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# Control of Hazardous Air Pollutants from Mobile Sources

## Regulatory Impact Analysis



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Assessment and Standards Division  
Office of Transportation and Air Quality  
U.S. Environmental Protection Agency



**EPA**

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## List of Acronyms

µg/kg-day	Micrograms per kilogram day
µg/m <sup>3</sup>	Microgram per cubic meter
AAM	Alliance of Automobile Manufacturers
ABT	Averaging, Banking, and Trading
ACS	American Cancer Society
AEO	Annual Energy Outlook (an EIA publication)
AGO	Atmospheric Gas Oil (a refinery stream)
ALTP	Absolute Level Trigger Point
AMS/EPA	Regulatory Model AERMOD
ANS	Alaska North Slope
APHEA	Air Pollution and Health: A European Approach
API	American Petroleum Institute
AQCD	Air Quality Criteria Document
AQMTSD	Air Quality Modeling Technical Support Document
ARB	(California) Air Resources Board
ASPEN	Assessment System for Population Exposure Nationwide
ASTM	American Society of Testing Materials
ATB	Atmospheric Tower Bottoms (a refinery stream)
ATSDR	Agency for Toxic Substances and Disease Registry
ATV	All-Terrain Vehicles
BBL	Barrel
BC	Black Carbon
BenMAP	Environmental Benefits Mapping and Analysis Program
BPCD	Barrels Per Calendar Day
BPD	Barrels Per Day
BTEX	Benzene, Toluene, Ethylbenzene, and Xylene isomers
BTX	Benzene, Toluene, and Xylene isomers
BZ	Benzene
C	Celsius
C <sub>6</sub> or C <sub>6</sub>	A hydrocarbon molecule with a specified number of carbon atoms, in this case 6 carbons
CA	California
CAA	Clean Air Act
CAIR	Clean Air Interstate Rule
California EPA	California Environmental Protection Agency
CAMR	Clean Air Mercury Rule
CAMx	Comprehensive Air Quality Model with Extension
CAND	Clean Air Nonroad Diesel
CARB	California Air Resources Board
CASAC	Clean Air Science Advisory Committee
CAVR	Clean Air Visibility Rule
CB	Chronic Bronchitis
CD	Criteria Document
CDC	Center for Disease Control
CE10	Gasoline with 10 percent ethanol content
CEA	Cost-Effectiveness Analysis
CFEIS	Certification and Fuel Economy Information System
CFR	Code of Federal Regulations
CG	Conventional Gasoline
CHAD	Consolidated Human Activity Database
CHD	Coronary Heart Disease
CI	Compression Ignition
CIIT	Chemical Industry Institute of Toxicology
CIMT	Carotid Intima-Media Thickness

CM15	Gasoline with 15 percent methanol content
CMAI	Chemical Market Associates Incorporated
CMAQ	Community Multiscale Air Quality Model
CNG	Compressed Natural Gas
CNS	Central Nervous System
CO	Carbon Monoxide
CO <sub>2</sub>	Carbon Dioxide
COI	Cost-of-Illness
COPD	Chronic Obstructive Pulmonary Disease
COV	Coefficient of Variation
C-R	Concentration-Response
CRC E-55/E-59	Coordinating Research Council Emission Test Program for Heavy Duty Trucks
CUA	Cost-Utility Analysis
DCS	Distributed Control System
DEOG	Diesel Exhaust Organic Gases
DF	Deterioration Factor
DOE	Department of Energy
DPM	Diesel Particulate
E&C	Engineering and Construction
E10	Gasoline Blend with Nominal 10 volume percent Ethanol
E200	Percent of Fuel Evaporated at 200 Degrees F (ASTM D 86)
E300	Percent of Fuel Evaporated at 300 Degrees F (ASTM D 86)
EAC	Early Action Compact
EC/OC	Elemental/Organic Carbon
ECM	Engine Control Module
EGU	Electrical Generating Utility
EIA	Economic Impact Analysis
EIA	Energy Information Administration (part of the U.S. Department of Energy)
EIM	Economic Impact Model
EMS-HAP	Emissions Modeling System for Hazardous Air Pollutants
EO	Executive Order
EPA	Environmental Protection Agency
EPEFE	European Programme on Emissions, Fuels, and Engine Technology
EPAct	Energy Policy Act of 2005
ETBE	Ethyl Tertiary Butyl Ether
ETC	Electronic Throttle Control
ETS	Environmental Tobacco Smoke
EU	European Union
EVOH	Ethylene vinyl alcohol
F	Fahrenheit
FACES	Fresno Asthmatic Children's Environment Study
FBP	Feed Boiling Point (also Final Boiling Point)
FCC	Fluidized Catalytic Cracker
FCCU	Fluidized Catalytic Cracking Unit
FEL	Family Emission Level
FEV	Functional Expiratory Volume
FHWA	Federal Highway Administration
FOEB	Fuel Oil Equivalent Barrel
FRM	Final Rulemaking
FRTP	Fixed Reduction Trigger Point
FTC	Federal Trade Commission
FTP	Federal Test Procedure
g/gal/day	Grams per gallon per day
GDP	Gross Domestic Product
GIS	Geographic Information System
GM	General Motors

