



**U.S. Department of Energy
Hanford Site**

July 27, 2021

21-ECD-002305

Mr. John Martell, Manager
Radioactive Air Emissions Section
Washington State Department of Health
309 Bradley Blvd., Suite 201
Richland, Washington 99352

Dear Mr. Martell:

**QUARTERLY HIGH-EFFICIENCY PARTICULATE AIR RADIOACTIVE AIR EMISSION
UNITS REPORT**

This is responding to the June 20, 2018, AIR 18-619 letter, which requires the submittal of Hanford Site High-Efficiency Particulate Air (HEPA)-filtered vacuum log sheets to the Washington State Department of Health within 30 days after the end of each calendar quarter.

The Attachment provides the completed HEPA-filtered vacuum log sheets subject to AIR 18-619 for the second quarter (April-June) of Calendar Year 2021.

If you have any questions, please contact me, or your staff may contact Paul M. Pak, Director, Environmental Compliance Division, on (509) 376-4798.

Sincerely,

GLYN TRENCHARD Digitally signed by GLYN
TRENCHARD
Date: 2021.07.27 13:20:51 -07'00'

Glyn D. Trenchard, Acting Assistant Manager
for Safety and Environment

ECD:AET

Attachment

cc w/attach:

S. D. Berven, DOH
F. J. Carleo, CPCCo
M. J. Demiter, HMIS
D. R. Einan, EPA
J. M. McAuley, EPA Region 10
M. D. Gerle, WRPS
R. D. Haggard, BNI
D. D. Heidelberg, HLMI

T. M. McDermott, PNSO
K. M. McDonald, PNNL
M. T. Schanke, CPCCo
J. M. Shoemake, HMIS
R. J. Utley, DOH
E. J. Van Mason, HLMI
Administrative Record
Environmental Portal, G3-35

Attachment
21-ECD-002305

Quarterly Portable/Temporary Radioactive Air Emission Unit and High-Efficiency Particulate
Air Radioactive Air Emission Units Report

17 pages including cover sheet

**Work Package # 817895
HEPA Vacuum Usage - Datasheet 1**

Pre-Job Activities			
Job Site Location (include Hanford Area): <u>200F LERF</u>	Vacuum Make/ Model # ² : <u>TIGER-VAC B-2 RE</u>	Procedure/Work Package #:	<u>WO 817895</u>
Aerosol Test Date ⁶ : <u>3/30/21</u>	Tamper Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ⁴	Serial Number:	<u>18101825</u>
Description of Activity: <u>VACUUM SAND/DIRT FROM CONCRETE WALK AROUND BASIN 44</u>			
Radionuclides, if known: <u>Cs 137 / Sr 90</u>		Type of Waste (dust, sand, concrete): <u>SAND/DIRT</u>	
Environmental or ETF Engineering Pre-Job Approval	Name (Printed)	Signature	Date
	<u>Clyde Allen</u>	<u>Clyde Allen</u>	<u>4-1-21</u>
Pre-Job Radiological Conditions			
	Alpha	Beta/Gamma	RSR #
Record smear of exhaust port	<u>< 20</u>	<u>< 1000</u>	<u>LE-2100662</u>
Average Removable Contamination (dpm/100 cm ²) ¹	<u>< 20</u>	<u>10,000</u>	<u>LE-2100662</u>
Average Fixed Contamination (dpm/100 cm ²) ¹	<u>< 20</u>	<u>1,200,000</u>	<u>LE-2100662</u>
In lieu of surveys, radiological inventory or airborne concentration present	Alpha	Beta/Gamma	Additional details
	<u>N/A</u>	<u>N/A</u>	<u>N/A</u>
Vacuum Operations			
Start Date/Time:	End Date/Time:	Area Vacuumed (m ²):	
<u>4-1-21 1448</u>	<u>4-1-21 1522</u>	<u>25 m²</u>	
Every thirty (30) minutes Record (Record additional readings on the Work Record)	Alpha	Beta/Gamma	RSR
Exhaust port smear (dpm/100 cm ²)	<u>< 20</u>	<u>< 1000</u>	<u>LE-2100662</u>
	<u>< 20</u>	<u>< 1000</u>	<u>LE-2100662</u>
	<u>N/A</u>		
External seal of gasket smear (dpm/100 cm ²)	<u>< 20</u>	<u>< 1000</u>	<u>LE-2100662</u>
	<u>< 20</u>	<u>< 1000</u>	<u>LE-2100662</u>
	<u>N/A</u>		

Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

		Dose Rate		RSR
Dose Rate < 2 mrem/hr @ 30 cm Gamma from HEPA Vacuum		0.8 mR/hr	1.2 mR/hr	LE-2100662 LE-2100662
		NA		NA
Post-Job Radiological Control Surveys				
		Alpha	Beta/Gamma	RSR
Exhaust port smear (dpm/100 cm ²)		< 20	< 1000	LE-2100662
Environmental Post-Job Approval		Name (Printed)	Signature	Date
		Clyde Allen	Clyde Allen	4-1-21
Estimated TEDE Contribution from Activity				
Step	Description	Value	Unit	
Step 1	Enter Area To Be Vacuumed	37	m ²	
Step 2	Enter Average Beta/Gamma reading ¹	1,200,000	dpm/100 cm ²	
Step 3	Enter TEDE/m ² value from Column C of Table 2 for Hanford Area that you're working in ¹	4.71E-09	mrem/m ²	
Step 4	Multiply values from Step 1, 2, and 3, and divide by 1,000,000	2.09E-07	mrem	
Step 5	Enter Average Alpha reading ¹	0	dpm/100 cm ²	
Step 6	Enter TEDE/m ² value from Column C of Table 1 for Hanford Area that you're working in ¹	3.21E-08	mrem/m ²	
Step 7	Multiply values from Step 1, 5, and 6, and divide by 250,000	0	mrem	
Step 8	Add values from Step 4 and 7	2.09E-07	mrem/yr	
Note 1: Average, not maximum, readings should be reported				
Note 2: When less than detectable readings are observed (e.g., <20 dpm/100 cm ² alpha, <1,000 dpm/100 cm ² for beta/gamma) these values are assumed to be zero.				
Note 3: If radionuclide mix for Hanford Area is not consistent with DOE/RL-97-50, Rev. 3, Appendix B, see Example 3 in Appendix C for calculating TEDE manually.				
Note 4: If tamper seal is not intact, do not proceed. Consult with environmental field representative and operations for further directions				
Note 5: Verify HVU make and model is on approved list maintained by main site contractor.				
Note 6: Verify aerosol test completed within prior 365 days				

**Work Package # 817895
HEPA Vacuum Usage - Datasheet 1**


Pre-Job Activities			
Job Site Location (include Hanford Area): <u>200E</u>	Vacuum Make/ Model # ¹ : <u>TIGER VAC B-8(A)RE</u>	Procedure/Work Package #: <u>WO 817895</u>	
Aerosol Test Date ² : <u>4-6-21</u>	Tamper Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ⁴	Serial Number: <u>18101822</u>	
Description of Activity: <u>VACUUM SAND + DIRT OFF CONCRETE SURROUNDING B-44</u>			
Radionuclides, if known: <u>Cs 137, Sr 90</u>	Type of Waste (dust, sand, concrete): <u>Dirt / Sand</u>		
Environmental or ETF Engineering Pre-Job Approval	Name (Printed)	Signature	Date
	<u>Clyde Allen</u>	<u>Clyde Allen</u>	<u>4-7-21</u>
Pre-Job Radiological Conditions			
	Alpha	Beta/Gamma	RSR #
Record smear of exhaust port	<u>< 20</u>	<u>< 1000</u>	<u>LE-2100708</u>
Average Removable Contamination (dpm/100 cm ²) ¹	<u>< 20</u>	<u>6500</u>	<u>LE-2100708</u>
Average Fixed Contamination (dpm/100 cm ²) ¹	<u>< 20</u>	<u>1,000,000</u>	<u>LE-2100708</u>
In lieu of surveys, radiological inventory or airborne concentration present	Alpha	Beta/Gamma	Additional details
	<u>NA</u>	<u>NA</u>	<u>NA</u>
Vacuum Operations			
Start Date/Time: <u>4-7-21 1255</u>	End Date/Time: <u>4-7-21 1315</u>	Area Vacuumed (m ²): <u>10.5</u>	
Every thirty (30) minutes Record (Record additional readings on the Work Record)	Alpha	Beta/Gamma	RSR
	<u>< 20</u>	<u>< 1000</u>	<u>LE-2100708</u>
Exhaust port smear (dpm/100 cm ²)	<u>NA</u>	<u>NA</u>	<u>NA</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>
External seal of gasket smear (dpm/100 cm ²)	<u>< 20</u>	<u>< 1000</u>	<u>LE-2100708</u>
	<u>NA</u>	<u>NA</u>	<u>NA</u>

Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

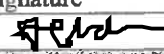
		Dose Rate	RSR	
Dose Rate <2 mrem/hr @ 30 cm Gamma from HEPA Vacuum		< 0.5	LE-2100708	
		NA	NA	
Post-Job Radiological Control Surveys				
		Alpha	Beta/Gamma	RSR
Exhaust port smear (dpm/100 cm ²)		< 20	< 1000	LE-2100708
Environmental Post-Job Approval		Name (Printed)	Signature	Date
		Clyde Allen	Clyde Allen	4-7-21
Estimated TEDE Contribution from Activity				
Step 1	Enter Area To Be Vacuumed	10.5	m ²	
Step 2	Enter Average Beta/Gamma reading ¹	1,000,000	dpm/100 cm ²	
Step 3	Enter TEDE/m ² value from Column C of Table 2 for Hanford Area that you're working in ³	4.71E-09	mrem/m ²	
Step 4	Multiply values from Step 1, 2, and 3, and divide by 1,000,000	4.95E-08	mrem	
Step 5	Enter Average Alpha reading ¹	0	dpm/100 cm ²	
Step 6	Enter TEDE/m ² value from Column C of Table 1 for Hanford Area that you're working in ³	3.21E-08	mrem/m ²	
Step 7	Multiply values from Step 1, 5, and 6, and divide by 250,000	0	mrem	
Step 8	Add values from Step 4 and 7	4.95E-08	mrem/yr	
Note 1: Average, not maximum, readings should be reported				
Note 2: When less than detectable readings are observed (e.g., <20 dpm/100 cm ² alpha, <1,000 dpm/100 cm ² for beta/gamma) these values are assumed to be zero.				
Note 3: If radionuclide mix for Hanford Area is not consistent with DOE/RL-97-50, Rev. 3, Appendix B, see Example 3 in Appendix C for calculating TEDE manually.				
Note 4: If tamper seal is not intact, do not proceed. Consult with environmental field representative and operations for further directions				
Note 5: Verify HVU make and model is on approved list maintained by main site contractor.				
Note 6: Verify aerosol test completed within prior 365 days				

A

Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

Pre-Job Activities			
Job Site Location (include Hanford Area): 200E	Vacuum Make/ Model # ⁵ : NILFISK 6M-80	Procedure/Work Package #:	WO 817895
Aerosol Test Date ⁶ : 3-4-21	Tamper Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ⁴	Serial Number:	3530183204283
Description of Activity: REMOVE surface Contamination from Basin 44 Concrete Surface			
Radionuclides, if known: Cs 137 / Sr 90		Type of Waste (dust, sand, concrete): SAND & DIRT	
Environmental or ETF Engineering Pre-Job Approval		Name (Printed) • Amber Chapman	Signature  Date 04/09/2021
Pre-Job Radiological Conditions			
	Alpha	Beta/Gamma	RSR #
Record smear of exhaust port	<20	<1000	LE-2100723
Average Removable Contamination (dpm/100 cm ²) ¹	14 <20	21000	LE-2100723
Average Fixed Contamination (dpm/100 cm ²) ¹	7 <20	58,000	LE-2100723
In lieu of surveys, radiological inventory or airborne concentration present	Alpha	Beta/Gamma	Additional details
	N/A	N/A	N/A
Vacuum Operations			
Start Date/Time: 4/9/21 1330	End Date/Time: 4/9/21 1430	Area Vacuumed (m ²): 65m²	
Every thirty (30) minutes Record (Record additional readings on the Work Record)	Alpha	Beta/Gamma	RSR
	<20	<1000	LE-2100723
	<20	<1000	LE-2100723
External seal of gasket smear (dpm/100 cm ²)	<20	<1000	LE-2100723
	<20	<1000	LE-2100723

Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

		Dose Rate		RSR	
Dose Rate <2 mrem/hr @ 30 cm Gamma from HEPA Vacuum		<0.5		LE-2100723	
		<0.5		LE-2100723	
Post-Job Radiological Control Surveys					
		Alpha	Beta/Gamma	RSR	
Exhaust port smear (dpm/100 cm ²)		<20	1650	LE-2100723	
Environmental Post-Job Approval		Name (Printed)	Signature	Date	
		Amber Chapman		4/12/21	
Estimated TEDE Contribution from Activity					
Step 1	Enter Area To Be Vacuumed	30		m ²	
Step 2	Enter Average Beta/Gamma reading ¹	1650 21000	63,000	0	dpm/100 cm ²
Step 3	Enter TEDE/m ² value from Column C of Table 2 for Hanford Area that you're working in ³	4.71e-09		mrem/m ²	
Step 4	Multiply values from Step 1, 2, and 3, and divide by 1,000,000	0 2.97e-9	8.20e-9	mrem	
Step 5	Enter Average Alpha reading ¹	0		dpm/100 cm ²	
Step 6	Enter TEDE/m ² value from Column C of Table 1 for Hanford Area that you're working in ³	3.21e-08		mrem/m ²	
Step 7	Multiply values from Step 1, 5, and 6, and divide by 250,000	0		mrem	
Step 8	Add values from Step 4 and 7	8.20e-9	2.97e-9	mrem/yr	
Note 1: Average, not maximum, readings should be reported					
Note 2: When less than detectable readings are observed (e.g., <20 dpm/100 cm ² alpha, <1,000 dpm/100 cm ² for beta/gamma) these values are assumed to be zero.					
Note 3: If radionuclide mix for Hanford Area is not consistent with DOE/RL-97-50, Rev. 3, Appendix B, see Example 3 in Appendix C for calculating TEDE manually.					
Note 4: If tamper seal is not intact, do not proceed. Consult with environmental field representative and operations for further directions					
Note 5: Verify HVU make and model is on approved list maintained by main site contractor.					
Note 6: Verify aerosol test completed within prior 365 days					

- 1) Actual emissions: Area to be vacuumed: 30 m²
- 2) Average Beta/Gamma Reading: 1650 dpm/100cm²
- 3) TEDE/m² value from column C of Table 2 for Hanford area: 4.71e-9 mrem/m²
- 4) Multiply values from steps 1,2&3 and divide by 1,000,000: 2.33e-10 mrem
- 5) Enter average alpha reading: 0 dpm/100 cm²
- 6) TEDE/M² value from Column C of Table 1 for Hanford area: 3.21E-8 mrem/m²
- 7) Multiply values from step 1,5 and 6 and divide by 250,000: 0 mrem
- 8) Add values from steps 4& 7: 8.2e-9 mrem/year

ACTUAL EMISSIONS AS CALCULATED: 8.2 E-9 mrem/year

B


**Work Package # 817895
HEPA Vacuum Usage - Datasheet 1**

Pre-Job Activities			
Job Site Location (include Hanford Area): 200 E	Vacuum Make/ Model #: NILFISK GM-80	Procedure/Work Package #: WO 817895	
Aerosol Test Date: 2-25-21	Tamper Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	Serial Number: 3510172101380	
Description of Activity: REMOVE Surface Contamination from Basin 44 Concrete Surface			
Radionuclides, if known:		Type of Waste (dust, sand, concrete): SWAMP & DIRT	
Environmental or ETF Engineering Pre-Job Approval	Name (Printed)	Signature	Date
	Clyde Allen	<i>Clyde Allen</i>	4-10-21
Pre-Job Radiological Conditions			
	Alpha	Beta/Gamma	RSR #
Record smear of exhaust port	< 20	< 1000	LE-2100732
Average Removable Contamination (dpm/100 cm ²) ¹	< 20	4,000	LE-2100732
Average Fixed Contamination (dpm/100 cm ²) ²	< 20	800,000	LE-2100732
In lieu of surveys, radiological inventory or airborne concentration present	Alpha	Beta/Gamma	Additional details
	N/A	N/A	N/A
Vacuum Operations			
Start Date/Time: 4-12-21 1240	End Date/Time: 4-12-21 1310	Area Vacuumed (m ²): 10	
Every thirty (30) minutes Record (Record additional readings on the Work Record)	Alpha	Beta/Gamma	RSR
	< 20	< 1000	LE-2100732
Exhaust port smear (dpm/100 cm ²)			
External seal of gasket smear (dpm/100 cm ²)	< 20	< 1000	LE-2100732


Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

		Dose Rate	RSR	
Dose Rate < 2 mrem/hr @ 30 cm Gamma from HEPA Vacuum		< 2 mrem/hr	LE-2100732	
Post-Job Radiological Control Surveys				
		Alpha	Beta/Gamma	RSR
Exhaust port smear (dpm/100 cm ²)		< 20	< 1000	LE-2100732
Environmental Post-Job Approval		Name (Printed)	Signature	Date
		Clyde Allen	Clyde Allen	4-18-21
Estimated TEDE Contribution from Activity				
Step 1	Enter Area To Be Vacuumed	10		m ²
Step 2	Enter Average Beta/Gamma reading ¹	800,000		dpm/100 cm ²
Step 3	Enter TEDE/m ² value from Column C of Table 2 for Hanford Area that you're working in ³	4.71E-09		mrem/m ²
Step 4	Multiply values from Step 1, 2, and 3, and divide by 1,000,000	3.77E-08		mrem
Step 5	Enter Average Alpha reading ¹	0		dpm/100 cm ²
Step 6	Enter TEDE/m ² value from Column C of Table 1 for Hanford Area that you're working in ³	3.21E-08		mrem/m ²
Step 7	Multiply values from Step 1, 5, and 6, and divide by 250,000	0		mrem
Step 8	Add values from Step 4 and 7	3.77E-08		mrem/yr
Note 1: Average, not maximum, readings should be reported				
Note 2: When less than detectable readings are observed (e.g., <20 dpm/100 cm ² alpha, <1,000 dpm/100 cm ² for beta/gamma) these values are assumed to be zero.				
Note 3: If radionuclide mix for Hanford Area is not consistent with DOE/RL-97-50, Rev. 3, Appendix B, see Example 3 in Appendix C for calculating TEDE manually.				
Note 4: If tamper seal is not intact, do not proceed. Consult with environmental field representative and operations for further directions				
Note 5: Verify HVU make and model is on approved list maintained by main site contractor.				
Note 6: Verify aerosol test completed within prior 365 days				

Work Package # 817895 HEPA Vacuum Usage - Datasheet 1

Pre-Job Activities			
Job Site Location (include Hanford Area): 200E	Vacuum Make/ Model # ⁵ : NILFISK GM-80	Procedure/Work Package #: WO 817895	
Aerosol Test Date ⁶ : 3-4-21	Tamper Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ⁴	Serial Number: 3510161604189	
Description of Activity: REMOVE SURFACE CONTAMINATION FROM BASIN 44 CONCRETE SURFACE			
Radionuclides, if known: Cs 137 / Sr 90		Type of Waste (dust, sand, concrete); SAND? DIRT	
Environmental or ETF Engineering Pre-Job Approval	Name (Printed)	Signature	Date
	Amber Chapman		04/15/2021
Pre-Job Radiological Conditions			
	Alpha	Beta/Gamma	RSR #
Record smear of exhaust port	< 20		
Average Removable Contamination (dpm/100 cm ²) ¹	< 20	< 1000 <small>173,000 dpm/cm²</small>	LE-2100764
Average Fixed Contamination (dpm/100 cm ²) ¹	< 20	133,000	LE-2100764
In lieu of surveys, radiological inventory or airborne concentration present	Alpha	Beta/Gamma	Additional details
	N/A	N/A	N/A
Vacuum Operations			
Start Date/Time: 04-15-21/1430	End Date/Time: 04-15-21/1450	Area Vacuumed (m ²): 3.3 m²	
Every thirty (30) minutes Record (Record additional readings on the Work Record)	Alpha	Beta/Gamma	RSR
	< 20	< 1000	LE-2100764
Exhaust port smear (dpm/100 cm ²)	N/A	N/A	N/A
	N/A	N/A	N/A
	N/A	N/A	N/A
External seal of gasket smear (dpm/100 cm ²)	< 20	< 1000	LE-2100764
	N/A	N/A	N/A
	N/A	N/A	N/A

Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

		Dose Rate	RSR	
Dose Rate <2 mrem/hr @ 30 cm Gamma from HEPA Vacuum		<0.5	LE-2100764	
		NA	NA	
Post-Job Radiological Control Surveys				
		Alpha	Beta/Gamma	RSR
Exhaust port smear (dpm/100 cm ²)		<20	<1000	LE-2100764
Environmental Post-Job Approval	Name (Printed)	Signature		Date
	Amber Chapman			04/16/2021
Estimated TEDE Contribution from Activity				
Step 1	Enter Area To Be Vacuumed	10	m ²	
Step 2	Enter Average Beta/Gamma reading ¹	133000	dpm/100 cm ²	
Step 3	Enter TEDE/m ² value from Column C of Table 2 for Hanford Area that you're working in ³	471e-9	mrem/m ²	
Step 4	Multiply values from Step 1, 2, and 3, and divide by 1,000,000	626e-9	mrem	
Step 5	Enter Average Alpha reading ¹	0	dpm/100 cm ²	
Step 6	Enter TEDE/m ² value from Column C of Table 1 for Hanford Area that you're working in ³	321e-8	mrem/m ²	
Step 7	Multiply values from Step 1, 5, and 6, and divide by 250,000	0	mrem	
Step 8	Add values from Step 4 and 7	6.26e-09	mrem/yr	
Note 1: Average, not maximum, readings should be reported				
Note 2: When less than detectable readings are observed (e.g., <20 dpm/100 cm ² alpha, <1,000 dpm/100 cm ² for beta/gamma) these values are assumed to be zero.				
Note 3: If radionuclide mix for Hanford Area is not consistent with DOE/RL-97-50, Rev. 3, Appendix B, see Example 3 in Appendix C for calculating TEDE manually.				
Note 4: If tamper seal is not intact, do not proceed. Consult with environmental field representative and operations for further directions				
Note 5: Verify HVU make and model is on approved list maintained by main site contractor.				
Note 6: Verify aerosol test completed within prior 365 days				

**Work Package # 817895
HEPA Vacuum Usage - Datasheet 1**

Pre-Job Activities			
Job Site Location (include Hanford Area): <i>200E-20RF</i>	Vacuum Make/ Model # ² : <i>TIGER-VAC R-8 RE</i>	Procedure/Work Package #:	WO 817895
Aerosol Test Date ⁶ : <i>4/20/21</i>	Tamper Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ⁴	Serial Number:	<i>21040575</i>
Description of Activity: <i>VACUUM SWEEP/DIRT FROM CONCRETE WALK AROUND BASIN 44</i>		Type of Waste (dust, sand, concrete): <i>SAND/DIRT</i>	
Radiomolides, if known: <i>N/A</i>			
Environmental or BTF Engineering Pre-Job Approval		Name (Printed): <i>Clyde Allen</i>	Signature: <i>Clyde Allen</i>
		Date: <i>5-3-21</i>	
Pre-Job Radiological Conditions			
	Alpha	Beta/Gamma	RSR #
Record smear of exhaust port	<i>< 20</i>	<i>11000</i>	<i>LE-2100884</i>
Average Removable Contamination (dpm/100 cm ²) ¹	<i>< 20</i>	<i>11000</i>	<i>LE-2100884</i>
Average Fixed Contamination (dpm/100 cm ²) ¹	<i>5-3-21 1,000,000-20</i>	<i>1,000,000</i>	<i>LE-2100884</i>
In lieu of surveys, radiological inventory or airborne concentration present	Alpha	Beta/Gamma	Additional details
	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
Vacuum Operations			
Start Date/Time: <i>5/3/21 1515</i>	End Date/Time: <i>5/3/21 1520</i>	Area Vacuumed (m ²): <i>30</i> ^{<i>see 5-3-21</i>}	
Every thirty (30) minutes Record (Record additional readings on the Work Record)	Alpha	Beta/Gamma	RSR
Exhaust port smear (dpm/100 cm ²)	<i>< 20</i>	<i>< 1000</i>	<i>LE-2100884</i>
	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
External seal of gasket smear (dpm/100 cm ²)	<i>< 20</i>	<i>< 1000</i>	<i>LE-2100884</i>
	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

