

# CCP-HSP-500

Revision 4

## CCP Hazard Control Plan for RH TRU Operations at INTEC

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APPROVED FOR USE

## RECORD OF REVISION

Revision Number	Date Approved	Description of Revision
0	02/07/2006	Initial issue.
1	08/08/2006	Revised to address Headspace Gas (HSG) and Real-Time Radiography (RTR) systems.
2	12/13/2006	Revised to address remote-handled (RH) transuranic (TRU) 72-B transportation operations.
3	08/05/2008	Revised to address remote-handled (RH) solids sampling and visual examination (VE) operations.
4	02/19/2009	Revised to accommodate remote-handled (RH) transuranic (TRU) waste sampling outside of the hot cell.

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## 1.0 PURPOSE

The Hazard Control Plan (HCP) addresses Central Characterization Project (CCP) operations at Idaho National Laboratory (INL) for characterization, certification, and transportation of remote-handled (RH) transuranic (TRU) waste to the Waste Isolation Pilot Plant (WIPP). This HCP incorporates a variety of safety features designed to protect the operators, technical personnel, equipment, the facility where the equipment is located, and the surrounding environment. These features provide protection from radiation exposure, fire, mechanical hazards, electrical hazards, chemical exposure hazards, and hazardous materials. This document addresses the various hazards and the controls designed to mitigate the identified hazards.

### 1.1 Scope

This HCP applies to the dose-to-curie (DTC) survey, nondestructive examination (NDE), headspace gas (HSG), visual examination (VE), solids sampling, and 72-B transportation (payload assembly, cask loading, leak testing) activities conducted by the CCP at INL.

## 2.0 REQUIREMENTS

### 2.1 References

#### Baseline Documents

- DOE/CBFO-94-1012, *U.S. Department of Energy, Carlsbad Field Office, Quality Assurance Program Document (QAPD)*
- DOE/WIPP 02-3283, *RH Packaging Program Guidance*
- DOE/WIPP 02-3284, *RH Packaging Operations Manual*
- CCP-PO-002, *CCP Transuranic Waste Certification Plan*
- CCP-PO-005, *CCP Conduct of Operations*
- CCP-TP-055, *CCP Varian Porta-Test Leak Detector Operations*
- CCP-TP-500, *CCP Remote-Handled Waste Visual Examination*
- CCP-TP-504, *CCP Dose-to-Curie Survey Procedure for Remote-Handled Transuranic Waste*
- CCP-TP-505, *CCP Removable Lid Canister Loading*

- CCP-TP-507, *CCP Shipping of Remote-Handled Transuranic Waste*
- CCP-TP-512, *CCP Remote-Handled Waste Sampling*
- CCP-AK-INL-535, *Central Characterization Project Sampling and Analysis Plan for Remote-Handled Transuranic Organic Debris from Reactor Technology Complex at the Idaho National Laboratory*
- CCP-AK-INL-565, *Central Characterization Project Sampling and Analysis Plan for Remote-Handled Transuranic Debris from the Naval Reactors Facility at the Idaho National Laboratory*
- CCP-RSP-INL-520, *CCP Sampling and Analysis Plan for the Remote-Handled (RH) Transuranic (TRU) Waste Generated at the Reactor Technology Complex (RTC)*
- WP 08-PT.07, *RH-TRU 72-B Cask Removable Lid Canister Handling and Operation Manual*

#### Referenced Documents

- National Fire Protection Association (NFPA) 70, *National Electric Code*
- CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan (QAPjP)*
- CCP-PO-501, *CCP/INL RH TRU Waste Interface Document*
- CCP-QP-002, *CCP Training and Qualification Plan*
- CCP-TP-093, *CCP Sampling of TRU Waste Containers*
- CCP-TP-508, *CCP RH Standard Real-Time Radiography Inspection Procedure*

## 2.2 Training Requirements

- 2.2.1 All individuals operating these systems shall have documented evidence as part of his/her training that he/she has read and understands CCP-PO-501, *CCP/INL RH TRU Waste Interface Document*, and this document.

- 2.2.2 All individuals operating the CCP characterization and transportation activities will have completed all applicable Host facility site-specific training, including Rad Worker II, and as a minimum, 24-hour HAZWOPER training and refreshers, as required.
- 2.2.3 Personnel associated with CCP characterization and transportation activities will have completed Lockout/Tagout (LO/TO) training as required by the site.
- 2.2.4 Qualification and training requirements for CCP characterization and transportation activities are contained in CCP-QP-002, *CCP Training and Qualification Plan*.

