There will be a test after this training.

You are encouraged to take notes. You will be able to use them during the test.

Inspection facilities will be able to start performing emission inspections using the manufacturer’s equipment on October 1, 2007.
GVIP Inspector/Mechanic Training Outline

• Discuss Air Quality Information
• Explain Why Vehicle Emissions I/M?
• Overview of On Board Diagnostics (OBD II)
• Define Emission Inspection Requirements
• Outline Emissions Testing Processes
• Provide Repair Shop / Receipt Expectations
• Describe Emissions Retest / Waiver Process
• Other Information: MRRT, GVIP
What is Ozone?

• Ozone is a gas composed of 3 oxygen atoms
• “Good” ozone is produced naturally in upper-atmosphere where it protects the Earth from the sun’s UV rays
• “Bad” ozone is formed at the Earth’s surface where it causes health problems in humans and damage to plant species
Why Is Ozone a Concern?
Breathing ozone is harmful to human health

- Irritates respiratory systems
- Aggravates asthma, emphysema and bronchitis
- Inflames and damages linings of lungs
Why Is Ozone a Concern?
People most susceptible include Those with respiratory illnesses, Older adults, Children who are active outdoors And Even Healthy adults
How is Ozone Formed?

\[ \text{VOC} + \text{NOx} + \text{Sunlight} = \text{Ozone} \]

Is Influenced by weather:
- sunlight
- high temperatures
- air inversions
- calm winds

Ozone is primarily a summertime concern for area residents. However, to minimize the production of the pollutants that contribute to ozone formation in the summer, a year round program of vehicle inspection and maintenance is necessary.

**Volatile Organic Compounds are primarily petroleum based compounds.**
Gasoline vapor, from unburnt or partially burnt fuel, is a major contributor to airborne VOC’s. Vehicles have evaporative emissions control systems to prevent raw fuel vapors from escaping. Minimizing the VOC’s in the atmosphere minimizes ozone formation.

**Oxides of Nitrogen are the result of the ‘burning’ of VOC’s occurring at very high temperatures, such as the inside of an engine cylinder for both gasoline and diesel vehicles.**
There are control strategies in place for most of the sources shown to minimize their contribution to the total VOC volume in the air.

Emissions inspections are one of the primary ways of ensuring automotive sources of VOC’s are kept to a minimum.

Point sources are known industrial producers of pollutants - factories, AmerenUE, etc.

Area sources are diffuse sources, such as home furnaces, lawnmowers, paints, asphalt, etc.

Off road mobile sources - construction sites, burn piles, mobile concrete plants, etc.
Why Vehicle Emissions Inspection and Maintenance?

- In 2002, the St. Louis area daily vehicle miles traveled (VMT) = 65,255,260
- Percent of VMT from light-duty gasoline vehicles = 86.8%
- St. Louis area light-duty gasoline vehicle VMT = 56,641,566
- 1996 and newer motor vehicles are about 75% of vehicle fleet, and that is growing at 5 - 8 % per year.
Good Air Quality Day Photo
See me after the class if you’d like the website that you can view ‘live’ photos of the air quality in St. Louis.

http://www.dnr.mo.gov/env/esp/aqm/archcam-1.htm
Sunday August 5, 2007

4 WARN AIR QUALITY FORECAST

Sunday

- Red: Unhealthy
- Orange: Unhealthy for people with special needs
- Yellow: Moderate
- Green: Good

GVIP
Gateway Vehicle Inspection Program
Air Quality Summary

• EPA 8-hour ozone standard is designed to be protective of human health

• St. Louis Region is in non-attainment for ground-level ozone
  - 10 Missouri monitors in region track hourly ozone levels
  - 57 monitored exceedances so far this year
  - 7 monitors have recorded ozone levels exceeding the EPA standard multiple times this year

If you’d like more information on this, I have a website I can provide you at the end of this training.

http://www.dnr.mo.gov/central/env/apcp/AirHome.htm
Air Quality Summary

• Motor vehicles produce 40% of pollutants that contribute to formation of ozone

• Vehicle emissions Inspection / Maintenance is a key part of the Missouri’s plan to reduce ground-level ozone in the St. Louis non-attainment area
  – By identifying and repairing vehicles to minimize the pollutants they produce, ozone is reduced
OBD II Purpose

