

**Atlantic RBCA - Human Health-Based Tier II Pathway-Specific Standards (PSS) for Soil - Residential / Parkland Land Use (mg/kg)**

Land Use	Residential / Parkland								
	Pathway	Soil Contact / Ingestion		Inhalation of Indoor Air			Leaching to Potable Groundwater		
		Parameter	Fine / Coarse	Reference	Fine	Coarse	Reference	Fine	Coarse
<b>Inorganic Parameters</b>									
Aluminum		15 400	USEPA, 2019 [5]	-	-		-	-	
Antimony		7.5	MOECC, 2011	-	-		-	-	
Arsenic		31	CCME [4]	-	-		10	10	BC CSR Schedule 3.1
Barium		6800	CCME	-	-		350	350	BC CSR Schedule 3.1
Beryllium		75	CCME	-	-		1 [10]	1 [10]	BC CSR Schedule 3.1
Boron (Total)		4300	MOECC, 2011	-	-		-	-	
Boron (mg/L in saturated paste extract)		7500	AEP, 2019	-	-		65	118	AEP, 2019
Cadmium		14	CCME	-	-		1 [10]	1 [10]	BC CSR Schedule 3.1
Chromium (hexavalent)		160	MOECC, 2011	-	-		60	60	BC CSR Schedule 3.1
Chromium (total)		220	CCME	-	-		>1 000 000	>1 000 000	BC CSR Schedule 3.1
Cobalt		22	MOECC, 2011	-	-		25	25	BC CSR Schedule 3.1
Copper		1100	CCME	-	-		250 [10]	250 [10]	BC CSR Schedule 3.1
Cyanide		29	CCME	-	-		6.5	6.5	BC CSR Schedule 3.1
Iron		11 000	USEPA, 2019 [5]	-	-		-	-	
Lead		140	CCME	-	-		120	120	BC CSR Schedule 3.1
Manganese		360	USEPA, 2019 [5]	-	-		2000	2000	BC CSR Schedule 3.1
Mercury (total)		6.6	CCME	-	-		-	-	
Molybdenum		110	MOECC, 2011	-	-		15	15	BC CSR Schedule 3.1
Nickel		200	CCME	-	-		70 [10]	70 [10]	BC CSR Schedule 3.1
Selenium		80	CCME	-	-		1	1	BC CSR Schedule 3.1
Silver		77	MOECC, 2011	-	-		-	-	
Strontium		9400	USEPA, 2019 [5]	-	-		-	-	
Thallium		1	CCME	-	-		-	-	
Tin		9400	USEPA, 2019 [5]	-	-		-	-	
Uranium		23	CCME	-	-		30	30	BC CSR Schedule 3.1
Vanadium		39	MOECC, 2011	-	-		100	100	BC CSR Schedule 3.1
Zinc		10 000	CCME	-	-		200 [10]	200 [10]	BC CSR Schedule 3.1
<b>General Chemistry Parameters</b>									
Chloride		>1 000 000	BC CSR Schedule 3.1	-	-		100	100	BC CSR Schedule 3.1
Sodium		>1 000 000	BC CSR Schedule 3.1	-	-		15 000	15 000	BC CSR Schedule 3.1
<b>Petroleum Hydrocarbons (PHC) Parameters</b>									
Benzene		180	ARBCA, 2021	0.49	0.021	ARBCA, 2021	0.094	0.042	ARBCA, 2021
Toluene		900	ARBCA, 2021	>RES	47	ARBCA, 2021	0.74	0.35	ARBCA, 2021
Ethylbenzene		2000	ARBCA, 2021	>RES	60	ARBCA, 2021	0.089	0.043	ARBCA, 2021
Xylene		1200	ARBCA, 2021	120	4.9	ARBCA, 2021	1.5	0.73	ARBCA, 2021
Modified TPH (Gas)		15 000	ARBCA, 2021	>RES	75	ARBCA, 2021	1,900	940	ARBCA, 2021
Modified TPH (Fuel)		8600	ARBCA, 2021	>RES	320	ARBCA, 2021	4700	1800	ARBCA, 2021
Modified TPH (Lube)		14 000	ARBCA, 2021	>RES	1800	ARBCA, 2021	>RES	15 000	ARBCA, 2021
MTBE		380	AEP, 2019	1.1	0.046	AEP, 2019	0.044	0.062	AEP, 2019

