

US Ecology, Inc.

USEI Site-Specific Dose Assessment Workbook
Summary of Project Alternate Disposal Dose Results

Rev. 3 Date: 5/9/2019

Customer:	Northstar	Used for MPF?:	No
Project:	Vermont Yankee Torus and Infiltration Water - 200k gal by Rail		
Number of Project Years:	1		
Max Dose Allowed (mrem/yr):	5		

a) USEI Worker Total Project Dose

Function	Minimum Number of Workers	Waste Contact Time (hr)	External Exposure Rate (mR/hr)	Internal Dose Rate (mrem/hr)	Distance (m)	Total No. of Repetitions	Total External Dose per Worker (mrem)	Total Internal Dose per Worker (mrem)	Total Project Dose per Worker (mrem)	% of Max Annual MEI Dose
Front-End Dray Truck Drivers	4	0.00	0.00E+00	0.00E+00	0.6	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Long-Haul Direct Truck Drivers - Drive Time	8	0.00	0.00E+00	0.00E+00	0.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
<i>Long-Haul Direct Truck Drivers - Sleep Time</i>	8	0.00	0.00E+00	0.00E+00	0.0	0	0.00E+00	0.00E+00	---	---
Tanker Truck Driver - Drive Time	8	0.75	4.07E-03	0.00E+00	3.3	40	1.53E-02	0.00E+00	1.53E-02	0.3%
<i>Tanker Truck Driver - Sleep Time</i>	8	0.00	4.07E-03	0.00E+00	3.3	0	0.00E+00	0.00E+00	---	---
Gondola Railcar Surveyors	4	0.33	6.93E-03	0.00E+00	1.0	7	4.00E-03	0.00E+00	4.00E-03	0.1%
Bulk/IMC Truck Surveyors	8	0.08	5.61E-03	0.00E+00	1.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Container Pad Operators	6	0.50	0.00E+00	1.29E-05	1.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
RTF Excavator Operator	2	0.75	4.09E-03	1.29E-05	2.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Gondola Railcar Cleanout	4	0.16	1.41E-03	1.29E-05	0.3	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Rail Transfer Equipment Operator	4	0.25	6.68E-04	0.00E+00	4.9	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Back-End Dray Truck Drivers	8	0.75	8.00E-03	0.00E+00	0.6	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Treatment Workers	6	0.75	2.42E-03	1.29E-05	2.0	40	1.21E-02	6.46E-05	1.22E-02	0.2%
Treatment Plant Truck Driver	2	0.16	6.26E-04	1.29E-05	0.6	101	5.06E-03	1.04E-04	5.16E-03	0.1%
Container Pad Truck Driver	2	0.16	0.00E+00	0.00E+00	2.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Landfill Cell Operators	2	0.25	2.68E-03	1.29E-05	1.0	43	1.44E-02	6.95E-05	1.45E-02	0.3%

b) USEI Worker Total Dose per Project Year (if applicable)

Function	Minimum Number of Workers	Waste Contact Time (hr)	External Exposure Rate (mR/hr)	Internal Dose Rate (mrem/hr)	Distance (m)	Total No. of Repetitions	Annual External Dose per Worker (mrem)	Annual Internal Dose per Worker (mrem)	Total Annual Dose per Worker (mrem)	% of Max Annual MEI Dose ¹
Front-End Dray Truck Drivers	4	0.00	0.00E+00	0.00E+00	0.6	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Long-Haul Direct Truck Drivers - Drive Time	8	0.00	0.00E+00	0.00E+00	0.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
<i>Long-Haul Direct Truck Drivers - Sleep Time</i>	8	0.00	0.00E+00	0.00E+00	0.0	0	0.00E+00	0.00E+00	---	---
Tanker Truck Driver - Drive Time	8	0.75	4.07E-03	0.00E+00	3.3	40	1.53E-02	0.00E+00	1.53E-02	0.3%
<i>Tanker Truck Driver - Sleep Time</i>	8	0.00	4.07E-03	0.00E+00	3.3	0	0.00E+00	0.00E+00	---	---
Gondola Railcar Surveyors	4	0.33	6.93E-03	0.00E+00	1.0	7	4.00E-03	0.00E+00	4.00E-03	0.1%
Bulk/IMC Truck Surveyors	8	0.08	5.61E-03	0.00E+00	1.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Container Pad Operators	6	0.50	0.00E+00	1.29E-05	1.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
RTF Excavator Operator	2	0.75	4.09E-03	1.29E-05	2.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Gondola Railcar Cleanout	4	0.16	1.41E-03	1.29E-05	0.3	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Rail Transfer Equipment Operator	4	0.25	6.68E-04	0.00E+00	4.9	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Back-End Dray Truck Drivers	8	0.75	8.00E-03	0.00E+00	0.6	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Treatment Workers	6	0.75	2.42E-03	1.29E-05	2.0	40	1.21E-02	6.46E-05	1.22E-02	0.2%
Treatment Plant Truck Driver	2	0.16	6.26E-04	1.29E-05	0.6	101	5.06E-03	1.04E-04	5.16E-03	0.1%
Container Pad Truck Driver	2	0.16	0.00E+00	0.00E+00	2.0	0	0.00E+00	0.00E+00	0.00E+00	0.0%
Landfill Cell Operators	2	0.25	2.68E-03	1.29E-05	1.0	43	1.44E-02	6.95E-05	1.45E-02	0.3%

c) USEI RESRAD Post-Closure Screening Dose 7.63E-02 mrem/yr

d) Inadvertent Intruder Doses

- (d) 1. Construction Scenario 2.01E-01 mrem/yr
- (d) 2. Well Driller Scenario 1.07E-01 mrem/yr
- (d) 3. Driller Occupancy Scenario 1.30E-02 mrem/yr