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May 18, 2007

Mr. Robert Sawyer, Chair
California Air Resources Board
Headquarters Building
1001 "I" Street
P.O. Box 2815
Sacramento, CA 95812

Subject: Comments on the ARB Offroad Diesel Rule (April 6, 2007 version) from the California Cement Manufacturers Environmental Coalition

Dear Mr. Sawyer:

The California Air Resources Board (ARB) is currently considering the adoption of off-road diesel (ORD) regulations that, if implemented as presently drafted, would have a profound, negative impact on California's infrastructure rebuilding efforts, the health of the state's construction industry and its overall economy. The purpose of this letter is to provide comments from Mitsubishi Cement Corporation (MCC). This letter expands on the themes in the comment letter submitted by MCC on April 3, 2007.

We want to be clear that MCC is very supportive of reducing particulate matter (PM) and NOx emissions from diesel engines. In fact, using the Carl Moyer program over the past five years in Southern California alone, the cement industry has replaced significant numbers of high polluting engines, resulting in a large reduction in PM and NOx emissions.

There is no disagreement that we need to work collectively to improve the state's air quality and all of us want to provide as healthy an environment as possible for our employees on our job sites. However, in their current form, the Board's proposed regulations are not viable from an economic or technological perspective.

When ARB first announced its intention to promulgate these regulations in 2000, their plan called for an 18-year timeline to meet the state's goals of reducing particulate matter emissions only. Due to delays in developing these rules, that timeline has been reduced to 13 years. In addition, the regulation of NOx emissions has been added to the rule – which significantly alters the kind of technology needed for companies to be in compliance.

What the NOx Requirements Mean

The NOx standards were added to the rule towards the end of the regulatory development process (in December 2006). Although there are two NOx control technologies that were

recently certified, these technologies are very limited in terms of which engines they apply to and the percent control that they achieve. For the vast majority of engines, there are no certified retrofit NOx control technologies, and, hence, to comply with the NOx standards, the only option is engine replacement.

Prior to December 2006, the offroad diesel rule had been a diesel PM control retrofit rule, consistent with many of the other diesel regulations that are already passed. In December 2006, when ARB added the NOx provisions, the rule became an engine replacement rule. The NOx provisions added to the offroad diesel rule are unprecedented and illustrate the fundamental problem with applying technology designed for new equipment to existing equipment. The problem is that the equipment **does not fit**, and the consequence is that the cost rises dramatically.

For most vehicle models found at cement plants, there are currently no engines available that will fit in the existing vehicles. Therefore, engine replacement actually implies vehicle replacement, which is three to four times the cost of engine replacement. Prior to 2011, the new engines are tier 3 (less than 750 horsepower) or tier 2 (greater than 750 horsepower). However, there are many models in the size range at cement plants for which there are no tier 2 or tier 3 engines that fit. After 2011, new tier 2 and tier 3 engines will no longer be sold, and the new engines sold will be tier 4i. Based on manufacturer communications, it is likely that Tier 4i engines **will not fit in any** of the existing vehicles and that vehicle replacement will be the only option.

What the NOx Requirements Will Cost the Cement Industry

Based on the NOx requirements in the ORD rule, we developed the following cost estimate. Cement manufacturing involves limestone mining in very large quantities (1 million to 3 million tons per year per plant), which requires very large loaders and haul trucks (most over 600 horsepower and many over 750 horsepower). The cost estimate for each of the 11 cement plants in the state will be similar to the following:

- To meet NOx provisions in the ORD rule, the only compliance option is engine replacement. Beginning in 2011, engine replacement likely triggers vehicle replacement, because tier 4i engines will likely not fit in the existing vehicles.

- The majority of the vehicles with high operating hours at cement plants are over 600 horsepower. For vehicles over 600 horsepower, the vehicle replacement cost is between $750,000 and $1.5 million per vehicle, which corresponds to a rule compliance cost of between $1,000 and $2,000 per horsepower.

- The forced vehicle turnover rate of 8% under the rule (i.e. entire fleet replaced within 12.5 years) is much faster than the natural turnover rate, which is between 2% and 4% per year (i.e. entire fleet replaced within 25 to 50 years).

