



## IU Health Physicians

Close-out survey of  
MPC II, Suite 4000, 1801 Senate Blvd., Indianapolis, Indiana, 46202

Performed by: Patrick J. Byrne, D.A.B.R., C.H.P., D.A.B.S.N.M.  
Medical Physics Consultants, Inc.

Radioactive materials usage at this address of use was limited to diagnostic medical procedures in humans, along with the use of sealed sources for equipment calibration and quality control.

Wipe tests for removable radioactive contamination were taken on 08/10/11 and analyzed in a Ludlum Model 243 (S/N: 145366) Shielded Well Scintillator coupled to a Ludlum Model 2200 (S/N: 138705) Scaler Ratemeter. A window of 50 to 400 keV was used to analyze the wipes. The efficiency of this system for Cobalt-57 is 1.09 dpm/cpm. The results of the wipe tests are enclosed.

The radiation levels survey was performed on 08/10/11 by Patrick Byrne, using a Ludlum Model 14C Geiger-Muller survey meter (S/N: 192047). The meter was calibrated on 06/24/11. The range used for the radiation level survey was 0.0 to 0.2 mR/hr.

### Visual Inspection

The area was visually inspected to ensure that all radioactive waste had been removed. No radioactive material was located in the area.

### Radiation Level Survey

No area demonstrated radiation levels in excess of the background reading of 0.01 mR/hr.

### Sealed Sources

All sealed sources have been transferred to U.S.N.R.C. Materials License 13-02752-03. No sealed source had ever been found to be leaking. Enclosed is a copy of the results of the last leak tests performed on the sealed sources prior to the move.

RECEIVED AUG 23 2011

Cardiology  
IU Health Methodist Professional Center 2  
1801 N. Senate Boulevard, Suite 4000  
Indianapolis, IN 46202  
T 317.962.0500 F 317.962.0501

General Information  
T 317.944.4000  
T 888.944.DOCS (3627)  
[iuhealth.org](http://iuhealth.org)

# **CERTIFICATE OF DISPOSITION OF MATERIALS**

Estimated burden per response to comply with this mandatory collection request: 30 minutes. This submittal is used by NRC as part of the basis for its determination that the facility is released for unrestricted use. Send comments regarding burden estimate to the Information Services Branch (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by internet e-mail to Infocollects.Resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0028), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

**LICENSEE NAME AND ADDRESS**

Krannert Institute of Cardiology  
MPC II, Suite 4000  
1801 North Senate Blvd.  
Indianapolis, IN 46202

**LICENSE NUMBER**

13-32435-01

**DOCKET NUMBER**

030-36171

**LICENSE EXPIRATION DATE**

12/31/2012

**A. LICENSE STATUS (Check the appropriate box)**

- ☐ This license has expired. ☒ This license has not yet expired; please terminate it.

**B. DISPOSAL OF RADIOACTIVE MATERIAL**

(Check the appropriate boxes and complete as necessary. If additional space is needed, provide attachments)

The licensee, or any individual executing this certificate on behalf of the licensee, certifies that:

- ☐ 1. No radioactive materials have ever been procured or possessed by the licensee under this license.
- ☒ 2. All activities authorized by this license have ceased, and all radioactive materials procured and/or possessed by the licensee under this license number cited above have been disposed of in the following manner.
- ☒ a. Transfer of radioactive materials to the licensee listed below:  
13-02752-03
- ☒ b. Disposal of radioactive materials:
- ☒ 1. Directly by the licensee:  
Radioactive waste of half lives less than 120 days was decayed to background levels and disposed of in regular waste.
- ☐ 2. By licensed disposal site:
- ☐ 3. By waste contractor:
- ☒ c. All radioactive materials have been removed such that any remaining residual radioactivity is within the limits of 10 CFR Part 20, Subpart E, and is ALARA.

**C. SURVEYS PERFORMED AND REPORTED**

- ☒ 1. A radiation survey was conducted by the licensee. The survey confirms:
- ☒ a. the absence of licensed radioactive materials
- ☐ b. that any remaining residual radioactivity is within the limits of 10 CFR 20, Subpart E, and is ALARA.
- ☒ 2. A copy of the radiation survey results:
- ☒ a. is attached; or ☐ b. is not attached (Provide explanation); or ☐ c. was forwarded to NRC on: \_\_\_\_\_ Date \_\_\_\_\_
- ☐ 3. A radiation survey is not required as only sealed sources were ever possessed under this license, and
- ☐ a. The results of the latest leak test are attached; and/or ☐ b. No leaking sources have ever been identified.

