U.S. NUCLEAR REGULATORY COMMISSION

REGION III

Report No. 030-19025/90001(DRSS)

Docket No. 030-19025

License No. 04-19644-01 Category E3 Priority 1

Licensee: Radiation Sterilizers, Inc. (RSI)
4020 Clipper Court
Fremont, CA 94538

Inspection Conducted At: 305 Enterprise Drive
Westerville, Ohio

Date of Inspection December 11, 1990

Inspector: J. L. Lynch
Radiation Specialist James L Lynch 1-2-91
Date

Approved By: William H. Schultz, Chief
Nuclear Materials Safety
Section 1
William H. Schultz
Date 1-2-91

Inspection Summary

Inspection on December 11, 1990 (Report No. 030-19025/90001(DRSS))
Areas Inspected: Announced, special inspection to review the WESF capsule removal process from the Westerville, Ohio irradiator facility.
Results: No violations were identified during the course of the inspection, however, one open item was identified.

DETAILS

1. Persons Contacted

*Barry Fairand, Ph.D., Corporate Radiation Safety Officer
*J. Tim Robison, Radiation Safety Officer
Gunter Horn, Vice President of Engineering
Dewey Robbins, Westinghouse Site Manager
Chuck Peach, Chem-Nuclear Manager

*Attended exit interview on December 11, 1990.

2. Purpose of Inspection

This was a special, announced safety inspection of the licensee's irradiator facility in Westerville, Ohio. The purpose of the inspection was to review the removal of Waste Encapsulation and Storage Facility (WESF) capsules from the facility. Other radiation safety aspects of the irradiation program were also reviewed during the course of the inspection.

3. Program Overview

The Westerville irradiator normally operates 24 hours per day, seven days per week. The facility irradiates medical products, aseptic packages, animal laboratory products and spices. Fourteen people are employed at the irradiator facility, nine of whom are qualified operators.

DOE-leased WESF capsules, each containing approximately 50,000 curies of cesium-137, were first installed in the irradiator in 1985, replacing the cobalt-60 sources. The WESF capsule failure in 1988 at RSI's Decatur, Georgia facility prompted a decision to return all RSI WESF sources to DOE. The Westerville irradiator had used 180 WESF capsules prior to the Decatur incident. One hundred eighteen capsules had been returned to DOE prior to this inspection, leaving 62 capsules at Westerville. With the removal of 27 sources during the week of the inspection, 35 WESF sources remain stored in the irradiator pool.

The license has been under timely renewal since 1986. The license will be renewed after the cesium-137 WESF capsules are all removed from the facility. Amendments were recently approved to name Mr. Robison as the RSO, extend the deadline for removal of all WESF capsules and to approve water chiller modifications.

4. WESF Capsule Removal

This inspection included observations of portions of the WESF source removal process for 12 sources. The sources were readied for transportation to DOE, Hanford, Washington facilities. Another 15 sources were transported later in the week.

DOE's primary contractor for the source removal was Westinghouse who, in turn, subcontracted much of the work to Chem-Nuclear. A staff of 4 Westinghouse and 6 Chem-Nuclear personnel were on site for the operation. A local crane operator was hired by RSI to lift casks and sources in and out of the irradiator cell through the roof port.

The following is a simplified description of the steps required to remove WESF capsules from the facility.

- "Clunk" test sources by shaking (underwater) to determine if inner capsule slides freely, indicating that is is not swollen.

- Lower source canister into pool. A canister can hold up to three WESF capsules.

- Using underwater manipulators, place WESF capsules into canister, secure lid.

- "Blow out" water from canister, time required approximately 15 minutes.

- Vacuum pump canister for approximately three hours.

- Lower cask into pool.

- Load canister into cask, secure lid.

- Tighten lid bolts at surface of water (radiation monitoring is performed as cask is lifted).

- Blow out water from cask.

- Lift cask out of cell to parking lot.

- Vacuum pump cask.

- Cover cask with fire shields and load onto flatbed truck (three casks per truck).

- Label casks (Yellow-III for Highway Route Controlled Quantity) and placard truck.

- Prepare shipping papers.

- Vehicle checked out by Public Utilities Commission of Ohio.

During the week of December 10 through 14, 1990, nine casks containing 27 sources were loaded and shipped in this manner. The remaining 35 sources are scheduled to be shipped in January 1991.

5. Radiation Safety

Throughout the week, radiation safety systems (with the exception of the

in-line radiation monitor) were out of service as RSI is rebuilding the irradiator mechanical and electrical systems concurrent with the WESF capsule removal. The electrical box supplying power to the source rack hoist system was shut off and fuses were removed during the process.

Good radiation safety practices were observed during the inspection, including checking of equipment leaving the pool and hand and foot monitoring of all personnel leaving the irradiator cell.

Contractor personnel were aware that RSI radiation safety policies were to be followed.

The RSO stated that additional cobalt-60 pencils were added to the source racks on December 14, 1990. The total source load is within the two megacurie license limit. When all of the cesium-137 is removed from the pool, the in-line radiation monitor will be recalibrated for cobalt-60.

Radiation surveys performed during the inspection did not reveal any radiation levels greater than background.

No violations of NRC requirements were identified.

6. Water Quality

During the WESF capsule removal process, the water and pool debris became stirred up. This resulted in slightly increased conductivity but did not appear to be a significant problem. NRC measurements indicated conductivity of 10.9 micromhos, slightly over the 10 micromho license limit. The RSO confirmed that conductivity levels returned to normal ranges after the source manipulations were completed and the pool was vacuumed.

NRC measurements were performed with a Fisher Scientific 09-327 conductivity meter.

No violations of NRC requirements were identified.

7. Transportation

The shipping casks used to transport the WESF capsules were appropriately tested, marked and labeled to DOT specifications. Westinghouse personnel ensured that labeling and shipping papers were in accordance with company procedures.

One issue was raised by the NRC with respect to the cask labeling. A Yellow-III label is required to be used for Highway Route Controlled Quantity per 49 CFR 172.403. The regulation does not specifically address the Transport Index to be included on the label (and shipping papers). Westinghouse personnel measured only background radiation levels on the casks' surfaces but opted to mark the Transport Index as 1.0, to be conservative. The inspector thought a more appropriate Transport Index would be the actual radiation level reading at one meter as defined in 49 CFR 173.403.

The Department of Transportation Region V office was contacted to address this issue. Mr. Greg Rowling, Regional Hazardous Materials Program Manager stated that the actual radiation levels at one meter is appropriate.

This information was conveyed to RSI and Westinghouse personnel. Both parties stated that they would research the issue and would get back to the NRC in the near future. This is considered to be an open item which will be resolved prior to the January 1991 shipments of WESF capsules.

No violations of NRC requirements were identified, however, one open item was noted.

8. Decommissioning

The licensee has filed a financial assurance plan with the NRC (pending review) and is maintaining appropriate records required by 10 CFR 30.35.

No violations of NRC requirements were identified.

9. Exit Interview

An exit interview was conducted on December 11, 1990 at the Westerville facility. Licensee attendance at the meeting is indicated in Section 1 of this report. During the exit interview, the inspector reviewed the open item identified during the inspection. Proprietary information was excluded from this report.