

OVERVIEW OF EPA’S EMISSION COMPLIANCE PROGRAMS FOR VEHICLES AND ENGINES

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Universe of Regulated Mobile Sources

- All motor vehicles
- All engines used in heavy duty motor vehicles (>8500 GVW)
- Nearly all nonroad engines
 - From smallest lawn equipment engine to largest locomotive engine
 - Recreational, Large SI, Inboard/Stern drive rules being developed

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EPA ‘Compliance’ Programs

- Certification
- Production Line Testing
- In-use
 - Our focus today

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Certification

- Manufacturer demonstrates capability of engine or vehicle design to meet standards for designated useful life
- Annual certification is a Clean Air Act mandate

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Production Line Testing

- Manufacturer tests new vehicles or engines; applies deterioration factors
 - Selective Enforcement Auditing
 - Mandatory PLT
 - **Marine SI engines**
 - **Small SI engines**
 - **Locomotives**

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In-Use Testing

- Manufacturer or EPA tests vehicles or engines after actual usage
 - EPA Recall Testing
 - **LDVs and LDTs for many years**
 - Mandatory In-use testing
 - **LDVs and LDTs under CAP 2000 beginning 2001.**
 - **Marine SI engines**
 - **Locomotives**

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In-Use Testing -- Purpose

- Assess emission performance in actual use
- Identify and fix vehicles/engines with in-use emission problems
- Provide incentives to mfrs to build emission-durable products
- Provide incentives to mfrs to test their own products in-use

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Marine SI Mandatory In-Use Program

- EPA designates up to 25% of a mfr’s engine families each year
- Mfr puts engines into test fleets
 - Age to required hours
 - Test four engines
 - For each failure, add two engines to max of 10
 - Compute average; bank or spend in-use credits
 - Mfr may test extra families to bank extra credits

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Locomotive Mandatory In-Use Program

- EPA designates one engine family per mfr and remanufacturer per model year
- Mfr or re manufacturer tests 2 locos; adds 2 for each failure to max of 10
- Testing occurs when locos are between 1/2 and 3/4 of useful life
- Recalls are feasible remedies

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Railroad Mandatory In-Use Program

- Begins in 2005
- Class 1 railroads must test at least 0.15% of their locomotives each year
- Test locomotives must be at 100% of useful life hours.

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Current EPA LD In-Use Testing

- Extremely successful EPA program
- FTP testing of cars and light trucks
- Dates to mid 1970’s
- Has led to recall of very large numbers of vehicles in past years
- Very low failure rates in recent years
- Virginia testing transitioning to Ann Arbor

