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STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

3100 Port of Benton Blvd • Richland, WA 99354 • (509) 372-7950

November 16, 2016

16-NWP-198

By certified mail

Mr. Doug S. Shoop, Manager
Richland Operations Office
United States Department of Energy
PO Box 550, MSIN: A7-50
Richland, Washington 99352

Mr. John A. Ciucci, President and CEO
CH2M HILL Plateau Remediation Company
PO Box 1600, MSIN: H7-30
Richland, Washington 99352

Re: Dangerous Waste Compliance Inspection on April 28, 2016 at Plutonium-Uranium Extraction (PUREX) Plant and Storage Tunnels, RCRA Site ID: WA7890008967, NWP Compliance Index No. 16.559

Dear Mr. Shoop and Mr. Ciucci:

Thank you for your staff's time during the PUREX Plant and Storage Tunnels inspection on April 28, 2016. The Department of Ecology's (Ecology) compliance report of this inspection is enclosed. The report cites one area of non-compliance and three concerns listed in the compliance problems section of the report.

To return to compliance, complete the action required and respond to Ecology within the timeframe specified. Include all supporting documentation in your response, (such as photographs, records, and statements explaining the actions taken and dates completed). Submit this information to Edward Holbrook at 3100 Port of Benton Boulevard, Richland, Washington 99354.

Specific deficiencies or violations not listed in the enclosed compliance report does not relieve your facility from having to comply with all applicable regulations.

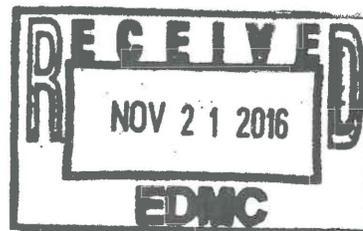
Failure to correct the deficiencies may result in an administrative order, a penalty, or both, as provided by the Hazardous Waste Management Act (Revised Code of Washington 70.105.080 and .095). Persons who fail to comply with any provision of this chapter are subject to penalties of up to \$10,000 per day per violation.

If you have questions or need further information, please contact me at edward.holbrook@ecy.wa.gov or (509) 372-7909.

Sincerely,

Edward Holbrook
Dangerous Waste Compliance Inspector
Nuclear Waste Program

tkb
Enclosure



cc: See page 2

S-2-1



Mr. Shoop and Mr. Ciucci
November 16, 2016
Page 2 of 2

16-NWP-198
PUREX Plant and Storage Tunnels
RCRA Site ID: WA7890008967
NWP Compliance Index No.: 16.559
Inspection Date: April 28, 2016

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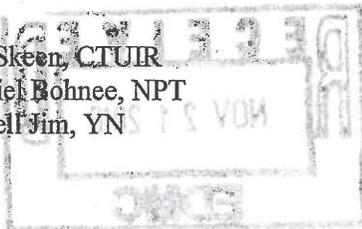
Dave Bartus, EPA
Jack Boller, EPA
Dennis Faulk, EPA
Duane Carter, USDOE
Cliff Clark, USDOE
Michael Collins, USDOE
Al Farabee, USDOE
Tony McKarns, USDOE
Julie Reddick, USDOE
Wade Woolery, USDOE
Allison Wright, USDOE
Darin Corriell, CHPRC
Rick Engelmann, CHPRC
Joel Williams, Jr., CHPRC
Jon Perry, MSA
Ken Niles, ODOE
Shawna Berven, DOH
John Martell, DOH
Kathy Conaway, Ecology
Suzanne Dahl, Ecology
Kelly Elsethagen, Ecology
Jared Mathey, Ecology
John Price, Ecology
Stephanie Schleif, Ecology
Ron Skinnarland, Ecology
Alex Smith, Ecology
John Temple, Ecology
CHPRC Correspondence Control
Environmental Portal
Hanford Facility Operating Record

cc w/enc:

Steve Hudson, HAB
Administrative Record
NWP Central File
NWP Compliance Index File: 16.559

cc w/o enc:

Rod Skeen, CTUIR
Gabriel Bohnee, NPT
Russell Jim, YN



**Washington Department of Ecology
Nuclear Waste Program
Compliance Report**

Site: Plutonium-Uranium Extraction (PUREX) Plant and Storage Tunnels
RCRA Site ID: WA7890008967
Inspection Date: April 28, 2016
Site Contacts: Joel F. Williams Jr. CH2M HILL Plateau Remediation Company (CHPRC)
Phone: (509) 376-4782 **FAX:** (509) 372-2828
Site Location: Hanford Site
Benton County, WA
At This Site Since: 1943 **NAICS#:** 924110, 56221, 54171
Current Site Status: Closure Unit Group 25 and Operating Unit Group 2

Ecology

Lead Contact: Edward Holbrook **Phone:** (509) 372-7909 **FAX:** (509) 372-7971
Other Representatives: N/A
Report Date: November 16, 2016
Report By: Edward Holbrook



(Signed)

11/16/16

(Date)

Site Location

The Hanford Site was assigned a single United States Environmental Protection Agency (EPA) identification number, and is considered a single Resource and Conservation Recovery Act of 1976, as amended, (RCRA) facility even though the Hanford Site contains numerous processing areas spread over a large geographic area. The Hanford Site is a tract of land approximately 583 square miles and is located in Benton County, Washington. This site is divided into distinct Dangerous Waste Management Units (DWMUs), which are administratively organized into "unit groups." A unit group may contain only one DWMU or many; currently, there are 36 unit groups at the Hanford Site. Individual DWMUs utilize only a very small portion of the Hanford Site. Additional descriptive information on the individual DWMUs is contained in unit group permit applications and in Parts III, V, and VI of the Hanford Facility RCRA Permit, Dangerous Waste Portion, WA7890008967, Revision 8C (hereafter referred to as the Permit).

Owner/Operator Information

USDOE is the owner and operator of the PUREX Plant and Storage Tunnels; USDOE oversees waste management activities on the Hanford Site. CHRPC is contracted by USDOE to co-operate the PUREX Plant and Storage Tunnels.

