BNFL Inc.

Record
CB 12/7/04

765 Lindsay Blvd
Idaho Falls, ID 83402
Tel: (208) 524-8484
Fax: (208) 524-4442

December 1, 2004

Mr. Brian Edgerton
U.S. Department of Energy NE-ID
Idaho Operations Office
1955 Fremont Ave
Idaho Falls, ID 83401

Subject: **Contract No. DE-AC07-97ID13481, Advanced Mixed Waste Treatment Project (AMWTP), Transmittal of a Permit to Construct Exemption for the Drum Vent Facility (WMF-615) - AJD-255-2004**

Dear Mr. Edgerton:

The attached Category I Level I Exemption documents that the Drum Vent Facility (WMF 615) located in WMF-635 meets all of the requirements for exemption from the requirement to obtain a permit to construct from the Idaho Department of Environmental Quality. The analysis supports the exemption and is based on a conservative estimate for VOC and radionuclide emissions as a result of drum venting and filter insertion operations. This exemption supercedes the existing Drum Vent Facility exemption issued by the DEQ on October 18, 1996.

This letter and the attached exemption will be placed in the AMWTP facility operating record. Based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

If you have any questions or comments, please feel free to contact Penny Pink at 557-7006 or myself at 557-7014.

Sincerely,

Alan Dobson, General Manager
Advanced Mixed Waste Treatment Project

Attachment

Stephanie Woolf, NE-ID
Mike Adams, NE-ID
John Medema, NE-ID
Rick Provencher, NE-ID

AMWTP Document Control
Neil Brill, BNFL Inc.
Penny Pink, BNFL Inc.
AJD-255-2004

CATEGORY I EXEMPTION

FOR THE

AMWTP Drum Vent Facility (WMF-615)

(Revision 0)

December 2004

Contents

List of Tables

1. Introduction

The Advanced Mixed Waste Treatment Project (AMWTP) Drum Vent Facility (DVF) is located in Waste Management Facility Building Number 615 (WMF-615) in the southwest corner of the Type I Module (WMF-635), which is part of the Radioactive Waste Management Complex (RWMC) at the Idaho National Engineering and Environmental Laboratory (INEEL). WMF-615 houses the equipment needed to insert a filter assembly into drums prior to shipment to the Waste Isolation Pilot Plant (WIPP). The DVF subsystems include the Conveyor System, Silo, Ventilation System, Punch & Filter Insertion machine (P&FIM), and Process Control System.

This document (Revision 0) demonstrates that the AMWTP DVF meets the requirements to exempt the facility from obtaining a permit to construct by meeting all of the general exemption criteria (IDAPA 58.01.01.220) and the specific requirements for a Category I Exemption (IDAPA 58.01.01.221). Listed under the Results Analysis section is a list of each requirement and how the requirement is met.

2. Process Description

The DVS is designed to punch a hole in the top of a drum and insert a filter using a safe and systematic method. The system is designed to vent drums in a continuous manner to provide a reasonable throughput of drums with a minimum impact on the operation.

Drum vent operation is initiated by performing several startup functions before beginning the punching operation. After power to the system is initialized, the Process Control Computer (PCC) and two instrument computers are turned on. Using the PCC, the fans, vacuum pump and hydraulic pump are started. The safety stops are checked and verified operational, then the differential pressure across all the filters is verified to be within operating range. Once this is performed, the silo is isolated, and pressure is verified to be less than a negative 0.25 inches of water. When all the checks are performed and the equipment is operating properly, the system is ready for operation.

2.1 Conveyor System

The Conveyor System uses powered roller conveyors and consists of four main subsections: (1) the inlet conveyor where drums are loaded for transfer into the silo; (2) the silo conveyors where drums are properly positioned for the actual punching and filter insertion operation; (3) the survey station conveyor where drums are rotated into position for proper inspection and radiation smears; and (4) the outlet conveyor that collects the drums in groups of four and removes the drums from the facility.

2.2 Silo

The Containment Silo is the primary containment enclosure for drum venting operations that contains the P&FIM, and is where the punching and venting operations occur.

2.3 Ventilation System

Two separate ventilation systems are used in the DVF. The Sweep System, which serves the hood over the drum venting area and includes a high-efficiency particulate air (HEPA) filter, is vented to the drum vent exhaust (DVE) system. The DVE, which includes another HEPA filter, vents the silo via the WMF-615 stack.

