This is an industry document for standardizing radiation protection processes. Standard processes and requirements are established to eliminate site-specific radiation protection procedures. The Institute for Nuclear Power Operations (INPO) maintains current procedures on the INPO website and has approval authority for revisions. Approval authority is granted by the industry contingent on a structured review and approval process by representatives of utility radiation protection organizations.
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1.0 Purpose

1.1 This procedure describes the processes and instructions to establish boundaries, barriers, postings, and labels necessary to inform workers on the radiological hazards in the work area. Instructions are also included for actions required to maintain the integrity of boundaries for High Radiation Areas, Locked High Radiation Areas, and Very High Radiation Areas.

2.0 Scope

2.1 Member utilities are expected to use this standard to enable supplemental workers to transition between nuclear power plants. Compliance with these instructions is expected without additional site requirements or process deviations being imposed that may require additional training or challenge the performance of supplemental workers.

2.2 The forms referenced by this procedure are examples used to describe the pertinent information that should be recorded for future reference. Plant procedures may specify the use of equivalent forms or the use of electronic media for the same purposes.

2.3 This procedure will be used to train and instruct supplemental radiological protection technicians. Member utilities will implement these process requirements in site procedures and update site procedures whenever requirements or process steps in this Nuclear Industry Standard Process (NISP) are revised. Current revisions are maintained on the INPO website.

3.0 Definitions

3.1 Terms, acronyms, and definitions are provided in NISP-RP-013, Radiation Protection Standard Glossary of Terms.

4.0 Responsibilities

4.1 Radiation protection is responsible for implementation of the requirements of this procedure per Efficiency Bulletin 17-01 and the Nuclear Industry Standard Process Initiative.

4.2 Radiation Protection Personnel are responsible for ensuring radiological postings are used and controlled properly in the RCA.

4.3 Personnel entering RCAs are responsible for reading and complying with associated postings and labels.

5.0 General Requirements
5.1 Ensure radiological areas and boundaries are conspicuous to prevent inadvertent access and/or serve to notify plant personnel that an area is controlled for radiological purposes. The types of radiological hazards that are present and the entry requirements should be readily identifiable.

5.2 Use the shapes and colors for radiological postings as described below. The color of the trefoil may be magenta, purple, or black.

5.3 Use pocket inserts below signs as needed to post hazards and entry requirements with the following hierarchy from top to bottom:
   a. External hazards.
   b. Airborne hazards.
   c. Contamination hazards.
   d. Other information.

5.4 Use the following signs to standardize radiological postings at US nuclear power plants.

5.4.1 Very High Radiation Area (VHRA) – Yellow letters with a magenta background.

5.4.2 Locked High Radiation Area (LHRA) – Magenta letters with a yellow background. Sign may state “Danger” instead of “Caution.”

5.4.3 High Radiation Area (HRA) – Magenta letters with a yellow background. Sign may state “Danger” instead of “Caution.”
5.4.4 Standard Radiation Sign – Magenta letters on a yellow background.

a. Use this sign for posting areas and conditions that do not require unique signs as shown above.

b. Examples include: Radiation Area, Airborne Area, Contaminated Area, etc.

5.4.5 Radiography Sign – Purple border with black and red letters.

a. Use this sign in addition to the Radiation Area posting.

5.5 Use the signs as described below to provide workers information needed to maintain radiation exposures ALARA while in a work area.
5.5.1 Hot Spot – Magenta letters and symbol on yellow background.
   a. Post at a localized source of radiation where contact dose rates are > 100 mrem/hour AND > 5 X the general area dose rate at 30 cm except when:
      - Foreign material exclusion and configuration controls prohibit the placement of signs.
      - Infrequent access to the area limits the value of the posting as determined by RP supervision.
   b. Record tracking numbers (T/N) on the sign per site procedures.

5.5.2 Elevated Dose Rates – White or black letters on a hot pink background
   a. Post in areas when determined by RP Supervision for ALARA purposes.
   b. Signs may also be used in High Radiation Areas for worker awareness to minimize dose.

5.5.3 Low Dose Waiting Area – White or black letters on a green background.
5.6 Use radiation rope for area boundaries adhering to the following restrictions:

5.6.1 Ensure rope is in good condition and continuous between attachment points, i.e. rope should not be spliced or tied together between attachment points.
   a. Firmly secure rope where it connects to stanchions, magnets, etc.
   b. Cut off excess radiation rope to prevent the need to have excess rope wrapped around a stanchion or coiled on the floor.
   c. Secure loose ends of knots using tie wraps, duct tape, or radiation tape. Braiding or twisting of radiation rope is not acceptable unless used in combination with tie wraps or tape. RP Supervision may approve other methods in FME areas.