### 3.0 RESPONSIBILITIES

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#### **NOTE**

The Responsible Individual (RI) is the Senior Operator that is physically on location at each characterization station.

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#### 3.1 Responsible Individual (RI)

3.1.1 Takes site-specific responsibility for the safety of this operation and assures that all work is performed in conformance with this HCP and applicable sections of any related Health & Safety and Environmental Compliance requirements.

#### 3.2 Radiological Control Technician (RCT) – Host Site

3.2.1 Provides site Health Physics support for CCP characterization and transportation operations.

#### 3.3 Waste Handler/Forklift Operator – Host Site

3.3.1 Provides site waste container movement, staging, and loading support for the characterization equipment used for CCP characterization and transportation operations.

#### 3.4 Operator(s)

3.4.1 Operates the equipment and/or performs the required activity (HSG, DTC Survey, VE, real-time radiography (RTR), solids sampling, transportation).

#### 3.5 Lead Operator(s) (LO)

3.5.1 Supervises the operation of the equipment.

#### 4.0 CHARACTERIZATION SYSTEMS, HAZARDS, AND CONTROLS

##### 4.1 Radiation Safety Systems on the DTC Survey System

###### 4.1.1 Radiological Hazards and Controls

- [A] The operator control room is separated from the DTC survey and RTR systems equipment bay by a wall. The door is locked, and access to the assay room is controlled by the operator.
- [B] The operator control station is fitted with closed-circuit television (CCTV) monitors that allow the operator to maintain visual surveillance.
- [C] A thermoluminescent dosimeter (TLD), as required by the U.S. Department of Energy (DOE) Host site, shall be worn by all personnel involved with TRU waste drum inspections. For all drums with a dose rate of >100 millirem per hour (mrem/hr) at 30 centimeters (cm), personnel will carry supplemental dosimetry as directed by the Host site.
- [D] Appropriate radiation signs shall be posted by the Host site.

##### 4.2 Fire Safety Systems on the Characterization Systems

###### 4.2.1 Hazards

- [A] Combustibles (paper, desk, etc.) are located inside the operator's control room.

###### 4.2.2 Controls

- [A] Accumulation of combustible waste material, dust, and debris shall be eliminated, as necessary, to maintain a safe work environment. Unnecessary combustible materials shall be removed from the characterization systems and vicinity immediately.
- [B] The exit door for the operator's control room shall be clearly marked.

#### 4.3 Electrical Safety Systems on the DTC Survey System

##### 4.3.1 Hazards

- [A] Electrical hazards, including severe shock, could occur while performing any repair work on the DTC survey system related electrical equipment.

##### 4.3.2 Controls

- [A] Electrical components and installation meet National Fire Protection Association (NFPA) 70, *National Electric Code* (NEC).
- [B] Electrical supplies are properly labeled.
- [C] Maintenance and repair work shall be performed on de-energized equipment by personnel having completed the appropriate training.
- [D] If it is determined that work must be performed on energized equipment, safety precautions and the appropriate site electrical safety work permits (i.e., LO/TO applied as applicable) shall be followed.

#### 5.0 HEADSPACE GAS SAMPLING HAZARDS AND CONTROLS

##### 5.1 Radiation Safety System

##### 5.1.1 Hazards

- [A] There is a possibility of a radioactive particle emission from a waste drum. Radioactive waste drums are typically sealed and vented through particle filters. Failure of the particle filter or the drum seal could result in radioactive particle emission. In this event, a health hazard may develop from radioactive particles from waste drums mixing with room air.

**NOTE**

Through personnel training and qualification, the CCP will ensure that only trained/qualified personnel conduct this operation.

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5.1.2 Controls

- [A] HSG Drum Sampling will only be done on vented drums that are in compliance with the container equilibrium requirements as documented in CCP-PO-001, *CCP Transuranic Waste Characterization Quality Assurance Project Plan (QAPjP)*.
- [B] DOE-Carlsbad Field Office (CBFO) approved filters will be installed on all drums.
- [C] Only waste containers within the designated HSG Drum Sampling operation area will be sampled.
- [D] Use of the appropriate tools and required personal protective equipment (PPE) will be in accordance with Host site requirements and governing Host site radiological work permit (RWP), and at a minimum, as indicated in Attachment 2, Personal Protective Equipment Requirements, will minimize or prevent exposure to hazardous waste constituents during HSG Drum Sampling.
- [E] All HSG Drum Sampling operations will be conducted with a High Efficiency Particulate Air (HEPA) vacuum or approved alternative.

