Pulp and Paper Manufacturing

Proposed Rule: Mandatory Reporting of Greenhouse Gases

United States Environmental Protection Agency

Under the proposed Mandatory Reporting of Greenhouse Gases (GHGs) rule, owners or operators of facilities that contain pulp and paper processes (as defined below) and that emit 25,000 metric tons of GHGs per year or more (expressed as carbon dioxide equivalents [CO_2e] and excluding biogenic carbon dioxide [CO_2]) from stationary combustion, miscellaneous use of carbonates and other source categories (see information sheet on General Provisions) would report emissions from pulp and paper processes and all source categories located at the facility for which calculation methods are defined in the rule. Owners or operators would collect emission data; calculate GHG emissions; and follow the specified procedures for quality assurance, missing data, recordkeeping, and reporting.

How Is This Source Category Defined?

Under the proposal, this 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), and operate coating and laminating processes.

This 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 collocated semichemical process).
- Chemical recovery combustion units at sulfite mills.
- Chemical recovery combustion units at stand-alone semichemical mills.
- Systems for adding makeup chemicals (calcium carbonate [$CaCO_3$], sodium carbonate [Na_2CO_3]).
- Lime kilns at kraft and soda pulp mills.

What GHGs Would Be Reported?

The proposal calls for pulp and paper manufacturing facilities to report:

- CO_2, biogenic CO_2, methane (CH_4), and nitrous oxide (N_2O) emissions from each chemical recovery furnace at kraft or soda mills and from each chemical recovery combustion unit at sulfite or stand-alone semichemical mills.
- CO_2 emissions from addition of makeup chemicals.
- CO_2, CH_4, and N_2O emissions from combustion of fossil fuels in each kraft or soda pulp mill lime kiln.
- CO_2, CH_4, N_2O, and biogenic CO_2 emissions from stationary fuel combustion units, other than chemical recovery units and lime kiln (e.g., boilers), by following the requirements of 40 CFR part 98, subpart C (General Stationary Fuel Combustion Sources).
- CH_4 from onsite landfills by following the requirements of 40 CFR part 98, subpart HH (Landfills).
- CH_4 from onsite wastewater treatment systems by following the requirements of 40 CFR part 98, subpart II (Wastewater Treatment).

How Would GHG Emissions Be Calculated?

Under the proposal, owners or operators of pulp and paper manufacturing facilities would calculate emissions as follows:

- Calculate CO_2 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 40 CFR part 98, subpart C.
- Calculate biogenic CO_2 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 sulfite or stand-alone semichemical facilities.
- Calculate CH_4 and N_2O 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)(2) and (3).
    - For biomass emissions, use measured quantities of spent liquor solids fired and a default emission factors for spent pulping liquor combustion according to the methodology for stationary combustion sources in 40 CFR 98.2(b)(3).
- Calculate CO_2 emissions from the use of makeup chemicals in lime kilns, using direct or indirect measurement of the quantity of chemicals added and ratios of the molecular weights of CO_2 and the makeup chemicals.
- Calculate CO_2, CH_4, and N_2O emissions from combustion[1] of fossil fuels in lime kilns using direct measurement of fossil fuels consumed and default emission factors and heating values found in 40 CFR part 98, subpart C.

What Information Would Be Reported?

In addition to the information required by the General Provisions at 40 CFR 98.3(c), the proposal calls for each annual report to include the following information:

- CO_2, biogenic CO_2, CH_4, and N_2O emission estimates presented by calendar quarters for each chemical recovery unit, each lime kiln, and all makeup chemicals.
- Consumption of all biomass fuels by calendar quarter.
- Quantity of spent liquor solids fired at the facility by calendar quarter.
- Annual steam purchases.
- Annual quantities of makeup chemicals (carbonates) used.

For More Information

This series of information sheets is intended to assist reporting facilities/owners in understanding key provisions of the proposed rule. However, these information sheets are not intended to be a substitution for the rule. Visit EPA's Web site (www.epa.gov/climatechange/emissions/ghgrulemaking.html) for more information, including the proposed preamble and rule and additional information sheets on specific industries, or go to <www.regulations.gov> to access the rulemaking docket (EPA-HQ OAR-2008-0508). For questions that cannot be answered through the Web site or docket, call 1-877-GHG-1188.

[1] Biogenic CO_2 from the conversion of $CaCO_3$ to CaO in kraft or soda pulp mill lime kilns is accounted for in the biogenic CO_2 emission factor for the recovery furnace.