



LB# 4206

AIR 14-908
NOC 922

STATE OF WASHINGTON
DEPARTMENT OF HEALTH

OFFICE OF RADIATION PROTECTION
309 Bradley Blvd., Suite 201 • Richland, Washington 99352
TDD Relay Service: 1-800-833-6388

September 26, 2014

Ms. Stacy Charboneau, Assistant Manager
For Safety and Environment
United States Department of Energy
Richland Operations Office
P.O. Box 550, MSIN: A5-14
Richland, Washington 99352

Dear Ms. Charboneau

Pursuant to Chapter 246-247 of the Washington Administrative Code (WAC), your application to operate is hereby approved according to the enclosed emission unit specific license for:

**Operation and Maintenance of the Central Waste Complex (replaces NOC 654)
(NOC 922; EU 439)**

The conditions, controls, monitoring requirements, and limitations of this license must be observed in order for you to be in compliance with WAC 246-247. Failure to meet any provision of this license may result in the revocation of approval, the issuance of Notices of Violation, or other enforcement actions under WAC 246-247-100.

This approval will be incorporated in the United States Department of Energy's (USDOE's) Hanford Site Radioactive Air Emissions License (FF-01) upon its next revision.

If you have any questions regarding this approval, please contact Tom Frazier at (509) 946-0774.

Sincerely,

P. John Martell, Manager
Radioactive Air Emissions Section

Enclosure: Conditions and Limitations for EU 439 (NOC 922)

cc: (see next page)



cc: Ruth Allen, WRPS
Matthew Barnett, PNNL
Lee Bostic, BNI
Cliff Clark, USDOE-RL
Jack Donnelly, WRPS
Rick Engelmann, CHPRC
Dennis Faulk, EPA
Thomas Frazier, WDOH
Gary Fritz, MSA
Phil Gent, Ecology
Dale Jackson, USDOE-RL
Reed Kaldor, MSA
Paul Karschnia, CHPRC
Ed MacAlister, USDOE-RL
Crystal Mathey, WDOH
Valarie Peery, Ecology
Maria Skorska, Ecology
Randy Utley, WDOH
Jeff Voogd, WRPS
Joan Woolard, WRPS
Davis Zhen, EPA
Environmental Portal
RAES Tracking: Line 825; Follow up to IM 8,291; NOC 922; EU 439

Emission Unit ID: 439

200W J-CWC 001

Central Waste Complex

This is a MINOR, ACTIVELY ventilated emission unit.

Central Waste Complex

Abatement Technology BARCT WAC 246-247-040(3), 040(4)

state only enforceable: WAC 246-247-010(4), 040(5), 060(5)

Zone or Area	Abatement Technology	Required # of Units	Additional Description
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Monitoring Requirements

state enforceable: WAC 246-247-040(5), 060(5), and federally enforceable: 40 CFR 61 subpart H

Federal and State Regulatory	Monitoring and Testing Requirements	Radionuclides Requiring Measurement	Sampling Frequency
40 CFR 61.93(b)(4)(i) & WAC 246-247-075(3)	40 CFR 61, Appendix B, Method 114(3)		Near field ambient monitoring program as specified in the Conditions and Limitations.

Sampling Requirements Environment Sampling; Ambient air monitors N-449, N-457, N-964, and N-433.

Additional Requirements

Additional monitoring or sampling requirements established by this License will be listed in the Conditions and Limitations section, if applicable.

Operational Status Activities at the CWC involve operations in support of waste management at the Hanford Site.

This Emission Unit has 1 active Notice(s) of Construction.

Project Title	Approval #	Date Approved	NOC_ID
Operation and Maintenance of the Central Waste Complex (replaces NOC 654)	AIR 14-908	9/26/2014	922

Conditions (state only enforceable: WAC 246-247-040(5), 060(5) if not specified)

- 1) The total abated emission limit for this Notice of Construction is limited to 1.57E-05 mrem/year to the Maximally Exposed Individual (WAC 246-247-040(5)).
- 2) This approval applies only to those activities described below. No additional activities or variations on the approved activities that constitute a "modification" to the emission unit, as defined in WAC 246-247-030(16), may be conducted

The mission of the CWC is the storage of mixed and/or radioactive waste that is generated on or off the Hanford Site. There could be up to 88,500 emission units (i.e., containers) within CWC. CWC manages many categories of radioactive materials such as low-level waste (LLW), transuranic (TRU) waste, TRU mixed waste and low-level mixed waste (LLMW) in contact-handled (CH) containers.