5.6.2 Secure the rope to or close enough to walls to block personnel access (gaps \( \leq 6'' \)) by either of the following methods:
   a. Attach the rope to a stanchion next to the wall with the stanchion as close to the wall as practical unless the area between the wall and stanchion will be used for access.
   b. Attach the rope to a permanent structure such as an I-beam, handrail, support member, etc.

5.6.3 Do not attach rope to conduit, electrical panel, operating equipment, or safety related equipment. Except when approved by plant engineering.

5.6.4 Secure signs to the rope using only tie wraps, key rings, or hangars designed by the manufacturer.

5.6.5 Attach signs to rope that are only for radiological protection purposes.

5.7 Exercise the following precautions for setting up boundaries:

5.7.1 Postings and boundaries should be established such that workers may enter the area without having to “duck under”, move or adjust a posting or barrier to enter the area. Exceptions include use of a swing gate, door, turnstile, etc.
5.7.2 Ensure placement of materials such as rope, tape, and step-off-pads (SOP) comply with station requirements for fire protection and configuration control.

5.7.3 Place SOPs in areas with the lowest practicable dose rates with adequate space for clothing and trash receptacles as required for doffing protective clothing.

5.7.4 For areas posted as a contaminated area, the step off pad is considered the boundary. Avoid the use of rope, swing gates, or turnstiles as the barrier for those areas unless needed for other radiological conditions, such as high radiation area.

5.7.5 Minimize safety hazards at SOP locations such as the potential for falling objects, tripping hazards, overhead hazards, etc.

5.7.6 Size the area as needed to accommodate the lay down of materials, the number of workers expected in the area, the type of equipment that will be used, etc.

5.8 Place door postings in the approximate center of the door, or in a conspicuous location on a wall beside the door. Ensure the posting is sufficiently secure to prevent the posting from falling when the door is opened or closed.

5.8.1 When the door is propped open obscuring the posting, move the posting to a conspicuous location or add a second posting.

5.9 Ensure entrances to High Radiation Areas are barricaded to obstruct entry except when personnel are entering and exiting.

5.9.1 In lieu of a barricade, the entrance may be attended by an individual assigned to allow entry only by authorized personnel.

5.9.2 Swing gates and turnstiles are examples of barricades that may be used to provide additional assurance that the barricade will return in place after individuals pass through.

5.9.3 A step-off-pad is not considered a barricade.

5.9.4 When used as a barricade, rope should be between 3 and 5 feet high and/or positioned to obstruct entry into the area.

5.10 Use a posting insert stating “RP Escort Required for Entry” for areas where dose rates may significantly increase from plant operation or areas that are not routinely surveyed due to high dose rates and infrequent access as determined by RP supervision.

5.11 Post ladder storage areas, staged ladders, portable power lifts, and teletowers with a sign stating “Contact RP Prior to Working or Climbing Above 7 Feet.”
5.11.1 Place a posting on each side of power lifts and teletowers when in service to ensure the posting is conspicuous.

5.12 Use yellow material for catch containments to identify the contained leakage as contaminated.

5.12.1 Ensure the catch containment and drain tubing is conspicuously labeled for containing contamination if the containment is located in a non-contaminated area.

5.13 Use labels stating “Possible Internal Contamination – Contact RP Prior to Opening” on equipment access locations (e.g. ventilation components) that are opened only during maintenance and internal surfaces may contain small or unknown amounts of contamination.

6.0 Process Instructions

6.0.1 The following tables define the requirements for posting and labeling radiological hazards. Requirements for area boundaries and the use of containers for radioactive material are also specified. Equivalent wording on inserts may be used except when the specific wording is required by 10 CFR 20.

6.1 Post External Radiation Hazards

6.1 The criteria for posting in the following table are established at 80% of the regulatory limits to maintain an administrative margin to compensate for potential variations in meter response, survey techniques, and/or minor system perturbations. The administrative criteria should be implemented with the following clarification:

6.1.1 The criteria for procedure compliance shall remain the regulatory limits in 10 CFR 20 and plant Technical Specifications.

6.1.2 The RPM or designee may approve deviations from the administrative criteria when dose rates are static, e.g. a resin liner in storage, and postings comply with regulatory requirements.

6.1.3 Posting is not required for areas or rooms containing radioactive materials for periods of less than 8 hours if each of the following conditions is met:

a. The materials are constantly attended during these periods by an individual who takes the precautions necessary to prevent the exposure of individuals to radiation or radioactive materials in excess of 10 CFR 20 limits.
b. The area or room is subject to the licensee's control.