Facility Background

The PUREX Plant DWMUs (Closure Unit Group No. 25), are identified in the October 1, 2008, *Washington State Department of Ecology, PUREX Plant, Revision 12, Dangerous Waste Permit Application Part A Form* (PUREX Plant Part A Form). The PUREX Storage Tunnels 1 & 2 DWMUs, (Operating Unit Group No. 2) are identified in the October 1, 2008, *Washington State Department of Ecology, PUREX Storage Tunnels, Revision 7, Dangerous Waste Permit Application Part A Form* (PUREX Tunnels Part A Form). According to the PUREX Plant Part A Form, the canyon building (202-A) contains the majority of the DWMUs.

Further information on the status of the PUREX Plant can be found in the *Hanford Federal Facility Agreement and Consent Order, DOE/RL-89-10*, also known as the

Tri-Party Agreement (TPA). The TPA *Action Plan, Section 8, Facility Disposition Process*, describes the canyon building, "PUREX" as a "Tier 1" and "Key Facility," which follows a phased facility disposition process.

- 1) Transition
- 2) Surveillance and Maintenance
- 3) Disposition

I observed in the TPA Action Plan, Section 8, *Table 8-1 Status of "Key Facilities" as of March 2010*, the following for PUREX under Canyon Buildings.

- Deactivated in accordance with *PUREX/UO₃ Deactivation Project Management Plan, WHC-SP-1011D* and *PUREX Deactivation End Point Criteria, WHC-SD-TPP-053*.
- Surveillance and maintenance is performed in accordance with the *Surveillance and Maintenance Plan for the PUREX Facility, DOE/RL-98-35*.
- Final disposition is to be addressed using Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA) remedial action coordinated with RCRA closure. Completion schedules to be established with Remedial Investigation and Feasibility Study (RI/FS) Work Plans and Remedial Design and Remedial Action (RD/RA) Work Plans in accordance with Action Plan Section 11.6 (M-85 milestones) and closure conditions / schedules established in the Hanford Facility Dangerous Waste Permit.

Ecology dangerous waste requirements for the PUREX Storage Tunnels are identified in Part III of the Permit.

The phased approach for decommissioning and demolition of the PUREX Plant can be observed in the TPA *Action Plan Appendix D*, under the M-085 milestone series.

According to the *Surveillance and Maintenance Plan for the Plutonium-Uranium Extraction (PUREX) Facility DOE/RL-98-35, Revision 3*, dated January 10, 2008 (PUREX Surveillance and Maintenance Plan), construction of the PUREX Facility began in 1952. The facility began recovery of plutonium, uranium, and neptunium from irradiated fuel elements in 1956. The fuel came from the 100 N Reactor and other single-pass reactors on the Hanford Site. Between 1956 and 1992, the PUREX Plant went through a series of operating and stand-by statuses:

- Recovery Operation: 1956-1972
- Wet Stand-by Mode: 1972-1978
- Cold Start-up Tests and Resumed Operations: 1978-1983
- Recovery Operation: 1983-1988
- Transitioning to Cold Stand-by Mode: 1988-1992
- Cold Stand-by Mode: September 1992-December 1992

The Transition Phase was conducted between 1992 and 1998. The Surveillance and Maintenance Phase began in 1998 and is currently in effect.

The PUREX Plant and Storage Tunnels have three types of DWMUs.

- Tank Systems: 45 tanks and vessels, which are identified in the PUREX Plant Part A Form.
- Containment Building: Includes the canyon deck and F cell. According to the *Calendar Year 2015 Hanford Site Mixed Waste Land Disposal Restriction Summary Report*,

DOE/RL-2016-08, Revision 0, Dated March 14, 2016 (2015 LDR Report), the PUREX Plant containment building currently stores one cubic meter of concrete debris contaminated with chromium.

- Storage Tunnels: According to the PUREX Storage Tunnels Permit (Operating Unit Group No. 2), Tunnel 1 contains 8 railcars of mixed waste and Tunnel 2 contains 28 railcars of mixed waste. Cadmium and lead contaminated mixed waste was removed from the containment building and stored in PUREX Storage Tunnel 2. Tunnel 1 has a storage capacity of 8 railcars and Tunnel 2 has a storage capacity of 40 railcars. According to the 2015 LDR Report, the Storage Tunnels are currently storing 2,800 cubic meters of mixed waste.

The PUREX Plant (Tank Systems and Containment Building) and Storage Tunnels (Miscellaneous Unit) DWMUs are located in the following structures:

- 202-A: PUREX Canyon Building
- 203-A: Acid Pump House / Acid Storage and Handling Facility
- 204-A: U Cell / Acid Storage Vault
- 211-A: Bulk Cold Chemical Tank Farm
- 218-E-14: PUREX Storage Tunnel 1
- 218-E-15: PUREX Storage Tunnel 2
- 276-A: R Cell
- Aqueous Makeup Unit (AMU)

Compliance Background

Between April 20th and May 6th 1994, Ecology inspected the PUREX Plant, which included multiple site meetings and field inspections. At the time of the 1994 inspection, only a portion of the 45 tanks and vessels systems were identified on the PUREX Plant Part A Form. The tank systems identified in the PUREX Plant Part A Form were TK-E5, TK-F15, TK-F16, TK-F18, TK-G7, TK-U3, and TK-U4. Also identified was the Concentrator E-F11 and the containment building. The owner of the PUREX Plant in 1994 was USDOE and the operator was the Westinghouse Hanford Company (WHC). The Ecology compliance report (Compliance Index Number 94.042) provides further information.

On March 12, 2015, Ecology conducted a dangerous waste compliance inspection (Compliance Index # 15.517) of the PUREX Plant and Storage Tunnels. The following areas of non-compliance were documented in the Ecology Compliance Report.

- 1) USDOE and CHPRC failed to document the time of the inspection, the printed name of the inspector, and the date and nature of any repairs or remedial actions taken for observations made and documented on the inspection logs.
- 2) USDOE and CHPRC failed to equip the PUREX Plant with spill control equipment.
- 3) USDOE and CHPRC failed to describe evacuation routes and alternate evacuation routes in the *Surveillance and Maintenance Building Emergency Plan, HNF-IP-0263-CP*.
- 4) USDOE and CHPRC failed to maintain labels or signs on Tanks TK-40 and TK-P4 to identify the waste contained within.
- 5) USDOE and CHPRC failed to inspect at least once each operating day, the above ground portions of Tanks TK-40 and TK-P4.

These areas of non-compliance were addressed in Ecology letter 16-NWP-092, dated May 16, 2016.

