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Section	Title	Revision	Effective Date
1.0	POLICIES		
1.1	Safety Priority and Procedure Compliance Policy	3	03/11/96
2.0	ORGANIZATION		
NOTE:	The charter for Analytical Services may be found in WHC-CM-1, Company Policies and Charters.		
2.1	Charters — Section Title (no text)		
2.1.1	222-S Analytical Operations Charter	3	04/13/95
2.1.2	222-S Facility Operations Charter (incorporated into 2.1.1)	Canceled	10/22/93
2.1.3	Program Management and Integration Charter	2	04/05/95
2.1.4	Work Control and Data Management Charter	Canceled	04/26/95
2.1.5	Office of Sample Management	Canceled	04/26/95
2.1.6	Plutonium Finishing Plant Engineering Laboratory	Canceled	07/06/95
2.1.7	Process Laboratories and Technology Charter	Canceled	07/11/95
2.1.8	PUREX Analytical Laboratories Charter	Canceled	07/20/95
2.1.9	Engineering and Technology Services Charter	1	03/31/95
2.2	Committees, Boards, and Task Teams	Canceled	08/17/95
2.2.1	Laboratory Instrument Control Board Charter	Canceled	09/18/96
2.2.2	Chemical Hygiene Committee Charter	1	05/31/95
2.2.5	Laboratories ALARA Committee Charter	Canceled	09/14/95
2.2.6	Laboratories Pollution Prevention Team Charter	1	05/01/95
2.2.8	Laboratory Facility Plant Review Committee Charter	Canceled	06/12/96
2.3.1	Waste Sampling and Characterization Facility — Startup Charter	Canceled	04/12/95
2.3.2	Waste Sampling and Characterization Facility — Analytical Operations Charter	2	02/26/96
2.3.3	Quality Systems Charter	1	08/02/96
2.3.4	Laboratory Transition Charter	0	03/21/95
2.3.6	222-S Production/Scheduling Charter	0	08/05/96

Section	Title	Revision	Effective Date
3.0	ADMINISTRATION		
3.1	Manual Administration	5	03/29/95
3.1-A	Manual Administration — Procedure (incorporated into Section 3.1, Rev. 5)	Canceled	04/05/95
3.2	Out-of-Tolerance Report System	Canceled	01/15/93
3.3	Corrective Action Requirements, Occurrence Categorization, Notification, and Reporting (moved to 6.7)	Canceled	09/13/93
3.4	Data Package Preparation	1	08/15/94
3.5	Administration for Nuclear Materials	4	09/09/96
3.6	Laboratories Entry Requirements	0	03/07/95
3.7	222-S Complex Radiological Postings	Canceled	07/25/95
3.8	Shift Turnover at 222-S Laboratories Complex	Canceled	07/06/95
3.9	Laboratory Procedures	5	01/15/96
3.10	Procedure Changes and Procedure Change Authorizations (incorporated into 3.9, Rev. 3)	Canceled	03/23/95
3.11	Format and Content Guide for Analytical Services Technical Procedures	0	11/03/95
3.12	Internal Audit Program (moved to 8.5)	Canceled	08/15/94
3.13	Unreviewed Safety Questions (USQ) Program	Canceled	06/12/96
3.14	Laboratory Sample Tracking	0	08/15/94
3.14-A	Laboratory Sample Tracking — Procedure	0	08/15/94
3.15-A	Data Package Administrative Verification — Procedure	0	08/15/94
3.16	Data Package Control Requirements and Procedure	2	05/01/96
3.16-A	Data Package Control — Procedure (incorporated into 3.16, Rev. 1)	Canceled	03/01/95
3.17	222-S Laboratory Radioactive Material Inventory Control Program	Canceled	09/14/95
3.18	Hanford Environmental Information System (HEIS) Data Entry	0	03/30/95
3.19	Sample Authorization Form (SAF) Issuance and Procedure	0	03/30/95
3.26	Terms and Conditions of Requests for Services at the Waste Sampling and Characterization Facility	0	07/30/96

