

Wheels: Heidi of Oakwood has a question about oxygen sensors. Both of her vehicles have had oxygen sensors replaced (a Honda and a VW Beetle). Is this a common problem and is it possible she is doing something wrong to cause these failures?

Halderman: An oxygen sensor is used in the exhaust system to signal the oxygen content of the exhaust to the vehicle computer. When the oxygen content is high, the vehicle's computer interprets this signal to mean that the air-fuel mixture is lean and the computer then commands a richer air-fuel mixture. The oxygen sensor is designed to function for the life of the vehicle (in most cases) without any maintenance or service required. The oxygen sensor can be damaged physically if struck during another service. Some chemicals can cause damage to the oxygen sensor including the use by a service technician of the wrong type of sealant used to repair leaks. Most sealants today use silicone and cure (dry) at room temperature in the presence of moisture in the air. This type of sealant is commonly referred to as RTV (room temperature vulcanization). Some RTV sealers use acetic acid as a curing agent and it is this acid that can be drawn into the engine and then exhausted past the oxygen sensor that can damage the sensor.

Wheels: How could a driver know if the oxygen sensor is defective?

Halderman: Good question. Most vehicles equipped with an oxygen sensor have a computer that can determine if the sensor is operating within an acceptable range and trigger an amber check engine light on the dash if it is not operating with the range. Vehicles built since 1996 are equipped with on-board diagnosis, second generation (OBD II). The vehicle computer on OBD II vehicles monitor the oxygen sensor very carefully and will trip the malfunction indicator light (MIL) (check engine) if a problem is detected. To avoid problems, follow these basic guidelines:

- Avoid operating the vehicle if the fuel level is very low. Consider ¼ tank empty and add fuel then to avoid drawing fuel from the bottom of the fuel tank where alcohol or water tends to be more concentrated.
- Replace all filters (air, fuel, and oil) regularly as per manufacturers' recommendations.
- Avoid overfilling the fuel tank. After the nozzle "clicks", go to the next 10 cents only.

Wheels: If Heidi has been doing everything right, do you have any idea why the oxygen sensors failed?

Halderman: No. Each failure would have to be diagnosed by a service technician using a scan tool. Many of today's oxygen sensors include a built-in electric heater. It could be that the heater is failing and causing the replacement of the sensor. Remember, an oxygen sensor is in the exhaust manifold in a very hot and hostile environment so that while premature failure is not common, it could have been caused by Heidi driving through water and causing the oxygen sensor ceramic to crack.

