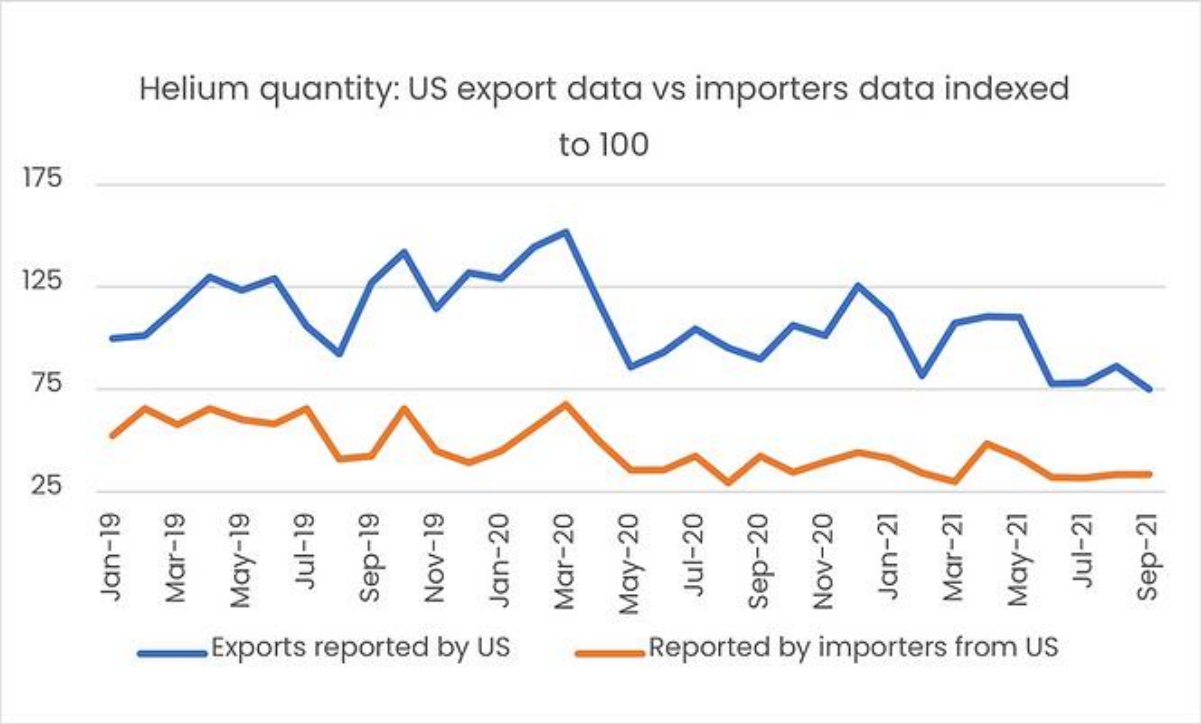
Below is a selection of articles that AKAP Energy has written on the topic of helium being removed from the US Critical Mineral List and the quality issues with the widely used data on the US helium market.

Jan 26, 2022

Removal of Helium from US Critical List using Flawed Export data

The US is proposing to remove helium from its Critical Minerals List, which we believe is using highly flawed data. AKAP Energy data show that the official US helium export data (presumably considered when coming to this decision) is incorrect and is dramatically over-stating US helium exports, on average we estimate that the actual US exports are <50% of what has been reported in the last few years. This is backed up by the USGS US helium supply balance which states: "substantial increases in exports reported in 2018, 2019, and 2020 suggest that domestic consumption declined, although no significant decline in U.S. helium consumption is thought to have taken place". AKAP Energy has done a deep analysis of what has been reported as US export data versus what has been reported by the corresponding importer from the US and in virtually all cases the US data is significantly over-reporting the quantities that are being exported, which makes it seem as if the US is in a more comfortable position than it actually is. Furthermore our data shows that exports have been falling and the most recent months show implied US exports being <30% of what was reported by the US in 2019 as exports.

