

Air Rule for Cement Kilns Requires 92 Percent Cut in Mercury Emissions

By Andrew Childers

Portland cement kilns will be required to reduce emissions of mercury by 92 percent as part of an Environmental Protection Agency final rule announced Aug. 9 that imposes controls for several toxic pollutants.

Although most of the emissions standards in the final rule are less stringent than what the agency had proposed in 2009, the cement industry said the cost to operate the required controls could force some kilns to shut down.

The rule revises both the national emissions standards for hazardous air pollutants (NESHAP) and new source performance standards for the portland cement manufacturing industry at 40 C.F.R. Parts 60 and 63. It will take effect 60 days after it is published in the Federal Register.

An estimated 181 portland cement kilns will be operating in the United States by 2013, according to EPA. Of those, 158 will be subject to the revised air toxics emissions control requirements. Another seven will be subject to the revised new source performance standards.

EPA revised the emissions limits as part of a settlement with the Sierra Club (Portland Cement Ass'n v. EPA, D.C. Cir., No. 07-1046, 1/16/09).

Mercury, Other Toxic Metals Controlled

The final rule sets emissions limits for mercury, total hydrocarbons, and particulate matter for both major source cement kilns and the smaller area source kilns.

Particulate matter is a surrogate for toxic metals, including arsenic, cadmium, beryllium, and lead. Total hydrocarbons are used as a surrogate for polycyclic organic matter (POM) and polychlorinated biphenyls (PCBs).

The rule also establishes an emissions limit for hydrochloric acid for kilns that are major sources of the pollutant.

Major sources are those that emit 10 tons a year or more of one hazardous air pollutant or 25 tons or more per year of any combination of hazardous air pollutants, and they are subject to maximum available control technology (MACT) standards. Area sources are those that emit less than 10 tons per year of any one air toxic and less than 25 tons per year of any combination of hazardous air pollutants.

Estimated Reductions

EPA estimates the rule will reduce mercury emissions from cement kilns by 16,600 pounds per year by 2013, a 92 percent reduction. Emissions of total hydrocarbons would be reduced by 10,600 tons per year, an 83 percent reduction; particulate matter would be reduced by 11,500 tons per year, a 92 percent reduction; hydrochloric acid by 5,800 tons per year, a 97 percent reduction; sulfur dioxide by 110,000 tons per year, a 78 percent reduction; and nitrogen oxides by 6,600 tons per year, a 5 percent reduction.

The emissions standards for hazardous air pollutants will apply to all kilns built after May 6, 2009. The new source performance standards—technology-based emissions limits for so-called criteria pollutants such as

nitrogen oxides and sulfur dioxide—will apply to all kilns built after June 16, 2008.

“Americans throughout the country are suffering from the effects of pollutants in our air, especially our children who are more vulnerable to these chemicals,” EPA Administrator Lisa Jackson said in a statement. “This administration is committed to reducing pollution that is hurting the health of our communities. With this historic step, we are going a long way in accomplishing that goal. By reducing harmful pollutants in the air we breathe, we cut the risk of asthma attacks and save lives.”

Toxics Standards Less Stringent Than Proposed

For most pollutants, the final hazardous emissions standards are less stringent than those EPA proposed in May 2009 (74 Fed. Reg. 21,136).

EPA first issued air toxics standards for area source cement kilns in 1999, requiring them to control emissions of total hydrocarbons (64 Fed. Reg. 31,898). That rule was amended in 2006, but it did not include emissions limits for other toxic emissions such as arsenic, cadmium, beryllium, and lead.

The air toxics portion of EPA's latest final rule limits emissions of mercury from existing kilns to 55 pounds per million tons of clinker. Clinker is the solid material produced by kilns, and is the primary constituent of portland cement.

New kilns must meet a mercury emissions standard of 21 pounds per million tons of clinker. EPA had proposed a standard of 43 pounds per million tons of clinker for existing kilns and 14 pounds per million tons of clinker for new facilities.

For total hydrocarbons, the final rule limits emissions from both new and existing kilns to 24 parts per million by volume (ppmv). The agency had proposed a standard of 7 ppmv for existing kilns and 6 ppmv for new kilns.

For both new and existing kilns, the final rule would limit emissions of hydrochloric acid to 3 ppmv. EPA had proposed limiting new facilities to 0.1 ppmv with a hydrochloric acid emissions standard of 2 ppmv for existing kilns.

Unlike the other emissions limits, EPA's final standards for particulate matter are more stringent than the agency had proposed. The final rule would cap emissions of particulate matter at 0.04 pounds per ton of clinker for existing facilities and 0.01 pounds per ton of clinker for new cement manufacturers.

All of the emissions standards are averaged over 30 days.

EPA said it revised the emissions standards from what had been proposed after receiving additional emissions data from the cement industry.

Performance Standards Revised

The final rule also revises the new source performance standards for portland cement manufacturing.

The agency issued the performance standards for the cement industry in 1971 (36 Fed. Reg. 24,876). Those standards have not been reviewed since 1988.

EPA's revised new source performance standards set emissions limits for nitrogen oxides, sulfur dioxide, and particulate matter. The rule requires new cement kilns to operate continuous emissions monitors for all three pollutants as well.

For new cement kilns, the emissions limit for nitrogen oxides will be 1.5 pounds per ton of clinker. For sulfur dioxide, the emissions standard will be 0.4 pound per ton of clinker. For particulate matter, the emissions limit will be 0.01 pound per ton of clinker.

All three emissions limits are averaged over 30 days.

Standards Could Close Kilns

The Portland Cement Association, an industry trade group, predicted the revised emissions standards could force some kilns to close.

“Although the standards in the final rule are not quite as stringent as those originally proposed in May 2009, the emission limits are still very low and will not be achievable by some facilities,” Brian McCarthy, chief executive officer and president of the Portland Cement Association, said in a statement.

Installing the needed controls is expected to cost the cement industry between \$926 million and \$950 million annually, according to EPA.

EPA estimates the health benefits of the rule will be between \$6.7 billion and \$18 billion annually by 2013, including 960 to 2,500 fewer premature deaths per year.

The Portland Cement Association had favored creating mercury emissions standards for subcategories of cement facilities and health-based standards for hydrochloric acid that would have exempted facilities from numeric emissions limits if they could demonstrate emissions of the pollutant were below EPA's level for concern.

“These approaches would have achieved the environmental objectives of the Clean Air Act, while also preserving U.S. cement production capacity,” McCarthy said.

EPA rejected the creation of subcategories for cement kilns based on the mercury content of the limestone used after its calculations indicated that regulating by subcategories would allow cement manufacturers to emit hazardous amounts of mercury.

Support for Final Rule

Environmental groups praised EPA's final rule.

“For years, the cement industry has gotten a free pass to pollute our air and water,” Earthjustice attorney James Pew said in a statement. “Previous administrations ignored the law and turned a blind eye towards the cost of pollution on our health and environment. Under Lisa Jackson, the EPA has taken the necessary steps to finally curtail some of the biggest polluters and clean up our air and water. Today's announcement will save lives and prevent suffering from cement kiln pollution's devastating health effects for thousands of Americans.”

EPA's final rule revising the national emissions standards for hazardous air pollutants and new source performance standards for the portland cement manufacturing industry is available at <http://www.epa.gov/ttn/oarpg/new.html>. For more information contact Keith Barnett in EPA's Office of Air Quality Planning and Standards at (919) 541-5605 or barnett.keith@epa.gov.