

Project IKE

Uranium Enrichment Facility



Environmental FAQs

As a public resource, this FAQs document provides a wide range of environmental information about Orano's Project IKE development of a uranium enrichment facility in Oak Ridge, Tennessee.

This summarized information was included in detail in Orano's facility license submission to the Nuclear Regulatory Commission as the Environmental Review document ML26191A483 in the NRC's ADAMS database.



Project IKE

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project-ike-
enrichment](https://orano.group/usa/project-ike-enrichment)

What is happening?

- In **September 2024**, Orano USA selected Oak Ridge, Tennessee, as the site for developing a multibillion-dollar uranium enrichment facility, termed Project IKE. Key criteria in this decision included the world-class, reliable power supply available from TVA, strong community and state support, remarkable educational systems providing employee pipelines, and available qualified workforce.
- In **January 2026**, Orano was sole-selected by the Department of Energy to receive a \$900 million award to produce a significant and reliable America-based supply of low-enriched uranium to power the nation's commercial nuclear energy reactors. Orano is using the funding to develop Project IKE.
- In **May 2026**, the Nuclear Regulatory Commission accepted Orano's Project IKE facility license submission for review on an accelerated 12-month timeline.

Who is Orano USA?

Orano has operated in the U.S. for 60 years. For more than 40 years, enriched uranium supplied by Orano from its French facilities has reliably powered America's nuclear reactors. The modern enrichment facility in Tricastin, France, uses efficient gas centrifuge technology. Orano is now building a similar facility in Oak Ridge, Tennessee. With U.S. headquarters in Bethesda, Maryland, and global headquarters in Paris, France, Orano is a leading technology and services provider throughout the nuclear fuel cycle for the commercial and federal nuclear industries. Orano currently provides 12% of global uranium enrichment capacity through its fuel enrichment site in Tricastin.

What does a uranium enrichment facility do?

The uranium enrichment process is one of the steps in producing fuel for nuclear energy reactors. The enrichment process uses a very long cascade of centrifuges to increase (enrich) the percentage of uranium-235 in the uranium hexafluoride (UF₆) gas as the material passes from one centrifuge to the next. Once the UF₆ is enriched to the desired percentage of uranium-235, it is sent to a fuel fabricator to create the specific fuel form for loading into the different types of reactors.

What is the NRC's role, and how is safety rigor achieved during the 12-month review?

The Nuclear Regulatory Commission (NRC) is an independent federal agency created to regulate civilian nuclear activities. Its review of Orano's application will independently provide reasonable assurance that proposed facility meets federal safety, security, and environmental standards. NRC Chairman Ho K. Nieh has stated that the agency's goal is 'credible, predictable and timely safety reviews' — not a reduced standard. The 12-month timeline was facilitated by more than a year of pre-application meetings between Orano and NRC staff before formal license submission, and NRC's previous approval of a similar gas centrifuge enrichment facility that Orano had earlier planned to build at another U.S. location.

Where is the Project IKE site, and what was it used for before Orano arrived?

The Project IKE site is in Roane County about seven miles southwest of downtown Oak Ridge, Tennessee, on the east side of the intersection of State Routes 95 and 58. This property was part of the Department of Energy (DOE) Self-Sufficiency Parcel 2 (SSP-2). In the Spring of 2026, 624 acres within SSP-2 were transferred from DOE to the Oak Ridge Industrial Development Board for Orano's Project IKE site. This land consists of Tracts 1A and 1B within SSP-2. Prior to government ownership, some of the property was forested and other sections were farmland with a few residences that had been abandoned long ago. The remainder of SSP-2, including the DOE White Wing Scrapyard, was not part of the transfer.

Is there any contaminated land on the site?

Prior to DOE's land transfer of SSP-2 to the Oak Ridge Industrial Development Board, DOE confirmed that Tracts 1A and 1B received a "clean parcel determination" (CPD). To receive the CPD, a documented investigation was conducted of the site to fulfill Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) requirements, including environmental sampling data and historical document examinations. The U.S. Environmental Protection Agency (EPA) and the Tennessee Department of Environment and Conservation (TDEC) reviewed and concurred with the investigation. A summary of the investigation provided as the Environmental Baseline Survey was in the Project IKE license submission.

Why did Orano choose a greenfield site rather than available brownfield areas?

A greenfield site is property that has not been used for commercial purposes. To ensure that Project IKE can construct its facility and begin producing a significant nuclear fuel supply on the same accelerated timeline as new U.S. nuclear energy, Orano selected greenfield property to avoid normal brownfield complexities. These complexities could include the discovery of unexpected environmental or legal concerns created by previous landowners that could create delays in construction. Resolving legacy brownfield issues can include environmental remediation of site contamination, land use restrictions, and additional regulatory requirements.

