



# **United States Environmental Protection Agency**

## **Federal Air Enforcement Trends: A Discussion With the Association of Air Pollution Control Agencies**

**April 5, 2018**

# Roadmap for Today

- A New Administration -- New Policy Direction
- Recent Cases – Policy in Action
  - Air Toxics
  - Energy Extraction
- Mobile Sources – A Clear Threat to Air Quality

# Enforcement Direction

- Goals
- Policy
- Actions

# GOALS

**EPA's Mission: To Protect Human Health and the Environment**

**Goal 1 – Core Mission:** Deliver real results to provide Americans with clean air, land, and water.

**Goal 2 – Cooperative Federalism:** Rebalance the power between Washington and the states to create tangible environmental results for the American people.

**Goal 3 – Rule of Law and Process:** Administer the law, as Congress intended, to refocus the Agency on its statutory obligations under the law.

# Policy

The U.S. Environmental Protection Agency's FY2018-2022 Strategic Plan establishes both *cooperative federalism* (Goal 2) and *compliance with the law* (Objective 3. 1) as fundamental priorities for the agency. In particular, Objective 2. 1 states that the EPA will: 'Improve environmental protection through shared governance and enhanced collaboration with State, tribal, local, and federal partners using the full range of compliance assurance tools.' In using our compliance assurance tools. Objective 3.1 stresses the need to maintain a **level playing field**, stating that noncompliance with the law 'unfairly tilts the field of economic competition in favor of those that skirt the *law*' . . .

Interim OECA Guidance on Enhancing Regional-State Planning and Communication on Compliance Assurance Work in Authorized States, January 22, 2018

# Recent Actions

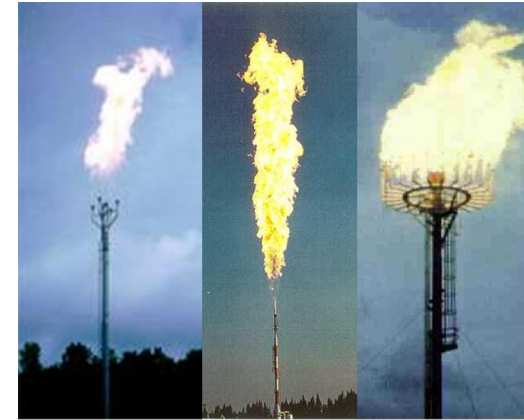
# Carbon Black Settlements

- **Lodged:** December 22, 2017
  - Orion Engineered Carbons, LLC (Louisiana Coplaintiff);
  - Sid Richardson Carbon and Energy Company; (Louisiana and Texas Coplaintiffs);
  - Columbian Chemicals Company (Louisiana and Kansas Coplaintiffs).
- **Alleged Violations:** NSR/NNSR, NESHAP and/or SIP violations
- **Control requirements include:**
  - Installation and operation of selective catalytic reduction for NO<sub>x</sub>; and
  - Installation and operation of dry or wet flue gas desulfurization for SO<sub>2</sub>.
- **Mitigation:** Varies by settlement.

# Air Toxics



# Why Focus on Flares?



- Two major problems:
  - Combustion of gases with low Btu content, and/or
  - Over-Assisting (steam/other)
- Potentially Causing:
  - Incomplete combustion
  - Significant HAP emissions

# The Issues

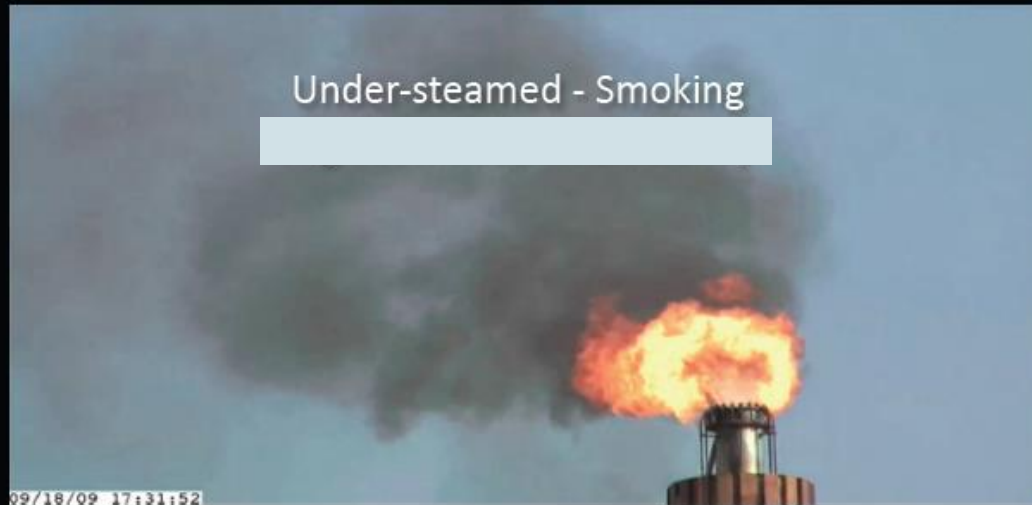
Over-steamed  
Low combustion efficiency