**Atlantic RBCA - Human Health-Based Tier II Pathway-Specific Standards (PSS) for Soil - Residential / Parkland Land Use (mg/kg)**

Land Use	Residential / Parkland							
Pathway	Soil Contact / Ingestion		Inhalation of Indoor Air			Leaching to Potable Groundwater		
Parameter	Fine / Coarse	Reference	Fine	Coarse	Reference	Fine	Coarse	Reference
<b>Polycyclic Aromatic Hydrocarbons (PAH) Parameters</b>								
<b>Non-Carcinogenic PAH Compounds</b>								
Naphthalene	1800	AEP, 2019	51	2.2	AEP, 2019	28	53	AEP, 2019
1 - Methylnaphthalene	72	MOECC, 2011 [9]	-	-		42	30	MOECC, 2011 [9]
2 - Methylnaphthalene		MOECC, 2011 [9]	-	-				MOECC, 2011 [9]
Acenaphthene	5300	AEP, 2019	99 000	3900	AEP, 2019	NGR	NGR	AEP, 2019
Acenaphthylene	78	MOECC, 2011 [4]	33	4.5	MOECC, 2011 [4]	32	23	MOECC, 2011 [4]
Anthracene	24 000	AEP, 2019	NGR	670 000	AEP, 2019	NGR	NGR	AEP, 2019
Fluoranthene	3500	AEP, 2019	NGR	48 0000	AEP, 2019	NGR	NGR	AEP, 2019
Fluorene	2700	AEP, 2019	220,000	8600	AEP, 2019	NGR	NGR	AEP, 2019
Phenanthrene	-		-	-		24	17	MOECC, 2011
Pyrene	2100	AEP, 2019	NGR	730 000	AEP, 2019	NGR	NGR	AEP, 2019
<b>Carcinogenic PAH Compounds</b>								
<b>BaP Total Potency Equivalents</b>	5.3	CCME	NGR	NGR	AEP, 2019	IACR<1.0	IACR<1.0	CCME
Benz[a]anthracene	-		-	-		6.4	12	AEP, 2019
Benzo[a]pyrene	-		-	-		7.0	14	AEP, 2019
Benzo[b,j,k]fluoranthene isomers	-		-	-		0.64	1.2	AEP, 2019
Benzo[g,h,i]perylene	-		-	-		130	250	AEP, 2019
Chrysene	-		-	-		40	78	AEP, 2019
Dibenz[a,h]anthracene	-		-	-		4.4	8.8	AEP, 2019
Indeno[1,2,3-c,d]pyrene	-		-	-		51	98	AEP, 2019
<b>Volatile Organic Compound (VOC) Parameters</b>								
Bromodichloromethane	130	MOECC, 2011 [4]	-	-		1.9	1.5	MOECC, 2011
Bromoform	1000	MOECC, 2011 [4]	2.6	2.7	MOECC, 2011 [4]	2.9	2.3	MOECC, 2011
<b>Bromomethane*</b>	20	BC CSR Schedule 3.1	0.0034	0.00034	MOECC, 2011	0.1	0.097	MOECC, 2011
<b>Carbon Tetrachloride (Tetrachloromethane)*</b>	27	AEP, 2019	0.013	0.00057	AEP, 2019	0.037	0.062	AEP, 2019
Chlorobenzene	16 000	AEP, 2019	0.39	0.018	AEP, 2019	0.61	1.1	AEP, 2019
Chloroethane	-		-	-		-	-	
Chloroform	72	AEP, 2019	0.22	0.011	AEP, 2019	0.53	0.88	AEP, 2019
Chloromethane	-		-	-		-	-	
Dibromochloromethane	760	AEP, 2019	7.8	0.27	AEP, 2019	0.91	1.5	AEP, 2019
1,2-Dichlorobenzene	16 000	AEP, 2019	230	10	AEP, 2019	0.097	0.18	AEP, 2019
1,3-Dichlorobenzene	420	MOECC, 2011	-	-	MOECC, 2011	34	24	MOECC, 2011
1,4-Dichlorobenzene	4200	AEP, 2019	14	0.67	AEP, 2019	0.051	0.098	AEP, 2019
1,1-Dichloroethane	8500	BC CSR Schedule 3.1	31	3.5	MOECC, 2011	0.6	0.47	MOECC, 2011
<b>1,2-Dichloroethane*</b>	2800	AEP, 2019	0.055	0.0027	AEP, 2019	0.025	0.041	AEP, 2019
<b>1,1-Dichloroethylene*</b>	110	ARBCA, 2021	0.93	0.039	ARBCA, 2021	0.38	0.17	ARBCA, 2021