NOTE: Criteria and requirements for posting an RCA for temporary conditions are defined by site procedures.

NOTE: Access authorizations and key controls for access into a VHRA are more extensive than for a LHRA per NISP-RP-005.

NOTE: A “Radioactive Materials” insert with the RCA posting at the entrance to an RCA informs workers that they are entering an area with radioactive materials consistent with 10 CFR 20.1902(e). Individual areas or rooms within an RCA do not require additional posting for radioactive materials.

NOTE: A secured access device requires an intentional act such as removing a lock, carabiner, clip, or pin prior to pushing open the barrier.
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Boundary Requirements</th>
<th>Posting</th>
</tr>
</thead>
</table>
| RCA Hazards Require Monitoring per 10 CFR 20 | • Boundary clearly marked.  
• Equipment and postings provided at entry and exit locations to ensure dose tracking and confinement of radioactive materials. | Standard Radiation Sign with the following:  
• RADIOLOGICALLY CONTROLLED AREA  
• RADIOACTIVE MATERIALS  
• RWP REQUIRED FOR ENTRY  
• DOSIMETRY REQUIRED FOR ENTRY  
• NO EATING, DRINKING, OR SMOKING |
| RADIATION AREA ≥ 4 & < 80 mrem/hour @ 30 cm | • Posting must be conspicuous at entry point and external to the Radiation Area.  
• Boundary demarcation or barricades are not required.  
• Avoid a single posting for a very large area or room if most of the area or room is < 4 mrem/hour. In such conditions, post the discrete areas or rooms ≥ 4 mrem/hour. | Standard Radiation Sign with the following:  
• RADIATION AREA |
| HIGH RADIATION AREA ≥ 80 & < 800 mrem/hour @ 30 cm | • A barricade or barrier is required for the boundary except while the area is accessed. A SOP is not considered as a barrier.  
• Barricades at access locations must be secured.  
• Refer to Attachments 1 and 2 for sample checklists typically used to post and down-post areas.  
• Attachment 1 may also be used for routine surveillance to verify the integrity of boundaries.  
• Post or label access points that require the removal of bolts and/or the use of lifting equipment.  
• Refer to NISP-RP-005 for access controls. | HRA Sign with the following:  
• RP BRIEF REQUIRED FOR ENTRY  

For bolted or plug access, an HRA sign is not required but the access must be labeled with a warning and:  
• CONTACT RP PRIOR TO OPENING |
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Boundary Requirements</th>
<th>Posting</th>
</tr>
</thead>
</table>
| LOCKED HIGH RADIATION AREA  
≥ 800 mrem/hour @ 30 cm | • A barrier with a locked door is required for the boundary except while the area is accessed.  
• Refer to Attachments 1 and 2 for sample checklists typically used to post and down-post areas.  
• A flashing light and barricade may be used in lieu of a locked door as permitted by the plant Technical Specifications and as approved by the RPM.  
• Refer to Attachment 3 for a sample checklist typically used to set up flashing lights.  
• Attachment 1 may also be used for routine surveillance to verify the integrity of boundaries.  
• An Access Control Guard may be used while an area is being routinely accessed or additional time is required to establish controlled boundaries. Refer to Attachment 4 for a sample checklist typically used to brief Access Control Guards.  
• Ensure posting and locked access of areas that require the removal of bolts and/or the use of lifting equipment.  
• Refer to NISP-RP-005 for access controls. | LHRA Sign with the following:  
• RP BRIEF REQUIRED FOR ENTRY  
For bolted or plug access, an LHRA sign is not required but the access must be labeled with a warning and:  
• CONTACT RP PRIOR TO OPENING |
<table>
<thead>
<tr>
<th>Hazard</th>
<th>Boundary Requirements</th>
<th>Posting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>VERY HIGH RADIATION AREA</strong></td>
<td>• A barrier with a locked door is required for the boundary except while the area is accessed.</td>
<td><strong>VHRA Sign</strong></td>
</tr>
<tr>
<td>≥ 500 rads/hour at 1 meter from any source or surface</td>
<td>• An Access Control Guard may be used while an area is being routinely accessed or additional time is required to establish controlled boundaries. Refer to Attachment 4 for a sample checklist typically used to brief Access Control Guards. • Refer to Attachments 1 and 2 for sample checklists typically used to post and down-post areas. • Attachment 1 may also be used for routine surveillance to verify the integrity of boundaries. • Refer to NISP-RP-005 for access controls.</td>
<td></td>
</tr>
<tr>
<td><strong>NEUTRON AREA</strong></td>
<td>• Post area commensurate with the criteria for Radiation Area, HRA, or LHRA</td>
<td><strong>Standard Radiation Sign</strong></td>
</tr>
<tr>
<td>η &gt; 4 mrem/hour General Area or @ 30 cm from a source</td>
<td>• Refer to NISP-RP-005 for access controls.</td>
<td>with the following:</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RADIATION AREA</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• RP BRIEF REQUIRED FOR ENTRY</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• NEUTRON MONITORING REQUIRED</td>
</tr>
<tr>
<td><strong>RADIOGRAPHY</strong></td>
<td>• Setup of boundaries and barricades is a collaborative responsibility with the radiographer.</td>
<td><strong>Radiography Sign</strong></td>
</tr>
<tr>
<td></td>
<td>• Radiographers must establish a restricted area boundary where the dose rate from source exposure is ≤ 2 mrem/hour.</td>
<td>in addition to a Standard Radiation Sign with the following inserts:</td>
</tr>
<tr>
<td></td>
<td>• Refer to NISP-RP-009, <em>Radiography</em> for boundary criteria and access controls.</td>
<td>• RADIOGRAPHY IN PROGRESS</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• AUTHORIZED PERSONNEL ONLY</td>
</tr>
</tbody>
</table>
## 6.2 Post Areas With Smearable Contamination