Incipient Smoke Point  
High combustion efficiency



Under-steamed - Smoking



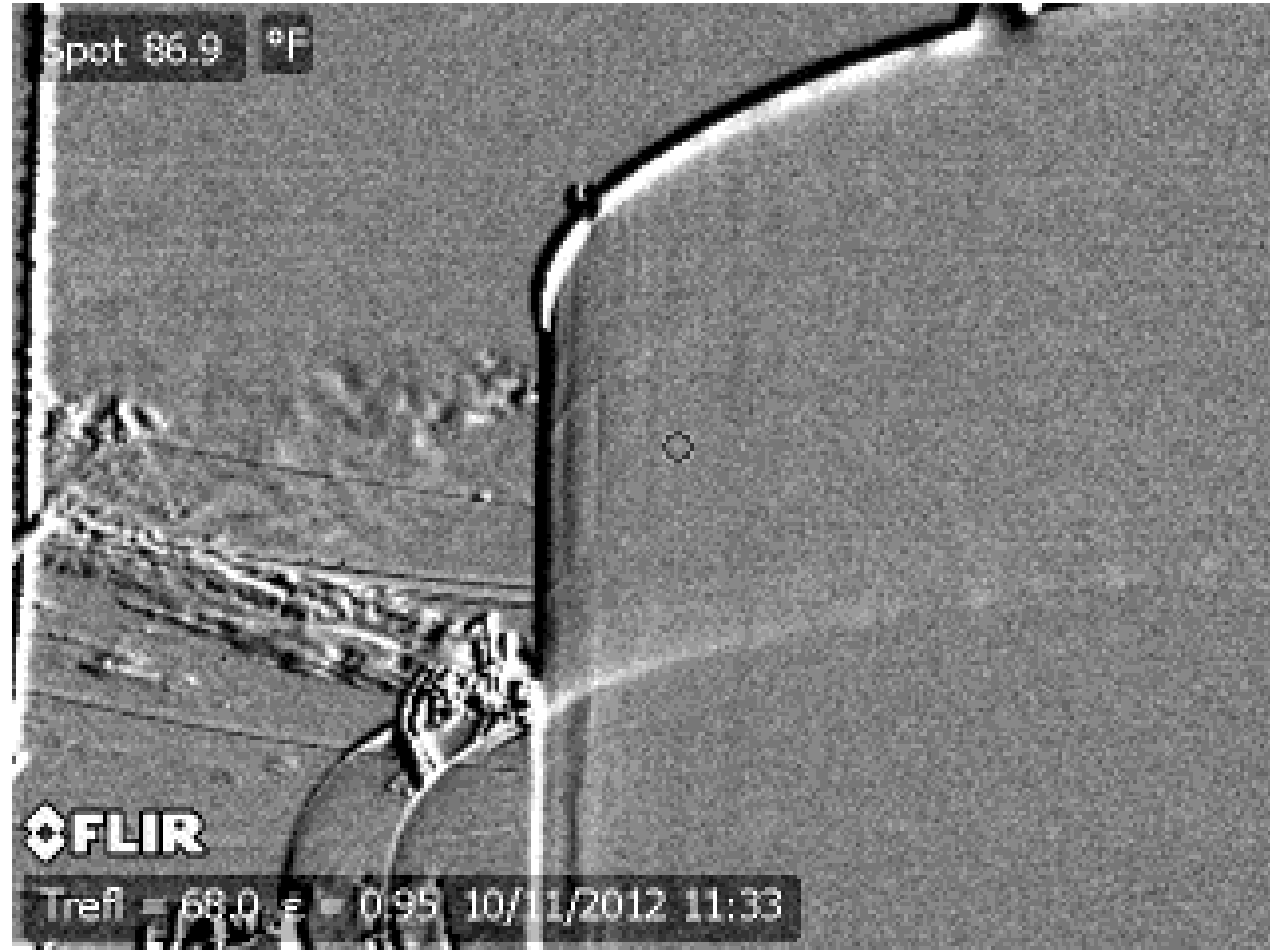
# ExxonMobil (Olefins)

- **Lodged October 31, 2017**
- **Louisiana is a Coplaintiff**
- **Alleged Violations:** Claims arise out of operation/modification of industrial flares.
  - New Source Review/Prevention of Significant Deterioration (NSR/PSD);
  - NSPS and NESHAP;
  - Title V and the Title V permits; and
  - SIP requirements
- **Injunctive Relief: Covers 26 flares operated at four olefin plants and four polymer plants in Texas and Louisiana.**
  - Waste gas minimization plans for reducing waste flaring.
  - Root cause analysis/corrective actions for significant flaring incidents
  - Flare gas recovery systems at the petrochemical/olefins facilities
  - Flare monitoring and control equipment to ensure high combustion efficiency at all 26 flares.
- Fenceline monitoring stations to detect the presence of benzene from four of the covered plants.
- **Federal SEP and State Mitigation/SEP**

# EPA Press Release on Exxon Settlement

“This settlement means cleaner air for communities across Texas and Louisiana, and reinforces EPA’s commitment to enforce the law and hold those who violate it accountable,” said EPA Administrator Scott Pruitt. “As this agreement shows, EPA is dedicated to partnering with states to address critical environmental issues and improving compliance in the regulated community to prevent future violations of the law.”

