TABLE 4.7.1.3–7.—*Estimated Criteria and VOC Pollutant Emission Inventory for the Region of Influence Counties and Pantex Plant*

COUNTY/YEAR	POLLUTANT (metric tons [tons] per year)				
	SO_2	NO_2	VOC	CO	PM_{10}
Carson/1988	177 (195)	2,106 (2,321)	1,281 (1,412)	3,500 (3,858)	7,442 (8,204)
Potter/1988	25,139 (27,711)	28,077 (30,950)	22,550 (24,857)	51,529 (56,801)	33,591 (37,028)
Randall/1988	318 (351)	3,002 (3,309)	3,209 (3,537)	13,024 (14,356)	22,635 (24,951)
Armstrong/1988	43 (47)	483 (532)	275 (303)	1,198 (1,321)	8,955 (9,871)
Donley/1988	68 (75)	77 (85)	501 (552)	2,087 (2,300)	9,082 (10,011)
Gray/1988	8,149 (8,983)	19,608 (21,614)	7,052 (7,773)	56,990 (62,821)	15,413 (16,990)
Roberts/1988	19 (21)	202 (223)	199 (219)	806 (889)	6,920 (7,628)
Hutchinson/1988	26,356 (29,052)	14,552 (16,041)	18,644 (20,551)	86,981 (95,880)	18,512 (20,406)
Moore/1988	4,267 (4,704)	11,347 (12,508)	5,227 (5,762)	31,087 (34,268)	9,461 (10,429)
Pantex Plant/1993	0 (0)	304.89 (336.09)	64.3 (70.88)	585.04 (644.89)	8.44 (9.3)

Source: EPA 1988; Pantex 1996

summarizes the sources and levels of radiation exposure in this geographical region, including sources of airborne radionuclide emissions from Pantex Plant. Estimates of radioactivity levels and radiological doses from current Pantex Plant operations are provided and discussed (DOE 1995b).

Sources of Radioactivity

The major source of radioactive exposure in the Texas Panhandle is natural background radiation. Sources of radioactivity related to Pantex Plant operations contribute a negligible amount of additional exposure.

Background radiation includes sources such as cosmic rays; radioactivity naturally present in soil, rocks, and the human body; and the airborne radionuclides of natural origin (such as radon). Radioactivity still remaining in the environment as a result of atmospheric testing of nuclear weapons also contributes to the background radioactivity level, although in very small amounts. The natural background dose for residents of the Texas Panhandle is about 95 millirem per year. For comparison, the average annual dose equivalent to any citizen of the U.S. is about 160 millirem, excluding exposure to radon (NCRP 1987).

Potential sources of radioactivity at Pantex Plant from weapons activities include radioactive materials that may be present in the components of weapons and in radiation-generating devices. The radioactive materials in weapons include tritium, various isotopes of plutonium and uranium, and thorium. Gamma radiation is produced by equipment that contains sealed gamma sources (e.g., cobalt-60 and cesium-137), Van de Graaf generators, and linear accelerators.

In normal operating situations, little potential exists for exposure to Pantex Plant personnel, the public, or the environment from release of radioactive materials. Small amounts of tritium escape as a gas or vapor during normal operations, and some tritium residual is present onsite as a result of an accidental release in 1989. Recent amounts of tritium released in 1993 and 1994 were 0.312 curie and 0.446 curie, respectively (DOE 1994b: 4-4; DOE 1995b:7-2). On May 17, 1989, an unplanned