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Boundary Requirements</th>
<th>Posting</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contaminated Area</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| ≥ 1,000 & < 100,000 βγ OR ≥ 20 α dpm/100 cm² | • Use radiation rope to establish boundaries with conspicuous postings.  
• Radiation tape may be used in lieu of radiation rope to establish a boundary for a small area such as a sample sink, tabletop, drain, pump basin, catch basin, tubing, etc. Radiation tape must be accompanied with the text “Contaminated Area.”  
• Conspicuously posted physical barriers such as handrails and knee walls do not require the use of radiation rope or tape on the barrier.  
• Place a step-off-pad (SOP) if required for workers to exit and remove protective clothing. (Note: An SOP is not a substitute for an HRA barrier.)  
• Secure hoses, cables, cords, etc. crossing the boundary to prevent pulling the potentially contaminated item out of the Contaminated Area.  
• Setup friskers and/or contamination monitors in close proximity after exiting the area to:  
  o Perform whole body monitoring OR  
  o Perform hand and foot frisking prior to proceeding to the nearest whole body contamination monitor. | Standard Radiation Sign with the following:  
• CONTAMINATED AREA |
### Hazard Boundary Requirements Posting

| **HIGH CONTAMINATION AREA** | ≥ 100,000 βγ dpm/100 cm² | - Use radiation rope to establish boundaries with conspicuous postings.  
- If worker access is required, establish a double SOP arrangement with knee or curtain walls as needed to contain the high levels of contamination.  
| **DRP AREA** | DRPs > 500,000 dpm OR > 50,000 ncpm | - Use radiation rope to establish boundaries with conspicuous postings.  
- Establish barriers as needed to prevent migration of particles across the boundary, e.g. a knee or curtain wall.  
- Establish a double SOP arrangement to maintain a buffer area to prevent particles from migrating to clean areas.  
| **ALPHA 2 AREA** | βγ/α ratio = 300 - 30,000 AND α ≥ 20 dpm/100 cm² | - Boundary controls are the same as for a Contaminated Area.  
| **ALPHA 3 AREA** | βγ/α ratio <300 AND α ≥ 20 dpm/100 cm² | - Boundary controls are the same as for a Contaminated Area.  
- If βγ/α ratio ≤ 50, setup a frisker capable of detecting alpha radiation in close proximity to the boundary  
| **RP BRIEF REQUIRED FOR ENTRY** | Standard Radiation Sign with the following:  
- HIGH CONTAMINATION AREA  
- LEVEL 2 ALPHA AREA  
| **CONTAMINATED AREA** | Standard Radiation Sign with the following:  
- HIGH CONTAMINATION AREA  
- DISCRETE RADIOACTIVE PARTICLES PRESENT  
- DRP BUFFER AREA  
- RP BRIEF REQUIRED FOR ENTRY  
Post the buffer area with Radiation Sign and the following inserts:  
- CONTAMINATED AREA  
- DRP BUFFER AREA  
| **LEVEL 3 ALPHA AREA** | Standard Radiation Sign with the following:  
- CONTAMINATED AREA  
- LEVEL 3 ALPHA AREA  
- RP BRIEF REQUIRED FOR ENTRY  
If βγ/α ratio ≤ 50, add:  
- ALPHA FRISKING/MONITORING REQUIRED UPON EXIT |
6.3 Post Airborne Radioactivity Areas

NOTE: See site specific procedures for Tritium sampling, calculation and dose assessment.

