www.epa.gov/climatechange/emissions/notices.html for a pre-publication version of the rule). In accordance with the rule, e-GGRT is not currently collecting data used as inputs to emission equations.

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Introduction

The U.S. Environmental Protection Agency's (EPA's) electronic greenhouse gas reporting tool (e-GGRT) extensible markup language (XML) Reporting Schema contains all of the data elements needed to comply with the greenhouse gas reporting program (GHGRP) beginning with the 2010 data collection year. The schema defines expected data elements and attributes, allowable data types for each element, and the hierarchy and order in which elements must appear. Similar to an architectural blueprint that describes the structural design of a house, an XML schema describes the structural design of an XML file. In some cases, it also defines which elements are optional and which are required, and the maximum number of occurrences allowed for each element.

The e-GGRT XML schema is made up of a root element, complex elements, and simple elements. A simple element is a single piece of data. A complex element is a group of simple elements which are logically grouped together. The root element is the base of the XML schema.

The elements are related to each other in parent-child relationships. The root element is the parent element of the entire schema. Complex elements are children of the root element, and complex elements can also be children of other complex elements. If a complex element is dependent on a parent complex element, the child complex element cannot be included in the XML file unless the appropriate parent complex element is also included.

The XML upload method may be used only for submitting the annual GHG report. User and facility or supplier registration, and the Certificate of Representation, must be entered on-line using e-GGRT.

All XML files submitted to e-GGRT must be well formed and will be accepted only if they conform to the correct and current version of the e-GGRT XML schema.

An XML submission can only contain GHG data for a single facility or supplier. All data for a facility or supplier must be submitted in a single file as a complete report and must include all of the relevant subparts. It is not possible to submit a subset of any portion of a facility's data to add, delete, correct, or update. The entire report must be resubmitted to make any modification at all. Each subsequent submission for the same facility replaces all of the previously submitted data.

The e-GGRT XML schema contains enumerated lists of the units of measures for some data elements and allowable values for some data elements. For rules regarding the unit of measure or allowable values for a specific data element, please refer to the appropriate Data Elements table.

The e-GGRT XML Reporting Schema is available for download at the GHGRP web site here: http://www.epa.gov/climatechange/emissions/e-ggrt_xml.html. The zip file contains:

- **GHG_Final.xsd and Included Files**
- **SchemaChanges.xlsx**

This topic provides a step-by-step description of how to report data on cement production as required by Subpart H of the Greenhouse Gas Reporting Program (GHGRP) using the XML schema. Please note the following:

- **Not all data elements included in the schema must be reported.** Required or relevant data components and data elements are boxed in red in the schema diagrams and listed in the tables. If a data element is not listed, it does not need to be reported (e.g., deferred data elements, IsConfidentialBusinessInformationIndicator). Some data elements are conditional and only need to be reported if they are relevant to the reporting facility.

- **Enumerations are case sensitive.** Values must be reported exactly as they are displayed in order to be accepted by schema validation.
- **Data elements must be reported in a specific order.** The figures and tables in this document depict the specific order in which data elements must be reported in order to produce a well-formed XML report.
- **Data elements for calculated and measured values are not displayed in the schema diagrams.** The parent elements for calculated and measured values are displayed in the schema diagrams in this document, but the specific data elements to be reported are not displayed. The descriptions in the XML data elements tables include the specific data elements to report, which are commonly the calculated or measured value and the unit of measure. For some values, the number of times substitute data procedures were used may also be required. See Figure 1 for the expanded view of a sample data element which is a calculated value and Figure 2 for the expanded view of a sample data element which is a measured value.

Figure 1
Sample Calculated Value Schema Diagram

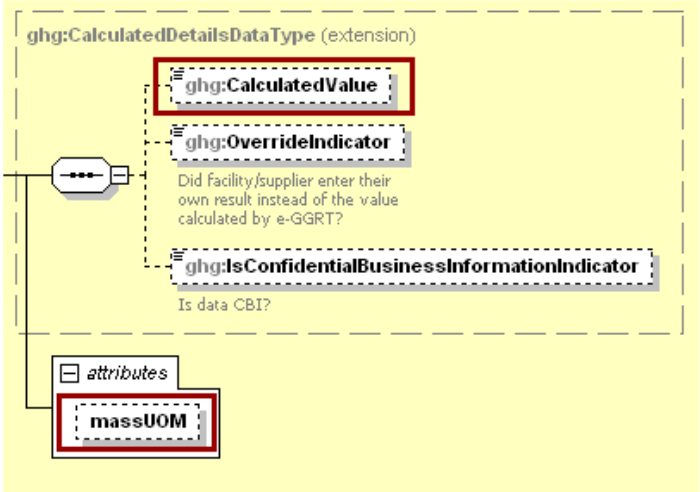


Figure 2
Sample Measured Value Schema Diagram

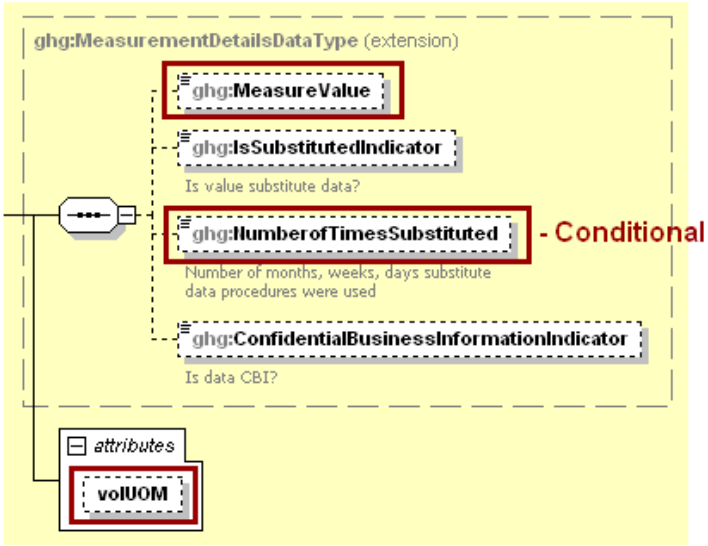
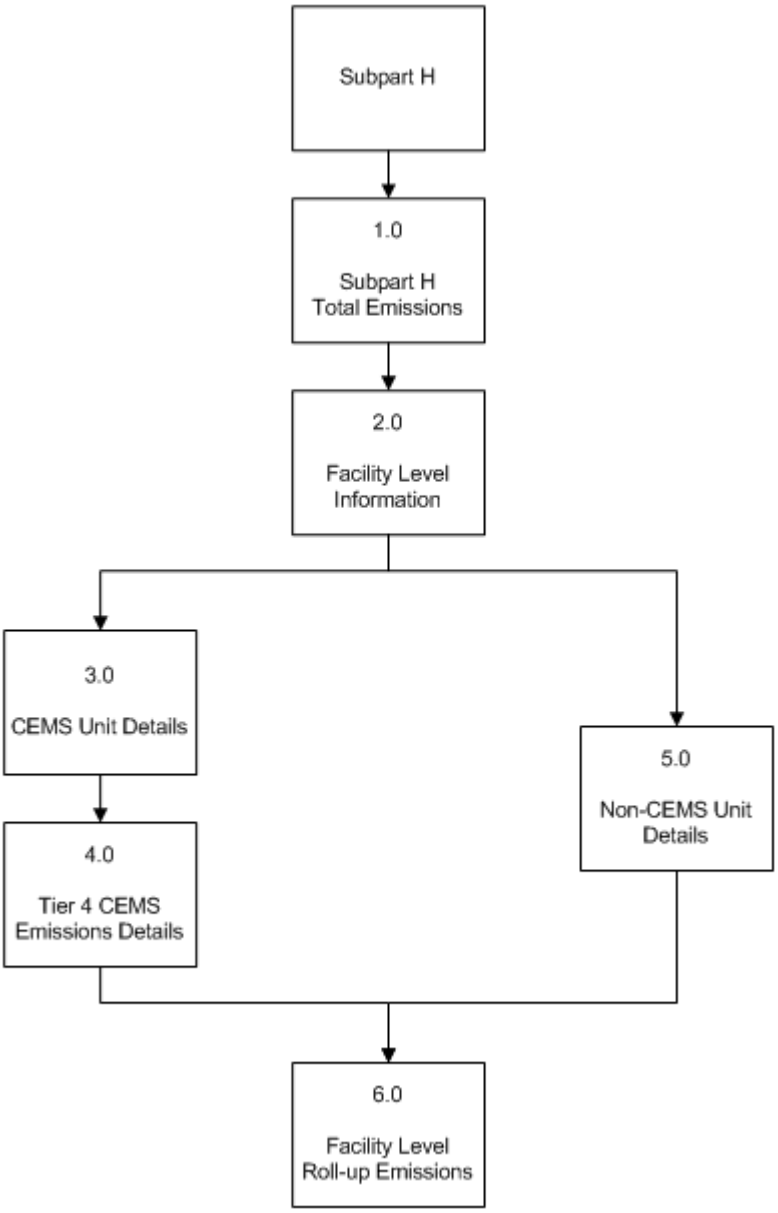


Figure 3
Subpart H Reporting Diagram



The XML schema includes the following areas for reporting for Subpart H, as diagrammed in Figure 3:

1.0 Subpart H Total Emissions: includes the total emissions of CO_2, CH_4 and N_2O as reported under Subpart H.
2.0 Facility Level Information: includes number of kilns, number of operating kilns and annual cement production for the facility.
3.0 CEMS Unit Details: includes information on unit identification and monthly details on clinker production if using CEMS.
4.0 Tier 4 CEMS Emissions Details: includes information on each CEMS monitoring location and emissions details.
5.0 Non-CEMS Unit and Emissions Details: includes information on unit identification, monthly details on clinker production, quarterly details on cement kiln dust and annual raw material information.

6.0 Facility Level Roll-up Emissions: includes information on how to report total emissions for CO_2e (excluding biogenic CO_2) and biogenic CO_2 from Subpart H at the facility level.

