



## OAR 340-245-8050 Table 5 Level 1 Risk Assessment Tool Dispersion Factors

### Table 5A: Stack Emission Dispersion Factors for Annual Exposure ( $\mu\text{g}/\text{m}^3$ / pounds/year)

Stack		Exposure Location Distance (meters)											
Ht (m)	50	60	70	80	90	100	110	120	130	140	150	160	170
5	0.0033	0.0026	0.0021	0.0017	0.0014	0.0012	0.0010	0.00088	0.00076	0.00066	0.00058	0.00051	0.00046
10	0.0014	0.0012	0.0011	0.00094	0.00084	0.00075	0.00068	0.00062	0.00057	0.00052	0.00048	0.00044	0.00041
15	0.00075	0.00061	0.00054	0.00049	0.00044	0.00040	0.00037	0.00034	0.00031	0.00029	0.00027	0.00025	0.00024
20	0.00072	0.00054	0.00035	0.00031	0.00028	0.00026	0.00023	0.00022	0.00020	0.00019	0.00017	0.00016	0.00015
25	0.00050	0.00041	0.00035	0.00025	0.00019	0.00018	0.00016	0.00015	0.00014	0.00013	0.00012	0.00012	0.00011
30	0.00037	0.00030	0.00026	0.00023	0.00019	0.00013	0.00012	0.00011	0.00010	0.000096	0.000090	0.000085	0.000080
35	0.00030	0.00023	0.00019	0.00017	0.00015	0.00013	0.00011	0.000081	0.000075	0.000071	0.000068	0.000064	0.000061
40	0.00023	0.00019	0.00015	0.00013	0.00012	0.00011	0.000096	0.000081	0.000064	0.000054	0.000051	0.000049	0.000047
45	0.00018	0.00016	0.00013	0.00011	0.000095	0.000085	0.000078	0.000072	0.000063	0.000053	0.000042	0.000038	0.000037
50	0.00014	0.00013	0.00011	0.000090	0.000077	0.000068	0.000062	0.000057	0.000053	0.000048	0.000042	0.000035	0.000029

  

Stack		Exposure Location Distance (meters)											
Ht (m)	180	190	200	250	300	350	400	450	500	600	700	800	1000
5	0.00041	0.00037	0.00034	0.00023	0.00017	0.00013	0.00010	0.000084	0.000071	0.000052	0.000040	0.000032	0.000022
10	0.00038	0.00035	0.00033	0.00023	0.00017	0.00013	0.000098	0.000078	0.000064	0.000047	0.000036	0.000029	0.000021
15	0.00023	0.00021	0.00020	0.00016	0.00013	0.00010	0.000083	0.000069	0.000057	0.000041	0.000032	0.000025	0.000018
20	0.00014	0.00014	0.00013	0.00010	0.000086	0.000073	0.000062	0.000053	0.000046	0.000035	0.000027	0.000021	0.000015
25	0.00010	0.000096	0.000091	0.000072	0.000059	0.000051	0.000044	0.000039	0.000034	0.000027	0.000022	0.000018	0.000013
30	0.000075	0.000071	0.000068	0.000053	0.000044	0.000037	0.000032	0.000028	0.000025	0.000021	0.000017	0.000014	0.000010
35	0.000058	0.000055	0.000052	0.000042	0.000034	0.000029	0.000025	0.000022	0.000019	0.000016	0.000014	0.000011	0.000008
40	0.000045	0.000043	0.000041	0.000033	0.000028	0.000023	0.000020	0.000018	0.000016	0.000013	0.000011	0.000009	0.000007
45	0.000036	0.000034	0.000033	0.000027	0.000023	0.000019	0.000017	0.000015	0.000013	0.000011	0.000009	0.000008	0.000006
50	0.000027	0.000026	0.000026	0.000022	0.000019	0.000016	0.000014	0.000012	0.000011	0.000009	0.000007	0.000006	0.000005