6.3.1 The hazards listed in the following table are based on measurements of airborne radioactivity as a fraction of the Derived Air Concentration (DAC).

<table>
<thead>
<tr>
<th>Hazard</th>
<th>Boundary Requirements</th>
<th>Posting</th>
</tr>
</thead>
</table>
| AIRBORNE RADIOACTIVITY AREA                 | • Setup a rope boundary and posting if airborne levels are due to, or expected from, system leakage or work in high levels of contamination. <br>• Install ventilation and/or containment devices as needed to encapsulate the airborne radioactivity within the boundary. | Standard Radiation Sign with the following:  
• AIRBORNE RADIOACTIVITY AREA  
• RP BRIEF REQUIRED FOR ENTRY |
| Particulates & Iodine ≥ 0.3 DAC             |                                                                                       |                                              |

| AIRBORNE RADIOACTIVITY AREA                 | • Setup a rope boundary and posting when identified.                                    | Standard Radiation Sign with the following:  
• AIRBORNE RADIOACTIVITY AREA  
• RP BRIEF REQUIRED FOR ENTRY |
| Summation of Particulate, Iodine, Noble Gas and Tritium greater than or equal to 1.0 DAC |                                                                                       |                                              |

6.4 Label Tools, Equipment, and Containers of Radioactive Material

NOTE: Precautionary information is provided to enable someone handling or opening a container to exercise precautions commensurate with the radiological hazards from the content(s). An example tag for recording precautionary information is shown in Attachment 5. Precautionary information may include:

- A brief description of contents.
- Highest smearable contamination levels in container.
- Highest contact dose rate on items in container.
- Additional hazards and precautions to open the container.

6.4.1 Label containers with radioactive material using a radiation symbol trefoil and the words “Caution Radioactive Material” as shown in Attachment 5. Add precautionary information for any of the following conditions:
6.4.2 Containers are not required to be labeled under step 6.4.1 for any of the following conditions:

a. Containers holding licensed material in quantities less than the quantities listed in 10 CFR 20, Appendix C.

b. Containers holding licensed material in concentrations less than those specified in 10 CFR 20, Appendix B, Table 3.

c. Containers attended by an individual who takes the precautions necessary to prevent the exposure of individuals in excess of the limits established by 10 CFR 20.

d. Containers when they are in transport and packaged and labeled in accordance with the regulations of the Department of Transportation.

e. Containers that are accessible only to individuals authorized to handle or use them, or to work in the vicinity of the containers, if the contents are identified to these individuals by a readily available written record (examples of containers of this type are containers in locations such as water-filled canals, storage vaults, or hot cells). The record must be retained as long as the containers are in use for the purpose indicated on the record.

f. Installed manufacturing or process equipment, such as reactor components, piping, and tanks.

g. Containers holding licensed material (other than sealed sources that are either specifically or generally licensed) that are within an RCA if the containers are:

- Conspicuously marked (such as by providing a system of color coding of containers) commensurate with the radiological hazard;
• Accessible only to individuals who have sufficient instruction to minimize radiation exposure while handling or working in the vicinity of the containers; and

• Subject to plant procedures to ensure they are appropriately labeled before being removed from the posted area.

6.4.3 Print the surveyor’s name and date of survey if precautionary information is provided.

NOTE: The value of net counts per minute is the count rate with background subtracted. Also referred to as corrected counts per minute (ccpm).

6.4.4 Decontaminate or dispose of hand tools with fixed contamination > 5,000 ncpm unless such actions are unreasonable based on the characteristics of the tool.

a. Identify tools with fixed contamination > 5,000 ncpm with markings or labels.

6.4.5 Clarification of tagging and labeling requirements for specific items are listed below:

a. A cabinet with multiple drawers may be considered as one container.

b. Liquid containers require only the contact dose rate on the container if ≥ 2 mrem/hour.

c. Bins of laundered protective clothing staged for use do not require tagging or labeling.

d. Precautionary information is not required for trash and clothing receptacles while in use.

e. Tag or label HEPA units and vacuum cleaners with the words “Possible Internal Contamination.” Recording expected levels of smearable contamination is not required.

f. Tag items tied off in a pool with expected contact dose rates on the item in the pool. Expected contamination levels are not required.

7.0 Records/Documentation

NONE

8.0 References

8.1 Commitments
NONE

8.2 General

8.2.1 10 CFR 20, “Standards for Protection against Radiation.”