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**NOTE**

On-site RCT personnel will be available during HSG Sampling Operations, as required.

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- [F] The RCT(s) will monitor the work areas, as well as the immediate area where HSG drum samples are taken.
- [G] All materials used during HSG Drum Sampling operations shall be cleared by RCT before any equipment can be removed from the designated HSG Drum Sampling area.

- [H] Upon completion of each step of handling sample drums that could expose the employees to radiological contamination, the RCT will survey equipment and employees to ensure adequate radiological control in the sampling area.

## 5.2 Radiation Monitoring Safety System

### 5.2.1 Hazards

- [A] Radioactive contamination poses the risk of ingestion and/or inhalation of radioactive material. Ingestion and/or inhalation of radioactive material may result in a source of neutron, beta and/or alpha radiation entering the body.

### 5.2.2 Controls

- [A] A Continuous Air Monitor (CAM) alarm system will be utilized to alert individuals that immediate action is necessary in order to minimize or terminate inhalation exposure within the HSG Drum Sampling operations area.

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#### NOTE

As determined by an external contamination survey performed by the RCT, drums exceeding the limits of the Host site RWP will **NOT** be sampled.

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- [B] The Host site RCT is responsible to swipe test the drums before delivery to the designated HSG Drum Sampling area.
- [C] A hand and foot monitor or applicable equipment will be located outside the HSG Drum Sampling operation area in accordance with Host site controls.
- [D] All HSG Drum Sampling will be conducted using a snorkel (e.g., elephant trunk) that is at negative pressure provided by a HEPA-filtered portable vacuum in place or an approved alternative.
- [E] RCTs will perform periodic radiation surveys and post the designated HSG Drum Sampling area, as appropriate. They will maintain survey records in accordance with site-specific requirements and notify HSG Drum Samplers of conditions and any changes on a regular basis.

- [F] All personnel involved in HSG Drum Sampling operations shall wear TLD badges or other approved dosimeter. If required by the Host site, extremity dosimeters and/or finger rings that are read periodically shall be worn.
- [G] Personnel will comply with site-specific emergency response and evacuation procedures.

### 5.3 Electrical Equipment Safety Systems

#### 5.3.1 Hazards

- [A] All electrical equipment installed and maintained in the Host site facility is potentially an electrical hazard. Electrical shock can be caused while working on energized equipment or equipment that is turned off, but has stored energy.

#### 5.3.2 Controls

- [A] All electrical equipment installed and maintained in the Host site facility will be maintained by Host site personnel.

### 5.4 Fire Safety Systems

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#### **NOTE**

Primary fire detection system may be inside the Host site facility where the HSG Drum Sampling area is located.

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#### 5.4.1 Hazards

- [A] TRU waste stored in drums have the potential to have flammable HSG from radioactive decay of the waste.
- [B] Fire hazards in the designated HSG Drum Sampling area include combustibles such as paper, cloth, and some plastic.

#### 5.4.2 Controls

- [A] The applicable portions of the TRU Waste Acceptable Knowledge (AK) Summary Report MUST be read prior to HSG Drum Sampling activities to flag potential combustibles present in drums.

- [B] Use of appropriate tools, as indicated in the HSG Drum Sampling procedure, will minimize or eliminate the potential for fires or explosions due to accumulation of flammables in waste containers.
- [C] An automatic sprinkler system or other approved fire suppression system will be present within the Host site facility.
- [D] The HSG Drum Sampling area will have a hand-held ABC fire extinguisher. Only trained operators will be allowed to use the fire extinguisher.
- [E] The exit door for the operator's work area shall be clearly marked.

## 5.5 Hazardous Materials Safety Systems

### 5.5.1 Hazards

- [A] Volatile Organic Compounds (VOCs) can emit from drums being sampled.

### 5.5.2 Controls

- [A] All personnel shall wear appropriate PPE as recommended in Material Safety Data Sheets (MSDSs) and as directed by Industrial Hygiene (IH).

## 5.6 Waste Produced

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### NOTE

Waste that will be produced as a result of CCP characterization activities includes non-contaminated items, such as packaging materials and spent office supplies; and radioactive contaminated items, such as PPE and swipes generated from routine radiological surveys, cleanup, and contamination control.

