

**STATEMENT
OF THE
MANUFACTURERS OF EMISSION CONTROLS ASSOCIATION
ON THE AIR RESOURCES BOARD'S
PROPOSED REGULATION FOR MOBILE CARGO HANDLING EQUIPMENT
AT PORTS AND INTERMODAL RAIL YARDS**

December 8, 2005

The Manufacturers of Emission Controls Association (MECA) is pleased to provide testimony in support of the Air Resources Board's proposal to require reductions in particulate matter (PM) from the existing mobile cargo handling equipment fleet. We believe the proposal presents a balanced, fair, and flexible approach that will achieve significant PM emission reductions in a cost-effective manner. Further, we firmly believe that the emission control technologies that will be needed to help meet the requirements of the proposed program will be available. Indeed, the PM control technologies cited in the ARB staff report are being used today on some off-road equipment in California and elsewhere. The staff report also summarizes the diesel retrofit technologies that are currently verified for on-road or off-road diesel engines using ARB's diesel retrofit verification protocols. The vast majority of these verified retrofit options come from MECA-member companies.

We commend the ARB for its leadership in developing this innovative and important regulatory initiative. ARB's proposed program will provide important and rapid PM emission reduction benefits and will provide an opportunity to demonstrate the effectiveness of a retrofit/rebuild/replacement strategy. This program can serve as a model for future efforts to reduce PM emissions from existing diesel engines not only in California, but also in other states and in other countries around the world.

MECA is a non-profit association of the world's leading manufacturers of emission control technology for motor vehicles. Our members have decades of experience and a proven track record in developing and manufacturing emission control technology for a wide variety of on-road and off-road vehicles and equipment. A number of our members have extensive experience in the development, manufacture, and application of PM control retrofit technologies.

Our members have invested and continue to invest significant resources in developing and verifying diesel retrofit technologies for use on the whole range of in-use diesel engines currently operating in California, including on-road, off-road, and stationary sources. To date, as stated in the ARB staff report, the majority of the retrofit technologies verified using ARB's verification procedures have targeted on-road diesel engines. Many of these retrofit technologies verified for on-road engines can also be successfully applied to appropriate off-road diesel engines, like those used in cargo handling equipment. MECA believes that there is an opportunity to greatly expand the range of verified off-road technologies available for off-road applications through the extension of existing on-road verifications. Sound engineering principles based on the

knowledge of engine size, duty cycle, exhaust temperature history, and engine-out emission characteristics can all be used to define appropriate off-road applications for existing verified on-road retrofit technologies. This type of engineering analysis complemented in some cases with limited engine test data can streamline and accelerate the verification extension process without the need for expensive and time consuming testing associated with the full-scale, verification application process. MECA would like to work with ARB staff to define a streamlined verification extension process that would help deliver more verified options to the off-road sector, and expand the verified retrofit technology options available for cargo handling fleet operators to comply with the proposed ARB PM reduction regulations.

Technologies to Reduce Diesel PM Emissions

The ARB Staff technical report provides a summary of the emission control technology options available to reduce PM emissions from existing on-road and off-road vehicles. MECA offers some additional comments in support of the Staff's conclusions regarding the technological feasibility of the proposed program.

Diesel Particulate Filters – Diesel particulate filters (DPFs) are commercially available today. Over 200,000 on-road heavy-duty vehicles worldwide have been equipped with DPFs – most in retrofit applications. In addition, over one million new passenger cars have been equipped with DPFs in Europe, and starting in 2007 every new heavy-duty on-road engine sold in the U.S. and Canada will be equipped with a high-efficiency DPF. The operating and durability performance of DPFs has been very impressive. For example, a growing number of on-road DPF-equipped heavy-duty vehicles have been successfully operating for several 100,000 miles or more. In addition to the successful retrofit programs cited by the ARB staff, other examples of successful programs include urban transit agencies in many large U.S. and European cities, the New York City Department of Sanitation fleet, which has successfully retrofitted refuse trucks with filters, and thousands of school buses across the U.S. DPFs have also been successfully retrofitted in a limited number of off-road applications including applications on construction equipment, mining equipment, and cargo handling equipment used at the Port of Oakland.

High-efficiency DPF technology can reduce PM emissions by up to 90 percent or more, ultra-fine carbon particles by up to 99+ percent and, depending on the system design, toxic HC emissions by up to 80 percent or more. In general, verified DPF technologies require the use of ultra-low sulfur diesel fuel to achieve Level 3 PM reductions. Development work is underway to further enhance the performance of filter system designs. For example, work continues on developing and implementing additional filter regeneration strategies that will expand the applications for retrofitting DPFs. Also, development work on filter materials and designs to further enhance filter system durability and to further reduce backpressure is underway. Manufacturers are also developing DPF options that minimize NO₂ emissions in systems that make use of NO₂ for filter regeneration. New, improved DPF systems continue to enter the diesel engine OE and retrofit market.

As mentioned in the Staff report, flow-through filter systems designs capable of reducing greater than 50 percent of the PM are emerging. A variety of different flow-through systems are being evaluated and MECA anticipates that additional flow-through filter systems will be an available option in the near future for both on-road and off-road diesel engines for which a high-efficiency DPF is not an available option.

MECA believes ARB's capital and operating costs estimates for DPFs in general are within a reasonable range. However, it is important to keep in mind that both capital and operating costs will vary among different engines, applications, and operating conditions. Individual MECA members have provided more detailed cost information directly to the ARB staff while staff developed the proposed rule.

Diesel Oxidation Catalysts – Diesel oxidation catalysts (DOCs) are capable of reducing PM emissions typically in the range of 20 to 40 percent and can reduce toxic HC emissions by up to 70 percent. DOCs have been used in retrofit applications for over 30 years. Over 100,000 on-road vehicles and 250,000 off-road vehicles and equipment have been retrofitted with DOCs. In addition, over 50 million light-duty vehicles in Europe and over 1.5 million trucks and buses in the U.S. have been equipped with DOCs as original equipment.

MECA concurs with the ARB Staff report that using 15 ppm sulfur fuel will minimize the formation of sulfate emissions from a DOC. Indeed, where low sulfur fuel is used, the DOC can be designed to be more active in reducing the SOF portion of the particulate. DOCs can and have been used on vehicles fueled with the conventional diesel fuel found in California. For these applications, the catalyst has been formulated to minimize sulfate production, but total PM control is compromised somewhat.

NOx Control Strategies – While NOx control is not being mandated by the proposed rule, it is worth noting that NOx control strategies exist or are emerging for diesel engines used in off-road diesel engines. The ARB retrofit requirement for PM reduction will create an opportunity for the fleets who elect to do so to incorporate NOx control strategies. These strategies include lean NOx catalysts, low pressure EGR, SCR, and fuel emulsions.

Conclusion

In closing, we commend the Air Resources Board for its continuing efforts to provide the people of California with healthy air quality and for demonstrating true leadership in proposing an innovative regulatory program that will significantly reduce PM emissions. Our industry is prepared to do its part to help meet the emission reduction goals of the proposed mobile cargo handling equipment fleet rule. MECA plans to be an active participant in ARB's technology workgroup that will be formed to support and encourage the development of effective, verified retrofit options for this class of off-road equipment. MECA and its members look forward to working with ARB, the fleet operators, and other interested stakeholders in implementing this important program. MECA.