8.2.2 USNRC I.E. Information Notice 84-82, “Guidance for Posting Radiation Areas.”

8.2.3 NUREG/CR-5569, “Health Physics Positions Data Base,” HPPOS-027 and HPPOS-028.

8.2.4 NUREG/CR-6204, “Questions and Answers Based on Revised 10 CFR Part 20,” Questions 127, 128, and 226 pertaining to labeling of containers.

8.2.5 INPO 05-008, Radiological Protection at Nuclear Power Plants

8.2.6 EPRI Alpha Monitoring and Control Guidelines for Operating Nuclear Power Stations, Revision 2.

8.2.7 NISP-RP-013, Radiological Protection Glossary

8.2.8 NISP-RP-005, Access Controls for Radiological Areas

8.2.9 NISP-RP-009, Radiography

8.2.10 NISP-RP-008, Use of HEPA Filtration Equipment

9.0 Attachments

9.1 Attachment 1 – “HRA, LHRA, and VHRA Posting Checklist – Sample”

9.2 Attachment 2 – “HRA, LHRA and VHRA Down-Posting Checklist – Sample”

9.3 Attachment 3 – “Use of Flashing Lights to Establish LHRA Checklist - - Sample”

9.4 Attachment 4 – “LHRA Access Guard Responsibilities Checklist – Sample”

9.5 Attachment 5 – “Radioactive Material Tag/Label – Sample”
### ATTACHMENT 1

**HRA, LHRA, and VHRA Posting Checklist – Sample**

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<table>
<thead>
<tr>
<th>Section 1</th>
<th>Section 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date:</strong> ___________________ <strong>Time:</strong> ___________________</td>
<td><strong>YOU ARE PREPARING TO POST A (L)HRA OR VHRA.</strong> This is being performed to protect and inform Plant personnel of the radiological hazards. You must remain focused on the task to ensure error free performance.</td>
</tr>
<tr>
<td><strong>Performed By:</strong> ___________________</td>
<td><strong>Checklist for Posting and Verifying a HRA:</strong></td>
</tr>
<tr>
<td><strong>Prior to performing a HRA, LHRA, or VHRA posting change, the RP Technician(s) should review this checklist.</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Area(s) Involved In Posting Change and Reason:</strong></td>
<td><strong>☐ Stanchions and swing-gate secured in position as needed. (i.e., positive latching device)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ Swing-gate verified closed when moved into position</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ Rad-rope, ribbon, or chain properly secured (do not use tape)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ Gaps in barrier. No gaps that would allow access of the whole body</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ No scaffold or ladders in area that would allow unauthorized access</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ All access points properly posted (stairwells, back doors, etc.)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ Unauthorized personnel out of area. For authorized personnel verify correct RWP and correct task for work activity</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ Verify correct RWP and correct task for work activity.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ HRA postings attached with required inserts in place</strong></td>
</tr>
<tr>
<td><strong>Action To Be Taken</strong></td>
<td><strong>Type Of Area</strong></td>
</tr>
<tr>
<td><strong>☐ Posting</strong></td>
<td><strong>☐ HRA (High Rad Area)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ LHRA (Locked High Rad)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ VHRA (Very High Rad)</strong></td>
</tr>
<tr>
<td><strong>Review Topics</strong></td>
<td><strong>☐ Are all postings consistent...Self-Check</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ Stop and Look...do the postings make sense?</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ Recognize conditions of the area (dose rate, contamination levels, etc.)</strong></td>
</tr>
<tr>
<td><strong>☐ Notifications (Ops, Security, RP Supervision, OCC, others as required) to access impact on time critical actions.</strong></td>
<td><strong>☐ VHRA: Barrier completely enclose VHRA to thwart undetected circumvention of barrier.</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ Documentation (electronic RP log)</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ LHRA: If physical barrier is a metal fence or solid wall, then ensure the barrier is greater than or equal to 2 meters high. (Approximately 6 ft high per Reg Guide 8.38)</strong></td>
</tr>
<tr>
<td><strong>Error Likely situations?</strong></td>
<td><strong>☐ Physical barrier has no gaps that would allow access</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ No adjacent scaffold or ladders that would allow access</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ No permanent plant equipment or temporarily stored material that would allow access</strong></td>
</tr>
<tr>
<td></td>
<td><strong>☐ All access points, such as stairwells or back doors, have been identified and controlled to prevent unauthorized access</strong></td>
</tr>
</tbody>
</table>
### ATTACHMENT 1

**HRA, LHRA, and VHRA Posting Checklist – Sample**

**Page 2 of 2**

<table>
<thead>
<tr>
<th>What actions should ensure proper radiological controls?</th>
<th>Unauthorized personnel out of area. For authorized personnel verify correct RWP AND correct task for work activity.</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>LHRA or VHRA postings attached with required inserts</td>
</tr>
<tr>
<td></td>
<td>Are all postings consistent…Self-Check</td>
</tr>
<tr>
<td></td>
<td>STOP and LOOK…do the postings make sense</td>
</tr>
<tr>
<td></td>
<td>Challenge access point doors</td>
</tr>
</tbody>
</table>