Inspection Summary

On April 28, 2016, I announced I would be conducting a Non-Financial Records Review inspection of the PUREX Plant and Storage Tunnels. I also requested the following documents to review for the inspection.

- Annual Scheduled Surveillance for 2015 Inspection Log
- Pressure Differential Monitoring (February 2016 – April 2016) Inspection Log
- Data Sheet SM-20482 “CP S&M Monthly/Annual Emergency Equipment Inspections” (February 2016 – April 2016) Inspection Log

I received the requested documents and information on June 2, 2016.

2015 Annual Surveillance of the PUREX Plant and Storage Tunnels

I observed each inspection conducted at the PUREX Plant used the *Data Sheet 2 – PUREX Facility Surveillance Criteria* from the *Surveillance of PUREX Facility, CPSM-PRO-OP-50668 Revision 4, Change 0* document. The criteria for the inspections includes the following:

- *Building/Area Secure – Criteria: Exterior doors are locked and there is no obvious indication of unauthorized entry into the building; perimeter fence is secure/undamaged, as applicable.*
- *Structural Integrity – Criteria: There is no new damage or deterioration, e.g., structural faults, damaged/friable asbestos openings, or holes in buildings/walls/ceilings/doors that would allow pests into the facility, no unpainted or deteriorating wooden pieces, upper edge of roof and flashing is in good condition, and there are no obvious abnormal or unsafe conditions. Attempt to date damaged item with marker, as applicable.*
- *Animal/Pest Intrusion – Criteria: There is no evidence of animal issues/intrusion, e.g. bird nests/droppings, anthills, beehives, termite nests, etc.*
- *Electrical Hazards – Criteria: There are no new open J boxes, conduit fittings, exposed or hanging wires, improper labeling, etc., as applicable.*
- *Ground Subsidence (exterior) – Criteria: There are no indications of ground subsidence (as might occur due to water leaking from broken underground pipes, etc.) as applicable.*
- *Lighting System – Criteria: System is operating adequately to perform the surveillance, as applicable.*
- *Housekeeping – Criteria: Accumulation of dirt, sand debris, tumbleweeds, etc., or equipment, material, etc., tripping and slipping hazards, broken steps, missing handrails, exit door egress locked or obstructed, as applicable.*
- *Signage – Criteria: Postings are adequate and accurate. No missing or fallen signs or postings (e.g., radiological, confined space, electrical, etc.) Gates and entries to the facilities shall be posted with “WARNING NO UNAUTHORIZED ACCESS” (or equivalent wording) signs.*
- *Water Intrusion (Leaks) – Criteria: There is no standing water or evidence of current or recent water pathways into or out of the building due to structural damage or leaks due to broken or leaking pipes or other reasons, as applicable.*
- *Containers – Criteria: There are no unlabeled or unidentified containers or hazardous materials observed.*

- *Combustible Material Storage – Criteria: There is no observed instance of unauthorized storage of combustible materials.*
- *Combustible Loading – Criteria: Combustible loading conditions are within allowable limitations and consistent with analyzed accidents.*
- *Egress – Criteria: Egress requirements are maintained for allowed surveillance pathways.*

A Data Sheet 2 inspection log was used for each route during the annually scheduled inspection. All of the routes are associated with the PUREX Plant and Storage Tunnels, but many of the routes do not enter the DWMUs located at the PUREX Plant and Storage Tunnels. The inspection routes are as follows.

- PUREX Path 1
- PUREX Path 2 (Lab and Vent Room)
- PUREX Path 3
- PUREX Path 4
- PUREX Path 5
- PUREX Path 6
- PUREX Path 7
- PUREX Quadrant 1
- PUREX Quadrant 2
- PUREX Quadrant 3
- PUREX Quadrant 4
- PUREX Railroad Cut

The procedures for the annual inspection are described in *Technical Procedure, 2CP-SUR-A-04002, CPSM-PRO-OP-50668, Surveillance of PUREX Facility.*

On the PUREX Path 1 inspection log, the structural integrity, animal/pest intrusion, housekeeping, occupational hazards, and water intrusion (leaks) were all marked “no” for not meeting the criteria. The comments associated with the water intrusion are as follows.

East Switch Gear Rm – Roof drain leak damage by switch gear # E8x215 see pictures 2-A & 2-B and 6-D,

East switch gear Rm water damage roof drain is leaking rusty see pictures 6-B and 6-A

Service Blower Rm water damage see pictures 6-E and 6-F

On July 11, 2016, I asked, by email, what repair or remedial action was taken for the water intrusion. I received the following response on August 18, 2016.

Engineering and Operations staff determined that no action was necessary. However, the condition will continue to be monitored. If water intrusion at additional locations or in increased amounts are noted during the 2016 inspection, further action may be needed.

On the PUREX Path 2 – Lab Vent Room inspection log, the structural integrity and signage were marked “no” for not meeting the criteria. The comments associated with structural integrity and signage are as follows.

Insulation coming loose possibly exposing PACM (Pictures 1)

There may be a need for a “confined space” sign on the door to the blower unit (picture 2) Probable need for a “no access” sign on fixed ladder which leads to the top of the blower unit (picture 3)

On the PUREX Path 2 – Lab inspection log, the lighting system and water intrusion were marked “yes” for meeting the criteria, but noted comments referenced on the *Data Sheet 3 – PUREX*

Facility Surveillance – Comments Sheet. The comments associated with the criteria are as follows.

May need some relamping in hall way and lab storage

No standing water, same stains as last yrs 2014 surv.

Whether the criteria were met for lighting systems and water intrusion is not clear.

On the PUREX Path 3 inspection log, the structural integrity, lighting system, and occupational hazards were marked “no” for not meeting the criteria. The comments associated with the structural integrity and occupational hazards are as follows.

Peeling paint on panel by col. 15 see pic A-1

Expansion joint splitting by col. 27 and col. 36 see pic B-1, B-2, B-3, B-4, B-5, B-6.