Chart of US exporter data demonstrating US overstates exports: data reported by US versus data reported by aggregated importers



Feb 21, 2022

Helium Officially Removed from US 2022 Critical Mineral List

The U.S. Geological Survey announced its final updated critical minerals list confirming the removal of helium and uranium from the final list. Senate Energy and Natural Resources ranking member John Barrasso commented, "By removing uranium and helium from the critical minerals list, President Biden has signaled he accepts Russia's control over these resources."

The Energy Act of 2020 defines a "critical mineral" as a non-fuel mineral or mineral material essential to the economic or national security of the U.S. and which has a supply chain vulnerable to disruption. Critical minerals are also characterized as serving an essential function in the manufacturing of a product, the absence of which would have significant consequences for the economy or national security.

We breakdown these points and show that helium should qualify as a critical mineral based on this criteria:

"essential to the economic or national security of the U.S." – Helium is vital to main critical industries such as semi-conductor manufacturing in the US, needed for MRI machines to function, critical university research and for rocket launches to name a few.

"supply chain vulnerable to disruption" – The supply chain has been shown to be clearly susceptible to disruption. The largest supplier Qatar (1/3 of the global market), has been impacted by blockades in the past in 2017 and is subject to continued Middle Eastern unrest. The only meaningful source of global helium storage, the US BLM, has had frequent outages and is currently down again for mechanical and safety issues. The US' largest helium producer, La Barge in Wyoming accounts for 25% of the market – therefore a disruption to this plant for unplanned downtime will have a huge impact on the market. Outside of the US, helium production is dependent on LNG production, so if LNG production falls from a particular country, helium production will too. Finally, the most significant new supply coming to the market is from Amur in Russia, where there has recently been a plant explosion not to mention the political risk of relying on Russia.

"essential function in the manufacturing of a product" – Helium is clearly critical in the manufacturer of semi-conductors, MRI machines, airbags and fibre optic cables. These plants cannot function without helium.

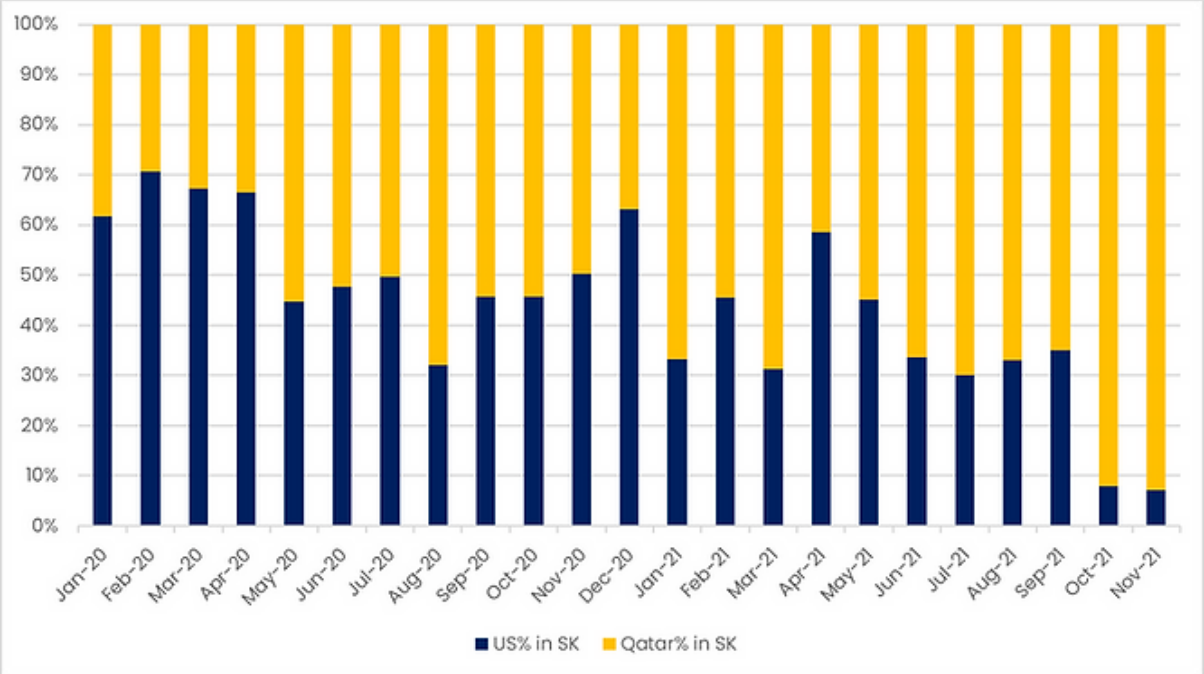
"the absence of which would have significant consequences for the economy or national security" – Semi-conductors are vital for many parts of the US economy and having a reliance on imports will also impact national security. The inability to manufacture cars due to an absence of semi-conductors or airbags is another impact.

