

CLEAN CITIES LEARNING PROGRAM FIRST RESPONDER SAFETY TRAINING OVERVIEW

The Clean Cities Learning Program First Responder Safety Training educates first responders on how to respond safely to a vehicle accident involving alternative fuel and advanced technology vehicles. This comprehensive information is organized into four separate modules to address the primary alternative fuel and advanced technology vehicles used on the road today.

Modules include:

- Biofuels and Biofuel Vehicles
- Gaseous Fuels and Gaseous Fuel Vehicles
- Hydrogen and Hydrogen-Powered Vehicles
- Electric Drive Vehicles

The Clean Cities Learning Program First Responder Safety Training also prepares first responders to deal with the media and respond appropriately and effectively to inquiries related to alternative fuel and advanced technology vehicle accidents.

The Clean Cities Learning Program First Responder Safety Training features useful reference materials, including a workshop booklet and a Quick Reference Guide intended for on-scene use. These materials, along with the comprehensive information presented during the training, provide first responders with the information and preparation necessary to properly respond to incidents and inquiries involving alternative fuel and advanced technology vehicles.

- **Protects the Environment.** Natural gas and propane are nontoxic and present no threat to soil, surface water, or groundwater in the event of a spill.
- **Vehicle Reliability and Performance.** Gaseous fuel vehicle users report service lives that are two to three years longer than comparable gasoline or diesel vehicles and extended time between required maintenance.^{3,4}

INTRODUCTION TO: GASEOUS FUELS AND GASEOUS FUEL VEHICLES

The First Responder Safety Training Gaseous Fuels and Gaseous Fuel Vehicles module focuses on compressed natural gas (CNG), liquefied natural gas (LNG), and liquefied petroleum gas (LPG), more commonly referred to as propane, as well as the vehicles that use these fuels. There are more than 268,000 gaseous fuel vehicles on the road today in the U.S., and this number is expected to increase.¹



Natural gas vehicle emblem. Source: NAFTC

Benefits. Gaseous fuels and gaseous fuel vehicles are beneficial in many ways.

- **Increases Energy Security.** The United States imports more than 60% of its petroleum. Most of the natural gas and propane consumed in the United States is produced domestically and distributed via an established infrastructure.
- **Reduces Emissions.** Compared with conventional vehicles, gaseous fuel vehicles produce lower amounts of harmful emissions. Natural gas vehicles produce lower amounts of nitrogen oxides, carbon monoxide, particulate matter, toxic and carcinogenic pollutants, and carbon dioxide (CO₂). The use of propane vehicles can also lower CO₂ and other emissions.



Natural gas vehicle. Source: National Renewable Energy Laboratory (NREL) Photographic Information eXchange (PIX) #16667

¹ Energy Information Administration (EIA), Alternatives to Traditional Transportation Fuels, 2008.

² EIA, Annual U.S. Crude Oil Supply & Disposition, 2008.

³ Alternative Fuels & Advanced Vehicles Data Center, What is a Natural Gas Vehicle? Accessed May 19, 2010.

⁴ National Propane Gas Association, Propane-Powered Fleets, Accessed May 20, 2010.

Training Objective. The Gaseous Fuels and Gaseous Fuel Vehicles module will provide first responders with the information, tools, and resources necessary to prepare for and respond to incidents involving gaseous fuel vehicles.



Propane decal on a school bus. Source: NAFTC

Training Components. The Gaseous Fuels and Gaseous Fuel Vehicles module will familiarize first responders with the key properties and characteristics of CNG, LNG, and propane, as well as important safety considerations related to gaseous fuel vehicles, including detailed information about how gaseous fuel vehicles differ from conventional diesel and gasoline vehicles. The training will also include:

1. Review of safety equipment necessary to properly respond to an incident involving a gaseous fuel vehicle.
2. Methods to identify gaseous fuel vehicles at the scene of an accident.
3. Recommended practices for approaching and securing gaseous fuel vehicles.
4. Vehicle extrication procedures specific to gaseous fuel vehicles.
5. Specific information about how to effectively manage a gaseous fuel vehicle fire, fuel spill, or leak.

After completing this training, first responders will have the knowledge and skills necessary to confidently and safely confront and handle accidents involving gaseous fuel vehicles.



Propane decal on a shuttle bus. Source: National Renewable Energy Laboratory (NREL) Photographic Information eXchange (PIX) #13690

BACKGROUND

Alternative fuel and advanced technology vehicles play a critical role in today's efforts to reduce U.S. dependence on petroleum, helping to secure our nation's energy resources through the use of domestic and renewable fuels and fuel-efficient technologies. Additionally, alternative fuel and advanced technology vehicles can assist in reducing harmful emissions, including greenhouse gases such as carbon dioxide (CO₂), both through the use of cleaner burning fuels as well as emissions reductions that result from decreased fuel use. Reduced dependence on petroleum is important to national security while improved air quality is tied directly to improved human health.

Many resources have been at work to bring the alternative fuel and advanced technology vehicles industry to the place it is today, and education and outreach are extremely important to its continued growth and success. A key element of this education and outreach is training for first responders. The number of alternative fuel and advanced technology vehicles on the road will only increase, and first responders must be properly informed about the ins and outs of the available fuels and technologies. To help ensure their safety and the safety of others, first responders must not only understand how alternative fuel and advanced technology vehicles differ from conventional vehicles but also be familiar with the unique considerations and response procedures surrounding these vehicles.

www.cleancities.energy.gov

The U.S. DOE Clean Cities Program is a government-industry partnership designed to reduce petroleum consumption in the transportation sector by advancing the use of alternative fuels and vehicles, idle reduction technologies, hybrid electric vehicles, fuel blends, and fuel economy measures.

www.naftc.wvu.edu/cleancitieslearningprogram

The *National Alternative Fuels Training Consortium* is the only nationwide alternative fuel vehicle and advanced technology vehicle training organization in the U.S.