TRU waste is waste that contains at least 100nCi of alpha emitting transuranic constituents with half-lives greater than 20 years. LLW is not TRU waste. TRU waste and LLW are not spent nuclear fuel, high level waste or byproduct material. CH containers are packages are defined having surface dose rates less than 200 mrem/hr while remote handled (RH) containers are packages with dose rates of greater than 200 mrem/hr. RH containers may be stored at the CWC in accordance with the approved safety analysis.

The LLW typically contains rags, paper, rubber gloves, disposal supplies, tools, industrial waste (e.g., failed equipment), and solidified waste that are contaminated with radioactive material. TRU and TRU-mixed waste typically contains rags, paper, rubber gloves, disposable supplies, tools, industrial waste (e.g., failed equipment), solidified process byproducts, and laboratory wastes that are contaminated with TRU material. Both TRU and LLW may contain non-radioactive constituents that could be managed as RCRA and/or TSCA waste.

The TRU waste accepted by CWC may contain varying concentration of TRU radionuclides and limited amounts of non-TRU radionuclides. With some exceptions all based on safety analysis, the TRU content of waste containers is generally limited to fifty three (53) Pu 239/Pu-240 dose equivalent curies (DE-Ci), where the DE-Ci is derived by multiplying the isotopic composition (i.e., weight fractions of the various TRU isotopes) by the specific activities of each isotope, and then converting that number with correction factors taken from the Hanford Site Solid Waste Acceptance Criteria. The DE-Ci unit is designed to control inhalation dose impacts independent of radionuclide type. The radionuclides Pu-239 and Pu-240 are considered equivalent and are combined for calculation purposes and are used to track the unabated emissions. The TRU waste containers are generally equipped with a pressure relief vent device such as the NucFil® filter. This filter allows the release of gases that may be produced as a result of radiolysis inside the container, while preventing release of particulate matter.

The waste storage areas and facilities at CWC include the following:

- Shipping and Receiving Area
- Outdoor Waste Storage Areas
- Flammable & Alkali Metal Waste Storage Modules
- Mixed and/or Radioactive Waste Storage Buildings
- RO/RO containers

As needed, the operational activity at CWC includes overpacking waste containers found to be in unsatisfactory condition. Additionally, there may be future instances where potential radiological contamination associated with the outer surfaces of containers and soils needs to be managed. As discussed in AIR 13-602, Central Waste Complex (CWC) Box 231ZDR-11 As Low As Reasonably Achievable. Control Technology (ALARACT) Approval, a general purpose burial box dripped contaminated water to the soil. Following discovery, the contaminated water was contained in collection containers that are emptied periodically. The ALARACT described actions to be taken to place the container in a configuration that would allow installation of a cover, move the container, and provide for the management of contaminated soil and materials disturbed during the activity (as needed). The ALARACT also identified associated radiological controls, monitoring, and records/documentation. To address potential radiological releases from a container, the cleanup of containers, buildings, equipment, and/or contaminated soil would be performed in a manner that is protective of workers and the environment. To address potential future releases from a CWC waste container, conditions 10 through 14 identify the controls that would be implemented to remediate the radiological release.

- 3) The PTE for this project as determined under WAC 246-247-030(21)(a-e) [as specified in the application] is 3.13E-02 mrem/year. Approved are the associated potential release rates (Curies/year) of:

Am - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
C - 14	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cm - 243	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cm - 244	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Co - 60	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Cs - 137	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
DE - 0	9.38E-03 Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Alpha release rate is assumed to be Pu 239/249. Other radionuclides may be encountered and are approved so long as they are conservatively represented by the total alpha constituents.		

Eu - 154	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Eu - 155	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ni - 59	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Ni - 63	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Pu - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Pu - 241	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Pu - 242	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Se - 79	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sm - 151	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sn - 126	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Sr - 90	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Tc - 99	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 233	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 234	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 235	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 236	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
U - 238	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		
Zr - 93	Liquid/Particulate Solid	WAC 246-247-030(21)(e)
Contributes less than 0.1 mrem/yr to the MEI, and represents less than 10% of the unabated PTE and represents less than 25% of the abated dose.		

The radioactive isotopes identified for this emission unit are (no quantities specified):

Am - 241	C - 14	Cm - 243	Cm - 244	Co - 60
Cs - 137	Eu - 154	Eu - 155	Ni - 59	Ni - 63
Pu - 238	Pu - 239	Pu - 240	Pu - 241	Pu - 242

Se - 79	Sm - 151	Sn - 126	Sr - 90	Tc - 99
U - 233	U - 234	U - 235	U - 236	U - 238
Zr - 93				

The potential release rates described in this Condition were used to determine control technologies and monitoring requirements for this approval. DOE must notify the Department of a "modification" to the emission unit, as defined in WAC 246-247-030(16). DOE must notify the Department of any changes to a NESHAP major emission unit when a specific isotope is newly identified as contributing greater than 10% of the potential TEDE to the MEI, or greater than 25% of the TEDE to the MEI after controls. (WAC 246-247-110(9)) DOE must notify the Department of any changes to potential release rates as required by state or federal regulations including changes that would constitute a significant modification to the Air Operating Permit under WAC 173-401-725(4). Notice will be provided according to the particular regulation under which notification is required. If the applicable regulation(s) does not address manner and type of notification, DOE will provide the Department with advance written notice by letter or electronic mail but not solely by copies of documents.