The following terminology is used throughout this document:

- Namespace: A namespace uniquely identifies a set of names such that there is no ambiguity when objects having different origins but the same names are mixed together.
- Markup Language: A way to combine text and extra information to show the structure and layout of a document. This information is expressed using markup, which is typically intermingled with the primary text. A commonly known markup language is HTML.
- XML: A markup language for documents containing structured information. The XML specification defines a standard way to add markup to documents. Its primary purpose is to facilitate the sharing of structured data across different information systems, particularly via the internet.
- XML Schema: An XML schema describes the structure of an XML document. An XML schema defines the set of rules to which the XML document must conform in order to be considered "valid" according to its schema. An instance of an XML schema is an XML schema document and is a file with the extension .xsd.
- XML Document: An XML document is a file containing data organized into a structured document using XML markup. An XML document is considered to be "well-formed" if it conforms to all XML syntax rules. An XML document is considered to be "valid" if it conforms to all the semantic rules defined by an associated XML schema. An XML document cannot be processed if it is not well-formed or valid. XML documents have the file extension .xml.
- XML Element: An XML element is a unit of the XML document that is expressed as tags in the form "<tagname>." XML elements must have either a start and end tag as in <ghg:GHGasInfoDetails> </ghg:GHGasInfoDetails> or a single empty tag name as in <ghg:GHGasInfoDetails/>. XML elements may be nested within one another in a structured hierarchy and sequence specified in an XML schema.
- XML Attribute: An XML attribute contains additional information about an XML element placed at the start tag of the XML element. XML attributes have the form attributeName = "attributeValue," as in <ghg:GHGasQuantity massUOM="Metric Tons">. XML attributes are used to report identifying information or to help e-GGRT process the data being reported within the data elements.

Rounded results from calculated values should be reported in the XML schema. Please use the following rounding rules:

1) CO_2e and CO_2 emissions data expressed in metric tons should be rounded to one decimal place. This should be done regardless of the level of data collection (e.g., unit-level, facility-level). Quantities less than 0.05 metric tons would round to 0.0 and be reported as such. Quantities greater than or equal to 0.05 metric tons would round up to 0.1 and be reported as such.

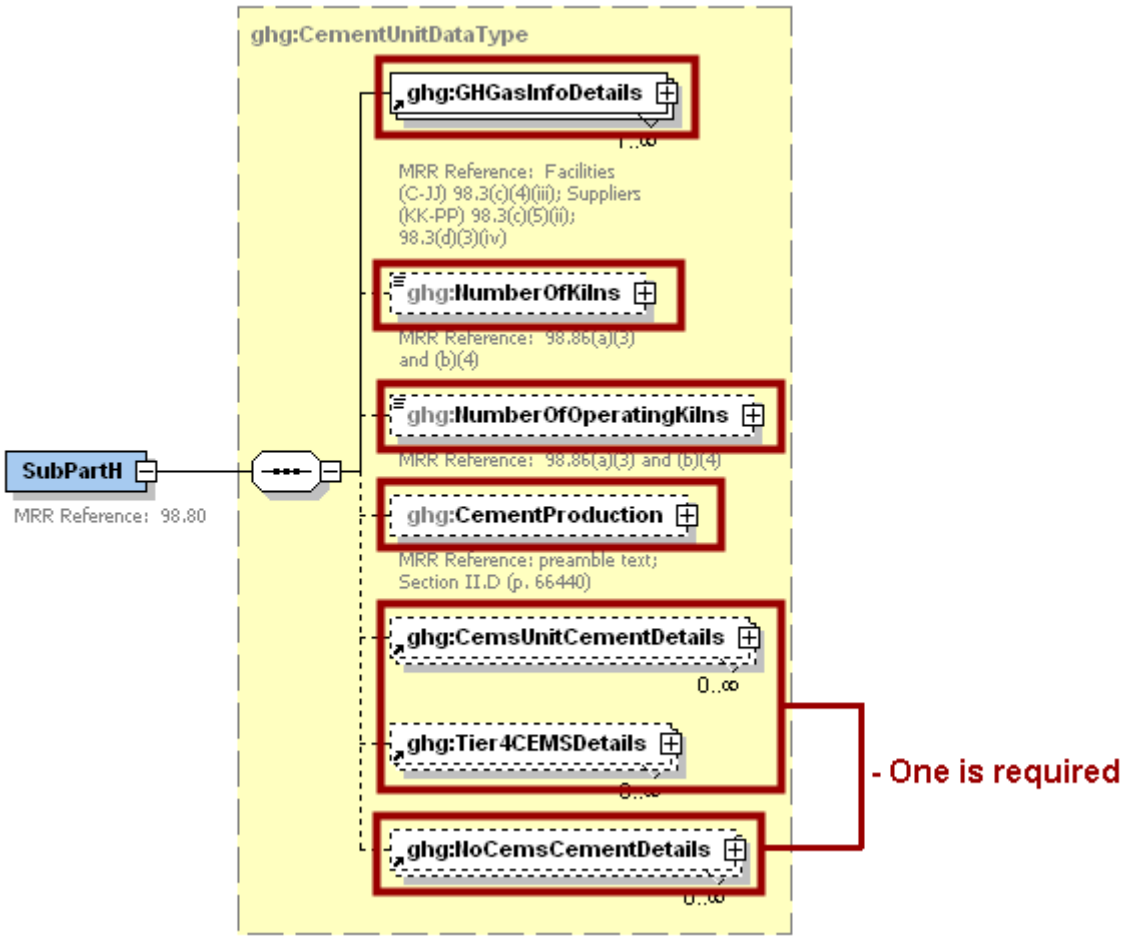
2) CH_4 emissions data expressed in metric tons should be rounded to two decimal places.

3) N_2O emissions data expressed in metric tons should be rounded to three decimal places.

4) Other (non-emissions) quantitative data reported by the user (e.g., a monthly HHV sample result, an annual production quantity) will not need to be rounded.

5) In the case of aggregation/roll-ups, those calculations should be performed on the rounded values.

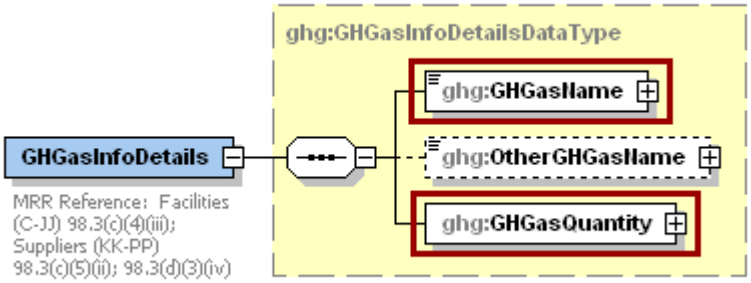
Figure 4
Subpart H Schema Diagram



1.0 Subpart H Total Emissions

Greenhouse gas information details comprise a collection of data elements to report the total annual emissions of each greenhouse gas (GHG) listed in Table A-1 of the Mandatory Reporting of GHG, Part 98, reported under Subpart H, expressed in metric tons.

Figure 5
GHGasInfoDetails Details Schema Diagram



For Subpart H, report total emissions for carbon dioxide (excluding biogenic CO_2), biogenic carbon dioxide (CO_2), methane (CH_4), and nitrous oxide (N_2O). For greenhouse gas quantity, report the calculated value and mass unit of measure (metric tons) only according to the following guidelines:

- For carbon dioxide, report the sum of
  - the annual CO_2 process emissions from cement manufacturing calculated from Equation H-1 for all kilns rounded to one decimal place and
  - the total annual CO_2 mass emissions from kilns monitored by the CEMS rounded to one decimal place minus the total annual biogenic CO_2 mass emissions for the CEMS monitoring location (CML) rounded to one decimal place for each CML.
- For biogenic carbon dioxide, report the sum of the total annual biogenic CO_2 mass emissions rounded to one decimal place for each CML.
- For methane, report the sum of the total CH_4 emissions rounded to two decimal places for each CML.
- For nitrous oxide, report the sum of the total N_2O emissions rounded to three decimal places for each CML.

Table 1
GHGasInfoDetails XML Data Elements

Data Element Name	Description
GHGasInfoDetails	A collection of data elements containing the total annual emissions of each greenhouse gas (GHG) listed in Table A-1 of the Mandatory Reporting of GHGes, part 98, reported under this subpart, expressed in metric tons.
GHGasName	Specify the name of the GHG. See list of allowable values: Carbon Dioxide Biogenic Carbon dioxide Methane Nitrous Oxide
GHGasQuantity	A collection of data elements that quantify the annual emissions from this source category. Report the calculated value only.
GHGasQuantity.massUOM	Metric Tons

Figure 6
Sample XML Excerpt for GHGasInfoDetails

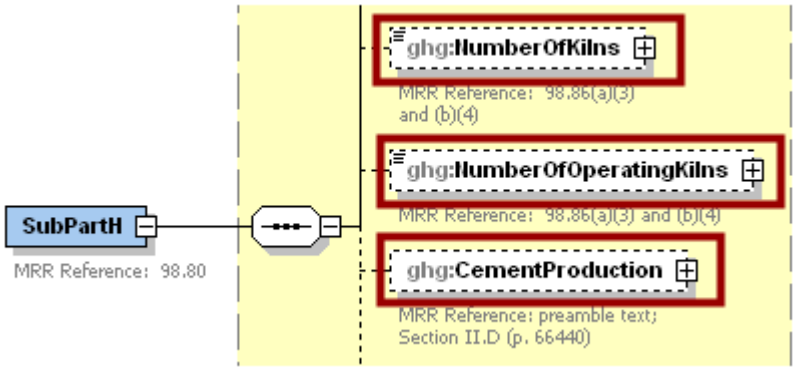
```
<ghg:SubPartH>
    <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
            <ghg:CalculatedValue>150</ghg:CalculatedValue>
        </ghg:GHGasQuantity>
    </ghg:GHGasInfoDetails>
    <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Methane</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
            <ghg:CalculatedValue>111</ghg:CalculatedValue>
        </ghg:GHGasQuantity>
    </ghg:GHGasInfoDetails>
    <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Nitrous Oxide</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
            <ghg:CalculatedValue>11</ghg:CalculatedValue>
        </ghg:GHGasQuantity>
    </ghg:GHGasInfoDetails>
    <ghg:GHGasInfoDetails>
        <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
        <ghg:GHGasQuantity massUOM="Metric Tons">
            <ghg:CalculatedValue>123556639</ghg:CalculatedValue>
        </ghg:GHGasQuantity>
    </ghg:GHGasInfoDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

2.0 Facility Level Information

This section provides a description of how to report Subpart H facility information.

Figure 7
Facility Level Information Schema Diagram



The following facility level information must be reported:

- The total number of kilns at the facility.
- The total number of operating kilns at the facility.
- The annual cement production for the facility in short tons.

Table 2
Facility Level Information XML Data Elements

Data Element Name	Description
NumberofKilns	Number of kilns at the facility.
NumberOfOperatingKilns	Number of operating kilns at the facility.
CementProduction	Annual cement production for the facility.
CementProduction.massUOM	Short Tons

Figure 8
Sample XML Excerpt for Facility Level Information

```
<ghg:NumberOfKilns>5</ghg:NumberOfKilns>
<ghg:NumberOfOperatingKilns>3</ghg:NumberOfOperatingKilns>
<ghg:CementProduction massUOM="Short Tons">
        <ghg:MeasureValue>987654321</ghg:MeasureValue>
</ghg:CementProduction>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

3.0 CEMS Unit Details

This section describes unit information that must be reported if a continuous emissions monitoring system (CEMS) was in use during the reporting year.

