

**Errata page for U.S. Department of Energy
Portsmouth Gaseous Diffusion Plant
Annual Site Environmental Report 2016
(DOE/PPPO/03-0813&D1,
FBP-ER-RCRA-WD-RPT-0266, Revision 3)**

During an evaluation of radiological dose, it was discovered that an error was made in the calculation of dose at the ambient air monitoring stations involving the misapplication of the conversion factor converting concentration to dose. An additional error was found in compiling radiological emissions from the FBP point sources. The following corrections to the report referenced above have been made to respond to these errors.

<u>Page</u>	<u>Correction</u>
ES-3	Ambient air section, third paragraph, third sentence. Corrected the ambient air dose as follows: “The highest net dose calculation for the ambient air monitoring stations (0.14 mrem/year) was at station A6 in Piketon.”
ES-7	Figure 1. Corrected Potential annual dose from PORTS – 2016 to “0.85”
ES-7	Dose section, second paragraph, first sentence. Corrected the maximum dose as follows: “The maximum dose that a member of the public could receive from radiation released by PORTS in 2016 is 0.85 mrem.”
ES-7	Dose section, third paragraph, fourth bullet. Corrected the dose as follows: “0.033 mrem from radionuclides released to the air (the dose calculated by the U.S. EPA model required to demonstrate compliance with the NESHAP 10 mrem/year standard [40 CFR Part 61 Subpart H]).”
ES-7	Dose section, fourth paragraph, first and second sentences. Corrected the doses in both sentences as follows: “This dose (0.85 mrem) is significantly less than the 100 mrem/year limit set in DOE Order 458.1 for the dose to a member of the public from radionuclides from all potential pathways. The dose to a member of the public from airborne radionuclides released by PORTS (0.033 mrem) is also significantly less than the 10 mrem/year standard set by U.S. EPA in NESHAP (40 CFR Part 61 Subpart H).”
2-8	First sentence (from Section 2.3.3.3 on previous page). Corrected total emissions as follows: “Total radiological airborne emissions from FBP sources in 2016 were 0.03068 curie (Ci) (3.068E-02 Ci).”
4-1	Section 4.1, fourth paragraph, second sentence. Corrected dose as follows: “The maximum dose a member of the public could receive from radiation released by PORTS in 2016 or detected by environmental monitoring programs in 2016 is 0.85 mrem/year.”

- 4-1 Table 4.1. Corrected the dose for airborne radionuclides (off-site individual) and total dose as follows:

Table 4.1. Summary of potential doses to the public from PORTS in 2016

Source of dose	Dose (mrem/year)
Airborne radionuclides (off-site individual)	0.033 ^a
Radionuclides released to the Scioto River	0.0015
External radiation near cylinder yards (northwest portion of Perimeter Rd)	0.76
Radionuclides detected by environmental monitoring programs	0.056
Total	0.85 ^b

- 4-5 First paragraph (Section 4.3.2 from previous page), last sentence. Corrected total emissions as follows: “Total emissions from the DOE/FBP airborne sources in 2016 were calculated to be 0.03068 Ci (3.068E-02 Ci).”
- 4-5 Third paragraph (Section 4.3.2 from previous page), first sentence. Corrected total emissions as follows: “Total emissions from all DOE airborne sources in 2016 were calculated to be 0.03072 Ci (3.072E-02 Ci).”
- 4-5 Section 4.3.3, third paragraph, first sentence. Corrected dose as follows: “The maximum potential dose to an off-site individual from radiological releases from PORTS air emission sources in 2016 was 0.033 mrem/year.”
- 4-5 Section 4.3.3, fourth paragraph, second sentence. Corrected dose as follows: “In 2016, the population dose from PORTS emissions was 0.09 person-rem/year.”
- 4-6 Section 4.3.4, third paragraph, last sentence. Corrected the ambient air dose as follows: “The net dose at each station ranged from 0 at stations with a lower dose than the background station to 0.14 mrem/year at station A6 in Piketon (see Figure 4.1).”
- 4-6 Section 4.3.4, fourth paragraph. Revised paragraph as follows: “The highest net dose at the ambient air monitoring stations (0.14 mrem/year at station A6) is less than the 10 mrem/year NESHAP limit for airborne radiological releases (40 CFR Part 61, Subpart H) and 100 mrem/year DOE limit in DOE Order 458.1 for all radiological releases from a facility.”
- 4-18 Paragraph before Section 4.6.2, second sentence. Corrected the ambient air dose as follows: “The highest net dose calculation for the off-site ambient air monitoring stations (0.14 mrem/year) was at station A6 in Piketon.”
- 4-23 First paragraph (Section 4.6.5 from previous page), last sentence. Corrected dose as follows: “The total potential dose to a member of the public resulting from PORTS operations (0.85 mrem/year), which includes this dose calculation (0.034 mrem/year), is well below the DOE standard of 100 mrem/year in DOE Order 458.1.”
- 4-25 Second paragraph (Section 4.6.7 from previous page), last sentence. Corrected dose as follows: “The total potential dose to a member of the public resulting from PORTS operations (0.85 mrem/year), which includes this dose calculation (0.022 mrem/year), is well below the DOE limit of 100 mrem/year in DOE Order 458.1.”