This move may have numerous repercussions with trickle down effects to all industries that are dependent on helium such as semiconductors and MRI scanners.

AKAP Energy believes that this decision has been taken on flawed data. In previous releases, we have displayed how the reported information by the United States is often inaccurate. If the US intends to maintain its market share in helium, it will need to boost its domestic production of helium. This is again concerning with the BLM reserves also declining.

We have already seen evidence of Asian countries replacing their helium volumes from the US to other producing countries. In the image below, you can clearly see the percentage of South Korea's (SK) imports from the US being replaced by Qatari volumes over a two year period. (imports from US and Qatar taken as a percentage of total imports of SK). This is just one example, similar trends were also noticed with China.

Chart of the % of South Korea's imports from the US and Qatar since January 2020



The 2020 Energy Act has directed the Interior Department to review and update the critical mineral list at least every three years. With this rationale, the USGS mentioned that the criticality of elements may change over time and the ones excluded now may be considered once again in the future. But this comes at a time where the world is already facing a supply shortage and demand is also skyrocketing. Apart from the fact that it may affect industries dependent on helium, if the situation of domestic production is not handled well, we may see the US becoming a net importer of helium over the next few years.

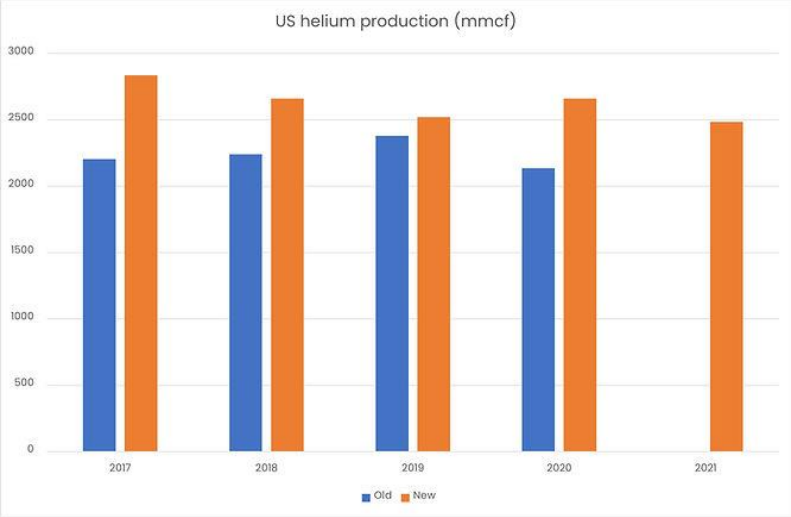
Mar 11, 2022

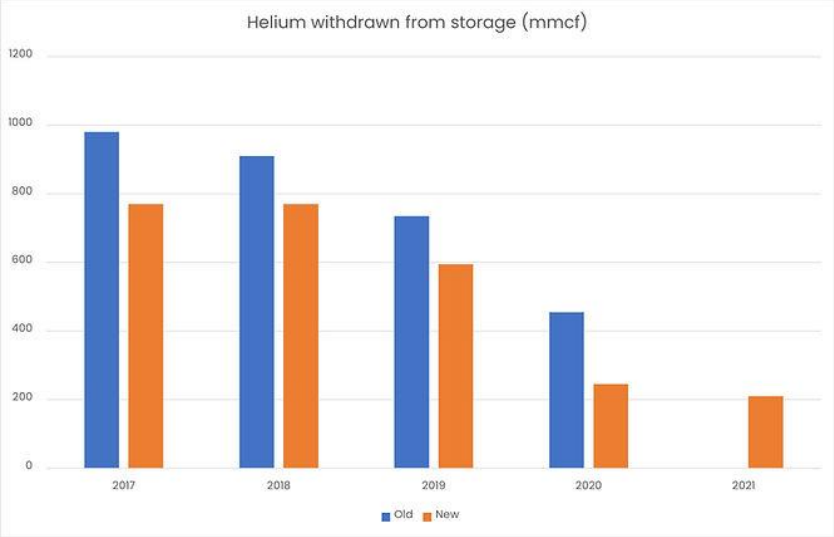
USGS helium report demonstrates opaque industry data