Section	Title	Revision	Effective Date
4.0	TRAINING		
4.1	Training Responsibilities and Definitions ("On-the-Job Training" moved to Section 4.4)	1	10/01/94
4.2	Training Development and Maintenance	0	11/30/93
4.3	Training Administration Change 1 (5)	1	11/15/95 01/22/96
4.4	On-The-Job Training	4	05/01/96
4.5	Training Programs	2	09/11/95
4.6	Training Plan for 222-S Laboratory RCRA Waste Management Units	0	10/14/96
5.0	PROCEDURES		
5.1	Analytical Laboratory Procedures (renumbered 3.9)	Canceled	01/15/93
5.2	Supporting Documents	Canceled	09/15/92
5.3	Laboratory Directions	Canceled	09/15/92
5.4	Laboratory Test Programs	0	03/30/92
6.0	CONDUCT OF OPERATIONS		
6.1	222-S/WSCF Daily Operating Instructions/Standing Orders	1	09/15/95
6.2	222-S Lockout/Tagout Guidance (replaced by LAP-01-100, 222-S Lockout/Tagout Guidance)	Canceled	01/23/96
6.7	Occurrence Categorization, Notification, and Reporting (Conduct of Operations Chapter 7)	7	07/10/96
6.7-A	Corrective Action Requirements, Occurrence Categorization, Notification, and Reporting — Procedure (incorporated into 6.7, Rev. 5)	Canceled	06/06/95
6.8	Lessons Learned Administration	0	01/22/96
6.9	Required Reading	0	09/02/96
6.11	Logkeeping Practices	0	05/17/94
6.17	Operator Aid Postings	1	12/27/95

Section	Title	Revision	Effective Date
7.0	RECORDS MANAGEMENT		
7.1	Laboratory Data Management Access Control for Data Packages	0	01/15/93
7.2	Quality Assurance Records	0	10/22/93
8.0	QUALITY ASSURANCE/QUALITY CONTROL		
8.1	222-S Laboratory Analytical Quality Assurance Plans	1	04/08/96
8.2	Laboratory Instrument Calibration Control System	Canceled	08/05/96
8.3	Laboratory Quality Affecting Software Control System	1	08/15/94
8.5	Laboratory Assessments	0	08/15/94
8.5-A	Laboratory Assessments — Procedure	0	08/15/94
8.6	Laboratory Computer Configuration Control	0	12/15/95
8.7	222-S Laboratory Management Assessments	0	11/21/95
8.8	Corrective Action Management	0	01/08/96
8.9	Management Assesment Program	0	11/14/96
9.0	WORK CONTROL		
9.1	Material Control	1	11/21/95
9.1-A	Material Control — Procedure (incorporated into Section 9.1, Rev. 1)	Canceled	11/21/95
9.2	Restricted Access Area Signage	0	04/18/94
9.3	222-S Complex Construction Work Authorization	0	05/02/94
9.4	222-S High Radiation and Very High Radiation Area Access Control	2	12/12/96
9.5	Access Control Entry System (ACES)	0	10/16/95
9.8	Notice of Construction Review	0	08/26/96
10.0	LABORATORY INSTRUMENTS		
10.1	Instrument Preventive Maintenance	1	01/08/96

Section	Title	Revision	Effective Date
11.0	RADIOLOGICAL CONTROL		
11.1	Policy and Management Commitment	0	12/22/95
11.2	Assignment of Responsibilities	0	12/22/95
11.3	Administrative Control Levels	0	12/22/95
11.4	Radiological and ALARA Performance Goals/Indicators	0	12/22/95
11.5	ALARA Training	0	12/22/95
11.6	Plans and Procedures	0	12/22/95
11.7	Internal ALARA Program Reviews and Work Practice Assessments	0	12/22/95
11.8	Optimization Methodology	0	12/22/95
11.9	ALARA Design Reviews	0	12/22/95
11.10	ALARA Work Documentation	0	12/22/95
11.11	ALARA Program Records	0	12/22/95

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222-S High Radiation and Very High Radiation Area Access Control	Approved by [original signed by] A. G. King, Manager Hanford Analytical Services Program
Author: Organization:	J. L. Miller Analytical Labs Radiological Control

1.0 PURPOSE/SCOPE

The purpose of this section is to describe the physical and access control requirements for High Radiation Areas (HRAs) and Very High Radiation Areas (VHRAs) at 222-S Analytical Laboratory. This policy is in accordance with the requirements of the Hanford Site Radiological Control Manual (HSRCM-1) and 10 CFR 835. It applies to all Hanford Analytical Services Program (HASP) and support organizations that control access or need access to HRAs/VHRAs.

2.0 DEFINITIONS

Entrance or access point

Any location through which an individual could gain access to areas controlled for the purposes of radiation protection. This includes entry or exit portals of sufficient size to permit human entry, irrespective of their intended use.

NOTE: Accessible in regards to "gain access", means the ability of an individual to, by ordinary means such as walking or climbing steps/ladder, cause their "whole body" to enter an area controlled as HRA/VHRA. If tools, or other mechanical devices or equipment, must be used to remove a barrier, this is not an accessible area. For example, using a screwdriver to remove a panel.

High Radiation Area

A High Radiation Area is "Any area, accessible to individuals, in which radiation levels could result in an individual receiving deep dose equivalent in excess of 0.1 rem (100 mrem, 0.001 sievert) in 1 hour at 30 centimeters from the radiation source or from any surface that the radiation penetrates".

*This revision is a total rewrite; therefore, no redlines have been used to indicate changes.

