

# Highly Enriched Uranium Transparency Program

*Argonne National Laboratory's Environmental Science Division (EVS) is supporting the U.S. Department of Energy in carrying out its responsibilities under the Highly Enriched Uranium Transparency Agreement between the United States and the Russian Federation. This agreement allows the United States to purchase previously highly enriched uranium from Russian nuclear weapons components that has been blended to form low enriched uranium.*

## PROBLEM/OPPORTUNITY

In February 1993, the United States and the Russian Federation signed an agreement allowing the United States to purchase 500 metric tonnes of Russian highly enriched uranium (HEU) that was removed from Russia's dismantled nuclear weapons and downblended to produce low enriched uranium (LEU). The blending operation is conducted at Russian facilities, and the LEU is shipped to the United States for use in manufacturing fuel for commercial nuclear power reactors. The HEU Transparency Program was established by the U.S. Department of Energy (DOE) to provide assurance that the HEU is from dismantled weapons and that the same HEU is converted, processed, and blended to LEU. Within DOE, the National Nuclear Security Administration (NNSA), Office of Non Proliferation and International Security (NA-24), is responsible for the program. The mission of NA-24 is to utilize its unique blend of policy and technical expertise to contribute to U.S. Government efforts to counter global weapons of mass destruction, proliferation and terrorist threats.

## APPROACH

Four Russian nuclear facilities conduct HEU-to-LEU processing and are subject to monitoring under the NNSA's HEU Transparency Program. The facilities are the Ural Electrochemical Integrated Enterprise (UEIE) in Novouralsk, the Mayak Production Association (MPA) in Ozersk, the Siberian Chemical Enterprise (SChE) in Seversk, and the Electrochemical Plant (ECP) in Zelenogorsk. Three of the four facilities, UEIE, SChE, and ECP, conduct blending operations. An NNSA

transparency monitoring office (TMO) was established at UEIE in August 1996 and has been staffed almost eighty percent of the time by U.S. monitors.

EVS supports the operation of the TMO. The TMO offers unprecedented access in a closed city and the opportunity to monitor blending operations occurring within Russia. Currently, monitoring at the other three Russian facilities is confined to 6 one-week visits annually.

The primary purpose of monitoring is to track the flow of material from HEU receipt through blending, by first-hand observation and measurements (such as nondestructive assay) and through examination of nuclear material records. Monitoring at the four sites is conducted at secure facilities within closed cities. In general, monitors have access to areas in the facilities where the HEU material is processed and downblended.

## RESULTS

EVS staff members routinely participate in monitoring activities at the four Russian facilities and are trained in uranium blending operations and nondestructive assay. In addition to its monitoring duties, EVS coordinates and manages the TMO for the NNSA. As part of this responsibility EVS recruits monitors, schedules TMO assignments, prepares the monitors for their trips, provides information on obtaining Russian clearances and visas, coordinates data collection at the TMO, performs data analysis, provides computer network support for the TMO, and oversees daily operations of the TMO.

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Maintaining an office of qualified individuals in Russia nearly continuously for more than 6 years has presented a challenge. To meet this challenge, EVS has worked closely with the American monitors, NNSA, and involved parties in Russia. The skills and the procedures EVS developed have direct application to other federal programs that involve work abroad.

## FUTURE

The HEU Transparency Agreement stipulates that the United States will purchase 500 metric tonnes of HEU downblended to LEU over a 20-year period, with a payment of \$12 billion dollars to the Russian Federation. During that time, U.S. monitoring will continue to ensure that agreement objectives are being met. As other Russian processing facilities are added or as the monitoring agreement changes, the United States will enhance its capabilities. Argonne is available to help DOE implement these new initiatives.



Administration Building at the Ural Electrochemical Integrated Enterprise in Novouralsk, Russia