Subpart H requires the following identification information for each operating kiln that had emissions monitored using a CEMS:

- A unique unit name or identifier (e.g., a unit ID number).
- An optional unit description or label.
- A code representing the type of unit (Cement Kiln).

For each month and for each kiln, the facility must provide the following:

- Clinker production in short tons [98.86(a)(1)].
- An indication (Y/N) if a missing data procedure was used to determine the monthly clinker production [98.86(b)(14)(i)].

Figure 9
CEMS Unit Details Schema Diagram

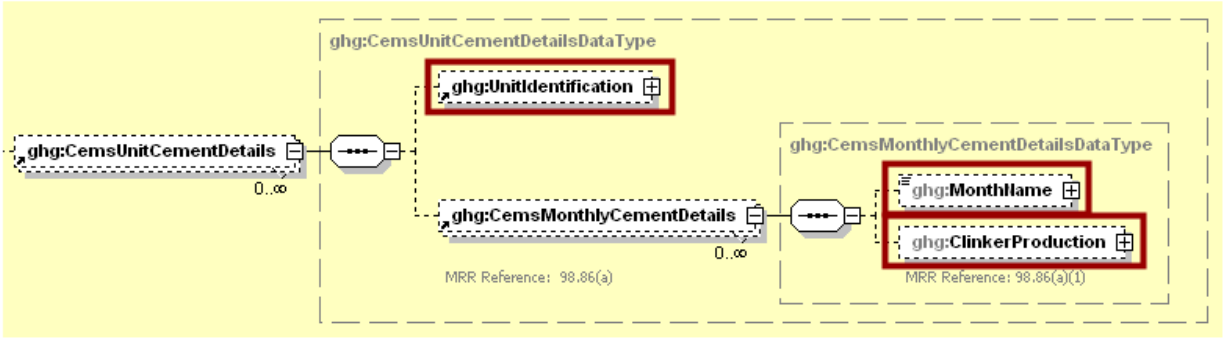


Table 3
CEMS Unit Details XML Data Elements

Data Element Name	Description
CemsUnitCementDetails	A collection of data elements for each cement kiln that is monitored by CEMS.
UnitIdentification	A collection of data elements containing the identity of each cement kiln. It includes the unit ID, an optional description, and a code representing the type of unit, Cement Kiln.
CemsMonthlyCementDetails	A collection of monthly data elements for each cement kiln that is monitored by CEMS.
MonthName	The name of each month. See list of allowable values: January February March

Data Element Name	Description
	April May June July August September October November December
ClinkerProduction	Clinker production from the kiln for the month specified. Report the measured value and an indication (Y/N) if a missing data procedure was used to determine the monthly clinker production only.
ClinkerProduction.massUOM	Short Tons

Figure 10
Sample XML Excerpt for CEMS Unit Details

```
<ghg:CemsUnitCementDetails>
        <ghg:UnitIdentification>
                <ghg:UnitName>003- CEMS</ghg:UnitName>
                <ghg:UnitDescription>CEMS unit</ghg:UnitDescription>
                <ghg:UnitType>Cement Kiln</ghg:UnitType>
        </ghg:UnitIdentification>
        <ghg:CemsMonthlyCementDetails>
                <ghg:MonthName>January</ghg:MonthName>
                <ghg:ClinkerProduction massUOM="Short Tons">
                        <ghg:MeasureValue>10</ghg:MeasureValue>
                        <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
                </ghg:ClinkerProduction>
        </ghg:CemsMonthlyCementDetails>
        <ghg:CemsMonthlyCementDetails>
                <ghg:MonthName>February</ghg:MonthName>
                <ghg:ClinkerProduction massUOM="Short Tons">
                        <ghg:MeasureValue>20</ghg:MeasureValue>
                        <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                </ghg:ClinkerProduction>
        </ghg:CemsMonthlyCementDetails>
        <ghg:CemsMonthlyCementDetails>
                <ghg:MonthName>March</ghg:MonthName>
                <ghg:ClinkerProduction massUOM="Short Tons">
                        <ghg:MeasureValue>30</ghg:MeasureValue>
                        <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                </ghg:ClinkerProduction>
        </ghg:CemsMonthlyCementDetails>
        <ghg:CemsMonthlyCementDetails>
                <ghg:MonthName>April</ghg:MonthName>
                <ghg:ClinkerProduction massUOM="Short Tons">
                        <ghg:MeasureValue>40</ghg:MeasureValue>
                        <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                </ghg:ClinkerProduction>
        </ghg:CemsMonthlyCementDetails>
        <ghg:CemsMonthlyCementDetails>
                <ghg:MonthName>May</ghg:MonthName>
                <ghg:ClinkerProduction massUOM="Short Tons">
                        <ghg:MeasureValue>50</ghg:MeasureValue>
                        <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                </ghg:ClinkerProduction>
        </ghg:CemsMonthlyCementDetails>
</ghg:CemsUnitCementDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

4.0 Tier 4 CEMS Emissions Details

This section describes emissions information that must be reported if a continuous emissions monitoring system (CEMS) was in use during the reporting year.

Figure 11
Tier 4 CEMS Details Schema Diagram

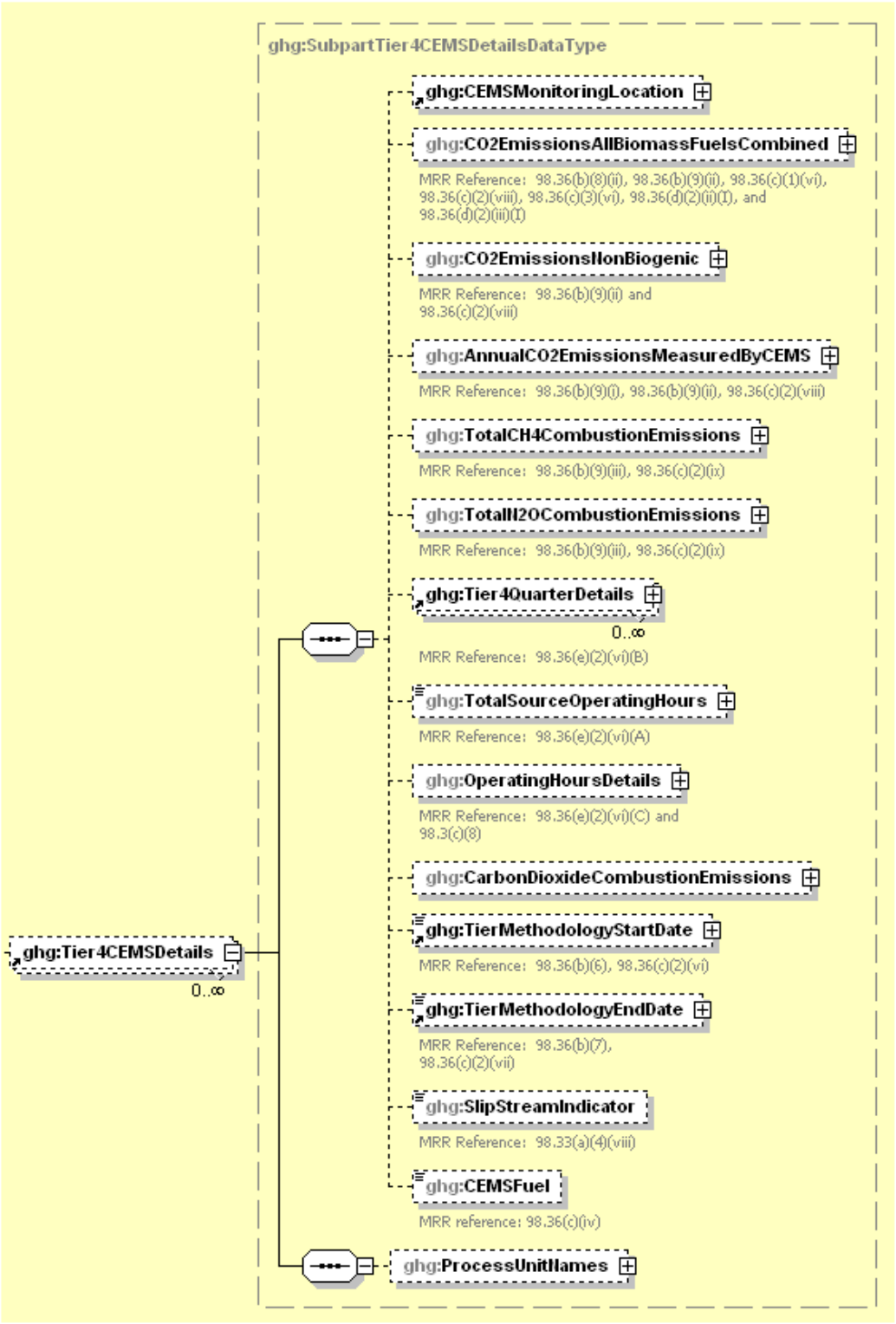


Figure 12
Tier 4 CEMS Location and Emissions Details Schema Diagram

For subpart H, information on each CEMS monitoring location (CML) is required including the name, an optional description and the configuration type. For each CML identified by the facility, the facility must specify the configuration type from the following list [98.176(e)]:

- Single industrial process or process unit that exhausts to a dedicated stack.
- Multiple industrial processes or process units share a common stack.
- Industrial process or process unit shares a common stack with a Tier 4 stationary fuel combustion unit.

For each CEMS monitoring location identified, the following emissions data must be reported:

- The total annual biogenic CO_2 mass emissions from combustion of all biomass fuels combined [98.36(b)(8)(ii)]
- The total annual non-biogenic CO_2 mass emissions (i.e. CO_2 mass emissions from fossil fuels, sorbent use, and process emissions) [98.36(b)(9)(ii)]
- The total annual CO_2 mass emissions measured by the CEMS [98.36(b)(9)(i)-(ii)]
- The total annual CH_4 mass emissions derived from Equation C-10, in metric tons CH_4 [98.36(b)(9)(iii), 98.36(c)(2)(ix)]
- The total annual N_2O mass emissions derived from Equation C-10, in metric tons N_2O [98.36(b)(9)(iii), 98.36(c)(2)(ix)]

Table 4
Tier 4 CEMS Location and Emissions Details XML Data Elements

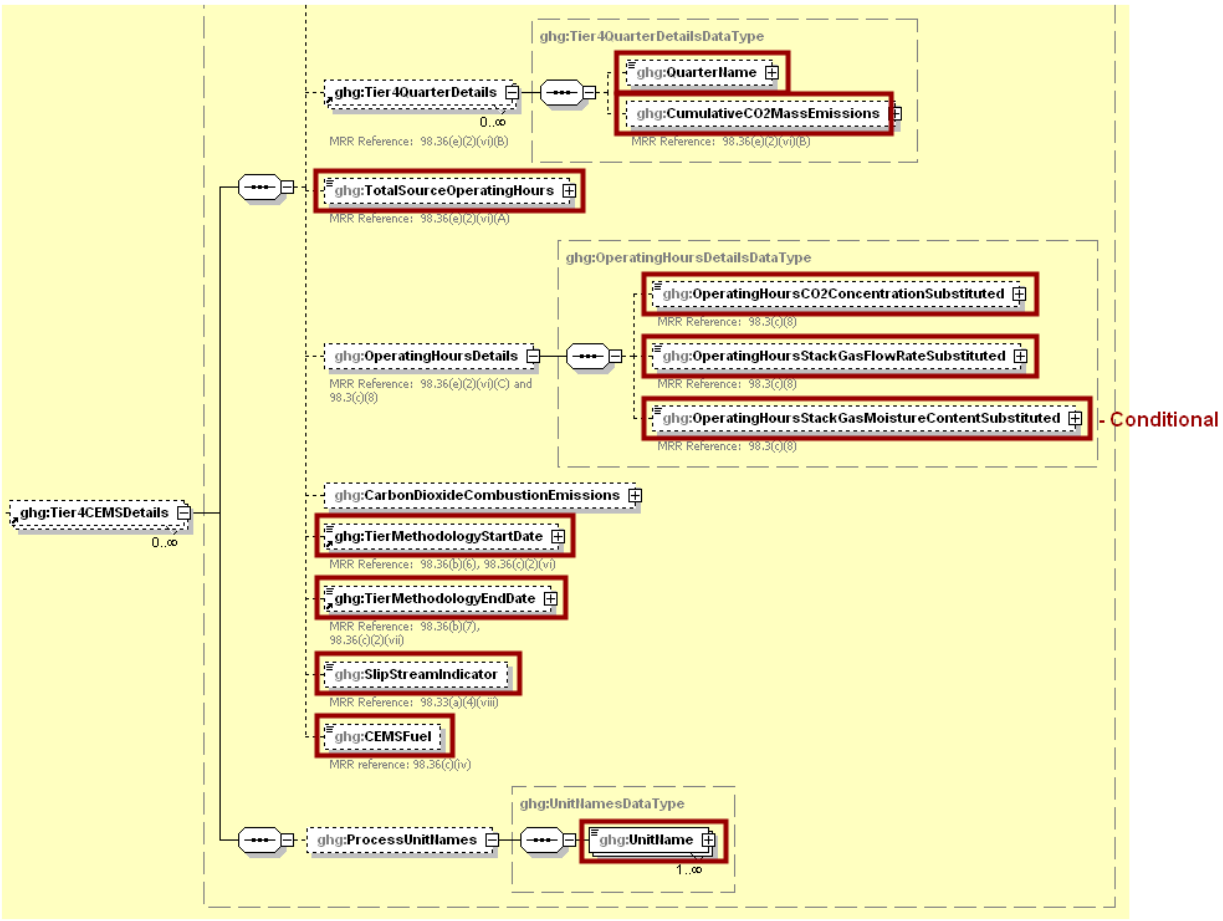
Data Element Name	Description
Tier4CEMSDetails	
CEMSMonitoringLocation	A collection of data elements containing information on each CEMS monitoring location. It includes the name, an optional description, and configuration type. See the list of allowable configuration types: Single process/process unit exhausts to dedicated stack Multiple processes/process units share common stack Process/stationary combustion units share common stack
CO2EmissionsAllBiomassFuelsCombined	Total annual biogenic CO_2 mass emissions for the CEMS monitoring location. Report the calculated value only.
CO2EmissionsAllBiomassFuelsCombined.massUOM	Metric Tons
CO2EmissionsNonBiogenic	The total annual non-biogenic CO_2 mass emissions for the CEMS monitoring location. Report the calculated value only.
CO2EmissionsNonBiogenic.massUOM	Metric Tons
AnnualCO2EmissionsMeasuredByCEMS	The total annual CO_2 mass emissions measured by the CEMS at the monitoring location. Report the calculated value only.
AnnualCO2EmissionsMeasuredByCEMS.massUOM	Metric Tons
TotalCH4CombustionEmissions	The annual CH_4 mass emissions for the specified fuel combusted in the CEMS monitoring location configuration during the reporting year calculated using Equation C-10 expressed in mass of CH_4. Report the calculated value only.
TotalCH4CombustionEmissions.massUOM	Metric Tons
TotalN2OCombustionEmissions	The annual N_2O mass emissions for the specified fuel combusted in the CEMS monitoring location configuration during the reporting year calculated using Equation C-10 expressed in mass of N_2O. Report the calculated value only.
TotalN2OCombustionEmissions.massUOM	Metric Tons

Figure 13
Sample XML Excerpt for Tier 4 CEMS Location and Emissions Details