- Prevent excessive emissions by identifying emissions control aspects that fail to meet manufacturer established criteria and alerting the driver to the problem
- Improve inspection and diagnostic process by standardizing:
  - Component terms
  - Data Link Connector (DLC) location, shape and pin assignment
  - Diagnostic Trouble Codes (DTCs)

Low emitting vehicle are low emitters because their catalytic converter efficiency is high. One of OBD II’s main purposes is to protect the catalytic converter from damage, so the vehicle has the best chance of remaining low emitting over its useful life.

OBD II protects the catalytic converter from misfires, and rich or lean running conditions that could compromise it’s ability to reduce (NOx) or oxidize (HC, CO) the pollutants that result from combustion.
OBD II Operation

• OBD II monitors and actively evaluates performance of vehicle emissions control systems and components
• Problems noted by the OBD II computer will cause a DTC to be stored and the malfunction indicator lamp (MIL) will be commanded to illuminate
• Emissions testing equipment uses this information to determine pass or fail

Be aware that not all OBD II problems cause driveability problems, so motorists may be resistant to accepting the emission test result.

However all OBD II failures require identifying and effectively repairing the cause(s) of the OBD II failure(s) to ensure tail pipe emissions of VOC’s and NOx are at their minimum, and so improve air quality.
Vehicles Subject to Emissions Testing

- Vehicles registered in St. Louis City and the Counties of St. Louis, St. Charles, Jefferson and Franklin
- Gasoline powered motor vehicles
  - 1996 and newer vehicles
  - 8,500 lbs. GVWR or less
- Diesel powered motor vehicle
  - 1997 and newer vehicles
  - 8,500 lbs. GVWR or less

The Safety Inspection process requires that 1968 and newer vehicles have the emission components verified as being present and operational as required in 11 CSR 50-2.280. Vehicles with emission control system components that do not meet the regulation shall fail the Safety Inspection.
Vehicles Subject to Emissions Testing

• Even model year vehicles required to be tested in even calendar years
• Odd model year vehicles required to be tested in odd calendar years
• An Emissions and Safety inspection is required at any title transfer
  – Private seller is required to provide this to the purchaser prior to the sale
  – Dealer’s of used vehicles required to either provide inspection or notify purchaser they have 10 days or 1000 miles to test and return vehicle to them for repair if it fails emission test

The biennial emission testing requirements follow the same timeline as the safety inspection requirements do.

Important to include if talking to dealers

Dealers providing a current emission inspection good for registration shall disclose in writing whether the vehicle received a Pass or Waiver.

Dealers not providing an current emission inspection to a motorist are required to put in writing on the sales contract and bill of sale that the motorist has 10 days or 1000 miles to emission test and return the vehicle should it fail the emission test. The dealer must repair the vehicle to ‘Pass’, not ‘Waiver’ or come to some other mutual agreement with the vehicle purchaser within 5 days of vehicle being returned.
Inspections & Registration

Time Limits

• Emissions inspection ‘Pass’ or ‘Waiver’ is able to be used for registration:
  – by current vehicle owner for 60 days after final test
  – by motorist purchasing a vehicle from a dealer for 120 days after final test
  – by motorist purchasing a vehicle from a private owner for 90 days after final test

Private sellers and dealers should provide VIR to purchaser documenting compliance at time of sale.

Motorist and dealer time lines have not changed.

People choosing to sell their vehicle will not be required to have the vehicle emission inspected if the previous one was completed within 90 days of the date of sale.
Emissions Testing Exemption

- Motorist may not be required to have emission inspection if mileage or GVWR exemptions are documented during safety inspection.

Motorist may need to request exemption to the emission test from the Department of Revenue fee office if for mileage.