4) WDOH NOTIFICATION- Contamination Levels

WDOH will be notified when the following contamination levels are found:

- Direct contamination on soil, container, or adjacent surfaces is detected greater than 500,000 dpm/100 cm² alpha and/or 1 rad/hr/100 cm² beta gamma are encountered.
- Removable/transferrable contamination levels above 2,000 dpm/100 cm² alpha or 100,000 dpm/100cm² beta-gamma are encountered. (WAC 246-247-040(5))

5) WDOH NOTIFICATION & IMPLEMENTATION OF CONTROLS-Contamination Levels

Removable/transferrable contamination will be maintained less than a maximum level of 2,200,000 dpm/100 cm² alpha and/or less than 4 rad/hr/100 cm² beta gamma.

Direct contamination levels will be maintained less than a maximum of 20,000dpm/100cm² alpha, and or 1,000,000dpm/100cm² beta-gamma

Exceeding these contamination limits requires work to stop and WDOH notification.

The following appropriate controls must then be implemented prior to resuming work:

- Contamination will be secured or contained prior to continuing work.
- Appropriate controls such as water, fixatives, covers, containment tents, or windscreens shall be applied.
- Soil shall be wetted prior to removal if not already damp.
- If soil is to be removed such as during excavation activities, it would be fixed or covered until excavated or otherwise dispositioned.
- General work place air monitoring shall be performed during removal activities.
- Removed soil or vegetation not already in containers will be covered with plastic, fixative applied at the end of each shift, and/or the material will be covered as necessary to prevent airborne dust particles. (WAC 246-247-040(5))

6) ABATEMENT- Drum Vents

TRU drum and box waste containers shall be equipped with passive vents, either vent clips, NucFil® filters, or similar devices. Vent clips will be replaced with NucFil® filters or similar devices as containers are prepared for shipment either to the Waste Isolation Pilot Plant (WIPP) or transferred to other locations onsite. (WAC 246-247-040(5))

7) ABATEMENT-NucFil® Filters or Similar Device

A NucFil filter or similar device may be constructed with a variety of filter media (e.g. a porous carbon/carbon composite or sintered 316 SS metal) housed in stainless steel. At a minimum, the NucFil filter or similar device shall restrict the release of 99.95% of particles with a mean 0.3 microns in size. (WAC 246-247-040(5))

8) ABATEMENT-PermaCon

A PermaCon modular containment unit may be placed in select, existing CWC buildings for the purpose of sampling the head space gas within solid waste storage containers. Such buildings would have roof mounted exhausters, rated at a minimum of 16,000 cubic feet per minute. (WAC 246-247-040(5))

9) 9) ABATEMENT-Roll-on/Roll-off (RO/RO) Containers

RO/RO containers are commercially-available, open-top dumpsters. They may be used for storage/disposal of LLW generated on the Hanford Site from routine maintenance and surveillance activities (e.g., rags, paper, rubber gloves, disposal supplies, tools, industrial waste potentially contaminated with radioactive material). For routine activities, the waste is placed in plastic on location, and the plastic is secured (e.g., taped close).

- the bagged waste shall be transported to the CWC and stored in a RO/RO.

-A maximum of four (4) RO/RO containers may be generated per year for waste streams associated with routine maintenance and surveillance activities.

-The containers could be located anywhere within the CWC fenced area.

-The filled containers shall be transported to ERDF for disposal.

The RO/RO containers may also be used in support of the management of contaminated soil and materials disturbed during the cleanup of containers, buildings, equipment, and/or contaminated soil (i.e. non-routine activities). The RO/RO container is located adjacent to the waste generation site and non-routine activity waste is loaded directly into the container.

-Prior to the use of RO/RO containers for non-routine cleanup activities, WDOH shall be notified of the anticipated waste volumes, radiologic contamination levels and any radiological controls required beyond those specified in the license.

-There is no maximum limit on the number of RO/RO containers that can be used for waste streams associated with non-routine activities.

-The containers could be located anywhere within the CWC fenced area.

