



U.S. Department of the Interior  
Bureau of Land Management

# Helium Fast Facts

Fact Sheet—BLM New Mexico Amarillo Field Office

## Helium: Questions and Answers

### ***What is helium?***

Helium is an odorless, colorless, and tasteless gas. Helium, more than 99.9 percent pure, is also used in liquid form at -452 degrees Fahrenheit.

### ***Where does helium come from?***

Helium occurs with other gasses in pockets beneath the Earth's surface. The most economical source of helium is natural gas, all of which contains some helium. Natural gas in the States of Texas, Kansas, Colorado, Utah, and Wyoming is richer in helium than what has been recovered from other States.

### ***How is helium produced?***

When a gas pocket containing economically recoverable amounts of helium is found, a well is drilled to release the gas. It travels by pipeline to a processing plant where the helium is separated from the other gasses. One method of separation is a cryogenic process, which uses cold temperature differences to split the components. Another process, membrane filtration, uses molecular size difference to split components.

### ***What is helium used for?***

Today, helium plays a prominent role in medical imaging (magnetic resonance imaging), fiber optics/semiconductor manufacturing, laser welding, leak detection, superconductivity development, aerospace, defense, and energy programs.

### ***Is helium renewable (does it naturally replenish itself after humans use it)?***

No, helium is a non-renewable resource. That is why the Federal Government stored 44 billion cubic feet of helium in a natural gas reservoir at Cliffside, just outside of Amarillo, Texas. Helium was injected into porous rock 3,000 feet below the Earth's surface during the 1960s. This rock holds gas like a sponge holds water. Two layers of calcium anhydrite cover the rock, acting as a lid. The sides are surrounded by water.

### ***Is helium harmful to humans or the environment?***

Helium is an inert gas that is not harmful to the environment or to humans. However, asphyxiation can result from its use in an oxygen-poor environment, and liquid helium is cold enough to "burn" human skin.

### ***How did the government get into the helium business?***

The Bureau of Land Management's Amarillo Field Office is the only government-run helium operation in the Nation. This effort began in 1917 when the War Department wanted to find a non-flammable gas to use in blimps. By the time World War I ended, there was enough helium produced for 2 or 3 blimps. The Amarillo Plant was opened in 1927 for research purposes, and during World War II the demand for helium boomed.

### ***What is the government's role in helium production today?***

Helium was injected into the reservoir in Cliffside, Texas between 1963 and 1973. Today the Amarillo Field Office pumps helium from storage to the Crude Helium Enrichment Unit where it is enriched to 78 percent helium, 21 percent nitrogen, and less than 1 percent methane. This crude helium is sold to private industry for refinement and distribution. The government also conducts surveys to discover helium supplies and analyzes natural gas samples from around the world.

## Helium Uses

- Filling party balloons.
- Widely used as an inert gas shield for arc welding.
- High-speed push gas inside air-to-air missiles for guidance corrections.
- Protective gas in growing silicon and germanium crystals, and in titanium and zirconium production.
- Since it is non-radioactive, it is used as a cooling medium for nuclear reactors.
- A mixture of 80 percent helium and 20 percent oxygen is used as an artificial atmosphere for divers and others working under pressure.
- Cryogenics and superconductivity.
- Rare document preservation.
- As a gas for supersonic wind tunnels.
- Pressurizing agent for liquid fuel rockets.
- Leak detection agent for extremely small leaks.
- Nuclear detonation simulations (using conventional explosives).
- Isotopic dating by helium ratios (seawater, ocean beds, etc.).
- Helium/neon lasers.
- Helium cardio-pulmonary resuscitation pump.
- Helium filled border patrol AEROSTATH monitoring blimps.