# Tank Emissions



# Off-site assessment with *GMAP-REQ* (*EPA has it.*)

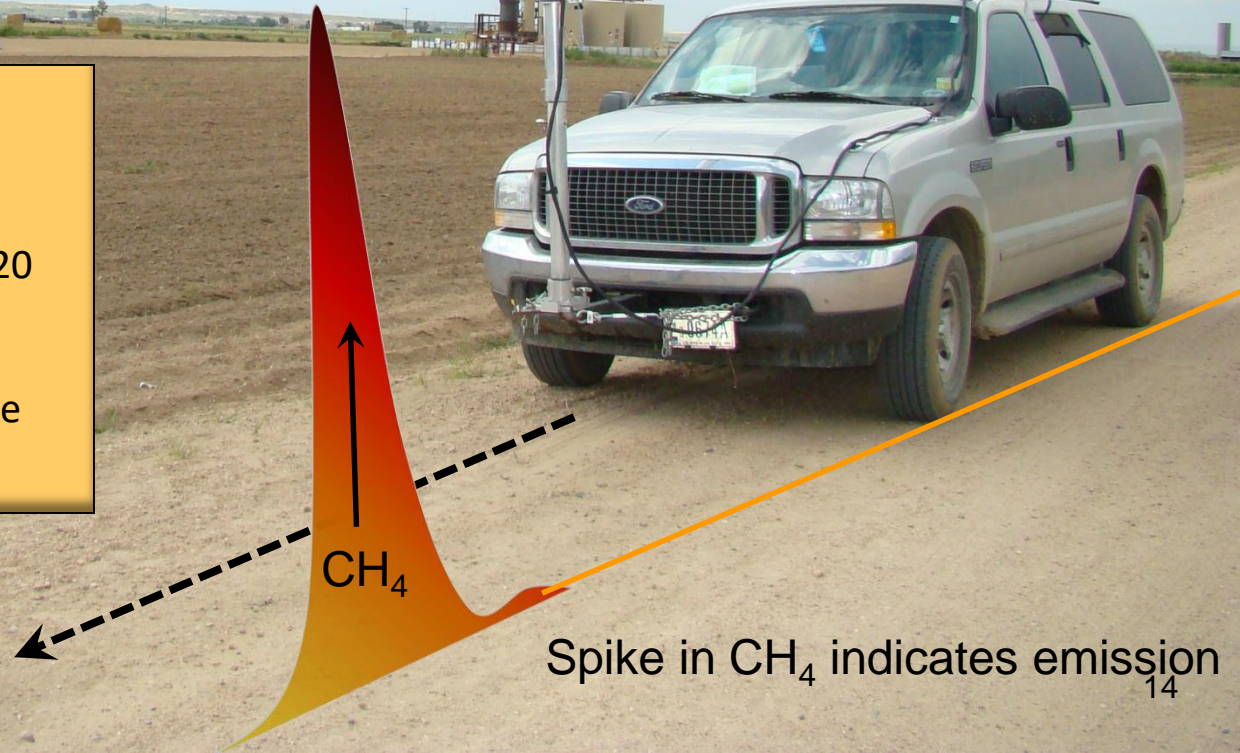
(*Geospatial Measurement of Air Pollution – Remote Emissions Quantification*)

wind direction



- Drive-by Mapping
- Position vehicle in the plume
- Acquire CH<sub>4</sub> and wind data for 20 minutes
- Pull a 30 second canister sample for VOC information

driving path



Spike in CH<sub>4</sub> indicates emission<sub>14</sub>

# GMAP REQ measurement equipment

## In the truck:

High-precision CH<sub>4</sub> and BTEX instruments, batteries, control system, IR camera, rangefinder

Auto-north met station (all in one weather station)

(Open tubes)  
Quad  
Sampling Port

3D (measuring the wind in 3D – have to have the up and down for the emissions rate) sonic anemometer

High-res GPS

1.4 liter canister placement



# Vopak North America Inc.

- **Lodged: May 17, 2017**
- **Texas is a Coplaintiff**
- **Alleged Violations:** Claims arise out of operation of terminal bulk storage tanks, flares, and a wastewater treatment system.
  - New Source Performance Standards (NSPS);
  - National Emission Standards for Hazardous Air Pollutants (NESHAP); and
  - State Implementation Plan (SIP) requirements.
- **Injunctive Relief:**
  - Installation of state-of-the-art air pollution controls at the facility's wastewater treatment system
  - Use of infrared cameras to detect excess VOCs from chemical storage tanks
  - Third party audit to improve waste management.

