

EPA Programs Addressing Motor Vehicle Air Toxics Emissions

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Outline of Presentation

- Mobile source air toxics standards
- Upcoming standards – renewable fuels
- Future work

Mobile Source Air Toxics Rule: Standards

- Published February 26, 2007
- Three major components
 - Gasoline benzene standard
 - Vehicle emissions standards
 - Portable fuel container
- Expect reductions of approx. 330,000 tons of MSATs by 2030

What are MSATs?

- Compounds that are emitted by mobile sources and have the potential for serious adverse health effects
- 2001 rule had formal list of 21 MSATs
- MSAT2 rule eliminated specific list of MSATs
 - Acknowledges several ways to identify potential for serious health effects
 - IRIS, ATSDR, CalEPA, IARC, NTP, etc.
 - Each has strengths and limitations
 - Benzene, 1,3-butadiene, formaldehyde, acrolein, acetaldehyde, diesel PM + exhaust organic gases, naphthalene, POM are among key MSATs of interest

Gasoline Benzene Standard

- Gasoline: 0.62% average benzene content beginning in 2011
 - Nationwide trading
 - No individual refinery's annual average can exceed 1.3%
 - Areas with highest benzene (Alaska, northwest) will have most significant reductions
- Current benzene average is about 1%

Vehicle Program

- NMHC (non-methane hydrocarbons) standards at lower temperatures (20°)
 - Reduces PM and air toxics as well
 - Air toxics reduced include benzene, formaldehyde, acetaldehyde, others
- Standards
 - Reduce total MSATs from vehicles by approximately 290,000 tons in 2030
 - 0.3 g/mile for vehicles below 6,000 lbs GVW
 - 0.5 g/mile for vehicles above 6,000 lbs GVW
- Also, evaporative standards
 - Equivalent to CARB (50 state standards)
 - Effective 2009-2010

Portable Fuel Container Program

- Limits hydrocarbons from evaporation and permeation
- For gasoline, diesel fuel, and kerosene containers
- Starts for containers manufactured in 2009
- Permeation standard of 0.3 g/day HC
- Cans will have permeation barrier and new automatically-closing spouts
- Standard results in 78% decrease in benzene emissions

Nonroad Emission Standards

- Published October 8, 2008
- Small gasoline engines (under 25 HP), equipment, and vessels
- Small nonroad engines
 - HC + NO_x standards for model years 2011-2012
 - Also CO standard
 - Consistent with CARB standards
- Marine (outboard, personal watercraft)
- Annual HC reductions 130,000 tons when rule fully implemented

Locomotive/Marine Diesel

- Published June 30, 2008
- Existing fleet – rebuilt engines
- Tier 3 for newly built engines phasing in for 2009
 - PM and NOx standards
- Tier 4 for newly-built engines
 - Incorporate catalytic aftertreatment
 - 2014 for marine; 2015 for locomotives
 - PM reductions of 27,000 tons in 2030
 - NOx reductions of 800,000 tons in 2030

Upcoming Work

Ocean-going Vessels

- Proposal published Aug. 26, 2009
- Controls diesel emissions from largest marine vessels:
 - container ships
 - Tankers
 - bulk carriers
 - cruise ships
- Anticipated reductions of 143,000 tons of diesel PM by 2030 (1.2 million tons of NO_x)

Renewable Fuels

- Energy Policy Act (EPAct) of 2005
 - Renewable Fuel Standards 1 program
 - Finalized May 2007
 - Program started September 2007
 - 7.5 billion gallons/year by 2012
- Energy Independence and Security Act of 2007
 - Greatly increased use of renewable fuels
 - 36 billion gallons by 2022
 - Requirements for specific fuels
 - Conventional biofuel (corn-based ethanol)
 - Cellulosic biofuel
 - Biomass-based diesel
 - Other advanced biofuel
- Renewable Fuels Standard (2) Proposal published May 26, 2009 – Final rule underway

Renewable Fuel Standards 2: Two Key Studies Required

- Section 204 report
 - Environmental and resource conservation
 - Every three years – recurring report
- Section 209 anti-backsliding
 - Requires study on air quality impacts of increased renewable fuel volumes
 - Requires regulations by the end of 2010 to mitigate any potential adverse impacts

Renewable Fuel Standards 2: Emissions Issues Across the Fuel Lifecycle

- Upstream
 - Agriculture
 - Fertilizer/pesticide production, transport and use
 - Farm equipment
 - Fuel Production
 - Gasoline, ethanol, biodiesel...
 - Fuel Transport and distribution
- Downstream (vehicle and engines)
 - Exhaust emissions
 - Evaporative emissions
 - Refueling emissions

Other OTAQ Actions Addressing MSATs

- Emission standards that reduce VOC, PM, and diesel emissions also reduce toxics
 - Low-sulfur gasoline and Tier 2 emission standards
 - Low-sulfur diesel and 2007/2010 HD emission standards
 - 2004 Non-road Diesel Rule
- Voluntary programs in OTAQ
 - National Clean Diesel Campaign
 - Retrofit engines with emission control technology
 - Cleaner fuels
 - Funding and other incentives
 - Idle reduction
- Evaluating public health and welfare endangerment from lead emitted by piston-engine aircraft operating on leaded aviation gasoline

Other Relevant EPA Work

- EPA has continuing obligation to review and revise regulations
- Several applicable areas of work related to mobile sources include:
 - Emission data with new vehicles and fuels
 - Air quality impact of new vehicles and fuels
 - Near roadway impacts
 - Atmospheric chemistry
 - Climate change