# APPENDIX A

**INSTRUCTIONS TO PERSONNEL FOR HUMAN USE OF RADIATION**

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RADIATION PROTECTION FOR ENVIRONMENTAL SERVICES PERSONNEL

1. **DO NOT REMOVE** trash containers posted with "CAUTION RADIOACTIVE MATERIALS".

2. NO sink is to be used under any circumstances which is posted with "CAUTION RADIOACTIVE MATERIALS" signs for any purpose other than disposal of radioactive material. These should not be cleaned by environmental services personnel.

3. Do not clean or touch any article, furniture, glassware, or equipment with "CAUTION RADIOACTIVE MATERIALS" signs attached.

4. Do not remove any article whatsoever with "CAUTION RADIOACTIVE MATERIALS" sign attached.

5. In case of accidental spillage of radioactive material(s):
   a) NOTIFY RADIATION SAFETY IMMEDIATELY, EXTENSION 4255.
   b) Do not leave the area.
   c) Do not attempt to clean up the spillage.

6. NO eating, drinking, smoking, or applying of cosmetics in rooms posted with "CAUTION RADIOACTIVE MATERIALS" signs.

7. No loitering in rooms posted with "CAUTION RADIOACTIVE MATERIALS" and/or "RADIATION AREA" signs.

8. Personnel who are issued radiation monitors by the Radiation Safety Office should wear them at all times while in rooms posted with "CAUTION RADIATION AREA" signs.
Example of Information to be included in patient's record:

__________________________________________ has received a diagnostic dose of
(Patient name)
__________________________________________ in the amount of ________________ BQ
(Radionuclide)

No special precautions are necessary.

Signed by: ______________________________

Title: __________________________________

Extension and/or Beeper # _______________

Date: ________________________________
Example of Information to be included in patient's record:

__________________________________________ was given ____________________ BQ

(Patient name)

of radioactive _______________________________ on _________________________.

(Date)

If any incontinence or death occurs in the patient before _________________, it is necessary

(Date)

that certain precautions be observed. In order to comply with these precautions, notify one of the

following at the Medical University of South Carolina Hospital.

Dr._______________________________________

(Attending Physician)

Extension and/or Beeper # _______________

Date: ___________________________________

Director of Radiation Oncology, extension 792-3271

Director of Nuclear Medicine, extension 792-3269

Director of Nuclear Pharmacy, extension 792-7458

Radiation Safety Office, extension 792-4255

The Centrex Operator at 792-2123 has an emergency call schedule if there is no answer at one of

the above numbers.
Example of Information to be included in patient's record.

_____________________________________________ was given ___________________ mCi
(Patient name)
of Cesium on ___________________ at_______________________ am/pm.
(Date)

OBSERVE RADIATION NURSING INSTRUCTIONS. THE PATIENT IS NOT TO BE
RELEASED FROM THE HOSPITAL UNTIL ALL THE CESIUM IS REMOVED AND THE
PATIENT SURVEYED AFTER REMOVAL OF CESIUM FROM THE ROOM.

NO VISITORS ALLOWED

Nurses and nursing assistants may remain in the room for the time required to administer nursing care.

If a Cesium source is accidentally removed, or works itself out, IMMEDIATELY contact the
Radiation Oncology Division at 792-3271, Radiation Safety at 792-4255, or the Gynecology
Resident on call.

In the event of death, notify Radiation Oncology at 792-3271, the service resident on call, and
Radiation Safety at 792-4255.

The Centrex Operator 792-2123 has an emergency call schedule if there is no answer at one of the
above numbers.
NURSING PRECAUTIONS FOR PATIENTS RECEIVING THERAPEUTIC DOSES OF CESIUM

Patient: ___________________________ Room No. _______

was administered ________ mCi of cesium on ________ at ________ P.M. (Date) (Time)

by: ___________________________________________, M.D.  Pager No. _____

(Physician's Signature)

1. All cesium therapy patients must be placed in a private room with a private bathroom. The patient is to be placed in the bed farthest from the door.

2. Portable lead shielding may be required to reduce personnel exposure at the patient bedside.

3. The patient shall remain in the room while sources are in place. If the patient accidentally or intentionally removes the source(s) from his/her body, contact the resident on duty who will place the source(s) in the portable shielded carrier and/or notify the above physician and Radiation Safety. In the event a source is damaged or ruptured, do not attempt to handle the source, stop all traffic into and out of the area and notify the Radiation Safety Office IMMEDIATELY. Close all air vents and turn off ventilators.

4. The patient must be surveyed after all sealed sources are removed from the room, and the results of the survey shall be noted in the patient's chart and the ward receipt.

