

Washington State Department of Ecology - Cleanup Levels and Risk Calculation (CLARC) Vapor Intrusion Method C Table - February 2021

CAS #	Chemical Name ⁽¹⁾	Links to Important Notes click here for general VI Guidance (Implementation Memo 21)	Risk Driver for Individual Chemicals	Indoor Air Cleanup Level	Indoor Air Cleanup Level	Groundwater Screening Level	Groundwater Screening Level	Sub-Slab Soil Gas Screening Level	Sub-Slab Soil Gas Screening Level	Deep Soil Gas Screening Level	Deep Soil Gas Screening Level
				Method C Noncancer (µg/m ³)	Method C Cancer (µg/m ³)	Method C Noncancer (µg/L)	Method C Cancer (µg/L)	Method C Noncancer (µg/m ³)	Method C Cancer (µg/m ³)	Method C Noncancer (µg/m ³)	Method C Cancer (µg/m ³)
75-07-0	acetaldehyde		Noncancer	9.00E+00	1.14E+01	4.90E+03	6.20E+03	3.00E+02	3.80E+02	9.00E+02	1.10E+03
67-64-1	acetone		Noncancer	3.10E+04		3.20E+07		1.00E+06		3.10E+06	
75-05-8	acetonitrile		Noncancer	6.00E+01		7.20E+04		2.00E+03		6.00E+03	
107-02-8	acrolein		Noncancer	2.00E-02		6.40E+00		6.70E-01		2.00E+00	
107-13-1	acrylonitrile		Cancer	2.00E+00	3.68E-01	6.30E+02	1.20E+02	6.70E+01	1.20E+01	2.00E+02	3.70E+01
107-05-1	allyl chloride		Noncancer	1.00E+00	4.17E+00	3.60E+00	1.50E+01	3.30E+01	1.40E+02	1.00E+02	4.20E+02
71-43-2	benzene	IMPLEMENTATION MEMO 18 (Sect. 5.2)	Cancer	3.00E+01	3.21E+00	2.20E+02	2.40E+01	1.00E+03	1.10E+02	3.00E+03	3.20E+02
100-44-7	benzyl chloride		Cancer	1.00E+00	5.10E-01	1.20E+02	6.20E+01	3.30E+01	1.70E+01	1.00E+02	5.10E+01
108-86-1	bromobenzene		Noncancer	6.00E+01		1.40E+03		2.00E+03		6.00E+03	
75-27-4	bromodichloromethane		Cancer		6.76E-01		1.80E+01		2.30E+01		6.80E+01
593-60-2	bromoethene		Cancer	3.00E+00	1.67E+00	8.50E+00	4.70E+00	1.00E+02	5.60E+01	3.00E+02	1.70E+02
75-25-2	bromoform		Cancer		2.27E+01		2.20E+03		7.60E+02		2.30E+03
74-83-9	bromomethane		Noncancer	5.00E+00		2.80E+01		1.70E+02		5.00E+02	
106-99-0	butadiene;1,3-		Cancer	2.00E+00	8.33E-01	9.20E-01	3.80E-01	6.70E+01	2.80E+01	2.00E+02	8.30E+01
75-15-0	carbon disulfide		Noncancer	7.00E+02		8.70E+02		2.30E+04		7.00E+04	
56-23-5	carbon tetrachloride		Cancer	1.00E+02	4.17E+00	1.30E+02	5.60E+00	3.30E+03	1.40E+02	1.00E+04	4.20E+02
126-99-8	chloro-1,3-butadiene;2-		Cancer	2.00E+01	8.33E-02	1.60E+01	6.50E-02	6.70E+02	2.80E+00	2.00E+03	8.30E+00
108-90-7	chlorobenzene		Noncancer	5.00E+01		6.30E+02		1.70E+03		5.00E+03	
75-45-6	chlorodifluoromethane		Noncancer	5.00E+04		3.90E+04		1.70E+06		5.00E+06	