2.4 Punch & Filter Insertion Machine

The DVF P&FIM is located in the approximate center of the silo. It contains a hydraulically powered, dual sliding-head assembly that punctures and inserts a filter assembly in each drum after it is properly positioned on the conveyor (maximum of 100 drums per day).

2.5 Process Control System

The DVF is equipped with an integrated control system using a computer control console and a Programmable Logic Controller (PLC). The PLC controls all the operations in the DVF. The controller is linked to several peripheral devices that provide input and output on system functional status. Overall, the system automates the DVF operation.

3. Waste Description

Typically, only non-debris waste will be processed at WMF-615. Non-debris waste includes inorganic and organic sludge-type wastes and soils. Debris waste containers will not normally require venting.

The estimated concentrations (bounding estimates based on existing documentation plus assumptions) of non-radioactive pollutants in each waste stream are based on the findings detailed in "*Waste Description Information for Transuranic-Contaminated Wastes Stored at the INEL*", B.D. Raivo, et al., INEL-95/0412, December 1995 (Raivo). The highest value for the estimated concentration of a particular pollutant in any of the non-debris waste streams is assigned to that pollutant. For example, of the waste streams in the non-debris waste type, waste stream RFETS-003 has the highest estimated concentration (5% by weight) of carbon tetrachloride. Therefore, for the non-debris waste type, the conservative concentration of 5 wt% is assigned to carbon tetrachloride. Where no concentration is given in Raivo's "estimated concentration" column for a pollutant, the analysis uses either the

concentration given in Raivo's "maximum expected" column or maximum values from previous core sample data, where applicable. The pollutants assigned concentrations from the previous analytical data include arsenic, barium, cadmium, chromium, lead, and silver. Each waste stream has been cross-referenced with EDF-RWMC-803, *"Chemical Constituents in Transuranic Storage Area Waste"*, INEL-95/022, Rev 5, April 1998 (EDF-803), which lists pollutants expected to be found in Transuranic Storage Area (TSA) waste, but does not give concentrations. Pollutants listed (for an individual waste stream) in EDF-803, but not in Raivo, and that were not assigned a value from the core sample data, are given conservative concentrations of 1% each. Radionuclide concentrations in the waste to be characterized are discussed in Section 5.

4. Calculation of Emissions

The source of emissions from WMF-615 is the DVF. The emissions estimate is based on a conservative daily throughput of 100, 55-gallon drums.

To calculate emissions from WMF-615, the total volatile organic compounds (VOC) emissions are estimated for drum venting. The waste to be processed at the DVF is primarily bound in sludge and, because it is not significantly mechanically disturbed, it is assumed that the amount of particulate matter (PM) emitted is effectively zero. Table 1 summarizes the assumptions and factors used to calculate total VOCs from drum venting activities. Emission factors from the Environmental Protection Agency (EPA) publication *AP-42, "Supplement F of the Compilation of Air Pollutant Emission Factors, Volume 1: Stationary Point and Area Sources,"* (AP-42) are multiplied by the throughput for drum venting to calculate an emission rate. From the total VOC value, individual toxic air pollutants (TAP) emissions are determined by multiplying the worst-case concentration percentage of each constituent by the total VOCs emitted for drum venting. The TAPs that are likely to be emitted as PM are included on the table as zero emissions. These rates are presented in Table 2. Emissions from the process are composed of VOCs, TAPs, and radionuclides. All emission rates are calculated as uncontrolled releases.

The significant emission comparison is presented in Table 3, and the results of the National Ambient Air Quality Standards analysis are presented in Table 4. Further discussion regarding calculations is provided in Section 6.

5. Radionuclide Emissions

As discussed in Section 2.3, emissions from the drum venting system pass through two HEPA filters prior to exhausting the building via the WMF-615 stack. Radionuclide emissions for this exemption are based on an analysis of the HEPA filters in service during the venting of 14,759 drums from May 1996 through January 23, 2002.[1] The population of drums to be processed in the future is expected to be similar to that processed in the time period covered by the HEPA report. Table 5 presents abated and unabated estimates for radionuclide emissions from the DVF. A HEPA filter efficiency of 99.9 and a daily throughput of 100 drums are assumed.