5. The room shall be thoroughly surveyed before reuse.

6. Excreta may be disposed of in the normal manner unless noted otherwise.

7. Nursing personnel attending the patient may be required to wear radiation monitors at the discretion of the Radiation Safety Officer. If issued, the radiation monitor is to be worn at the waist, on a pocket, or on the collar. Radiation monitors are to be worn only by the individual to whom they are issued.

8. Nurses and other attendants may remain in the vicinity of the patient as indicated below in the stay-time chart. The times noted are for radiation workers. Visitors are allowed one-tenth (1/10) of the time shown in the table. No visitors are allowed under 18 years of age or if pregnant.

9. Only OB/GYN resident, Radiation Oncology residents, the attending physician, cesium curator, radiation physicist, radiation therapist, or Radiation Safety Officer shall remove cesium from a patient.

10. In case of death, DO NOT REMOVE THE BODY from the room until the Radiation Safety Officer (792-4255) has issued appropriate instructions. Contact Radiation Safety at 792-4255, Radiation Oncology at 792-3271 or call the Centrex operator at 792-2123 for emergency phone numbers if no answer at either office.
### Cesium Permissible Stay-Times for Radiation Workers* in Minutes/8 Hour Shift

<table>
<thead>
<tr>
<th>Dose (mCi)</th>
<th>C kg(^{-1}) h(^{-1}) at 1 meter (mR h(^{-1}))</th>
<th>Minutes at 1 meter (3 feet)</th>
<th>Minutes at 2 meters (6 feet)</th>
</tr>
</thead>
<tbody>
<tr>
<td>150</td>
<td>3.82 x 10(^{-5}) (148)</td>
<td>8</td>
<td>32</td>
</tr>
<tr>
<td>100</td>
<td>2.55 x 10(^{-5}) (99)</td>
<td>12</td>
<td>48</td>
</tr>
<tr>
<td>75</td>
<td>1.90 x 10(^{-5}) (74)</td>
<td>16</td>
<td>65</td>
</tr>
<tr>
<td>50</td>
<td>1.26 x 10(^{-5}) (49)</td>
<td>24</td>
<td>98</td>
</tr>
<tr>
<td>25</td>
<td>0.64 x 10(^{-5}) (25)</td>
<td>48</td>
<td>194</td>
</tr>
</tbody>
</table>

*based upon 6.45 x 10\(^{-7}\) C kg\(^{-1}\) h\(^{-1}\) (2.5 mR/hr) or 2.58 x 10\(^{-5}\) C kg\(^{-1}\) (100 mR per 40-hour week. Non-radiation workers may stay one-tenth (1/10) of these times. No one under 18 years old or pregnant is allowed.
MEDICAL UNIVERSITY OF SOUTH CAROLINA
Radiation Oncology Department

CESIUM WARD RECEIPT

DATE: ________________________________

TIME OF INSERTION: ____________________AM/PM

NUMBER OF HOURS: _______________________

TIME OF REMOVAL: ____________________AM/PM

APPLICATORS & LOADING

SOURCES, NUMBER & DESCRIPTION:

_____________________________________________________________________

_____________________________________________________________________

TOTAL NUMBER OF SOURCES: ________________________________

REMOVAL OF CESIUM:

REMOVED BY: ___________________ DATE: __________ TIME: ________AM/PM

CHECKED BY: ___________________ DATE: __________ TIME: ________AM/PM

RECEIVED IN CESIUM (“RADIUM”) ROOM: ____________________________AM/PM

SURVEY READINGS:

READING AT 1 METER (3 FEET): ______________________mR/hr

READING AT DOOR: _________________________________mR/hr

READING AFTER CESIUM REMOVED FROM PATIENT AND
ROOM: ________________________________mR/hr
MEDICAL UNIVERSITY OF SOUTH CAROLINA
Radiation Oncology Department

NURSING PRECAUTIONS FOR PATIENTS RECEIVING RADIOACTIVE BRACHYTHERAPY

PATIENT: ___________________  PATIENT #: ___________________  ROOM #: ____________
was administered ________mg-Ra-Eq of _________ on (Date:) __________ at (Time:) _________AM/PM
By: ____________________________________ M.D.; Pager #: ______________________ Phone: (2-3271)

NO VISITORS ARE ALLOWED IN ROOM DURING TREATMENT

PLEASE OBSERVE THE FOLLOWING NURSING PRECAUTIONS UNTIL ALL SOURCES ARE REMOVED FROM PATIENT AND ROOM IS SURVEYED.

1. All brachytherapy patients must be placed in a private bathroom. If only one brachytherapy patient is to be placed in a room, place the patient in a bed farthest from the door.

2. Portable lead shielding may be required to reduce personnel exposure at bedside. Please stand behind this shield when attending the patient, if possible.

