

TABLE 4.7.1.3–5.—Estimated^a Maximum Fence Line Concentration of Air Pollutants at Pantex Plant Site

POLLUTANT	AVERAGING TIME	ESL $\mu\text{g}/\text{m}^3$	MAXIMUM FENCE LINE CONCENTRATION $\mu\text{g}/\text{m}^3$
CLEAN AIR ACT LISTED AIR POLLUTANTS^b			
1,1,2-trichloroethane	Annual 30-minute	5.50×10^1 5.50×10^2	8.07×10^{-2} 1.73×10^1
1,3-butadiene - 45.4 kg (100 lb) HE	Annual 30-minute	1.10×10^1 1.10×10^2	9.09×10^{-3} 3.76
1,3-butadiene - 363 kg (800 lb) HE	Annual 30-minute	1.10×10^1 1.10×10^2	9.09×10^{-3} 3.76
2-nitropropane	Annual 30-minute	5.00 5.00×10^1	3.56×10^{-2} 8.55
Alcohols ^c	Annual 30-minute	NA 1.00×10^2	7.01×10^{-1} 1.95×10^2
Benzene	Annual 30-minute	3.00 7.50×10^1	5.47×10^{-2} 1.94×10^1
Carbon Disulfide	Annual 30-minute	3.00 3.00×10^1	9.39×10^{-2} 2.26×10^1
Carbon Tetrachloride	Annual 30-minute	1.30×10^1 1.26×10^2	8.19×10^{-2} 1.97×10^1
Chlorobenzene	Annual 30-minute	4.60×10^1 4.60×10^2	8.13×10^{-2} 1.95×10^1
Chromium - 45.4 kg (100 lb) HE	Annual 30-minute	1.00×10^{-1} 1.00	1.91×10^{-3} 9.72×10^{-2}
Chromium - 363 kg (800 lb) HE	Annual 30-minute	1.00×10^{-1} 1.00	8.00×10^{-5} 7.62×10^{-3}
Cresols	Annual 30-minute	NA 5.00	1.72×10^{-3} 4.13×10^{-1}
Cresylic Acid	Annual 30-minute	NA 5.00	2.14×10^{-3} 5.13×10^{-1}
Dibenzofurans - 45.4 kg (100 lb) HE	Annual 30-minute	NA NA	2.00×10^{-5} 9.60×10^{-4}
Dibenzofurans - 363 kg (800 lb) HE	Annual 30-minute	NA NA	0.00 ^e 8.00×10^{-5}
Dimethylformamide	Annual 30-minute	3.00×10^1 3.00×10^2	6.19×10^{-2} 2.80×10^1
Ester Glycol Ethers	Annual 30-minute	NA NA	1.50×10^{-1} 3.59×10^1
Ethyl Acetate	Annual 30-minute	1.44×10^3 1.44×10^4	6.93 1.99×10^3
Ethyl Benzene	Annual 30-minute	4.34×10^2 2.00×10^3	1.29×10^{-1} 3.11×10^1

