DOCS DELAWARE OUTPATIENT CENTER FOR SURGERY

774 Christiana Road
Suite 2
Newark, Delaware 19713

Phone: (302) 738-0300
Fax: (302) 355-0155

10-25-18

Br. 1

United States Nuclear Regulatory Commission
Region I
Attn: Tara Wiedner
475 Allendale Rd
King of Prussia, PA, 19406-1415

Re: Request to Renew and amend Radioactive Materials License # 07-31332-01 / 03037830

Dear Sir/Madam:

Our current NRC Materials license for Sealed source (# 07-31332-01) for Delaware Outpatient Surgical Center, Newark, DE is expiring on Dec 31st, 2018. As RSO of this facility, I respectfully request to renew my existing materials license for through Dec 31st, 2028 for us to be able to use the radionuclides for prostate cancer low dose rate brachytherapy use.

I am also requesting an amendment of our radioactive material license to add the IsoRay Model CS-1 Cesium-131 (Cs-131) brachytherapy Seed. The CS-1 is a sealed radioactive source for manual brachytherapy. It is listed in the Sealed Source and Device Registry as WA-1220-S-101-S (approval attached), and cleared by the FDA 510(k) K030162 (attached clearance letter).
The maximum activity currently permitted in the SSDR is 65 mCi per source. We request a per source limit of at least 10 mCi. We request a total activity of 5,000 mCi total, but at least 2,000 mCi to permit multiple patients per week and also to allow for decay of the 9.7 day half-life in transit and prior to use.

The photon energies for Cs-131 are about 30 keV energy, and therefore is highly shielded by patient soft tissue after implantation. Patients may be released at 6 mrem/hour Effective Dose Equivalent (EDE) measured at 1 meter per 10 CFR 35.75, and NUREG 1556 Vol. 9 Appendix U calculations. Note that due to self-shielding EDE is significantly lower than measured dose. However, it is not expected that such corrections will be needed.
Also note since Cs-131 is not specifically listed in the Table U 1 in NUREG 1556, patient instruction on minimizing dose to members of the public must be made and documented. These instructions will be the same or similar to other radionuclide procedures we already perform at our center. If corrections to EDE are applied to facilitate release, then the calculation and its justification will be documented.

Rec'd. in LAT - 10/25/2018

610318
REGION I MATERIALS

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My final request will be to remove the following radionuclides from the license as they are no longer being used in any form at this facility.

1. Amersham Health Model 6711 (OncoSeed)
2. Bard Brachytherapy, Inc., Model STM 1251

Sincerely,

Adam Raben MD, RSO
Delaware Outpatient Center for Surgery
744 Christina Road, Suite 2
Newark, DE, 19713
302-623-4857

IsoRay may be contacted at:
IsoRay Medical
350 Hills St.
Suite 106
Richland, WA 99354
(509) 375-1202

IsoRay's Radiation Safety Officer is Troy Sienko

STATE OF WASHINGTON
DEPARTMENT OF HEALTH
DIVISION OF RADIATION PROTECTION
*7171 Cleanwater Lane, Bldg. 5 * P.O. Box 47827 * Olympia, Washington 98504-7827*
TDD Relay 1-800-833-6388

October 5, 2004

Garrett N. Brown, Ph.D.
Radiation Safety Officer
ISORAY
350 Hills Street Suite 106
Richland, Washington 99352

Dear Dr. Brown:

Enclosed is the Sealed Source & Device registration for your CSERION CS 131 Brachytherapy Seed, SS&D registry number WA-1220-S-101-S. Also enclosed is Amendment No. 1 to License Number WN-L0213-1 authorizing distribution of the ^{131}Cseed. In accordance with your letter of August 13, 2004, our evaluation of your SS&D application is subject to WAC 246-254-120, "Fees for Licensing and Compliance Actions." It is the purpose of this section of Title 246 of the Washington Administration Code to recover the cost to the department of staff activities, such as the review of your Sealed Source and Device evaluation. This portion of WAC provides that we charge a fee of $100.00 per hour.

Our staff's time directly associated with your SS&D evaluation totals 21 hours. At $100.00 per hour the fee is $ 2,100.00.

Please return the lower portion of the enclosed billing with your remittance to Department of Health, within 30 days.