Insulation coming loose by col. 34 see pic C-1

White powder by col. 26 and in white Rm see pic D-1, D-2 & D-3

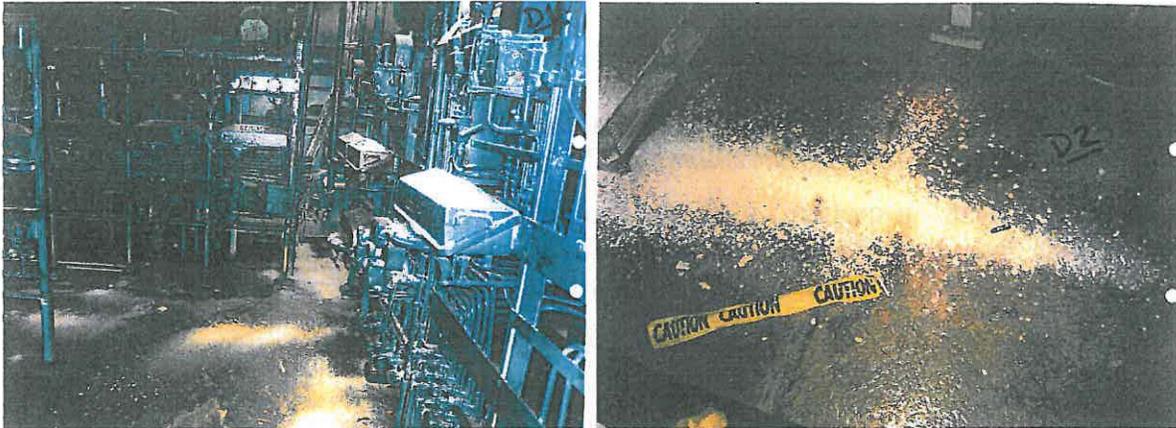


Photo D-1 and D-2: 2015 Surveillance of PUREX Plant (Surveillance Path 3 and Path 4).



Photo D-3: 2015 Surveillance of PUREX Plant (Surveillance Path 3 and Path 4).

On July 11, 2016, I asked what repair or remedial action was taken for the structural integrity and the documented white powder found. I received the following response on August 18, 2016.

DOE-RL/CHRPC will continue to monitor structural integrity. Additional investigation / data may be needed to determine if the white powder poses a hazard that requires additional

action. Workplace air monitoring will be performed during the 2016 surveillance in the vicinity of the white powder to evaluate the need for addition controls to protect workers.

I did not receive the date and nature of any repairs or remedial actions taken for the white powder discovered on Path 3. The PUREX Plant Path 3 inspection record was dated May 7, 2015.

Note: On September 19, 2016, at 3:30 p.m. I attended a meeting regarding the missing dates and nature of any repairs or remedial actions taken. A narrative of the meeting can be found at the end of this section of the compliance report.

On the PUREX Path 4 inspection log, the lighting system and occupational hazards were marked “no” for not meeting the criteria. The comment associated with the occupational hazard was:

White Rm – col. 5 white powder on floor see pic D-1

On July 11, 2016, I asked what repair or remedial action was taken for the white powder observed (See Photo D-1). I received the following response on August 18, 2016.

Additional investigation/data may be needed to determine if the white powder poses a hazard that requires additional action. Workplace air monitoring will be performed during the 2016 surveillance in the vicinity of the white powder to evaluate the need for additional controls to protect workers.

I did not receive the date and nature of any repairs or remedial actions taken for the white powder discovered on Path 4. The PUREX Plant Path 4 inspection record was dated May 7, 2015.

On the PUREX Path 5 inspection log, the lighting system was marked “no” for not meeting criteria. The structural integrity and housekeeping were marked “yes” for meeting the criteria, but noted comments referenced on the *Data Sheet 3 – PUREX Facility Surveillance – Comments Sheet*. I observed the comments on the Data Sheet 3 referred to observations from the 2014 annual inspection regarding lighting systems, radiological contamination, and grout falling from the ceiling.

On the PUREX Path 6 inspection log, the structural integrity was marked “no” for not meeting criteria. The comments associated with the structural integrity were:

Q-cell control Rm falling down tiles see pictures ceiling tiles.

Note: N-cell ladder inspection will expire on 10/8/15 see pictures

Note: N-cell upper south had stain on path way from up above intake air decon that area see pictures

On the PUREX Path 7 inspection log, the lighting system and occupational hazards were marked “no” for not meeting criteria. The comments associated with the lighting system and occupational hazards were:

Only 1 light on the 2nd floor AMU. The light by the old lunch room is the only one working. It does light up the stairs to the 3rd floor through. Otherwise no lighting on the 2nd floor.

Brown stain on the floor (Picture 1) most likely from Tank 204-Sugar Tank

White Powder on the floor. This looks to be a new accumulation, from a valve off of Tank 200 – Sodium Hydroxide Solution 50% (Picture 2)

Green liquid (stain) from years past is dried up. Everything else is ok.



Photo 2: 2015 Surveillance of PUREX Plant (Surveillance Path 7), four photos marked with a 2.



Photo 2: 2015 Surveillance of PUREX Plant (Surveillance Path 7), four photos marked with a 2.

On July 11, 2016, I asked what repair or remedial action was taken for the brown stain, white powder, and green liquid. I received the following response on August 18, 2016.

Additional investigation/data may be needed to determine if the white powder poses a hazard that requires additional action. Workplace air monitoring will be performed during the 2016 surveillance in the vicinity of the white powder to evaluate the need for additional controls to protect workers.

I did not receive a response regarding the green liquid stain or the brown stain. I did not receive the date and nature of any repairs or remedial actions taken for the white powder discovered on Path 7. The PUREX Plant Path 7 inspection record was dated May 21, 2015.

On the PUREX Quadrant 1 inspection log, the structural integrity and water intrusion were marked “no” for not meeting criteria. The comments associated with the structural integrity and water intrusion were:

Asbestos repair degrading on a number of joints (Pic 1A) Damage to joint down to bare asbestos

Guard House basement stairwell and basement leaking roof, falling ceiling tiles, wall's falling apart, open hole in basement floor has standing water open hole is a fall hazard needs covered. Hanging light (Pic I-5).

On July 11, 2016, I asked what repairs are completed for observations regarding asbestos or potential asbestos containing material at the PUREX Plant. I received the following response on August 18, 2016.

No repairs have been completed for asbestos or potential asbestos containing material. Asbestos repairs are not typically performed unless needed to keep the inspection pathway safe for workers.

On the PUREX Quadrant 2 inspection log, the housekeeping and occupational hazards were marked “no” for not meeting criteria. The comments associated with the housekeeping and occupational hazards were:

Tumbleweeds in various location's Pic 2, 4, 5, 6. Trash from Asbestos work tank 30 cleaned up and taken to 400 area (440 pad) dumpster (pic 3). Tools from asbestos cleaned up Pic 6.