**TABLE 4.7.1.3–5.—Estimated^a Maximum Fence Line Concentration of Air
Pollutants at Pantex Plant Site-Continued**

POLLUTANT	AVERAGING TIME	ESL μg/m ³	MAXIMUM FENCE LINE CONCENTRATION μg/m ³
Ethylene Dichloride	Annual 30-minute	4.00 1.60 x 10 ²	3.99 x 10 ⁻² 9.58
Formaldehyde - 45.4 kg (100 lb) HE	Annual 30-minute	1.50 1.50 x 10 ¹	4.03 x 10 ⁻³ 3.66 x 10 ⁻¹
Formaldehyde - 363 kg (800 lb) HE	Annual 30-minute	1.50 1.50 x 10 ¹	4.03 x 10 ⁻³ 3.66 x 10 ⁻¹
Hydrogen chloride - 45.4 kg (100 lb) HE	Annual 30-minute	1.00 x 10 ⁻¹ 7.50 x 10 ¹	8.76 x 10 ⁻² 5.98
Hydrogen chloride - 363 kg (800 lb) HE	Annual 30-minute	1.00 x 10 ⁻¹ 7.50 x 10 ¹	3.54 x 10 ⁻² 3.75
Hydrogen fluoride - 45.4 kg (100 lb) HE	3-hour 12-hour 24-hour	4.90 3.68 2.86	1.52 3.81 x 10 ⁻¹ 2.70 x 10 ⁻¹
Hydrogen fluoride - 363 kg (800 lb) HE	3-hour 12-hour 24-hour	4.90 3.68 2.86	1.07 x 10 ⁻¹ 2.67 x 10 ⁻² 2.08 x 10 ⁻²
Mercury	Annual 24-hour 30-minute	5.00 x 10 ⁻² 2.50 x 10 ⁻¹ 5.00 x 10 ⁻¹	0.00 ^e 0.00 ^e 0.00 ^e
Methanol	Annual 30-minute	2.62 x 10 ² 2.62 x 10 ³	5.75 x 10 ⁻¹ 2.45 x 10 ²
Methyl Cyanide - 45.4 kg (100 lb) HE	Annual 30-minute	NA NA	0.00 ^e 0.00 ^e
Methyl Cyanide - 363 kg (800 lb) HE	Annual 30-minute	NA NA	0.00 ^e 0.00 ^e
Methyl Ethyl Ketone	Annual 30-minute	5.90 x 10 ² 3.90 x 10 ³	5.10 1.40 x 10 ³
Methyl Isobutyl Ketone	Annual 30-minute	2.05 x 10 ² 2.05 x 10 ³	1.85 x 10 ⁻² 4.45
Methylene Chloride	Annual 30-minute	2.60 x 10 ¹ 2.60 x 10 ²	7.37 x 10 ⁻¹ 1.80 x 10 ²
Naphthalene - 45.4 kg (100 lb) HE	Annual 30-minute	5.00 x 10 ¹ 4.40 x 10 ²	1.10 x 10 ⁻⁴ 5.48 x 10 ⁻³
Naphthalene - 363 kg (800 lb) HE	Annual 30-minute	5.00 x 10 ¹ 4.40 x 10 ²	0.00 ^e 4.30 x 10 ⁻⁴
Nitrobenzene	Annual 30-minute	5.00 2.40 x 10 ¹	2.14 x 10 ⁻³ 5.13 x 10 ⁻¹
Phenol - 45.4 kg (100 lb) HE	Annual 30-minute	1.90 x 10 ¹ 1.54 x 10 ²	5.70 x 10 ⁻⁴ 2.92 x 10 ⁻²
Phenol - 363 kg (800 lb) HE	Annual 30-minute	1.90 x 10 ¹ 1.54 x 10 ²	2.00 x 10 ⁻⁵ 2.29 x 10 ⁻³