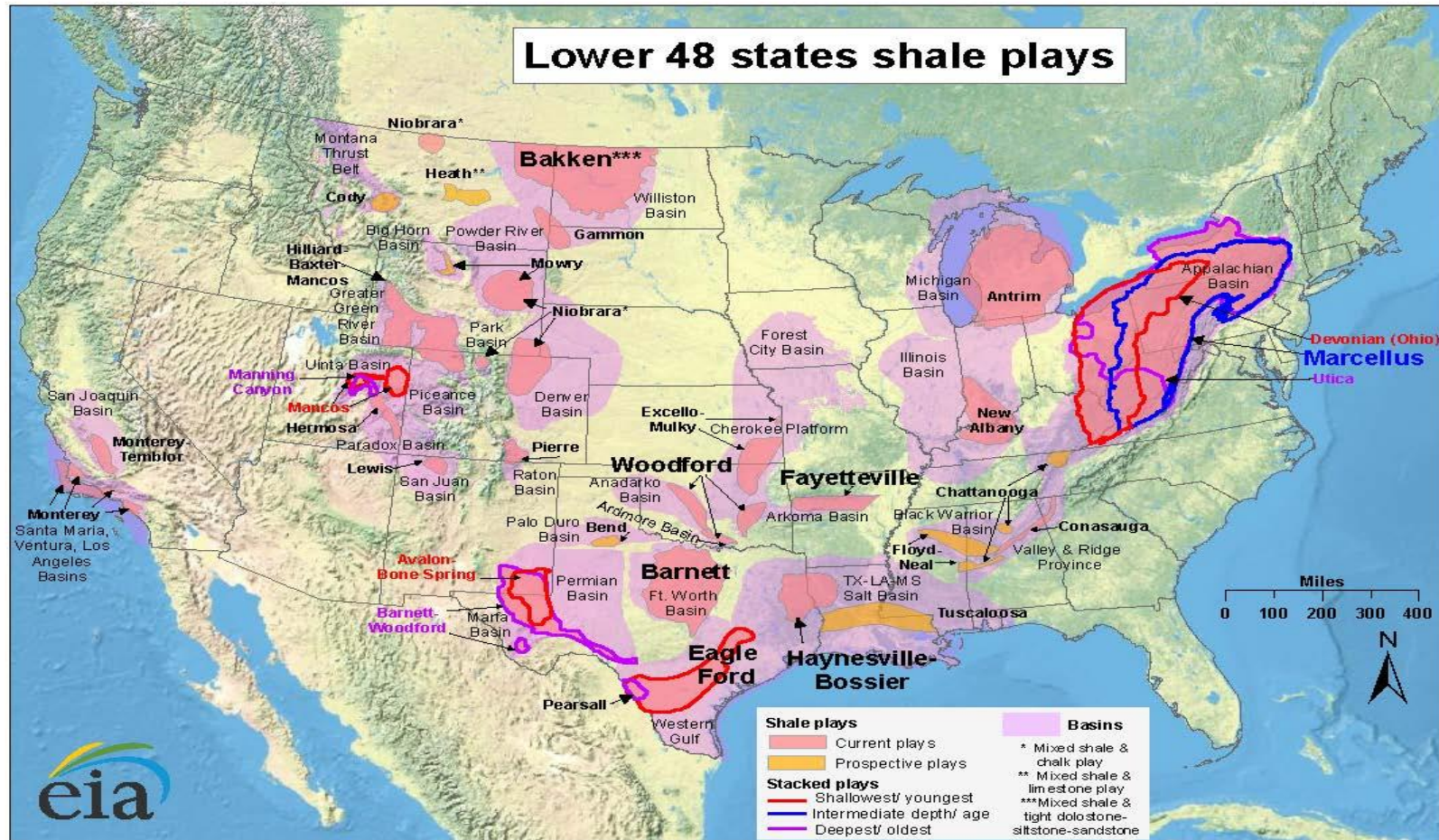
# Energy Extraction National Enforcement Initiative

- In March 2010, EPA announced a new **enforcement initiative** for energy extraction.
- Initiative renewed for FY 14-16 cycle.
- Requested comment on whether to renew for the FY 17-19 cycle.
- Focus is **onshore natural gas extraction and production**.



# Energy Extraction: Expansion

Advances in hydraulic fracturing and horizontal drilling have opened new areas for oil and gas development. Growth is regional, unevenly distributed across the U.S., and in close proximity to large populations in some areas. Natural gas is an important cleaner burning “bridge fuel” that must be extracted and produced in a manner that protects communities and the environment, and complies with applicable laws.