4-25 Section 4.6.8.1, second paragraph, last sentence. Corrected dose as follows: “The total potential dose to a member of the public resulting from PORTS operations (0.85 mrem/year), which includes this dose calculation (0.00033 mrem/year), is well below the DOE Order 458.1 limit of 100 mrem/year.”

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**Errata page for U.S. Department of Energy
Portsmouth Gaseous Diffusion Plant
Annual Site Environmental Data 2016
(DOE/PPPO/03-0814&D1,
FBP-ER-RCRA-WD-RPT-0267, Revision 1)**

During an evaluation of radiological dose, it was discovered that an error was made in the calculation of dose at the ambient air monitoring stations involving the misapplication of the conversion factor converting concentration to dose. An additional error was found in compiling radiological emissions from the FBP point sources. The following corrections to the report referenced above have been made to respond to these errors.

<u>Page</u>	<u>Correction</u>
1-1	Section 1, third paragraph, first sentence. Corrected maximum dose as follows: “Radiological monitoring data presented in this Data Report and discussed in the <i>Annual Site Environmental Report 2016</i> indicate that the maximum dose a member of the public could receive from radionuclides released by PORTS in 2016 or detected by environmental monitoring programs in 2016 is 0.85 millirem (mrem).”
3-1	Table 3.1. Corrected emissions for Group 3. A replacement for Table 3.1 is provided (page 3-1) following this Errata page.
3-2	Table 3.2. Corrected dose to maximally exposed individual (0.033 mrem/year) and population dose (0.09 person-rem/year). A replacement for Table 3.2 is provided (page 3-2) following this Errata page.
3-2	Table 3.3. Dose calculations for ambient air monitoring stations – 2016. A replacement for Table 3.3 (pages 3-2 through 3-5) is provided following this Errata page.

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3. DOSE

This section provides summary tables of air emissions and dose assessments completed by DOE for compliance with the National Emission Standards for Hazardous Air Pollutants for airborne radionuclide emissions. The following tables are provided in this section:

- Table 3.1. Emissions (Ci/year) from DOE air emission sources – 2016
- Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2016
- Table 3.3. Dose calculations for ambient air monitoring stations – 2016.

Table 3.1. Emissions (Ci/year) from DOE air emission sources – 2016

Radionuclide	Group 1 ^a	Group 2 ^b	Group 3 ^c	DUF ₆ facility ^d
Americium-241	1.954E-07	-	5.625E-07	-
Neptunium-237	1.113E-07	-	1.706E-06	-
Plutonium-238	2.189E-07	-	3.201E-07	-
Plutonium-239/240	1.371E-07	-	1.796E-06	-
Technetium-99	1.442E-03	6.309E-04	2.564E-02	-
Uranium-233/234	6.312E-05	3.947E-06	2.356E-04	1.44E-06
Uranium-235	5.047E-06	9.362E-06	1.273E-05	6.61E-08
Uranium-238	4.405E-04	1.075E-03	7.711E-05	3.54E-06
Thorium-228	3.740E-08	1.958E-07	3.390E-10	-
Thorium-230	3.750E-05	2.938E-06	3.400E-10	-
Thorium-231	5.047E-06	2.440E-06	5.095E-06	1.99E-07
Thorium-232	2.290E-09	1.672E-08	2.070E-11	-
Thorium-234	4.395E-04	1.010E-05	4.146E-05	1.82E-05
Protactinium-234m	4.395E-04	1.010E-05	4.146E-05	1.82E-05
Total	2.873E-03	1.745E-03	2.606E-02	4.16E-05

^aGroup 1 consists of the X-326 Top Purge/Emergency Jet Vents, X-326 Seal Exhaust Vents, X-710 Vents, XT-847 Glove Box, and X-622 Groundwater Treatment Facility.