Sump cover off, Replaced Pic 3

There appears to have been remedial actions taken for the trash and sump cover on June 3, 2015.

On the PUREX Quadrant 3 inspection log, the housekeeping was marked “no” for not meeting criteria. The comment associated with the housekeeping:

Housekeeping wood metal, hoses see Pic I-4.

On the PUREX Quadrant 4 inspection log, the structural integrity was marked “no” for not meeting criteria. The occupational hazards and storage were marked “yes” for meeting the criteria, but noted comments referenced on the *Data Sheet 3 – PUREX Facility Surveillance – Comments Sheet*. The comments were:

Steam line over burial tunnel exposed asbestos see pictures 1, 2, and 3 need repair.

*Housekeeping – PUREX east burial tunnel ladders and planks in CA need picked up.
PUREX East Burial Tunnel tumbleweeds*

292-AB light bulbs and misc. equipment needs housekept see pictures.

*291-AE misc equipment Hoses cardboard, filters, drum lids, and ladders need housekept.
See pictures 212-A metal casing from rollup dr need housekept.*

295-AA building needs resigned. Faded signs: signs are already made by sign painter's work in progress.

I observed numerous photos of fluorescent light bulbs either in or out of boxes. Whether the bulbs were used is not clear. I asked what repairs are completed for observations regarding

asbestos or potential asbestos containing material at the PUREX Plant. I received the following response from USDOE and CHRPC.

No repairs have been completed for asbestos or potential asbestos containing material. Asbestos repairs are not typically performed unless needed to keep the inspection pathway safe for workers.

On the PUREX Railroad Cut inspection log, the housekeeping was marked "yes" for meeting the criteria but noted comments referenced on the *Data Sheet 3 – PUREX Facility Surveillance – Comments Sheet*. The comment was: *Tumble weeds cleanup of Railroad cut were house kept.*

On August 29, 2016, I sent an email to Mr. Williams, requesting a meeting with USDOE and CHRPC. I requested the meeting to discuss the response I receive regarding the white powder observed and documented by CHRPC surveillance and maintenance personnel during their PUREX Plant 2015 annual inspection.

On September 19, 2016, at 3:25 p.m. I arrived at 2420 Stevens Center Drive, Richland WA, 99354, Room 308. At approximately 3:35 p.m. USDOE and CHRPC personnel in attendance introduced themselves. USDOE and CHRPC personnel present for the meeting are as follows.

- Joel Williams Jr. (CHPRC)
- Deborah Singleton (CHPRC)
- Jim Hoffman (CHPRC)
- Ray Stevens (CHPRC)
- Rick Engelmann (CHPRC)
- Darin Corriell (CHPRC)
- Wade Woolery (USDOE)

After introductions I described what I observed on the *Data Sheet 2 – PUREX Facility Surveillance Criteria* and photographs for the following paths inspected in 2015:

- PUREX Path 3, P&O Gallery
- PUREX Path 4, Canyon Lobby & White Room
- PUREX Path 7, Aqueous Makeup Unit

I described that the CHRPC surveillance and maintenance personnel conducting the annual inspections documented in notes and photographs white powder in the P&O Gallery, White Room, and Aqueous Makeup Unit. I said that there appears to be no dates and nature of repairs or remedial actions taken for the white powder discovered on PUREX Plant Path 3, 4, and 7.

I asked how observations made during the annual inspection surveillance are processed to determine if a repair or remedial action needs to be taken. Mr. Stevens said that inspectors conduct the surveillance according to procedures. He said their responsibility is to observe conditions along prescribed paths and document the observations on the data sheets. He said after the personnel complete the walk downs, a group of professionals, which includes industrial hygienist, engineers, environmental compliance officers, radiological control technicians, and others meet to discuss the observations. He said the group reviews the documented observations and photographs to prioritize repairs and remedial actions and make decisions on the type of actions to be taken.

At approximately 3:45 p.m. Kathy Conaway arrived to join the meeting. I gave Kathy a summary of what we had discussed so far. I then reiterated that a remedial action or repair appears to have not been taken for the white powder discovered on PUREX Plant Paths 3, 4, and 7. I asked Mr. Stevens for some examples of when observations of an unknown substance

would be prioritized and scheduled for a repair or remedial action. Mr. Stevens said if the white powder was obstructing the inspection path, there would be a repair or remedial action, which could include anything from sampling to removing material. He also said if contamination was migrating there would be a repair or remedial action taken. He also said there are structural repairs that would prompt the surveillance and maintenance group to conduct repairs or remedial actions. Ms. Singleton said that the areas where white powder was observed may not be accessible to CHPRC surveillance and maintenance personnel.

I asked if the CHPRC Surveillance and Maintenance group have identified what the white powder is. Mr. Stevens said the white powder could be product from the tanks and pipelines and could be determined through process knowledge. He said that the gaskets associated with the tanks and pipelines are failing in the facilities that are under the surveillance and maintenance phase. He said that the tanks and pipelines have been flushed prior to the surveillance and maintenance phase, but residual may still be present. He said that this material will be reviewed and that air monitoring will be performed during the 2016 annual surveillance to determine if further action needs to be taken. I asked why were there no samples taken during or after the 2015 annual inspection and if there was a determination the white powder was dangerous or mixed waste and why the white powder was not removed. Mr. Stevens could not recall what specific decision was made after the 2015 annual inspection. Mr. Corriell said that the material is contained within the facility and no personnel are working in these areas between each annual surveillance.

Note: The 2015 annual inspections for Path 3, Path 4, and Path 7 were completed in May, 2015. As of October 26, 2016 there appears no repairs or remedial actions taken regarding the white powder found within the PUREX Plant. I observed no date or nature of repairs or remedial actions taken that were documented on the documents received on June 2, August 18, or October 20, 2016.

I said that I would request further information regarding the risks in the vicinity of the white powder on PUREX Plant Path 3, 4, and 7. I said that I would be requesting an explanation as to why samples and removal of the material were not performed during or after the 2015 annual inspection of the PUREX Plant. I also said that I would be requesting the tracking table for issues documented during the 2015 annual inspection. Kathy and I left at 4:35 p.m.

