

**STATEMENT OF THE
MANUFACTURERS OF EMISSION CONTROLS ASSOCIATION
ON THE CALIFORNIA AIR RESOURCES BOARD'S PROPOSED
AMENDMENTS TO THE CURRENT REGULATION FOR SMALL OFF-ROAD
ENGINES**

November 21, 2008

The Manufacturers of Emission Controls Association (MECA) is pleased to provide comments in support of the California Air Resources Board's (ARB) proposed amendments to the small off-road engine (SORE) Tier 3 regulation.

MECA is a non-profit association made up of the world's leading manufacturers of emission control technology for on-road and off-road vehicles and engines, as well as stationary internal combustion engines. MECA's member companies have over 35 years of experience and a proven track record in developing and commercializing emission control technologies for a wide range of vehicles and engines of all sizes and applicability. These companies have developed control technologies for gasoline, diesel, and alternative-fueled engines, including small off-road spark-ignited engines used in handheld and non-handheld applications.

We support the proposed changes to the current Tier 3 regulation that will further enhance alignment with the recently released U.S. EPA Phase 3 standards. In addition, we support the 2009 sunset date for production emission credits and requiring the conversion of any banked production credits by 2010. The fact that there has been no instance to date where a manufacturer has required the use of production credits to comply with the emission standards attests to the robustness of existing manufacturing processes for small engines. MECA also supports the proposed five-year limit on the use of certification emission credits as this is consistent with the new full useful life timelines for equipment under this regulation. Although the original standards were intended to take advantage of the best available technology, such as exhaust control catalysts, to meet the tighter Tier 3 standards, manufacturers have demonstrated that engineering ingenuity and the use of emission credits can easily exceed the current emission standards without the application of catalysts on these small engines. Limiting credit life will motivate manufacturers to apply well-established exhaust control technology to small off-road engines to ultimately exceed the current emission standards and achieve further reductions in HC+NO_x.

Based on over thirty years of experience in designing and applying catalyst technology to a variety of mobile sources, including small off-road engines, the catalyst technology is available today for use on small off-road engines of all sizes to help meet the Tier 3 HC+NO_x standards adopted by California in September 2003 without the use of emission credits. The application of catalysts to Class I and Class II engines is technically feasible as demonstrated by test programs conducted by ARB and EPA. These studies along with commercial experience around the world support the safe application of catalysts to the full range of small SI engines.



Handheld devices, which tend to be operated by smaller two-stroke engines, are employing simple two-way oxidation catalysts incorporated directly into existing mufflers making them extremely cost effective. Approximately four to five million pieces of catalyst-equipped handheld equipment, largely two-stroke engines, were sold in the U.S. in 2005. Manufacturers are meeting regulations in Europe by employing catalysts without the use of emission credits. Additionally, more than 500,000 catalyst-equipped lawnmowers have been sold in Europe since the late 1990s, and tens of millions of motor scooters, mopeds, and other small engine motorcycles equipped with catalysts (<200 cc displacement, two-stroke and four-stroke engines) have been sold worldwide. Catalyst and muffler design issues, such as heat management, packaging, poisoning, and durability, raised by engine and equipment manufacturers are straightforward engineering challenges that are well understood. These types of issues have been raised virtually every time the use of catalyst technology has been proposed for use on a spark-ignition engine, be it an automobile, heavy-duty truck, off-road engine over 25 hp such as a forklift, a motorcycle or moped, or a small handheld engine used on lawn and garden equipment. All of these issues were successfully addressed for each application. Strategies to mitigate these issues are already available today to ensure the safe operation of catalyzed mufflers used on small engines.

In ARB's own test program, three small SI engines, representing a range of engine displacements, equipped with catalyst technology achieved emission levels below the ARB Tier 3 standards at the end of the engine's prescribed durability testing that ranged from 250 hours to 500 hours. The catalyst technology achieved conversion efficiencies well in excess of 50 percent at the conclusion of the durability testing. In each test engine, only relatively minor changes in the original muffler envelope supplied by the manufacturers were needed to accommodate the catalysts used in this test program. Similar emission performance results have been reported by EPA for catalyst-equipped Class I and II engines.

Both ARB and EPA test programs have shown that catalysts can be applied to Class I and Class II engines without increasing safety risks associated with exhaust component surface temperatures. Integration of catalyst into small engine mufflers utilizes uncomplicated manufacturing techniques that should allow for the design and validation of compliant engines. The 30 years of catalyst experience in general and the over 10 years of experience with applying catalysts to small engines provide an experience base that has enabled catalyst technology to continue to be improved. This small engine experience has provided an increased understanding of how to optimize the engine/catalyst/exhaust system to work effectively, and will facilitate application of catalyst technology on the full range of small engines to meet the ARB Tier 3 standards without the use of emission credits.

MECA believes that catalyst technology can be incorporated on small off road engines at modest and reasonable cost. The cost estimates in the published ARB Tier 3 regulatory documents for catalyst technology represent a reasonable range. We also note, however, that the experience with the cost of compliance with other categories of engines and vehicles often proved to be less than the estimates made at the time of the original proposal.

MECA asks ARB to consider reviewing their Tier 3 SORE exhaust emission standards in the near future and determine if further exhaust emission reductions can be gained by combining recent improvements in small engine designs with the application of catalyst technology on all SORE engine classes. As an example, MECA believes that ARB's Tier 3 exhaust standards for Class II engines will largely be met by engine manufacturers with improved engine and fueling technologies, without the use of catalysts. A further tightening of SORE emission standards could provide ARB with much needed, additional reductions in hydrocarbon and NOx emissions that are critical for California to comply with EPA's recently revised ambient ozone standards.

CONCLUSION

In closing, MECA supports ARB's amendments to its Tier 3 emission regulation for small off-road SI engines. MECA believes that the application of catalysts to small off-road SI engines is a cost-effective solution for reducing exhaust emissions from these engines and we are committed to do our part to ensure that emission control technology is available to help meet ARB's standards.

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