

Cesium Irradiator Replacement Project

Achieve Risk Elimination Using Federal Incentives

Incentives to Eliminate Radiological Risk

Radioactive sources, such as cesium-137, play an important role in everyday industrial, medical, and research facilities. However, they can also pose a significant risk to public health and safety if ever lost, stolen, or misused. Thanks to the development of advanced radiation technology, viable alternatives to cesium-137 irradiators are now widely available. Replacing an irradiator that uses radioactive sources with advanced technology, such as an X-ray device, eliminates the risk associated with radioactive sources while maintaining all the benefits of radiation technology.

The Cesium Irradiator Replacement Project (CIRP), offered by the Department of Energy's National Nuclear Security Administration's Office of Radiological Security (ORS), launched in 2014, provides incentives to facilities interested in replacing cesium-137 irradiators with non-radioisotopic X-ray devices. These incentives include the secure removal and disposal of disused irradiators and payment of up to 50% toward the purchase price of replacement technology.

Greater than 75% of the United States cesium-137 self-shielded irradiator inventory has been eliminated or is contracted to be, achieving permanent risk reduction both at individual facilities and within communities. **CIRP directly supports the United States' goal to eliminate blood irradiation devices that rely on cesium-137** by December 31, 2027, through a voluntary program.



Advancing patient care with cutting-edge technology. This canister represents the vital resource, now irradiated with advanced X-ray technology.

“The X-Ray irradiator... is critical to our ability to efficiently provide irradiated red blood cells to our patients who need them. Every unit that is irradiated is documented electronically with key information such as irradiation date, time, and dose. With this information we are able to reprocess our red blood cells to irradiated red blood cells in our laboratory information system. Once units are designated as irradiated in our computer system, these are the only units that can be allocated and issued to patients with a requirement for irradiated units. The computerization of records provides an extra layer of safety towards ensuring only irradiated units are given to those who require them.”

— Jasper Wu, Senior Clinical Lab Scientist-QC/Equipment Specialist at UC San Francisco

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Benefits of X-Ray Irradiators

Alternative technologies produce equivalent, or better, results than existing cesium irradiators. In addition to proven performance, replacing a cesium-137 device with X-ray can also offer the benefits of:

- ★ Additional research opportunities
- ★ Increased throughput
- ★ Consistent irradiation times
- ★ Partial reimbursement for new X-ray irradiator
- ★ Estimated \$500k in removal cost savings
- ★ Liability risk removed
- ★ Reduced security licensing requirements

Replacement Considerations

Facilities that want to replace their cesium irradiators with X-ray devices may want to compare and consider:

- ★ Equipment reliability
- ★ Ease of use
- ★ Operational protocols

“ORS provided a lot of incentives for us to switch from a cesium irradiator to an X-ray irradiator. Disposal fees and the pickup fees were being covered by ORS and the cost of the X-ray irradiator would be reimbursed a month after the old irradiator was picked up. Indeed, 30 days later we received a check.”

— Marissa Hernandez, Morristown Medical Center

- ★ Costs including device procurement, warranty and maintenance, infrastructure, end of life management, background checks, and security
- ★ Throughput needs and clinical and research supported applications
- ★ Potential liability for radioactive source accidents or misuse
- ★ Unique user requirements

CIRP Incentives

- ★ Removal and disposal of cesium irradiators, saving the facility at least \$500k per irradiator
- ★ 50% of the purchase price of the new X-ray irradiators with payment disbursed upon removal of the disused device and replacement with the new irradiator
- ★ Training, warranty/maintenance agreement, building modifications, spare part costs, or other complementary incentives may be covered on an as-needed basis
- ★ Information on available X-ray irradiators and assistance with stakeholder discussion

Registering for Recovery Services

Licensees in possession of radioactive sealed sources are encouraged to register with the Off-Site Source Recovery Program (OSRP) for recovery consideration. Please visit <https://osrp.lanl.gov> to register your sources.

**Source registration with OSRP does not guarantee recovery or disposition. If recovery occurs, there is no charge.*

For more information, contact ORSinfo@nnsa.doe.gov.