

What the impending helium shortage tells us about the cost of government gridlock in an interconnected world

By **Joseph Ganem**

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This past Wednesday I received an email from my professional organization — the American Physical Society — with the subject line: "Urgent Helium Alert." The message called on me to contact Congress immediately to urge them to act on helium legislation so that the U. S. Bureau of Land Management can continue operations beyond September 30. According to the email: "Partisan gridlock threatens to diminish the US Helium supply by 50% on October 1st."

As I looked at the list of Congressional names and phone numbers provided, I tried to imagine what I would say to a staffer who might only think of helium as the element that keeps balloons and blimps afloat. As a physicist, I am aware of the importance of helium to a number of vital industries. But I would need to explain that curious fact on the phone to an overwhelmed staffer who has probably never thought about the economic sectors that rely on helium. I also wondered how many other essential commodities and services exist that, like helium, are never thought about until their supplies are threatened.

Most sectors of our economy depend on vast, intricate networks of public and private entities in order to function. Once on a flight, I found myself sitting next to an off-duty airline captain who was taking an open seat to return to his home. When he learned that I was a physics professor, he talked to me about his college experiences majoring in physics. We then had an engaging discussion about the physics of airplanes. I realized that as a person responsible for educating future pilots and aeronautical engineers, I was also part of the network needed to fly the plane we were on.

In fact, we rarely think about all the workers — public and private — needed to fly a plane. The designers, engineers and builders, the pilots and crew members, the baggage handlers, fuel truck operators and ticket agents, the air traffic controllers, TSA workers, FAA inspectors and maintenance workers, the airport administrators and bus drivers, the software programmers and many other jobs that would take too much space to list. If you are a person with enough money to purchase a plane ticket, it is in your self-interest to see to it that all of these people have a decent standard of living and adequate health care because you depend on them more than they depend on you. Simply having money isn't going to build and fly a plane safely to a place that you want to go.

Actually, in the 21st century, money by itself is meaningless. Those pieces of paper in your wallet, or more commonly computer bits that encode your bank account balances, have no intrinsic value. What we call money is a contract that provides access to vast interwoven public-private networks. As miraculous as a single modern airplane, or automobile, or telephone, or computer might be, none of these devices have much use outside of a network. Nor can these devices be built or maintained without a network. The functionality of these networks depends on millions of people, all working collaboratively, responsibly, and in good faith.

For example, the helium supply is an essential part of many networks. If helium availability were to cease, a great deal of university research would be disrupted and possibly damaged. Ironically, much of this research is federally funded. In addition, the manufacture of semi-conductor devices and optical fibers, all essential for our innumerable electronic devices, would be negatively impacted. Health care would be compromised because

hospital MRI machines would have to be shut down.

MRI (magnetic resonance imaging) is just one example of a successful public-private partnership. Magnetic resonance was discovered in university labs, and a great deal of research on the phenomena has been federally funded. However the use of it in medicine provides private jobs and profits and improves the health of millions of Americans. It makes no sense for Congress to shut down MRI machines by refusing to fund helium production.

I urge Congress to pass the helium legislation, and all the other legislation necessary for our economy to function. I urge politicians to stop repeating the fictional narrative that government is not vital to the function of our society. Most importantly, I urge us all to be more mindful of the innumerable ways that we are connected to each other. Our personal standard of living and well being depends on the standard of living and well being of all.

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