metric tons of CO\textsubscript{2} equivalent by multiplying each annual CH\textsubscript{4} and N\textsubscript{2}O emissions total by the appropriate global warming potential (GWP) factor from Table A–1 of subpart A of this part.

(c) For each pulp mill lime kiln located at a kraft or soda facility, you must determine CO\textsubscript{2}, CH\textsubscript{4}, and N\textsubscript{2}O emissions using the procedures in paragraphs (c)(1) through (c)(3) of this section:

(1) Calculate CO\textsubscript{2} emissions from fossil fuel from direct measurement of fossil fuels consumed and default HHV and default emissions factors, according to the Tier 1 Calculation Methodology for stationary combustion sources in §98.33(a)(1). A higher tier from §98.33(a) may be used to calculate fossil fuel-based CO\textsubscript{2} emissions if the respective monitoring and QA/QC requirements described in §98.34 are met.

(2) Calculate CH\textsubscript{4} and N\textsubscript{2}O emissions from fossil fuel from direct measurement of fossil fuels consumed, default or site-specific HHV, and default emissions factors and convert to metric tons of CO\textsubscript{2} equivalent according to the methodology for stationary combustion sources in §98.33(c); use the default HHV listed in Table C–1 of subpart C and the default CH\textsubscript{4} and N\textsubscript{2}O emissions factors listed in Table AA–2 of this subpart.

(3) Biogenic CO\textsubscript{2} emissions from conversion of CaCO\textsubscript{3} to CaO are included in the biogenic CO\textsubscript{2} estimates calculated for the chemical recovery furnace in paragraph (a)(3) of this section.

(d) For makeup chemical use, you must calculate CO\textsubscript{2} emissions by using direct or indirect measurement of the quantity of chemicals added and ratios of the molecular weights of CO\textsubscript{2} and the makeup chemicals, according to Equation AA–3 of this section:

\[
CO_2 = \left[ \frac{M(CaCO_3) \times 44}{100} + M(Na_2CO_3) \times 44 \right] \times 1000 \text{ kg/metric ton} \quad \text{(Eq. AA-3)}
\]

Where:
- CO\textsubscript{2} = CO\textsubscript{2} mass emissions from makeup chemicals (kilograms/yr).
- M(CaCO\textsubscript{3}) = Make-up quantity of CaCO\textsubscript{3} used for the reporting year (metric tons per year).
- M(Na\textsubscript{2}CO\textsubscript{3}) = Make-up quantity of Na\textsubscript{2}CO\textsubscript{3} used for the reporting year (metric tons per year).
- 44 = Molecular weight of CO\textsubscript{2}.
- 100 = Molecular weight of CaCO\textsubscript{3}.
- 105.99 = Molecular weight of Na\textsubscript{2}CO\textsubscript{3}.


§ 98.274 Monitoring and QA/QC requirements.

(a) Each facility subject to this subpart must quality assure the GHG emissions data according to the applicable requirements in §98.34. All QA/QC data must be available for inspection upon request.

(b) Fuel properties needed to perform the calculations in Equations AA–1 and AA–2 of this subpart must be determined according to paragraphs (b)(1) through (b)(3) of this section.

(1) High heat values of black liquor must be determined no less than annually using T684 om–06 Gross Heating Value of Black Liquor, TAPPI (incorporated by reference, see §98.7). If measurements are performed more frequently than annually, then the high heat value used in Equation AA–1 of this subpart must be based on the average of the representative measurements made during the year.

(2) The annual mass of spent liquor solids must be determined using either of the methods specified in paragraph (b)(2)(i) or (b)(2)(ii) of this section.

(i) Measure the mass of spent liquor solids annually (or more frequently) using T–650 om–05 Solids Content of Black Liquor, TAPPI (incorporated by reference in §98.7). If measurements are performed more frequently than annually, then the mass of spent liquor solids used in Equation AA–1 of this subpart must be based on the average of the representative measurements made during the year.
Environmental Protection Agency § 98.276

(i) Determine the annual mass of spent liquor solids based on records of measurements made with an online measurement system that determines the mass of spent liquor solids fired in a chemical recovery furnace or chemical recovery combustion unit.

(3) Carbon analyses for spent pulping liquor must be determined no less than annually using ASTM D5373–08 Standard Test Methods for Instrumental Determination of Carbon, Hydrogen, and Nitrogen in Laboratory Samples of Coal (incorporated by reference, see §98.7). If measurements using ASTM D5373–08 are performed more frequently than annually, then the spent pulping liquor carbon content used in Equation AA–2 of this subpart must be based on the average of the representative measurements made during the year.

(c) Each facility must keep records that include a detailed explanation of how company records of measurements are used to estimate GHG emissions. The owner or operator must also document the procedures used to ensure the accuracy of the measurements of fuel, spent liquor solids, and makeup chemical usage, including, but not limited to calibration of weighing equipment, fuel flow meters, and other measurement devices. The estimated accuracy of measurements made with these devices must be recorded and the technical basis for these estimates must be provided. The procedures used to convert spent pulping liquor flow rates to units of mass (i.e., spent liquor solids firing rates) also must be documented.

(d) Records must be made available upon request for verification of the calculations and measurements.

§ 98.275 Procedures for estimating missing data.

A complete record of all measured parameters used in the GHG emissions calculations is required. Therefore, whenever a quality-assured value of a required parameter is unavailable (e.g., if a meter malfunctions during unit operation or if a required sample is not taken), a substitute data value for the missing parameter shall be used in the calculations, according to the requirements of paragraphs (a) through (c) of this section:

(a) There are no missing data procedures for measurements of heat content and carbon content of spent pulping liquor. A re-test must be performed if the data from any annual measurements are determined to be invalid.

(b) For missing measurements of the mass of spent liquor solids or spent pulping liquor flow rates, use the lesser value of either the maximum mass or fuel flow rate for the combustion unit, or the maximum mass or flow rate that the fuel meter can measure.

(c) For the use of makeup chemicals (carbonates), the substitute data value shall be the best available estimate of makeup chemical consumption, based on available data (e.g., past accounting records, production rates). The owner or operator shall document and keep records of the procedures used for all such estimates.

§ 98.276 Data reporting requirements.

In addition to the information required by §98.3(c) and the applicable information required by §98.36, each annual report must contain the information in paragraphs (a) through (k) of this section as applicable:

(a) Annual emissions of CO$_2$, biogenic CO$_2$, CH$_4$, biogenic CH$_4$, N$_2$O, and biogenic N$_2$O (metric tons per year).

(b) Annual quantities fossil fuels by type used in chemical recovery furnaces and chemical recovery combustion units in short tons for solid fuels, gallons for liquid fuels and scf for gaseous fuels.

(c) Annual mass of the spent liquor solids combusted (short tons per year), and basis for determining the annual mass of the spent liquor solids combusted (whether based on T650 om-05 Solids Content of Black Liquor, TAPPI (incorporated by reference, see §98.7) or an online measurement system).

(d) The high heat value (HHV) of the spent liquor solids used in Equation AA–1 of this subpart (mmBtu per kilogram).

(e) The default or site-specific emission factor for CO$_2$, CH$_4$, or N$_2$O, used in Equation AA–1 of this subpart (kg CO$_2$, CH$_4$, or N$_2$O per mmBtu).

(f) The carbon content (CC) of the spent liquor solids, used in Equation AA–2 of this subpart (percent by