GPA	Geographic Phase-in Area
GVW	Gross Vehicle Weight
GVWR	Gross Vehicle Weight Rating
H <sub>2</sub>	Hydrogen gas
HAD	Diesel Health Assessment Document
HAP	Hazardous Air Pollutant
HAPEM5	Hazardous Air Pollutant Exposure Model version 5
HC	Hydrocarbon
HCO	Heavy Cycle Oil (a refinery stream)
HDN	Naphtha Hydrotreater (also Hydro-Denitrogenation Unit)
HDPE	High density polyethylene
HDS	Hydro-Desulfurization Unit
HDT	Hydrotreater
HEGO	(Heated) Exhaust Gas Oxygen
HHC	Heavy Hydrocrackate
HHDDT	Heavy Heavy-Duty Diesel Truck
HI	Hazard Index
HLDT	Heavy Light-Duty Truck
HQ	Hazard Quotient
HSR	Heavy Straight Run (a refinery stream)
HVGO	Heavy Vacuum Gas Oil (a refinery stream)
IBP	Initial Boiling Point
ICAO	International Civil Aviation Organization
ICD-9	International Classification of Diseases - Ninth Revision
ICI	Independent Commercial Importer
IFP	Institute Francais du Petrole
IMO	International Maritime Organization
IMPROVE	Interagency Monitoring of Protected Visual Environments
IRFA	Initial Regulatory Flexibility Analysis
IRIS	Integrated Risk Information System
ISBL	Inside Battery Limits
ISC	Integrated Source Complex
ISCST	Industrial Source Complex Short Term
JAMA	Journal of the American Medical Association
K	Thousand
KBBL	Thousand barrels
Kfoeb/day	Thousands of Fuel Oil Equivalent Barrels per Day
KWH	Kilowatt Hour
LB	Pound
LCG	Light Cracked Gasoline
LCN	Light Coker Naphtha
LCO	Light Cycle Oil (a refinery stream)
LDGT	Light Duty Gasoline Truck
LDGV	Light Duty Gasoline Vehicle
LDT	Light-Duty Truck
LDV	Light-Duty Vehicle
LEV I	Low Emission Vehicle I
LEV II	Low Emission Vehicle II
LEV	Low Emission Vehicle
LHC	Light Hydrocrackate
LLDT	Light Light-Duty Truck
LLE	Liquid-Liquid Extraction
LNS	Light Naphtha Splitter
LP	Linear Programming (a type of refinery model)
LPG	Liquefied Petroleum Gas
LRS	Lower Respiratory Symptom

LSR	Light Straight Run (a refinery stream)
MACT	Maximum Available Control Technology
MAF	(Engine) Mass Air Flow
MAP	(Engine) Manifold Absolute Pressure
MC	Motorcycle
MDPV	Medium-Duty Passenger Vehicle
mg/m <sup>3</sup>	Milligrams per cubic meter
MHDDT	Diesel-Fueled Medium Heavy-Duty Truck
MHDT	Medium Heavy-Duty Truck
MI	Myocardial Infarction
MILY	Morbidity Inclusive Life Years
MLE	Maximum Likelihood Estimate
MM	Million
MNCPES	Minnesota Children's Pesticide Exposure Study
MOBILE6.2	EPA's Highway Vehicle Emission Model
MON	Motor Octane Number
MRAD	Minor Restricted Activity Days
MRL	Minimum Risk Level
MSAT	Mobile Source Air Toxics
MSAT1	2001 Mobile Source Air Toxics Rule
MTBE	Methyl Tertiary-Butyl Ether
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industrial Classification System
NAS	National Academy of Science
NATA	National Scale Air Toxics Assessment
NATTS	National Air Toxics Trends Sites
NCI	National Cancer Institute
NCLAN	National Crop Loss Assessment Network
NEI	National Emissions Inventory
NEMS	National Energy Modeling System
NESCAUM	Northeast States for Coordinated Air Use Management
NESHAP	National Emissions Standards for Hazardous Air Pollutants
NHAPS	National Human Activity Pattern Survey
NHEXAS	National Human EXposure Assessment Survey
NIOSH	National Institute for Occupational Safety and Health
NLEV	National Low Emission Vehicle
NMHC	Non-Methane Hydrocarbons
NMIM	National Mobile Inventory Model (EPA software tool)
NMIM2005	National Mobile Inventory Model Released in 2005
NMMAPS	National Mortality, Morbidity and Air Pollution
NMOG	Non-Methane Organic Gases
NO <sub>2</sub>	Nitrogen Dioxide
NONROAD	EPA's Non-road Engine Emission Model
NONROAD2005	EPA's Non-road Engine Emission Model Released in 2005
NO <sub>x</sub>	Oxides of Nitrogen
NPRA	National Petroleum Refiners Association
NPRM	Notice of Proposed Rulemaking
NRC	National Research Council
NSTC	National Science and Technology Council
O&M	Operating and maintenance
OBD	On-board Diagnostics
OEHHA	Office of Environmental Health Hazard Assessment
OGJ	Oil and Gas Journal
OMB	Office of Management and Budget
OP	Original Production
OSHA	U.S. Department of Labor Occupational Safety and Health Organization