# Air Pollution Focus

- Air emissions from shale gas exploration and production threaten ambient air quality.
  - Air emissions can be released during all stages of production.
  - Primary pollutants of concern are volatile organic compounds (VOCs, e.g., propane, butane, xylene, benzene, toluene).
  - Ozone non-attainment areas.
  - Between 2000 and 2013 approx. 9.4 million people lived within one mile of a hydraulically fractured well.
  - Approx. 487,000 active natural gas wells

# CAA Legal Authorities

- NSPS, especially Subpart 0000
- NESHAP/MACT
- NSR/PSD
- SIP
- FIP
- Permit Requirements
- Section 303 – Imminent and Substantial Endangerment
- Section 112(r) – General Duty Clause

# Noble Energy

- Entered in June 2015.
- Resolves claims that Noble failed to adequately design, size, operate, and maintain vapor control systems on its controlled condensate storage tanks, resulting in emissions of VOCs.
- Covers all of Noble's controlled condensate storage tanks in the Denver 8-hour ozone marginal nonattainment area that have vapor control systems operating pursuant to the Colorado SIP.
  - More than 3,400 tank batteries, which are multiple storage tanks located together.
- Noble will spend an estimated \$60 million on system upgrades, monitoring, and inspections.
- Required environmental mitigation projects as well as Supplemental Environmental Projects to reduce emissions (e.g. reduction of emissions during condensate loading, retrofitting drill site diesel engines to reduce NOx, etc.)
- \$4.95 million civil penalty.

# Noble Energy

## Injunctive Relief

- Engineering evaluations to ensure vapor control systems are properly designed/controlled.
- Noble must make necessary modifications to ensure systems are properly designed/controlled following the engineering evaluations.
- Infrared camera inspections to ensure the vapor control systems are controlling emissions as expected.
- Inspection/preventative maintenance program.
- Third-party auditor will review the engineering evaluations and will also perform infrared camera inspections.
- Evaluation of the pressure relief valves and thief hatches on each condensate storage tank and address any evidence of VOC emissions.
- Install pressure monitors with continuous data reporting on a cross-section of the tank systems.

# Noble Energy

## Emissions Reductions

As a result of the settlement's injunctive relief, mitigation projects, and SEPs, the estimated emissions reductions will be:

- VOCs: Greater than 3,270 tons per year;
- CO: An estimated 450 tons per year;
- NO<sub>x</sub>: An estimated 60 tons per year;
- PM<sub>2.5</sub>: An estimated 60 tons per year; and
- HAPs: An estimated 10 tons per year.

# PDC Energy Inc.

- **Filed Complaint June 26, 2017**
- **Colorado is a Coplaintiff**
- **Consent Decree Lodged October 31, 2017**
- **Alleged Violations:** Claims arise out of Colorado SIP requirements relating to operation, maintenance, design, and sizing of vapor control systems at condensate storage tanks.

# PDC Energy Inc.

- **Injunctive Relief:**

- Engineering evaluations to ensure vapor control systems are properly designed/sized to control VOC emissions.
- PDC must make necessary modifications to ensure systems are properly designed/controlled following the engineering evaluations.
- Infrared camera inspections to ensure the vapor control systems are controlling emissions as expected.
- Third Party engineering evaluations verified by in-house PDC engineer.
- Inspection/preventative maintenance program.
- Install pressure monitors with continuous data reporting on a cross-section of the tank systems.
- Other measures to proactively detect and correct recurring issues.

- **Mitigation:**

- Installation of closed vapor system for loading condensate from certain PDC storage tanks into tanker trucks
- Installation of emissions control on certain natural gas-fueled compressor engines

Enforcement Is Not The Only Pathway

# Range Resources New Owner Audit Agreement

- August 9, 2017
- Covers approximately 400 well sites in Louisiana previously owned by Memorial Resources Development Corporation
- Elements of the Agreement
  - Requires development of a Facility and Permit Inventory (within first 30 days of Audit)
  - Preparation of an air permitting summary report that includes permitting corrective actions
  - Facility Compliance Evaluation and Corrective Actions
    - Assessment of vapor control sizing and schedule for completing appropriate repairs/upgrades
    - Audit of NSPS and NESHAP compliance and schedule for corrective actions (Part 60 Subparts K/Ka/Kb, KKK, LLL, IIII, JJJJ, KKKK, OOOO, OOOOa, and Part 63 Subparts H, HH, OO, SS, TT, UU, VV, HHH, ZZZZ, and BBBB)
- Agreement requires Range to submit a proposed schedule for corrective actions that will take more than 60 days. Extensions up to 36 months may be granted.
- New Owner Audit provides Range with penalty mitigation (adjusting the way penalties for economic benefit are calculated in the new owner context).