- The typical fleet at a cement plant consists of about 35 vehicles, with about 70% of the horsepower hours coming from 10 of those vehicles, denoted the "high-use" vehicles. The fleet analysis required to identify the optimal compliance plan is complex, and, hence, for illustration purposes, we are presenting a simplified analysis that actually **underestimates** the projected cost. To comply with the NOx requirements, **in addition to** the natural vehicle turnover rate, it will be necessary to turn over at least one of the ten high-use vehicles in each of the 10 years from 2011 to 2020. Assuming an additional turnover of one vehicle per year, the total cost for the ten-year period will be between $7.5 million and $15 million per plant (2007 dollars, without taking into account time value of money), or a total between $82.5 million and $165 million for the eleven plants.

- The vehicle turnover costs are in addition to the PM retrofit costs. For an engine over 600 horsepower, the PM retrofit cost is between $45,000 and $90,000 per engine. The PM retrofit costs for a fleet of ten vehicles for the period 2011 through 2020, based on 20% retrofit per year followed by replacement every five years, are between $0.9 and $1.8 million, or a total between $10 and $20 million for the eleven plants.

- For the period 2011 through 2020, the total cost for NOx turnovers and PM retrofits is between $8.4 million and $16.8 million per plant, or a total between $92.5 and $185 million for the eleven plants.

- In the later years of the program, vehicles that were previously replaced (to meet tier 4i standards) may need to be replaced again to meet fleet average tier 4 standards. Annual expenditures on the program will continue until either the 2020 fleet average limit is met or all vehicles have been turned over (whichever comes first). The costs of the program after 2020 have not been included in the analysis.

We believe that the add-on cost for the NOx portion of the ORD rule are much too high, and we agree with the Construction Industry Air Quality Coalition (CIAQC) that the ORD rule should be postponed. We estimate the total industry-wide cost of implementing these proposed rules to be upward of $9 billion. **For each cement plant, the total cost for the period 2011 through 2020 will be between $8.4 and $16.8 million.**

These rules will also significantly reduce the buying power of the historic $43 billion infrastructure bonds the people of California approved in November. Due to the enormous expense of replacing this equipment – in some cases more than $1 million for each machine – we will be forced to increase the cost of construction projects. This means fewer roads, schools, housing and levees will be built and the pace at which these projects can be completed will be significantly slowed.

Benefits of Five-Year Postponement of Implementation Date
We support any revision to the rule that eliminates the requirement to meet NOx standards until 2015, when the Tier 4 engines will become available for larger horsepower engines. Potential revisions could include an overall five-year ORD rule postponement as proposed by CIAQC or a compromise solution that keeps the 2015 limits intact but eliminates the NOx limits prior to 2015. Eliminating the NOx requirements prior to 2015 should give equipment manufacturers time to catch-up and produce engines that will allow the industry to meet California's progressive air quality standards and distribute the massive expense of purchasing new equipment out over a longer period.

The benefits of the elimination of NOx requirements prior to 2015 include the following:

- If ARB could postpone the NOx provisions until NOx retrofit control technologies become available, the cost would be significantly reduced. To achieve cost-effective NOx retrofit technologies will require some time and effort, and ARB needs to allow this process to occur, just as ARB has promoted PM retrofit control technology development since 2000. (The NOx control provisions of the ORD rule were added in December 2006.)

- One of the main reasons that off-road NOx retrofit technology has lagged behind is there is no clear market for the technology, and there is insufficient data about the number and type of offroad engines where NOx retrofit technology is needed. To obtain this data, ARB needs to do a detailed inventory of offroad engines. After the inventory is completed, NOx control providers will have the data they need to invest in NOx control technology development. Without this data, cost-effective NOx controls will not be developed.

The need for a comprehensive inventory of offroad vehicles, which accurately quantifies the distribution of vehicles between vehicle types as well as the total number of vehicles, is another reason that the NOx provisions should be delayed for at least five years.

We look forward to working with you, environmental organizations, the Legislature and other stakeholders to find a feasible solution that achieves the state's air quality goals while keeping California's economy moving forward.

Sincerely,

Michael W. Jasberg
Executive Vice President

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