**Field Notes:**

- All applicable areas have been:
  - Posted
  - RP Supervisor verify radiological survey information for all HRA, LHRA, VHRA posting
  - Area secured (HRA)
  - Area locked (LHRA, VHRA)

Logged into electronic RP log by:

<table>
<thead>
<tr>
<th>Performed By (Signature):</th>
<th>Date and Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Supv. Verification (Signature)</th>
<th>Date and Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>
## ATTACHMENT 2
### HRA, LHRA and VHRA Down-Posting Checklist – Sample

### Page 1 of 2

<table>
<thead>
<tr>
<th>Section 1</th>
<th>Section 2</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Date:</strong> ___________________ <strong>Time:</strong> ___________________</td>
<td>YOU ARE PREPARING TO DOWN POST A HRA, LHRA, or VHRA. This is being performed to protect and inform Plant personnel of the radiological hazards. You must remain focused on the task to ensure error free performance.</td>
</tr>
<tr>
<td><strong>Performed By:</strong> ___________________</td>
<td><strong>Checklist for Down-Posting and Verifying a HRA:</strong></td>
</tr>
<tr>
<td><strong>Prior to performing a HRA, LHRA, or VHRA posting change, the RP Technician(s) should review this checklist:</strong></td>
<td>□ Stanchions or swing-gate removed or repositioned as needed</td>
</tr>
<tr>
<td>Area(s) Involved In Posting Change and Reason:</td>
<td>□ Swing-gate verified closed when moved into position (if applicable)</td>
</tr>
<tr>
<td></td>
<td>□ Rad-rope, ribbon, or chain removed or repositioned</td>
</tr>
<tr>
<td>Review Topics</td>
<td>□ Are all postings consistent...Self-Check</td>
</tr>
<tr>
<td><strong>What are the IMPORTANT steps associated with this task?</strong></td>
<td>□ Stop and Look...do the postings make sense</td>
</tr>
<tr>
<td>□ Down post area(s) correctly and consistently (think of the posting requirements applicable to the area)</td>
<td><strong>Checklist for Down Posting and Verifying a LHRA or VHRA</strong> (for down-posting to LHRA from VHRA or HRA from LHRA, use Attachment 1, HRA, LHRA, and VHRA Posting Checklist)</td>
</tr>
<tr>
<td>□ Recognize conditions of the area (dose rate, contamination levels, etc.)</td>
<td>□ Survey area to confirm radiation levels do not exceed criteria for down-posted conditions prior to worker access.</td>
</tr>
<tr>
<td>□ Notifications (Ops, Radwaste, RP Supervision, OCC, others as required) to assess impact on time critical actions.</td>
<td>□ Perform independent survey to verify radiation levels do not exceed criteria for down-posted conditions. If waived by RP supervision, record N/A.</td>
</tr>
<tr>
<td>□ Documentation (surveys, electronic RP log, turnover)</td>
<td>□ If LHRA physical barrier is a metal fence or solid wall, then ensure barrier is greater than or equal to two meters high.</td>
</tr>
<tr>
<td>□ Historical Information to verify plant conditions causing a Very High Radiation Area do not currently exist.</td>
<td>□ Remaining physical barrier has no gaps that would allow access</td>
</tr>
<tr>
<td><strong>Error Likely situations?</strong></td>
<td>□ No adjacent scaffold or ladders that would allow access (if applicable)</td>
</tr>
<tr>
<td>□ Ladders, scaffolding, doors leading into or out of area(s)</td>
<td>□ All access points, such as stairwells or back doors, have been identified and controlled to prevent unauthorized access</td>
</tr>
<tr>
<td>□ Plant transients or power changes</td>
<td>□ Are all postings consistent...Self-Check</td>
</tr>
<tr>
<td>□ Transient dose potential (RAM movement, resin transfers, etc.)</td>
<td>□ Stop and look...do the postings make sense</td>
</tr>
<tr>
<td>□ Variations in Dose Rates</td>
<td>□ Challenge access point doors</td>
</tr>
<tr>
<td>□ Discrete Radioactive Particles</td>
<td></td>
</tr>
<tr>
<td>□ Streaming</td>
<td>Field Notes:</td>
</tr>
</tbody>
</table>

**What actions should ensure proper radiological controls?**
## ATTACHMENT 2
HRA, LHRA and VHRA Down-Posting Checklist – Sample
Page 2 of 2

