

# GAO Highlights

Highlights of [GAO-15-123](#), a report to congressional requesters

## Why GAO Did This Study

The United States needs an assured source of tritium to maintain the U.S. nuclear weapons stockpile. To produce tritium, DOE has stated that it can only use LEU with no obligation to other countries under international agreements to use it for only peaceful purposes. USEC, a government corporation privatized in 1998, was the only company enriching uranium that DOE said could meet its LEU needs, but USEC ceased enrichment operations in May 2013 and filed for Chapter 11 bankruptcy protection in March 2014. DOE is currently considering options for obtaining unobligated LEU. Only one enrichment facility, which is owned by URENCO, operates in the United States, and four other commercial facilities are planned. Four of the five facilities use or will use technology that carries peaceful use obligations to other countries.

GAO was asked to review international agreements addressing enrichment technology in the United States with respect to how peaceful use provisions apply to tritium production. This report examines (1) the extent to which DOE has adhered to its practice of using only unobligated LEU to produce tritium and (2) the basis for this practice. To address these issues, GAO analyzed agency documents and international agreements and interviewed DOE and Department of State officials, among other steps.

## What GAO Recommends

GAO recommends that the Secretary of Energy work through an interagency working group to review DOE's current practice of using only unobligated LEU for the production of tritium. DOE neither agreed nor disagreed with GAO's recommendation.

View [GAO-15-123](#). For more information, contact David C. Trimble at (202) 512-3841 or [trimbled@gao.gov](mailto:trimbled@gao.gov) or Susan D. Sawtelle at (202) 512-6417 or [sawtelles@gao.gov](mailto:sawtelles@gao.gov).

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## DEPARTMENT OF ENERGY

### Interagency Review Needed to Update U.S. Position on Enriched Uranium That Can Be Used for Tritium Production

## What GAO Found

The Department of Energy (DOE) has adhered to its practice of using only unobligated low-enriched uranium (LEU) to meet national security needs for tritium—a radioactive isotope of hydrogen used to enhance the power of U.S. nuclear weapons. LEU is considered unobligated when neither the uranium nor the technology used to enrich it carries an “obligation” from a foreign country requiring that the material only be used for peaceful purposes. These obligations are contained in international agreements to which the United States is a party. DOE has adhered to this practice by, for example, requiring in its interagency agreement for tritium production with the Tennessee Valley Authority (TVA) that TVA use only unobligated LEU as fuel in any nuclear reactor that is being used to produce tritium for national security purposes, and DOE is responsible for ensuring that TVA can obtain unobligated LEU for this purpose.

The basis for DOE's practice of using only unobligated LEU to produce tritium considers both law and policy.

- **Legal considerations:** GAO reviewed the three key international agreements that address the importation of foreign-owned enrichment technology that is operating or planned for operation in the United States. GAO found that only one agreement explicitly addresses tritium and this agreement likely prohibits the production of tritium for weapons purposes. This is also consistent with an executive branch interpretation of the agreement. The other two agreements do not explicitly address tritium production for weapons purposes, but Department of State officials told GAO that a reading of the agreements to prohibit the use of technology subject to the peaceful use restrictions for tritium production is consistent with U.S. nonproliferation policy interests.
- **Policy considerations:** Officials told GAO that using only unobligated LEU for national security purposes supports U.S. nonproliferation policy goals by, for example, avoiding setting a precedent for other countries that may seek to use purchased LEU for military purposes. A 1998 interagency report evaluated nonproliferation implications of U.S. tritium production and concluded that, in utilizing TVA's reactors for tritium production, DOE should fuel the reactors with LEU that does not have peaceful use obligations to best preserve a military-civilian dichotomy. DOE and State officials have also cited policy goals in response to questions about whether TVA can use LEU produced by a URENCO enrichment facility for tritium production.

However, a key assumption underlying the decision to use only unobligated LEU for national security purposes has changed. The United States no longer has a ready capability to enrich unobligated LEU for tritium production because USEC ceased enrichment operations in 2013, and the future of the company's planned next-generation enrichment facility—the only planned enrichment facility that could produce unobligated LEU—is uncertain. According to DOE officials, the department is currently engaged with an interagency working group to assess options for obtaining unobligated LEU in the future. Given that the United States no longer has an assured source of unobligated LEU, the results of an updated interagency review that either reaffirms or supports a change in the current practice could help address questions about whether using certain other LEU for tritium production is an option for DOE at this time.