5.1 Radionuclide Modeling

Dose assessment modeling was done using the Clean Air Act Assessment Package (CAP88) computer code (V. 2), with the following inputs.

- Wind file: Central Facilities Area (CFA) 10-year averages (1987 to 1996)
- Annual precipitation: 20.8 cm
- Annual ambient temperature: 5.8 degrees C
- Height of lid: 800 m
- Stack height: 13.588 m
- Stack diameter: 0.254 m
- Stack exit velocity: 0.566 m/s
- Rural agricultural scenario (default settings)

The maximally exposed individual (MEI) is in the SSW sector at a distance of 5,700 meters, as the southern boundary of the INEEL represents the location with maximum dose rate where an individual could reside. The effective dose equivalent to the MEI is 6.4E-06 mrem/yr unmitigated and 6.4E-08 mrem/yr mitigated, assuming a HEPA efficiency of 99.9%. Regulations state that no individual can be exposed to more than 10 mrem/y as a result of stack emissions, and permit exemption criteria require that the exposure be less than 1% of the accepted standard, or 0.1 mrem/y. Therefore, the exposure to an individual as a result of radionuclide emissions from drum venting operations in WMF-615 by way of WMF-615 stack emissions is within regulatory permit exemption criteria. Periodic measurements to confirm low emissions will be required because the unmitigated dose is less than 0.1 mrem/y.

[1] INEEL Interoffice Memorandum, from H.M. Brocksome to R.D. Sayer, *Air Emissions Report for Calendar Year 2002*, February 18, 2003.

6. Results Analysis

Below is a list of each of the requirements and how the requirements are met for the Category I Exempt sources. Drum venting meets Category I requirements

220. GENERAL EXEMPTION CRITERIA FOR PERMIT TO CONSTRUCT EXEMPTIONS **01. General Exemption Criteria**. Sections 220 through 223 may be used by owners or operators to exempt certain sources from the requirement to obtain a permit to construct. . . . No permit to construct is required for a source that satisfies all of the following criteria, in addition to the criteria set forth at Sections 221, 222, or 223: **a.** The maximum capacity of a source to emit an air pollutant under its physical and operational design without consideration of limitations on emission such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored or processed would not: **i.** Equal or exceed one hundred (100) tons per year of any regulated air pollutant.	
Response	This source will not exceed one hundred tons per year of any regulated air pollutant (see Table 3).
ii. Cause an increase in the emissions of a major facility that equals or exceeds the significant emissions rates set out in the definition of significant at Section 006.	
Response	The results of the significant emission analysis are shown in Table 3. The pollutants listed in the table include those compounds from the significant emissions list specified in IDAPA 58.01.01.006.90 that are expected to be present in the wastes processed at the WMF-615 DVF. As shown in Table 3, WMF-615 emissions are estimated to be below the significant thresholds, as required by the rules for a Category I exemption.
iii. Cause or significantly contribute to a violation of an ambient air quality standard, based upon the applicable air quality models, data bases, and other requirements of 40 CFR Part 51, Appendix W (Guideline on Air Quality Models). No demonstration under this subsection is required for those sources listed at Subsection 222.02.	
Response	WMF-615 emission estimates for ozone (VOCs), were used to determine maximum ambient contributions from WMF-615 emissions, regardless of whether these worst-case concentrations were located at points accessible to the public. The emission estimate for ozone (VOCs) was input into the SCREEN3 model to determine the maximum ambient

	concentration. [Since Particulate emissions were assumed to be effectively zero, CO, lead (Pb), nitrogen dioxide (NO_2), PM-10, and SO_2 emissions are zero.] The maximum WMF-615 contribution for ozone was then added to the background ambient concentration and the total compared with the Section 577 NAAQS. The results are shown in Table 4. The combined concentration is below the NAAQS limits. A discussion of the air dispersion model and methodology used to determine the results displayed in Table 4 can be found in BNFL document BNFL-5232-PTC-01 "Application to Construct an Air Pollution Emitting Facility: the Advanced Mixed Waste Treatment Facility", Rev. 02, August 2001, Appendix E.

b. Combination. The source is not part of a proposed new major facility or part of a proposed major modification.

Response	This source is not part of a proposed new major facility nor is it part of a major modification.