If information provided to the GVIP equipment exempts the vehicle, it will be recorded both on the vehicle inspection report (VIR) and the vehicle information database (VID).
Emissions Testing Exemption

• New, unregistered vehicles are exempt from the emissions inspection at time of initial sale, unless more than 6,000 miles on the odometer.
  – A current model year vehicle purchased new the previous year, is exempt from the emissions inspection requirement until two years after model year.
    • Eg. 2007 purchased in 2006 not due until 2009
  – A new, unregistered vehicle with more than 6,000 miles on the odometer sold by a dealer for the first time is subject to the emissions test regardless of the year sold.
    • Eg. 2007 sold in 2006 with 6001 miles is required to be emission tested at time of sale, and possibly again in 2007, 2009, etc.

After sale, mileage exemptions may take precedence over emission inspection requirements at first biennial test.
Emissions Testing Exemption

- Vehicles are exempt if over 8500 lbs GVWR
- For some vehicles, the VIN identifies a range of GVWR possible
  - dependant on how manufactured
  - DOR renewal notice may indicate an emission inspection is required when the GVWR would exempt the vehicle from it
- Software requires the inspector/mechanic to verify and designate the range the vehicle’s GVWR falls in
  - VID will record exemption if GVWR over 8500 lbs

Inspector/mechanics must check vehicle information on door plate / decal to determine actual GVWR of vehicle. The software requires the I/M to verify and enter the vehicle’s GVWR range as part of required vehicle information. May query I/M whether wants to exempt vehicle from the emission test.

Department of Revenue (DOR) database does not identify specific GVWR for a vehicle, so vehicles over 8500 lbs GVWR may still be noted as requiring an emission test on the notice received from DOR.
Emissions Testing Exemption

• Vehicles are exempt until four (4) calendar years after their model year (2nd biennial inspection), if they have no more than 40,000 miles on the odometer at the time of the first biennial safety inspection, unless being sold.
  – Eg. 2005 model year vehicle is emissions test exempt in 2007 if safety inspection records less than 40000 miles on odometer in 2007. Will be required in 2009.
• Vehicles are exempt from the emissions inspection if they are driven fewer than 12,000 miles between biennial safety inspections regardless of model year.

Analyzer may not identify or prevent emission inspection from occurring. **Inspection facility should verify motorist wants an emission inspection under these circumstances (especially older adults or physically challenged motorists) to prevent motorist from returning if they find out they could’ve been exempted**

**Motorist must apply for emission exemption at Department of Revenue fee office.** Current vehicle model year and safety inspection information will document 40,000 mile exemption status.

Motorist must present previous biennial safety inspection form and current biennial safety inspection form to DOR to receive 12,000 mile exemption. Not shops responsibility to provide previous safety inspection form even if done at their shop.
Inspection Process

• Motorist comes into inspection facility
• Motorist approves type of inspection(s) to be performed
  – Safety or emissions inspection may be done at different shops
• Two separate inspections and fees:
  – Emission - $24
  – Safety - $12

Be sure and verify inspection(s) owner wants.

A vehicle cannot get retest at your shop unless an initial inspection has been performed on your analyzer, regardless if had an initial inspection elsewhere.

There is no state requirement that a shop must charge any inspection fee. You may charge a motorist for an initial inspection if you choose to.

Data download fee of $3.45 charged for each initial emission inspection (1st, 3rd, 5th, etc)
No data download fee for safety
No authorization fee until decal printed.
Inspection Process

- A vehicle that fails either / or both inspections gets 1 free retest if returned to your shop within 20 business days
  - will perform complete emission retest
- Shop may charge an initial test fee a second (or third, etc.) time if vehicle fails both initial and free retest or returns after 20 business days

Some motorist ‘shop’ for inspections. The software will provide a historic record of safety and / or emission tests performed this cycle.

**Failing safety inspection and passing emissions inspection (or vice versa) requires the vehicle to be retested only for the inspection type that failed.** Not one combined inspection.

