The US Helium Supply Shortage

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The US Helium Supply Shortage

Based on two bulk gas supplier interviews:

- David Joyner, President for Helium Division, Air Liquide
- Tim Parker, Business Manager for Helium Sourcing, Airgas
Where does Helium Come From?

- Radioactive decay of Thorium deep in the earth’s crust
- Captured: Liquified Natural Gas (LNG) Production
- Produced in only 9 geographic locations globally
- < 4% of NG generated contains Helium
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US Generation Market & Sources:

- LGN Facilities: Exxon – WY, Duke - CO
- 6 Helium Refineries owned by 4 companies
  - Air Products – Linde – Praxair – Keyes
  - Produce 4.2 – 4.5B cu ft/yr annually
  - Exports 2 B annually
- Bulk gas companies’ Dilemma
  - Have been under-allocated for past 2.5 years
  - Currently around 50-70% of supply levels
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US Generation Market & Sources:

- Bulk gas companies’ Dilemma
  - US once supplied 80% of Helium to the global market
  - Exxon-WY reserves supplied 20%
  - Have been under-allocated for past 2.5 years
    - Currently around 50-70% of supply levels
    - Partly due to Exxon shut-down in Sept.
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Bureau of Land Management (BLM) - US Dept. of Interior

- Storing Helium since 1929
- Trying to get out of the business since 1996

- Manages Production and Reserves in TX, OK & KS
- Historically Supplied approx. 2 Billion cu ft/yr to the US
- Sold Helium at undervalued prices at a loss
- Now: about 1.1B cu ft/yr – artificially low due to legislation
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Bureau of Land Management (BLM) - US Dept. of Interior

- Expects to release 1.3B cu ft/yr next year
- Could be as high as 1.7B if private reserves are released
- Expect to see a price jump within the year
  - Could be as high as a 25-30%
  - Speculation: level-off to around 10% in years to follow
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HR 527 – The Responsible Helium Administration and Stewardship Act

- October 7th, 2013 – He supply shuts-down
- President signed on Tuesday, Oct. 2nd
- New Act Authorizes
  - Privatization – New Pricing model
    - More buyers
    - Market-based pricing
    - Auction-based component
  - Close off supply to public market at a 3B cu ft threshold
BLM Supply Estimates

- A Finite Amount in Storage
  - Estimates are about 10 -12 B cu ft
  - Current usage rate: 2B cu ft/yr
  - Estimate a 5-7 year supply
  - By around 2018–2020 US could become a net importer
- US Supply Model will change
Helium is a Global Business

- Global helium network consists of 9 sources
- U.S. is still the major producer, but most new sources are developing elsewhere
- Demand comes from many industries including electronics, healthcare, alternative energy, R&D, & manufacturing
- At full production, global supply is very tight
Global Helium Supply Network

- Global supply is currently 6.2 Billion cu ft/year
- Qatar II expected to supply about 1.3B cu ft/year
- Russia and Algeria also new sources of supply
  - Russia not a major player yet – expected to grow
  - Algeria is below capacity
    - Equipment problems
    - Low demand for LNG
Global Helium Supply Network

- Global supply will increase to 7.5B cu ft/yr – Qatar II
- Costs of transportation and distribution
- Helium storage containers cost $1M ea
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Take Home Message:

- Helium is not going away
- Different Global Supply model in 5-7 years
- US Will import 50% of its capacity
- With a very close supply-demand ratio expect dramatic price changes with interruptions in supply
- The price will continue to increase
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Consumer Action Plan

- Reduce consumption:
  - Inspect for leaks in supply lines periodically
  - Shut down instruments when not in use
  - Purge with a different gas during down-times
- Convert to other carrier gases
  - Hydrogen
  - Hydrogen-Helium mixture
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Future Global He Production Leaders

- Companies Involved in He Production
  - Qatar – Razgas partnering with Exxon
  - Algeria – Sonatrack (Govt owned) seeking partners
  - Russia – Gazprom – seeking partners