3. The patient shall remain in the room while the source(s) are in place. If the patient accidently or intentionally removes the source(s) from his/her body, IMMEDIATELY CONTACT THE RESIDENT ON DUTY. He/She will place the source(s) in a portable shielded carrier. UNDER NO CIRCUMSTANCES SHOULD YOU PICK UP OR TOUCH THE SOURCE(S). In the event of lost, damaged, or ruptured source(s), CONTACT THE ABOVE PHYSICIAN AND THE MUSC RADIATION SAFETY OFFICER (2-4255). Stop all traffic into or out of the area and turn off all room air-conditioning or ventilation. Close the door and label “Contaminated Area- Do Not Enter without Protective Clothing!”

4. The patient must be surveyed after all source(s) are removed from the room and the results of the survey shall be noted in the patient’s chart and the MUSC Cesium Ward Receipt form. The room also shall be thoroughly surveyed before release for use.

5. Patient excreta may be disposed of in the normal manner unless noted otherwise in these instructions:

6. Nursing personnel attending the patient may be required to wear radiation monitors at the discretion of the MUSC Radiation Safety Officer (RSO). If issued by the RSO, the radiation monitor is to be worn either at waist level, on a pocket, or on the collar. Radiation monitors are to be worn ONLY by the individual to whom they are issued. Contact the RSO (792-4255) if additional monitors are needed.

7. Only designated residents, radiation oncology residents, attending radiation oncologists, radiation physicists, radiation oncology dosimetrists, radiation therapists, or RSOs shall remove brachytherapy sources from a patient.

8. In case of death, DO NOT REMOVE THE BODY FROM THE ROOM until the RSO (792-4255) has issued appropriate instructions. Contact the RSO, Radiation Oncology (792-3271) or the Centrex Operator (792-2123) for emergency phone numbers or pager numbers if no answer at either office.
PERMISSIBLE STAY-TIMES FOR RADIATION WORKERS* IN MINUTES PER 8 HOUR SHIFT
GOLD-198, IRIDIUM-192, AND IODINE-125

<table>
<thead>
<tr>
<th>DOSE mBq (mCi)</th>
<th>C kg⁻¹ h⁻¹ (mR h⁻¹)</th>
<th>DAY 1</th>
<th>DAY 2</th>
<th>DAY 3</th>
<th>DAY 4</th>
<th>DAY 5</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 m 3 ft</td>
<td>2 m 6 ft</td>
<td>1 m 3 ft</td>
<td>2 m 6 ft</td>
<td>1 m 3 ft</td>
</tr>
<tr>
<td>5550 (150)</td>
<td>3.812 X 10⁻⁵ (148)</td>
<td>8</td>
<td>32</td>
<td>12</td>
<td>46</td>
<td>14</td>
</tr>
<tr>
<td>3700 (100)</td>
<td>2.55 X 10⁻⁵ (99)</td>
<td>12</td>
<td>48</td>
<td>17</td>
<td>70</td>
<td>21</td>
</tr>
<tr>
<td>2775 (75)</td>
<td>1.90 X 10⁻⁵ (74)</td>
<td>16</td>
<td>65</td>
<td>23</td>
<td>93</td>
<td>28</td>
</tr>
<tr>
<td>1850 (50)</td>
<td>1.26 X 10⁻⁵ (49)</td>
<td>24</td>
<td>98</td>
<td>35</td>
<td>140</td>
<td>42</td>
</tr>
<tr>
<td>925 (25)</td>
<td>.64 X 10⁻⁵ (25)</td>
<td>48</td>
<td>194</td>
<td>70</td>
<td>280</td>
<td>84</td>
</tr>
</tbody>
</table>

*based upon 6.45 x 10⁻⁷ C kg⁻¹ h⁻¹ (2.5 mR/hr) or 2.58 x 10⁻⁵ C kg⁻¹ per 40 hr. week. Half-life = 3.83 days for Cesium. Non-radiation workers and visitors may stay one tenth (1/10) of these times. No one under 18 years of age or pregnant is allowed.
NURSING PRECAUTIONS FOR PATIENTS RECEIVING THERAPEUTIC DOSES OF I-131

Patient: ___________________________ Room No. _____

was administered _______ Bq/mCi of I-131 _________ at _______ AM
(Date) (Time) PM

by: ___________________________ M.D. Pager No. ____________
(Physician's Signature)

1. All radioiodine therapy patients must be placed in a private room with a private bathroom. The floors of the room and bathroom must be lined with absorbent pads. A step-off pad must be placed outside the patient room. A cart with plastic or rubber disposable gloves and shoe covers shall be placed outside the patient's door. Nurses entering the room shall wear gloves and shoe covers. Upon leaving the room, the gloves and shoe covers shall be removed before stepping off the step-off pad and placed in a trash can by the cart.

