

## On-Board Diagnostics (OBD)

- Required equipment on 1996 and newer cars, vans, SUVs, and light trucks.
- Monitors the vehicle emissions control systems, to ensure that they are working as designed.

## OBD Test Results

- The inspection is conducted by connecting to the vehicle's computer and "asking" for emissions-related information to determine if the vehicle is "healthy."
- The inspection result is not dependent on technician judgement.
- The emissions inspection is simple – the inspection tablet connects to the vehicle via a bluetooth connected scan tool and reads the "health," or status, of the emissions control system.
- When any emissions related malfunctions occur, the MIL (malfunction indicator light) or "Check Engine Light" is turned on. A Diagnostic Trouble Code (DTC) is recorded to help identify the problem area.
- The inspection tablet is able to retrieve the DTCs.

## Benefits of OBD Testing

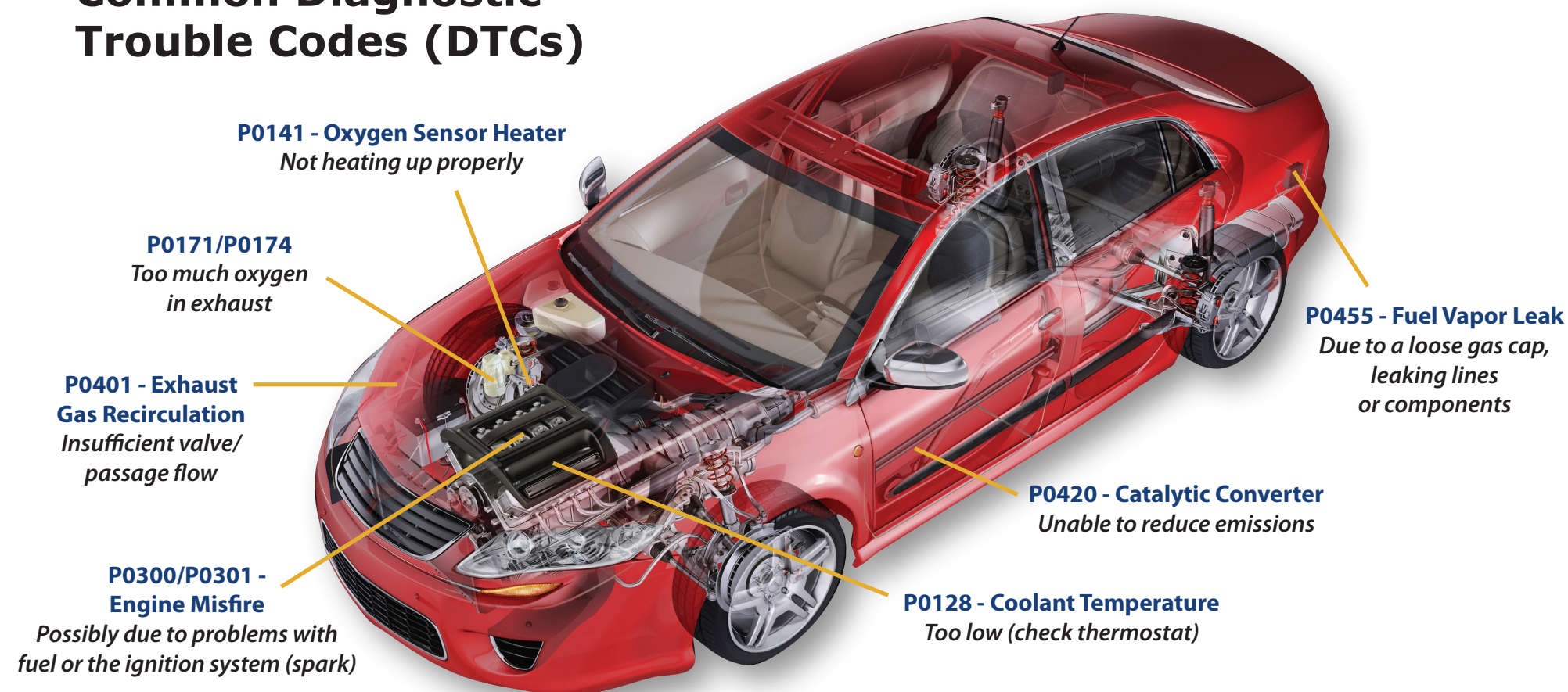
- Fast and accurate vehicle emissions information.
- Early detection of defects that lead to repairs that improve vehicle performance and fuel economy.
- Repairing a defect before it gets worse saves money.
- A key feature is that a motorist can easily determine if repairs were successful — the light will go out and stay out.
- Helps to protect our environment and our health by identifying vehicle problems that cause increased air pollutants.