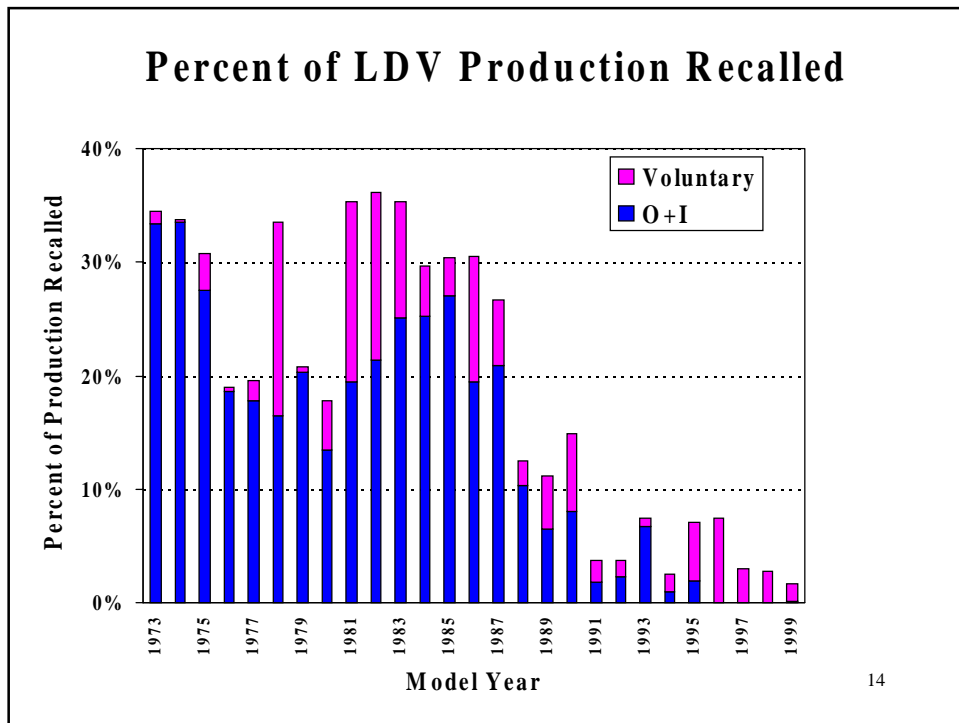
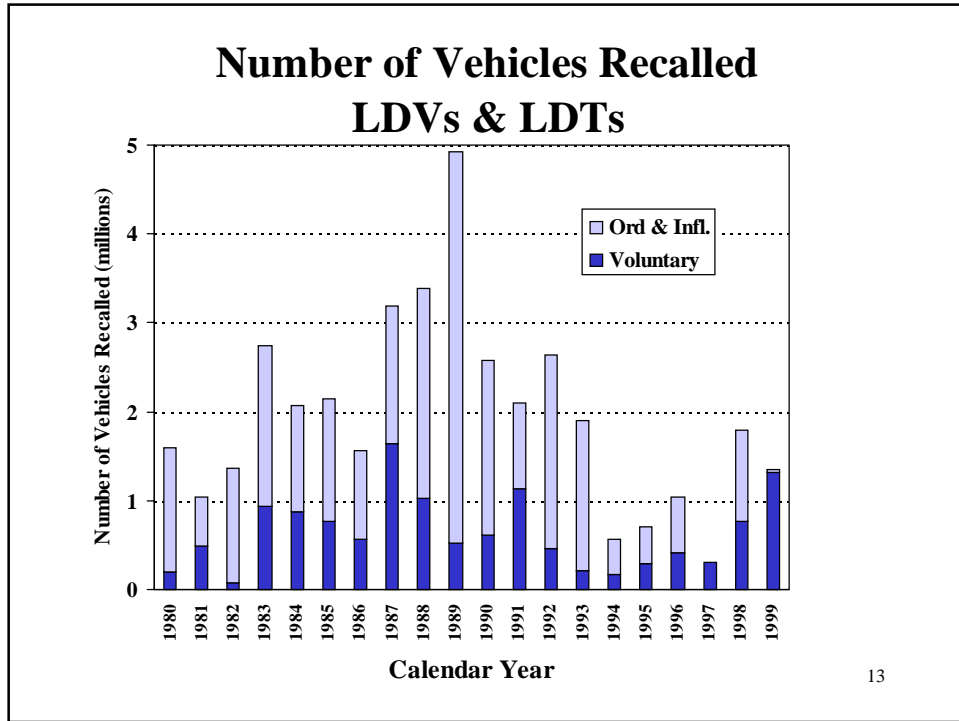
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Future EPA LD In-Use Testing