67-66-3	chloroform		Cancer	9.80E+01	1.09E+00	1.10E+03	1.20E+01	3.30E+03	3.60E+01	9.80E+03	1.10E+02
74-87-3	chloromethane		Noncancer	9.00E+01		3.30E+02		3.00E+03		9.00E+03	
98-82-8	cumene		Noncancer	4.00E+02		2.00E+03		1.30E+04		4.00E+04	
110-82-7	cyclohexane		Noncancer	6.00E+03		1.60E+03		2.00E+05		6.00E+05	
108-94-1	cyclohexanone		Noncancer	7.00E+02		4.50E+06		2.30E+04		7.00E+04	
96-12-8	dibromo-3-chloropropane;1,2-		Cancer	2.00E-01	4.17E-03	7.70E+01	1.60E+00	6.70E+00	1.40E-01	2.00E+01	4.20E-01
95-50-1	dichlorobenzene;1,2-		Noncancer	2.00E+02		5.50E+03		6.70E+03		2.00E+04	
106-46-7	dichlorobenzene;1,4-		Cancer	8.00E+02	2.27E+00	1.70E+04	4.90E+01	2.70E+04	7.60E+01	8.00E+04	2.30E+02
75-71-8	dichlorodifluoromethane		Noncancer	1.00E+02		9.20E+00		3.30E+03		1.00E+04	
75-34-3	dichloroethane;1,1-		Cancer		1.56E+01		1.10E+02		5.20E+02		1.60E+03
107-06-2	dichloroethane;1,2- (EDC)	IMPLEMENTATION MEMO 18 (Sect. 5.2)	Cancer	7.00E+00	9.62E-01	3.10E+02	4.20E+01	2.30E+02	3.20E+01	7.00E+02	9.60E+01
75-35-4	dichloroethylene;1,1-		Noncancer	2.00E+02		2.80E+02		6.70E+03		2.00E+04	
156-60-5	dichloroethylene;1,2-,trans		Noncancer	4.00E+01		1.70E+02		1.30E+03		4.00E+03	
78-87-5	dichloropropane;1,2-		Noncancer	4.00E+00	6.76E+00	6.10E+01	1.00E+02	1.30E+02	2.30E+02	4.00E+02	6.80E+02
542-75-6	dichloropropene;1,3-		Cancer	2.00E+01	6.25E+00	5.10E+01	1.60E+01	6.70E+02	2.10E+02	2.00E+03	6.30E+02
75-37-6	difluoroethane;1,1-		Noncancer	4.00E+04		6.40E+04		1.30E+06		4.00E+06	
123-91-1	dioxane;1,4-		Cancer	3.00E+01	5.00E+00	2.80E+05	4.70E+04	1.00E+03	1.70E+02	3.00E+03	5.00E+02
141-78-6	ethyl acetate		Noncancer	7.00E+01		2.30E+04		2.30E+03		7.00E+03	
140-88-5	ethyl acrylate		Noncancer	8.00E+00		1.10E+03		2.70E+02		8.00E+02	
75-00-3	ethyl chloride		Noncancer	1.00E+04		3.20E+04		3.30E+05		1.00E+06	
97-63-2	ethyl methacrylate		Noncancer	3.00E+02		3.10E+04		1.00E+04		3.00E+04	
100-41-4	ethylbenzene	(2)	Noncancer	1.00E+03		6.10E+03		3.30E+04		1.00E+05	
106-93-4	ethylene dibromide (EDB)		Cancer	9.00E+00	4.17E-02	6.40E+02	3.00E+00	3.00E+02	1.40E+00	9.00E+02	4.20E+00
75-21-8	ethylene oxide		Cancer	3.00E+01	8.33E-03	7.30E+03	2.00E+00	1.00E+03	2.80E-01	3.00E+03	8.30E-01
76-44-8	heptachlor		Cancer		1.92E-02		1.40E+00		6.40E-01		1.90E+00
142-82-5	heptane;n-		Noncancer	4.00E+02		8.80E+00		1.30E+04		4.00E+04	
118-74-1	hexachlorobenzene		Cancer		5.43E-02		3.10E+00		1.80E+00		5.40E+00
87-68-3	hexachlorobutadiene		Cancer		1.14E+00		8.00E+00		3.80E+01		1.10E+02
