

Pulp and Paper Manufacturing

Subpart AA, Greenhouse Gas Reporting Program

OVERVIEW

Subpart AA of the Greenhouse Gas Reporting Program (GHGRP) (40 CFR §§ 98.270 – 98.278) applies to any facility that contains a pulp and paper manufacturing process and that meets the Subpart AA source category definition. Some subparts have thresholds that determine applicability for reporting, and some do not. To decide whether your facility must report under this Subpart, please refer to 40 CFR § 98.271 and the GHGRP [Applicability Tool](#).

This Information Sheet is intended to help facilities reporting under Subpart AA understand how the source category is defined, what greenhouse gases (GHGs) must be reported, how GHG emissions must be calculated and shared with EPA, and where to find more information.



How is This Source Category Defined?

The Subpart AA source category consists of facilities that produce market pulp (i.e., stand-alone pulp facilities), manufacture pulp and paper (i.e., integrated mills), produce paper products from purchased pulp, produce secondary fiber from recycled paper, convert paper into paperboard products (e.g., containers), or operate coating and laminating processes. The source category consists of the following processes:

- Chemical recovery furnaces at kraft and soda mills (including recovery furnaces that burn spent pulping liquor produced by both the kraft and semichemical process).
- Chemical recovery combustion units at sulfite (SO²⁻³) facilities.
- Chemical recovery combustion units at stand-alone semichemical facilities.
- Pulp mill lime kilns at kraft and soda facilities.
- Systems for adding makeup chemicals (calcium carbonate (CaCO₃), sodium carbonate (Na₂CO₃)) in the chemical recovery areas of chemical pulp mills.



What GHGs Must Be Reported?

Pulp and paper manufacturing facilities must report:

- Carbon dioxide (CO₂), biogenic CO₂, methane (CH₄), and nitrous oxide (N₂O) emissions from each kraft or soda chemical recovery furnace.
- CO₂, biogenic CO₂, CH₄, and N₂O emissions from each SO²⁻³ chemical recovery unit.
- CO₂, biogenic CO₂, CH₄, and N₂O emissions from each stand-alone semichemical chemical recovery combustion unit.
- CO₂, biogenic CO₂, CH₄, and N₂O emissions from combustion of fossil fuels in each kraft or soda pulp mill lime kiln.
- CO₂ emissions from addition of makeup chemicals (CaCO₃, Na₂CO₃) in the chemical recovery areas of chemical pulp mills.
- CO₂, CH₄, and N₂O combustion emissions from each stationary fuel combustion unit. Calculate and report these emissions under Subpart C of this part (General Stationary Fuel Combustion Sources) by

following the requirements of Subpart C.

- Facilities must also report greenhouse gas (GHG) emissions from other source categories for which calculation methods are provided in other parts the rule, as applicable.

If multiple GHGRP source categories are co-located at a facility, the facility may need to report greenhouse gas (GHG) emissions under a different subpart. Please refer to the relevant information sheet for a summary of the rule requirements for any other source categories located at the facility.



How Must GHG Emissions Be Calculated?

Pulp and paper manufacturing facilities must calculate GHG emissions as follows:

- Calculate CO₂ emissions from fossil fuels used in chemical recovery furnaces using direct measurement of fossil fuels consumed and default emission factors according to the Tier 1 methodology for stationary combustion sources in Subpart C, found at 40 CFR §§ 98.30 – 98.38. Tiers 2 or 3 may be used to calculate fossil fuel-based CO₂ emissions if the respective monitoring and quality assurance/quality control (QA/QC) requirements are met.
- Calculate biogenic CO₂ emissions from combustion of biomass in spent pulping liquor using:
 - Measured quantities of spent liquor solids fired, site-specific high heating value (HHV), and default or site-specific emission factors for each chemical recovery furnace located at kraft or soda facilities.
 - Measured quantities of spent liquor solids fired and the carbon content of the spent liquor solids for each chemical recovery unit at SO²⁻³ or stand-alone semichemical facilities.
- Calculate CH₄ and N₂O emissions as the sum of emissions from the combustion of fossil fuels and the combustion of biomass in spent pulping liquor, as follows:
 - For fossil fuel emissions, use direct measurement of fuels consumed, a default HHV, and default emission factors according to the methodology for stationary combustion sources in 40 CFR § 98.33(c).
 - For biomass emissions, use measured quantities of spent liquor solids fired, site-specific HHV, and default emission factors for kraft facilities.
- Calculate CO₂ emissions from the use of makeup chemicals using direct or indirect measurement of the quantity of chemicals added and ratios of the molecular weights of CO₂ and the makeup chemicals.
- Calculate CO₂, CH₄, and N₂O emissions from combustion of fossil fuels in lime kilns using direct measurement of fossil fuels consumed and default emission factors and heating values found in Subpart C, found at 40 CFR §§ 98.30 – 98.38. Biogenic CO₂ from the conversion of CaCO₃ to calcium oxide (CaO) in kraft or soda pulp mill lime kilns is accounted for in the biogenic CO₂ emission factor for the recovery furnace.