If vehicle has a current inspection decal that you question regarding its validity, please contact the MSHP-MVI at 314-340-4041 while the vehicle is at your shop.
Inspection Process

Step 1 -- If applicable, complete the Safety Inspection
- Inspector/Mechanic does a physical vehicle examination and record findings on either a paper checklist or scrap piece of paper
- To replace the current paper-based system, results are entered manually into the Missouri Decentralized Analyzer System (MDAS).
- Some component failures require factual measurements to be entered

Safety inspection does not have to be done in same bay as emission inspection equipment located in

Vehicle should be emission inspected in bay where equipment located

Video camera must be able to view emission inspection
Step 2 - Access Inspection Computer
• Choose Inspection type(s) performed
• Enter motorist information
• Enter vehicle identification number (VIN)
  – 1st try scanning dashboard VIN plate
  – 2nd try scanning door VIN bar code
    • must verify VIN on door matches VIN on dashboard
  – 3rd manually enter dashboard VIN
• VIN entry populates vehicle information
  – if it doesn’t, will need to manually enter
• Enter Safety Inspection info if applicable
Inspection Process

Step 3
Take pictures of:
• Rear of vehicle with license plate (if available)
• VIN plate
• Odometer

Dock the camera and transfer the pictures to the analyzer.

Pictures saved to system/record should be clear and readable

Should include some of car in picture of license plate to ease identification. May take picture of front of vehicle with plate if needed. If no plate, be sure and include more of car in picture.

May take multiple pictures to ensure there is at least one good one to save to record
Emissions Testing Process

Initiate Emission Inspection
• Perform MIL Bulb Check tests
• Connect inspection equipment data link connector
  – Inspection equipment will download data
• Disconnect inspection equipment data link connector
• Generate Vehicle Inspection Report
  – Attach window decal if vehicle passes Safety and/or Emission Inspection

Inspection equipment will prompt you to move to next part of test

May generate Safety or Emission inspection decal / sticker separately as either one passes
- Vehicle may end up with 2 inspection decals
- state authorization fee taken only when vehicle has passed inspection performed at your shop and a decal / sticker has been printed
- state authorization fee is
  - $1.50 for safety
  - $2.50 for emissions
Emissions Testing Outcomes

PASS
• MIL illuminated when Key On Engine Off
• MIL off when Key On Engine Running
• Data Link Connector accessible & working
• Communications able to be established
• No Diagnostic Trouble Codes commanding MIL to illuminate
• Readiness monitors meet criteria

FAIL
• Any result other than what’s stated above
Example of Malfunction Indicator Lamp (MIL)

Seen as:

- Check Engine
- Service Engine Soon
- Engine Picture
1) MIL Bulb check test  
- Key On/Engine Off (KOEO)  
  - Inspector/Mechanics must fail a vehicle during the bulb check test if: 
  - the MIL does not illuminate with the key in the on position and the engine is off.

Equipment will prompt you for result of bulb test

If you didn’t observe the MIL being lit the first time you try it, you should consider performing KOEO test a second time to verify it truly didn’t illuminate
Emissions Testing Process

1) MIL Bulb Check Test
   - Key On/Engine Running (KOER)
     • Inspector/Mechanics must fail a vehicle during the bulb check test if:
       – the MIL is illuminated while the key is in the on position and the engine is running
       • failure not dependant on DTC’s being noted on vehicle inspection report

If MIL illuminated when KOER, but I/M failed it for not illuminating at KOEO, should go back and change KOEO test result to a ‘Pass’. (Software may correct this automatically)

If MIL given a ‘Fail’ for not illuminating on KOEO, it should not be seen as illuminated on KOER, even if it is being commanded on by the OBD II computer due to a DTC being stored.

Could end up with a KOEO - ‘Fail’, and KOER -‘Pass’, even though MIL is not functioning and DLC is commanding MIL to illuminate
Emissions Testing Process
Keyless Ignition Vehicles

• Some vehicles have a key fob that allows motorists to enter and start the vehicle without using a key
• This makes it difficult to do a “Bulb Test”
• Most “Keyless Ignition” vehicles have a special procedure called a “Bulb Test” to check the MIL
• Consult manufacturer guidelines for performing bulb checks on these vehicles

VIN will not identify these types of vehicles
Emissions Testing Process

2) DLC and Communications Test
   • Connect test equipment DLC to vehicle DLC
   • Start engine
   • Disconnect DLC and turn off vehicle when prompted by test equipment
   • A DLC locator guide will be on the test equipment for your use if having a problem finding the DLC

If a DLC is not located where indicated by the diagram or picture, and cannot be found, it must be failed for “DLC Tampering” (wording may be different, but ‘tamper’ will be a part of it).
Example of a Data Link Connector (DLC)
The emission test equipment will utilize the vehicle’s power pin (#16) and chassis ground pin (#4) as a power source for itself (as many scan tools do).