### Table 5B: Stack Emission Dispersion Factors for 24 hour Exposure ( $\mu\text{g}/\text{m}^3$ / pounds/day)

Stack		Exposure Location Distance (meters)											
Ht (m)	50	60	70	80	90	100	110	120	130	140	150	160	170
5	8.3	7.1	6.1	5.2	4.4	3.8	3.2	2.7	2.4	2.1	1.8	1.6	1.4
10	3.8	3.4	3.1	2.8	2.6	2.4	2.2	2.1	2.0	1.8	1.7	1.6	1.5
15	1.8	1.6	1.6	1.5	1.4	1.3	1.2	1.1	1.1	1.0	0.95	0.91	0.87
20	1.6	1.3	0.91	0.86	0.82	0.77	0.73	0.69	0.65	0.62	0.59	0.56	0.54
25	0.97	0.93	0.85	0.64	0.52	0.50	0.48	0.46	0.44	0.42	0.40	0.38	0.36
30	0.62	0.59	0.57	0.55	0.49	0.34	0.32	0.31	0.30	0.29	0.28	0.27	0.26
35	0.42	0.41	0.39	0.38	0.37	0.34	0.29	0.22	0.21	0.21	0.20	0.20	0.19
40	0.30	0.29	0.28	0.28	0.27	0.26	0.25	0.22	0.17	0.15	0.15	0.15	0.14
45	0.22	0.22	0.21	0.21	0.20	0.20	0.19	0.19	0.17	0.16	0.12	0.11	0.11
50	0.16	0.16	0.16	0.16	0.16	0.15	0.15	0.14	0.14	0.13	0.12	0.10	0.082

  

Stack		Exposure Location Distance (meters)											
Ht (m)	180	190	200	250	300	350	400	450	500	600	700	800	1000
5	1.3	1.2	1.1	0.72	0.55	0.44	0.36	0.30	0.26	0.20	0.16	0.13	0.092
10	1.4	1.3	1.3	0.91	0.67	0.50	0.38	0.30	0.25	0.18	0.14	0.12	0.088
15	0.83	0.80	0.77	0.64	0.53	0.43	0.36	0.30	0.25	0.18	0.13	0.10	0.075
20	0.52	0.49	0.48	0.40	0.35	0.31	0.27	0.23	0.20	0.16	0.12	0.096	0.064
25	0.35	0.34	0.32	0.27	0.23	0.21	0.19	0.17	0.15	0.12	0.10	0.082	0.057
30	0.25	0.24	0.23	0.19	0.17	0.15	0.13	0.12	0.11	0.095	0.078	0.066	0.048
35	0.18	0.18	0.17	0.15	0.13	0.11	0.099	0.090	0.083	0.072	0.062	0.053	0.040
40	0.14	0.14	0.13	0.11	0.10	0.088	0.078	0.070	0.064	0.056	0.049	0.044	0.033
45	0.11	0.11	0.10	0.092	0.081	0.072	0.065	0.058	0.053	0.045	0.040	0.036	0.028
50	0.081	0.080	0.079	0.072	0.065	0.059	0.053	0.048	0.044	0.037	0.032	0.029	0.024

**Use of stack emission dispersion factors in a Level 1 screening risk assessment:**

For each Toxics Emissions Unit, select the appropriate stack height and distance from the stack to nearest exposure locations approved by DEQ. For each exposure location, find the corresponding annual dispersion factor in Table 5A. For each toxic air contaminant, multiply the annual toxic air contaminant emission rate (in pounds/year) by the dispersion factor. Divide the product by the RBC for all the toxic air contaminants for the appropriate exposure location in OAR 340-245-8040 Table 4. Add up the resulting ratios for all Toxic Emissions Units for each exposure location. Compare the results with the Risk Action Levels in OAR 340-245-8010 Table 1. Repeat the process for daily emission rates (in pounds/day) using Table 5B at the acute exposure location.

For a stack height between the values shown in the table, either use the next lowest stack height, or interpolate the dispersion factor. For an exposure location distance between the values shown in the table, either use the next lowest distance, or interpolate the dispersion factor. For stack heights greater than 50 meters, use the appropriate dispersion factor for 50 meters. For exposure locations greater than 1,000 meters from the stack, use the appropriate dispersion factor at 1,000 meters. In the absence of a known stack height and exposure location distance, use as a default the annual dispersion factor (0.0033  $\mu\text{g}/\text{m}^3$  / pounds/year) and daily dispersion factor (8.3  $\mu\text{g}/\text{m}^3$  / pounds/day) for a stack height of 5 meters and an exposure location distance of 50 meters.