**TABLE 4.7.1.3–5.—Estimated^a Maximum Fence Line Concentration of Air
Pollutants at Pantex Plant Site-Continued**

POLLUTANT	AVERAGING TIME	ESL $\mu\text{g}/\text{m}^3$	MAXIMUM FENCE LINE CONCENTRATION $\mu\text{g}/\text{m}^3$
Tetrachloroethylene	Annual 30-minute	3.40×10^1 3.40×10^2	7.33×10^{-2} 1.76×10^1
Toluene	Annual 30-minute	1.88×10^2 1.88×10^3	1.73 5.68×10^2
Trichloroethylene	Annual 30-minute	1.35×10^2 1.35×10^3	2.12×10^{-1} 5.11×10^1
Triethylamine	Annual 30-minute	4.00 4.00×10^1	2.38×10^{-3} 1.08
Xylene	Annual 30-minute	4.34×10^2 3.70×10^3	4.74×10^{-1} 1.45×10^2
TNRCC LISTED AIR POLLUTANTS^d			
1,1,1-chloroethane	Annual 30-minute	5.00×10^1 5.00×10^2	5.28×10^{-1} 1.27×10^2
1,3,5-trinitrobenzene - 45.4 kg (100 lb) HE	Annual 30-minute	NA 2.00	0.00 ^e 3.00×10^{-5}
1,3,5-trinitrobenzene - 363 kg (800 lb) HE	Annual 30-minute	NA 2.00	0.00 ^e 0.00 ^e
1-butanol	Annual 30-minute	7.60×10^1 7.60×10^2	1.99×10^{-2} 4.79
2,4,6-trinitrotoluene - 45.4 kg (100 lb) HE	Annual 30-minute	NA 5.00	0.00 ^e 3.30×10^{-4}
2,4,6-trinitrotoluene - 363 kg (800 lb) HE	Annual 30-minute	NA 5.00	0.00 ^e 2.00×10^{-5}
2,4-dinitrotoluene - 45.4 kg (100 lb) HE	Annual 30-minute	1.50×10^{-1} 1.50×10^1	0.00 ^e 5.00×10^{-5}
2,4-dinitrotoluene - 363 kg (800 lb) HE	Annual 30-minute	1.50×10^{-1} 1.50×10^1	0.00 ^e 3.00×10^{-5}
2,6-dinitrotoluene - 45.4 kg (100 lb) HE	Annual 30-minute	NA 1.50×10^1	0.00 ^e 5.00×10^{-4}
2,6-dinitrotoluene - 363 kg (800 lb) HE	Annual 30-minute	NA 1.50×10^1	0.00 ^e 4.00×10^{-5}
2-ethoxyethanol	Annual 30-minute	NA 1.80×10^2	3.91×10^{-1} 9.42
2-nitronaphthalene - 45.4 kg (100 lb) HE	Annual 30-minute	NA 5.00×10^2	1.00×10^{-5} 4.20×10^{-4}
2-nitronaphthalene - 363 kg (800 lb) HE	Annual 30-minute	NA 5.00×10^2	0.00 ^e 2.00×10^{-5}
Acetone	Annual 30-minute	5.90×10^2 5.90×10^3	3.39 5.19×10^2

**TABLE 4.7.1.3–5.—Estimated^a Maximum Fence Line Concentration of Air
Pollutants at Pantex Plant Site-Continued**

POLLUTANT	AVERAGING TIME	ESL $\mu\text{g}/\text{m}^3$	MAXIMUM FENCE LINE CONCENTRATION $\mu\text{g}/\text{m}^3$
Acetylene - 45.4 kg (100 lb) HE	Annual 30-minute	2.66×10^3 2.66×10^4	3.33×10^{-3} 1.11
Acetylene - 363 kg (800 lb) HE	Annual 30-minute	2.66×10^3 2.66×10^4	3.33×10^{-3} 1.11
Aluminum - 45.4 kg (100 lb) HE	Annual 30-minute	5.00 5.00×10^1	1.28×10^{-3} 5.22×10^{-2}
Aluminum - 363 kg (800 lb) HE	Annual 30-minute	5.00 5.00×10^1	1.17×10^{-3} 4.94×10^{-2}
Ammonia	Annual 30-minute	1.70×10^1 1.70×10^2	2.89×10^{-2} 1.31×10^1
Barium	Annual 30-minute	5.00×10^{-1} 5.00	1.25×10^{-3} 2.93×10^{-3}
Benzo(a)anthracene - 45.4 kg (100 lb) HE	Annual 30-minute	NA 5.00×10^{-1}	1.00×10^{-5} 5.00×10^{-4}
Benzo(a)anthracene - 363 kg (800 lb) HE	Annual 30-minute	NA 5.00×10^{-1}	0.00 ^e 4.00×10^{-5}
Benzo(a)pyrene - 45.4 kg (100 lb) HE	Annual 30-minute	3.00×10^{-3} 3.00×10^{-2}	1.00×10^{-5} 4.10×10^{-4}
Benzo(a)pyrene - 363 kg (800 lb) HE	Annual 30-minute	3.00×10^{-3} 3.00×10^{-2}	0.00 ^e 2.00×10^{-5}
Bismuth	Annual 30-minute	5.00 5.00×10^2	3.00×10^{-5} 1.13×10^{-3}
Butane	Annual 30-minute	1.90×10^3 1.90×10^4	2.98×10^{-2} 1.12×10^1
Butene	Annual 30-minute	NA 1.60×10^2	2.81×10^{-1} 1.18×10^1
Calcium	Annual 30-minute	5.00 5.00×10^1	5.00×10^{-5} 1.90×10^{-3}
Chlorinated Fluorocarbon	Annual 30-minute	NA 1.80×10^4	2.90×10^{-1} 6.93×10^1
Copper	Annual 30-minute	1.00 1.00×10^1	3.08×10^{-3} 1.25×10^{-1}
Cyanogen - 45.4 kg (100 lb) HE	Annual 30-minute	2.10×10^1 2.10×10^2	1.00×10^{-5} 2.00×10^{-4}
Cyanogen - 363 kg (800 lb) HE	Annual 30-minute	2.10×10^1 2.10×10^2	0.00 ^e 2.00×10^{-5}
Cyclohexane	Annual 30-minute	3.40×10^2 1.44×10^3	3.68×10^{-1} 9.41×10^1
Cyclohexanone	Annual 30-minute	1.00×10^2 4.81×10^2	6.09×10^{-2} 1.44