02. Record Retention. Unless the source is subject to and the owner or operator complies with Section 385, the owner or operator of the source, except for those sources listed in Subsections 222.02.a. through 222.02.g., shall maintain documentation on site which shall identify the exemption determined to apply to the source and verify that the source qualifies for the identified exemption. The records and documentation shall be kept for a period of time not less than five (5) years from the date the exemption determination has been made or for the life of the source for which the exemption has been determined to apply, which ever is greater, or until such time as a permit to construct or an operating permit is issued which covers the operation of the source. The owner or operator shall submit the documentation to the Department upon request.

Response	A copy of this exemption will be kept in the Facility Operating Record.

221. CATEGORY I EXEMPTION.
No permit to construct is required for a source that satisfies the criteria set forth in Section 220 and the following:

01. Below Regulatory Concern. The maximum capacity of a source to emit an air pollutant under its physical and operational design considering limitations on emissions such as air pollution control equipment, restrictions on hours of operation and restrictions on the type and amount of material combusted, stored or processed shall be less than ten percent (10%) of the significant emission rates set out in the definition of significant at Section 006.

Response	The drum venting sources are less than 10% of the emission rate limits (see Table 2).
02. Radionuclides. The source shall have potential emissions that are less than one percent (1%) of the applicable radionuclides standard in 40 CFR Part 61, Subpart H.	
Response	This source has potential emissions that are less than 1% of the standard (please see Section 5 for analysis and Table 5 for results.).
03. Toxic Air Pollutants. The source shall comply with Section 223.	
Response	This source qualifies as a below regulatory concern (BRC) source (see Table 2).

223. EXEMPTION CRITERIA AND REPORTING REQUIREMENTS FOR TOXIC AIR POLLUTANT EMISSIONS.

No permit to construct for toxic air pollutants is required for a source that satisfies any of the exemption criteria below, the recordkeeping requirements at Subsection 220.02, and reporting requirements as follows:

01. Below Regulatory Concern (BRC) Exemption. The source qualifies for a BRC exemption if the uncontrolled emission rate (refer to Section 210) for all toxic air pollutants emitted by the source is less than or equal to ten percent (10%) of all applicable screening emission levels listed in Sections 585 and 586.

Response	Table 2 compares uncontrolled (i.e., no credit is taken for filtration or other means of abatement) TAP emissions from drum venting activities to their respective emission limits (EL). The estimated non-carcinogenic and carcinogenic TAP emissions are all less than 10% of their ELs.

Table 1. Total Uncontrolled VOC Emissions from Drum Venting

Characterization Activity		Process Rate	Waste Type	Waste Density	Waste Throughput	Liquid Throughput	Emission Factor	"VOC" Emissions
	Notes		*a*		*b*	*c*	*d*	
	e	dm/dy		lb/dm	ton/hr	ton/hr	lb/ton	lb/hr
Drum Venting	*f*	100	ND	525	1.0935	0.0028	0.02	5.7E-05

a. Waste type: ND=Non-debris (primarily organic and inorganic homogeneous solids).
b. Waste Throughput (ton/hr) = Process Rate (dm/dy) x Waste Density (lb/dm) / (2000 lb/ton x 24 hr/dy).
c. The quantity of liquid in the waste stream is assumed to be up to 1% in up to 26% of the containers; therefore, Liquid Throughput = 0.01 x 0.26 x Waste Throughput.
d. Emission factors are from AP-42, Table 4.7-1, Emission Factors for Solvent Reclaiming. Areas (drum venting) where waste is not disturbed use 0.02 lb/ton (factor for a solvent storage tank vent). Also, liquid is not all VOCs (mostly oils).
e. Unit abbreviations: dm=drum; dy=day; lb=pound; hr=hour.
f. The waste density is the average weighted non-debris density.