It will utilize the signal ground pin (#5) and the appropriate ‘protocol’ pins to initiate communications with the vehicle’s OBD II system and download data from it.

If necessary power or protocol pins are bent, missing, pushed back into the plug, or their wires are broken or loose at the back of the DLC, communications may fail. DLC may be failed for tampering in these instances.
Emissions Testing Process

2) DLC and Communications Test
   • Vehicles will fail the DLC portion of the OBD II test if the DLC is:
     – tampered with
       • pins damaged or missing
       • used as a power source for other items on vehicle
     – blocked by aftermarket equipment installation
     – not located where the manufacturer installed the DLC
     – not accessible where the manufacturer located it

   Inspection facility must attempt to access DLC’s regardless of location - behind the ashtray, glove box, pop off panel, radio console, etc. Should a vehicle’s DLC’s not be accessible due to aftermarket or manufacturer placement, shop shall record a DLC ‘Fail’ and identify reason.

   Vehicle owners should be informed of the reason for any DLC fail, and are expected to correct that problem. Most DLC failures will be considered tampers, and repairs will not be applied toward a waiver. Fails due to manufacturer placement of the DLC can require the motorist to take the vehicle to a dealer to have the DLC made accessible.
Emissions Testing Process

2) DLC and Communications Test

• Vehicles will fail for communications if:
  – the vehicle does not transmit the necessary information to the inspection equipment after one (1) ten (10)-second attempt and two (2) thirty (30)-second attempts
  – Analyzer verifies failed communications is not due to inspection equipment problems
    • Inspector/mechanic connects OBD II cable to OBD II verification port to verify equipment functionality

The test equipment will notify you if it fails to communicate with the vehicle. It will prompt you to initiate communications again. Before doing so, you should verify that test equipment DLC is connected securely to vehicle’s DLC

EPA requires the vehicle to communicate with any scan tool or emission inspection equipment using the generic mode. The Missouri OBD II emission test requires this ability to pass the test.

Communicating on the manufacturer side does not affect the test outcome, but can allow a manufacturer scan tool access to significantly more data regarding vehicle. This type of communications will not allow a “Pass”.
Emissions Testing Process

3) Evaluation of Readiness Monitors

- This test requires successful communication with vehicle’s OBD II computer
- Inspector/mechanic does not determine result
  - GVIP recommends inspector/mechanic use their own OBD II scan tool to verify a vehicle’s readiness monitor status prior to a test or retest
  - Inspector / mechanic has authority to test even if monitors not ready

Readiness monitors are an ‘anti-fraud’ aspect of the OBD II system
Vehicle monitor readiness should be verified by the inspection facility prior to the OBD II test to minimize motorist issues with shop.

Repairs performed on a vehicle are best verified by having all required monitors, especially those associated with the repaired components set to “Ready”
- documents the DTC was repaired
- good customer service whether repair performed at inspection facility or not

Dealers need to be aware that disconnecting battery while vehicle sits on the lot resets monitors to ‘Not Ready’ and will cause vehicle to fail.
For readiness issues, the repair industry has found that - 70% of the time readiness can be addressed by the manufacturer’s drive cycle, but that the vehicle must be driven correctly, under the conditions and loads required for each monitor. - 30% of the time, there is a problem with the vehicle that is preventing it from running monitors. These problems are not always identified by a DTC being set, so additional diagnostic time while driving the vehicle is necessary.

O2 and Cat monitors required to be supported as a method of defeating some of the PCM reprogramming observed during the GCAP program
Readiness Exemptions

- There are vehicles with known readiness issues
  - an exemption table created by the EPA is maintained by the contractor
    - identifies vehicles through VIN
    - ignores monitor status as criteria of test
  - the department may include other known problem vehicles on exemption list
- List should be available to inspector / mechanic through GVIP equipment’s VID information

Inspection facility will not necessarily be aware of this ‘override’ for a problem vehicle during the test. It is built into the software, and will ignore a readiness fail for a vehicle if on this list.

