

**Table 1.** Modeling Scenarios Used for the ISC-PRIME Consequence Analysis.

<b>Case</b>	<b>Bldg. Dimensions</b>	<b>Bldg. Ht. (m)</b>	<b>Dispersion</b>	<b>Stack Ht. (m)</b>
<b>No Building</b>	N/A	N/A	Urban	35
			Rural	35
		N/A	Urban	100
			Rural	100
<b>Squat Building</b> Stack Adjacent to NE Corner of Building	60m x 120m	34	Urban	35
			Rural	35
		50	Urban	100
			Rural	100
<b>Squat Building</b> Stack at 4xHb to NE Corner of Building	60m x 120m	34	Urban	35
			Rural	35
		50	Urban	100
			Rural	100
<b>Tall Building</b> Stack Adjacent to NE Corner of Building	30m x 30m	34	Urban	35
			Rural	35
		50	Urban	100
			Rural	100
<b>Tall Building</b> Stack at 4xHb to NE Corner of Building	30m x 30m	34	Urban	35
			Rural	35
		50	Urban	100
			Rural	100
<b>Super Squat Building</b> Stack Adjacent to NE Corner of Building	180m x 180m	34	Urban	35
			Rural	35
<b>Super Squat Building</b> Stack at 4xHb to NE Corner of Building	180m x 180m	34	Urban	35
			Rural	35

**Table 2.** Comparison of ISC3 and ISC-PRIME Modeling Results.

Case	Parameters		Modeled Concentrations ( $\mu\text{g}/\text{m}^3$ )					
			Annual H		24-Hr HSH		3-Hr HSH	
	Dispersion	Stack Ht (m)	ISC3	ISC-PRIME	ISC3	ISC-PRIME	ISC3	ISC-PRIME
No Building	Urban	35	27.1	27.1	198.8	198.8	362.4	362.4
	Rural	35	5.78	5.78	56.1	56.1	174.7	174.7
	Urban	100	3.35	3.35	22.4	22.4	58.6	58.6
	Rural	100	0.412	0.412	5.06	5.06	22.6	22.6
Squat Building - Stack adjacent to NE of building								
Hb = 34m 60m x 120m	Urban	35	232.6	286.7	1439.8	2130.1	3442.4	2938.2
	Rural	35	236.6	204.9	1574.7	1624.7	5662.6	2193.2
Hb = 50m 60m x 120m	Urban	100	4.07	8.75	30.0	62.1	62.4	120.6
	Rural	100	1.548	2.49	21.9	39.4	59.2	95.7
Squat Building - Stack at distance 4*Hb to NE of building								
Hb = 34m 60m x 120m	Urban	35	180.4	39.7	1097.4	269.3	3007.7	553.6
	Rural	35	180.7	8.88	1556.5	167.9	4292.8	483
Hb = 50m 60m x 120m	Urban	100	3.94	4.3	26.0	30.4	58.6	80.7
	Rural	100	1.41	0.541	17.3	5.62	59.2	24.3
Tall Building - Stack adjacent to NE of building								
Hb = 34m 30m x 30m	Urban	35	243.9	419.5	1508.3	3375.6	3442.4	4439.3
	Rural	35	242.5	321.4	1751.9	2375.9	5662.6	3603.1
Hb = 50m 30m x 30m	Urban	100	3.39	5.53	23.4	37.4	58.6	92.7
	Rural	100	0.423	0.522	7.53	5.75	31.3	31.1
Tall Building - Stack at distance 4*Hb to NE of building								
Hb = 34m 30m x 30m	Urban	35	150.8	38.5	1023.5	288	2780.6	652.7
	Rural	35	181.5	7.69	1556.1	75.3	4206.6	317.5
Hb = 50m 30m x 30m	Urban	100	3.39	4.51	22.7	32.3	58.6	85.1
	Rural	100	0.423	0.457	7.28	5.06	31.3	23.8
Supersquat Building - Stack adjacent to NE of building								
Hb = 34m 180m x 180m	Urban	35	244.2	182.9	1508.3	1350.9	3017.8	2244.5
	Rural	35	243.2	137.5	1761.8	1155.3	5614.5	1893.2
Supersquat Building - Stack at distance 4*Hb to NE of building								
Hb = 34m 180m x 180m	Urban	35	226.2	37.4	1154.4	235.7	3007.7	493.4
	Rural	35	240.6	11.4	1556.5	224.8	4292.8	530.7

**Table 3.** Comparison of SCREEN (Cavity) and ISC-PRIME Modeling Results.

Case	Parameters		Modeled Concentrations ( $\mu\text{g}/\text{m}^3$ )					
			Annual H		24-Hr HSH		3-Hr HSH	
	Dispersion	Stack Ht (m)	SCREEN3	ISC-PRIME	SCREEN3	ISC-PRIME	SCREEN3	ISC-PRIME
No Building	Urban	35	N/A	27.1	N/A	198.8	N/A	362.4
	Rural	35	N/A	5.78	N/A	56.1	N/A	174.7
	Urban	100	N/A	3.35	N/A	22.4	N/A	58.6
	Rural	100	N/A	0.412	N/A	5.06	N/A	22.6
Squat Building - Stack adjacent to NE of building								
Hb = 34m 60m x 120m	Urban	35	359.7	286.7	1798.4	2130.1	4046.4	2938.2
	Rural	35	953.6	204.9	4768.0	1624.7	10728.0	2193.2
Hb = 50m 60m x 120m	Urban	100	7.7	8.75	38.6	62.1	86.9	120.6
	Rural	100	8.0	2.49	39.9	39.4	89.7	95.7
Squat Building - Stack at distance 4*Hb to NE of building								
Hb = 34m 60m x 120m	Urban	35	359.7	39.7	1798.4	269.3	4046.4	553.6
	Rural	35	953.6	8.88	4768.0	167.9	10728.0	483
Hb = 50m 60m x 120m	Urban	100	7.7	4.3	38.6	30.4	86.9	80.7
	Rural	100	8.0	0.541	39.9	5.62	89.7	24.3
Tall Building - Stack adjacent to NE of building								
Hb = 34m 30m x 30m	Urban	35	359.7	419.5	1798.4	3375.6	4046.4	4439.3
	Rural	35	953.6	321.4	4768.0	2375.9	10728.0	3603.1
Hb = 50m 30m x 30m	Urban	100	7.7	5.53	38.6	37.4	86.9	92.7
	Rural	100	8.0	0.522	39.9	5.75	89.7	31.1
Tall Building - Stack at distance 4*Hb to NE of building								
Hb = 34m 30m x 30m	Urban	35	359.7	38.5	1798.4	288	4046.4	652.7
	Rural	35	953.6	7.69	4768.0	75.3	10728.0	317.5
Hb = 50m 30m x 30m	Urban	100	7.7	4.51	38.6	32.3	86.9	85.1
	Rural	100	8.0	0.457	39.9	5.06	89.7	23.8
Supersquat Building - Stack adjacent to NE of building								
Hb = 34m 180m x 180m	Urban	35	359.7	182.9	1798.4	1350.9	4046.4	2244.5
	Rural	35	953.6	137.5	4768.0	1155.3	10728.0	1893.2
Supersquat Building - Stack at distance 4*Hb to NE of building								
Hb = 34m 180m x 180m	Urban	35	359.7	37.4	1798.4	235.7	4046.4	493.4
	Rural	35	953.6	11.4	4768.0	224.8	10728.0	530.7