How much of the site will be used for Project IKE, and how much will remain undisturbed?

Of the 624 acres, about 150 acres are estimated to be developed for Project IKE operations, including the building footprint, cylinder storage area, parking lots, access roads, water retention ponds, and security infrastructure.

Will old-growth forest be affected?

No, the portion of SSP-2 with old-growth forest was not part of the transfer for Project IKE.

Will construction affect any streams or wetlands on the site?

Yes, impacts to three small wetlands and two small streams are unavoidable during construction. Orano has proactively engaged in an extensive permitting process to reduce and mitigate impacts by working with hydrologists, geologists, and biologists to study the site as part of its planning for site preparations and construction. The information collected is included in its permit applications to the U.S. Army Corps of Engineers and TDEC. Orano has also purchased recommended licensed stream bank credits to support restoration efforts elsewhere and to mitigate the project's net effects to the environment.

Where will the facility's water come from?

The facility will obtain its water from the City of Oak Ridge's public water distribution system. Since gas centrifuge enrichment is primarily a dry, mechanical process, most of the water will be used for building cooling systems and office functions like restrooms and drinking water. The facility will not use groundwater.

Will operations affect the Clinch River, Poplar Creek, or other nearby waterways?

Facility operations will not affect regional waterways, and any liquid process waste will be managed on the site in accordance with federal, state, and local regulatory requirements. Sanitary wastewater will be routed to the City of Oak Ridge's water treatment works. The site and facility are designed to collect and manage stormwater in a detention basin engineered to meet EPA and TDEC standards. To confirm compliance with National Pollutant Discharge System requirements, the facility's environmental monitoring program will include routine sampling of groundwater from site monitoring wells and monitoring surface water quality at natural drainage points around the site.

What air emissions will the facility produce during operations?

The facility will operate in compliance with an EPA and TDEC issued air permit, and any process emissions are projected to be well below regulatory emission thresholds. During normal operations, the primary potential emission sources for hazardous air pollutants (HAPs) are four 2,500-kilowatt standby diesel generators used only during power outages or testing. Construction-phase emissions from diesel equipment and dust are projected to be below applicable federal and state ambient air quality standards.

Is there any risk of a UF₆ gas release, and what is the emergency plan?

The Project IKE facility will have multiple layers of protection preventing a uranium hexafluoride (UF₆) release. An NRC-required Emergency Plan will be in place that ensures emergency planning preparation, coordination, and training with local emergency response organizations. UF₆ is the gas used to carry uranium through the enrichment centrifuges. During Orano's 15 years of ongoing operations at its centrifuge uranium enrichment facility in France and prior operations at its gaseous diffusion plant from 1979 to 2012, its technology, processes, and training program have ensured no hazardous release of UF₆. As part of Orano's Project IKE license application for this similar enrichment facility, UF₆ release scenarios, credible accident scenarios, and required safety systems are addressed in the Integrated Safety Analysis (ISA). UF₆ is chemically reactive if released and exposed to moisture in the air and would form hydrogen fluoride (a highly corrosive gas) and uranium-containing particles. This chemical hazard, not radiation, is the primary concern in a UF₆ release scenario.

What will happen to wildlife during construction and operations?

As site preparations begin, local wildlife will likely transfer to the many acres of the property that will stay undisturbed and to the surrounding forests. Wildlife travel corridors will remain available. Facility operations should have little impact to wildlife, and noise and artificial lighting will be within regulations and similar to other industrial facilities and highways in the area.

Are there federal- or state-protected bat species that could be affected?

Orano conducted an extensive bat acoustic survey of the site. The survey identified the calls of 15 bat species either on or adjacent to the property, including three federally endangered species: gray bat (not tree-dwelling), Indiana bat (tree-dwelling), and northern long-eared bat (tree-dwelling). Two additional state-listed bat species were detected: little brown bat (tree-dwelling) and tricolored bat (tree-dwelling).

What precautions will Orano take during site work to protect bats?

Orano is committed to being a good land steward, including carefully managing the native ecosystem. To ensure that our site preparations do not affect "pup season" for any resident tree-dwelling bats, Orano is working with the U.S. Fish and Wildlife Service (USFWS) and TDEC to conduct needed tree removal during a time and in a manner designed to minimize the impact to an endangered bat population. Additional accommodations were made with guidance from the regulators so that the "maternity season" of offsite cave-dwelling bats observed in the surrounding area would not be negatively affected during site preparations.

Are there other federal- or state-protected species that could be affected?

The USFWS's Information for Planning and Consultation (IPaC) tool identified the potential for three federally listed threatened or endangered species other than bats to occur on the site: the Spotfin Chub fish, the Virginia Spiraea shrub, and the White Fringeless orchid. An investigation of the site showed that the facility construction will not impact these three species, and no critical habitat overlaps the site.

