

Full of Hot Air

By Reg P. Wydeven
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A couple of weeks ago, our family celebrated a wonderful Thanksgiving. Keeping with tradition, we woke up and watched the Macy's Thanksgiving Day Parade while we ate breakfast.

My favorite part of the parade is the gigantic balloons. My kids love the Spongebob balloon, while my favorite is Spiderman. While I love the balloons, I kind of take their presence for granted without really thinking about what's involved in having them in the parade. Each balloon is tethered to a car and takes about 90 people to handle. I'm hoping the handlers' voices get really high being that close to the helium.

A single balloon weighs about 400 pounds and it takes around 12,000 cubic feet of helium to inflate it. Between all of the parade's balloons, they use a total of approximately 300,000 cubic feet of helium, which would fill about three-and-a-half Olympic size swimming pools.

Of course, like everything else in the world, there are laws that govern the use of helium, which is a by-product of natural gas.

There is a Helium Resources department at the U.S. Bureau of Land Management. According to John Hamak, who is a lead petroleum engineer there, the largest deposits of helium on the planet are found in the United States, Algeria and Qatar.

Like natural gas, Earth's helium supply is finite. Many scientists feared our helium was being depleted, however, more recent studies have shown that it's not dwindling as rapidly as originally thought. The noble gas has the lowest melting and boiling points of any element, and can create frigid environments. As a result, it was originally used for airships and as a coolant during the Cold War and Space Race.

Today, helium is frequently used in cryogenics, to chill fiber optics in computer network cables, and for cooling superconductors in MRI machines. Because helium does not react with anything, it is safe to use for potentially volatile work, such as in underwater welding or for testing spaceflight fuel tanks.

Knowing America's propensity for using up natural resources, and our love for parades, in 1925 Congress passed the Helium Act.

The Act governed the use of helium to ensure it would not be exhausted. It also established the Federal Helium Reserve, which is a strategic reserve that holds over 1 billion cubic meters of helium gas. The gas is stored at the Cliffside Storage Facility, which is located just outside of Amarillo, Texas. The area is close to natural gas fields in southwest Kansas, plus the panhandles in both Oklahoma and Texas. These fields contain unusually high concentrations of helium.

In 1960, the Helium Act was amended to allow the U.S. Bureau of Mines to arrange for five private plants to recover helium from natural gas. To accommodate this, the Bureau built a 425-mile pipeline to collect the helium and deliver it to the Cliffside facility.

By 1995, however, the reserve was \$1.4 billion in debt. In response, Congress adopted the Helium Privatization Act of 1996, which allowed the Department of the Interior to start selling off the reserve over the next decade. However, in May of 2013, the House of Representatives voted to continue government oversight of the Helium Reserve.

So next year, when you're watching the Macy's Thanksgiving Day Parade, remember that a lot of thought, plus a lot of helium, goes into those balloons.

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