OTAQ	Office of Transportation and Air Quality
PADD	Petroleum Administration for Defense District
PAH	Polycyclic Aromatic Hydrocarbon
PC	Particle Count
PC	Passenger car
PFC	Portable Fuel Containers
PFT	perfluorocarbon tracer
PM	Particulate Matter
PM/NMHC	Particulate Matter to Non-Methane Hydrocarbon Ratio
PM <sub>10</sub>	Coarse Particle
PM <sub>2.5</sub>	Fine Particle
POM	Polycyclic Organic Matter
PONA	Paraffin, Olefin, Naphthene, Aromatic
PPM	Parts Per Million
PRTP	Percentage Reduction Trigger Point
PSI	Pounds per Square Inch
PSR	Power Systems Research
QALY	Quality-Adjusted Life Year
R&D	Research and Development
RAMS	Regional Atmospheric Modeling System
RBOB	Reformulated Blendstock for Oxygenate Blending
RECS	Residential Energy Consumption Survey
REMSAD	Regional Modeling System for Aerosols and Deposition
RfC	Reference Concentration
RfD	Oral reference dose
RFG	Reformulated Gasoline
RFS	Renewable Fuels Standard
RIA	Regulatory Impact Analysis
RIOPA	Relationship Between Indoor, Outdoor and Personal Air
ROI	Return on Investment
RON	Research Octane Number
RPM	Revolutions Per Minute
RSM	Response Surface Metamodel
RVP	Reid Vapor Pressure
SAB	Science Advisory Board
SAB-HES	Science Advisory Board - Health Effects Subcommittee
SAE	Society of Automotive Engineers
SBA	Small Business Administration
SBAR Panel, or 'the Panel'	Small Business Advocacy Review Panel
SBREFA	Small Business Regulatory Enforcement Fairness Act of 1996
SCF	Standard Cubic Foot
SECA	SO <sub>x</sub> Emission Control Area
SER	Small Entity Representative
SFTP	Supplemental Federal Test Procedure
SHED	Sealed Housing for Evaporative Determination
SI	Spark Ignition
SIP	State Implementation Plan
SOA	Secondary Organic Aerosols
SPECIATE	EPA's repository of Total Organic Compound (TOC) & Particulate Matter (PM) speciated profiles
SUV	Sports-Utility Vehicle
SVM	Small Vehicle Manufacturer
SVOC	Semi-Volatile Organic Compound
SwRI	Southwest Research Institute
TDM	Travel Demand Model
TEACH	Toxic Exposure Assessment – Columbia/Harvard



TEAM	Total Exposure Assessment Methodology
THC	Total Hydrocarbon
TMP	2,2,4-Trimethylpentane
TWA	Time-weighted Average
TSP	Total Suspended Particulate Matter
TWC	Three-Way Catalyst
UC	Unified Cycle Emission Test Procedure from ARB
UCL	Upper Confidence Limit
ULSD	Ultra-Low Sulfur Diesel
URE	Unit Risk Estimate
URS	Upper Respiratory Symptom
UV	Ultraviolet
UVb	Ultraviolet-b
VGO	Vacuum Gas Oil (a refinery stream)
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound
VSL	Value of a Statistical Life
VTB	Vacuum Tower Bottoms (a refinery stream)
WLD	Work Loss Days
WTP	Willingness-to-Pay