

BLOG

Helium-3 Supply Chain Challenge: Perception vs...

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Traditionally, Helium-3 (^3He) gas has been produced as a byproduct of U.S. and Soviet/Russian nuclear weapons programs. Tritium, an isotope of Hydrogen, is a key component of modern nuclear warheads. Over time (12.4 years for 50% decay), Tritium [decays](#) into ^3He gas. That gas was collected and stockpiled by the U.S. government over decades during the cold war between the U.S. and U.S.S.R. Tritium production, and thus ^3He production, scaled with the nuclear stockpile over those decades.

Reductions in weapons stockpiles following adoption of nuclear weapons reduction [treaties](#), beginning with the Intermediate-Range Nuclear Forces Treaty in 1989 and up to the new START treaty in 2010, resulted in significant

reductions in Tritium, and thus ^3He production.

The perception of a ^3He supply crisis is the result of decreased ^3He production and a period of increased consumption for Homeland Security radiation portal monitors.

Well, where's the gas?!

The Department of Energy (DOE) once sold ^3He through auctions to private corporations. As shown below, sporadic auctions of more than 1,000 liters were offered to the market until 2014. 70% of the [\$^3\text{He}\$](#) sold to Reuter-Stokes in 2008 was controlled by the National Nuclear Security Administration (NNSA) for the Second Line of Defense (SLD) program.

The sudden reduction of the ^3He stockpile led to a dramatic increase in cost and decrease in availability of the gas. The impact to the supply chain was immediate, as a shock to the system drove the price to all-time highs.

However, there is over 120,000 liters of ^3He gas contained in existing Reuter-Stokes detectors that can be reclaimed and recycled for upgrading next generation Radiation Portal Monitors and other [homeland security](#) applications.

Beyond detector recycling, the market has adapted to optimize the production of ^3He gas without relying on the weapons program's surplus.

Today, Reuter-Stokes still maintains the position as the world's leading consumer of Helium-3 gas. We have an inventory of ^3He ready to meet our customers' needs!

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