**Atlantic RBCA - Human Health-Based Tier II Pathway-Specific Standards (PSS) for Soil - Residential / Parkland Land Use (mg/kg)**

Land Use	Residential / Parkland								
	Pathway	Soil Contact / Ingestion		Inhalation of Indoor Air			Leaching to Potable Groundwater		
		Parameter	Fine / Coarse	Reference	Fine	Coarse	Reference	Fine	Coarse
	<b>cis-1,2-Dichloroethylene*</b>	74	ARBCA, 2021	0.52	0.019	ARBCA, 2021	1.0	0.42	ARBCA, 2021
	<b>trans-1,2-Dichloroethylene*</b>	740	ARBCA, 2021	0.56	0.02	ARBCA, 2021	1.4	0.58	ARBCA, 2021
	1,2-Dichloropropane	600	BC CSR Schedule 3.1	0.085	0.01	MOECC, 2011	0.74	0.54	MOECC, 2011
	1,3-Dichloropropene	1000	BC CSR Schedule 3.1	0.83	0.27	MOECC, 2011 [4]	0.81	0.59	MOECC, 2011 [4]
	<b>Ethylene Dibromide*</b>	2.2	MOECC, 2011 [4]	0.0054	0.014	MOECC, 2011 [4]	0.0062	0.0048	MOECC, 2011
	Methylene Chloride (Dichloromethane)	990	AEP, 2019	16	0.71	AEP, 2019	0.21	0.32	AEP, 2019
	Styrene	2500	MOECC, 2011	19	16	MOECC, 2011	66	47	MOECC, 2011
	1,1,1,2-Tetrachloroethane	250	BC CSR Schedule 3.1	0.46	0.58	MOECC, 2011 [4]	0.2	0.15	MOECC, 2011
	1,1,1,2,2-Tetrachloroethane	35	BC CSR Schedule 3.1	0.096	0.045	MOECC, 2011 [4]	0.19	0.14	MOECC, 2011
	<b>Tetrachloroethylene*</b>	170	ARBCA, 2021	0.39	0.016	ARBCA, 2021	0.57	0.27	ARBCA, 2021
	1,1,1-Trichloroethane	85 000	BC CSR Schedule 3.1	3.4	0.38	MOECC, 2011	27	20	MOECC, 2011
	1,1,2-Trichloroethane	150	BC CSR Schedule 3.1	0.18	0.3	MOECC, 2011 [4]	0.73	0.54	MOECC, 2011
	<b>Trichloroethylene*</b>	54	ARBCA, 2021	0.02	0.00081	ARBCA, 2021	0.13	0.061	ARBCA, 2021
	<b>Vinyl Chloride*</b>	31	ARBCA, 2021	0.0087	0.00031	ARBCA, 2021	0.060	0.021	ARBCA, 2021
<b>Pesticides</b>									
	Aldicarb	22	AEP, 2019	-	-		0.041	0.065	AEP, 2019
	Aldrin	3.4	AEP, 2019	-	-		5.9	11	AEP, 2019
	Atrazine	11	AEP, 2019	-	-		0.10	0.19	AEP, 2019
	Azinphos-methyl	55	AEP, 2019	-	-		0.41	0.75	AEP, 2019
	Bendiocarb	89	AEP, 2019	-	-		0.14	0.21	AEP, 2019
	Bromoxynil	11	AEP, 2019	-	-		0.18	0.35	AEP, 2019
	Carbaryl	220	AEP, 2019	-	-		1.9	3.6	AEP, 2019
	Carbofuran	220	AEP, 2019	-	-		0.68	1.2	AEP, 2019
	Chlorothalonil	330	AEP, 2019	-	-		27	53	AEP, 2019
	Chlorpyrifos	220	AEP, 2019	-	-		49	95	AEP, 2019
	Cyanazine	29	AEP, 2019	-	-		0.12	0.21	AEP, 2019
	2,4-D	220	AEP, 2019	-	-		0.43	0.67	AEP, 2019
	DDT	220	AEP, 2019	-	-		5900	11,000	AEP, 2019
	Diazinon	44	AEP, 2019	-	-		2.2	4.2	AEP, 2019
	Dicamba	280	AEP, 2019	-	-		0.5	0.79	AEP, 2019
	Dichlorop-methyl	22	AEP, 2019	-	-		NGR	NGR	AEP, 2019
	Dieldrin	3.4	AEP, 2019	-	-		0.59	1.1	AEP, 2019
	Dimethoate	44	AEP, 2019	-	-		0.077	0.12	AEP, 2019
	Dinoseb	22	AEP, 2019	-	-		2.8	5.5	AEP, 2019
	Diquat	180	AEP, 2019	-	-		11	21	AEP, 2019
	Diuron	350	AEP, 2019	-	-		1.9	3.5	AEP, 2019