Dose Rate <2 mrem/hr @ 30 cm Gamma from HEPA Vacuum	Dose Rate		RSR
	< 0.2		LE-2100884
	N/A		N/A
Post-Job Radiological Control Surveys			
Exhaust port smear (dpm/100 cm ²)	Alpha	Beta/Gamma	RSR
	L20	L1000	LE-2100884
Environmental Post-Job Approval	Name (Printed)	Signature	Date
	Clyde Allen	<i>Clyde Allen</i>	5-4-21
Estimated TEDE Contribution from Activity			
Step 1	Enter Area To Be Vacuumed	30	m ²
Step 2	Enter Average Beta/Gamma reading ¹	1,000,000	dpm/100 cm ²
Step 3	Enter TEDE/m ² value from Column C of Table 2 for Hanford Area that you're working in ³	4.71E-09	mrem/m ²
Step 4	Multiply values from Step 1, 2, and 3, and divide by 1,000,000	1.41E-07	mrem
Step 5	Enter Average Alpha reading ¹	0	dpm/100 cm ²
Step 6	Enter TEDE/m ² value from Column C of Table 1 for Hanford Area that you're working in ³	3.21E-08	mrem/m ²
Step 7	Multiply values from Step 1, 5, and 6, and divide by 250,000	0	mrem
Step 8	Add values from Step 4 and 7	1.41E-07	mrem/yr
Note 1: Average, not maximum, readings should be reported			
Note 2: When less than detectable readings are observed (e.g., <20 dpm/100 cm ² alpha, <1,000 dpm/100 cm ² for beta/gamma) these values are assumed to be zero.			
Note 3: If radionuclide mix for Hanford Area is not consistent with DOE/RL-97-50, Rev. 3, Appendix B, see Example 3 in Appendix C for calculating TEDE manually.			
Note 4: If tamper seal is not intact, do not proceed. Consult with environmental field representative and operations for further directions			
Note 5: Verify HVU make and model is on approved list maintained by main site contractor.			
Note 6: Verify aerosol test completed within prior 365 days			

Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

	Dose Rate	RSR	
Dose Rate < 2 mrem/hr @ 30 cm Gamma from HEPA Vacuum	0.5	LE-2100892	
	N A	N A	
Post-Job Radiological Control Surveys			
	Alpha	Beta/Gamma	RSR
Exhaust port smear (dpm/100 cm ²)	< 20	< 1000	LE-2100892
Environmental Post-Job Approval	Name (Printed)	Signature	Date
	Clyde Allen	Clyde Allen	5-5-21
Estimated TEDE Contribution from Activity			
Step 1	Enter Area To Be Vacuumed		30 m ²
Step 2	Enter Average Beta/Gamma reading ¹	500,000	dpm/100 cm ²
Step 3	Enter TEDE/m ² value from Column C of Table 2 for Hanford Area that you're working in ³	4.71E-09	mrem/m ²
Step 4	Multiply values from Step 1, 2, and 3, and divide by 1,000,000	7.07E-08	mrem
Step 5	Enter Average Alpha reading ¹	0	dpm/100 cm ²
Step 6	Enter TEDE/m ² value from Column C of Table 1 for Hanford Area that you're working in ³	3.21E-08	mrem/m ²
Step 7	Multiply values from Step 1, 5, and 6, and divide by 250,000	0	mrem
Step 8	Add values from Step 4 and 7	7.07E-08	mrem/yr
Note 1: Average, not maximum, readings should be reported			
Note 2: When less than detectable readings are observed (e.g., <20 dpm/100 cm ² alpha, <1,000 dpm/100 cm ² for beta/gamma) these values are assumed to be zero.			
Note 3: If radionuclide mix for Hanford Area is not consistent with DOE/RL-97-50, Rev. 3, Appendix B, see Example 3 in Appendix C for calculating TEDE manually.			
Note 4: If tamper seal is not intact, do not proceed. Consult with environmental field representative and operations for further directions			
Note 5: Verify HVU make and model is on approved list maintained by main site contractor.			
Note 6: Verify aerosol test completed within prior 365 days			

Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

Pre-Job Activities			
Job Site Location (include Hanford Area): <i>ZOOE-LERF</i>	Vacuum Make/Model # ⁵ : <i>Tiger-Vac B-8 RE</i>	Procedure/Work Package #:	<i>WO 817895</i>
Aerosol Test Date ⁶ : <i>4/28/21</i>	Tamper Seal Intact: <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No ⁴	Serial Number:	<i>21040576</i>
Description of Activity: <i>Vacuum sand/dirt from concrete walkway around Basin 44</i>			
Radionuclides, if known: <i>N/A</i>		Type of Waste (dust, sand, concrete): <i>Sand/Dirt</i>	
Environmental or ETF Engineering Pre-Job Approval		Name (Printed)	Signature
		<i>Clyde Allen</i>	<i>Clyde Allen</i>
			Date <i>5-5-21</i>
Pre-Job Radiological Conditions			
	Alpha	Beta/Gamma	RSR #
Record smear of exhaust port	<i>L20</i>	<i>L1000</i>	<i>LE-2100903</i>
Average Removable Contamination (dpm/100 cm ²) ¹	<i>L20</i>	<i>L1000</i>	<i>LE-2100903</i>
Average Fixed Contamination (dpm/100 cm ²) ¹	<i>L20</i>	<i>1000000</i>	<i>LE-2100903</i>
In lieu of surveys, radiological inventory or airborne concentration present	Alpha	Beta/Gamma	Additional details
	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
Vacuum Operations			
Start Date/Time: <i>1021</i>	End Date/Time: <i>1045</i>	Area Vacuumed (m ²): <i>10 m²</i>	
Every thirty (30) minutes Record (Record additional readings on the Work Record)	Alpha <i>L20</i>	Beta/Gamma <i>L1000</i>	RSR <i>LE-2100903</i>
Exhaust port smear (dpm/100 cm ²)	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>
External seal of gasket smear (dpm/100 cm ²)	<i>L20</i>	<i>L1000</i>	<i>LE-2100903</i>
	<i>N/A</i>	<i>N/A</i>	<i>N/A</i>

Work Package # 817895
HEPA Vacuum Usage - Datasheet 1

	Dose Rate	RSR	
Dose Rate < 2 mrem/hr @ 30 cm Gamma from HEPA Vacuum	0.5	LE-2100 903	
	N A	N A	
Post-Job Radiological Control Surveys			
	Alpha	Beta/Gamma	RSR
Exhaust port smear (dpm/100 cm ²)	220	1100	LE-2100 903
Environmental Post-Job Approval	Name (Printed) Clayde Allen	Signature Clayde Allen	Date 5-5-21
Estimated TEDE Contribution from Activity			
Step 1	Enter Area To Be Vacuumed	210 30	m ²
Step 2	Enter Average Beta/Gamma reading ¹	1,000,000	dpm/100 cm ²
Step 3	Enter TEDE/m ² value from Column C of Table 2 for Hanford Area that you're working in ³	4.71E-09	mrem/m ²
Step 4	Multiply values from Step 1, 2, and 3, and divide by 1,000,000	1.41E-07	mrem
Step 5	Enter Average Alpha reading ¹	0	dpm/100 cm ²
Step 6	Enter TEDE/m ² value from Column C of Table 1 for Hanford Area that you're working in ³	3.21E-08	mrem/m ²
Step 7	Multiply values from Step 1, 5, and 6, and divide by 250,000	0	mrem
Step 8	Add values from Step 4 and 7	1.41E-07	mrem/yr
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Note 3: If radionuclide mix for Hanford Area is not consistent with DOE/RL-97-50, Rev. 3, Appendix B, see Example 3 in Appendix C for calculating TEDE manually.			
Note 4: If tamper seal is not intact, do not proceed. Consult with environmental field representative and operations for further directions			
Note 5: Verify HVU make and model is on approved list maintained by main site contractor.			
Note 6: Verify aerosol test completed within prior 365 days			