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3rd Federal Workshop on Isotope Supply and Demand
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Dr. Jehanne Gillo
Director, Facilities and Project Manager Division
Director, DOE Isotope Program
Office of Nuclear Physics, Office of Science, U.S. Department of Energy

Stable Isotope Operations: Helium-3

Savannah River Plant

- He-3 is derived from tritium decay
- Widely used in neutron detection, cryogenics, and basic research

- Tritium operations managed by DOE/NNSA
- DOE IP manages extraction of He-3 from tritium
- Investments in processing recapitalization, new supplies, optimization of yields

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Role of DOE IP in He-3

- Manage He-3 extraction
- Distribute He-3 to vendor for purification
- Set He-3 prices
- Conduct He-3 Auctions (3 from 2012-2014)

- Distribute He-3 according to decisions from He-3 Interagency Group
- Lead the Interagency Group on He-3: reports to NSS

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He-3 Shortage

- He-3 shortage recognized in 2008 (Isotope Program Workshop)
- Many factors contributed to shortage
- Unanticipated spikes in demand for radiation portal monitors after 9-11 and poor communication amongst federal agencies
- Unanticipated reduction in global supply (Russian supply terminated)
- Classification of tritium reserves and He-3 supply – poor communication within DOE-NNSA on available supply

Interagency Group

Allocations of He-3 through an Interagency Group since 2009

- Reports to the EOP National Security Council
- Prioritized and allocated He-3 in FY 2009 through FY 2014
- 14 Application Categories–
  demand forecast process is robust
- On annual basis, champion obtains demand
  information from community on behalf of agency
- He-3 request form for each application
- Annual allocation report is formed
- Interagency Group meets to discuss requests and determine allocations
- Submits report to NSS for approval (Frank Wong)
- DOE IP distributes He-3 according to details in report

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He-3 champions

- Mr. David Chu (Department of Homeland Security)
- Mr. Dominic Benford (National Aeronautics and Space Administration)
- Dr. Kyle Turner (Department of State)
- Dr. Murali Cherukuri (National Institutes of Health)
- Dr. Robert Dimeo (National Institute of Standards and Technology)
- Mr. Dale Dunsworth (NNSA)
- Dr. Daniele Finotello (National Science Foundation)
- Ms. Erica Folio (DOE Office of Fossil Energy – Oil and Gas Community)
- Mr. Joel Grimm (DOE Office of Science, Cryogenics, Non-U.S. Government Sponsored Research)
- Mr. Kenneth Lord (Department of Transportation)
- Mr. Charlie Marineau (Office of the Director of National Intelligence)
- Dr. Craig Wuest (Department of Defense)

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Allocation priorities

- Each year roughly 14,000 liters of U.S. origin He-3 will be made available.
- Up to 4,000 liters could be auctioned in order to meet high priority industrial and international requests, starting at the current commercial price. (At this time an auction in 2015 is not envisioned as adequate He-3 supply is available on the market.)

The following priorities apply to the 10,000 liters made available through the federal allocation process:

- Domestic requests championed through a federal agency have first priority:
  - Those programs requiring the unique physical properties of He-3 have first priority.
  - Those programs that secure the threat furthest away from U.S. territory and interests have second priority.
  - Those programs for which substantial costs have been incurred have third priority.

International Requests

International requests championed through a federal agency have second priority:

- He-3 will be used in an international research project with direct U.S. involvement. This provides direct benefit to U.S. researchers and the U.S. research enterprise.
- He-3 will be used at a scientific facility at which there is U.S. research participation. This provides direct benefit to the U.S. research enterprise and it will contribute positively to international cooperation and relations. In addition, the research complements that carried out by U.S. scientists and has strong U.S. support.
- He-3 will be used by an international entity for research that does not directly involve U.S. scientists but the research complements that carried out by U.S. scientists and has strong U.S. support. This provides an indirect or direct benefit to the U.S. research enterprise and it will contribute positively to international cooperation and relations.

International requests limited to 100l per application per year

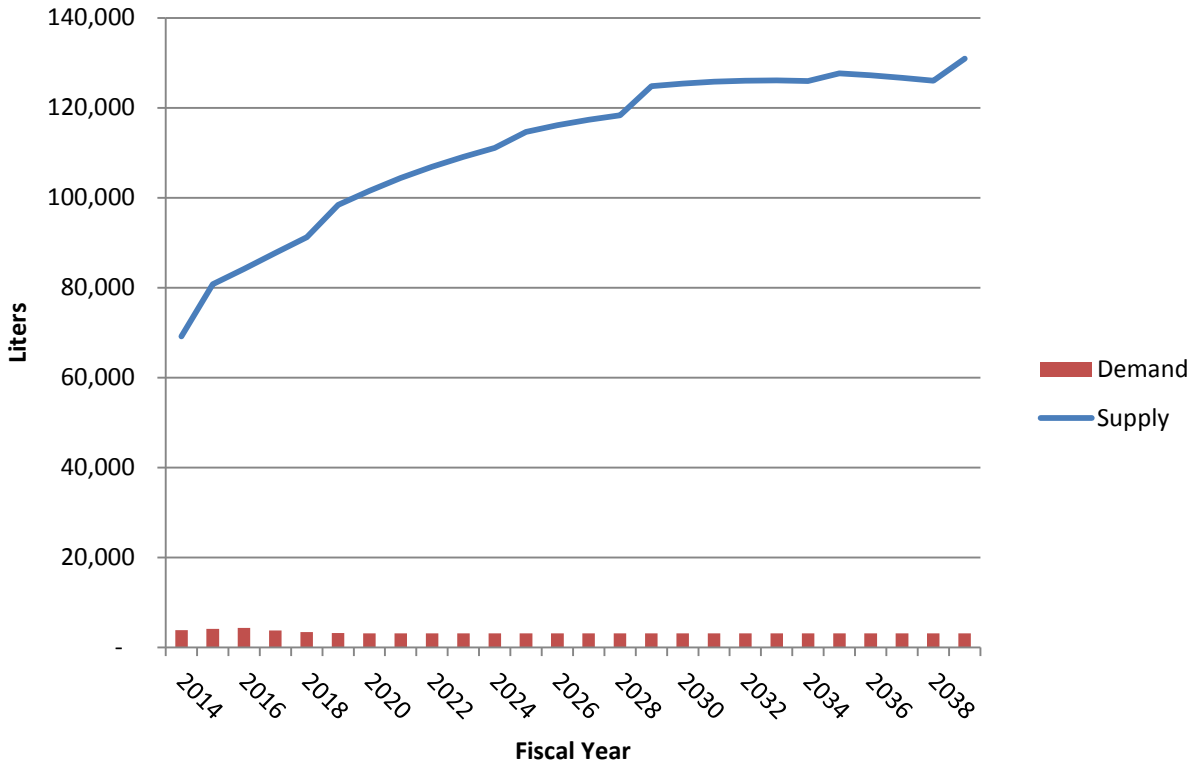
Lower two conditions are subject to commercial prices

He-3 Shortage Mitigated

Mitigation and prioritization efforts on behalf of the IAG have successfully addressed He-3 shortage

Federal demand has decreased from 70,000 a year to less than 3,200 liters per year

The current supply is anticipated to meet Federal agency needs well beyond FY 2040 and beyond



Conclusions

- He-3 Interagency Working Group successful example of interagency cooperation
- Assumes current vigilance and allocation priorities, continued recycling, continued use of alternatives
- He-3 shortage provides lessons learned: communication between agencies is critical