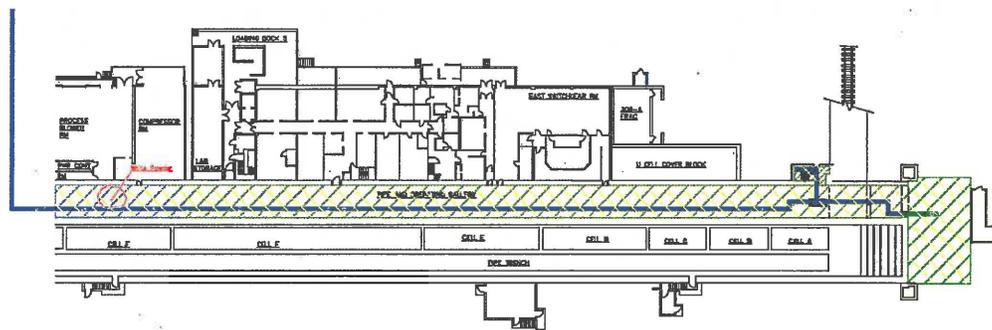
On September 21, 2016, I sent an email to Mr. Williams requesting information and documentation regarding the September 19, 2016 meeting. On October 20, 2016, I received the requested information, which I reviewed and documented below.

I requested the PUREX Plant and Storage Tunnels open/closed items list for the 2015 Annual Surveillance. I received the list on October 20, 2016. I observed the following regarding the white powder discovered on Path 3, Path 4, and Path 7.

Path	Location	Issue	Action to be Taken	Pictures
3	N/A	White powder by col. 26 and in white room	Perform IH air sampling at next entry	9-3
4	N/A	Col. 5 white powder on floor	Perform IH air sampling at next entry	None
7	N/A	Brown stain on the floor (picture 1) most likely from tank 204. White powder on the floor. This looks to be a new accumulation, from a valve off of Tank 200- Sodium Hydroxide solution 50%	Perform IH air sampling at next entry	15-2

I observed that the photos referenced on the 2015 Annual Surveillance open items list did not match the photos noted by the inspector on the inspection logs for PUREX Plant Paths 3, 4, and 7. I did not observe photos labelled 9-3 or 15-2. The action to “Perform IH air sampling at next entry” is not clear as to whether the next entry has been scheduled before the 2016 Annual Surveillance or during the 2016 Annual Surveillance. There appears to be no schedule to sample the white powder to determine if the powder is a dangerous waste or extremely hazardous waste in accordance with procedures under WAC 173-303-070, Designation of dangerous waste.

I requested documentation and an explanation as to why the white powder could not have been sampled and removed if sample results determined the white powder to be dangerous or mixed waste on Path 3. I also requested a drawing identifying the location of the white powder discovered on Path 3. I received the following drawing and response on October 20, 2016.



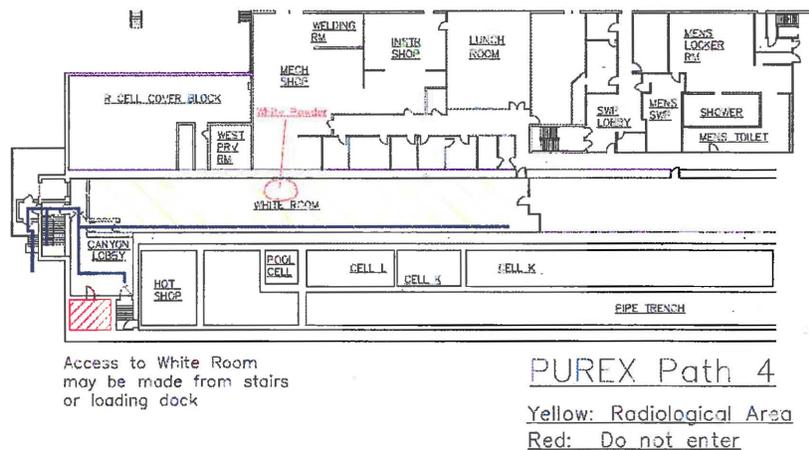
Excerpt 1: PUREX Surveillance Path 3

I observed a legend on the PUREX Path 3 drawing, which states yellow is a radiation area and green is a beryllium area. I also observed on the PUREX Path 3 drawing that the red marking is the location of the white powder, which appears to be in both a radiation area and beryllium area.

Surveillance path 3 is of the pipe and operating gallery along the north side of the PUREX canyon. The pipe and operating (P&O) gallery contains deactivated instrument racks, electrical motor controls, steam and cooling water supply lines, and the piping and associated valves for transferring nonradioactive solutions that served the in-cell equipment. Hazardous materials and wastes were removed in accordance with the end point criteria and materials remaining in the P&O Gallery are identified in Appendix A of the PUREX S&M Plan. These sources do not provide any indication that the white powder (if determined to be a solid waste) would designate as a dangerous waste. The powder is in a safe and stable condition within the confines of the robust canyon structure of PUREX and does not constitute a threat to human health and the environment. In accordance with agreements established under the TPA, disposition of this material will be addressed during the CERCLA remedial action unless hazards to workers or the environment mandate an earlier removal action. The only sampling that will be performed is industrial hygiene air sampling as identified in the Item 1 DOE-RL/CHPRC Response Attachment. Path 3 S&M annual inspection is not within a treatment, storage, or disposal (TSD) boundary as identified in the PUREX Part A Form, dated October 1, 2008. Attached is a copy of the PUREX Part A, Rev 12, page 8 of 12 that identifies the TSD boundaries. Path 3 is located in a radiological and beryllium contaminated controlled area and for ALARA concerns the procedure requires that the inspection teams stay within the designated pathway to minimum the exposure to radioactive and beryllium contamination. Path 3 is a highly congested area with equipment and piping and difficult to maneuver during the inspection.

DOE-RL/CHPRC believes that the white powder is not a threat to the human health and environment and removing the white powder could cause an ALARA issue by causing more contamination issues. Leaving the white powder in place better protects the human health and the environment. This path and white powder is to be dealt with under CERCLA.

I requested documentation and an explanation as to why the white powder could not have been sampled and removed if sample results determined the white powder to be dangerous waste or mixed waste on PUREX Path 4. I also requested a drawing identifying the location of the white powder discovered on PUREX Path 4. I received the following drawing and response on October 20, 2016.