77-47-4	hexachlorocyclopentadiene		Noncancer	2.00E-01		9.20E+00		6.70E+00		2.00E+01	
67-72-1	hexachloroethane		Cancer	3.00E+01	2.27E+00	5.00E+02	3.80E+01	1.00E+03	7.60E+01	3.00E+03	2.30E+02
110-54-3	hexane;n-	(2)	Noncancer	7.00E+02		1.60E+01		2.30E+04		7.00E+04	
591-78-6	hexanone;2-		Noncancer	3.00E+01		1.60E+04		1.00E+03		3.00E+03	
7783-06-4	hydrogen sulfide		Noncancer	2.00E+00		7.10E+00		6.70E+01		2.00E+02	
7439-97-6	mercury		Noncancer	3.00E-01		1.80E+00		1.00E+01		3.00E+01	
126-98-7	methacrylonitrile		Noncancer	3.00E+01		5.30E+03		1.00E+03		3.00E+03	

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				Method C Noncancer (µg/m ³)	Method C Cancer (µg/m ³)	Method C Noncancer (µg/L)	Method C Cancer (µg/L)	Method C Noncancer (µg/m ³)	Method C Cancer (µg/m ³)	Method C Noncancer (µg/m ³)	Method C Cancer (µg/m ³)
67-56-1	methanol		Noncancer	2.00E+04		2.00E+08		6.70E+05		2.00E+06	
78-93-3	methyl ethyl ketone		Noncancer	5.00E+03		3.70E+06		1.70E+05		5.00E+05	
108-10-1	methyl isobutyl ketone		Noncancer	3.00E+03		1.00E+06		1.00E+05		3.00E+05	
80-62-6	methyl methacrylate		Noncancer	7.00E+02		1.10E+05		2.30E+04		7.00E+04	
1634-04-4	methyl tert-butyl ether (MTBE)		Cancer	3.00E+03	9.62E+01	2.70E+05	8.60E+03	1.00E+05	3.20E+03	3.00E+05	9.60E+03
74-95-3	methylene bromide		Noncancer	4.00E+00		2.10E+02		1.30E+02		4.00E+02	
75-09-2	methylene chloride		Noncancer	6.00E+02	2.50E+03	1.10E+04	4.40E+04	2.00E+04	8.30E+04	6.00E+04	2.50E+05
2385-85-5	mirex		Cancer		4.90E-03				1.60E-01		4.90E-01
91-20-3	naphthalene	IMPLEMENTATION MEMO 18 (Sect. 5.2)	Cancer	3.00E+00	7.35E-01	3.60E+02	8.90E+01	1.00E+02	2.50E+01	3.00E+02	7.40E+01
79-46-9	nitropropane;2-		Cancer	2.00E+01	4.31E-02	7.90E+03	1.70E+01	6.70E+02	1.40E+00	2.00E+03	4.30E+00
75-44-5	phosgene		Noncancer	3.00E-01		7.10E-01		1.00E+01		3.00E+01	
123-38-6	propionaldehyde		Noncancer	8.00E+00		4.40E+03		2.70E+02		8.00E+02	
103-65-1	propylbenzene;n-		Noncancer	1.00E+03		4.90E+03		3.30E+04		1.00E+05	
100-42-5	styrene		Noncancer	1.00E+03		1.80E+04		3.30E+04		1.00E+05	
630-20-6	tetrachloroethane;1,1,1,2-		Cancer		3.38E+00		7.10E+01		1.10E+02		3.40E+02
79-34-5	tetrachloroethane;1,1,2,2-		Cancer		4.31E-01		6.20E+01		1.40E+01		4.30E+01
127-18-4	TETRACHLOROETHYLENE (PCE)		Noncancer	4.00E+01	9.62E+01	1.00E+02	2.40E+02	1.30E+03	3.20E+03	4.00E+03	9.60E+03
109-99-9	tetrahydrofuran		Noncancer	2.00E+03		1.10E+06		6.70E+04		2.00E+05	
108-88-3	toluene	(2)	Noncancer	5.00E+03		3.40E+04		1.70E+05		5.00E+05	