Your cooperation in this matter is appreciated.

Sincerely,

Arden C. Scroggs, Supervisor
Radioactive Materials Section

Enclosures: Sealed Source & Device Registration No. WA-1220-S-101-S
License Amendment No.1

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

NO.: WA-1220-S-101-S **DATE:** 17 September 2004

SOURCE TYPE: Sealed Brachytherapy Source

MODEL: CS-1
Lawrence CSERION Cs-131 Brachytherapy Seed
(also known as ^{131}Cseed)

DISTRIBUTOR: IsoRay
Suite 106
350 Hills Street
Richland, WA 99352

MANUFACTURER: IsoRay
Suite 106
350 Hills Street
Richland, WA 99352

ISOTOPE: Cesium-131

MAXIMUM ACTIVITY: 65 mCi (2.41 GBq) Internal Activity
2-5 mCi Average Air Kerma Strength/Assay Activity

LEAK TEST FREQUENCY: Not Required

PRINCIPAL USE: (AA) Manual Brachytherapy

CUSTOM SOURCE: ____YES __X__NO

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

SOURCE TYPE: Sealed Brachytherapy Source

DESCRIPTION:

The IsoRay Model CS-1 brachytherapy seed is a small, cylindrical, sealed source that consists of a welded titanium capsule containing the low energy gamma (X-ray) emitting isotope, cesium-131 ($T_{1/2}$ = 9.7 d), adsorbed onto an internal inorganic substrate. The nominal external seed dimensions (4.5 mm length and 0.8 mm diameter) and patient-contacting material (titanium) are identical to other commercially available brachytherapy sources for radiation oncology.

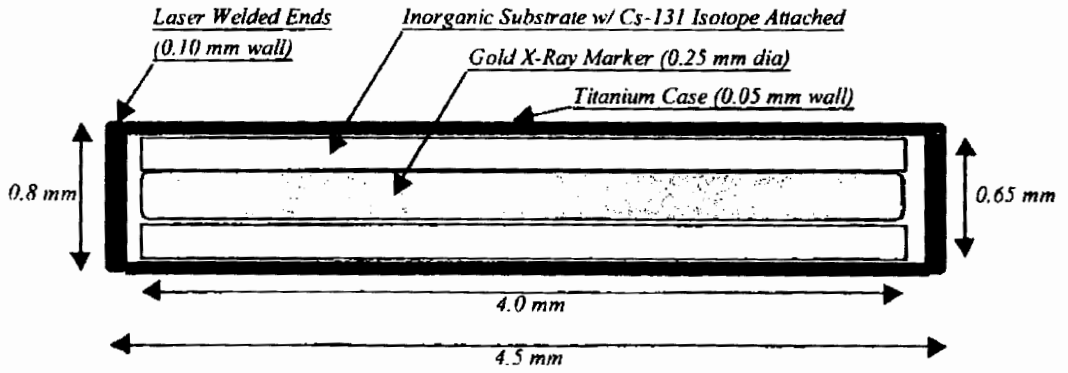
The brachytherapy seed contains a cylindrical inorganic substrate onto which a thin coating of radioactive cesium-131 is applied. A 0.25 mm diameter gold wire is placed within in the central annulus of the core. The gold wire serves as an X-ray marker for radiographic visualization of individual brachytherapy source locations. The internal core materials are inserted into a tube of commercially pure, grade 2 titanium (4.3 mm long, 0.8 mm OD, 0.7 mm ID). Titanium end caps (0.8 mm diameter, 0.1 mm thick) are precision laser welded in place.

LABELING:

Because of their small size, individual brachytherapy sources do not directly exhibit identifying marking, labeling or warnings. Multiple sources will be supplied in a primary container such as a glass vial or preloaded cartridges. The primary container will be placed inside a shielded storage container. The shielded storage container will be placed inside a shipping container meeting DOT requirements for shipment of radioactive materials. Examples of labels for each of these containers appear in Figures 1 – 3. The labels will be made of durable materials that remain legible during the expected conditions of transportation and use.