^bGroup 2 consists of the X-344A Gulper Vent and X-344A Cold Trap Vent.

^cGroup 3 consists of the X-330 Vents, X-333 Vents, X-700 Vents, X-705 Vents, X-623 Groundwater Treatment Facility, X-624 Groundwater Treatment Facility, and X-627 Groundwater Treatment Facility.

^dDUF₆ – depleted uranium hexafluoride.

Note: Measurements are provided in scientific notation. The number and sign (+ or -) to the right of the “E” indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right).

Table 3.2. Predicted radiation doses from airborne releases at PORTS – 2016

Effective dose to:	All PORTS releases (DOE and Centrus)
Maximally exposed individual (mrem/year)	0.033
Population ^a (person-rem/year)	0.09

^aPopulation within 50 miles (80 kilometers) of plant site.

Table 3.3. Dose calculations for ambient air monitoring stations – 2016

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A3	Americium-241	1.5E-03		
	Neptunium-237	1.5E-04		
	Plutonium-238	3.0E-04		
	Plutonium-239/240	2.0E-03		
	Technetium-99	3.6E-01		
	Uranium-233/234	3.5E-03		
	Uranium-235/236	2.0E-04	(0.37)	(0.06)
	Uranium-238	1.4E-03	3.7E-01	6.0E-02
A6	Americium-241	3.4E-03		
	Neptunium-237	2.5E-04		
	Plutonium-238	3.0E-04		
	Plutonium-239/240	1.3E-03		
	Technetium-99	4.4E-01		
	Uranium-233/234	2.3E-03		
	Uranium-235/236	1.7E-04	(0.45)	(0.14)
	Uranium-238	1.7E-03	4.5E-01	1.4E-01
A8	Americium-241	3.4E-03		
	Neptunium-237	0		
	Plutonium-238	5.9E-04		
	Plutonium-239/240	1.4E-03		
	Technetium-99	2.9E-01		
	Uranium-233/234	5.3E-03		
	Uranium-235/236	1.9E-04	(0.30)	
	Uranium-238	1.4E-03	3.0E-01	0
A9	Americium-241	2.6E-03		
	Neptunium-237	1.9E-04		
	Plutonium-238	1.1E-03		
	Plutonium-239/240	2.2E-03		
	Technetium-99	4.2E-01		
	Uranium-233/234	4.3E-03		
	Uranium-235/236	2.4E-04	(0.44)	(0.13)
	Uranium-238	2.9E-03	4.4E-01	1.3E-01

Table 3.3. Dose calculations for ambient air monitoring stations – 2016 (continued)

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A10	Americium-241	1.3E-03		
	Neptunium-237	1.4E-04		
	Plutonium-238	1.2E-03		
	Plutonium-239/240	2.6E-03		
	Technetium-99	4.2E-01		
	Uranium-233/234	1.0E-02		
	Uranium-235/236	3.8E-04	(0.44)	(0.13)
	Uranium-238	4.7E-03	4.4E-01	1.3E-01
A12	Americium-241	2.5E-03		
	Neptunium-237	4.2E-04		
	Plutonium-238	1.7E-03		
	Plutonium-239/240	2.2E-03		
	Technetium-99	3.4E-01		
	Uranium-233/234	4.7E-03		
	Uranium-235/236	2.8E-04	(0.36)	(0.05)
	Uranium-238	1.6E-03	3.6E-01	5.0E-02
A15	Americium-241	2.8E-03		
	Neptunium-237	3.0E-04		
	Plutonium-238	8.6E-04		
	Plutonium-239/240	2.2E-03		
	Technetium-99	3.4E-01		
	Uranium-233/234	3.5E-03		
	Uranium-235/236	1.6E-04	(0.35)	(0.04)
	Uranium-238	1.4E-03	3.5E-01	4.0E-02
A23	Americium-241	2.4E-03		
	Neptunium-237	5.5E-04		
	Plutonium-238	1.5E-03		
	Plutonium-239/240	1.2E-03		
	Technetium-99	3.4E-01		
	Uranium-233/234	4.6E-03		
	Uranium-235/236	2.5E-04	(0.35)	(0.04)
	Uranium-238	1.5E-03	3.5E-01	4.0E-02
A24	Americium-241	4.6E-03		
	Neptunium-237	1.5E-04		
	Plutonium-238	1.3E-03		
	Plutonium-239/240	1.1E-03		
	Technetium-99	3.2E-01		
	Uranium-233/234	5.8E-03		
	Uranium-235/236	2.1E-04	(0.33)	(0.02)
	Uranium-238	2.0E-03	3.3E-01	2.0E-02

