Approaching Alternative-Fueled Vehicle Crashes

Emergency Personnel

The purpose of this brochure is to assist law enforcement officers, fire services, emergency medical service providers and other public safety personnel who arrive on the scene of an alternative-fueled vehicle crash. Emergency personnel must identify the specific type of fuel and secure the scene so rescue work can begin. They also need to know when to call for trained personnel equipped with proper protective gear for assistance. The goal is to protect the first arriving emergency responders, occupants of the vehicles, and bystanders at the scene.

Described below are the key features and emergency approach procedures for five of the most common types of alternative-fueled vehicles (AFV).

The first objective is to identify the specific type of alternative-fueled vehicle. Look for special fuel ports, distinctive profiles, and any written markings on the vehicle. Except for selected local areas, these vehicles are not required to be identified and there are no standardized placards, logos or symbols for the identification of each type of AFV as there are for railroad tank cars and trucks. We have included several examples of identifying symbols for each alternative-fueled vehicle, however, these symbols may vary in size and color.

Liquefied Petroleum Gas (LPG) and Compressed Natural Gas (CNG)

Examples of identification symbols for LPG-fueled vehicles are:

Examples of identification symbols for CNG-fueled vehicles are:

Locating the LPG or CNG fuel containers

In most LPG or CNG vehicles, containers will be found in the trunk area, under the side panel of a van or school bus, on the frame, or in the bed of a pick up truck. Expect a majority of the vehicles to be owned by a fleet service such as buses, taxi cabs, or utility companies.

Handling emergency incidents

If the vehicle is not on fire and no obvious leak is detected, stabilize and secure the vehicle by setting the brake, utilizing wheel chocks or other forms of cribbing as needed. Then turn off the vehicle's ignition and turn the gas cylinder valve handle to the "off" position.

If the vehicle is on fire or a leak is detected, do not approach the vehicle. Secure the scene with non-sparking markers or cones. DO NOT USE FLARES!

Approaching the CNG or LPG vehicle that is leaking fuel or on fire should only be attempted when wearing proper clothing and self-contained breathing apparatus. If you do not have the proper protective gear, equipment and training to deal with fire or HazMat emergencies, do not approach the vehicle. Create a safe zone and contact the proper response units in your area. Remember, in most cases, an alternative-fueled vehicle in a crash should not require a HazMat response.

The greatest hazard of the LPG containers exposed to fire or extreme heat is BLEVE (boiling liquid/expanding vapor explosion). However, a CNG container exposed to fire can also fail, releasing dangerous amounts of fuel and/or flame. When LPG fuel containers become compromised, the fuel converts from a liquid to a vapor that could rapidly produce a sizeable vapor cloud which may ignite and flash back to the fuel source.

Methanol and Ethanol

Examples of identification symbols for methanol-fueled vehicles are:

Examples of identification symbols for ethanol-fueled vehicles are:

Locating the Methanol and Ethanol tanks

Both of these fuels are used in the vehicle's existing fuel tanks. Bus fleets are common users of these two types of fuels.

Handling emergency incidents

If there is no fire or leak, carefully approach the vehicle, turn off the driver's ignition switch and set the parking brake or use wheel chocks to secure the vehicle.

If fire is present, stay away from the vehicle, secure the area and deny entry. **Caution:** a fire fueled by methanol or ethanol burns bright blue and can be difficult to see on a clear day.

If there is an obvious leak, you may approach the vehicle, but use the same caution as when working around a traditional-fueled vehicle. When a leak or fire exists, call fire or HazMat services.

If you do not have the proper protective gear, equipment and training to deal with fire or HazMat emergencies, do not approach the vehicle. Create a safe zone and contact the appropriate response units in your area. **DO NOT USE FLARES.**

Electric

Examples of identification symbols for electric-fueled vehicles are:

Look for an electric charging port on the side or front of the vehicle, the electric logo, a stepped-up roof line or a distinctive profile.

Locating the Electric Batteries

These vehicles are powered by batteries, as high as 300 volts, usually located under the hood, in the trunk or under the vehicle. A separate, traditional 12 volt battery is still needed to operate the vehicle's electric features such as the radio or headlights.

Handling emergency incidents

If there is no fire or battery liquid leak, carefully approach the vehicle, turn off the driver's off/on switch, and set the parking brake or use wheel chocks to secure the vehicle.

If smoke is visible, **NO ONE SHOULD APPROACH THE VEHICLE** without self-contained breathing apparatus. Toxic fumes and vapors from damaged batteries can be carried in the smoke or steam.

If the vehicle is on fire, or an obvious leak is detected, do not approach the vehicle. Secure the scene with non-sparking markers or cones and call the appropriate response units. DO NOT USE FLARES!

When an electric vehicle has been in a severe crash and the normal safety features have been compromised, avoid approaching the vehicle when there is arcing under the hood.

Never cut into the battery pack or the traction cable, even if the high voltage has been shut down, because the battery pack can remain charged.

Since there still may be toxic fumes present around the vehicle after the fire is contained, only those with proper protective gear, equipment and training should participate in the cleanup.

Final thoughts...

- *Identify the alternate fueled vehicle by its special markings and equipment. Since most vehicles are modified, the Vehicle Identification Code (VIN) will not help identify the vehicle.*
- *When approaching or working around any alternative-fueled vehicle, first stabilize and secure it by setting the brakes and utilizing wheel chocks or other forms of cribbing, especially if the vehicle is upside down or on its side. Turn off the ignition.*
- *Alternative fuel emergencies require non-sparking items such as cones to secure the scene. DO NOT USE FLARES!*
- *Methanol and ethanol may burn bright blue and the flames may be almost invisible on a clear day.*
- *When approaching electric vehicles, be aware of toxic vapors, gases, and fumes, even after a fire is extinguished. Avoid contact with fluids on the vehicle or the ground run-off, as some may cause burns. However, if there is no fire, smoke or battery liquid leaks, you may approach the vehicle, turn off the off/on switch, set the drive train parking brake (use wheel chocks if necessary) and look for the switch to shut down the high voltage.*
- *When vehicles at an incident are transporting alternative fuels as cargo or if a fueling station is involved, call the local HazMat services and keep everyone away.*
- *CNG containers have been tested for their resistance to crashes and other external forces such as gun shots. Dangerous leaks can come from ruptured connection fittings and lines.*

- *Emergency personnel should participate in prevention programs in the community. For example, if a company has a fleet of alternative-fueled vehicles, encourage them to understand these issues. Companies should contact their local fire services, HazMat team, or Local Emergency Planning Committee for copies of available pre-incident plans in the community.*

Post-crash safety precautions are critical, and it is imperative that emergency personnel familiarize themselves with the differences between alternative and conventional fuels.

FOR MORE INFORMATION:

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Electric Transportation Coalition
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DOT HS 808 400 June 1996

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