

Where does Ozone come from?

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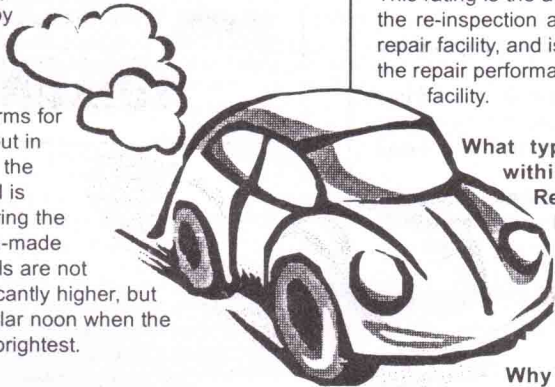
When I was first learning about air pollution one of my first questions was, if ozone (O3) does not come from tailpipes or vehicle emissions how come vehicle emissions get blamed for it? If we know the answer to this question it helps to understand why gas caps and evaporative emissions are one of the OBD II monitored systems.

Perfect gasoline combustion results in nitrogen (N2), carbon dioxide (CO2), and water (H2O) coming out of the tailpipe. If the combustion temperatures exceed 2500 degrees Fahrenheit, the nitrogen "burns" and combines with oxygen. This process creates what we call NOX, which is any nitrogen / oxygen compound. Nitrogen dioxide (NO2) is one of the most common NOX components and the one that is most responsible for ozone formation. When NO2 is exposed to sunlight it does two things. The first is that it turns brown, which is why the sky turns brown over most major cities during hot summer days when there is no breeze or wind. The second thing it does is break down into nitric oxide (NO) and release an oxygen atom. The oxygen atom ties up with the first oxygen molecule (O2) it finds and creates ozone (O3).

Normally the ozone (O3) will react with the nitric oxide (NO) and re-form NO2

and O2. Unfortunately a reactive hydrocarbon in the atmosphere can interrupt this process by being more attractive to the nitric oxide than the ozone molecule is. These reactive hydrocarbons are usually called volatile organic compounds or VOC's. While this may not be technically correct: If you can smell it, the compound is volatile and will probably combine with nitric oxide. Evaporating gasoline or vapors are a significant source of these reactive hydrocarbons that increase ozone levels. This process means both NOX and HC are primary pollutants (they come from vehicles) and the precursors to the formation of ozone, a secondary pollutant. Ozone is also produced by natural sources (trees and thunderstorms for example) but in rural areas the ozone level is highest during the night. Man-made ozone levels are not only significantly higher, but occur at solar noon when the sun is the brightest.

This was recognized fairly early and so charcoal canister evaporative systems were required all the way back to the 1970's as were exhaust gas recirculation systems. The evaporative systems control the HC and the exhaust gas recirculation systems control the NOX. If two OBD II monitors were to be chosen as most important to Texas air quality, these two would most likely be the ones since most of the State has either exceeded or is close to exceeding federal ozone standards.



To ensure that each facility is up to speed with the Repair Effectiveness Rating System, we have included a few "Frequently Asked Questions".

What is Repair Effectiveness?

Repair effectiveness is defined as the ability to detect, analyze and adequately repair an emissions related problem following the failure of an emissions inspection. The repair effectiveness rating is a reflection of a facility's ability to successfully detect, diagnosis and repair emissions related items.

What does the repair effectiveness rating really mean to me?

This rating is the actual percentage of vehicles passing the re-inspection after being repaired at a recognized repair facility, and is useful to consumers in determining the repair performance of a particular recognized repair facility.

What type of information is contained within the Repair Effectiveness Report?

Facility Location Information
Contact Phone Number
Type of vehicles the facility specializes in repairing
Repair Effectiveness Rating

Why do some recognized repair facilities have a "0.00%" RER?

A 0.00% RER indicates:
Either ALL repairs made by the recognized repair facility resulted in failures; OR
Recommended repairs were not performed, at the discretion of the vehicle owner; OR
Required forms, for data entry capture, were either improperly completed or not submitted.

Where does the data come from to calculate the repair effectiveness rating?

Vehicle Repair Forms (VRFs) submitted by inspection stations or recognized repair facilities; OR
Recognized Emissions Repair Summary Sheets submitted by the recognized repair facility.

Make sure your facility isn't left behind

Here are a few things that your facility can do to ensure that your rating is secured.

Send in the Repair Summary Sheets.

You can send in the Repair Summary Sheets on a weekly, bi-weekly or monthly basis and they can be submitted by fax or regular mail. Remember, ALL summary sheets MUST be submitted on or before the last day of every month, to ensure your rating is complete.

Fill out the Repair Summary Sheets accurately.

Ensure that the data you write down is accurate. Since we compare the data you submit to the data in the VID, accuracy is critical. The only data used in reporting Repair Effectiveness is the data that can be traced through the testing cycle.

The Fine Print

Federal law requires that the emission control systems on 1995 and newer model year vehicles be warranted for a minimum of 2 years or 24,000 miles. Warrantee coverage for the on board computer and catalytic converter (only) is extended to 8 years or 80,000 miles for these same vehicles.

Many auto makers provide extended warranty coverage beyond that required by law. So, depending on the model year and mileage of your vehicle, emission system repairs may be covered by the manufacturer.

NOTICE

If you encounter a 1996 or 1997 Mazda Protege that won't run the OBDII monitors, check the engine base idle speed and make sure that it is within OEM specs. (600-800 RPM) Less than a 2% RPM reading over the upper limit will cause this vehicle not to run the monitors.