Table 3.3. Dose calculations for ambient air monitoring stations – 2016 (continued)

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
A28	Americium-241	1.5E-03		
	Neptunium-237	3.4E-04		
	Plutonium-238	1.1E-03		
	Plutonium-239/240	2.2E-03		
	Technetium-99	2.6E-01		
	Uranium-233/234	1.9E-03		
	Uranium-235/236	1.6E-04	(0.27)	
	Uranium-238	1.5E-03	2.7E-01	0
A29	Americium-241	1.9E-03		
	Neptunium-237	5.9E-04		
	Plutonium-238	6.5E-04		
	Plutonium-239/240	3.5E-03		
	Technetium-99	3.4E-01		
	Uranium-233/234	6.2E-03		
	Uranium-235/236	1.6E-04	(0.35)	(0.04)
	Uranium-238	1.7E-03	3.5E-01	4.0E-02
A36	Americium-241	1.4E-02		
	Neptunium-237	2.0E-03		
	Plutonium-238	2.0E-03		
	Plutonium-239/240	8.5E-04		
	Technetium-99	2.1E-01		
	Uranium-233/234	7.0E-03		
	Uranium-235/236	1.0E-03	(0.24)	
	Uranium-238	1.5E-03	2.4E-01	0
A37	Americium-241	1.9E-03		
	Neptunium-237	2.8E-04		
	Plutonium-238	1.1E-03		
	Plutonium-239/240	7.1E-04		
	Technetium-99	3.0E-01		
	Uranium-233/234	1.8E-03		
	Uranium-235/236	1.1E-04	(0.31)	
	Uranium-238	1.5E-03	3.1E-01	-
A41A	Americium-241	2.6E-03		
	Neptunium-237	8.7E-04		
	Plutonium-238	1.2E-03		
	Plutonium-239/240	1.8E-03		
	Technetium-99	2.6E-01		
	Uranium-233/234	3.2E-03		
	Uranium-235/236	1.6E-04	(0.27)	
	Uranium-238	1.7E-03	2.7E-01	0

Table 3.3. Dose calculations for ambient air monitoring stations – 2016 (continued)

Station	Parameter ^a	Dose ^b (mrem/year)	Total dose for station ^c	Net dose for station ^d
T7	Americium-241	3.1E-03		
	Neptunium-237	4.6E-04		
	Plutonium-238	0.0E+00		
	Plutonium-239/240	1.5E-03		
	Technetium-99	3.2E-01		
	Uranium-233/234	5.2E-03		
	Uranium-235/236	2.6E-04	(0.34)	(0.03)
	Uranium-238	1.5E-03	3.4E-01	3.0E-02

^aParameters listed in **bold** type were detected at least once in the samples collected in 2016 (see Table 2.9).

^bThe dose calculation is based on the maximum detection of each parameter at each station. For parameters that were not detected, half of the highest undetected result for the parameter was used to calculate the activity of each parameter in ambient air that is the basis for the dose. Measurements are provided in scientific notation. The number and sign (+ or -) to the right of the "E" indicate the number of places to the right or left of the decimal point. For example, 3.4E-04 is 0.00034 (the decimal point moves four places to the left); 2.1E+02 is 210 (the decimal point moves two places to the right).

^cThe total dose is provided in scientific notation and standard numeric format (in parentheses).

^dThe net dose is calculated by subtracting the total dose at Station A37 (background) from the total dose calculated for each station (the net dose is recorded as zero for stations with a gross dose less than the background station). The net dose is provided in scientific notation and standard numeric format (in parentheses).