```
<ghg:Tier4CEMSDetails>
    <ghg:CEMSMonitoringLocation>
        <ghg:Name>004- CML</ghg:Name>
        <ghg:Description>CEMS monitoring location 004</ghg:Description>
        <ghg:Type>Single process/process unit exhausts to dedicated
        stack</ghg:Type>
    </ghg:CEMSMonitoringLocation>
    <ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
        <ghg:CalculatedValue>150</ghg:CalculatedValue>
    </ghg:CO2EmissionsAllBiomassFuelsCombined>
    <ghg:CO2EmissionsNonBiogenic massUOM="Metric Tons">
        <ghg:CalculatedValue>10610</ghg:CalculatedValue>
    </ghg:CO2EmissionsNonBiogenic>
    <ghg:AnnualCO2EmissionsMeasuredByCEMS massUOM="Metric Tons">
        <ghg:CalculatedValue>100000</ghg:CalculatedValue>
    </ghg:AnnualCO2EmissionsMeasuredByCEMS>
    <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
        <ghg:CalculatedValue>111</ghg:CalculatedValue>
    </ghg:TotalCH4CombustionEmissions>
    <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
        <ghg:CalculatedValue>11</ghg:CalculatedValue>
    </ghg:TotalN2OCombustionEmissions>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

Figure 14
Tier 4 CEMS Quarter and Additional Details Schema Diagram



For each quarter of the reporting year, the facility must provide the cumulative CO_2 mass emissions for each CML [98.36(e)(2)(vi)(B)].

The facility must provide the following additional information for each CML:

- The total number of source operating hours in the reporting year [98.36(e)(2)(vi)(A)]
- The total operating hours in which a substitute data value was used in the emissions calculations for the CO_2 concentration parameter [98.36(e)(2)(vi)(C) and 98.3(c)(8)]
- The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter [98.36(e)(2)(vi)(C) and 98.3(c)(8)]
- 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 [98.36(e)(2)(vi)(C) and 98.3(c)(8)]
- The Tier 4 methodology start date [98.36(b)(6), 98.36(c)(2)(vi)]
- The Tier 4 methodology end date [98.36(b)(7), 98.36(c)(2)(vii)]
- Specify if emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS [98.33(a)(4)(viii)]
- Each type of fuel combusted in the group of units during the reporting year [98.36(c)(1)(v)]
- The name of each process unit sharing the stack.

Table 5
Tier 4 CEMS Quarter and Additional Details XML Data Elements

Data Element Name	Description
Tier4QuarterDetails	
QuarterName	The name of the quarter. See list of allowable values: First Quarter Second Quarter Third Quarter Fourth Quarter
CumulativeCO2MassEmissions	The cumulative CO_2 mass emissions for the specified quarter of the reporting year. Report the calculated value only.
CumulativeCO2MassEmissions.massUOM	Metric Tons
TotalSourceOperatingHours	The total number of source operating hours in the reporting year.
OperatingHoursDetails	
OperatingHoursCO2ConcentrationSubstituted	The total operating hours in which a substitute data value was used in the emissions calculations for the CO_2 concentration parameter
OperatingHoursStackGasFlowRateSubstituted	The total operating hours in which a substitute data value was used in the emissions calculations for the stack gas flow rate parameter.
OperatingHoursStackGasMoistureContentSubstituted	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.
TierMethodologyStartDate	The Tier 4 methodology start date for the specified CEMS monitoring location.

Data Element Name	Description
TierMethodologyEndDate	The Tier 4 methodology end date for the specified CEMS monitoring location.
SlipStreamIndicator	An indication (Y/N) that the emissions reported for the CEMS include emissions calculated according to 98.33(a)(4)(viii) for a slipstream that bypassed the CEMS.
CEMSFuel	Each type of fuel combusted in the group of units during the reporting year.
ProcessUnitNames	A collection of data elements identifying each unit or furnace which was monitored at the specified CEMS monitoring location.
UnitName	The unit ID for each unit or furnace which was monitored at the specified CEMS monitoring location. Report each unit separately.

