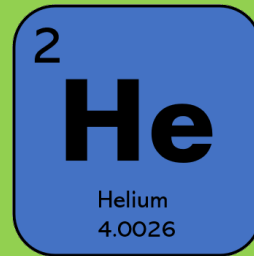


**Is the sky falling?  
Well, I suppose that would help.**



[Bezos](#), [Musk](#), [NASA](#), [Intel](#), [NVIDIA](#), [Netflix](#), [Amazon](#), [Google](#), and many others are helpless without it. Crippled, done, nada. What is this “magic” ingredient that is so necessary for their current success? [Helium](#). Not just for kids balloons and [silly voices](#), helium is integral to our major technological advances today. [Netflix stores its data](#) on 36 helium-filled drives that hold about 100TB of data. Helium increases hard drive storage capacity [by 50%](#) and reduces power consumption while doing it.

There have been [numerous articles](#) about depletion of helium reserves, increasing [global demand](#), and other [doom and gloom](#), the sky is falling, rhetoric. The fact is there are many advances in global production. And, worst case, the moon is full of [Helium-3](#), which is extremely rare on Earth but [100 million times as abundant](#) on the moon. So, a few more rocket launches, and we can tap that resource along with all the other unique minerals available there.

Hydrogen and helium make up 98% of the matter in the universe. The sun is approximately 75% hydrogen, 25% helium, plus traces amounts of oxygen, carbon, neon, nitrogen, magnesium, iron, and silicon. But, hydrogen is highly flammable (i.e. [Hindenburg](#)), limiting its usability.

Helium is the second lightest and second most abundant element and...

has the lowest boiling point of any element and cannot be solidified by lowering the temperature (which makes it popular as a cooling source for MRIs and electronics);

extremely abundant in space because it is so light; it is present in all stars;

most helium on Earth is the result of radioactive decay;

the greatest concentrations are found in natural gas, with concentrations as high as 7%.

In 1903, an oil drilling operation in Kansas produced a [gas geyser that would not burn](#). Chemists determined that the material included a concentration of 1.84% helium. This led to extraction of helium as a byproduct of natural gas, primarily for military use. [Military uses](#) today include cleaning up noisy signals in submarine detectors, reference point for heat guided missiles, spectroscopic and imaging, purging/pressurizing propulsion of rockets tanks, and cooling thermographic cameras.

The government established the [National Helium Reserve](#) in 1925 in Texas and banned the export of helium during times of scarcity. The Bureau of Land Management built a 425-mile pipeline from Kansas to Texas to store helium.

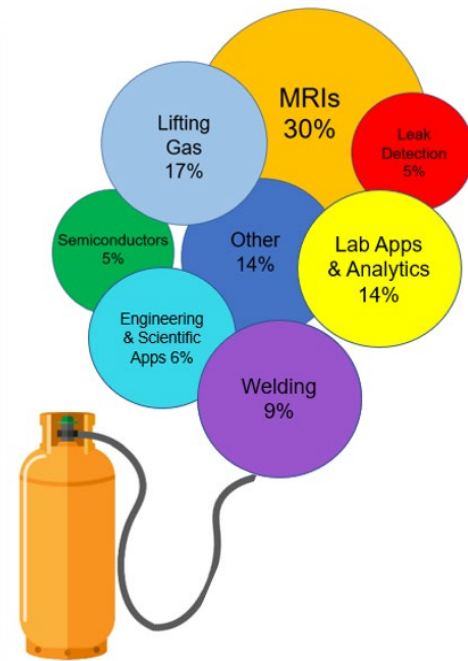
By 1995 a billion cubic meters of the gas had been collected and the reserve was \$1.4 B in debt leading to the desire to [phase out](#) the reserve. These reserves will be depleted by September 2021 as we move solely to privatization of helium production and storage.

Common uses for helium include hard drives, space flight, cooling magnets in MRIs, detecting leaks in air conditioners, scanning barcodes, preventing bubbles from getting trapped inside fiber optic internet cables during development, cooling and processing silicon during creation of semiconductor chips, specialized welding, missiles, rockets, observation balloons, and to inflate car airbags after impact.

