

MOTOR VEHICLE AND OFF-ROAD EQUIPMENT EMISSION CONTROL REQUIREMENTS

Category	Examples	Controlled Since...	Date of Recent and/or Future Standards	Comments
Passenger Vehicles	Cars, SUVs, minivans, pick ups	1975	2004 [Tier 2 program]	Implementation through 2009; VOC and PM standards
Diesel Trucks & Buses	Large and mid-size trucks and all buses	1988	October 2002 [consent decrees]; 2004; 2007 [Clean diesel program]	VOC and PM standards, NOx adsorbers, catalyzed traps, SCRs and oxidation catalysts in 2007
Gasoline Trucks & Buses	Mid-size trucks and all buses	1988	2004	VOC and PM standards
Diesel Buses	Urban buses HD retrofit	1994	Completed 1998	PM standard
Off Road Diesel Engines	Construction, mining, industrial, agricultural and airport equipment	1996	2006 [Tier 3];[Tier 4 standards under development]	
Off Road Gasoline Engines	Construction, mining, industrial, agricultural and airport equipment	Not controlled	2004; 2007	
Locomotives	Long-haul, switch engines, passenger	2000	Proposed: Tier 3 requirements for new engines by 2012; Tier 4 requirements for new engines by 2015-17; Remanufactured Tier 0-2 engines will have to meet higher standards between 2008 and 2013	

Small Gasoline Engines (lawn and garden)	Lawn mowers, string trimmers, chain saws, leaf blowers, etc.	1997	Proposed: HC & NO _x exhaust emission standards of 10 g/kW-hr for Class I engines starting in the 2012 model year and 8 g/kW-hr for Class II engines starting in the 2011 model year. Evaporative emission standards also proposed.	
Large spark-ignition engines	Nonroad spark-ignition (si) engines over 19 KW(25 hp) – Forklifts, compressors, generators, etc.	2004	2007	VOC standards
Gasoline Recreational Water Craft	Outboard engines, jet skis, sterndrive and inboard engines	1998	Proposed: Emission standards for outboard and personal watercraft engines starting with the 2009 model year are 16 g/kW-hr for HC+NO _x and 200 g/kW-hr for CO for engines above 40 kW. For engines below 40 kW, the standards increase based on the engine's maximum power. Standards for sterndrive and inboard marine engines will be 5 g/kW-hr for HC+NO _x and 75 g/kW-hr for CO starting with the 2009 model year and require that these engines have a diagnostic system to detect failures in the emission control system. For sterndrive and inboard marine engines above 373 kW with high-performance characteristics, a CO standard of 350 g/kW-hr will be applied.	

Diesel Recreational Water Craft	Yachts and cruisers	Not controlled	Proposed: Tier 3 requirements for new engines by 2009-14; Tier 4 requirements for new engines by 2014-17;	
Ocean-going ships	Diesel tugs, tankers, freighters, cruise ships	Not controlled	2004/2007 [Proposed]	
Aircraft Jet Engines	Commercial passenger and cargo aircraft	1984 smoke 2005 NOx		
Highway Motorcycles		1978	2006 [Proposed]	VOC standard
Off Road Motorcycles		Not controlled	2006	
All Terrain Vehicles; snowmobiles		Not controlled	2006; 2010/2012	

Federal Fuel Requirements

Program	Description	Effective Date	Other
Unleaded Gasoline	Gas stations must have at least one unleaded pump	1974	
Lead Phase Down	Refiners gradually lower the amount of lead in leaded gas	1979	
Lead Ban	Lead is no longer allowed in U.S. gasoline	1996	
Gasoline Volatility	Summer-only requirement to lower the evaporation rate of gasoline	1989; 1992	
Oxygenated Gasoline	Winter-only requirement to add oxygenates to gas in carbon monoxide non-attainment areas	Winter of 1992-93	
Reformulated Gasoline	VOC, NOx and toxics reduction standards, benzene cap, and addition of an oxygenate	1995 (Phase 1) 2000 (Phase 2)	
Mobile Source Air Toxics	MSAT1	2002	
Gasoline Sulfur	Reduction to 30 ppm average	2004 [Part of Tier 2 program]	
Diesel Sulfur	Reduction to 500 ppm average [Part of clean diesel program]	1993; 2006	
Ultra Low Sulfur Diesel (ULSD)	A cleaner-burning diesel fuel containing a maximum 15 ppm sulfur introduction into supply chain	2006-10	Distribution terminals extended to 9/1/06 and retail to 10/15/06
Highway ULSD introduction	Reduction from 500+ ppm to 15 ppm (at 100%)	2006 - 2010	≥80% supply beginning 6/1/2006 & 2007
Non-road diesel fuel	< 500 ppm	6/1/2007 - 2010	
Locomotive & marine diesel fuel	Reduction from 500+ ppm to 15 ppm (at 100%)	2007 - 2012	
Nonroad ULSD	15 ppm	6/1/2010	
Gasoline Benzene	MSAT2	2011	
Locomotive & Marine ULSD	15 ppm (at 100%)	6/1/2012	
Heating oil	Remains at ~3400 ppm		