Stat. Auth.: ORS 468.020, 468.065, 468A.025, 468A.040, 468A.050, 468A.070, 468A.155

Stats. Implemented: ORS 468.065, 468A.010, 468A.015, 468A.025, 468A.035, 468A.040, 468A.050, 468A.070, and 468A.155



## OAR 340-245-8050 Table 5 Level 1 Risk Assessment Tool Dispersion Factors

### Table 5C: Fugitive Emission Dispersion Factors for Annual Exposure ( $\mu\text{g}/\text{m}^3$ / pounds/year)

Building Area (1,000 ft <sup>2</sup> )	Building Height (ft)	Exposure Location Distance (meters)												
		50	60	70	80	90	100	110	120	130	140	150	160	170
≤3	≤20	0.0045	0.0033	0.0026	0.0020	0.0017	0.0014	0.0012	0.0010	0.00089	0.00078	0.00069	0.00062	0.00056
>3 to 6	≤20	0.0044	0.0032	0.0025	0.0020	0.0016	0.0014	0.0012	0.0010	0.00088	0.00077	0.00069	0.00061	0.00055
>3 to 6	>20	0.0041	0.0031	0.0024	0.0019	0.0016	0.0013	0.0011	0.0010	0.00086	0.00076	0.00067	0.00060	0.00054
>6 to 10	≤20	0.0044	0.0033	0.0025	0.0020	0.0017	0.0014	0.0012	0.0010	0.00088	0.00077	0.00069	0.00062	0.00055
>6 to 10	>20	0.0037	0.0028	0.0022	0.0018	0.0015	0.0013	0.0011	0.0010	0.00083	0.00074	0.00066	0.00059	0.00053
>10 to 15	≤20	0.0044	0.0033	0.0025	0.0020	0.0017	0.0014	0.0012	0.0010	0.00088	0.00077	0.00069	0.00062	0.00055
>10 to 15	>20	0.0034	0.0027	0.0021	0.0018	0.0015	0.0012	0.0011	0.00093	0.00081	0.00072	0.00064	0.00058	0.00052
>15 to 30	≤20	0.0043	0.0032	0.0025	0.0020	0.0016	0.0014	0.0012	0.0010	0.00088	0.00077	0.00069	0.00061	0.00055
>15 to 30	>20	0.0034	0.0027	0.0021	0.0018	0.0015	0.0012	0.0011	0.00093	0.00082	0.00072	0.00065	0.00058	0.00052
>30	>20	0.0022	0.0018	0.0015	0.0013	0.0011	0.0010	0.00086	0.00076	0.00068	0.00061	0.00055	0.00050	0.00046

  

Building Area (1,000 ft <sup>2</sup> )	Building Height (ft)	Exposure Location Distance (meters)												
		180	190	200	250	300	350	400	450	500	600	700	800	1000
≤3	≤20	0.00050	0.00046	0.00042	0.00029	0.00021	0.00016	0.00013	0.00010	0.000087	0.000064	0.000049	0.000039	0.000027
>3 to 6	≤20	0.00050	0.00046	0.00042	0.00028	0.00021	0.00016	0.00013	0.00010	0.000087	0.000064	0.000049	0.000039	0.000027
>3 to 6	>20	0.00049	0.00045	0.00041	0.00028	0.00021	0.00016	0.00013	0.00010	0.000087	0.000064	0.000049	0.000039	0.000027
>6 to 10	≤20	0.00050	0.00046	0.00042	0.00028	0.00021	0.00016	0.00013	0.00010	0.000087	0.000064	0.000049	0.000039	0.000027
>6 to 10	>20	0.00048	0.00044	0.00041	0.00028	0.00020	0.00016	0.00013	0.00010	0.000086	0.000064	0.000049	0.000039	0.000027
>10 to 15	≤20	0.00050	0.00046	0.00042	0.00028	0.00021	0.00016	0.00013	0.00010	0.000087	0.000064	0.000049	0.000039	0.000027
>10 to 15	>20	0.00048	0.00044	0.00040	0.00028	0.00020	0.00016	0.00012	0.00010	0.000086	0.000063	0.000049	0.000039	0.000027
>15 to 30	≤20	0.00050	0.00046	0.00042	0.00028	0.00021	0.00016	0.00013	0.00010	0.000087	0.000064	0.000049	0.000039	0.000027
>15 to 30	>20	0.00048	0.00044	0.00040	0.00028	0.00020	0.00016	0.00013	0.00010	0.000086	0.000063	0.000049	0.000039	0.000027
>30	>20	0.00042	0.00039	0.00036	0.00025	0.00019	0.00015	0.00012	0.00010	0.000083	0.000061	0.000048	0.000038	0.000027