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- 5.6.1 Radioactive-contaminated waste and secondary (job-controlled) waste generated by CCP characterization activities will be collected, packaged, and disposed of through a Waste Coordinator assigned to CCP by the Host site.

## 6.0 RTR HAZARDS AND CONTROLS

### 6.1 Radiation Safety Systems for RTR Unit

#### 6.1.1 Hazards and Controls

- [A] Radiographic images are produced utilizing a radiation-generating device (RGD) with operating range of 20 kilovolt (kV) to 420kV. In order to keep personal exposure levels as low as reasonably achievable (ALARA), the radiography system has been located within a shielded vault.
- [B] The RTR unit also has the advantage of not requiring restrictions outside the enclosure since inherent shielding is sufficient to meet the maximum permissible dose equivalent requirements for non-controlled areas. At the operator's console and immediately around the exterior of the vault, the measured radiation levels are less than 1 mrem/hr.
- [C] The RGD and the drum being inspected are enclosed in a shielded room. The door to this room is fitted with redundant interlock switches such that X-ray generation is not possible unless the door is securely closed.
- [D] The operator control station is fitted with CCTV monitors that provide constant visual surveillance of the shielded room.
- [E] Audible and visual alarms are provided to warn personnel in the vicinity of impending and actual X-ray generation. These safety systems shall be tested daily in accordance with the requirements of CCP-TP-508, *CCP RH Standard Real-time Radiography Inspection Procedure*.

### 6.2 Electrical Safety Systems for the RTR Unit

#### 6.2.1 Hazards

- [A] Electrical hazards, including severe shock, could occur while performing any repair work on the RTR-related electrical equipment.

#### 6.2.2 Controls

- [A] Safety enclosed electrical systems.
- [B] High-voltage warning labels.
- [C] Work shall be performed on de-energized equipment, with the personnel performing the work having completed site standard 101 training.
- [D] If it is determined that work must be performed on energized equipment, safety precautions, and the appropriate site electrical safety work permits (i.e., LO/TO applied as applicable) shall be followed.

### 7.0 TRANSPORTATION HAZARDS AND CONTROLS

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#### **NOTE**

Activities associated with preparation of RH TRU waste for transportation to WIPP include: canister loading, storage of loaded canisters, removing/replacing RH 72-B cask lids and performing leak testing, loading canisters into the 72-B cask, removing and installing the 72-B cask on the trailer, and staging equipment supporting all transportation-related operations.

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#### 7.1 Radiation Safety System

##### 7.1.1 Hazards

- [A] Transfer of RH TRU drums into canisters, storage of loaded canisters, and transfer of canisters into the cask could result in radiation exposure. These operations will involve the movement of an unshielded canister until loaded into the cask.
- [B] Release of contamination could occur in the event of a dropped drum or canister.

##### 7.1.2 Controls

- [A] RCTs will provide continuous monitoring of radiation levels during operations and will provide direction, as needed, to ensure operations personnel safety.

- [B] RCTs will perform smears of canisters to ensure no contamination above permissible levels is present.
- [C] ALARA practices, including but not limited to, the use of distance and shielding will be used to minimize radiation exposure.

## 7.2 Compressed Gases

### 7.2.1 Hazards

- [A] Compressed helium gas is used to perform leak testing of installed lids on the 72-B cask to ensure transportation requirements are achieved. Compressed gas cylinder hazards include unexpected release of high-pressure gas resulting from failed fittings or dropped gas cylinder.

### 7.2.2 Controls

- [A] Trained and qualified personnel are used to perform changeout of cylinders of helium gas.
- [B] A secure storage rack is used to prevent accidental tipping of the cylinders.

## 7.3 Pressurized Fluids

### 7.3.1 Hazards

- [A] The rotating cask trailer is equipped with a hydraulic system for supporting cask removal and installation operations. The hydraulic system contains a pressurized fluid with pressures up to 3000 pounds per square inch (psi). Unexpected rupture of a fitting or hose could expose personnel to a high-pressure fluid that could result in skin or eye damage.

### 7.3.2 Controls

- [A] Routine inspection and maintenance is performed by qualified personnel to ensure proper equipment function.
- [B] Use of proper PPE for personnel operating or maintaining the hydraulic system.

- [C] Restricting personnel access or maintaining a safe distance from the hydraulic system, as directed by the job foreman.

