

Nuclear Energy



The IAEA LEU Bank

Assuring a supply of low enriched uranium (LEU) for Member States

What is the IAEA LEU Bank?

The IAEA LEU Bank is a physical reserve of up to 90 metric tons of low enriched uranium suitable to make fuel for a typical light water reactor, which is the most widely used type of nuclear power reactor worldwide. Such a reactor can power a large city for three years.

A key principle of the IAEA LEU Bank, as an assurance of supply mechanism of last resort, is that it must not distort the commercial market. Its existence also does not affect the rights of IAEA Member States to develop their own nuclear fuel cycle facilities. Member States who need to purchase LEU from the IAEA LEU Bank need to have a Comprehensive Safeguards Agreement with the IAEA and also be in compliance with it.

The establishment and operation of the IAEA LEU Bank is fully funded by voluntary contributions, and has no impact on the Agency's budget or other activities. Donors have provided a total of US \$150 million to establish the IAEA LEU Bank and operate the Bank for at least 10 years.

The Bank is part of global efforts to create an assured supply of nuclear fuel to countries in case of disruption of the open market or of other existing supply arrangements for LEU. Other assurance of supply mechanisms established with IAEA approval include a guaranteed physical reserve of LEU maintained by the Russian Federation at the International Uranium Enrichment Centre in Angarsk, Russian Federation, and a United Kingdom assurance of supply guaranty for supplies of LEU enrichment services. The United States also operates its own LEU reserve.



Model of the IAEA LEU Storage Facility being established in the Ulba Metallurgical Plant in Ust-Kamenogorsk, Kazakhstan.

(Photo: Ulba Metallurgical Plant)

What is low enriched uranium?

LEU is the basic ingredient to fabricate nuclear fuel. It is made by enriching naturally occurring uranium to improve its ability to produce energy. Enrichment increases the concentration of atoms that can be split to produce heat. This heat in turn is used to generate electricity. The LEU that will be stored in the IAEA LEU Bank will be enriched up to nominally 4.95%, suitable to make fuel for a typical light water reactor. LEU is safely stored and transported in strong steel cylinders.

LEU does not deteriorate and can be safely stored for many years. It is a white-grey, waxy solid during storage and transport. LEU is not nuclear waste, nor is any waste generated by simply storing it.



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Unloading 30B cylinders, Ulba Metallurgical Plant, Ust-Kamenogorsk, 2016.

(Photo: Ulba Metallurgical Plant)

Where will the IAEA LEU Bank be located?

The IAEA LEU Bank will be located at the Ulba Metallurgical Plant (UMP) in Oskemen, a city in northeastern Kazakhstan. It is the capital of the East-Kazakhstan oblast (region), which has a large mining and metals industry.

Kazakhstan has 60 years of proven experience in civil nuclear fuel supply and a modern infrastructure.

UMP is a licensed nuclear site with commercial scale operations and the complete infrastructure to safely and securely store, transport, and process LEU.

How will safety, security and safeguards be assured?

The IAEA LEU Bank will be safe and secure. LEU has been safely stored in many countries for many years without harming the public or the environment. For over 60 years, UMP has been safely and securely handling and storing nuclear materials, including LEU.

Safety and security of the IAEA LEU Bank will be governed by Kazakhstan's legal and regulatory requirements, and will meet the applicable provisions of the IAEA's safety standards and security guidance documents. The IAEA LEU Bank will also be subject to IAEA safeguards pursuant to Kazakhstan's Comprehensive Safeguards Agreement and Additional Protocol with the IAEA.



Signing of the Technical Agreement between the IAEA and the Ministry of Energy of Kazakhstan on the specific arrangements to be implemented for the establishment of the IAEA LEU Bank in the country, Astana, 2015.

(Photo: Ministry of Foreign Affairs of the Republic of Kazakhstan)

How will the LEU in the IAEA LEU Bank be used?

If an IAEA Member State is unable to obtain LEU from the commercial market, it can ask the IAEA for a supply from the IAEA LEU Bank as a mechanism of last resort. The IAEA Director General will determine whether the request meets the criteria approved by the IAEA Board of Governors, which will be kept informed throughout the process.

The criteria are:

- The supply of LEU to a nuclear power plant is disrupted;
- The Member State is unable to secure LEU from the commercial market, State-to-State arrangements, or by any other such means; and

- The Member State has in place a comprehensive safeguards agreement with the IAEA and is in compliance with this agreement.

The Member State must agree to a supply agreement with the IAEA and pay the full cost to re-stock the LEU stored in the Bank.

What happens when LEU leaves the IAEA LEU Bank?

Once the recipient Member State has paid the IAEA, and the necessary contractual arrangements have been concluded, UMP will prepare the LEU for off-site shipment. The cylinders that will contain the IAEA LEU are designed for transportation and manufactured and tested according to international standards. The cylinders



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The IAEA LEU Storage Facility under construction, Ulba Metallurgical Plant, Ust-Kamenogorsk, 2017.

(Photo: Ulba Metallurgical Plant)

will leave the site by train and be transferred to a facility where the LEU can be made into fuel.

The Member State supply agreement with the IAEA would specify that the LEU shall only be used to make fuel for a power reactor. It shall not be used to make any nuclear weapon or nuclear explosive devices, or for any military purpose. It shall not be enriched further, reprocessed, retransferred, or re-exported unless the IAEA agrees. All relevant IAEA safeguards, safety standards and physical protection measures will apply to the LEU at all times.

Who has contributed funds to the LEU Bank?

- European Union: €24.4 million
- Kuwait: US \$10 million
- Norway: US \$5 million
- United Arab Emirates: US \$10 million
- United States: US \$49 million
- Nuclear Threat Initiative: US \$50 million
- Kazakhstan: US \$400,000 plus in-kind contributions

For further information on the LEU Bank Project, email: LEU-Bank-Administration.Contact-Point@iaea.org

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