**TABLE 4.7.1.3–5.—Estimated^a Maximum Fence Line Concentration of Air
Pollutants at Pantex Plant Site-Continued**

POLLUTANT	AVERAGING TIME	ESL $\mu\text{g}/\text{m}^3$	MAXIMUM FENCE LINE CONCENTRATION $\mu\text{g}/\text{m}^3$
Dioxane	Annual 30-minute	9.00×10^1 9.00×10^2	7.88×10^{-1} 3.57×10^1
Ethyl Ether	Annual 30-minute	NA 9.27×10^2	3.33×10^{-1} 7.96×10^1
Ethylene - 45.4 kg (100 lb) HE	Annual 30-minute	NA 1.17×10^3	6.04×10^{-1} 2.53×10^2
Ethylene - 363 kg (800 lb) HE	Annual 30-minute	NA 1.17×10^3	6.04×10^{-1} 2.44×10^2
Formic Acid - 45.4 kg (100 lb) HE	Annual 30-minute	9.40 9.40×10^1	0.00 ^e 8.00×10^{-5}
Formic Acid - 363 kg (800 lb) HE	Annual 30-minute	9.40 9.40×10^1	0.00 ^e 2.00×10^{-5}
Iron - 45.4 kg (100 lb) HE	Annual 30-minute	NA 5.00×10^1	4.99×10^{-2} 1.82
Iron - 363 kg (800 lb) HE	Annual 30-minute	NA 5.00×10^1	2.44×10^{-2} 1.02
Isobutane	Annual 30-minute	1.90×10^3 4.85×10^3	4.01×10^{-2} 1.39×10^1
Isobutanol	Annual 30-minute	1.52×10^2 1.52×10^3	2.27×10^{-2} 5.46
Ketene - 45.4 kg (100 lb) HE	Annual 30-minute	9.00×10^{-1} 9.00	0.00 ^e 0.00 ^e
Ketene - 363 kg (800 lb) HE	Annual 30-minute	9.00×10^{-1} 9.00	0.00 ^e 0.00 ^e
Ketone	Annual 30-minute	NA 1.00×10^2	1.39×10^{-1} 3.34×10^1
Lithium	Annual 30-minute	NA 1.00×10^1	4.00×10^{-5} 1.84×10^{-3}
Magnesium	Annual 30-minute	NA 5.00×10^1	1.05×10^{-3} 4.41×10^{-2}
Methane - 45.4 kg (100 lb) HE	Annual 30-minute	NA 3.00×10^4	7.16×10^{-1} 2.64×10^1
Methane - 363 kg (800 lb) HE	Annual 30-minute	NA 3.00×10^4	7.16×10^{-1} 2.61×10^1
N-butyl Alcohol	Annual 30-minute	7.60×10^1 7.60×10^2	1.35×10^{-1} 3.25
Non-F Listed Solvents ^f	Annual 30-minute	NA 1.00×10^1	9.40×10^{-4} 2.26×10^{-1}
Ortho-dichlorobenzene	Annual 30-minute	NA 1.50×10^3	6.36×10^{-1} 1.53×10^2

