

Kraft Pulp Mills: Neglected Under the Clean Air Act

The US is the world's largest consumer and producer of paper products.¹ This industry sector is also a significant source of greenhouse gases. Within manufacturing, the forest products industry was the third largest consumer of energy in 2006 (following the petroleum and chemical industries).² The pulp and paper industry emitted 57.7 MMT CO₂eq (million metric tons carbon dioxide equivalent) in 2004.³ Besides greenhouse gases, the pulp and paper industry releases a variety of air pollutants that can harm human health and well-being. These include particulate matter (PM), sulfur compounds, nitrogen oxides (NO_x), and volatile organic compounds (VOCs).⁴

Kraft pulp mills “cook” wood chips down into a reduced form that can be used to make paper. The first step in paper manufacturing is “pulping.” This is the processing of wood chips to separate plant fibers, which are the raw material from which paper products are made, from lignin, a glue-like material in wood that binds the fibers together.⁵ Pulping can be completed mechanically, semi-chemically or chemically. The “kraft” method utilizes chemical pulping and is the most common in the US, despite its low yields (40-55%).⁶ The kraft pulping process involves digesting wood chips in chemical solutions at high temperatures and in turn “recovering” the chemicals from the solution through a heating process. These steps produce heat, some of which is used to generate energy for the milling process. This energy-intensive process produces considerable amounts of greenhouse gas emissions.⁷

Pulp processing also produces a staggering volume of other air pollutants. For instance, every ton of air-dried pulp produced in 2002 by Kraft pulp mills generated about 0.3-3 kg of reduced sulfur compounds; 75-150 kg of particulate matter; 0.5-30 kg of sulfur oxides from black liquor oxidation; 1-3 kg of nitrogen oxides; and 15 kg of VOCs from black liquor oxidation;⁸ and 6 kg of turpentine.⁹

¹ A. Brown & Nilgun Atamturk, *Potential Impacts of and Climate Policies on the U.S. Pulp and Paper Industry*, 4 (Georgia Tech. Ivan Allen College, working Paper No. 40, 2008).

² EIA, 2006 Manufacturing Energy Consumption Survey, *available at* <http://www.eia.doe.gov/emeu/mecs/contents.html>.

³ U.S. EPA, TECHNICAL SUPPORT DOCUMENT FOR THE PULP AND PAPER SECTOR 4 (2009). This estimate excludes biomass-derived sources of CO₂.

⁴ World Bank Group, POLLUTION PREVENTION AND ABATEMENT HANDBOOK 396 (1998), *available at* [http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_pulp_WB/\\$FILE/pulp_PPAH.pdf](http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_pulp_WB/$FILE/pulp_PPAH.pdf)

⁵ Office of Compliance, U.S. Environmental Protection Agency, PROFILE OF THE PULP AND PAPER INDUSTRY 15 (2nd ed. 2002) [hereinafter PROFILE], *available at* <http://www.epa.gov/compliance/resources/publications/assistance/sectors/notebooks/pulppasn.pdf>.

⁶ N. Martin et al., OPPORTUNITIES TO IMPROVE ENERGY EFFICIENCY AND REDUCE GREENHOUSE GAS EMISSIONS IN THE U.S. PULP AND PAPER INDUSTRY 10 (July 2000), *available at* <http://www.energystar.gov/ia/business/industry/LBNL-46141.pdf>.

⁷ *Id.*

⁸ WORLD BANK GROUP, POLLUTION PREVENTION AND ABATEMENT HANDBOOK 396 (1998), *available at* [http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_pulp_WB/\\$FILE/pulp_PPAH.pdf](http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/gui_pulp_WB/$FILE/pulp_PPAH.pdf)

⁹ Food and Agriculture Organization of the United Nations, THE EIA IN THE PULP AND PAPER INDUSTRY (1996).

Recognizing the need to control air pollution from this industry, EPA created new source performance standards (NSPS) under authority of the Clean Air Act (CAA) for kraft pulp mills in 1978.¹⁰ EPA reviewed these standards once in 1986¹¹ but has failed to update them for the last 24 years.

Under section 111(b) of the CAA, EPA must not only set pollution emission limitations for each new stationary source that “causes, or contributes significantly to, air pollution which may reasonably be anticipated to endanger public health or welfare,”¹² but must also review each NSPS at least every 8 years¹³ to ensure that industry practices and new technology are implemented to achieve the greatest possible reductions in air pollution from these sources. Furthermore, under section 111(d) of the CAA, EPA must promulgate “emissions guidelines” providing information on health impacts, pollutant reductions, and technology options for reducing “designated air pollutants”¹⁴ from existing stationary sources.¹⁵ The first, last, and only emissions guidelines for kraft pulp mills were published in 1979.¹⁶

Decades have passed since EPA last updated the performance standards and emissions guidelines for pulp mills. Since then, technology has continued to improve, as has our understanding of the health impacts of air pollutants, especially greenhouse gases. The result is that much greater reductions in air pollution could and should be achieved today than when these regulations were last promulgated. EPA is required by law to protect the air we breathe and preserve a safe climate. This duty necessitates the immediate revision of the performance standards for new pulp mills and emissions guidelines for existing pulp mills.

¹⁰ 43 Fed. Reg. 7,568 (Feb. 23, 1978).

¹¹ 51 Fed. Reg. 18,538 (May 20, 1986); *see also* 66 Fed. Reg. 3180 (Jan. 12, 2001) (setting limits for PM and as a surrogate for metal hazardous air pollutants under authority of 42 U.S.C. § 7412).

¹² 42 U.S.C. § 7411(b)(1)(A).

¹³ 42 U.S.C. § 7407(d)(3)(E).

¹⁴ Defined as air pollutants that are regulated under a NSPS but are not criteria air pollutants. 40 C.F.R. § 60.21(a).

¹⁵ 42 U.S.C. § 7411(d); 40 C.F.R. § 60.22(b).

¹⁶ 44 Fed. Reg. 29,828 (May 22, 1979); *see also* 45 Fed. Reg. 67,146 (October 9, 1980) (corrections to the original guidelines).