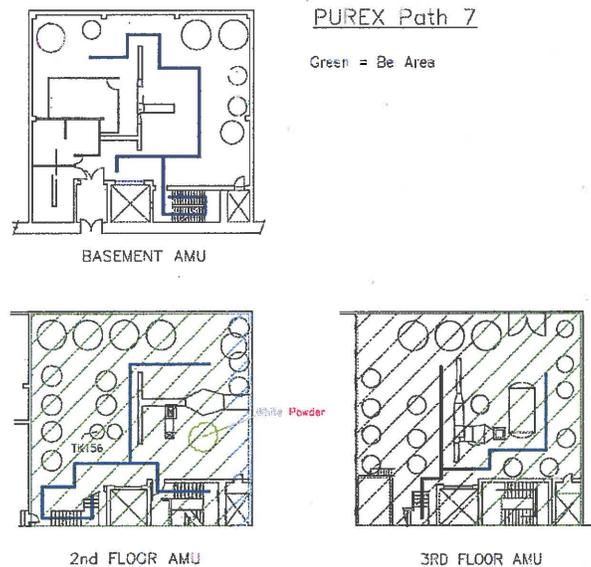
Excerpt 2: PUREX Surveillance Path 4

I observed on the PUREX Path 4 drawing that the red marking is the location of the white powder, which appears to be in a radiation area.

Surveillance path 4 is of the White Room which is at the west end of the P&O Gallery. Hazardous materials and wastes were removed in accordance with the end point criteria and materials remaining in the P&O Gallery are identified in Appendix A of the PUREX S&M Plan. These sources do not provide any indication that the white powder (if determined to be a solid waste) would designate as a dangerous waste. The powder is in a safe and stable condition within the confines of the robust canyon structure of PUREX and does not constitute a threat to human health and the environment. In accordance with agreements established under the TPA, disposition of this material will be addressed during the CERCLA remedial action unless hazards to workers or the environment mandate an earlier removal action. The White Room has additional access controls because of radiological contamination. The only sampling that will be performed is industrial hygiene air sampling as identified in the Item 1 DOE-RL/CHPRC Response Attachment. Path 4 S&M annual inspection is not within a treatment, storage, or disposal (TSD) boundary as identified in the PUREX Part A Form, dated October 1, 2008 (refer to Item 2 DOE-RL/CHPRC Response, provides copy of the PUREX Part A, Rev 12, page 8 of 12 that identifies the TSD boundaries). Path 4 is located in a radiological contaminated controlled area and for ALARA concerns the procedure requires that the inspection teams stay within the designated pathway to minimum the exposure to radioactive contamination. Path 4 is a highly congested area with equipment and piping and difficult to maneuver during the inspection. Due to an incident back in the late 1950's, there was a spill of plutonium that distributed over a large surface area. Numerous coats of paint covered by a polymeric barrier system

has been place on the floor fixing the contamination. DOE-RL/CHPRC believe that the white powder is not a threat to the human health and environment and removing the white powder could cause an ALARA issue by causing more contamination issues. Leaving the powder in place better protects human health and the environment. This path and white powder is to be dealt with under CERCLA.

I requested documentation and an explanation as to why the white powder could not have been sampled and removed if sample results determined the white powder to be dangerous waste or mixed waste on PUREX Path 7. I also requested a drawing identifying the location of the white powder discovered on PUREX Path 7. I received the following drawing and response on October 20, 2016.



Excerpt 2: PUREX Surveillance Path 4

I observed on the PUREX Path 7 drawing that the red marking is the location of the white powder, which appears to be in a beryllium area.

Surveillance path 7 is of the Aqueous Makeup Unit (AMU) and involves entries on the basement, 2nd floor, and 3rd floor. Tank 156 in the AMU was used for nitric acid storage and is identified in the PUREX Part A (refer to Item 2DOE-RL/CHPRC Response provides copy of the PUREX Part A, Rev 12, page 8 of 12 that identifies the TSD boundary). The remainder of the AMU is not within the TSD boundary. Tank 156 was flushed and sampled to confirm that residues were below dangerous waste regulatory limits. Hazardous materials and wastes were removed in accordance with the end point criteria and materials remaining in the AMU are identified in Appendix A of the PUREX S&M Plan. These sources do not provide any indication that the white powder (if determined to be a solid waste) would designate as a dangerous waste. The only sampling that will be performed is industrial hygiene air sampling as identified in the Item 1 DOE-RL/CHPRC Response Attachment. Path 7 is located in a radiological and beryllium contamination controlled area. For ALARA concerns the procedure requires that the inspection teams stay within the designated pathway to minimize the exposure to radioactive and beryllium contamination. Path 7 is a highly congested area with equipment and piping and difficult to maneuver during the inspection.

DOE-RL/CHPRC believes that the white powder is not a threat to the human health and the environment and removing the white powder could cause an ALARA issue by causing more contamination issues. Leaving the powder in place better protects the human health and the environment. This path and white powder is to be dealt with under CERCLA.

PUREX Surveillance and Monitoring Control System (SAMCONS) Rounds

I reviewed the *PUREX Surveillance and Monitoring Control System (SAMCONS) Rounds*, which appeared to be taken approximately once every week. I observed the following readings for the East and West canyon differential pressure.

Date	Component	Verification Location	Required Status	As-Found Status
2/3/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.304" wg
2/3/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.300" wg
2/9/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.283" wg
2/9/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.284" wg
2/17/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.279" wg
2/17/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.280" wg
2/24/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.290" wg
2/24/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.290" wg
3/2/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.299" wg
3/2/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.294" wg
3/9/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	Out of Service
3/9/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	Out of Service
3/16/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
3/16/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
3/23/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
3/23/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
3/30/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
3/30/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
4/6/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
4/6/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
4/13/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
4/13/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
4/20/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	Out of Service
4/20/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	Out of Service
4/27/16	PDIT-V11-CAN-1 East Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg
4/27/16	PDIT-V11-CAN-2 West Canyon dP*	202-A Trends Screen or Locally	dP Min: -0.2" wg / dP Max: -0.6" wg	0.00" wg

I observed comments between March 9, 2016 and April 20, 2016 described the fans and sample pumps were out of service due to maintenance.