DIAGRAM:

A diagram of the IsoRay Model CS-1 brachytherapy seed showing components, dimensions, and the method of sealing appears below:



SOURCE TYPE: Sealed Brachytherapy Source

CONDITIONS OF NORMAL USE:

IsoRay Model CS-1 brachytherapy seeds are indicated for the treatment of malignant disease (e.g., head and neck, brain, breast, prostate, etc.) in a clinical setting and may be used in topical, interstitial, and intracavitary applications for tumors with known radiosensitivity. The seeds may be used as a primary treatment or in conjunction with other treatment modalities, such as external beam radiation therapy, chemotherapy or as treatment for residual disease after excision of primary tumors.

Seeds are typically supplied non-sterile in radiation shielded packaging. The sources are capable of withstanding autoclave conditions. Sources may be implanted using any appropriate, FDA-approved device (e.g., 18-gauge brachytherapy needle, seed applicator, tubing, etc.). Radiological protection devices should be utilized during implantation procedures. When protective barriers are not practical, (e.g., certain surgical stages), the user must rely on time and distance to minimize radiation exposure.

PROTOTYPE TESTING:

IsoRay Model CS-1 Brachytherapy Seeds were classified and subjected to environmental test conditions and stresses as defined in ISO 2919-1999, "Radiation Protection – Sealed Radioactive Sources – General Requirements and Classification." The seeds successfully passed all of the required test conditions and are classified as ISO 99C53211, where the last five digits define the test conditions and requirements as shown in the following table. The cesium-131 isotope is classified as Group 3: Moderate Toxicity.

Test	Classification	Test Conditions
Low Temperature High Temperature	5	-40°C (20 min) w/ thermal shock to 20°C; +600°C (1 hr) w/ thermal shock to 20°C
External Low Pressure External High Pressure	3	Two 5 min periods at 25 kPa absolute; Two 5 min periods at 2 Mpa absolute
Impact	2	50 g steel weight dropped from 1 meter height
Vibration	1	No Test Required
Puncture	1	No Test Required
Bending	1	No Test Required
Steam Autoclave	Optional	121°C at 29.8 psig for 20 min

SOURCE TYPE: Sealed Brachytherapy Source

EXTERNAL RADIATION LEVELS:

The radiation dose rates in air at various distances from the Model CS-1 source were calculated using a gamma dose rate constant of 0.637 cGy/hr-mCi (637 mR/hr) at 1 cm. The dose rate constant is based on Air Kerma Rate measurements of actual seeds by the National Institute for Standards and Technology and has been confirmed using Monte Carlo calculations.

Distance from the source (cm)	Dose Rate (mR/hr) Maximum activity (50 mCi)	Dose Rate (mR/hr) Typical activity (3.3 mCi)
5	1300	84
30	35	2.3
100	3.2	0.21

QUALITY ASSURANCE AND CONTROL:

Prior to distribution, the following quality control tests will be completed:

Test	Method	Acceptance Criteria
Radionuclidic Purity	Gamma Analysis	> 99.9% Cs-131; < 0.01% Ba-131; < 0.1% Cs-132; < 0.05% all other radioisotopes
Weld Inspection	Visual – w/ Magnification	Silver in color, with no cracks or holes
Leak Test	ISO 9978	≤ 0.185 kBq (≤ 0.005 µCi) per seed
Radioassay	Dose Calibrator	0.2 to 50.0 mCi ± 5% apparent activity
External Dimensions	Gauging	0.8mm ± 10% OD; 4.5 mm ± 10% length
Seed Assembly	Visual	No foreign material, dents, or scratches
Labeling	Visual	Information is legible, accurate and complete

IsoRay maintains a quality assurance program that is based on ISO 9001 requirements and is designed to comply with US Food and Drug Administration Quality System Requirements for medical devices. Elements of the quality system that are directly applicable to this brachytherapy seed are included in the application for safety evaluation of this sealed source.