# The State and Federal Governments Are Not The Only Ones Looking – Citizens Have IR Capability Too



# Enforcement Trends – Mobile Sources

Light Duty  
Vehicles (1970s)



Heavy Duty (1980s)



Nonroad Spark  
Ignition (1997)



Marine SI (1998)



Locomotive (2000)



Nonroad Compression  
Ignition (1996)



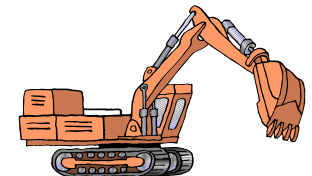
Marine CI  
(2004)



Recreational  
Vehicles (2006)



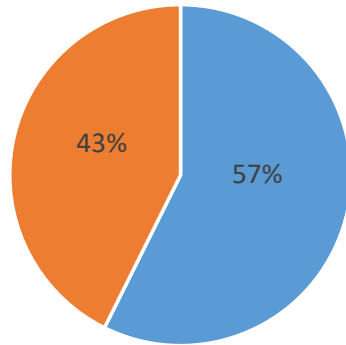
Large SI  
(2004)



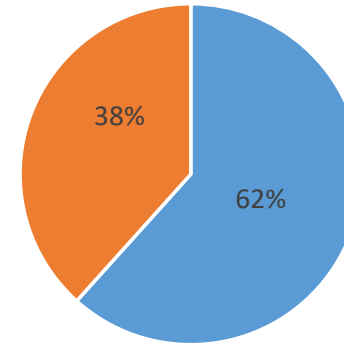
# Mobile vs Stationary Emissions

(Source: 2011 National Emissions Inventory Air Pollutant Emissions Data)

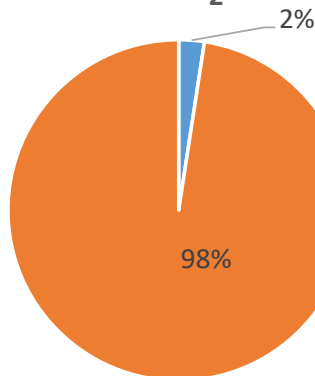
CO



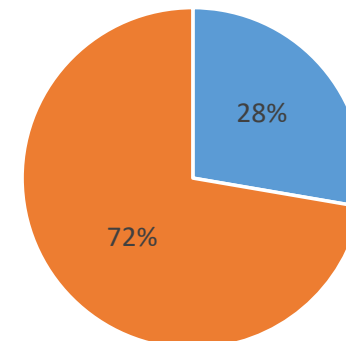
NO<sub>x</sub>



SO<sub>2</sub>



VOC



■ Mobile  
■ Stationary

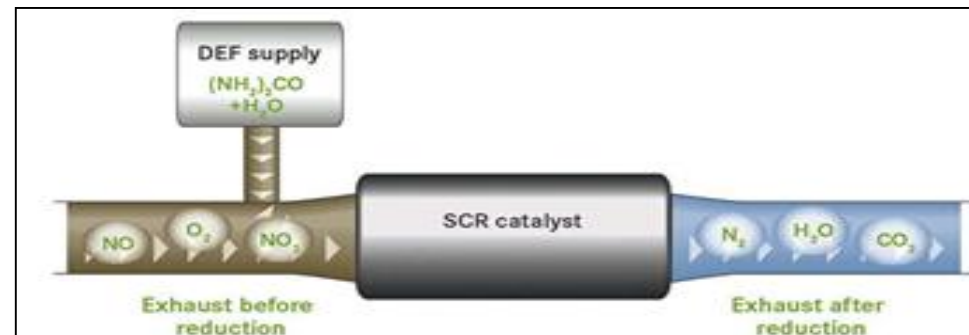
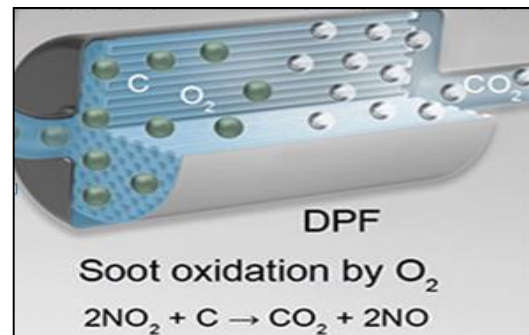
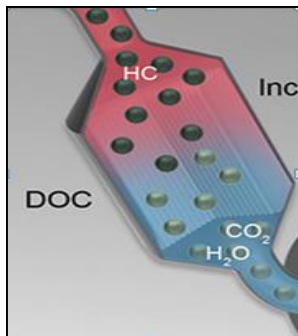
# Advances in Technology Have Given Us Cleaner Air

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- Current standards equate to 98% control of NO<sub>x</sub> and 99.9% control of particulates.
- Compared to 1970 vehicle models, new cars, SUVs and pickup trucks are roughly 99 percent cleaner for common pollutants (hydrocarbons, carbon monoxide, nitrogen oxides and particle emissions). New heavy-duty trucks and buses are roughly 99 percent cleaner than 1970 models.