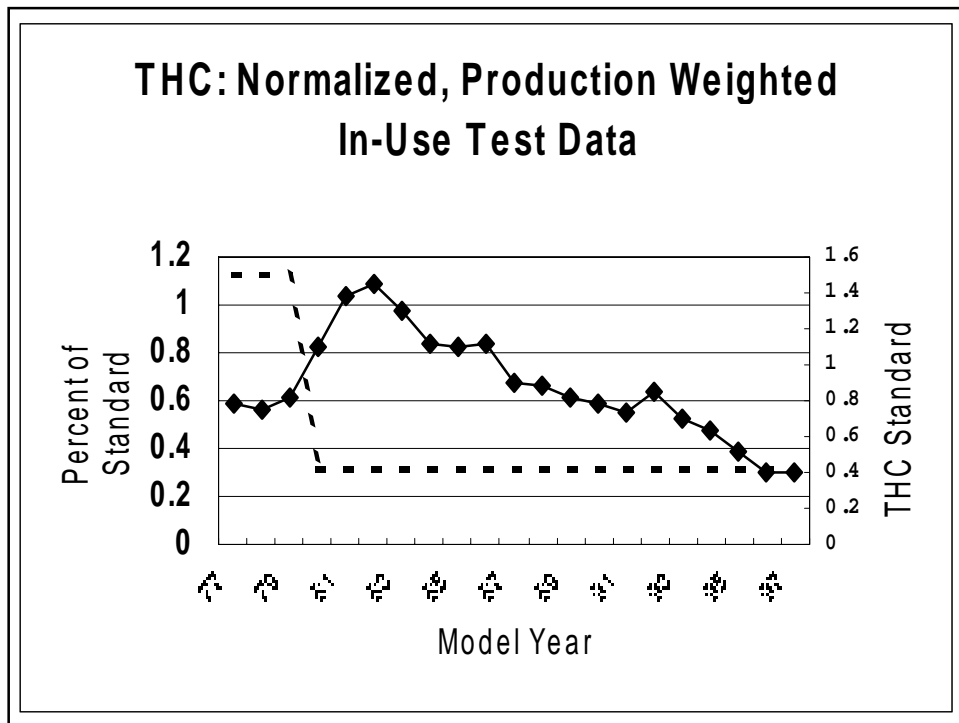
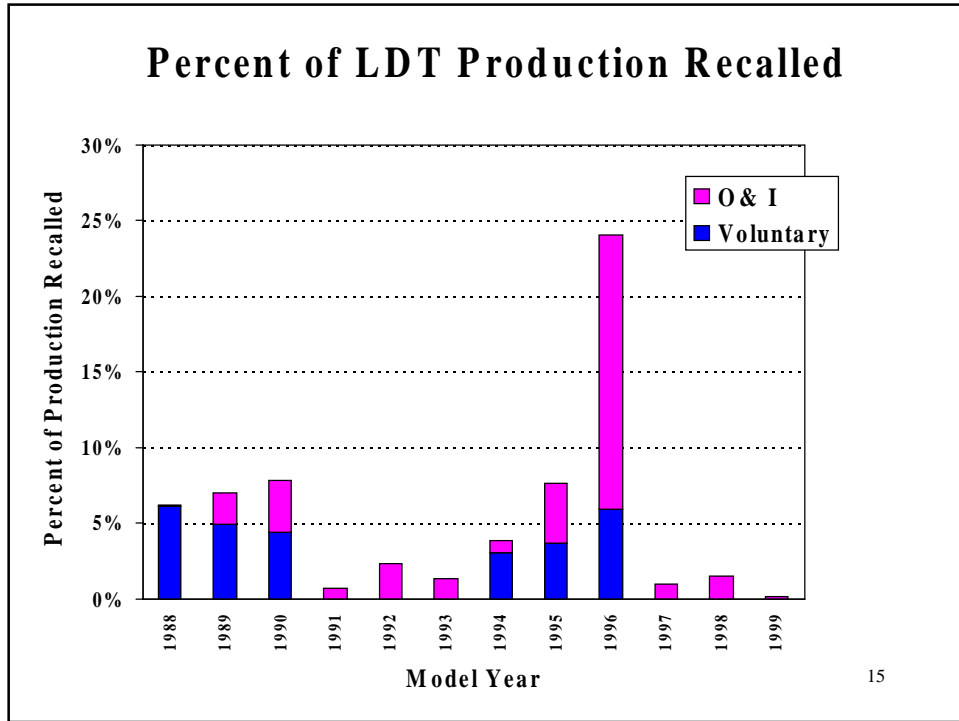
- Begin testing NLEV vehicles
- Checking OBD performance
 - Introducing faults
- Use of ROVER as screening tool
 - “**R**real-time **O**n-road **V**ehicle **E**missions **R**eporter’
 - Target classes for FTP testing