SOURCE TYPE: Sealed Brachytherapy Source

LIMITATIONS AND OTHER CONSIDERATIONS OF USE:

- The sealed sources shall be distributed only to specific licensees of the Washington State Department of Health, the U.S. Nuclear Regulatory Commission, or an Agreement State.
- Handling, Storage, Use, Transfer and Disposal: To be determined by the licensing authority. Given that these sealed sources exhibit high surface dose rates when unshielded, these sources should be handled by experienced licensed personnel using adequate remote handling equipment and procedures.
- Leak testing beyond that performed by the manufacturer is not required due to the short half-life (9.7 days) of Cs-131.
- Since the seeds are non-sterile when shipped, they must be sterilized upon receipt prior to use using either steam (autoclave) or ethylene oxide (EtO). Dry heat sterilization must not be used.
- Sources shall not be exposed to conditions that exceed the ISO 2919 classification of 99C53211. Despite excellent corrosion resistance of titanium, seeds are not to be exposed to concentrated acids or bases.
- Licensees should observe the manufacturer's instructions for handling and using the Cs-131 sources which are provided with each shipment of seeds. When not in use, seeds should be stored in shielded containers in a controlled area.
- Any excess seeds must be disposed in accordance with applicable rules and regulations. Unused sources may be returned to the distributor.
- This registration sheet and the information contained with the references shall not be changed without the written consent of the Washington State Department of Health.

SAFETY ANALYSIS SUMMARY:

Based on review of the IsoRay Model CS-1 brachytherapy sealed source, its ISO 2919/ANSI N43.6/ANSI N44.1 classification, and the information and test data cited below, we conclude that the IsoRay Model CS-1 sealed source is acceptable for licensing purposes.

Furthermore, we conclude that this source should maintain its integrity under normal conditions of use and accidental conditions which might occur during uses specified in this certificate.

REGISTRY OF RADIOACTIVE SEALED SOURCES AND DEVICES
SAFETY EVALUATION OF SEALED SOURCE

SOURCE TYPE: Sealed Brachytherapy Source

REFERENCES:

This Certificate of Registration is based on information contained in the following supporting documents which are hereby incorporated by reference and made a part of this registry document:

- Application for Safety Evaluation and Registration of IsoRay Model CS-1 Brachytherapy Sealed Source, dated May 20, 2004.
- Letter and attachment dated 24 August 2004.

ISSUING AGENCY: Washington State Department of Health, Office of Radiation Protection
Box 47827, Olympia, Washington 98504 360-236-3220.

Date: 17 Sept 04 REVIEWED BY: for C. DeMaris

Date: 23 September 04 CONCURRENCE: A. Grumbles

SOURCE TYPE: Sealed Brachytherapy Source

Cs-131 Brachytherapy Seed Model CS-1	
IsoRay, Richland, WA 99352 USA	
Lot Number:	
Assay Date:	
Number of Sources:	**CAUTION**  Radioactive Materials
Total Activity: mCi	
NON-STERILE	
Caution: Cesium-131 Radioactive Material	

Figure 1. Example of primary seed container labeling

Cs-131 Brachytherapy Seed Model CS-1				
Manufactured By: IsoRay, Inc. 350 Hills Street, Suite 106 Richland, WA 99352 USA Phone: 509-375-1202		Certificate Number:		
		Lot Number:		
		Number of Seeds:	Reference Date:	Implant Date:
		Total Apparent Activity (mCi):		
		Total Air Kerma $\mu Gy\ m^2\ h^{-1}$ (U):		
CAUTION  Radioactive Materials	Caution: Federal law restricts this device to sale by or on the order of a physician	Midpoint Apparent Activity (mCi):		
		Midpoint Air Kerma $\mu Gy\ m^2\ h^{-1}$ (U):		
		Patient Name or ID:		
Caution: Radioactive Material Cesium-131		Physician Name:		
		SINGLE USE ONLY	**WARNING: NON-STERILE**	

Figure 2. Example of shielded storage container labeling

SOURCE TYPE: Sealed Brachytherapy Source

CAUTION: RADIOACTIVE MATERIAL	CAUTION
READ THE **WARNINGS AND PRECAUTIONS** SECTION OF THE PACKAGE INSERT SHEET ENCLOSED WITH THIS PACKAGE BEFORE HANDLING THIS CONTAINER OR CONTENTS	

Figure 3. Example of package insert warning label

DEPARTMENT OF HEALTH & HUMAN SERVICES Public Health Service

Food and Drug Administration
10903 New Hampshire Avenue
Document Control Room – WO66-G609
Silver Spring, MD 20993-0002

Mr. Fredric G. Swindler
Vice President
Regulatory Affairs and Quality Assurance
IsoRay Medical, Inc.
350 Hills St., Suite 106
RICHLAND WA 99354-5411