2. The bed shall be covered with a rubber or plastic mattress cover. A labeled plastic bag shall be placed in the room for contaminated items used by the patient.

3. The patient shall remain in the room. All eating utensils shall be disposable. Unless otherwise noted, all excreta may be disposed of in the normal manner. If the patient is incontinent, vomits, or contaminates the linens, notify Nuclear Medicine IMMEDIATELY.

4. All contaminated linens shall be placed in labeled plastic bags and stored for decay. When all items read less than $2.58 \times 10^8$ C kg$^{-1}$ h$^{-1}$, they may be released for laundry or reuse.

5. The room shall be thoroughly surveyed for contamination after release of the patient, paying attention to items held or used by the patient, i.e., TV controls, telephone, faucets, door knobs, etc., before the room is released for laundry or reuse.

6. Nurses and other attendants may remain in the vicinity of the patient as indicated in the stay-time chart below. The times noted are for radiation workers. Non-radiation workers and visitors are allowed one-tenth (1/10) of the times shown in the table. No visitors under 18 years of age or pregnant women are allowed.

7. The patient may be released after _____ days. The physician named above and the Radiation Safety Officer will make this determination. In the event of death, notify the Radiation Safety Officer at 792-4255 immediately.
### I-131 Permissible Stay-Times for Radiation Workers*

<table>
<thead>
<tr>
<th>Dose Given Mbq (mCi)</th>
<th>C kg⁻¹ h⁻¹ (mR h⁻¹)</th>
<th>DAY 1</th>
<th>DAY 2</th>
<th>DAY 3</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>1 ft 0.3 m</td>
<td>3 ft 1 m</td>
<td>6 ft 2 m</td>
</tr>
<tr>
<td>7400 (200)</td>
<td>12.20 X 10⁻⁵ (473)</td>
<td>2</td>
<td>22</td>
<td>91</td>
</tr>
<tr>
<td>6475 (175)</td>
<td>10.68 X 10⁻⁵ (414)</td>
<td>3</td>
<td>26</td>
<td>104</td>
</tr>
<tr>
<td>5550 (150)</td>
<td>9.15 X 10⁻⁵ (355)</td>
<td>4</td>
<td>30</td>
<td>122</td>
</tr>
<tr>
<td>3700 (100)</td>
<td>6.09 X 10⁻⁵ (236)</td>
<td>5</td>
<td>46</td>
<td>182</td>
</tr>
<tr>
<td>2775 (75)</td>
<td>4.57 X 10⁻⁵ (177)</td>
<td>6</td>
<td>61</td>
<td>243</td>
</tr>
<tr>
<td>1850 (50)</td>
<td>3.04 X 10⁻⁵ (118)</td>
<td>10</td>
<td>91</td>
<td>365</td>
</tr>
</tbody>
</table>

*Based upon 6.45 x 10⁻⁷ C kg⁻¹ h⁻¹ (2.5 mR/hr) or 2.58 x 10⁻⁵ C kg⁻¹ per 40 hr. week. Half-life = 3.83 days for Cesium. Non-radiation workers and visitors may stay one tenth (1/10) of these times. No one under 18 years of age or pregnant is allowed.
MEDICAL UNIVERSITY HOSPITAL

INSTRUCTIONS FOR FAMILY OF RELEASED RADIATION PATIENTS

Please show this form to every physician consulted concerning this patient until _____________.

Patient: _______________________________________ Phone: _________________________
Address: ______________________________________ Phone: _________________________
Next of kin: _____________________________________ Phone: _________________________

__________________________________ was treated on _____________________
with ___________ mCi of ___________________ in the form of ________________________.

NO SPECIAL RADIATION SAFETY PRECAUTIONS ARE NECESSARY AFTER:

__________________________________.

Until that time:

Persons under 45 years of age should not remain closer than the following distances from the patient, for the time period indicated below:

A. _____ to _____: Permissible distance: ______ feet or more, for _______ hours per week. At other times remain farther than 6 feet.

B. _____ to _____: Permissible distance: ______ feet or more, for _______ hours per week. At other times remain farther than 6 feet.

Note: During the above times, brief periods of closer contact (for example, shaking hands or kissing the patient) are permissible.

SPECIAL PRECAUTIONS:

A. Spouse or other person taking care of patient:

__________________________________________________________________________________
__________________________________________________________________________________.

B. Children or pregnant women:

__________________________________________________________________________________
__________________________________________________________________________________.

C. Sleeping arrangements:

__________________________________________________________________________________
__________________________________________________________________________________.

If the patient is to be hospitalized, or if death should occur, notify the following individuals immediately:

_________________________________________ Phone: _________________________
_________________________________________ Phone: _________________________