

**CENTER FOR ENERGY EFFICIENCY AND RENEWABLE TECHNOLOGIES  
ENVIRONMENT CALIFORNIA  
NATURAL RESOURCES DEFENSE COUNCIL  
PLANNING AND CONSERVATION LEAGUE  
SIERRA CLUB CALIFORNIA**

January 22, 2007

Dr. Robert Sawyer, Ph.D., Chairman  
California Air Resources Board  
1001 I Street,  
Sacramento, CA 95814

**Re: Early Action Measures -- Cement Industry Greenhouse Gas and Toxic Emission Reductions**

Dear Dr. Sawyer:

On behalf of CEERT, NRDC, Environment California, Planning and Conservation League, and Sierra Club California, we urge CARB to explore early action measures to significantly reduce the emission of both greenhouse gasses and mercury and other toxins by California's eleven cement kilns, consistent with Assembly Bill (AB) 32's direction to pursue complementary greenhouse gas (GHG) and toxic air contaminant reduction efforts.

Cement production in California accounts for about 2% of greenhouse gas emissions,<sup>1</sup> and almost 90% of statewide mercury (Hg) emissions (about tenfold more than the oil refining industry, the state's next largest source) according to US EPA's TRI data.<sup>2</sup> Coal combustion accounts for a high proportion of both carbon dioxide (CO<sub>2</sub>) and mercury emissions from these plants; energy efficiency and the use of cleaner fuels would reduce emissions of both pollutants. CARB has authority to address the GHG emissions from these facilities under AB 32 and additional authority to control sources of mercury emissions under its toxic air contaminant program.<sup>3</sup>

Researchers have identified an extensive list of practical energy efficiency measures for cement plants.<sup>4</sup> These include relatively inexpensive energy savings measures with short pay back times, such as automated process control and management systems (potential annual CO<sub>2</sub> and Hg emission reductions of .07-.14 million metric tons (MMT) and 12-24 lbs respectively) and improved preheating kiln technology (potential annual CO<sub>2</sub> and Hg emission reductions of .2 MMT and 30.5 lbs respectively). These energy efficiency measures may also include more

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<sup>1</sup> Climate Action Team, Climate Action Team Report to Governor Schwarzenegger and the Legislature, 2006.

<sup>2</sup> U.S. EPA, 2004 data release for Toxic Release Inventory, available at <http://www.epa.gov/triexplorer>.

<sup>3</sup> Health & Safety Code §§ 39658(b) & 39666(c).

<sup>4</sup> Some fraction of California's cement plants may already employ these technologies thereby reducing the estimate of overall emission reductions achieved by applying the technologies to cement production in the state.

extensive equipment conversions that bring larger emissions reductions, such as conversion from a dry to a precalciner kiln (estimated cost of \$28/metric ton clinker; potential CO<sub>2</sub> and Hg emission reductions of .1 MMT and 181lbs per year, respectively) and conversion from wet to dry processes (estimated cost of \$133/metric ton clinker; potential CO<sub>2</sub> and Hg emission reductions of .6MMT and 381 lbs respectively). A number of these measures could be implemented quickly – indeed, some plants have already implemented them – and could, over time, reduce operating costs.<sup>5,6</sup>

In addition to energy efficiency opportunities, CARB should also explore a greenhouse gas and mercury emission performance standard for cement facilities equivalent to the level achievable through conversion from coal to natural gas. Some facilities are already equipped to burn natural gas. Such a performance standard would be expected to reduce the sector's CO<sub>2</sub> and Hg emissions by an estimated 22% and 30-45% (1.2MMT and 1200-1800 lbs per year), respectively.<sup>7</sup>

While a suite of policies will likely be needed to reduce the greenhouse gas emissions from the cement sector, we urge CARB to further explore these ideas as early action measures because of the win-win opportunity to reduce both GHG and toxic emissions simultaneously. We appreciate your consideration of our suggestions, and we look forward to continuing to work with you to implement AB 32.

Sincerely,

John Shears  
Center for Energy Efficiency and Renewable Technologies

Jason Barbose  
Environment California

Michael Wall  
Natural Resources Defense Council

Rene Guerrero  
Planning and Conservation League

Bill Magavern  
Sierra Club California

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<sup>5</sup> Hendricks, CA., E Worrell, D. de Jager, K. Block, and P. Reimer. 2004. Emission Reduction of Greenhouse Gases from the Cement Industry. IEA Greenhouse Gas R&D Programme. Report downloaded from [www.sustainablefinance.net/web/projects/cement/tf1/prghgt42.pdf](http://www.sustainablefinance.net/web/projects/cement/tf1/prghgt42.pdf). Accessed 12/12/06.

<sup>6</sup> CO<sub>2</sub> and Hg emission reductions were calculated based on reductions in coal use proportional to energy savings estimated by Hendricks et al. 2004 and USEPA emission factors for CO<sub>2</sub> and Hg from coal combustion.

<sup>7</sup> CO<sub>2</sub> and Hg emission reductions were calculated based on replacing coal combustion with natural gas and USEPA emission factors for CO<sub>2</sub> and Hg from coal and natural gas combustion.