-The filled containers shall be transported to ERDF for disposal. (WAC 246-247-040(5))

10) ABATEMENT-Additional Controls for Spill or Release

In the event that a spill or release of contamination associated with a waste container is discovered, additional controls will be implemented

-During work activities, continuous radiological control technician (RCT) coverage will be provided .

-Alpha and beta-gamma contamination surveys will be performed prior to and during cleanup activities that have the potential to disturb radioactive contamination such as soil disturbance and box covering. (WAC 246-247-040(5))

11) ABATEMENT- Wind Speeds-Stop Work

In any Contamination Area (CA), High Contamination Area (HCA) or Airborne Radioactivity Area (ARA), cleanup activities involving dispersible contaminated material shall stop if average wind speeds exceed 10 miles per hour (mph) for elevated work or 20 mph for ground level work, as measured at the site. (WAC 246-247-040(5))

12) ABATEMENT- Misters-fixatives

-Hand-held and/or over-head atomized misting will be performed during work activities where a potential exists to generate airborne radioactivity.

-Atomized misters and fixative sprayers shall be function-checked at the work site prior to commencing work activities. (WAC 246-247-040(5))

13) ABATEMENT-Related Approvals

If a truck-mounted vacuum (i.e., Guzzler™) Portable/Temporary Radioactive Air Emission Units (PTRAEU), or HEPA filtered vacuum radioactive air emission unit is used, controls as described in the Hanford Site Radioactive Air Emissions License #FF-01, for the Sitewide Guzzler™ NOC (Emission Unit ID: 476), the PTRAEU NOC (Emission Unit ID: 447), and the Hanford Sitewide W PORTEX 007 [HEPA vacuums] NOC (Emission Unit ID: 455), respectively, would be followed. (WAC 246-247-040(5))

14) ABATEMENT-Soil Removal

-During and after removal of radiologically-contaminated soil, soil surface radiological contamination levels shall be verified.

-If contamination is present $>500,000$ dpm/100cm² beta-gamma or $>10,000$ dpm/100cm² alpha:

o Additional soil shall be removed and containerized for disposal

o Soil shall be containerized, fixed or covered if it is to be left for greater than 48 hours

(WAC 246-247-040(5))

15) INVENTORY TRACKING-Container Inventory

Container inventory tracked (logged) in the SWITS database and available for audits. (WAC 246-247-040(5))

16) TRACKING-Activity Log

The facility must maintain a log in an approved format (SWITS database) for this activity or emission unit. (WAC 246-247-040(5))

17) HOUSEKEEPING

Decontamination and/or replacement of leaking containers shall be performed as needed.

Frequent smears throughout the CWC will be used to ensure that the emission control equipment is working properly.

-Smears that exceed 20 dpm/100 cm² for alpha and 1,000 dpm/100 cm² for beta/gamma contamination will be

investigated to determine the cause of the contamination and appropriate corrective actions shall be implemented. (WAC 246-247-040(5))

18) **MONITORING-Periodic Confirmatory Sampling**

Periodic confirmatory sampling is required. It must consist of: sampling quarterly using a portable sampler for a two-week interval inside the CWC building (excluding outdoor pads) containing vented containers with the highest cumulative inventory of DE curies during the quarter sampled. (Samples will be handled following the applicable sections of 40 CFR 61, Appendix B, Method 114.) (WAC 246-247-040(5))

19) **MONITORING- Ambient Air Monitoring Network**

The 200 Area near-facility ambient air monitoring network shall be used for continuous monitoring. Ambient air monitors N-449, N-457, N-964, and N-433 are maintained as monitors for CWC diffuse/fugitive emissions. These monitors shall provide indication of potential elevated airborne radioactivity using the same frequency and protocol of the Hanford Site Near-Facility Environmental Monitoring Program. (WAC 246-247-040(5))

20) **CONTINUOUS MONITORING- Chain of custody**

Air sample data shall be analyzed by contracted Laboratory and ABCASH data shall available to WDOH. The chain of custody shall be the same as for the 200 Area near-facility ambient air monitoring network. (WAC 246-247-040(5))

21) **NEW RADIONUCLIDE ASSESSMENT**

Washington State Department of Health (WDOH) recognizes that the CWC facility may encounter any radionuclide during their normal operations. Notwithstanding the radionuclides and limits listed in condition 3, additional radionuclides may be possessed subject to the following evaluation and notification requirements. If a new radionuclide is identified that is not listed in the license, a written notification will be made to WDOH. An assessment will also be made to determine if the radionuclide contributes greater than 10% of the PTE or greater than 0.1 mrem TEDE to the MEI or greater than 25% of the TEDE to the MEI after abatement controls. The assessment and notification will be made within 30 days of identifying the new radionuclide (WAC 246-247-060(5))