## 8.0 RH SOLIDS SAMPLING HAZARDS AND CONTROLS

### 8.1 Radiation Safety System

#### 8.1.1 Hazards

- [A] Radiation and the possibility of a radioactive particle emission from a waste drum are potential hazards during sampling operations. Contact dose readings for drums will exceed 200 mrem/hr and particle emission is possible during breaching of the drum inner waste bags to access the media to be sampled.

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#### NOTE

Through personnel training and qualification, the CCP will ensure that only trained/qualified personnel conduct this operation.

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#### 8.1.2 Controls

- [A] Drums to be sampled will be placed in shielded overpacks, or using appropriate shielding per RWP, prior to opening the drum and performing sample collection to minimize radiation levels.
- [B] Only waste containers identified in the appropriate sampling and analysis plan will be sampled.
- [C] Use of PPE and supporting tools will be in accordance with Host site requirements and governing Host site RWP. Use of required PPE will minimize or prevent exposure to airborne radioactive particles and other hazardous waste constituents during sampling operations.
- [D] A HEPA air sweep or approved alternative will be located adjacent to the drum to be sampled to capture any release of radioactive particles.

**NOTE**

On-site RCT personnel will be available during RH Solids Sampling operations, as required.

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- [E] The RCT(s) will monitor the work areas, as well as the immediate area where solid samples are taken.
- [F] All materials used during sampling operations shall be cleared by the RCT before any materials, samples, or equipment can be removed from the designated sampling area.

8.2 Radiation Monitoring Safety System

8.2.1 Hazards

- [A] Radioactive contamination poses the risk of ingestion and/or inhalation of radioactive material. Ingestion and/or inhalation of radioactive material may result in a source of neutron, beta, and/or alpha radiation entering the body.

8.2.2 Controls

- [A] Job-specific air sampling will be performed during solids sampling operations.

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**NOTE**

As determined by an external contamination survey performed by the RCT, drums exceeding the limits of the Host site RWP will **NOT** be sampled.

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- [B] The Host site RCT is responsible to swipe test the drums before delivery of the drum to the designated sampling area.
- [C] A hand and foot monitor, or applicable equipment, will be located outside the solids sampling operation area in accordance with Host site controls.
- [D] Sampling will be conducted using an air sweep that is at negative pressure provided by a HEPA-filtered portable vacuum or an approved alternative.

- [E] RCTs will perform periodic radiation surveys and post the designated solids sampling area, as appropriate. They will maintain survey records in accordance with site-specific requirements and notify Solids Samplers of conditions and any changes on a regular basis.
- [F] All personnel involved in RH solids sampling operations shall wear TLD badges or other approved dosimeter. If required by the Host site, extremity dosimeters shall be worn.
- [G] Personnel will comply with site-specific emergency response and evacuation procedures.

### 8.3 Electrical Equipment Safety Systems

#### 8.3.1 Hazards

- [A] All electrical equipment installed and maintained in the Host site facility is potentially an electrical hazard. Electrical shock can be caused while working on energized equipment or equipment that is turned off, but has stored energy.

#### 8.3.2 Controls

- [A] All electrical equipment installed and maintained in the Host site facility will be maintained by Host site personnel.

### 8.4 Fire Safety Systems

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#### **NOTE**

Primary fire detection system may be inside the Host site facility where the solids sampling area is located.

---

#### 8.4.1 Hazards

- [A] TRU waste stored in drums have the potential to have flammable HSG from radioactive decay of the waste.
- [B] Fire hazards in the designated solids sampling area include combustibles, such as plastics.

#### 8.4.2 Controls

- [A] The applicable portions of the TRU Waste AK Summary Report MUST be read prior to RH solids sampling activities to flag potential combustibles present in drums.
- [B] All drums to be sampled have previously been vented to aspirate flammable gases.
- [C] An automatic sprinkler system or other approved fire suppression system will be present within the Host site facility.
- [D] The steam spray booth sampling area may have a hand-held ABC fire extinguisher. Only trained operators will be allowed to use the fire extinguisher, if provided.
- [E] The exit door for the operator's work area shall be clearly marked.

#### 8.5 Hazardous Materials Safety Systems

##### 8.5.1 Hazards

- [A] AK information indicates a potential exists for the presence of VOCs that could be released during sampling of the drums.

##### 8.5.2 Controls

- [A] All personnel shall wear appropriate PPE as recommended in MSDSs and as directed by IH.