<table>
<thead>
<tr>
<th>All applicable areas have been:</th>
</tr>
</thead>
<tbody>
<tr>
<td>□ Down-Posted</td>
</tr>
<tr>
<td>□ RP Supervisor verify radiological survey information for all HRA, LHRA, VHRA posting</td>
</tr>
</tbody>
</table>

Logged into electronic RP log by:

<table>
<thead>
<tr>
<th>Survey Number:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Performed By (Signature):</th>
<th>Date and Time:</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Supv. Verification (Signature):</th>
<th>Date and Time:</th>
</tr>
</thead>
</table>
## Attachment 3
### Use of Flashing Lights to Establish LHRA Checklist – Sample

#### Page 1 of 1

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
</table>
| 1. | Obtain RPM approval to establish LHRA with flashing light(s).  
RPM: __________________________ Date and Time: __________________________  
☐ Justification for allowance of Flashing Lights |
| 2. | Establish LHRA with Tech. Spec. flashing light(s) by performing the following:  
☐ Install barricades to prevent inadvertent access  
☐ Post conspicuously  
☐ Position flashing light(s) so clearly visible when approached  
☐ Activate flashing light(s)  
☐ If using AC powered light(s), then ensure drop cords tagged at each connection and at each receptacle to prevent unauthorized de-energizing of the light(s)  
☐ Using DC (battery) powered lights |
| 3. | Flashing Light installed by (signature): __________________________ Date and Time: __________________________  
4. | ANSI qualified or Task Qualified RP Technician Peer check (signature): __________________________  
Performed by (signature): __________________________ Date and Time: __________________________  
RP Supervisor verification performed by (signature): __________________________ Date and Time: __________________________  
5. | Log establishment and use of flashing light in electronic RP log.  
Log entry by: __________________________ Date and Time: __________________________  
6. | RPM Approval (signature): __________________________ Date and Time: __________________________ |

---

**Note:** The table above outlines the steps and checks for establishing a Limited How Released Area (LHRA) with flashing lights. Each step has specific requirements to ensure safety and compliance.
Attachment 4
LHRA Access Guard Responsibilities Checklist – Sample
Page 1 of 1

(Required for all Personnel except ANSI qualified RP Personnel)

<table>
<thead>
<tr>
<th>Date: __________________________</th>
<th>Time: __________________________</th>
</tr>
</thead>
<tbody>
<tr>
<td>Area to be guarded: __________________________</td>
<td></td>
</tr>
</tbody>
</table>

- [ ] Individual signing as the Access Control Guard reads, understands and accepts the following responsibilities:

- [ ] Have the signed Attachment 4, LHRA Access Guard Responsibilities Checklist, present with them while performing duties as an Access Control Guard.

- [ ] Wears the vest or garment as provided by RP, to identify the individual as a LHRA and VHRA Guard.

- [ ] Has received a briefing on the LHRA boundary that he or she is guarding.

- [ ] If the door controlling access to the LHRA is to be left open or cannot be secured or locked when entering or exiting, the Access Control Guard should remain stationed with a direct line-of-sight and control at the door until:
  - [ ] Access or barrier is secured or locked and verified by RP.
  - [ ] Relieved by ANSI qualified RP personnel.
  - [ ] Relieved by another briefed Access Control Guard.

- [ ] Prevent unauthorized entry into the LHRA by performing the following actions for any individual requesting access to the area:
  - [ ] Obtain verbal or written acknowledgement from RP that the prospective entrant has permission from and is covered under the provisions of an RWP authorizing access to the LHRA for each individual entry.
  - [ ] If RP acknowledges permission for entry; permit entry to the area. Otherwise, DENY entry and instruct the individual to contact RP.

- [ ] Ensure that personnel are able to exit the LHRA at any time and are not prevented from leaving the area by a locked or obstructed access.

- [ ] If, at any point, you do not believe that access to the LHRA is being adequately controlled then contact RP personnel immediately.

- [ ] When all individuals have exited the LHRA area and the Access Control Guard is no longer going to be present:
  - [ ] Ensure that access door is secured or locked by physically challenging the access or barrier and ensuring proper latching.
  - [ ] Notify the RP Technician that the initial check is complete and door(s) should be verified.
  - [ ] Remain at the door until the door is verified secured or locked by RP Personnel.

Access Control Guard Name: __________________________
Access Control Guard (Signature): __________________________ Date: __________________________
RP Technician Performing Brief (Signature): __________________________ Date: __________________________
Attachment 5
Radioactive Material Tag/Label – Sample
Page 1 of 1

TAG

LABEL