TABLE 4.14.1.1–1.—*Major Sources of Radiation Exposure in the Vicinity of Pantex Plant*

SOURCE OF EXPOSURE	AVERAGE DOSE TO AN INDIVIDUAL (mrem/yr)[1]	TOTAL EXPOSURE (PERCENT)
NATURAL BACKGROUND RADIATION		
Cosmic and external terrestrial radiation	95	
Internal terrestrial	39	
Radon in home	200	
Total natural	334	83.9
MEDICAL RADIATION		
Diagnostic x-rays	39	
Nuclear medicine	14	
Total medical	53	13.3
OTHER SOURCES		
Fallout from past weapons testing	<1	
Consumer and industrial products	10	
Air travel	1	
Nuclear facilities (other than Pantex and transportation of radioactive materials)	<1	
Pantex - environmental radioactivity	<<1 (4.98×10^{-7})	
Total other	11	2.8
Total - all sources	398	100

< - less than
<< - much less than
[1] Effective Dose Equivalent
Sources: NCRP 1987:15, 53; DOE 1995b:7-5

4.4×10^{-5}. For those Pantex Plant workers that receive radiation doses, this 4.4×10^{-5} value is essentially in addition to the average annual fatal cancer risk of 1.7×10^{-3} for the regional population.

The largest contributors to worker radiological doses at Pantex Plant are external exposures (i.e., those received from radiation-emitting sources). The largest potential for external doses occurs from weapon operations and pit repackaging. Worker population dose, from an external exposure viewpoint, has been significantly reduced at Pantex Plant due to improvements in work practices and changes in work scope. In 1980, Pantex Plant operations resulted in a cumulative worker dose of 148 person-rem over 719 personnel. In 1994, Pantex Plant operations resulted in a cumulative worker dose of 29 person-rem over 329 personnel (Pantex 1996a).

Internal exposures, received when radioactive materials are deposited through inhalation, ingestion, or absorption, are only minor contributors to worker doses. During normal operations, engineering controls (e.g., confinement and ventilation) are the primary methods of controlling airborne concentrations of radionuclides and minimizing internal exposure. Administrative controls (e.g., exposure limits and procedural requirements)