#### 8.6 Waste Produced

- 8.6.1 Radioactive-contaminated waste and secondary (job-controlled) waste generated by CCP characterization activities will be collected, packaged, and disposed of through a Waste Coordinator assigned to CCP by the Host site.

9.0 VISUAL EXAMINATION HAZARDS AND CONTROLS

9.1 Radiation Safety System

9.1.1 Hazards

- [A] Radiation exposure is a possible but unlikely event since drums that will be remotely opened are inside a hot cell for VE. When performing VE in a tent or glovebox, radiation exposure is possible; however, all work will be performed by using all means (temporary shielding) to reduce exposure under approved RWP and using ALARA. VE personnel will be outside the hot cell, observing through the window and/or via cameras setup inside the hot cell.

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**NOTE**

Through personnel training and qualification, the CCP will ensure that only trained/qualified personnel conduct this operation.

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9.1.2 Controls

- [A] Compliance with radiological permit requirements will control personnel exposure.
- [B] Use of PPE and supporting tools and equipment will be in accordance with Host site requirements.
- [C] Use of required PPE will minimize or prevent exposure to radiological contamination and/or other industrial type hazards associated with this work activity.

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**NOTE**

On-site RCT personnel will be available during RH VE operations, as required.

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- [D] The RCT(s) will monitor the work areas, as required.

## 10.0 RADIATION SAFETY

### 10.1 Radiation Safety Systems on CCP Characterization and Transportation Activities

10.1.1 A TLD, as required by the DOE Host site, shall be worn by all personnel involved with TRU waste drum inspections. For all drums with a contact dose rate of >100 mrem/hr at 30 cm, personnel will carry supplemental dosimetry as directed by the Host site.

10.1.2 Appropriate radiation signs shall be posted by the Host site.

## 11.0 MATERIAL HANDLING

### 11.1 Hazards

11.1.1 Due to the large size and weight of the drums, such as Interim Storage Containers, Shielded Overpacks, and 72-B canisters, a potential for personnel injury and/or equipment damage exists.

11.1.2 Potential hazards when handling drums, canisters, and lifting equipment include pinch points, hand and foot injuries, breached containers, and releases.

11.1.3 There are hazards associated with sharp edges or points with canister needles, hand tools, and enclosures.

11.1.4 There are strain, pinch point, and cut hazards associated with attaching lifting devices, performing tool changeout, and installing and tightening bolts.

### 11.2 Controls

11.2.1 Material handling aids (e.g., cranes, fork trucks, drum lifts, drum carriers, castors, ramps, or hoists) shall be used whenever practical.

11.2.2 All movement and handling of drums and canisters, which require forklifts or cranes, will be performed by Host site personnel.

11.2.3 Personnel handling heavy items or containers (e.g., drums) shall wear appropriate PPE. At the minimum, PPE for material handling shall include safety shoes. Heavy gloves (e.g., leather) are required for handling drums.

11.2.4 Walking and working surfaces shall be maintained in a clean and undamaged condition so as not to impede materials handling activities and minimize risks associated with trips, slips, and falls.

11.2.5 Use of proper PPE shall be used during evolutions involving attachment of lifting devices, performing tool changeout, and installing and tightening bolts.

## 12.0 EMERGENCY RESPONSE PLANS AND PROCEDURES

12.1 All assigned CCP personnel are trained on the contents of the Emergency Action Plan and will participate in all drills concerning recognition and response to emergencies.

12.2 Inclement weather hazards shall be controlled by appropriate work shutdowns, weather protection, and snow and ice removal.

## 13.0 OTHER OPERATIONS SAFETY REQUIREMENTS (OSRs)

13.1 If a container is suspected to be damaged, STOP WORK, leave the immediate area, and notify the facility supervision.

13.2 Telephone communications should be available and installed at each system (e.g., DTC survey, VE). If telephone communications are not available, portable 2-way radios will be utilized.

## 14.0 WASTE PRODUCED

14.1 Non-contaminated waste will be disposed of by the Host site.

14.2 Radioactively-contaminated waste and secondary (job-controlled) waste generated by CCP characterization activities will be collected, packaged, and disposed of by the Host site.

## 15.0 RECORDS

15.1 No records are generated as a result of this Hazard Control Plan.

16.0 ATTACHMENTS

16.1 Attachment 1 - Hazards and Controls

16.1.1 Attachment 1 summarizes the hazards and controls for characterization activities performed. It provides the actions taken (activities conducted), lists the hazards and controls for the action taken, and provides the position titles corresponding to the action taken.

