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Helium supply deflated

Production shortages mean some industries and partygoers must squeak by

By **MARK BABINECK**

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AMARILLO — Helium, helium, everywhere, nor any puff to squeak.

With apologies to poet Samuel Taylor Coleridge, that's been the story at some florists' and party shops in Texas and the rest of North America, even though the epicenter of the world's helium supply is right here.

"We're so close to the edge now, and every molecule counts," said Leslie Theiss, who oversees one-third of the world's helium production as manager of the U.S. Bureau of Land Management's field office in Amarillo. "We're walking the tightrope right now."

The problem isn't overuse by clowns, blimps or Alvin and the Chipmunks wannabees. Rather, expected production from two large international sites is temporarily down, crimping supplies and raising the specter that some balloon-festooned celebrations this fall might be a little more down-to-earth than planned.

Things could get worse before they get better. Starting Wednesday, production at the BLM's National Helium Reserve complex near Amarillo will be curtailed for a week to 10 days for annual maintenance.

"That's going to make things tight again," Theiss said. "We need everybody to function."

The current woes should be resolved soon, and the government is sending out helium as fast as it can. But in about 20 years, most of the reserve should be depleted under a 1996 privatization law.

For scientists, it's an ignoble time for a noble gas.

"Physicists in particular tend to get almost emotional over helium," said Robert Park, a University of Maryland physics professor and officer of the American Physical Society. "Almost all modern research that involves very low temperatures ... depends on helium."

Just because the BLM is slowly deflating the U.S. reserve doesn't mean shortages will persist, said Gary Ciesar, president of Houston-based Air Liquide Helium America Inc. There are other domestic sources, including Exxon Mobil's plant in Wyoming, and helium is being captured at massive natural gas liquefaction plants being built around the world.

"I think helium always will be in the pipeline and market economics will drive its recovery," Ciesar said.

Producing helium

Sir Joseph Lockyer discovered helium in England by viewing the sun through a spectroscope in 1868, and it was first unearthed in 1895.

Although the second-most-common element in the universe after hydrogen, thanks to giant factories known as stars, helium is rare on this planet and typically found with natural gas.

On Earth, helium is produced by radioactive decay of elements such as thorium or uranium. And geologically speaking, the conditions in the Panhandle were more ripe for helium than virtually anywhere else.

Though most widely known for its whimsical uses — such as causing voices to squeak because sound travels more quickly through it than air — helium was a military commodity when the U.S. government initially began producing it as a safe replacement for potentially explosive hydrogen in dirigibles.

By World War II there were two government helium refineries in Amarillo, which for decades has held the heaviest concentration of the lightest inert gas and proudly bills itself the "Helium Capital of the World."

The government started reinjecting helium into the old gas fields north of town in 1960 to create a reserve. In 1968, the city even celebrated the element's centennial of discovery by unveiling the 55-foot steel Helium Monument, which also serves as a sundial and a time capsule, filled with helium, of course.

But a source of pride for the region became a source of ridicule in Congress. Helium storage was Exhibit A for government waste by the 1980s and 1990s for having racked up \$1.4 billion in intragovernmental debt.

Led by anti-helium crusader Rep. Christopher Cox, R-California, Congress finally passed a privatization bill in 1996 that called for steady liquidation of the reserve through 2015, although Theiss said it probably will take until the mid-2020s.

Ironically, the reserve might be in the black before the helium's finally gone.

"We've been paying back the debt, and this year we sent back \$160 million," Theiss said.

"We do not operate on appropriated dollars, so we run the entire operation on funds we make from managing the operation."

The debt is down to about \$914 million and should be paid off by 2015 if not before, she said.

Government-mandated dispersal of the reserve called for closure of the two federal refineries and construction of a processing plant on the Cliffside Field near the city.

The plant, which looks like a compact oil refinery surrounded by cow pastures, takes in helium from surrounding wells and pulls out methane, nitrogen and other impurities, then pipes the raw helium to a string of private sites between here and central Kansas that purify and market the final product.

"Our equipment is designed to produce 6.1 million cubic feet per day, and we've been pretty successful at getting that done," said Theiss, who has about 28.6 billion cubic feet in storage. "But demand is outstripping the market right now."

'There is a shortage'

Deborah Muse learned the hard way how tenuous the helium supply is.

Recently, routine reorders for her American Balloon and Novelty Co. near downtown Houston have been met with bad news.

"There have been a few weeks when I couldn't get any helium at all because they were just out," Muse said.

Muse again has canisters in stock, although she's wary.

"I'm not trusting (suppliers) too much, so I'm trying to get ahead on tanks," said Muse, who recalled just one other similar shortage in her 21 years in the business.

Others have been more fortunate. Arne's Warehouse Store, one of Houston's largest party suppliers and a fixture in the Sixth Ward, reports no problems and doesn't anticipate any.

Ciesar said novelty use is at the end of the supply chain, and therefore most sensitive to shortages. He hadn't heard about any problems in other uses, including science, space, welding, cryogenics, MRIs and deep-sea breathing mixtures.

Ciesar, who has dealt in helium since the 1980s, said steady growth in demand comes from traditional sectors such as metal fabrication, where it gives arc welders nonflammable environments.

Mike Havard, co-owner of Havard Welding in Galena Park, said he's kept his customers supplied.

"There is a shortage. There is some concern of allocation," said Havard, who has maintained a supply of canisters despite heavy demand.

In fact, Ciesar said the rise and fall of helium supplies is a decent economic indicator, so it shouldn't be a surprise that supplies are tight just as stock indexes are setting records.

Ciesar said users are working to conserve where they can, such as using less helium in MRI machines. Allard Beutel, a NASA spokesman, said the agency is trying to do more with less.

"During shortages in the market, we work with them to make sure we're not using more than we need to and to cut back," said Beutel, who added that the space program uses helium to pressurize rocket propellant.

For scientists such as Park, or the 17 BLM employees at Cliffside, that's not much solace.

Unless there's a breakthrough in helium-producing nuclear fusion, it's a finite resource that's heading toward extinction at Amarillo. The reserve is supposed to keep 600 million cubic feet, but workers here are skeptical that will happen.

And if there's a major advance in superconducting power transmission, which in some forms needs helium's supercooling ability, Park frets supplies could be scarce just when mankind really needs it.

It's enough to make a physicist almost emotional.

"Nothing is really being done to save helium from being lost forever," Park said.

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