

Cobalt-60 Production in U.S. PWRs

A Strategic Collaboration Between Westinghouse and Nordion to Safeguard U.S. Healthcare



Background

Cobalt-60 is a vital radioisotope used in gamma sterilization and is responsible for sterilizing over 16 billion single-use medical devices annually in the United States. These include critical items such as syringes, surgical gloves, catheters, heart valves and bioprocessing equipment used in vaccine production. The technology has been trusted for nearly 70 years due to its deep penetration, uniform dose distribution and compatibility with a wide range of materials.

Despite its importance, the U.S. currently relies entirely on foreign sources for Cobalt-60, with 20–50% of supply coming from Russia. This dependency introduces significant vulnerabilities, especially in light of recent geopolitical tensions and supply chain disruptions. The COVID-19 pandemic further exposed the fragility of the sterilization infrastructure, leading to shortages and delays in medical procedures.

To address this critical gap, Westinghouse Electric Company and Nordion (a Sotera Health company) have partnered to develop and deploy first-of-a-kind technology that enables the production of Low Specific Activity (LSA) Cobalt-60 in U.S. Pressurized Water Reactors (PWRs). This initiative will not only secure a domestic supply, but also enhance national healthcare resilience and reduce reliance on high-risk international sources.

Project Overview

The Westinghouse–Nordion initiative will:

- Develop cutting edge technology to facilitate the production of Cobalt-60 in Pressurized Water Reactors
- Establish a domestic supply chain for Cobalt-60 through partnerships with U.S. Utilities
- Meet 50–100% of U.S. demand by the mid-2030s
- Eliminate reliance on Russian-sourced Cobalt-60

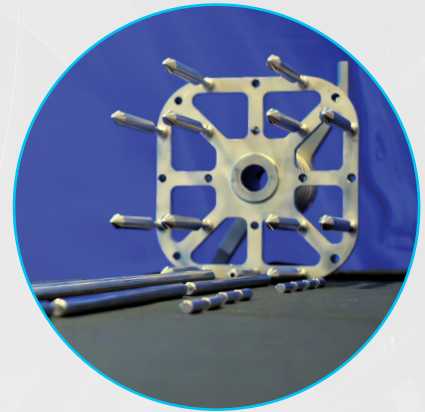
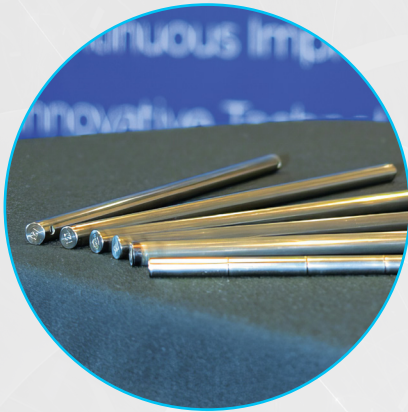
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Cobalt-60



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Technology

The proprietary Cobalt Burnable Absorber (COBA) insert integrates Nordion-engineered Cobalt-59 slugs seamlessly into Westinghouse fuel assemblies. These targets are irradiated over three 18-month fuel cycles and harvested in the cask loading pit using a Westinghouse-designed workstation. The harvesting process is designed to minimize irradiated waste and impact plant operations.

Key Features:

- COBA rodlets, with nickel-plated Cobalt-59 slugs, engineered for insertion into Westinghouse fuel assemblies
- Innovative harvesting process occurs after refueling outage
- Compatibility with existing PWR infrastructure

COBA rodlets

Benefits

- **Public Health Security:** Ensures uninterrupted sterilization of critical medical devices
- **Economic Resilience:** Reduces exposure to global supply chain disruptions
- **Scalable Production:** Technology adaptable to PWRs worldwide
- **Regulatory Readiness:** NRC licensing underway with high confidence

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