



How to Rise Above the Helium Shortage

NSF grants for UC physicians, scientists and researchers to work towards healthcare and research sustainability



Problem: Global Helium Shortage

- A rare and valuable resource, many industries use helium including healthcare, electronics, and aerospace
- A global helium shortage has developed as the world's supply of this finite gas has dwindled
- Helium cost has increased by more than 400% in the last 5 years, and the market is not expected to stabilize for years



Helium Production Issues

About 88% of helium is produced by Qatar and Russia, and recent changes to US policy have created multiple pressure points on the helium market:

- Qatar has decreased production indefinitely
- Russian plant maintenance and fires in 2021-2022 eliminated 26% of world helium production
- Russia-Ukraine war sanctions have delayed release of Russian helium (55% of world supply) to US market
- US Bureau of Land Management (BLM) previously managed most helium production in the US. In 2022, BLM awarded plant operations to a private company, eliminating ongoing supply to US strategic reserves, and removing protections and discounts to research institutions, including UC.



Helium Shortage Impact on UC

- Reduced helium supply risks UC's ability to perform critical Magnetic Resonance Imaging (MRI) for patient care and complete federally funded research projects
- Nuclear Magnetic Resonance (NMR) machine failure, delays in research, and halting infrastructure developments have already occurred within UC
- This jeopardizes UC's ability to provide effective healthcare, retain world class researchers and scientists, and secure future federal research funds



Reduced Helium Allocation

UC currently has two contracted helium suppliers:

- Airgas – at 60% allocation
- Matheson – at 65% allocation

UC was reduced to 60% allocation with our suppliers for most of 2022 with no increases in sight.

We hope to increase allocation through the RFP process, but this is not a permanent or guaranteed solution.



Environmental Factors

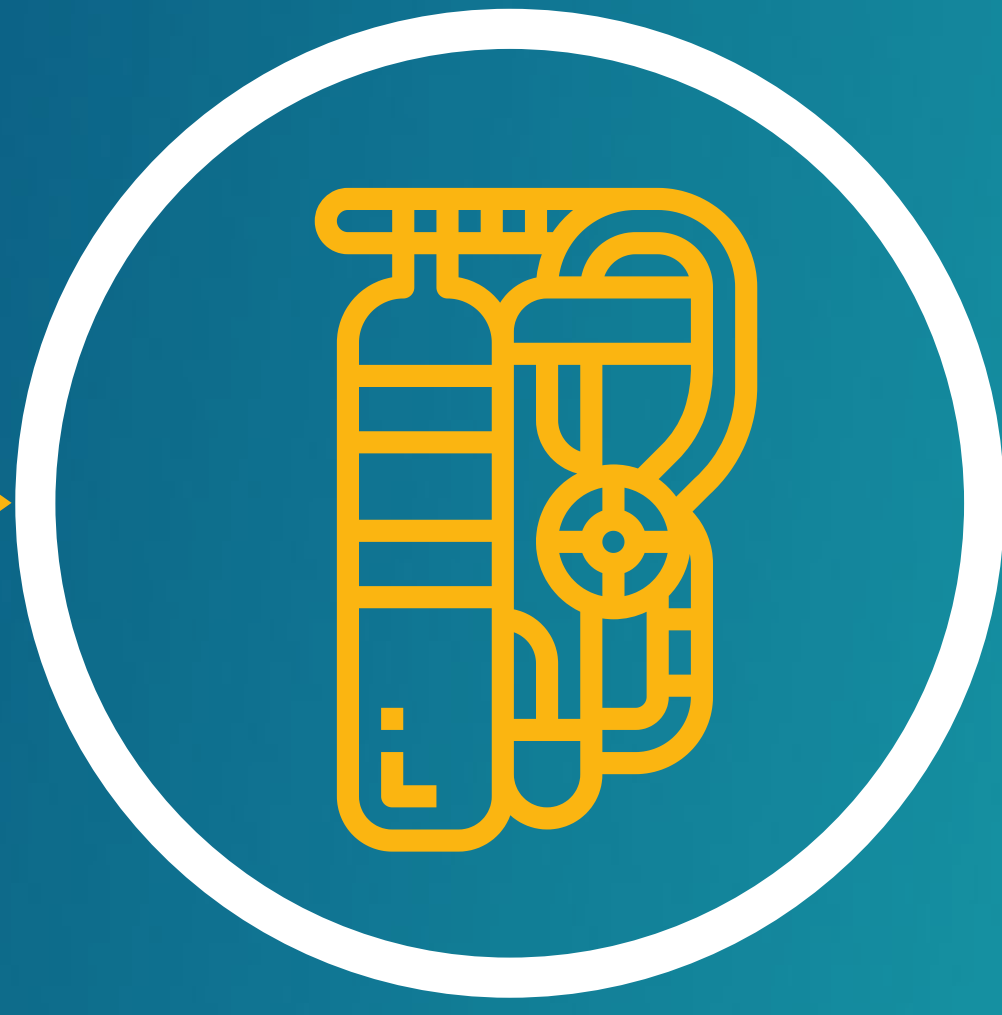
Produced from natural gas, the helium conversion process emits about .34 kilograms of CO₂ per liter of helium.

Reducing UC's helium reliance on world markets would eliminate 34 metric tons (75,000 lbs) of CO₂ emissions per year. (This does not include the extra energy required for extraction, transfer, machine, transportation, and delivery vehicle usage.)

Also, transporting and storing helium causes evaporation of 2-5% per day.

SOLUTION: Helium Recycling

The best way to reduce our carbon footprint, eliminate market volatility, and save research and institutional money is to install helium recapture, purification, and liquefaction equipment at UC research labs.



Helium recycling systems will protect UC's multi-million-dollar investments in costly NMR systems.

A team of UCSF physicians, scientists and researchers recently completed an NMR Core renovation to recycle helium, leading to cost savings of at least \$120,000 per year.

Scientists and researchers at UCLA initiated recycling efforts resulting in over 90% of helium recovery from MRI magnet use.



Federal Grants Available

This past year, UC worked with the federal government and key national scientific bodies to protect and ensure our helium supply.

These efforts have paid off!

The National Science Foundation (NSF) now offers grants for mid-scale research infrastructure equipment, including helium recapture systems, as part of the CHIPS & Science Act passed in late 2022.



Click APPLY Button for more Grant Information

Proposal Submission Deadlines:
October 16, 2023 –
November 15, 2023 (by 5 pm)

These NSF grants favor projects that:

- Show strong scientific merit
- Respond to an identified need of the research community
- Demonstrate readiness for implementation
- Include a plan to train students for implementation of mid-scale research infrastructures
- Involve a diverse workforce in research infrastructure development or associated data management.