Figure 15
Sample XML Excerpt for Tier 4 CEMS Quarter and Additional Details

```
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>First Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>10000</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>Second Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>20000</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>Third Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>30000</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:Tier4QuarterDetails>
        <ghg:QuarterName>Fourth Quarter</ghg:QuarterName>
        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                <ghg:CalculatedValue>40000</ghg:CalculatedValue>
        </ghg:CumulativeCO2MassEmissions>
</ghg:Tier4QuarterDetails>
<ghg:TotalSourceOperatingHours>10</ghg:TotalSourceOperatingHours>
<ghg:OperatingHoursDetails>
        <ghg:OperatingHoursCO2ConcentrationSubstituted>11</ghg:OperatingHours
        CO2ConcentrationSubstituted>
        <ghg:OperatingHoursStackGasFlowRateSubstituted>12</ghg:OperatingHours
        StackGasFlowRateSubstituted>
        <ghg:OperatingHoursStackGasMoistureContentSubstituted>13</ghg:Operatin
        gHoursStackGasMoistureContentSubstituted>
</ghg:OperatingHoursDetails>
<ghg:TierMethodologyStartDate>2010-01-01</ghg:TierMethodologyStartDate>
<ghg:TierMethodologyEndDate>2010-12-31</ghg:TierMethodologyEndDate>
<ghg:SlipStreamIndicator>Y</ghg:SlipStreamIndicator>
<ghg:CEMSFuel>coal, coke, natural gas</ ghg:CEMSFuel>
<ghg:ProcessUnitNames>
        <ghg:UnitName>003-CEMS</ghg:UnitName>
</ghg:ProcessUnitNames>
</ghg:Tier4CEMSDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

5.0 Non-CEMS Unit Details

This section describes information that must be reported for cement kilns which were not monitored by CEMS during the reporting year.

Figure 16
Non-CEMS Cement Details Schema Diagram

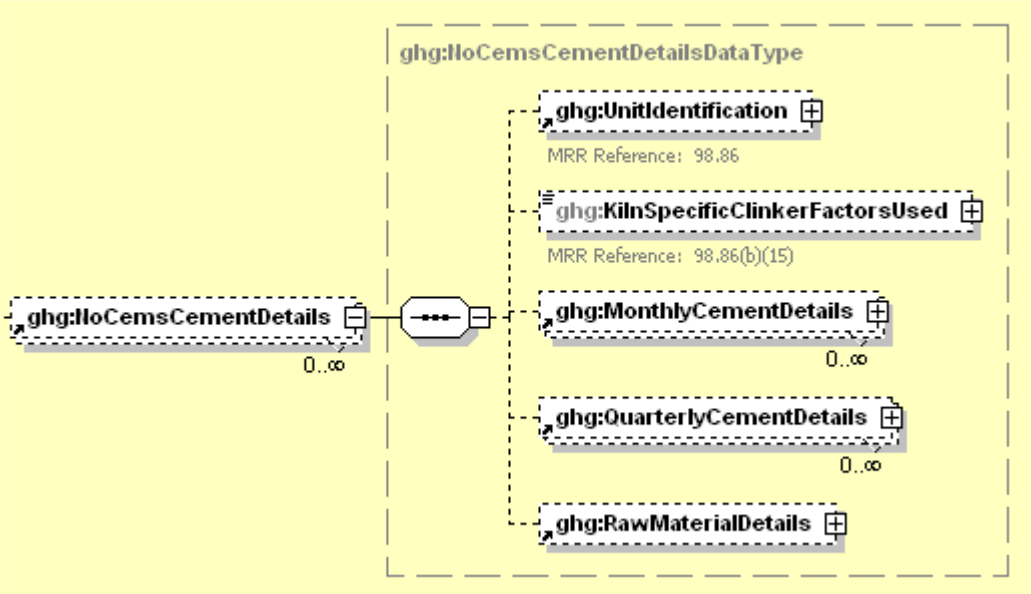
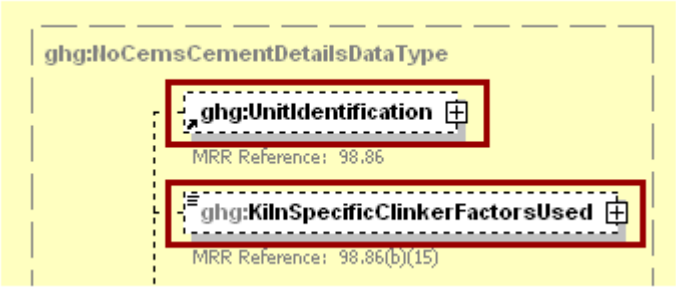


Figure 17
Non-CEMS Unit Details Schema Diagram



Subpart H requires the following identification information for each operating kiln which was not monitored by CEMS:

- A unique unit name or identifier (e.g., a unit ID number).
- An optional unit description or label.
- A code representing the type of unit (Cement Kiln).

The facility must provide for each kiln an indication if monthly kiln-specific clinker factors were used to determine monthly clinker production [98.86(b)(15)]

Table 6
Non-CEMS Unit Details XML Data Elements

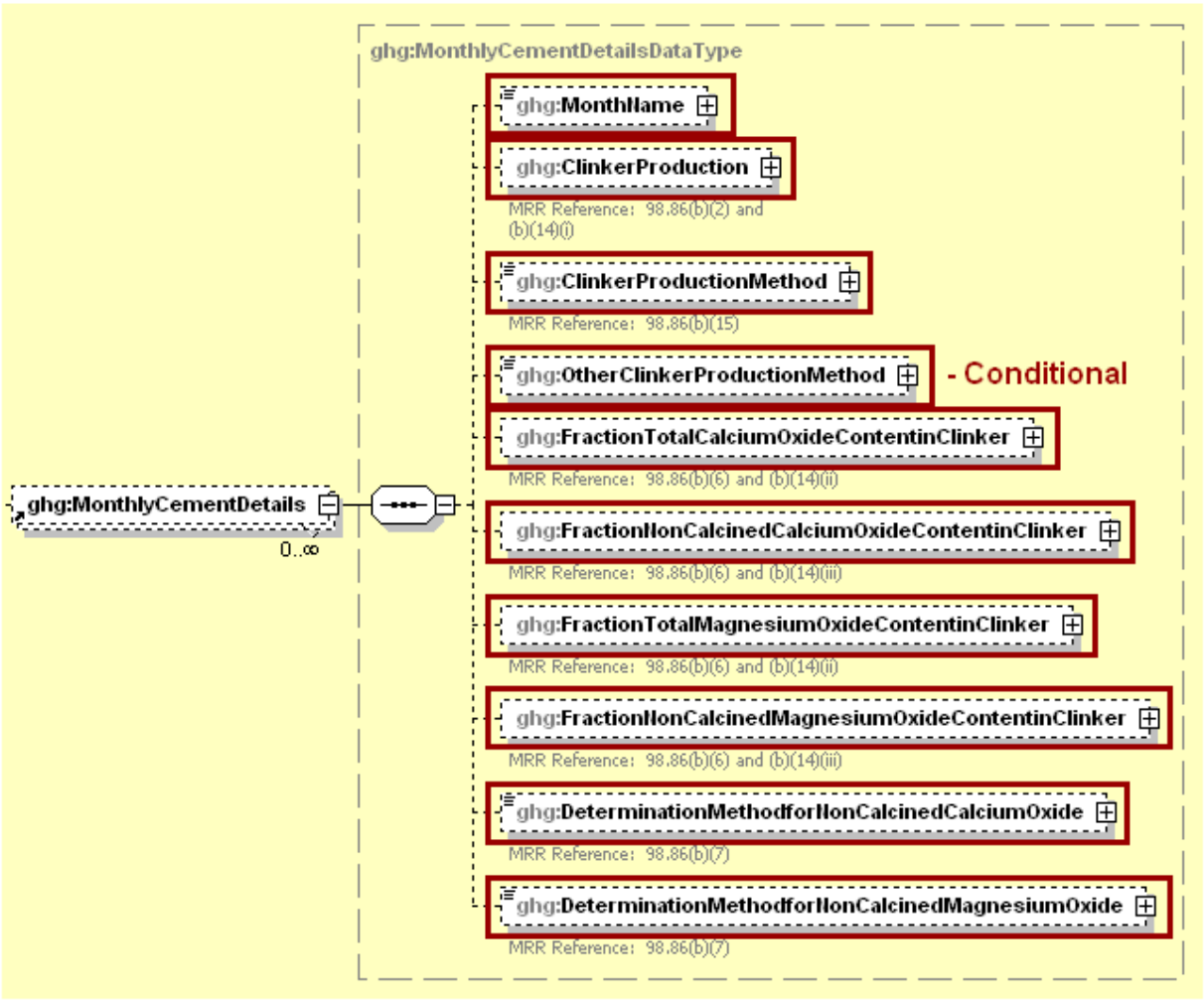
Data Element Name	Description
NoCemsCementDetails	
UnitIdentification	A collection of data elements containing the identity of each cement kiln. It includes the unit ID, an optional description, and a code representing the type of unit (Cement Kiln).
KilnSpecificClinkerFactorsUsed	Report an indication (Y/N) of whether kiln specific clinker factors were used to determine monthly clinker production.

Figure 18
Sample XML Excerpt for Non-CEMS Unit Details

```
<ghg:NoCemsCementDetails>
        <ghg:UnitIdentification>
                <ghg:UnitName>001- Non-CEMS RM</ghg:UnitName>
                <ghg:UnitDescription>Non-CEMS, based on consumption of raw
                material</ghg:UnitDescription>
                <ghg:UnitType>Cement Kiln</ghg:UnitType>
        </ghg:UnitIdentification>
        <ghg:KilnSpecificClinkerFactorsUsed>Y</ghg:KilnSpecificClinkerFactorsUsed>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

Figure 19
Non-CEMS Monthly Details Schema Diagram



For each month and for each kiln, the facility must provide the following:

- An indication if a missing data procedure was used to determine the monthly clinker production [98.86(b)(14)(i)]
- The method used to determine the monthly clinker production [98.86(b)(15)]
- An indication if a missing data procedure was used to determine the fraction of total CaO in clinker [98.86(b)(14)(ii)]
- An indication if a missing data procedure was used to determine the fraction of non-calcined CaO in clinker [98.86(b)(14)(iii)]
- An indication if a missing data procedure was used to determine the fraction of total MgO in clinker [98.86(b)(14)(ii)]
- An indication if a missing data procedure was used to determine the fraction of non-calcined MgO in clinker [98.86(b)(14)(iii)]
- The method used to determine the fraction of non-calcined CaO in clinker [98.86(b)(7)] (See 98.84(g) for more information on applicable methods.)
- The method used to determine the fraction of non-calcined MgO in clinker [98.86(b)(7)] (See 98.84(g) for more information on applicable methods.)

Table 7
Non-CEMS Monthly Details XML Data Elements

Data Element Name	Description
MonthlyCementDetails	
MonthName	Month name. See list of allowable values: January February March April May June July August September October November December
ClinkerProduction	Report an indication (Y/N) if missing data procedures were used to determine clinker production for the month specified.
ClinkerProductionMethod	Clinker production method used for the month specified. See list of allowable values: Direct measurement Kiln specific feed-to-clinker ratio Other Did not operate
OtherClinkerProductionMethod	The description of the clinker production method for the month if "Other" was specified for clinker production method.
FractionTotalCalciumOxideContentinClinker	Report an indication (Y/N) if missing data procedures were used to determine the fraction of total CaO in clinker for the month specified.
FractionNonCalcinedCalciumOxideContentinClinker	Report an indication (Y/N) if missing data procedures were used to determine the fraction of non-calcined CaO in clinker for the month specified.
FractionTotalMagnesiumOxideContentinClinker	Report an indication (Y/N) if missing data procedures were used to determine the fraction of total MgO in clinker for the month specified.
FractionNonCalcinedMagnesiumOxideContentinClinker	Report an indication (Y/N) if missing data procedures were used to determine the fraction of non-calcined MgO in clinker for the month specified.
DeterminationMethodforNonCalcinedCalciumOxide	Specify the method used to determine the fraction of non-calcined CaO in clinker for the month.