### Table 5D: Fugitive Emission Dispersion Factors for 24 hour Exposure ( $\mu\text{g}/\text{m}^3$ / pounds/day)

Building Area (1,000 ft <sup>2</sup> )	Building Height (ft)	Exposure Location Distance (meters)												
		50	60	70	80	90	100	110	120	130	140	150	160	170
≤3	≤20	4.8	3.7	2.9	2.4	2.0	1.7	1.4	1.2	1.1	0.97	0.87	0.78	0.71
>3 to 6	≤20	4.1	3.1	2.5	2.0	1.7	1.4	1.2	1.1	0.95	0.84	0.76	0.68	0.62
>3 to 6	>20	3.5	2.8	2.2	1.9	1.6	1.3	1.2	1.0	0.90	0.80	0.72	0.65	0.59
>6 to 10	≤20	4.0	3.1	2.5	2.0	1.7	1.4	1.2	1.1	0.94	0.84	0.75	0.68	0.62
>6 to 10	>20	3.3	2.6	2.1	1.8	1.5	1.3	1.1	0.97	0.86	0.77	0.69	0.63	0.57
>10 to 15	≤20	4.0	3.1	2.4	2.0	1.7	1.4	1.2	1.1	0.94	0.84	0.75	0.68	0.62
>10 to 15	>20	2.9	2.4	2.0	1.6	1.4	1.2	1.1	0.93	0.83	0.74	0.67	0.61	0.56
>15 to 30	≤20	3.7	2.9	2.3	1.9	1.6	1.4	1.2	1.0	0.92	0.82	0.74	0.67	0.61
>15 to 30	>20	2.9	2.3	1.9	1.6	1.4	1.2	1.0	0.92	0.82	0.74	0.67	0.60	0.55
>30	>20	1.8	1.5	1.3	1.2	1.0	0.92	0.82	0.73	0.66	0.60	0.55	0.51	0.47

  

Building Area (1,000 ft <sup>2</sup> )	Building Height (ft)	Exposure Location Distance (meters)												
		180	190	200	250	300	350	400	450	500	600	700	800	1000
≤3	≤20	0.65	0.59	0.55	0.38	0.29	0.22	0.18	0.15	0.13	0.095	0.074	0.060	0.043
>3 to 6	≤20	0.57	0.52	0.48	0.33	0.25	0.20	0.16	0.13	0.11	0.083	0.065	0.053	0.038
>3 to 6	>20	0.54	0.50	0.46	0.32	0.24	0.19	0.15	0.13	0.11	0.081	0.064	0.052	0.037
>6 to 10	≤20	0.56	0.52	0.48	0.33	0.25	0.20	0.16	0.13	0.11	0.083	0.065	0.053	0.038
>6 to 10	>20	0.53	0.48	0.45	0.31	0.24	0.19	0.15	0.12	0.11	0.080	0.063	0.051	0.036
>10 to 15	≤20	0.56	0.52	0.48	0.33	0.25	0.19	0.16	0.13	0.11	0.083	0.065	0.053	0.038
>10 to 15	>20	0.51	0.47	0.43	0.31	0.23	0.18	0.15	0.12	0.10	0.078	0.062	0.050	0.035
>15 to 30	≤20	0.55	0.51	0.47	0.33	0.25	0.19	0.16	0.13	0.11	0.083	0.065	0.053	0.037
>15 to 30	>20	0.51	0.47	0.43	0.31	0.23	0.18	0.15	0.12	0.10	0.078	0.062	0.050	0.035
>30	>20	0.43	0.40	0.37	0.27	0.21	0.17	0.14	0.12	0.098	0.075	0.059	0.048	0.034

**Use of fugitive emission dispersion factors in a Level 1 screening risk assessment:**

For each Toxics Emissions Unit, select the appropriate building dimensions and distance from building to nearest exposure locations approved by DEQ. For each exposure location, find the corresponding annual dispersion factor in Table 5C. For each toxic air contaminant, multiply the annual toxic air contaminant emission rate (in pounds/year) by the dispersion factor. Divide the product by the RBC for all the toxic air contaminants for the appropriate exposure location in OAR 340-245-8040 Table 4. Add up the resulting ratios for all Toxic Emissions Units for each exposure location. Compare the results with the Risk Action Levels in OAR 340-245-8010 Table 1. Repeat the process for daily emission rates (in pounds/day) using Table 5D at the acute exposure location.

For an exposure location distance between the values shown in the table, either use the next lowest distance, or interpolate the dispersion factor. For exposure locations greater than 1,000 meters from the building, use the appropriate dispersion factor at 1,000 meters. In the absence of known building dimensions and exposure location distance, use as a default, the annual dispersion factor (0.0045  $\mu\text{g}/\text{m}^3$  / pounds/year) and daily dispersion factor (4.8  $\mu\text{g}/\text{m}^3$  / pounds/day) for a building area of ≤3,000 ft<sup>2</sup>, height of ≤20 ft, and exposure location distance of 50 meters.