Inspection facility should check list before suggesting a motorist whose monitors are not set to ‘Ready’ at inspection / re-inspection drive vehicle to set readiness.

You may see me after the training for the website that has this list

http://www.epa.gov/otaq/regs/im/obd/r01015.pdf, Appendix D
OBD II Monitors

• Three readiness monitors run all the time, most readiness monitors run once per trip
• There is a readiness monitor for each major emissions control system
  – Misfire (Continuous)
  – Fuel Trim (Continuous)
  – EGR (Non-Continuous)
  – Catalytic Converter (Non-Continuous)
  – Evaporative (fuel vapors) (Non-Continuous)
  – Oxygen Sensors (Non-Continuous)

Continuous monitors run every other second.

Non-continuous monitors may run once per trip but only if manufacturer parameters are met
- Monitors are set by the OBD II computer verifying all the DTC items associated with that monitor pass
- Driving will not reset a monitor if required criteria, such as engine temperature, pending code for a required DTC pass, driving requirements not able to be met except on open, or empty road, and more.

Utilize resources such as ShopKey, AllData, etc. to determine monitor setting criteria; Use scan tool in correct Mode to verify performing drive cycle correctly
4) DTC test

- This test requires successful communication with vehicle’s OBD II computer
- Inspector/mechanic does not determine result

Vehicle inspection report (VIR) will list those DTC’s the command the MIL on
- Only generic DTC’s (P0###) will be defined on VIR
- Manufacturer specific DTC’s (P1###) will require other sources for shop to identify
  - Many available online at various sites

There may be pending or historic DTC’s in the OBD II computer that should be noted during repair process
- Pending DTC’s may indicate intermittent problem
  - could prevent monitors from setting to ready
- Historic DTC’s can be important in diagnosis
Emissions Testing Process

4) DTC test

• Vehicles fail the DTC test if:
  – the OBD II system has stored at least one (1) mature (non-pending, non-historic) DTC that commands the MIL to be illuminated

• The vehicle’s OBD II system may command the MIL to be illuminated even though no mature DTCs stored in the system
  – this will cause MIL KOER fail
Transmission DTC’s will cause a vehicle to fail the emission inspection the vehicle’ inability to shift at the manufacturer determined loads and RPM’s can increase the engine’s emissions output
- higher RPM’s = greater exhaust volume

Transmission codes do not always indicate a transmission problem. Depending on the vehicle, a bad vehicle speed sensor can fool the PCM into thinking the transmission is not shifting at the required engine RPM’s.
Emissions Testing Process

**Step 5 -- Complete the Emissions Inspection**

- Analyzer will notify inspector/mechanic of completion of tests and generate vehicle inspection report (VIR) and Comment Form
- Windshield sticker will be printed if vehicle receives a Pass on inspection(s) initiated at inspection station
- Analyzer will also print a Repair Data Sheet if vehicle failed the OBD II test
  - Inspector/mechanic must provide motorist with VIR, Comment Form, and Repair Data Sheet in these cases

Vehicles that “Pass” each inspection at different times (eg. one initially, the other on a retest) may end up with 2 window decals.

Vehicle inspection database (VID) will eventually include OBD II inspection history from Gateway Clean Air Program data after January 1, 2008
- will allow inspector to check whether problems with vehicle have been ongoing
  - can use information to assist in focusing diagnosis on problems that may not be currently noted by OBD II computer due to monitors not being set to ‘Ready’
Motorist Comment Form

• Computer will print after each emission inspection performed
• Must be provided to motorist by shop
• May be sent to Department of Natural Resources
  – instructions will be printed on form
• Shop will be made aware of comments made on form
  – may address comments when motorist there

Inspector/mechanic, or service manager should explain process for completing form. If customer concern is addressed and resolved at the shop, customer still has option of completing form. Shop may not keep form from customer.

Instructions on form will direct motorist where to send it.
Repair Data Sheet

• Inspection equipment automatically prints for vehicles failing emission inspection
• Person / shop performing repair completes
  – information will eventually be able to be entered through web portal by non-emission inspection repairer
• Must be entered into vehicle information database (VID) prior to reinspection
  – a check box form except for repair shop info
  – inspection facility cannot reinspect unless info has been entered, must enter if not already done

This form will be printed automatically for any vehicle that fails. Form must be provided to motorist if not having inspection facility perform repairs after ‘Fail’

Must be entered into system prior to retest to allow retest to be performed.