# Diesel Exhaust Aftertreatment Emission Controls

- Oxidation Catalyst
  - Commonly a diesel oxidation catalyst (DOC) that controls unburnt hydrocarbons (HC)
  - Generally in 2003 and newer diesels
- DPF
  - Controls particulate matter (PM)
  - Generally found in 2007 and newer diesels
- SCR
  - Primarily controls  $\text{NO}_x$  using the injection of diesel exhaust fluid (DEF) prior to catalytic reduction
  - Generally found in 2010 and newer diesels



# Emission Controls Can Be “Defeated” By Software Installed by the Vehicle Manufacturer

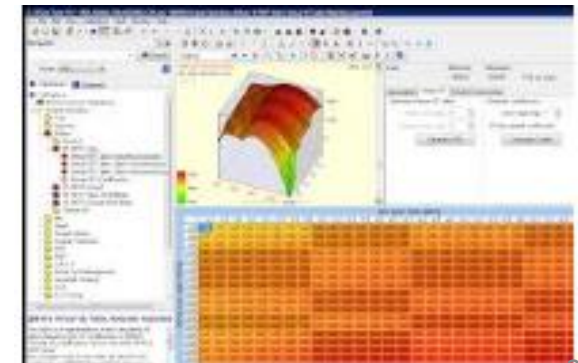


# What Does the VW Settlement Mean for Your State?

Hint: The answer is on-line at  
<https://www.epa.gov/enforcement/volkswagen-clean-air-act-civil-settlement>, and it is not worth less than \$7.5 million.

# Emission Control Defeat Devices Can Be Installed by Vehicle Owners

- Aftermarket Defeat Device – “any part or component...where a principal effect...is to bypass, defeat, or render inoperative any device or element of design installed on or in a [motor vehicle](#) or motor vehicle...”
- Types of Defeat Devices
  - EGR Hardware Deletes
  - Exhaust Aftertreatment Delete Hardware (straight pipes)
  - Tuning – Calibration and OBD modifications



# Why buy an aftermarket defeat device?

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- Increase MPG
- Increase tow capacity
- Culture: “rolling coal”



# Aftermarket Defeat Devices Are Heavily Marketed

“From the factory, your vehicle’s computer is calibrated for the masses, designed with the average driver in mind, not the performance enthusiast. This not only leaves valuable Horsepower & Torque hidden inside your vehicle, but it also makes for a mediocre driving experience. The [product] unlocks your vehicle’s hidden performance by recalibrating your vehicle’s computer for **Maximum Horsepower & Torque, Increase Throttle Response, Firmer Shifts and even Increased Fuel Mileage.**”

— *Advertisement*



# Anyone Can Learn How To Remove Emission Controls

- There are many instructional videos and blogs/forums online that show drivers how to remove the emission controls from their certified motor vehicles.
- Our enforcement work shows that some drivers also take their vehicles to mechanics to have the hardware removed.



# How to remove the DPF system from a Dodge RAM truck

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- “If you’re watching this video, more likely you’re planning on removing your stock exhaust and going with a delete kit for whatever reason.” (0:11)
- “You want to get yourself a racing tuner, some sort of computer you are going to plug in...that will basically reprogram your computer so that you don’t have to get any more delete codes.” (2:47)

Video shows how to remove the DPF system from a Dodge RAM truck. It has been viewed over 75,000 times.



# Even Big Rigs Tune



## Big Boss ECMS

Why settle for the limits of factory programming? PDI BIG BOSS ECMS offer tuning that is not available anywhere else in the marketplace. The tuning that PDI offers in a wide variety of applications is the highest horsepower and efficiency gains in the industry. PDI offers tuning in different ranges and stages of horsepower to meet the needs of all of our customers. Call today to find out more about our Big Boss Ecms.



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# Settled Aftermarket Defeat Device Cases