Table 2. Toxic Air Pollutant Emissions from Drum Venting

Pollutant		Worst-Case Non-Debris	Non-Debris Emissions	IDAPA 585,586 Emission Limits (EL)	% of EL
	Notes		a		
		wt%	lb/hr		
"VOC" Emissions	***b***		**5.7E-05**		
Volatiles					
Acetone		1	5.7E-07	1.2E+02	0.0%
Benzene		1	5.7E-07	8.0E-04	0.1%
Butanol, n-		0.001	5.7E-10	1.0E+01	0.0%
2-Butanone (Methyl ethyl ketone)		1	5.7E-07	3.9E+01	0.0%
Carbon tetrachloride		5	2.8E-06	4.4E-04	0.6%
Chlorobenzene		1	5.7E-07	2.3E+01	0.0%
Chloroform		1	5.7E-07	2.8E-04	0.2%
1,2-Dichloroethane		1	5.7E-07	2.5E-04	0.2%
Dichloroethylene		0	0.0E+00	5.3E+01	0.0%
cis-1,2-Dichloroethene		0	0.0E+00	5.3E+01	0.0%
1,1-Dichloroethylene		1	5.7E-07	1.3E-04	0.4%
2-Ethoxyethanol		1	5.7E-07	1.3E+00	0.0%
Ethyl benzene		1	5.7E-07	2.9E+01	0.0%
Ethyl ether	*c*	0	0.0E+00	n/a	
Isopropanol		0	0.0E+00	6.5E+01	0.0%
Methane	*c*	0	0.0E+00	n/a	
Methanol		0.003	1.7E-09	1.7E+01	0.0%
Methylene chloride		0.07	4.0E-08	1.6E-03	0.0%
1,1,2,2-Tetrachloroethane		0	0.0E+00	1.1E-05	0.0%
Tetrachloroethylene		1	5.7E-07	1.3E-02	0.0%
Toluene		1	5.7E-07	2.5E+01	0.0%
1,1,1-Trichloroethane (methyl chloroform)		15	8.5E-06	1.3E+02	0.0%
1,1,2-Trichloroethane		1	5.7E-07	4.2E-04	0.1%
Trichloroethylene		1	5.7E-07	5.1E-04	0.1%
1,1,2-Trichloro-1,2,2-trifluoroethane	*c*	5	2.8E-06	n/a	
Xylene		0.005	2.8E-09	2.9E+01	0.0%
Semivolatiles			0.0E+00		
Cyclohexane		1	5.7E-07	7.0E+01	0.0%
Nitrobenzene		1	5.7E-07	3.3E-01	0.0%
1,2,4-Trimethylbenzene		0	0.0E+00	8.2E+00	0.0%
1,3,6-Trimethylbenzene		0	0.0E+00	8.2E+00	0.0%
Total PM	***d***	**NA**	**0.0E+00**		
Metals					
Arsenic		1	0.0E+00	1.5E-06	0.0%
Barium		1	0.0E+00	3.3E-02	0.0%
Beryllium		1	0.0E+00	2.8E-05	0.0%
Cadmium		1	0.0E+00	3.7E-06	0.0%
Chromium		1	0.0E+00	3.3E-02	0.0%
Lead	*c*	1	0.0E+00	n/a	
Mercury	*e*	2.5	0.0E+00	1.0E-03	0.0%
Nickel		1	0.0E+00	2.7E-05	0.0%
Selenium		1	0.0E+00	1.3E-02	0.0%
Silver		1	0.0E+00	1.0E-03	0.0%
Other Pollutants					
Asbestos	*c*	0	0.0E+00	n/a	
Cyanide		1	0.0E+00	3.3E-01	0.0%
PCBs		15	0.0E+00	6.6E-05	0.0%

a. Emission Rate (lb/hr) = Worst-Case Non-Debris Concentration (wt%/100) x "VOC" Emissions (lb/hr) [Total PM (lb/hr) = 0].
b. See Table 1 for calculations of total VOCs.
c. Pollutants not regulated by IDAPA 58.01.01, "Rules for the Control of Air Pollution in Idaho".
d. Because the waste is not significantly mechanically disturbed, PM emissions are effectively zero.
e. Mercury is assumed in particulate form since heat is not generated during the drum venting process.

