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Helium: harder to come by

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Mickey Derrigo uses helium to inject life into a party.

Dr. Gianfranco Vidali uses the lighter-than-air element in its liquid form to pry open the secrets of life.

But, whether it's for Syracuse University physicist Vidali's research into the fundamentals of the universe or the balloon bouquets crafted by the Derrigos' North Syracuse decorating supply business, helium is becoming harder to obtain. And if that hasn't driven the price higher yet, it could soon, users say.

That could mean more than inflating the cost of party balloons or putting a lid on pure research like Vidali's.

Helium is used in a variety of industrial applications, from manufacturing televisions and computer chips to arc welding.

Anyone who has taken the long, stock-still diagnostic trip through the doughnut of a magnetic nuclear resonance machine has come near liquid helium it's used to cool the magnets of the device.

In fact, the booming variety of uses for helium and the burgeoning number of factories overseas where it's being used are among the reasons why supplies are tightening.

The other is that, while demand is soaring, production is lagging.

The shortage and resulting price inflation have been felt by Vidali and colleagues at SU who use liquid helium in their research.

Under pressure, liquid helium is the coldest liquid in the universe. Vidali uses 60 liters of it, about 16 gallons,

every week or two in an apparatus that duplicates the incredible cold of deep space, about 10 degrees Kelvin, or minus 441.7 degrees Fahrenheit.

With that device, he studies how atoms of hydrogen, the most basic element in the universe, join on grains of stardust to form molecular hydrogen. These molecules intervene in the formation of stars and in the construction of more complex molecules that go into the building blocks of life, Vidali said.

Several months ago, Praxair Inc., the company that supplies SU researchers with liquid helium, informed them that it was no longer economical to supply the Upstate market.

"That put us in a panic mode," Vidali said.

A physics colleague, Dr. Britton Plourde, called all the other suppliers.

"No one wanted to sell us helium at any price," Vidali said.

Praxair later relented but increased the price. Liquid helium that used to cost \$4.50 per liter now costs the department \$9, not including a 50 percent premium the researchers pay to the university to recover laboratory, administration, utilities and other costs, Vidali said.

Rising helium costs were not part of the calculations when Vidali sought grants from NASA and the National Science Foundation, the groups that finance the bulk of his research. If the trend continues, he said, he may need to cut other budget areas, slowing the pace of his research. That could mean fewer graduate and undergraduate students to assist him, less money for travel, and the like.

"Right now we are basically trying to get some important experiments done and hope for the best," he said.

The helium shortage also is starting to be felt where the public likely would first notice it - the party stores that fill balloons for customers, sell or rent do-it-yourself helium tanks, or decorate clients' parties.

Derrigo, owner with wife, Janet, of Mickey's Balloons in North Syracuse, said their suppliers have raised helium prices five times in the past year. They're currently paying \$51 for 200 cubic feet, including delivery charges, up from \$29 to \$31 for the same volume a year ago, Mickey Derrigo said.

"You order 40 tanks, you might get half if you're lucky," said Derrigo, whose Bear Road company builds balloon bouquets for walk-in customers and resells helium to florists, among other things.

"I just worry about February. I go through tons of it" around Valentine's Day, he said.

Ironically, helium is the second-most abundant element in the universe, Vidali said, "but you wouldn't know it on Earth."

Crude helium is obtained from the Earth's crust in the course of pumping out natural gas. But it's not found in every natural gas deposit, only those where the radioactive decay of nearby uranium has produced helium, and then only when certain other conditions are met. In the United States, it's obtained mainly from natural gas deposits in Texas, Oklahoma and Kansas.

The U.S. government set up a Federal Helium Reserve in the 1920s outside Amarillo, Texas. The reserve, now under the Interior Department's Bureau of Land Management, stopped refining the gas in 1996 under the Helium Privatization Act, but continues to provide high-grade crude helium to private refiners out of its stockpile.

Today, the reserve provides about 42 percent of the nation's helium supply, Helium Reserve Manager Leslie Theiss said.

There's a lot of competition for helium, Theiss said. China and Southeast Asian countries are gobbling up more of the gas as their economies and manufacturing soar. The U.S. exported 1.9 billion cubic feet of helium in 2006, up 39 percent from 2002, according to the U.S. Geological Survey's latest Mineral Commodity Summary.

Meanwhile, refineries being built in Algeria and Qatar haven't started producing large quantities as quickly as expected.

If that wasn't enough, the federal stockpile is dwindling as its sources tap out. Theiss said the

Helium Reserve is trying to stretch out its supplies to 2015.

Besides supply pressure, rising energy, transportation, labor and regulatory compliance costs have been driving costs higher, the USGS commodity summary said. Gaseous helium went for \$80 to \$85 per 1,000 cubic feet in 2006, up 12 percent to 15 percent from the previous year, and the trend was not expected to slow as the government's horde dissipated.

The government and private helium producers have set priorities for who gets helium. Theiss said federal law dictates that federal agencies get first dibs. But private companies won't short customers, such as the medical industry, from supplies, she said.

"The bottom of the food chain," Theiss said, "is the party folks."

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