Whole Body
For external exposure includes, head, trunk (including male gonads), arms above and including the elbows, and legs above and including the knee.

Very High Radiation Area
A Very High Radiation Area is "Any area, accessible to individuals, in which radiation levels could result in an individual receiving an absorbed dose in excess of 500 rads (5 grays) in one hour at 1 meter from a radiation source or from any surface that the radiation penetrates".

3.0 PRECAUTIONS AND LIMITATIONS

3.1 Positive access controls shall not prevent personnel from exiting an HRA/VHRA in emergency conditions.

3.2 Strict key control for HRAs/VHRAs must be maintained.

4.0 RESPONSIBILITIES

4.1 222-S Operations Manager

Responsible for establishing and maintaining key control for HRAs/VHRAs, implementing access controls to HRAs/VHRAs, and for surveillance of HRA/VHRA access controls on a frequency which meets the HSRCM minimum requirement of weekly inspections.

4.2 Facility HRA Technical Authority

Responsible for providing technical guidance to the Facility Operations Manager in the establishment, control and access of existing and new HRAs/VHRAs. Responsible to provide interpretation to the Facility Operations Manager of all regulatory requirements regarding HRAs/VHRAs.

4.3 222-S Radiological Control Manager

Provide Radiological Control Technician (RCT) support for establishment, verification and removal of HRAs/VHRAs. Develop Radiological Work Permits (RWPs) for HRA/VHRA entries and work. Approves personnel entry into HRAs with dose rates in excess of 1 rem/hr and personnel entries into VHRAs. Maintain a current inventory of all HRAs/VHRAs.

4.4 Radiological Control Technicians (RCTs)

Provide radiation monitoring for entries into HRAs/VHRAs, perform routine and specific radiological surveys to verify, downgrade, and determine new locations of HRAs/VHRAs, provide/verify proper dosimetry for personnel entering HRAs/VHRAs.

4.5 HASP Radiological Control Engineering Organization

Has responsibility for assessing the HASP overall HRA/VHRA implementation, control and surveillance program.

4.6 Workers

Responsible for understanding and complying with the following:

- Entry requirements
- What constitutes acceptable HRA/VHRA controls
- Conditions that can cause an HRA/VHRA
- Work assigned requiring the entry/remaining in "Standby Areas" as designated by RCTs when not actually involved in the work
- Complying with HRA/VHRA controls.

Workers are responsible for their own exposure.

5.0 ENTRY CONTROLS FOR HRAs/VHRAs

5.1 Physical Access Controls

One or more of the following features shall be used for each entrance or access point to all established HRAs/VHRAs, with the exception of the 1E-1 Hot Cell (see note below).

- A control device that prevents entry to the area when high radiation levels exist or upon entry causes the radiation level to be reduced below that level defining an HRA/VHRA.

- A device that functions automatically to prevent use or operation of the radiation source or field while personnel are in the area.

- A control device that energizes a conspicuous visible or audible alarm signal so that the person entering the HRA/VHRA and the supervisor of the activity are made aware of the entry.

- Locked entryways.

- Specific individual assigned to provide positive control over each entry when normal features are inactive.

- Continuous direct or electronic surveillance that is capable of preventing unauthorized entry.

- A control device that automatically generates audible and visual alarm signals to alert personnel in the area before use or operation of the radiation source and in sufficient time to permit evacuation of the area or activation of a secondary control device that will prevent use or operation of the source.

NOTE: The 1E-1 hot cell cubicle has a shielded steel partition which requires the use of an overhead hoist for access to the cubicle. Facility management, in concert with Radiological Control, believes that the shielded inner access door provides equal or greater measure of access protection based on the hot cell design, in that this large shield cannot be inadvertently removed. A Technical Equivalency Document is in place that allows this to remain unlocked.

5.2 Administrative Access Controls

NOTE: Personnel working in HRAs/VHRAs must periodically read their supplemental pencil dosimeter.

5.2.1 Entry to all HRAs/VHRAs will be controlled by a Job Control Work Package or by an equivalent Technical Work Document.

5.2.2 Minimum Entry Requirements for HRAs/VHRAs

Minimum requirements for unescorted entry into HRAs include the following:

- Radiological Worker II training and self-monitoring training in the use of a dose rate indicating device
- Worker's signature on the radiological work permit
- Personnel and supplemental dosimeters
- Survey meter or dose rate indicating device available at the work area operated by a qualified RCT or worker.

5.2.3 Minimum Entry Requirements for HRA's with radiation level > 1 rem/hr

Minimum requirements for unescorted entry into High Radiation Areas where dose rates exist such that a worker could exceed a whole body dose of 1 rem in one hour shall include those items listed in Step 5.2.2 and the following:

- A determination of the worker's current exposure, based on primary and supplemental dosimeter readings
- Pre-job briefing, as applicable

- Review and determination by the Radiological Control Organization regarding the required level of Radiological Control Technician coverage.