Table 3. Significant Emissions Comparison

Pollutant		Drum Venting Emissions (ton/yr)	Significant Emission Threshold (ton/yr)	% of Significant Limit	Allowable
	Notes		c		
Asbestos		0.0E+00	0.007	0.0000%	10%
Beryllium		0.0E+00	0.0004	0.0000%	10%
Carbon monoxide		0.0E+00	100	0.0000%	10%
Lead		0.0E+00	0.6	0.0000%	10%
Mercury		0.0E+00	0.1	0.0000%	10%
Nitrogen oxides		0.0E+00	40	0.0000%	10%
Ozone (VOCs)	f	2.5E-04	40	0.0006%	10%
Particulate matter	e	0.0E+00	25	0.0000%	10%
PM-10		0.0E+00	15	0.0000%	10%
Sulfur dioxide		0.0E+00	40	0.0000%	10%
Radionuclides (EDE)		mrem/yr	mrem/yr		
	d,g	6.4E-06	10	0.0001%	1%

a. Non-radioactive emissions are from Table 2.
b. Listed emissions are unabated (calculated without considering air pollution control equipment removal efficiencies).
c. "Significant" emission limits are defined in IDAPA 58.01.01, Section 006.
d. % of Significant Limit = (Total WMF-615 Emissions / Significant Emission Limit) x 100. For non-radioactive emissions, a Category I exemption requires abated (controlled) emissions to be less than 10% of their significant limits; the comparison presented uses unabated emissions. For radionuclides, the EDE must be < 0.1 mrem/yr to meet Category I requirements.
e. All PM is assumed to be PM-10 (PM with a diameter < 10 micrometers) for conservatism.
f. Volatile organic compounds (VOCs) are used as a measure of ozone.
g. Unmitigated. See Table 5 for the calculation of Effective Dose Equivalent (EDE) estimated for WMF-615 activities.

Table 4. National Ambient Air Quality Standards Analysis

Pollutant		CO	CO	Lead	NO2	Ozone	PM-10	PM-10
(Units vary, see below)		(8-hr)	(1-hr)	(quarter)	(annual)	(1-hr)	(annual)	(24-hr)
	Notes					a		
WMF-615 Stack Emissions	b,c	NA	NA	0.0E+00	NA	5.7E-05	0.0E+00	0.0E+0(
Max. WMF-615 Concentration		0.0E+00	0.0E+00	0.0E+00	0.0E+00	7.0E-02	0.0E+00	0.0E+0(
ID Background Ambient Concentration	d	5.1E+03	1.1E+04	1.7E-01	4.0E+01	7.8E+01	3.3E+01	8.6E+0
Combined Concentration		5.1E+03	1.1E+04	1.7E-01	4.0E+01	7.8E+01	3.3E+01	8.6E+0
Sect. 577 NAAQS (ug/m3)		1.0E+04	4.0E+04	1.5E+00	1.0E+02	2.4E+02	5.0E+01	1.5E+0
Max. WMF-615 % of NAAQS limit		0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%
ID Background % of NAAQS limit		51.0%	27.5%	11.3%	40.0%	32.5%	66.0%	57.3%
Combined % of NAAQS limit	e	51.0%	27.5%	11.3%	40.0%	32.5%	66.0%	57.3%

a. The ozone stack emission of 5.7E-5 lb/hr was less than the minimum concentration that SCREEN3 could use for an input; therefore, the
b. Main stack emissions consist of the VOC emissions from Table 1.
c. Particulate emissions assumed effectively zero.
d. Statewide background ambient concentrations for criteria pollutants were obtained from the Idaho Department of Environmental Quality
e. Combined concentrations were obtained by adding the WMF-615 concentrations to the statewide background ambient concentrations.

Table 5. Drum Vent Facility Source Term Calculations (Radionuclides)

Isotope	Analysis isotopic ave (Ci/g)	Total activity (Ci)[a]	Daily release (Ci/day)[b]	Unabated Activity (Ci/y)	Abated activity (Ci/y)
Am-241	4.84	1.32E-08	8.94E-11	3.36E-08	3.36E-10
Be-7	9.23	2.51E-08	1.70E-10	6.40E-08	6.40E-10
K-40	12.3	3.35E-08	2.27E-10	8.53E-08	8.53E-10
Cs-137	0.02	5.45E-11	3.69E-13	1.39E-10	1.39E-12
Pb-210	2.78	7.57E-09	5.13E-11	1.93E-08	1.93E-10
Co-60	0.2	5.45E-10	3.69E-12	1.39E-09	1.39E-11
Pu-239	37.86	1.03E-07	6.99E-10	2.63E-07	2.63E-09
Sr-90	48.24	1.31E-07	8.91E-10	3.35E-07	3.35E-09

a. Based on HEPA filter weight of 2724 g
b. Assumes 100 drum/day throughput

C A P 8 8 - P C

Version 2.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Nov 1, 2004 12:07 pmm