The USGS has released its 2021 helium report, which is the go-to resource for many on the global helium market. However, the quality of the data is again shockingly poor with caveats such as "Substantial increases in exports reported in recent years suggested that the data may be incorrect" and the US apparently importing 7% of its helium from Portugal, which doesn't produce helium. There have also been substantial revisions to the helium data and its estimates for private user pricing is unchanged in 4 years. US helium consumption for 2017 was revised up by 33% and US exports for 2020 revised down by 50%! It is no surprise that helium was removed from the Critical Mineral List, when the data quality it is based on is either out of date or riddled with errors.

The data show that helium production in the US in 2021 was 2.5bcf, down 7% y/y. Helium production from storage (the BLM Cliffside field) was just 210mmcf (-15% y/y). The historic data for these have been revised substantially as shown in the charts. Also the data for Qatar production for 2020 has been revised up by 11% and we believe is still too low. There is currently 2.96bcf of private helium remaining in the Cliffside field and 3.1bdf of conservation helium. In FY'21, there was 674mmcf of helium delivered from storage and 288mmcf of helium put into storage.

Revisions by the USGS to US helium production estimates and BLM storage withdrawals

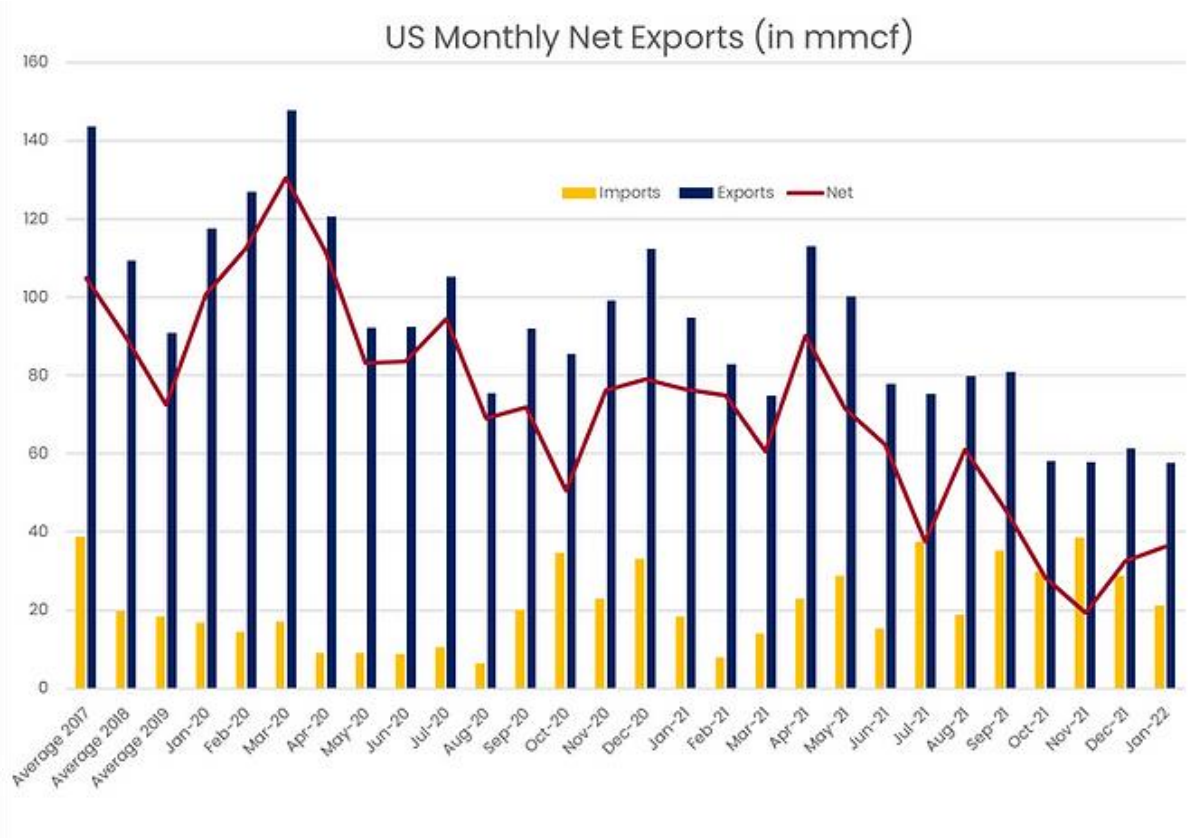




May 9, 2022

USGS rationale behind removal of helium from Critical Mineral List

The U.S. Geological Survey of 2021 excluded helium from its critical mineral list in early 2021. This will last for the next 3 years, which is when the next revision is to take place. The USGS's main arguments behind removal of this inert gas were that it did not meet the quantitative threshold nor the single point of failure (SPOF) criteria.



AKap Energy data show that the official US helium export data (presumably considered when coming to this decision) is incorrect and is dramatically over-stating US helium exports, on average we estimate that the actual US exports are <50% of what has been reported in the last few years. This is backed up by the USGS US helium supply balance which states: “substantial increases in exports reported in 2018, 2019, and 2020 suggest that domestic consumption declined, although no significant decline in U.S. helium consumption is thought to have taken place”. It also states in its report “Substantial increases in exports reported in recent years suggested that the data may be incorrect”.

In the quantitative assessment, a mineral commodity for which the US was a net exporter received a trade exposure score of 0, resulting in an overall supply risk of 0. Net exporter status does not necessarily indicate that the domestic industry is immune to supply disruptions. The US may, for example, be only a modest net exporter or there may be only a single domestic producer. If that single domestic producer becomes unable to continue operating or decreases production, the US may become a net importer and exposed to foreign supply disruptions.