**Atlantic RBCA - Human Health-Based Tier II Pathway-Specific Standards (PSS) for Soil - Residential / Parkland Land Use (mg/kg)**

Land Use	Residential / Parkland								
	Pathway	Soil Contact / Ingestion		Inhalation of Indoor Air			Leaching to Potable Groundwater		
		Parameter	Fine / Coarse	Reference	Fine	Coarse	Reference	Fine	Coarse
Endosulfan		210	AEP, 2019	-	-		99	190	AEP, 2019
Endrin		10	AEP, 2019	-	-		2.4	4.7	AEP, 2019
Glyphosate		670	AEP, 2019	-	-		0.95	1.4	AEP, 2019
Heptachlor		0.46	AEP, 2019	0.21	0.012	AEP, 2019	0.039	0.076	AEP, 2019
Lindane		6.7	AEP, 2019	-	-		0.31	0.6	AEP, 2019
Linuron		44	AEP, 2019	-	-		0.56	1.1	AEP, 2019
Malathion		440	AEP, 2019	-	-		0.82	1.3	AEP, 2019
MCPA		460	AEP, 2019	-	-		0.42	0.66	AEP, 2019
Methoxychlor		3500	AEP, 2019	-	-		NGR	NGR	AEP, 2019
Metolachlor		110	AEP, 2019	-	-		1.3	2.4	AEP, 2019
Metribuzin		180	AEP, 2019	-	-		7.8	15	AEP, 2019
Paraquat		22	AEP, 2019	-	-		1.1	2.2	AEP, 2019
Parathion		110	AEP, 2019	-	-		7.2	14	AEP, 2019
Phorate		4.4	AEP, 2019	-	-		0.075	0.14	AEP, 2019
Picloram		440	AEP, 2019	-	-		0.64	0.94	AEP, 2019
Simazine		29	AEP, 2019	-	-		0.14	0.25	AEP, 2019
Tebuthiuron		1600	AEP, 2019	-	-		2.5	3.7	AEP, 2019
Terbufos		1.1	AEP, 2019	-	-		0.08	0.15	AEP, 2019
Toxaphene		4.8	AEP, 2019	3100	170	AEP, 2019	3.3	6.3	AEP, 2019
Triallate		290	AEP, 2019	-	-		16	31	AEP, 2019
Trifluralin		110	AEP, 2019	-	-		NGR	NGR	AEP, 2019
<b>PFAS Substances</b>									
Perfluorooctanoic acid (PFOA)		0.70 [8]	HC, 2019	-	-		-	-	
Perfluorooctane sulfonate (PFOS)		2.1 [8]	HC, 2019	-	-		0.35	0.35	BC CSR Schedule 3.1
Perfluorobutanoate (PFBA)		114	HC, 2019	-	-		-	-	
Perfluorobutane sulfonate (PFBS)		61	HC, 2019	-	-		-	-	
Perfluorohexanesulfonate (PFHxS)		2.3	HC, 2019	-	-		-	-	
Perfluoropentanoate (PFPeA)		0.8	HC, 2019	-	-		-	-	
Perfluorohexanoate (PFHxA)		0.8	HC, 2019	-	-		-	-	
Perfluoroheptanoate (PFHpA)		0.8	HC, 2019	-	-		-	-	
Perfluorononanoate (PFNA)		0.08	HC, 2019	-	-		-	-	
<b>Other Parameters</b>									
Polychlorinated Biphenyl (Total PCB)		22	AEP, 2019	190	31	MOECC, 2011 [4]	1100	770	MOECC, 2011
Dioxins and Furans (TEQ) (mg TEQ/kg)		0.000004	CCME	0.017	0.0028	MOECC, 2011	0.0026	0.0018	MOECC, 2011
Pentachlorophenol (PCP)		93	CCME	66 000	66 000	CCME	7.6	7.6	CCME
Organotins - Tributyltin		3.8	USEPA, 2019 [5]	-	-		-	-	
Ethylene Glycol		73 000	AEP, 2019	NGR	86 000	AEP, 2019	60	68	AEP, 2019