Facility: Drum Vent Facility WMF-615
Address: AMWTP
City: Scoville
State: ID Zip: 83400

Source Category: Point
Source Type: Stack
Emission Year: 2004

Comments: Source term unabated

Dataset Name: DVF-U
Dataset Date: Nov 1, 2004 12:07 pm
Wind File: C:\CAP88PC2\WNDFILES\CFA10.WND

Nov 1, 2004 12:07 pmm

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.06E-06
BREAST	1.35E-07
R MAR	6.97E-06
LUNGS	1.82E-05
THYROID	1.34E-07
ENDOST	8.20E-05
RMNDR	3.70E-06
EFFEC	6.87E-06

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	6.55E-07
INHALATION	6.20E-06
AIR IMMERSION	7.54E-13
GROUND SURFACE	1.27E-08
INTERNAL	6.86E-06
EXTERNAL	1.27E-08
TOTAL	6.87E-06

Nov 1, 2004 12:07 pmm

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
AM-241	1.11E-06
BE-7	1.91E-11
K-40	2.30E-08
CS-137	1.01E-11
PB-210	6.31E-08
CO-60	5.20E-10
PU-239	5.61E-06
SR-90	7.34E-08
TOTAL	6.87E-06

Nov 1, 2004 12:07 pmm

SUMMARY
Page 5

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)
Direction	5700
N	2.9E-06
NNW	2.4E-06
NW	1.6E-06
WNW	1.6E-06
W	1.8E-06
WSW	2.7E-06
SW	5.4E-06
SSW	6.4E-06
S	4.7E-06
SSE	4.5E-06
SE	4.4E-06
ESE	4.6E-06
E	5.3E-06
ENE	6.9E-06
NE	5.6E-06
NNE	3.9E-06

C A P 8 8 - P C

Version 2.00

Clean Air Act Assessment Package - 1988

D O S E A N D R I S K E Q U I V A L E N T S U M M A R I E S

Non-Radon Individual Assessment
Nov 1, 2004 12:07 pmm

Facility: Drum Vent Facility WMF-615
Address: AMWTP
City: Scoville
State: ID Zip: 83400

Source Category: Point
Source Type: Stack
Emission Year: 2004

Comments: Source term abated

Dataset Name: DVF-615
Dataset Date: Nov 1, 2004 12:07 pm
Wind File: C:\CAP88PC2\WNDFILES\CFA10.WND

Nov 1, 2004 12:07 pmm

ORGAN DOSE EQUIVALENT SUMMARY

Organ	Selected Individual (mrem/y)
GONADS	1.06E-08
BREAST	1.35E-09
R MAR	6.97E-08
LUNGS	1.82E-07
THYROID	1.34E-09
ENDOST	8.20E-07
RMNDR	3.70E-08
EFFEC	6.87E-08

PATHWAY EFFECTIVE DOSE EQUIVALENT SUMMARY

Pathway	Selected Individual (mrem/y)
INGESTION	6.55E-09
INHALATION	6.20E-08
AIR IMMERSION	7.54E-15
GROUND SURFACE	1.27E-10
INTERNAL	6.86E-08
EXTERNAL	1.27E-10
TOTAL	6.87E-08

Nov 1, 2004 12:07 pmm

NUCLIDE EFFECTIVE DOSE EQUIVALENT SUMMARY

Nuclide	Selected Individual (mrem/y)
AM-241	1.11E-08
BE-7	1.91E-13
K-40	2.30E-10
CS-137	1.01E-13
PB-210	6.31E-10
CO-60	5.20E-12
PU-239	5.61E-08
SR-90	7.34E-10
TOTAL	6.87E-08

Nov 1, 2004 12:07 pmm

INDIVIDUAL EFFECTIVE DOSE EQUIVALENT RATE (mrem/y)
(All Radionuclides and Pathways)

	Distance (m)
Direction	5700
N	2.9E-08
NNW	2.4E-08
NW	1.6E-08
WNW	1.6E-08
W	1.8E-08
WSW	2.7E-08
SW	5.4E-08
SSW	6.4E-08
S	4.7E-08
SSE	4.5E-08
SE	4.4E-08
ESE	4.6E-08
E	5.3E-08
ENE	6.9E-08
NE	5.6E-08
NNE	3.9E-08