This being explained, according to the USGS, the US is the world’s leading producer and a net exporter of helium. Helium’s trade exposure was thus 0 and, in turn, its supply risk was 0. Crude helium is produced in more than a dozen plants across several States, and several other plants

produced grade-A helium. Helium, therefore, does not qualify for inclusion on the critical mineral list (CML) based on the SPOF criteria.

Helium supply shortages have occurred sporadically during the past two decades. The most recent disruptions were associated with political tensions between Qatar and its neighbouring countries, and now with the Russia-Ukraine war. The disruptions have resulted in higher prices and, in some cases, actual shortages. In response, some consumers have attempted to reduce or eliminate the use of helium from their processes, whereas others have installed recovery and recycling systems.

The disposal of the remaining Federal helium inventory and assets by the Bureau of Land Management by September 2021 has the potential to remove the buffer that has provided a level of market stability and to increase the level of uncertainty in the market. The shift from conventional natural gas towards shale gas, which lacks recoverable quantities of helium, also has the potential to reduce the supply of helium, especially for the US.

AKAP believes that although the US is currently a net exporter, it is only due to the massive BLM reserve it sits on. With domestic and global demand surging, this reserve is rapidly declining. The global helium shortage will soon make the US a net importer of helium which will increase the reliance on foreign sources. The US has already imposed trade sanctions on Russia. The only other hope for fulfilling the US demand are imports coming in from Qatar and Algeria. Poland and Australia produce too little volumes to count as sizeable sources for the US.

Anish Kapadia

Anish is one of the leading experts on the helium industry. The helium industry is a niche market with opaque data and one that suffers from a lack of detailed analysis. Anish has created a proprietary helium supply and demand balance and has completed a comprehensive analysis into helium pricing, where there is little easily accessible data given the lack of any relevant spot market and a paucity of published helium price benchmarks.

Much of the data in the market at present is stale and has relied on extrapolated trends from outdated information. As a result, Anish has conducted a comprehensive analysis of the demand dynamics and created an exhaustive list of all the new potential supply sources.