**TABLE 4.7.1.3–5.—Estimated^a Maximum Fence Line Concentration of Air
Pollutants at Pantex Plant Site-Continued**

POLLUTANT	AVERAGING TIME	ESL μg/m ³	MAXIMUM FENCE LINE CONCENTRATION μg/m ³
Propane	Annual 30-minute	1.80 x 10 ³ 1.80 x 10 ⁴	4.21 x 10 ⁻² 1.32 x 10 ¹
Propene	Annual 30-minute	NA 3.00 x 10 ⁴	3.71 x 10 ⁻¹ 1.56 x 10 ²
Pyrene - 45.4 kg (100 lb) HE	Annual 30-minute	5.00 x 10 ⁻² 5.00 x 10 ⁻¹	5.00 x 10 ⁻⁴ 1.57 x 10 ⁻³
Pyrene - 363 kg (800 lb) HE	Annual 30-minute	5.00 x 10 ⁻² 5.00 x 10 ⁻¹	0.00 ^e 9.00 x 10 ⁻⁵
Pyridine	Annual 30-minute	1.50 x 10 ¹ 6.90 x 10 ¹	3.78 x 10 ⁻¹ 9.08
Silicon	Annual 30-minute	5.00 5.00 x 10 ²	0.00 ^e 2.90 x 10 ⁻⁴
Silver	Annual 30-minute	1.00 x 10 ⁻² 1.00 x 10 ⁻¹	1.45 x 10 ⁻³ 6.22 x 10 ⁻²
Tetrahydrofuran	Annual 30-minute	5.90 x 10 ² 5.90 x 10 ³	7.55 x 10 ⁻¹ 3.42 x 10 ²
Trichlorofluoromethane	Annual 30-minute	5.62 x 10 ³ 2.80 x 10 ⁴	4.21 x 10 ⁻¹ 1.01 x 10 ²
Trichlorotrifluoroethane	Annual 30-minute	NA 7.60 x 10 ⁴	1.77 4.73 x 10 ²
Zinc	Annual 30-minute	5.00 5.00 x 10 ¹	1.32 x 10 ⁻³ 5.58 x 10 ⁻²

^aEPA Model ISCST2 was used to calculate maximum fence line concentrations.

^bHours of operations were taken into account for emissions from open burning and engine emissions for CAA listed air pollutants.

^cThe group of alcohols, while not listed in CAA, were estimated to exceed the conservative ESL used by TNRCC. Therefore, alcohols were included for more complete presentation of results.

^dHours of operation were not taken into account and emissions were modeled for an entire year of meteorological data for TNRCC listed air pollutants.

^eThe ISCST2 air quality model returns a value of 0.00 for any concentration equal to or less than 1.00 x 10⁻⁵ μg/m³ (i.e., less than one ten millionth of a part per billion or less than ten parts per quadrillion).

^fSolvents that are not listed under 40 CFR 261.33 (Hazardous Waste from Non-Specific Sources).

NA - An ESL has not been established by TNRCC.

Sources: TNRCC 1996a; CAA as amended

The maximum pollutant concentrations which were predicted to occur at 11 residences that are located near the plant boundaries are all below respective NAAQS. Appendix B presents tables of these concentrations for each of the 11 residences.

In summary, the modeling results presented in this document are the highest concentrations

predicted by the model. The modeling results suggest that existing short-term air quality may be slightly degraded on or near the boundary of Pantex Plant by alcohol emissions. However, subsequent review of specific alcohol concentrations indicates that this degradation would not occur and that the regional and long-term air quality is good.