

Supply and Demand of Helium-3 (^3He)

The need for ^3He in the United States is outpacing production

The Department of Energy (DOE) has supplied isotopes and isotope-related services to the Nation and to foreign countries for more than 50 years. The Isotope Development and Production for Research and Applications Program, Office of Nuclear Physics, Office of Science, is responsible for the sale and distribution of ^3He , but not the production of He-3. The sole production of ^3He is from the refurbishment and dismantlement of the nuclear stockpile as a byproduct from the radioactive decay of tritium where it is separated during the tritium cleaning process at the National Nuclear Security Administration's (NNSA) Savannah River Site (SRS) in South Carolina. This ^3He has been made available to commercial entities through an auction conducted by the Isotopes Program.

Currently, the need for ^3He in the United States is outpacing production. The increased demand is due to the expanded use of ^3He in neutron detectors for national security, nonproliferation, defense, border security, and homeland security applications. In addition, ^3He is also used in many other applications such as medical diagnostics, the oil and gas industry, and basic science research. Since 2003, DOE has sold over 175,000 liters of ^3He , drawing down a significant portion of the Department's inventory. Projected demand for He-3 is about 65,000 liters per year through 2013 but the He-3 production in the United States is estimated to be only a small fraction of that per year for FY 2010 and beyond. The result is that U.S. production alone cannot meet anticipated worldwide demand.

The Office of Science is participating in a governmental interagency ^3He Integrated Product Team (IPT) composed of Department of Energy, National Nuclear Security Administration, Department of Homeland Security, Department of Defense, and other government agencies. This group has been formed to address the decreasing supply of ^3He . Discussions of this group include the pursuit of alternative technologies for neutron detection, finding alternative methods for production of He-3 for those applications for which there is no other alternative, and allocation of the existing supply.

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