The PUREX Surveillance and Maintenance Plan describes the use of differential pressure monitoring as an alternative to inspecting the containment building, which was described as satisfying the 40 CFR 265.1101(c)(4) requirement "to maintain the containment building's integrity. The PUREX S&M Plan states that no additional surveillance of the dangerous waste or ancillary equipment will be performed to satisfy this requirement." The use of scheduled differential pressure monitoring instead of visual inspections of the containment building does not clearly demonstrate the ability to detect a release of dangerous or mixed waste.

PUREX S&M Plan, Table 6-1 references the 40 CFR 265.1101(c)(4), which states the following.

Inspect and record in the facility's operating record at least once every seven days, except for Performance Track member facilities, that must inspect up to once each month, upon approval of the director, data gathered from monitoring and leak detection equipment as well as the containment building and the area immediately surrounding the containment

building to detect signs of releases of hazardous waste. To apply for reduced inspection frequency, the Performance Track member facility must follow the procedures described in §265.15(b)(5).

As of March 9, 2016, no readings were taken due to ongoing maintenance with the PUREX ventilation system.

Compliance Problems

The Dangerous Waste inspection on April 28, 2016, found the following compliance problems.

Each problem is covered in three parts:

- (1) **Citation from the regulations**
- (2) **Specific observations** from the inspection that highlight the problem
- (3) **Required actions** needed to fix the problem and achieve compliance.

The problems listed below must be corrected to comply with Washington Dangerous Waste Regulations (Chapter 173-303 WAC), or other environmental laws or regulations. Complete the required actions listed below and respond to Ecology at the following address within 60 days of receipt of this compliance report. Include all supporting documentation such as photographs, records, and statements explaining the actions taken and dates completed to return to compliance.

Attention: Edward Holbrook
Washington Department of Ecology
Nuclear Waste Program
3100 Port of Benton Blvd
Richland, WA 99354

You may request an extension of the deadlines to achieve compliance. Make the request in writing, including the reasons an extension is necessary and proposed date(s) for completion, and send it to Edward Holbrook before the date specified above. Ecology will provide a written approval or denial of your request.

**If you have any questions about information in this Compliance Report, please call:
Edward Holbrook at (509) 372-7909**

This does not relieve you of your continuing responsibility to comply with the regulations at all times.

1) WAC 173-303-070(3) Designation procedures.

(a) To determine whether or not a solid waste is designated as a dangerous waste a person must: (i) First, determine if the waste is a listed discarded chemical product, WAC 173-303-081; (ii) Second, determine if the waste is a listed dangerous waste source, WAC 173-303-082; (iii) Third, if the waste is not listed in WAC 173-303-081 or 173-303-082, or for the purposes of compliance with the federal land disposal restrictions as adopted by reference in WAC 173-303-140, determine if the waste exhibits any dangerous waste characteristics, WAC 173-303-090; and (iv) Fourth, if the waste is not listed in WAC 173-303-081 or 173-303-082, and does not exhibit a characteristic in WAC 173-303-090, determine if the waste meets any dangerous waste criteria, WAC 173-303-100.

(b) A person must check each section, in the order set forth, until they determine whether the waste is designated as a dangerous waste. Once the waste is determined to be a dangerous waste, further designation is not required except as required by

subsection (4) or (5) of this section. If a person has checked the waste against each section and the waste is not designated, then the waste is not subject to the requirements of chapter 173-303 WAC. Any person who wishes to seek an exemption for a waste which has been designated DW or EHW must comply with the requirements of WAC 173-303-072.

(c) For the purpose of determining if a solid waste is a dangerous waste as identified in WAC 173-303-080 through 173-303-100, a person must either: (i) Test the waste according to the methods, or an approved equivalent method, set forth in WAC 173-303-110; or (ii) Apply knowledge of the waste in light of the materials or the process used, when: (A) Such knowledge can be demonstrated to be sufficient for determining whether or not it designated and/or designated properly; and (B) All data and records supporting this determination in accordance with WAC 173-303-210(3) are retained on-site.

Observation: I observed inspection logs from the 2015 PUREX Plant and Storage Tunnels Annual Surveillance, identified white powder on Path 3 (May 7, 2015), Path 4 (May 7, 2015), and Path 7 (May 21, 2015). The notes made by the inspector referred to photographs, which showed white powder on the floor and on equipment from Path 3, Path 4, and Path 7. I observed no designation records for the white powder in responses received on June 2, 2016, August 18, 2016, or October 20, 2016, or during the September 19, 2016 meeting with USDOE and CHPRC.

Action Required: To determine if the white powder designates as a dangerous waste, within 60 days upon receipt of this compliance report, submit to Ecology a plan to sample the white powder discovered on Paths 3, 4, and 7 during the May 7, 2015 and May 21, 2015 inspections of the PUREX Plant. The plan must include requirements to sample the white powder discovered on Paths 3, 4, and 7 within 120 days of receipt of this compliance report and if the material designates as dangerous waste, follow the requirement established in the Dangerous Waste Regulations, Chapter 173-303 WAC.

Concerns:

- 1) I observed that inspectors continue to mark “Yes” and document observations on the *Data Sheet 3 – PUREX Facility Surveillance – Comments Sheet*. The instructions on the Data Sheet 2 state “Any items that does not meet the criteria or requires notes is to be checked as ‘NO’ and must have a detailed description on Data Sheet 3 – PUREX Facility Surveillance – Comments Sheet.” The practice of marking “Yes” and providing comments causes unnecessary confusion on whether there is a repair or remedial action needed. Surveillance and maintenance personnel should receive instruction to follow the procedures for the annually scheduled surveillance.
- 2) The majority of the *Data Sheet 3 – PUREX Facility Surveillance – Comments Sheets* do not identify repairs or remedial actions. The instructions on the Data Sheet 3, state “This sheet is to be used to document deficiencies noted/actions taken during performance of the surveillance.” The date and nature of repairs or remedial actions taken should be documented on the Data Sheet 3 or put
- 3) With numerous notations of water intrusion, degrading structural integrity, stains, and white powder, there are concerns of materials migrating throughout the canyon building and outside of the building. With only annual inspections being conducted, the opportunity for contaminants to migrate without notice increases, compared to having more frequent inspections. USDOE and CHPRC should consider repairs in cases of water intrusion, degrading structural integrity, and releases of unknown substances rather than just continued surveillance. Releases of unknown substances, which turn out to be dangerous waste or mixed waste could lead to violations for not conducting repairs or remedial actions.

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Concerns:

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