

AMENDMENTS TO REGULATIONS REGARDING NEW AFTERMARKET AND USED CATALYTIC CONVERTERS FOR CALIFORNIA VEHICLES

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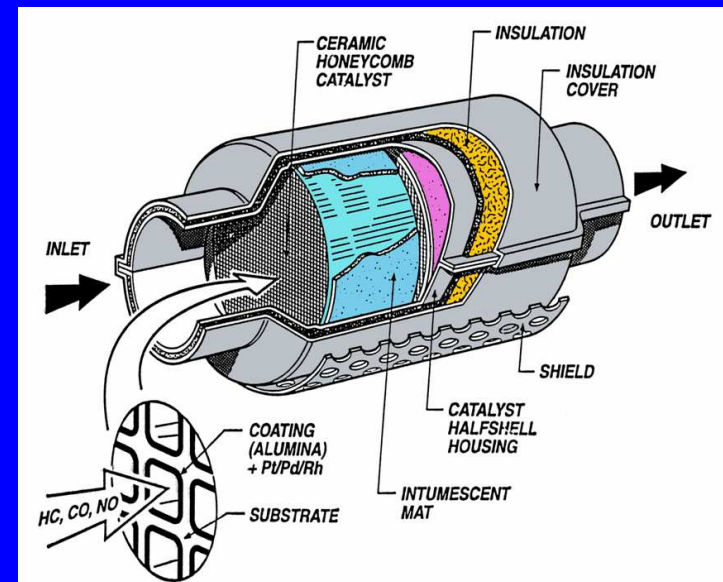
Outline

- **Background**
- **Current Requirements**
- **Why are Amendments Needed?**
- **Proposed Amendments**
- **Benefits/Costs**
- **Summarize/Recommendations**



Automotive Catalytic Converters

- Located in exhaust stream to remove engine-out pollutants
- Substrates coated with precious metals chemically convert HC, CO, and NO_x
- Conversion efficiencies typically exceed 95%



Converter Replacement

- **OEM Replacement Converters**
 - Expensive
 - Often last longer than the vehicle
- **ARB Regulations Provide for Lower Cost Options**
 - ARB Evaluation Procedures established in 1988
 - New Aftermarket Catalytic Converters
 - Used OEM Converters



Current Aftermarket Converter Requirements

- **New Aftermarket Converters**
 - **Minimum Conversion Efficiencies**
 - 70% HC, CO
 - 60% NO_x
 - **Durability: 25,000 miles**
- **Used Converters**
 - **Screened for effectiveness before resale**



Needed Improvements

- **Converter efficiencies $> 90\%$ needed to meet vehicle standards**
- **Current aftermarket converters not compatible with OBD II systems**
- **Greater emission reductions for older vehicles possible**



Proposed Amendments

New Aftermarket Converters

- **Conversion Efficiency – high enough for vehicles to meet certification emission standards**
- **Durability: 5 years or 50,000 miles**
- **OBD II compatibility demonstration**
- **Other improvements**
 - **Quality control**
 - **5 year / 50,000 mile warranty**
 - **Converter labeling**
- **Implementation Date: January 1, 2009**



Issues Specific to Used OEM Converters

- Each converter must be emission tested
- Test procedure must be fast and inexpensive
- Tests used to determine vehicle compliance typically cost \$1,500 or more
- No economically feasible procedure available to test for levels of efficiency needed to meet standards
- How long the converter will last is unknown



Impact of Efficiency Losses on Tailpipe Emissions

Example for LEV I Vehicle

HC Conversion Efficiency		Tailpipe Emissions
Needed to meet standards	95.5%	0.09 g/mile
Used OEM Converter	90%	0.2 g/mile (2.2x higher)
Used OEM converter	85%	0.30 g/mile (3.3X higher)

Based on 2 g/mile engine out emissions

Proposed Amendments

Used OEM Converters

- **Without an economically feasible screening procedure, staff proposes to sunset used OEM converter provisions (effective July 1, 2008)**
- **Proposal would impact:**
 - **Businesses that sell used converters in California**
 - **Replacement options for low volume vehicle models**

Air Quality Benefits

- **Significant benefits would result from higher converter performance for older vehicles**

Statewide 2012

HC (tons/day)	5.30
NO _x (tons/day)	31.31
HC+NO _x (tons/day)	36.61

Costs

- **Average cost per new aftermarket converter expected to increase by \$200**
- **Increased durability (from 25K to 50K miles) would mitigate cost increase**

Cost per 100 Miles of Vehicle Operation

Current Requirements	Proposed Amendments
\$0.24 – \$0.60	\$0.52 to \$0.70

- **Cost Effectiveness: \$1.88/lb. HC + NO_x**

Summary/Conclusions

- **Proposed amendments will bring replacement converter performance up to par with current vehicle requirements**
- **Would provide for significant, cost effective, emission benefits from older model year vehicles**