- Approval from the 222-S Radiological Control Manager

NOTE: Visitors shall not enter High Radiation Areas in accordance with Article 334.5, HSRCM-1 and WHC-CM-5-4, Laboratories Administration, Section 3.6, "Laboratories Entry Requirements," unless the individual qualifies as a radiological worker.

6.0 PROCEDURE

6.1 Establishing New HRAs/VHRAs

6.1.1 When any area is found that is suspected to meet the criteria of an HRA/VHRA, an RCT shall make a detailed survey of the area to determine the posting requirement.

NOTES:

- When, based on sample dose rates, an area to be used for sample storage is expected to have dose rates meeting the HRA posting criteria, this area may be posted as an HRA. An RCT survey will be performed in the area when samples are moved into the location. If, after all samples are stored, the area does not meet HRA criteria the area may be downposted.

- The configuration of samples can create an HRA condition. If a number of samples, each with dose rates less than the HRA criteria, are placed close together, the resulting dose rates at 30 cm can be above the HRA dose criteria.

1. If the dose rates are > 80 mrem/hr and < 100 mrem/hr immediate attempts shall be made to mitigate the dose rates:

   - Shield the source of the dose rate.
   - Reconfigure the stored material or samples.
   - Relocate the material or samples.
   - Dispose of the material or samples.

2. If the dose rate cannot be mitigated the Radiological Control Manager and the Facility Manager, or designate, shall be notified for further direction.

6.1.2 The results of this survey must be recorded on a Radiological Survey Report.

6.1.3 If the area meets the requirements of an HRA/VHRA the Radiological Control Manager and the Facility Manager, or designate, must be contacted immediately.

1. Others working in the area must be notified of the condition and directed to exit the area, unless a physical guard of the area can keep it clear of personnel.

6.1.4 The Facility Manager, or designate, shall immediately have the area posted as

HRA/VHRA and have the area guarded until the proper physical controls are put into place.

NOTE: Work on in-process samples with an RCT, and monitoring equipment, do not constitute an uncontrolled HRA/VHRA. The RCT shall maintain physical control of the area until the samples can be shielded and the dose rate lowered below the HRA/VHRA levels.

6.1.5 The Facility Technical Authority shall verify the proper controls are in place.

6.1.6 The Radiological Control Manager shall add the area to the Radiological Control Organization inventory of HRAs/VHRAs.

6.1.7 The Facility Manager, or designate, shall ensure that the area is added to the Facility HRA/VHRA surveillance data sheet.

6.2 Inspection of Controls of HRAs/VHRAs

6.2.1 222-S Facility Manager, or designate, shall ensure that a physical verification of all access controls for HRAs/VHRAs is performed weekly at a minimum.

6.2.2 The individual performing the inspection shall check that all required doors, locks or other means of control are in place and locked.

6.2.3 The Radiological Control Manager and the Facility Manager, or designate, must be immediately notified of any discrepancies found during the inspection.

6.3 Downgrading/Downposting of HRAs/VHRAs

6.3.1 When an area is suspected to no longer meet the criteria for posting as an HRA/VHRA, an RCT must make a detailed survey of the area to verify the dose rates are less than the HRA/VHRA posting requirements.

6.3.2 This must be recorded on a Radiological Survey Report and the results reported to the Radiological Control Manager who will inform the Facility Manager, or designate.

6.3.3 The Facility Manager, or designate, will direct the removal of the HRA/VHRA posting and the removal of the access controls.

6.3.4 The Radiological Control Manager will remove the area from the Radiological Control Organization HRA/VHRA inventory.

6.3.5 The Facility Manager, or designate, will ensure the area is removed from the HRA/VHRA surveillance data sheet.

7.0 KEY CONTROL FOR HRAs/VHRAs

7.1 Keys for HRA's/VHRA's must be strictly controlled. The HASP Key Control Program is administered under procedure LAP-15-000.

8.0 RECORDS

Any records generated as a result of activities described in this section will be managed in accordance with applicable Records Inventory and Disposition Schedules.

9.0 DESIGNATED REVIEWING ORGANIZATIONS

Designated Reviewing Organizations	CMPOC
Analytical Labs Radiological Control (Champion)	T6-28
222-S Laboratory	T6-14
222-S Operations	T6-12
Hot Cell & Sample Preparation	T6-20
222-S Building Operations	T6-20
Quality Systems	T6-03

10.0 REFERENCES

HSRCM-1, Hanford Site Radiological Control Manual, Rev. 2.

10 CFR 835, Occupational Radiation Protection.

WHC-CM-5-4, Laboratories Administration, Section 3.6, "Laboratories Entry Requirements"

LAP-15-000, Analytical Services Key Control.

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