## What It Means When The Check Engine Light is On?

The "Check Engine", "Service Engine Soon", or "Malfunction Indicator Lamp" only comes on when an emissions – related malfunction is found by your vehicle's OBD system. The warning light tells you that the vehicle's emissions have exceeded certification standards and need repair.



## Common Diagnostic Trouble Codes (DTCs)



## Vehicles must be "Ready" for the OBD test.

### Vehicle Readiness

- "Not ready" means the vehicle's computer has not had time to complete the necessary emissions control system checks.
- An OBD test result of "Not ready" does not necessarily mean your vehicle has a problem, but it does mean the vehicle can't pass the OBD test until it is "Ready."

### Possible Reasons for a Vehicle to be "Not Ready"

- The battery has been disconnected or replaced recently.
- The computer memory has been cleared, which can occur during repair activities or software update.

### Getting a Vehicle "Ready"

- A few days of city and highway driving will allow the vehicle's computer to check all systems and get the vehicle ready.
- STEP 1:** Make sure the vehicle has been parked for eight hours without a start. Be sure your fuel tank is  $\frac{1}{4}$  to  $\frac{3}{4}$  full.
- STEP 2:** Start the engine and let it idle in Drive for two-and-a-half minutes with the air conditioning and rear defroster on.
- STEP 3:** Turn the air conditioning and rear defroster off. Drive the vehicle for 10 minutes at highway speeds.
- STEP 4:** Drive the vehicle for 20 minutes in stop-and-go traffic.
- If the vehicle has an emissions control system issue, it may take longer.
- Repair technicians can assist with readiness issues by following specific manufacturer instructions for drive cycles.



Ozone

**AVIP** Automated Vehicle Inspection Program

## Environmental Benefits of Vermont's Automated Vehicle Inspection Program

Over 300 counties in the United States, mainly clustered around heavily populated areas (especially in California and the Northeast) regularly fail to meet National Ambient Air Quality Standards. In Vermont, exhaust emissions from the vehicles on the roads contribute to the air pollution problems.

The purpose of Vermont's Automated Vehicle Inspection Program is to make sure vehicles are operating as they were designed, in order to reduce the emissions of smog-causing pollutants and toxics. Well-maintained vehicles use less fuel and emit fewer pollutants.

Breathing in smog can cause serious health issues. Children, people with lung disease, older adults and those who are active outdoors may be particularly sensitive to smog.

Motor Vehicles are the largest source of toxic and ozone-forming air pollutants in Vermont. Emissions testing in Vermont improves the air quality.

Benefits to Vermonters include clean air, improved vehicle performance and fuel economy, and savings — timely repair of small problems can often prevent more costly repairs "down the road."

Hydrocarbons

NO<sub>x</sub>

NO<sub>x</sub>

Hydrocarbons

Smog, which is a serious health problem, is made up of ground level ozone combined with other gases and particle pollution. Ground-level (bad) ozone is created by chemical reactions between NO<sub>x</sub> and hydrocarbons in the presence of heat and sunlight.

**NO<sub>x</sub> + Hydrocarbons + Heat & Sunlight = Bad Ozone**

Motor vehicle exhaust, industrial emissions, gasoline vapors and chemical solvents are some of the major sources of nitrogen oxides (NO<sub>x</sub>) and hydrocarbons. Both chemicals contribute to air pollution problems.