The person to be contacted regarding the information provided on this form:

|                          |                                   |   |   |
|--------------------------|-----------------------------------|---|---|
| NAME<br>Patrick J. Byrne | TITLE<br>Radiation Safety Officer | TELEPHONE (Include Area Code)<br>(800) 321-2207 | E-MAIL ADDRESS<br>pbyrne@mpcphysics.com |
|--------------------------|-----------------------------------|---|---|

Mail all future correspondence regarding this license to:

Jeff Mason; Radiation Safety Office; Indiana University - Indianapolis; 541 Clinical Drive - CL159; Indianapolis, IN, 46202

**C. CERTIFYING OFFICIAL**  
**I CERTIFY UNDER PENALTY OF PERJURY THAT THE FOREGOING IS TRUE AND CORRECT**

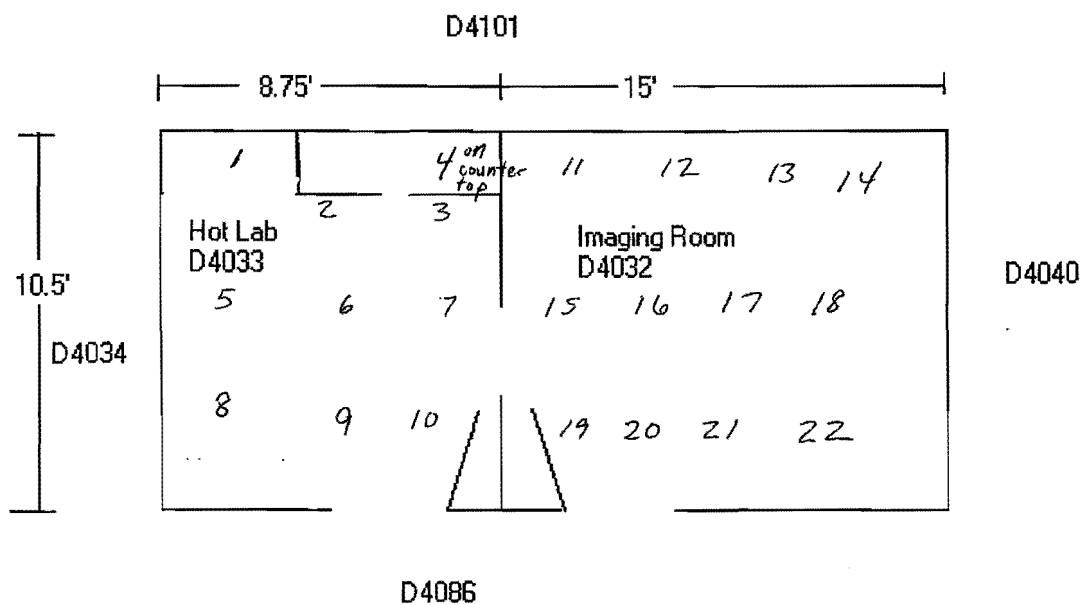
|   |                              |                 |
|---|------------------------------|-----------------|
| PRINTED NAME AND TITLE<br>Anaela Rinehart, Cardiology Service Line Admin. | SIGNATURE<br>Anaela Rinehart | DATE<br>8/12/11 |
|---|------------------------------|-----------------|

**WARNING: FALSE STATEMENTS IN THIS CERTIFICATE MAY BE SUBJECT TO CIVIL AND/OR CRIMINAL PENALTIES. NRC REGULATIONS REQUIRE THAT SUBMISSIONS TO THE NRC BE COMPLETE AND ACCURATE IN ALL MATERIAL RESPECT. 18 U.S.C. SECTION 1001 MAKES IT A CRIMINAL OFFENSE TO MAKE A WILLFULLY FALSE STATEMENT OR REPRESENTATION TO ANY DEPARTMENT OR AGENCY OF THE UNITED STATES AS TO ANY MATTER WITHIN ITS JURISDICTION.**



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Indianapolis, IN 46202



\* Numbers refer to wipe sample locations.