AUG 07 2009

Re: K092136
Trade/Device Name: Proxcelan™ (Cesium-131) Implant Devices,
Model PL-5 – Cs-131 Preloaded Braided Strands
Regulation Number: 21 CFR 892.5730
Regulation Name: Radionuclide brachytherapy source
Regulatory Class: II
Product Code: KXK
Dated: July 10, 2009
Received: July 15, 2009

Dear Mr. Swindler:

We have reviewed your Section 510(k) premarket notification of intent to market the device referenced above and have determined the device is substantially equivalent (for the indications for use stated in the enclosure) to legally marketed predicate devices marketed in interstate commerce prior to May 28, 1976, the enactment date of the Medical Device Amendments, or to devices that have been reclassified in accordance with the provisions of the Federal Food, Drug, and Cosmetic Act (Act) that do not require approval of a premarket approval application (PMA). You may, therefore, market the device, subject to the general controls provisions of the Act. The general controls provisions of the Act include requirements for annual registration, listing of devices, good manufacturing practice, labeling, and prohibitions against misbranding and adulteration.

If your device is classified (see above) into either class II (Special Controls) or class III (PMA), it may be subject to additional controls. Existing major regulations affecting your device can be found in the Code of Federal Regulations, Title 21, Parts 800 to 898. In addition, FDA may publish further announcements concerning your device in the Federal Register.

Please be advised that FDA's issuance of a substantial equivalence determination does not mean that FDA has made a determination that your device complies with other requirements of the Act or any Federal statutes and regulations administered by other Federal agencies. You must comply with all the Act's requirements, including, but not limited to: registration and listing (21 CFR Part 807); labeling (21 CFR Part 801); medical device reporting (reporting of medical

device-related adverse events) (21 CFR 803); good manufacturing practice requirements as set forth in the quality systems (QS) regulation (21 CFR Part 820); and if applicable, the electronic product radiation control provisions (Sections 531-542 of the Act); 21 CFR 1000-1050.

If you desire specific advice for your device on our labeling regulation (21 CFR Part 801), please go to http://www.fda.gov/AboutFDA/CentersOffices/CDRH/CDRHOffices/ucm115809.htm for the Center for Devices and Radiological Health's (CDRH's) Office of Compliance. Also, please note the regulation entitled, "Misbranding by reference to premarket notification" (21CFR Part 807.97). For questions regarding the reporting of adverse events under the MDR regulation (21 CFR Part 803), please go to http://www.fda.gov/cdrh/mdr/ for the CDRH's Office of Surveillance and Biometrics/Division of Postmarket Surveillance.

You may obtain other general information on your responsibilities under the Act from the Division of Small Manufacturers, International and Consumer Assistance at its toll-free number (800) 638-2041 or (240) 276-3150 or at its Internet address http://www.fda.gov/cdrh/industry/support/index.html.

Sincerely yours,

Janine M. Morris
Acting Director, Division of Reproductive,
Abdominal, and Radiological Devices
Office of Device Evaluation
Center for Devices and Radiological Health

Enclosure

2.0 Section B

Indications for Use

510(k) Number: K092136

Device Name: Proxcelan™ (Cesium-131) Implant Devices, Model PL-5 – Cs-131 Preloaded Braided Strands

Indications for Use:

Proxcelan™ (Cesium-131) Implant Devices, Model PL-5 – Cs-131 Preloaded Braided Strands, containing cesium-131 brachytherapy seeds are indicated for the treatment of malignant disease (e.g. head and neck, brain, breast, lung, prostate, eye, etc.) and may be used in surface, interstitial, and intracavity applications for tumors with known radiosensitivity. These devices may be used as a primary treatment or in conjunction with other treatment modalities, such as external beam radiation therapy, chemotherapy or as a treatment for residual disease after excision of primary tumors.

Prescription Use __X__ (Per 21 CFR § 801.109) OR Over-The-Counter Use _____

(PLEASE DO NOT WRITE BELOW THIS LINE - CONTINUE ON ANOTHER PAGE IF NEEDED)

Concurrence of CDRH, Office of Device Evaluation (ODE)

(Division Sign-Off)
Division of Reproductive, Abdominal, and Radiological Devices
510(k) Number K092136