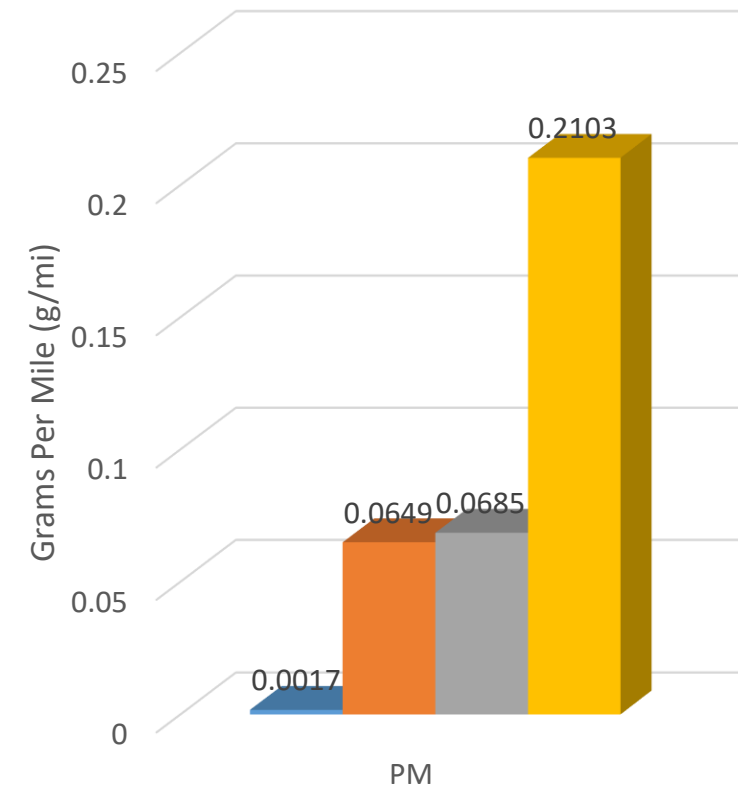
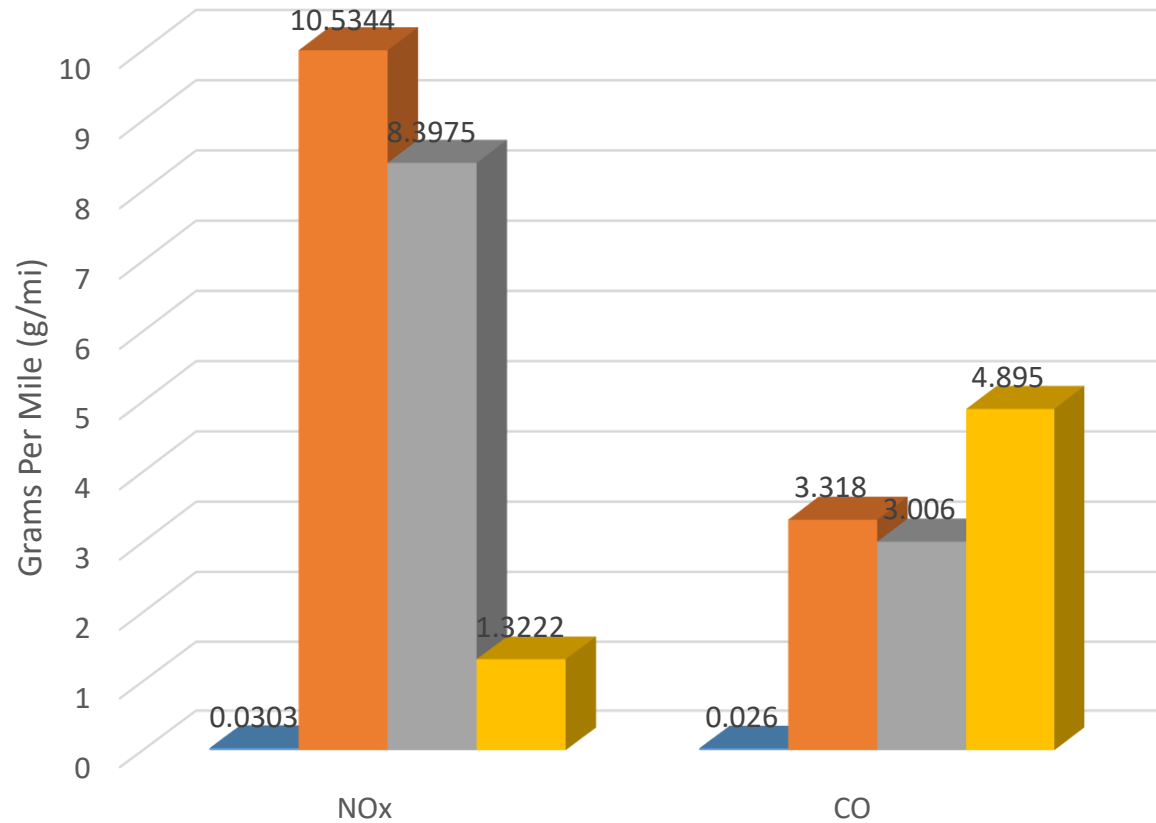
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- Caspers Electronics sold 44,000 “oxygen sensor simulators” to enable removal of catalytic converters
- Edge Products sold 9,000 tuners to enable removal of diesel particulate filters
- H&S Performance sold 114,000 products used to reprogram engines and enabled the removal of treatment systems like filters and catalysts.



# EPA Tuner Emissions Tests

Stock Calibration/Equipment Versus Emissions-Equip. Removed Tuners



Second and Third test: EGR electronically disabled by tuner. DOC, DPF, and SCR replaced with straight pipe and disabled by tuner in calibration.

Fourth Test: EGR not disabled electronically by tuner. DOC, DPF, and SCR replaced with straight pipe and disabled by tuner in calibration.

# Defeat Devices Undermine Advances and Investment in Technology

Removing the emission controls from a modern truck  
can convert this



into this