Data Element Name	Description
DeterminationMethodforNonCalcinedMagnesiumOxide	Specify the method used to determine the fraction of non-calcined MgO in clinker for the month.

Figure 20
Sample XML Excerpt for Non-CEMS Monthly Details

```
<ghg:MonthlyCementDetails>
        <ghg:MonthName>January</ghg:MonthName>
        <ghg:ClinkerProduction>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:ClinkerProduction>
        <ghg:ClinkerProductionMethod>Direct
        measurement</ghg:ClinkerProductionMethod>
        <ghg:FractionTotalCalciumOxideContentinClinker>
                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
        </ghg:FractionTotalCalciumOxideContentinClinker>
        <ghg:FractionNonCalcinedCalciumOxideContentinClinker>
                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedCalciumOxideContentinClinker>
        <ghg:FractionTotalMagnesiumOxideContentinClinker>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionTotalMagnesiumOxideContentinClinker>
        <ghg:FractionNonCalcinedMagnesiumOxideContentinClinker>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedMagnesiumOxideContentinClinker>
        <ghg:DeterminationMethodforNonCalcinedCalciumOxide>Method
        C</ghg:DeterminationMethodforNonCalcinedCalciumOxide>
        <ghg:DeterminationMethodforNonCalcinedMagnesiumOxide>Method
        D</ghg:DeterminationMethodforNonCalcinedMagnesiumOxide>
</ghg:MonthlyCementDetails>
<ghg:MonthlyCementDetails>
        <ghg:MonthName>February</ghg:MonthName>
        <ghg:ClinkerProduction>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:ClinkerProduction>
        <ghg:ClinkerProductionMethod>Direct
        measurement</ghg:ClinkerProductionMethod>
        <ghg:FractionTotalCalciumOxideContentinClinker>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionTotalCalciumOxideContentinClinker>
        <ghg:FractionNonCalcinedCalciumOxideContentinClinker>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedCalciumOxideContentinClinker>
        <ghg:FractionTotalMagnesiumOxideContentinClinker>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionTotalMagnesiumOxideContentinClinker>
        <ghg:FractionNonCalcinedMagnesiumOxideContentinClinker>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedMagnesiumOxideContentinClinker>
        <ghg:DeterminationMethodforNonCalcinedCalciumOxide>Method
        C</ghg:DeterminationMethodforNonCalcinedCalciumOxide>
        <ghg:DeterminationMethodforNonCalcinedMagnesiumOxide>Method
        D</ghg:DeterminationMethodforNonCalcinedMagnesiumOxide>
</ghg:MonthlyCementDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

Figure 21
Non-CEMS Quarterly Details Schema Diagram

For each quarter and each kiln, the facility must provide the following:

- An indication if a missing data procedure was used to determine the quantity of cement kiln dust (CKD) not recycled to the kiln [98.86(b)(14)(iv)].
- An indication if a missing data procedure was used to determine the fraction of non-calcined CaO in CKD not recycled to the kiln [98.86(b)(14)(v)].
- An indication if a missing data procedure was used to determine the fraction of non-calcined MgO in CKD not recycled to the kiln [98.86(b)(14)(v)].
- The method used to determine the fraction of non-calcined CaO in CKD not recycled to the kiln [98.86(b)(9)].
- The method used to determine the fraction of non-calcined MgO in CKD not recycled to the kiln [98.86(b)(9)].

Table 8
Non-CEMS Quarterly Details XML Data Elements

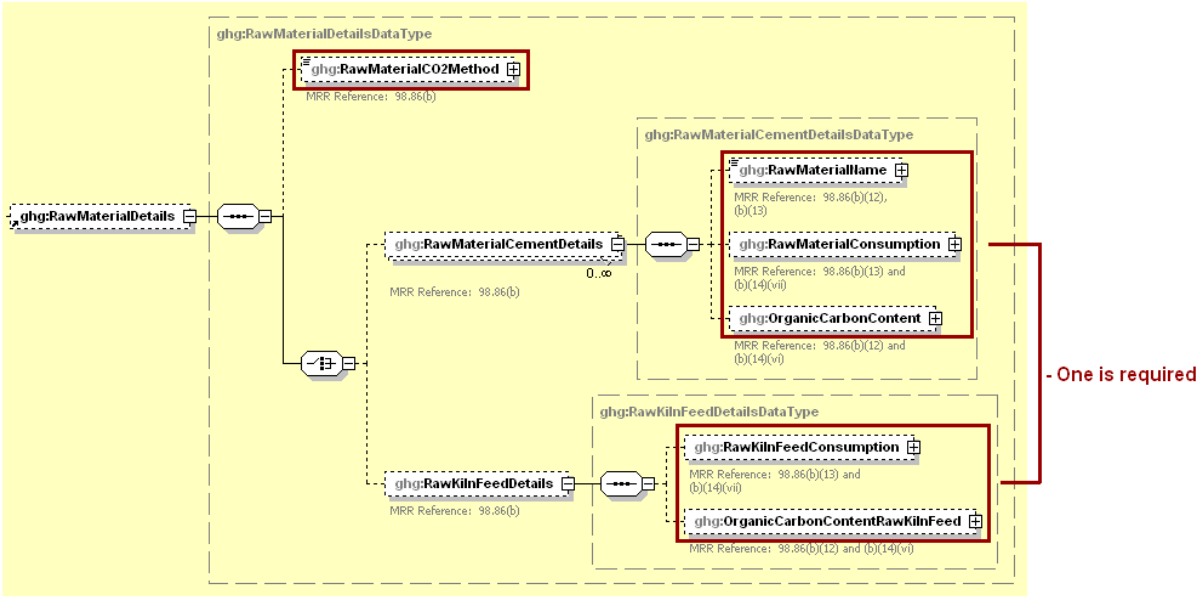
Data Element Name	Description
QuarterlyCementDetails	
QuarterName	Specify the quarter. See list of allowable values: First Quarter Second Quarter Third Quarter Fourth Quarter
CementKilnDustNotRecycledtoKiln	Report an indication (Y/N) if missing data procedures were used to determine the quantity of cement kiln dust not recycled to the kiln for the quarter specified.
FractionNonCalcinedCalciumOxideInCementKilnDustNotRecycled	Report an indication (Y/N) if missing data procedures were used to determine the fraction of non-calcined CaO in cement kiln dust not recycled to the kiln for the quarter specified.
FractionNonCalcinedMagnesiumOxideInCementKilnDustNotRecycled	Report an indication (Y/N) if missing data procedures were used to determine the fraction of non-calcined MgO in cement kiln dust not recycled to the kiln for the quarter specified.
DeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust	Specify the determination method for non-calcined calcium oxide in cement kiln dust. See list of allowable values: Default of 0.0 Other Did not operate this quarter
OtherDeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust	Specify the determination method for non-calcined calcium oxide in cement kiln dust if "Other" was specified.
DeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust	Specify the determination method for non-calcined magnesium oxide in cement kiln dust. See list of allowable values: Default of 0.0 Other Did not operate this quarter
OtherDeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust	Specify the determination method for non-calcined magnesium oxide in cement kiln dust if "Other" was specified.

Figure 22
Sample XML Excerpt for Non-CEMS Quarterly Details

```
<ghg:QuarterlyCementDetails>
        <ghg:QuarterName>First Quarter</ghg:QuarterName>
        <ghg:CementKilnDustNotRecycledtoKiln>
                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
        </ghg:CementKilnDustNotRecycledtoKiln>
        <ghg:FractionNonCalcinedCalciumOxideInCementKilnDustNotRecycled>
                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedCalciumOxideInCementKilnDustNotRecycled>
        <ghg:FractionNonCalcinedMagnesiumOxideInCementKilnDustNotRecycled>
                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedMagnesiumOxideInCementKilnDustNotRecycled>
        <ghg:DeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>Default
        of 0.0</ghg:DeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>
        <ghg:DeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust>Other
        </ghg:DeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust>
        <ghg:OtherDeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust>
        Method
        A</ghg:OtherDeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust
        >
</ghg:QuarterlyCementDetails>
<ghg:QuarterlyCementDetails>
        <ghg:QuarterName>Second Quarter</ghg:QuarterName>
        <ghg:CementKilnDustNotRecycledtoKiln>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:CementKilnDustNotRecycledtoKiln>
        <ghg:FractionNonCalcinedCalciumOxideInCementKilnDustNotRecycled>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedCalciumOxideInCementKilnDustNotRecycled>
        <ghg:FractionNonCalcinedMagnesiumOxideInCementKilnDustNotRecycled>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedMagnesiumOxideInCementKilnDustNotRecycled>
        <ghg:DeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>Did not
        operate this
        quarter</ghg:DeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>
        <ghg:DeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust>Did
        not operate this
        quarter</ghg:DeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDus
        t>
</ghg:QuarterlyCementDetails>
<ghg:QuarterlyCementDetails>
        <ghg:QuarterName>Third Quarter</ghg:QuarterName>
        <ghg:CementKilnDustNotRecycledtoKiln>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:CementKilnDustNotRecycledtoKiln>
        <ghg:FractionNonCalcinedCalciumOxideInCementKilnDustNotRecycled>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedCalciumOxideInCementKilnDustNotRecycled>
        <ghg:FractionNonCalcinedMagnesiumOxideInCementKilnDustNotRecycled>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedMagnesiumOxideInCementKilnDustNotRecycled>
        <ghg:DeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>Default
        of 0.0</ghg:DeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>
        <ghg:DeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust>Defau
        lt of
        0.0</ghg:DeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust>
</ghg:QuarterlyCementDetails>
<ghg:QuarterlyCementDetails>
        <ghg:QuarterName>Fourth Quarter</ghg:QuarterName>
        <ghg:CementKilnDustNotRecycledtoKiln>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:CementKilnDustNotRecycledtoKiln>
        <ghg:FractionNonCalcinedCalciumOxideInCementKilnDustNotRecycled>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedCalciumOxideInCementKilnDustNotRecycled>
        <ghg:FractionNonCalcinedMagnesiumOxideInCementKilnDustNotRecycled>
                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
        </ghg:FractionNonCalcinedMagnesiumOxideInCementKilnDustNotRecycled>
        <ghg:DeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>Other</g
        hg:DeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>
        <ghg:OtherDeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>Met
        hod
        B</ghg:OtherDeterminationMethodforNonCalcinedCalciumOxideinCementKilnDust>
        <ghg:DeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust>Defau
        lt of
        0.0</ghg:DeterminationMethodforNonCalcinedMagnesiumOxideinCementKilnDust>
</ghg:QuarterlyCementDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

Figure 23
Raw Material Details Schema Diagram



The facility must indicate for each kiln if annual CO_2 emissions from raw materials were estimated:

1) based on consumption of individual raw materials or
2) based on the amount of raw kiln feed consumed annually.