## IU Health Physicians

### Removable Contamination Survey Results

Wipe samples were counted in a Ludlum Model 243 Shielded Well Scintillator (S/N: 145366) coupled to a Ludlum Model 2200 Scaler Ratemeter (S/N: 138705). The efficiency of this system for Cobalt-57 is 1.09 dpm/cpm.

Background: 246 counts per minute

| Wipe Number | Gross counts per minute | Net counts per minute | Disintegrations per minute |
|-------------|-------------------------|-----------------------|----------------------------|
| 1           | 250                     | 8                     | 1.09                       |
| 2           | 235                     | 0                     | 0                          |
| 3           | 275                     | 29                    | 31.61                      |
| 4           | 260                     | 14                    | 15.26                      |
| 5           | 252                     | 6                     | 6.54                       |
| 6           | 240                     | 0                     | 0                          |
| 7           | 247                     | 1                     | 1.09                       |
| 8           | 234                     | 0                     | 0                          |
| 9           | 263                     | 17                    | 18.53                      |
| 10          | 270                     | 24                    | 26.16                      |
| 11          | 249                     | 3                     | 3.27                       |
| 12          | 255                     | 9                     | 9.81                       |
| 13          | 229                     | 0                     | 0                          |
| 14          | 231                     | 0                     | 0                          |
| 15          | 250                     | 4                     | 4.36                       |
| 16          | 238                     | 0                     | 0                          |
| 17          | 241                     | 0                     | 0                          |
| 18          | 252                     | 6                     | 6.54                       |
| 19          | 248                     | 2                     | 2.18                       |
| 20          | 258                     | 12                    | 13.08                      |
| 21          | 251                     | 5                     | 5.45                       |
| 22          | 274                     | 28                    | 30.52                      |

\*Please refer to the attached survey map for wipe locations.

Maximum removable contamination occurred in area 3. Gross count rate = 275 cpm/100cm<sup>2</sup>. Net count rate (gross minus background) = 275 – 246 = 29 cpm/100cm<sup>2</sup>. Net removable disintegrations per minute = 29 cpm/100cm<sup>2</sup> x 1.09 dpm/cpm = 31.61 dpm/100cm<sup>2</sup>.

### Conclusion

As of 8/10/11, all radioactive materials have been removed from the area of use and no removable contamination is present.



## Sealed Source Leak Test

Licensee: Krannert Institute of Cardiology

Date: 07/01/11

Performed by: Patrick Byrne

| Nuclide | Type  | Calibration                 | Calibration | Location | M/N     | S/N      |
|---------|-------|-----------------------------|-------------|----------|---------|----------|
|         |       | Activity                    | Date        |          |         |          |
| Cs-137  | Vial  | 253.6 uCi                   | 07/01/02    | Hot Lab  | MED3550 | 24160    |
|         |       | Current Activity: 206 uCi   |             |          |         |          |
| Ba-133  | Vial  | 257 uCi                     | 03/01/03    | Hot Lab  | MED3550 | 33835    |
|         |       | Current Activity: 150.0 uCi |             |          |         |          |
| Co-57   | Flood | 10 mCi                      | 05/01/11    | Hot Lab  | MED3727 | 1501-006 |
|         |       | Current Activity: 8.555 mCi |             |          |         |          |

Comment: The sources listed above were leak tested using a dry wipe technique and were found to have less than 0.005 uCi removable activity. The following Minimum Detectable Activities are based upon a background at the indicated value. Background was at or below these levels when the above tests were completed.

Well Counter: Ludlum 2200 Scaler

| Nuclide | MDA                      | Background |
|---------|--------------------------|------------|
| Cs-137  | $2.1 \times 10^{-4}$ uCi | 45 cpm     |
| Ba-133  | $6.0 \times 10^{-5}$ uCi | 264 cpm    |
| Co-57   | $4.0 \times 10^{-5}$ uCi | 307 cpm    |

**RADIATION SAFETY OFFICER:** \_\_\_\_\_

Krasner Institute of Cardiology  
IUHP - Cardiology  
1801 N Senate, APC 2, Suite 4000  
Indianapolis, IN 46202

Attn: Sheri Stricker

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