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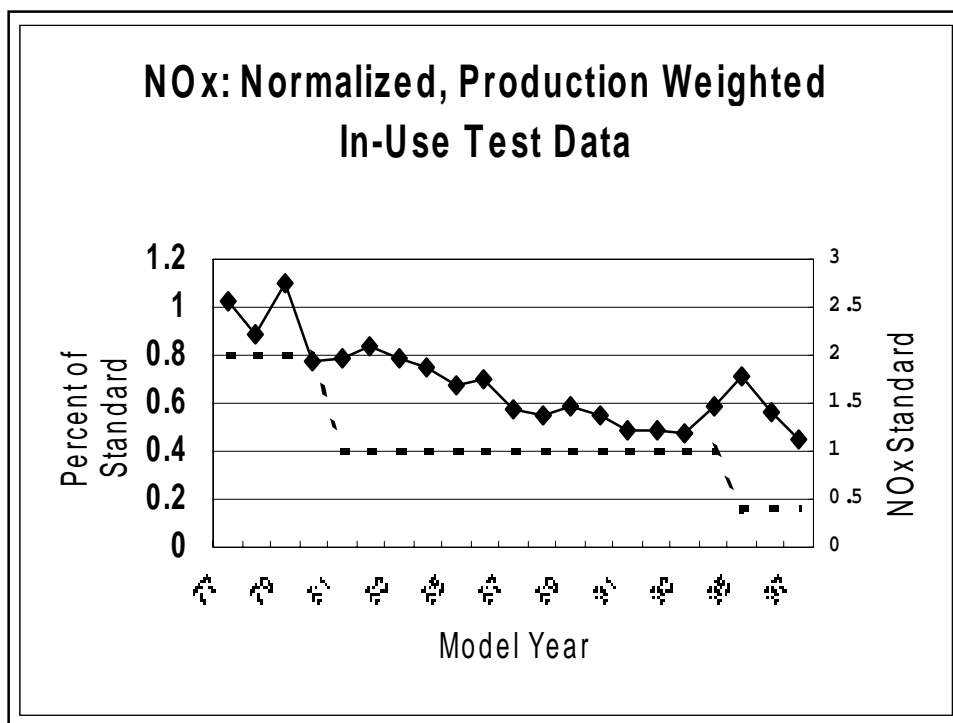
“OVERVIEW OF EPA’S EMISSION COMPLIANCE PROGRAMS FOR VEHICLES AND ENGINES” as presented to the MSTRS by John Guy on 10/11/00



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CAP 2000 In-Use Verification Testing

- Mandatory beginning in 2001 Model Year for LDV/T test groups >5000
- Sample size varies with production
- Minimum mileage = 50,000
- One vehicle/test group must be at 75% or more of useful life
- One vehicle for each evap family must be evap tested.
- Low mileage testing added in 2004

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CAP 2000 Confirmatory Testing

- If average Verification Testing results \geq 1.3 times any standard AND
- Failure rate for the pollutant \geq 50%
- Sample size minimum = 10

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Heavy Duty/ Nonroad In-Use Testing

- FTPs problematic due to need to remove engine==> Have little in-use data
- ROVER
 - Real-time **O**n-road **V**ehicle **E**missions **R**eporter
 - Allows vehicle to be tested on the road
 - Promising screening tool
- Substantial experience with ROVER in enforcement cases
- Have ROVER-tested trucks and nonroad vehicles under real-world conditions

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Ideal Future State

- Strong in-use presence for all vehicles/engines
 - Determine compliance with standards in-use
- Robust in-use emission database
 - Cover on-hwy and nonroad vehicles
 - Include all criteria pollutants, GHGs, toxics
- Versatile in-use measurement devices
 - Measure vehicle activity, emissions, engine load
 - Compact, low cost, low-power, high reliability
 - Leave on vehicle for up to a week

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FY 2001 Plans

- Expect to fund grant to Aberdeen
- Borrow 40-50 vehicles from fleet operators
- Go to nonroad vehicle work sites
- Perform ROVER testing
- First focus is on-hwy vehicles
 - Evaluate compliance with consent decrees and guidance document

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FY 2001 Plans (cont.)

- Enhance ROVER; develop PM ability
- Develop reference database of emissions
 - Ascertain “failure” thresholds
 - Need large database for rulemaking support
- Develop other tools esp for modeling
 - Measure vehicle activity and engine emissions over extended time
 - Work underway to develop low cost, compact, low power datalogger/sensor systems

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Use of ROVER Results

- NOT FTP data.
- Screen for high emissions; determine cause
 - Deterioration
 - Defects
 - Defeat devices; high off-cycle emissions
- Encourage manufacturer remedies
- Feedback into future rulemakings

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Possible Follow-up

- Mfrs may correct some problems based on ROVER data
- CAA Sec. 208 provides for mfr engine testing (FTP)
- EPA could do FTPs on suspect engines.
- FTP results could lead to recalls

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