Required information is based on the method indicated above:

1) For each kiln which the facility indicated that annual CO_2 emissions from raw materials are to be based on consumption of individual raw materials, the facility must provide a unique identifier/description for each raw material consumed in the kiln during the reporting year [98.86(b)(12) and 98.86(b)(13)].

   For each raw material, the facility must provide the following:

   - The number of months a missing data procedure was used to determine a monthly quantity of the raw material consumed used in the determination of the annual consumption quantity [98.86(b)(14)(vii)].
   - The number of times a missing data procedure was used to determine the annual organic carbon content of the raw material feed [98.86(b)(14)(vi)].

2) For each kiln for which the facility indicated that annual CO_2 emissions from raw materials are to be based on raw kiln feed, the facility must provide the following:

   - The number of months a missing data procedure was used to determine a monthly quantity of raw kiln feed consumption used in the determination of the annual consumption quantity [98.86(b)(14)(vii)].
   - The number of times a missing data procedure was used to determine the annual organic carbon content of the raw kiln feed [98.86(b)(14)(vi)].

Table 9
Raw Material Details XML Data Elements

Data Element Name	Description
RawMaterialDetails	
RawMaterialCO2Method	Specify the method used to estimate annual CO_2 emissions from the kiln specified. See list of allowable values: Raw kiln feed Individual raw materials
RawMaterialCementDetails	A collection of data elements to report if "Individual raw materials" was indicated.
RawMaterialName	Specify the name of each raw material consumed by the kiln separately.
RawMaterialConsumption	Report the number of months a missing data procedure was used to determine a monthly quantity of the raw material consumed used in the determination of the annual consumption quantity of the raw material specified.
OrganicCarbonContent	Report the number of times a missing data procedure was used to determine the annual organic carbon content of the raw material feed specified (0 or 1).
RawKilnFeedDetails	A collection of data elements to report if "Raw kiln feed" was indicated.
RawKilnFeedConsumption	Report the number of months a missing data procedure was used to determine a monthly quantity of raw kiln feed consumption used in the determination of the annual consumption quantity.
OrganicCarbonContentRawKilnFeed	Report the number of times a missing data procedure was used to determine the annual organic carbon content of the raw kiln feed (0 or 1).

Figure 24
Sample XML Excerpt for Raw Material Details

Individual raw materials:

```
<ghg:RawMaterialDetails>
        <ghg:RawMaterialCO2Method>Individual raw
        materials</ghg:RawMaterialCO2Method>
        <ghg:RawMaterialCementDetails>
                <ghg:RawMaterialName>raw material 1</ghg:RawMaterialName>
                <ghg:RawMaterialConsumption>
                        <ghg:NumberofTimesSubstituted>6</ghg:NumberofTim
                esSubstituted>
                </ghg:RawMaterialConsumption>
                <ghg:OrganicCarbonContent>
                        <ghg:NumberofTimesSubstituted>0</ghg:NumberofTim
                esSubstituted>
                </ghg:OrganicCarbonContent>
        </ghg:RawMaterialCementDetails>
</ghg:RawMaterialDetails>
```

Raw kiln feed:

```
<ghg:RawMaterialDetails>
        <ghg:RawMaterialCO2Method>Raw kiln feed</ghg:RawMaterialCO2Method>
        <ghg:RawKilnFeedDetails>
                <ghg:RawKilnFeedConsumption>
                        <ghg:NumberofTimesSubstituted>4</ghg:NumberofTim
                esSubstituted>
                </ghg:RawKilnFeedConsumption>
                <ghg:OrganicCarbonContentRawKilnFeed>
                        <ghg:NumberofTimesSubstituted>1</ghg:NumberofTim
                esSubstituted>
                </ghg:OrganicCarbonContentRawKilnFeed>
        </ghg:RawKilnFeedDetails>
</ghg:RawMaterialDetails>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

6.0 Facility Level Roll-up Emissions

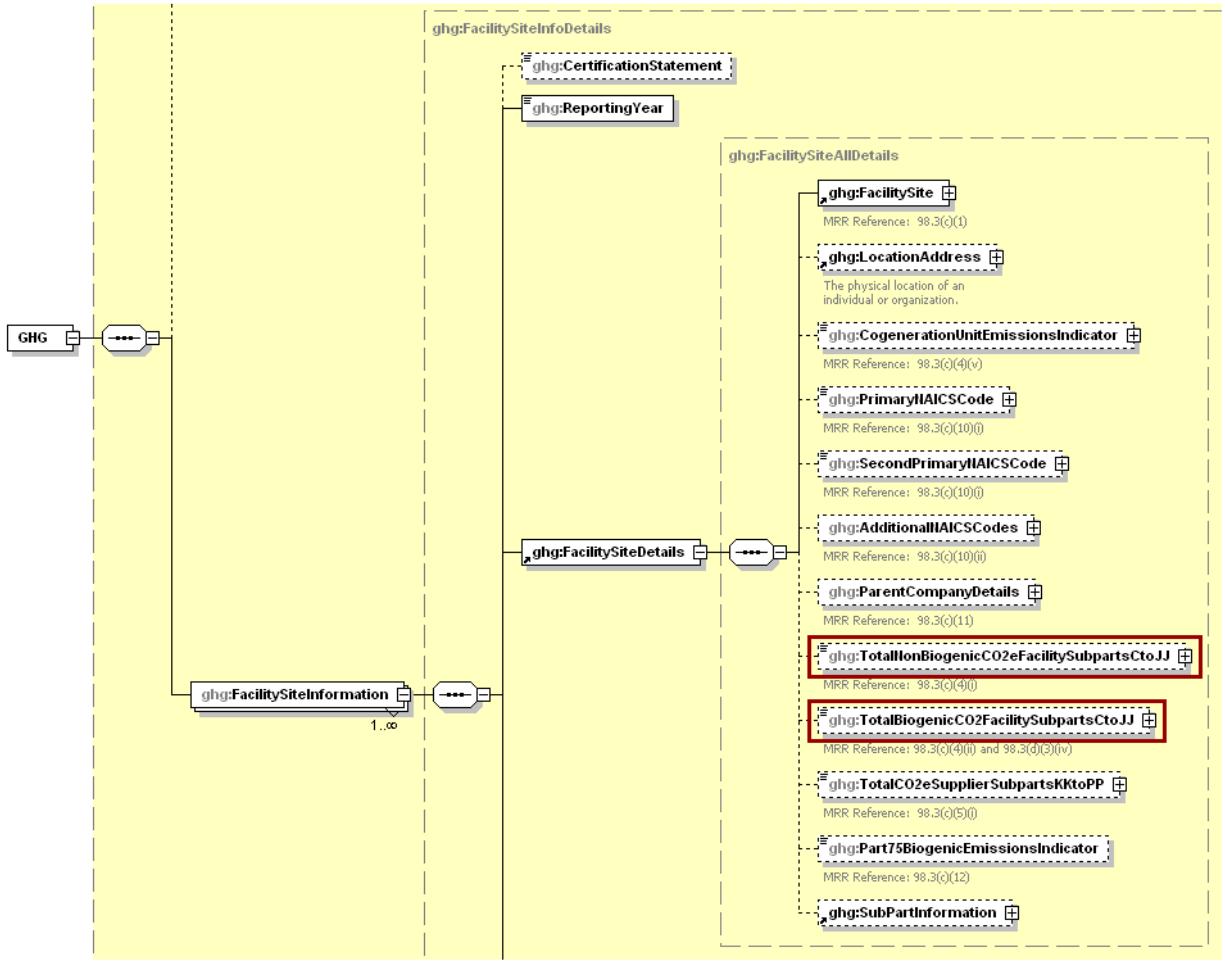
Each facility must report the following facility-level emission totals:

- Total CO_2 equivalent (CO_2e) emissions (excluding biogenic CO_2) aggregated across all direct emitter source categories (subparts C-HH) associated with the facility.
- Total biogenic CO_2 emissions aggregated across all direct emitter source categories (subparts C-HH) associated with the facility.

Each supplier must report the following supplier totals:

- Total CO_2e associated with products supplied aggregated across subparts NN, OO and PP (as applicable). Do not include subpart LL and MM totals in this data element as these values are not being collected in e-GGRT.

Figure 25
Facility Level Roll-up Emissions Schema Diagram



1) Add the total CO_2e value for subpart H in metric tons to the total CO_2e emissions (excluding biogenic CO_2) aggregated across all source category subparts associated with the facility according to the following guidelines:

- Add the annual CO_2 process emissions from cement manufacturing (H-1, all kilns) in metric tons rounded to one decimal place.
- Add the total annual CO_2 mass emissions measured by the CEMS in metric tons rounded to one decimal place minus the total annual biogenic CO_2 mass emissions for the CML in metric tons rounded to one decimal place (the difference of the total CO_2 monitored by the CEMS and the total biogenic CO_2) for each CML.
- Multiply the total CH_4 emissions in metric tons rounded to two decimal places by the Global Warming Potential for CH_4 (21) for each CML and add the resulting value.
- Multiply the total N_2O emissions in metric tons rounded to three decimal places by the Global Warming Potential for N_2O (310) for each CML and add the resulting value.

2) Add the total annual biogenic CO_2 mass emissions for the CML in metric tons rounded to one decimal place for each CML to the total biogenic CO_2 aggregated across all source category subparts associated with the facility.

Table 10
Facility Level Roll-up Emissions XML Data Elements

Data Element Name	Description
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ	Add the total CO_2e value for subpart H in metric tons to the total CO_2e emissions (excluding biogenic CO_2) aggregated across all source category subparts associated with the facility according to the guidelines above. MRR Reference 98.3(c)(4)(i)
TotalNonBiogenicCO2eFacilitySubpartsCtoJJ.massUOM	Metric Tons
TotalBiogenicCO2FacilitySubpartsCtoJJ	Add the total annual biogenic CO_2 value for subpart H in metric tons to the total biogenic CO_2 emissions aggregated across all source category subparts associated with the facility according to the guideline above. MRR Reference 98.3(c)(4)(ii) and 98.3(d)(3)(iv)
TotalBiogenicCO2FacilitySubpartsCtoJJ.massUOM	Metric Tons

Figure 26
Sample XML Excerpt for Facility Level Roll-up Emissions