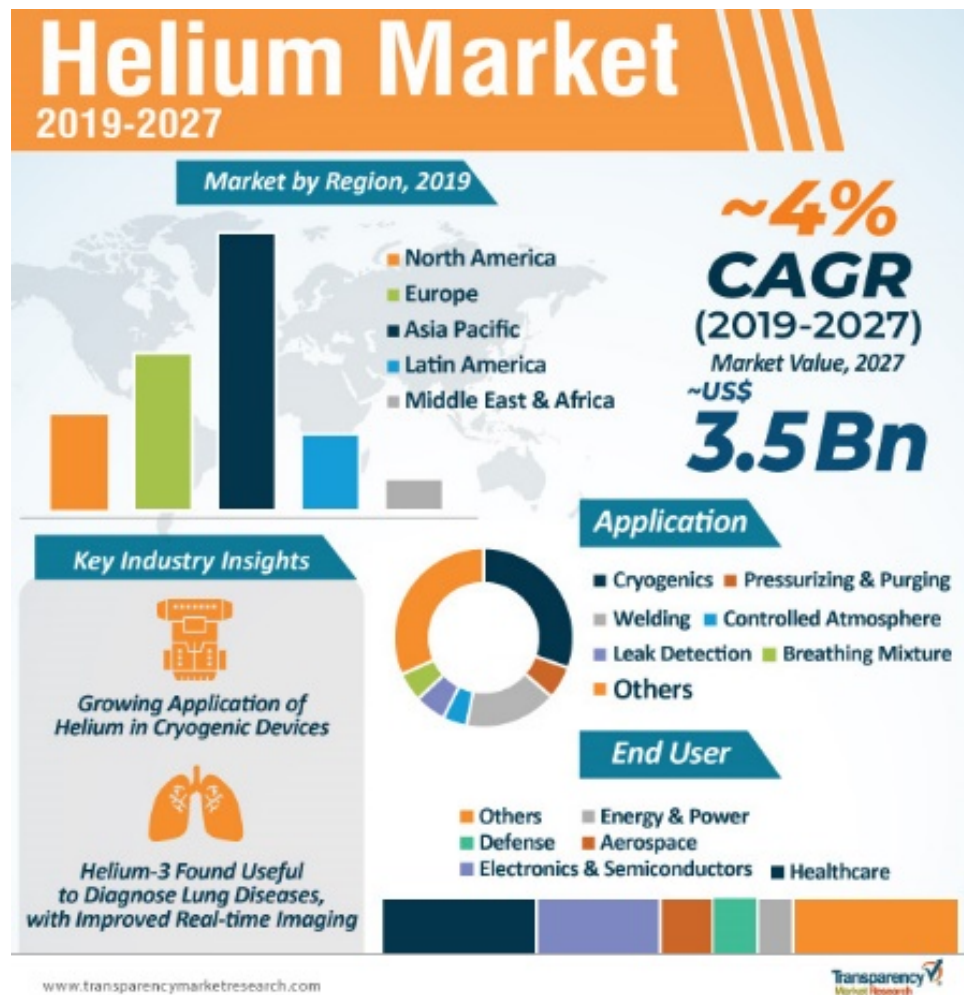
Global demand is predicted to grow at a CAGR of [4.65%](#) – particularly for MRIs, fiber optics, semiconductor manufacturing, and other electronics manufacturing. The United States is currently the world’s largest producer of helium. In 2019, the [United States generated 68 million cubic meters](#), Qatar produced 51 million, Algeria produced 14 million, Australia and Russia, the next largest producers, produced 4 and 2 million cubic meters, respectively.

The world is poised to meet this demand. Qatar has [two production facilities](#) and has become the largest exporter and the second-largest producer of helium gas in the world. One facility is the largest helium processing facility globally, with a daily production capacity of 17.3 million tons of liquid helium. Qatar’s North Dome gas field accounts for more than 28% of the world’s helium gas reserves; followed by Iran (which shares the field), Russia, and the United States. By the close of 2021, Qatar will reach nearly 35% of global helium production, with a total production capacity of 2.6 billion cubic feet per year.

Gazprom’s new facility in Siberia will increase Russia’s share in the global helium market to 25-30% of global helium demand within a few years. And, in North America, [Avanti Energy](#) acquired license production on 8500 acres in Alberta and 62K acres in Montana.



The [estimated value](#) of Grade-A helium (99.997% or greater) extracted during 2020 by private industry was about \$322M. Fourteen US plants (Arizona -1, Colorado - 2, Kansas - 5, Oklahoma - 1, Texas -4, and Utah - 1) produced crude helium that ranged from 50% to 99% purity. In 2019, estimated domestic consumption of Grade-A helium was 40 million cubic meters (1.4 billion cubic feet), and it was used for magnetic resonance imaging (30%); lifting gas (17%); analytical and laboratory applications (14%); welding (9%); engineering and scientific applications (6%); leak detection and semiconductor manufacturing (5% each); and other minor applications (14%). Medical use includes breathing mixtures to help reduce density (asthma, emphysema). A mixture of 80% helium and 20% oxygen is used as an artificial atmosphere for deep-sea divers and others working under pressurized conditions.



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