Investigating the ability for do-it-yourselfer or repair tech to complete and enter on line from own computer.
Repair Data Sheet

• Provides department
  – information on performer of repairs
    • owner, non-MRRT shop, MRRT shop
  – information on process used to achieve successful repairs
  – allows determination of repair shop’s success
    • may be used to calculate repair effectiveness index for MRRT shops based on success of reinspection
Repairs After Emission Inspection Failure

• Anyone can perform repairs
  – inspection equipment automatically prints nearest ten (10) shops employing Missouri Recognized Repair Technicians (MRRTs)
  – owner may elect to get vehicle repaired
    • at shop of own choice (including inspection shop)
    • by performing repair work themself
• Repair data sheet required for reinspection
  – must be entered to allow retest
  – not a substitute for a repair invoice for waiver

Repair shop should ensure monitors are set to ready after repair as documentation of the repairs effectiveness.

Shop may:
- Leave MIL lit, and monitors set to ‘Ready’
  - customer returns when MIL goes out (or after set time)
- Erase DTC(s), clear monitors
  - Monitors now require driving / operating conditions to be met to set them back to ‘Ready’
  - all criteria must be met to allow monitors to set
- How does motorist know when vehicle monitors set to ‘Ready’
  - obligates repair and/or inspection shop to deal with irate customer if takes long time or multiple tests

Used parts may not be applied toward a Waiver.
Shop Repair Receipts / Invoices

• To be accepted for waiver must include
  – repair facility name, address and phone number
  – repair technician name (printed or typed), signature and Missouri Recognized Repair Technician unique number (if applicable)
  – describe emission repairs authorized by owner and performed by repair technician
    • identify parts used and cost
      – identify tax exempt parts, note separate costs
    • identify labor cost separately from parts
  – Confirm payment was collected
Shop Repair Receipts / Invoices

- Diagnostic information must describe
  - the diagnostic test(s) performed to identify reason vehicle failed
  - the emission repairs indicated by diagnosis
  - the vehicle parts serviced or replaced
  - the readiness monitors that were either set to ready or left unset
  - the diagnostic tests performed after repair to verify the emission control system is operating as designed by the manufacturer

The best documentation of repair effectiveness is to ensure the monitors are ready and that the OBDII system passes whatever the cause of failure was.

A repair receipt / invoice meeting these criteria will be required whenever a vehicle is unable to pass the OBD II test and the vehicle owner requests a waiver. The motorist will be sent back to the repair shop should any repair receipt information be missing.

A MRRT shop’s Repair Effectiveness Index score will likely include ability for vehicle to pass ‘readiness’.
Air Pollution Parts Exempt from Sales Tax

• The following emission parts are exempt
  – Air injection parts, air pumps / check valves, smog pumps
  – Catalytic converters (must be OBD II compliant)
  – Exhaust gas recirculation (EGR) valves
  – Evaporative canisters and purge valves
  – Positive crankcase ventilation (PCV) valves

• Applies to motorist and shop purchases
  – no form required
  – retailer must keep records for 5 years

Tax exemption applies whether parts bought to perform GVIP inspection repairs or during normal course of vehicle maintenance work.
Emissions Retest Process

Step 5 -- Emissions retest procedure

• Vehicles will be retested at no cost to the motorist if:
  – Vehicle is returned to original inspection station within 20 business days of initial inspection
  – Repair Data Sheet information is entered into the analyzer

• OBD II retest follows same procedures as initial inspection

Not required to redo both safety and emission inspection if one passed during previous inspection

Emission inspection must pass all aspects of test, just not what failed initially

Safety inspection still only requires or allows failed item(s) to be reinspected
- don’t need to reinspect entire vehicle
- can’t fail vehicle for new items found during reinspection
Motorist Options After Retest Fail

• If the subject vehicle fails a retest, the vehicle owner may either:
  – have more repairs performed on the vehicle;
  or
  – apply for a cost-based waiver from the Department of Natural Resources
Repair / Waiver Exceptions

• Repairs appropriate for the failure must be made prior to a waiver being sought.
• No repair costs (parts or labor) for repairing tampered or missing emission control equipment found during the Safety Inspection will be applied toward the cost-based waiver.
• No waiver is available for failure to meet safety inspection requirements.

