

Wheels: We have received many letters, e-mails, and questions about gasoline and gasoline-related topics. This week's column will try to address most of these concerns and procedures that will not only explain the technicalities of gasoline, but also how you can get value for your money and tips that could prevent you from doing harm to your vehicle without ever knowing you are causing harm.

Halderman: One of the most common mistakes I see is overfilling the gas tank. Vehicles are constructed with an expansion area that is equal to 10% to 20% of the volume of the gasoline held in the tank. This means that a 20-gallon gas tank could be found to hold another 2 to 3 gallons or more. This is exactly what some drivers are attempting to do when they bounce their vehicles and continue to add fuel in short bursts after the nozzle has clicked off. **DO NOT ADD FUEL AFTER THE NOZZLE CLICKS OFF** – if you must, go to the next \$.10, not the next \$1.00!

Wheels: What harm could overfilling the fuel tank do to my vehicle?

Halderman: At the top of the expansion chamber inside the fuel tank is a small orifice that allows gasoline fumes to be drawn into the charcoal canister and eventually drawn into the engine to prevent the fumes from escaping into the atmosphere. The problem starts when liquid fuel is drawn into the charcoal canister instead of just the fumes. The canister is not designed to handle liquids. As a result, the liquid fuel could be drawn into the engine increasing exhaust emissions. The liquid fuel can also cause damage to the charcoal canister control system and could lead to poor fuel economy. A gasoline smell can also be contributed to overfilling the tank.

Wheels: What other problems could be caused by carelessly filling the gasoline tank?

Halderman: If you own a 1996 or newer vehicle, be sure to shut the engine off before fueling. This can cause the amber check engine light (also called the service engine soon light) to light on the dash because the vehicle computer could have detected a leak in the fuel tank because the gas cap is off. All 1996 and newer vehicles are equipped with the latest version of on-board diagnosis second generation that is referred to as OBD II. The computer in vehicles equipped with OBD II run tests on all systems of the engine operating system to be sure that they are operating correctly. To avoid a false failed test of the fuel tank, be sure the ignition is off before removing the gas cap.

Also, whenever replacing the gas cap, be sure to tighten properly. Many gas caps must be twisted until you hear 3 clicks to be assured that the seal on the gas cap has been properly compressed. Also be sure to use the recommended octane rating for your vehicle.

- **Most vehicles require regular 87 octane fuel** – Using fuel with a higher octane rating will not improve engine performance and could cause a false knock sensor diagnostic trouble code and the lighting of the check engine light on some vehicles.
- **Use premium for vehicles that specify premium** – The use of lower octane fuel could cause engine damage on older vehicles and reduced engine performance and increased fuel consumption on newer vehicles.
- **Try to purchase fuel from a busy station to be assured of fresh gasoline.** This is especially true if you travel. Try to find a station that many local drivers use to get their fuel instead of the often more convenient station, right at the freeway exit.

Keep your fuel tank above ¼ tank. This will avoid drawing fuel from the bottom of the tank where any condensed water, alcohol, or dirt are most concentrated.

