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Technical Information For The Collision Industry

Fuel Tank Contamination

Contamination in a vehicle fuel tank can occur from a number of causes, such as corrosion, foreign materials, and moisture. The most common of these is moisture in the fuel tank.

When a vehicle has been involved in a collision, part of the damage may include the fuel tank. That damage can allow moisture to get in the tank, which may lead to fuel contamination. Moisture can also occur as the result of condensation on the walls of the tank when a collision-damaged vehicle is waiting for repairs and there are extreme changes of temperature.

If the fuel is diesel and moisture is allowed to remain in the fuel, bacteria will grow and the fuel quality will be degraded (see Figure 1). For all fuel types, corrosion and sediment may build at the bottom of the tank because the moisture can also cause corrosion. The sediment or fungus may eventually find its way into the fuel line and plug-up the fuel filter, resulting in poor engine performance and possible damage.

Foreign matter, such as dirt and debris, can get into a fuel tank from dirty filler caps, tank spouts, or funnels. Dirt can also be a cause of diesel fuel or gasoline deterioration.

VANDALISM

Intentional causes of fuel tank contamination can also occur. If the damaged vehicle is not kept in a secured location, vandals may pour sand, dirt, sugar, etc. down the filler neck. It was long believed that pouring sugar in the fuel tank would damage an engine. The truth is, the sugar probably will never get as far as the engine. Sugar will not dissolve in hydrocarbons such as diesel fuel and gasoline. It will merely settle to the bottom of the tank.

When the vehicle is moved, any sediment in the tank will be stirred up and could eventually get into the fuel line. There are several filters between the fuel tank and the engine that are designed to stop this type of contamination from reaching the engine. Any sand, dirt, sugar, or similar contaminant will likely plug up the fuel filter and possibly the fuel injectors and prevent the engine from running. Fuel pumps may also be damaged by contaminated fuel passing through them.

If contamination is suspected, fill a clean, glass container with the questionable fuel. To accomplish this, disconnect the fuel supply line that goes to the engine. Operate the fuel pump, and pump at least 0.4 liters (one pint) of fuel into the container. Allow the sample to sit for a few minutes to allow water and other contaminants to settle. A visual inspection should reveal the existence of possible contaminants (see Figure 2). If necessary, shine a light through the jar to inspect for discoloration, the presence of water, or contamination particles. If the color is abnormal and particles are present, the contaminated fuel should be properly disposed.

Figure 1–Sediments of contamination are evident in this sample of contaminated diesel fuel.

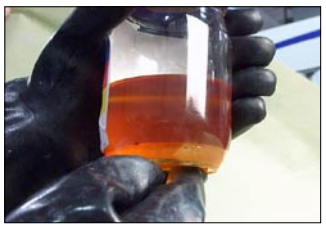

Figure 2–Drain gasoline into a clear jar to look for signs of contamination.

Another way of identifying possible solid contaminants in fuel is to inspect the fuel filters. Filters plugged with large amounts of solid contaminants may indicate the presence of contaminated fuel in the fuel tank.

If contamination is discovered in the fuel tank, the tank must be drained and thoroughly cleaned (see Figure 3). Verify that all fuel lines and filters are also cleared of any possible contamination. Plugged filters should be replaced. If fuel lines cannot be cleaned, they should also be replaced. If the vehicle features a fuel injection system, use a fuel injector cleaning system to remove any contaminants.

SAFETY WITH FUEL

Be sure to use proper safety precautions when handling diesel fuel or gasoline. Whether they are contaminated or not, these fuels are dangerous substances. They are extremely flammable. Wear rubber gloves to avoid absorbing fuel through your skin and a vapor respirator to avoid breathing in the vapors.

Do not attempt to reuse any fuel that may be contaminated. Dispose of any contaminated fuel following local, state, or provincial regulations. According to the Environmental Protection Agency, one of the best ways to dispose of contaminated fuel is to clean it and mix one-to-five with new fuel and burn it in a small engine, such as a lawn mower. Straining or pouring gasoline from the top of water can clean fuel, if large amounts of water are present. If the water concentration is not too high, fuel conditioners can be added to absorb the water.

Figure 3–After draining, clean a contaminated fuel tank with water.