```
<ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric
Tons">123562380</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
<ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM="Metric Tons">150</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
<ghg:TotalCO2eSupplierSubpartsKKtoPP massUOM="Metric Tons">0</ghg:TotalCO2eSupplierSubpartsKKtoPP>
```

Note: The code excerpt above is presented here to demonstrate the concept of reporting greenhouse gas emissions data.

Appendix A

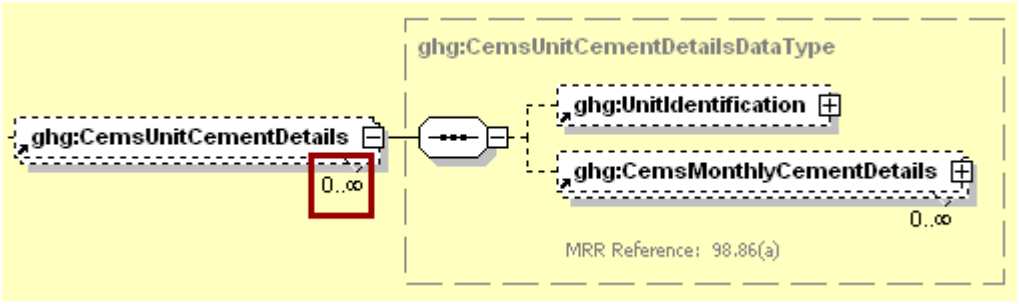
Legend for Tables

Blue = parent element

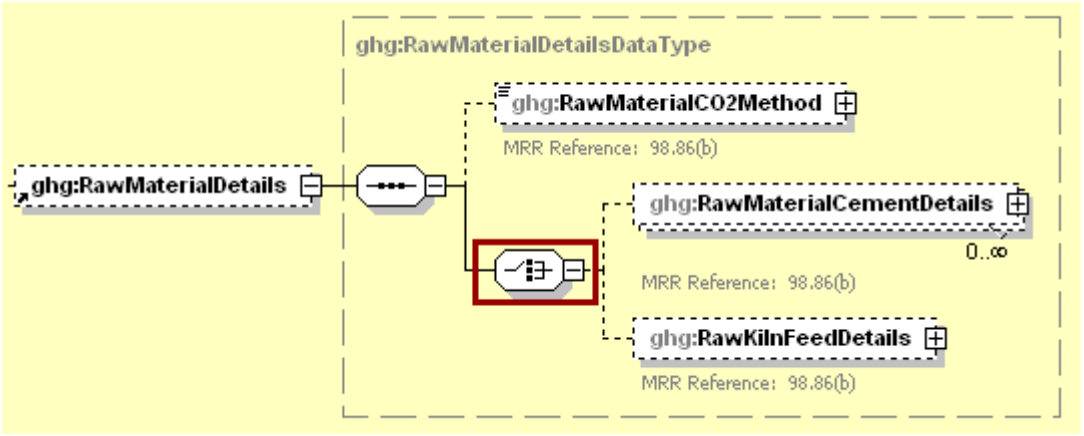
Legend for XML Schema

Red box = relevant for reporting

The following XML symbol "0..∞" means that multiple occurrences for the parent element can be reported:



The following XML symbol for "or" means that only one of the data elements following the sign can be reported for the current instance of the parent element:



Appendix B

Sample XML Document for Subpart H

(Note: Data values do not reflect an actual facility's emissions.)

```
<ghg:GHG xmlns="http://www.ccdsupport.com/schema/ghg">
  <ghg:FacilitySiteInformation>
    <ghg:CertificationStatement>The designated representative or alternate designated representative must sign (i.e., agree to) this certification statement. If you are an agent and you click on  "SUBMIT", you are not agreeing to the certification statement, but are submitting the certification statement on behalf of the designated  representative or alternate designated representative who is agreeing to the certification statement. An agent is only authorized to make the electronic submission on behalf of the designated representative, not to sign (i.e., agree to) the certification statement.</ghg:CertificationStatement>
    <ghg:ReportingYear>2010</ghg:ReportingYear>
    <ghg:FacilitySiteDetails>
      <ghg:FacilitySite>
        <ghg:FacilitySiteIdentifier>524337</ghg:FacilitySiteIdentifier>
        <ghg:FacilitySiteName>Test Facility H</ghg:FacilitySiteName>
      </ghg:FacilitySite>
      <ghg:LocationAddress>
        <ghg:LocationAddressText>1 Main St.</ghg:LocationAddressText>
        <ghg:LocalityName>Charlottesville</ghg:LocalityName>
        <ghg:StateIdentity>
          <ghg:StateCode>VA</ghg:StateCode>
        </ghg:StateIdentity>
        <ghg:AddressPostalCode>22911</ghg:AddressPostalCode>
      </ghg:LocationAddress>
      <ghg:CogenerationUnitEmissionsIndicator>N</ghg:CogenerationUnitEmissionsIndicator>
      <ghg:PrimaryNAICSCode>327310</ghg:PrimaryNAICSCode>
      <ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ massUOM="Metric Tons">123562380</ghg:TotalNonBiogenicCO2eFacilitySubpartsCtoJJ>
      <ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ massUOM="Metric Tons">150</ghg:TotalBiogenicCO2FacilitySubpartsCtoJJ>
      <ghg:TotalCO2eSupplierSubpartsKKtoPP massUOM="Metric Tons">0</ghg:TotalCO2eSupplierSubpartsKKtoPP>
      <ghg:SubPartInformation>
        <ghg:SubPartH>
          <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Biogenic Carbon dioxide</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
              <ghg:CalculatedValue>150</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
          </ghg:GHGasInfoDetails>
          <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Methane</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
              <ghg:CalculatedValue>111</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
          </ghg:GHGasInfoDetails>
          <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Nitrous Oxide</ghg:GHGasName>
            <ghg:GHGasQuantity massUOM="Metric Tons">
              <ghg:CalculatedValue>11</ghg:CalculatedValue>
            </ghg:GHGasQuantity>
          </ghg:GHGasInfoDetails>
          <ghg:GHGasInfoDetails>
            <ghg:GHGasName>Carbon Dioxide</ghg:GHGasName>
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            </ghg:GHGasQuantity>
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          <ghg:NumberOfOperatingKilns>3</ghg:NumberOfOperatingKilns>
          <ghg:CementProduction massUOM="Short Tons">
            <ghg:MeasureValue>987654321</ghg:MeasureValue>
          </ghg:CementProduction>
          <ghg:CemsUnitCementDetails>
            <ghg:UnitIdentification>
              <ghg:UnitName>003- CEMS</ghg:UnitName>
              <ghg:UnitDescription>CEMS unit</ghg:UnitDescription>
              <ghg:UnitType>Cement Kiln</ghg:UnitType>
            </ghg:UnitIdentification>
            <ghg:CemsMonthlyCementDetails>
              <ghg:MonthName>January</ghg:MonthName>
              <ghg:ClinkerProduction massUOM="Short Tons">
                <ghg:MeasureValue>10</ghg:MeasureValue>
                <ghg:IsSubstitutedIndicator>Y</ghg:IsSubstitutedIndicator>
              </ghg:ClinkerProduction>
```

```
                </ghg:CemsMonthlyCementDetails>
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                        </ghg:ClinkerProduction>
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                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
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                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                        </ghg:ClinkerProduction>
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                        </ghg:ClinkerProduction>
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                <ghg:CemsMonthlyCementDetails>
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                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                        </ghg:ClinkerProduction>
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                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
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                        </ghg:ClinkerProduction>
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                                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
                        </ghg:ClinkerProduction>
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                        </ghg:ClinkerProduction>
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                <ghg:CEMSMonitoringLocation>
                        <ghg:Name>004- CML</ghg:Name>
```

```
                        <ghg:Description>CEMS monitoring location 004</ghg:Description>
                        <ghg:Type>Single process/process unit exhausts to dedicated
                        stack</ghg:Type>
                </ghg:CEMSMonitoringLocation>
                <ghg:CO2EmissionsAllBiomassFuelsCombined massUOM="Metric Tons">
                        <ghg:CalculatedValue>150</ghg:CalculatedValue>
                </ghg:CO2EmissionsAllBiomassFuelsCombined>
                <ghg:CO2EmissionsNonBiogenic massUOM="Metric Tons">
                        <ghg:CalculatedValue>10610</ghg:CalculatedValue>
                </ghg:CO2EmissionsNonBiogenic>
                <ghg:AnnualCO2EmissionsMeasuredByCEMS massUOM="Metric Tons">
                        <ghg:CalculatedValue>100000</ghg:CalculatedValue>
                </ghg:AnnualCO2EmissionsMeasuredByCEMS>
                <ghg:TotalCH4CombustionEmissions massUOM="Metric Tons">
                        <ghg:CalculatedValue>111</ghg:CalculatedValue>
                </ghg:TotalCH4CombustionEmissions>
                <ghg:TotalN2OCombustionEmissions massUOM="Metric Tons">
                        <ghg:CalculatedValue>11</ghg:CalculatedValue>
                </ghg:TotalN2OCombustionEmissions>
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                        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                                <ghg:CalculatedValue>10000</ghg:CalculatedValue>
                        </ghg:CumulativeCO2MassEmissions>
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                        <ghg:CumulativeCO2MassEmissions massUOM="Metric Tons">
                                <ghg:CalculatedValue>20000</ghg:CalculatedValue>
                        </ghg:CumulativeCO2MassEmissions>
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                                <ghg:CalculatedValue>30000</ghg:CalculatedValue>
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                        <ghg:OperatingHoursStackGasFlowRateSubstituted>12</ghg:OperatingHoursSt
                        ackGasFlowRateSubstituted>
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                <ghg:TierMethodologyEndDate>2010-12-31</ghg:TierMethodologyEndDate>
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                        material</ghg:UnitDescription>
                        <ghg:UnitType>Cement Kiln</ghg:UnitType>
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```

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                    D</ghg:DeterminationMethodforNonCalcinedMagnesiumOxide>
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```

```
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        D</ghg:DeterminationMethodforNonCalcinedMagnesiumOxide>
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                <ghg:IsSubstitutedIndicator>N</ghg:IsSubstitutedIndicator>
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        <ghg:FractionNonCalcinedMagnesiumOxideContentinClinker>
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