TABLE 3.1-5 Estimated Radiation Doses to Members of the General Public and Cylinder Yard Workers at the Portsmouth Gaseous Diffusion Plant

Receptor	Radiation Source	Dose to Individual (mrem/yr)
Member of the general public (MEI)[a]	Routine site operations	
	Airborne radionuclides	0.060[b]
	Waterborne radionuclides	0.039[c]
	Direct gamma radiation	0.98[d]
	Ingestion	0.88[e]
Cylinder yard worker	External radiation	64[f]
On-site monitored employee	External radiation	1.85[g]
Member of the public or worker	Natural background radiation around the Portsmouth site	78[h]
DOE worker limit		2,000[i]

[a] The MEI is assumed to reside at an off-site location or undertake specific activities that would yield the largest dose. An average person would receive a radiation dose much less than the values shown in this table.

[b] Radiation doses from airborne releases were estimated on the basis of air concentrations calculated by an air dispersion model. For the total dose of 0.060 mrem/yr, 0.014 mrem/yr was contributed by DOE sources, and 0.046 mrem/yr was contributed by USEC sources. The radiation dose calculated from the maximum measured ambient air concentrations was approximately 0.3% of the estimated value (DOE 2002b,c).

[c] The MEI is assumed to drink water and ingest fish caught from the Scioto River. The MEI is also assumed to swim and boat in the river and use the shoreline for recreational activities (DOE 2002c). This is a very conservative assumption because actually, the Scioto River is not used for drinking water downstream of the Portsmouth facility.

[d] Radiation exposure is assumed to be incurred by a person driving slowly on Perimeter Road and passing close to the edge of the cylinder yards 2 times a day for 185 days per year. The radiation dose was estimated by using the direct radiation monitoring data taken at the cylinder yards. Radiation levels at the accessible point would be much lower (DOE 2002b). Because Perimeter Road was closed to the public after September 11, 2001, 185 days was used in the calculation rather than the previously used 260 days.

[e] Radiation doses would result from ingestion of sediment, soil, locally produced vegetation and crops, deer, and fish. They were calculated by using detected concentrations of radionuclides in different media at different locations (DOE 2002c).

[f] Average dose from monitoring data in year 2001 (DOE 2002b).

[g] Average dose from monitoring data (DOE 2002b). If cylinder yard workers were excluded, the average for the rest of the employees would be 0.84 mrem/yr.

[h] Average dose from natural background radiation; 50 mrem/yr cosmic radiation and 28 mrem/yr terrestrial radiation (DOE 2002c).

[i] DOE administrative procedures limit DOE workers to 2,000 mrem/yr (DOE 1992), whereas the regulatory dose limit for radiation workers is 5,000 mrem/yr (10 CFR Part 835).