**Atlantic RBCA - Human Health-Based Tier II Pathway-Specific Standards (PSS) for Soil - Residential / Parkland Land Use (mg/kg)**

Land Use	Residential / Parkland							
	Soil Contact / Ingestion		Inhalation of Indoor Air			Leaching to Potable Groundwater		
Parameter	Fine / Coarse	Reference	Fine	Coarse	Reference	Fine	Coarse	Reference
Propylene Glycol	-		-	-		-	-	
Phenol	1900	CCME	500	500	CCME	3.8	3.8	CCME

Notes:

[1] All values are in units of mg/kg unless otherwise noted.

[2] "-" indicates no guideline available; >RES means no soil criteria are shown as residual soil saturation limits may be exceeded; IACR means the CCME Index of Additive Cancer Risk for carcinogenic PAHs.

[3] When evaluating human contact with sediments, dry weight chemical concentrations in sediment should be evaluated against the soil quality guidelines for Soil Contact/Ingestion only.

[4] Value has been adjusted from its original jurisdictional value, to reflect a  $1 \times 10^{-05}$  Target Cancer Risk Level.

[5] Original USEPA value has been divided by 5 to adjust from a target hazard quotient of 1.0 to a target hazard quotient of 0.2.

[6] Benzo(a)pyrene (BaP) Total Potency Equivalents (TPE) are to be calculated following the methodology shown in "Canadian Council of Ministers of the Environment, 2010 Canadian soil quality guidelines for the protection of environmental and human health: Carcinogenic and Other PAHs."

[7] Dioxins and Furans Toxic Equivalents (TEQ), are to be calculated following the methodology shown in "Canadian Council of Ministers of the Environment. 2002. Canadian soil quality guidelines for the protection of environmental and human health: Dioxins and Furans".

[8] When PFOS and PFOA co-occur in soil or groundwater, it is recommended that both chemicals be considered together when comparing to screening values. Refer to Health Canada's "Summary Table: Health Canada Draft Guidelines, Screening Values and Toxicological Reference Values (TRVs) for Perfluoroalkyl Substances (PFAS). May, 2019." for specific guidance on calculating PFOS/PFOA ratios and hazard indices.

[9] The guideline is applicable to both 1-methylnaphthalene and 2-methylnaphthalene isomers. If both isomers are detected, the sum of the two must not exceed the guideline.

[10] The BC CSR Schedule 3.1 value is pH-dependent. The lowest value from Schedule 3.1 is presented.

\* Indicates the derived guideline value is below currently achievable analytical RDLs (the value is not reliably attainable with current analytical methods). For sites where VOCs are identified as a contaminant of potential concern and where the indoor air guidelines are not achievable for the VOC parameters (parent and associated daughter products), soil vapour or subslab vapour testing is required to determine potential exposures. In any such testing program, the site professional must consult with and abide by the guidance provided in ARBCA (2021), with respect to CVOCs, and the Atlantic RBCA Guidance for Vapour Intrusion Assessments posted at: [www.atlanticrbc.com/technical-documents/](http://www.atlanticrbc.com/technical-documents/).