16.2 Attachment 2 - Personal Protective Equipment Requirements

Attachment 1 – Hazards and Controls

<b>Visual Examination and Characterization</b>	
<b>Observing and Documenting Visual Examination and Characterization of RH TRU Waste</b>	
<b>Hazard Description</b>	<b>Controls</b>
1a. Heat stress	1a. Job Supervisor determines heat stress stay times per MCP-2704, <i>Heat and Cold Stress</i> .
1b. Tripping	1b. Substantial footwear required when walking and working on uneven surfaces. Maintain awareness of surroundings.
1c. Radiological	1c. Radiological Worker I or Radiological Worker II training. Wear a TLD.
<b>Dose-to-Curie Survey and RTR</b>	
<b>Characterization of RH TRU Waste</b>	
<b>Hazard Description</b>	<b>Controls</b>
1a. Heat stress	1a. Job Supervisor determines heat stress stay times per MCP-2704, <i>Heat and Cold Stress</i> .
1b. Tripping	1b. Substantial footwear required when walking and working on uneven surfaces. Maintain awareness of surroundings. Secure equipment and cords to minimize tripping.
1c. Radiological	1c. Radiological Worker II training. A RWP mitigates radiological hazards. An ALARA review of procedure will be performed. Ensure drum is not in a cell during a cell entry. Room 306 is posted as High Radiation Areas if a drum is >100 mrem/hr at 30 cm, or posted as Locked High Radiation Areas if a drum is >1 rem/hr at 30 cm (see MCP-3627). Sources will be controlled per MCP-137, <i>Radioactive Source Accountability and Control</i> . Source user training
1d. Hoisting and rigging	1d. Incidental Crane Operator training for Decontamination Facility personnel who perform crane lifts. Professional Crane Operator training for crane lifts by equipment operators. Verify that hoisting and rigging equipment has current tags, inspections, and weight testing.
1e. Suspended load	1e. Ensure personnel are not allowed under suspended loads. Do not enter Room 306 when a drum is suspended.
1f. Improper use of plugs and cords (instruments, camera, monitor, etc.)	1f. Do not unplug cords by pulling cord. Visually inspect cords prior to use.
1g. Mechanical motion	1g. Personnel must stay clear of the rotating table. Ensure all personnel are clear of rotating table before initiating rotation.
1h. Muscle strain	1h. General Ergonomics Awareness Training. Use mechanical lifting and transporting devices or two person lift if object exceeds 50 lb or is awkward. Do not exceed 50 lb or 1/3 person's body weight (whichever is less).
1i. Pinch points	1i. Use caution when setting up or moving equipment.

Attachment 1 – Hazards and Controls (Continued)

<b>Transportation</b>	
<b>Leak Testing and Loading of RH-TRU 72-B Casks</b>	
1a. Compressed Gas	1a. Ensure only qualified personnel changeout and inspect compressed gas cylinders.
1b. Pressurized Fluids	1b. Maintain safe distance from hydraulic unit unless directly involved in operation.
<b>Solids Sampling</b>	
<b>Collection of Samples and Transfer</b>	
1a. Heat stress	1a. Job Supervisor determines heat stress stay times per MCP-2704, <i>Heat and Cold Stress</i> .
1b. Tripping	1b. Substantial footwear required when walking and working on uneven surfaces. Maintain awareness of surroundings. Secure equipment and cords to minimize tripping.
1c. Radiological	1c. Radiological Worker I or II training. Wear a TLD during sampling operations. Use of a shielded overpack is required to reduce radiation exposure to personnel. Use of respiratory protection is required for entry into the steam spray booth. Follow other directions identified in RWP and direction provided by radiological control techniques.

Attachment 2 – Personal Protective Equipment Requirements

Procedure	Operation/ Conditions	Respiratory Protection	Protective Clothing	Dosimetry
CCP-TP-093, <i>CCP Sampling of TRU Waste Containers</i>	HSG Drum Sampling	N/A	Nitrile gloves, safety shoes, safety glasses, and required PPE per Radiological Control Documentation	Dosimetry requirements will be specified in the Radiological documents (e.g., RWP)
CCP-TP-093	Preparing Drums for Sampling	N/A	Leather gloves for drum handling and for sharps, safety glasses, safety shoes, and required PPE per Radiological Control Documentation	Dosimetry requirements will be specified in the Radiological documents (e.g., RWP)