How much noise could occur during construction and operations?

The facility construction will generate normal noise on the site during the day, and routine construction will not occur at night. Third-party studies and Orano's experience operating an enrichment facility indicate that noise from operations will be well within noise limits and guidelines. Results from the noise surveys showed that sound from Project IKE operations will not impact public areas or the nearest homes located more than a mile away on the other side of a forested ridge.

Will the facility be visible from the road?

Forested buffers and terrain will limit views from the Oak Ridge Turnpike and nearby trails. The tallest buildings will be roughly 60 to 65 feet and lower than the surrounding ridgelines.

Where will the electricity come from, and will it affect residents' electricity rates?

Electricity for the facility will be supplied by the Tennessee Valley Authority through an existing transmission line connected to a new substation on the site. Large industrial facilities, like Project IKE, buy power at negotiated industrial rates that do not affect residential customers' electricity bills.

Is there any radiation exposure to the public from facility operations?

As part of its license submission requirements, Orano performed detailed radiation dose modeling. The average American receives an annual dose of about 620 millirem per year from all natural and man-made radiation sources combined, such as cosmic rays, radon in homes, medical X-rays, and so on. An important aspect of dosage is that it decreases with more distance from the radiation source. The NRC's dose limit for the public from a licensed facility is 25 millirem/yr. The maximum calculated potential dose for a representative person living year-round at the facility's fence line is 16.5 mrem/yr. For the nearest actual residence (1.19 miles away), any dose is essentially undetectable at less than 0.0001 mrem/yr.

How will environmental radiation monitoring protect the public once the facility is operating?

Project IKE has a comprehensive Radiological Environmental Monitoring Program (REMP) as part of its NRC license. This includes air monitoring for radionuclides at and near the site boundary using air samplers, groundwater monitoring wells installed at the site, surface water and sediment sampling, and periodic milk and vegetation sampling within 50 miles of the facility to detect any food-chain pathway impacts. Radiation dose at the site boundary will also be monitored. Monitoring results are reported to the NRC and made publicly available in an Annual Site Environmental Report.

What are the primary waste streams from an enrichment facility?

The facility will generate four categories of waste: (1) non-radioactive solid waste from industrial processes; (2) radioactive and mixed solid waste from the enrichment process, including DUF6; (3) liquid effluents with managed evaporation onsite; and (4) filtered gaseous effluents.

What happens to the depleted uranium hexafluoride (DUF6), the main byproduct?

Uranium with a concentration of the U-235 isotope below that of natural uranium (0.7%) is called depleted uranium. As the desired enriched uranium is being processed for increased levels of U-235, depleted uranium hexafluoride (DUF6) is the principal byproduct and will be stored onsite in 14-ton steel cylinders

meeting industry standards for handling and storage. As conditions of its NRC license, Orano will have a DUF6 management plan and an NRC-approved decommissioning funding plan.

Will radioactive waste be permanently disposed of at the site?

No, radioactive waste generated at the facility will be packaged and shipped offsite in secure containers to licensed radioactive waste disposal facilities.

How many daily truck shipments will there be?

At the height of construction, about 50 trucks a day may be in and out of the site. During operations, about 8 trucks a day for all aspects of the facility's functions are projected to enter or leave the facility.

What does the full project timeline look like from licensing to decommissioning?

The facility is designed for an initial 40-year NRC license with intent of operating for 60 years. Based on the expected schedule, the NRC license application review is targeted for completion by April 2027, construction begins September 2027, ramp-up to initial commercial production begins in 2031/2032, and operations are planned from January 2032 through December 2091.

What financial assurance does Orano provide to ensure site cleanup at the end of the facility's operation?

NRC regulations require uranium enrichment licensees to set aside funds to cover the cost of dismantling, removing contaminated equipment, and restoring the site, even if the company ceases operations. This financial assurance must be provided prior to possession of UF6 and operation of the enrichment facility.

Is enriched uranium at this facility the same as weapons material? Is there a proliferation risk?

No, this uranium enrichment for commercial nuclear energy is much less than the level required for weapons-grade material. Project IKE is only licensed to produce low enriched uranium (LEU) up to 10% U-235 for commercial nuclear energy reactors. Weapons-grade highly enriched uranium (HEU) requires enrichment to 90% or more. The NRC's security and safeguards review specifically requires and evaluates physical protection systems, materials accountability, and international safeguards compliance. As an NRC-licensed commercial facility, Project IKE would be regularly inspected by the NRC throughout its operational life.



Concept rendering of the Project IKE facility in Oak Ridge, Tennessee.