



fact sheet

Hydrogen Use and Safety

Hydrogen, the lightest and most common element in the universe, has been safely used for decades. In the United States alone, more than nine million tons of hydrogen are produced annually and used to make products like gasoline, glass, margarine, soap, vitamins, peanut butter, toothpaste and silicon chips. In the 1950s, the National Aeronautics & Space Administration (NASA) began using hydrogen as a fuel. Today, automotive and energy companies are using hydrogen to fuel demonstration vehicles with a goal of commercial viability.

Hydrogen – A safe, clean fuel for vehicles

Hydrogen is non-toxic, non-corrosive and completely benign. It doesn't harm the environment or public health. Because it is so light—14 times lighter than air—it quickly dissipates if it were to leak. Contrast hydrogen with the effects of oil and gasoline spills and it's easy to see why hydrogen offers such an exciting future!

Hydrogen and fuel cell vehicles can help our nation reduce its consumption of fossil fuels. In a fuel cell vehicle, hydrogen combines with oxygen to produce an electric current that powers an electric motor. A fuel cell vehicle has a smooth, quiet ride—and the only emission from the tailpipe is water vapor.

Misconceptions about the past

In 1937, the airship Hindenburg had a tragic fire when docking in New York. The fire gave hydrogen a misleading reputation. Hydrogen was used to keep the airship buoyant, but did not cause the fire. NASA scientists found that the Hindenburg's outer shell was coated with a compound similar to what is now used in solid rocket fuel. When the ship docked, a static electric charge ignited the coating. In the pictures, one can see the hydrogen escaping as the ship burns.

Respecting flammable fuels

The very property that makes all fuels useful also makes them potentially dangerous. It is important know the properties and safely handle all fuels like gasoline, diesel, natural gas and hydrogen.

Today, every fueling station and every vehicle has built-in safety systems. The systems are different depending upon the type of fuel.

With every fuel, the most important safety consideration is



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avoiding leaks, thus avoiding the opportunity for fuel to ignite. Fuel cell cars and hydrogen fueling stations are designed to prevent hydrogen from leaking with redundant systems to shut down automatically if an accident occurs.

Fill 'er up with hydrogen

When you pull into a gas station today, you rarely think about safety. Most people are aware of the basics of safety, such as not smoking, not using cell phones and not filling the car with the engine running. In some ways, hydrogen stations will be like traditional gas stations. Many of the same safety precautions will apply, like grounding to prevent static electricity. Others are slightly different. For example, because most hydrogen is stored as a compressed gas, the station and vehicle tanks have pressure release valves. If the pressure becomes too great, the valves open to safely vent the hydrogen.

One benefit of refueling with buoyant, gaseous hydrogen is that it does not drip or pool as a liquid fuel can. It also has no smell or color—quite a change from the fuel most of us use today!

Fueling Takes Only Minutes

Refueling your hydrogen fuel cell vehicle won't feel all that different. You'll still hook up a nozzle to a fueling receptacle on your car. In this case, though, the nozzle will be securely connected to your tank to prevent hydrogen from escaping.

Nozzles used today are different enough to make it impossible to accidentally fuel a fuel cell vehicle with gasoline or natural gas. Many vehicles also have a communication cable with the dispenser. The tank can actually tell the dispenser when to start and stop refueling.

On the Road Today

Fuel cell vehicles are on the road today. In California, about 135 passenger vehicles and transit buses have been placed into operation. If you live in the Los Angeles, San Francisco or Sacramento area, keep your eyes open for these clean, quiet vehicles. They'll be the cars, SUVs and buses with just a little steam coming from the tailpipe!

Hydrogen Safety Examined

Government and industry have decades of experience designing and conducting safety tests for vehicles and transportation fuels. That same diligence and accumulated experience will be applied to hydrogen fuel cell vehicles with collision, fire and leak tests. In some respects, hydrogen already has been found to be as safe as gasoline and other fuels we commonly use today.

In fact, the U.S. Department of Energy compares hydrogen very favorably to other fuels.

Companies that manufacture hydrogen fuel cell vehicles and build hydrogen stations will use many safety features. These features will be validated through safety tests.

Ultimately consumers will play a critical safety role. The more aware you are of the fuels you use, the safer the transition to hydrogen will be. Someday soon, fuel cell vehicles may become as much a part of our lives as our gasoline powered cars.

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