DTC’s may be related to tampered emission control devices.

Repair to emission control equipment noted on Safety Inspection should be identified separately on repair invoice. Costs for repairing / replacing such tampered items will not be applied toward a ‘cost-based waiver’ from DNR. Repair shop should explain that these type of repairs are considered tampering repairs, and so won’t be applied toward a waiver.
Emissions Waiver Process

• Repair costs must:
  – Exceed four hundred fifty dollars ($450) for vehicles not repaired by the owner of the failed vehicle
    • Parts and labor will apply if work done by Missouri Recognized Repair Technician (MRRT)
  – Exceed four hundred dollars ($400) for all vehicles repaired by the owner
    • Only parts from EPA rule will be accepted

• A low income waiver is also available
  – Motorist must document need to DNR
Emissions Waiver Process

• If the motorist elects to apply for a waiver, the vehicle operator must provide to the Department of Natural Resources (DNR):
  – a completed Waiver Application
  – all itemized repair receipts verifying minimum repair expenditure has been met
    • receipts must meet requirements of 10 CSR 10-5.381 (3)(K)3. (previous slide)

• Motorist must contact DNR at 314-416-2115 to request waiver
Emissions Waiver Process

• The department will verify:
  – the repair receipts or invoices submitted meet the requirement of 10 CSR 10-5.381 (3)(K)3.
  – that the repairs indicated on the itemized receipts for qualifying repairs were made and that the parts were repaired/replaced as claimed
• The department will generate a waiver for the motorist if the above requirements are met

1996 and newer vehicles failing the OBD II test for reasons associated with a Safety Inspection emission component failure will not have the repairs made to those components applied toward a waiver.
Waiver Request When Motorist Performs Repairs

- Only the cost for the following parts, listed in 40 CFR 51.360(a)(5), will be accepted:
  - Oxygen sensors;
  - Catalytic converters;
  - EGR valves;
  - Evaporative canisters;
  - PCV valves;
  - Air pumps;

These components only apply toward motorist performed repairs.

Licensed repair facilities will have the parts determined by their diagnostic research applied toward a waiver.
Waiver Request by Motorist Performing Own Repairs

• Only the cost for the following parts, listed in 40 CFR 51.360(a)(5), will be accepted:
  – Distributors;
  – Ignition wires;
  – Coils;
  – Spark plugs;
  – Any hoses, gaskets, belts, clamps, brackets, or other accessories directly associated with these parts.

The EPA created this list

If diagnostic work has been done and billed for by a Missouri Recognized Repair Technician, that cost will be applied toward a waiver.
Additional Information
Missouri Recognized Repair Technician (MRRT)

- Any repair technician may be an MRRT if
  - has current ASE certifications in
    - Electrical / Electronic Systems (A6)
    - Engine Performance (A8)
    - Auto Advanced Engine Performance (L1)
  - is currently registered with state as MRRT or
  - submits application to SysTech International
    - registers shop as MRRT shop
    - registers mechanic as MRRT
  - must maintain ASE certifications and provide documentation to SysTech Int. if expires
Missouri Recognized Repair Technician (MRRT)

• Advantages
  – allows diagnostic charge to be applied toward waiver (if repair invoice completed correctly)
  – allows repair labor to be applied toward waiver
  – allows shop to be listed on vehicle inspection report if one of ten (10) closest MRRT shops to emission inspection facility
GVIP Web Site and Phone Number

www.GatewayVIP.com
1 (866) OBD-TEST
The information presented here is for emissions inspection training purposes. Rules regarding both emissions inspection and repair requirements may be found in the Code of State Regulations, 10 CSR 10-5.381, available at the following web site: http://www.sos.mo.gov/adrules/csr/current/10csr/10c10-5.pdf
THANK YOU FOR ATTENDING

Gateway Vehicle Inspection Program