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.

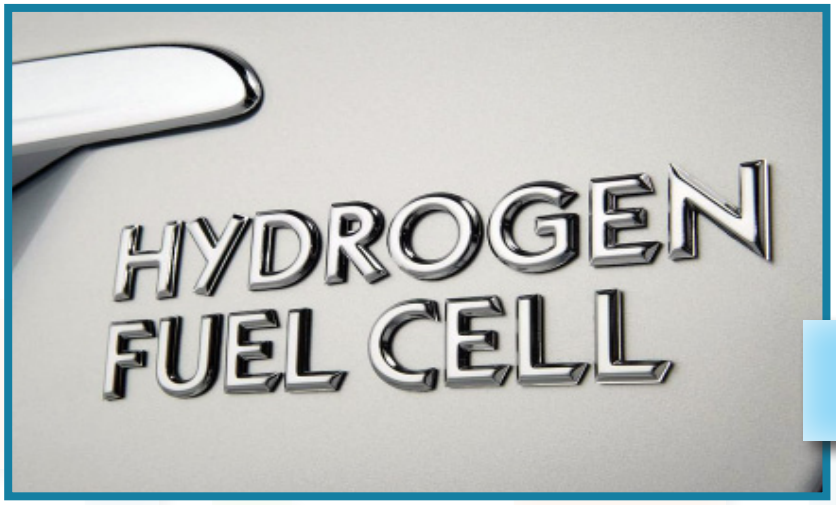
INTRODUCTION TO:
HYDROGEN AND HYDROGEN-POWERED VEHICLES

The First Responder Safety Training Hydrogen and Hydrogen-Powered Vehicles module focuses on hydrogen as a vehicle fuel as well as the vehicles that use hydrogen, including internal combustion engine hydrogen-powered vehicles and fuel cell electric vehicles (FCEVs). As of 2008, about 300 hydrogen-powered vehicles were in use in the United States, but significant research and development efforts are underway to make these vehicles commercially available in more areas of the country. [1]

FCEV. *Source: National Renewable Energy Laboratory (NREL) Photographic Information eXchange (PIX) #15716*

Benefits. Hydrogen and hydrogen-powered vehicles are beneficial in many ways.

- Increases Energy Security. The United States imports more than 60% of its petroleum. Hydrogen can be produced domestically from a variety of resources, including natural gas, coal, and nuclear power.
- Promotes the use of Renewable Resources. Hydrogen can also be produced from renewable resources such as solar energy, wind, and biomass.
- Reduces Emissions. Hydrogen-powered vehicles do not emit the harmful pollutants that come from conventional fuel use.



Hydrogen-powered vehicle badge. *Source: NAFTC*

[1] U.S. Energy Information Administration, Alternatives to Traditional Transportation Fuels 2008.
[2] EIA, Annual U.S. Crude Oil Supply & Disposition, 2008.

Hydrogen fuel cell bus. *Source: National Renewable Energy Laboratory (NREL) Photographic Information eXchange (PIX) #17239*

Training Objective. The Hydrogen and Hydrogen-Powered Vehicles module will provide first responders with the information, tools, and resources necessary to prepare for and respond to incidents involving hydrogen-powered vehicles.

Training Components. The Hydrogen and Hydrogen-Powered Vehicles module will familiarize first responders with the key properties and characteristics of hydrogen, as well as important safety considerations related to hydrogen-powered vehicles, including detailed information about how hydrogen-powered 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 hydrogen-powered vehicle.
2. Methods to identify hydrogen-powered vehicles at the scene of an accident.
3. Recommended practices for approaching and securing hydrogen-powered vehicles.
4. Vehicle extrication procedures specific to hydrogen-powered vehicles.
5. Specific information about how to effectively manage a hydrogen-powered 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 hydrogen-powered vehicles.

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 (CO_2), 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.

Acknowledgment: This material is based upon work supported by the U.S. Department of Energy Clean Cities Program under Award Number DE-EE0001696.