A checklist for data that must be monitored is available here: [Subpart AA Monitoring Checklist](#).



What Information Must Be Reported?

In addition to the information required by the General Provisions in Subpart A, found at 40 CFR § 98.3(c), the following must be reported:

- Annual CO₂, biogenic CO₂, CH₄, and N₂O emissions for each chemical recovery unit and each lime kiln (metric tons per year (tonnes/year)).
- Annual quantity of fossil fuels for each chemical recovery furnace, combustion unit, and lime kiln (short tons (tons)) for solid fuels, gallons (gal) for liquid fuels, and standard cubic feet (scf) for gaseous

fuels).

- Default emission factor for CO₂, CH₄, or N₂O, used in Equation AA-1 of this subpart (kilograms (kg) CO₂, CH₄, or N₂O per million British thermal units (mmBtu)).
- Annual quantity of spent liquor solids fired in each chemical recovery furnace and chemical recovery combustion unit, and the basis for determining the annual quantity of the spent liquor solids combusted. If an online measurement system is used, you must retain records of the calculations used to determine the annual quantity of spent liquor solids combusted from the continuous measurements.
- HHV of spent liquor solids (mmBtu/kg).
- Carbon content of spent liquor solids fired at SO₂²⁻³ and semichemical pulp facility (percent by weight, expressed as a decimal fraction).
- Annual steam purchases (pounds (lbs) of steam per year).
- Annual quantities of makeup chemicals (carbonates) used (tonnes).
- Annual production of unbleached virgin chemical pulp produced (air dried tonnes). Sum of all kraft, semichemical, soda and SO₂²⁻³ pulp produced onsite, prior to bleaching. Do not include mechanical pulp or secondary fiber repulped for paper production in the virgin pulp production total.



What Records Must Be Maintained?

Reporters are required to retain records that pertain to their annual GHGRP report for at least three years after the date the report is submitted. Please see the [Subpart A Information Sheet](#) and 40 CFR § 98.3(g) for general recordkeeping requirements. Specific recordkeeping requirements for Subpart AA are listed at 40 CFR § 98.277.



When and How Must Reports Be Submitted?

Reporters must submit their annual GHGRP reports for the previous calendar year to the EPA by March 31st, unless the 31st falls on a Saturday, Sunday, or federal holiday, in which case reports are due on the next business day. Annual reports must be submitted electronically using the [electronic Greenhouse Gas Reporting Tool \(e-GGRT\)](#), the GHGRP's online reporting system. For facilities required to use the e-GGRT *Inputs Verifier Tool* (IVT), reporters must enter required data into the e-GGRT IVT, which includes inputs to emission equations for which reporting is not required. IVT uses these data to calculate the equation results.

Each report may be prepared by either a designated representative, an alternate designated representative or agent(s) of the owner or operator. The report must be signed by a designated representative of the owner or operator, certifying under penalty of law that the report has been prepared in accordance with the requirements of the rule. Additional information on setting up user accounts, registering a facility, and submitting annual reports is available on the [GHGRP Help webpage](#).



When Can a Facility Stop Reporting?

A facility may discontinue reporting under several scenarios, which are summarized in Subpart A (found at 40 CFR 98.2(i)) and the [Subpart A Information Sheet](#).



For More Information

For additional information on Subpart AA, please visit the [Subpart AA webpage](#). For additional information on the GHGRP, please visit the [GHGRP website](#), which includes additional information sheets, [data](#) previously reported to the GHGRP, [training materials](#), and links to [FAQs](#). For questions that cannot be answered through the GHGRP website, please contact us at: GHGreporting@epa.gov.

This Information Sheet is provided solely for informational purposes. It does not replace the need to read and comply with the regulatory text contained in the rule. Rather, it is intended to help reporting facilities and suppliers understand key provisions of the GHGRP. It does not provide legal advice; have a legally binding effect; or expressly or implicitly create, expand, or limit any legal rights, obligations, responsibilities, expectations, or benefits with regard to any person or entity.