76-13-1	trichloro-1,2,2-trifluoroethane;1,1,2-		Noncancer	5.00E+03		3.60E+02		1.70E+05		5.00E+05	
120-82-1	trichlorobenzene;1,2,4-		Noncancer	2.00E+00		8.40E+01		6.70E+01		2.00E+02	
71-55-6	trichloroethane;1,1,1-		Noncancer	5.00E+03		1.20E+04		1.70E+05		5.00E+05	
79-00-5	trichloroethane;1,1,2-		Noncancer	2.00E-01	1.56E+00	1.00E+01	7.90E+01	6.70E+00	5.20E+01	2.00E+01	1.60E+02
79-01-6	TRICHLOROETHYLENE (TCE)		Noncancer	2.00E+00	6.10E+00	8.20E+00	2.50E+01	6.70E+01	2.00E+02	2.00E+02	6.10E+02
75-69-4	trichlorofluoromethane		Noncancer	7.00E+02		2.60E+02		2.30E+04		7.00E+04	
96-18-4	trichloropropane;1,2,3-		Noncancer	3.00E-01		4.50E+01		1.00E+01		3.00E+01	
121-44-8	triethylamine		Noncancer	7.00E+00		2.10E+03		2.30E+02		7.00E+02	
526-73-8	trimethylbenzene;1,2,3-		Noncancer	6.00E+01		9.10E+02		2.00E+03		6.00E+03	
95-63-6	trimethylbenzene;1,2,4-		Noncancer	6.00E+01		5.20E+02		2.00E+03		6.00E+03	
108-67-8	trimethylbenzene;1,3,5-		Noncancer	6.00E+01		3.70E+02		2.00E+03		6.00E+03	
108-05-4	vinyl acetate		Noncancer	2.00E+02		1.70E+04		6.70E+03		2.00E+04	
75-01-4	vinyl chloride		Cancer	1.00E+02	2.84E+00	1.20E+02	3.40E+00	3.30E+03	9.50E+01	1.00E+04	2.80E+02
1330-20-7	xylenes	(2); IMPLEMENTATION MEMO 18 (Sect. 5.2)	Noncancer	1.00E+02		7.10E+02		3.30E+03		1.00E+04	
None	TPH - Generic cleanup level	IMPLEMENTATION MEMO 18 (Sect. A.2)		1.40E+02				4.70E+03		1.40E+04	
None	TPH - Site-specific	IMPLEMENTATION MEMO 18 (Sect. B.1)									

Notes:

(1) Chemicals on the VI table have been identified as being sufficiently volatile (i.e., Henry's law > 1E-05 atm-m³/mol or a vapor pressure > 1 mmHg) and toxic under the VI pathway at a groundwater-soil system temperature of 13° Celsius. This list does not include every chemical that could potentially contaminate soil gas and indoor air. As such, on a site-specific basis, Ecology may identify circumstances where it becomes necessary to consider the volatility and toxicity of other chemicals not included on this list.

(2) For this petroleum related compound, where non-cancer effects drive the cleanup level, the non-cancer based indoor air cleanup level and corresponding groundwater and soil gas screening levels only apply when the compound is found to be present at the site on its own, and not part of a petroleum mixture. Cumulative non-cancer effects must be accounted for when addressing releases of petroleum mixtures that contain any petroleum related compound with non-cancer based cleanup levels.