

Atlantic RBCA - Human Health-Based Tier II Pathway-Specific Standards (PSS) for Groundwater - Commercial Land Use (µg/L)

Land Use	Commercial					
	Pathway	Potable Groundwater Drinking Water		Vapour Migration from Groundwater to Indoor Air		
		Parameter	Fine / Coarse	Reference	Fine	Coarse
<b>Inorganic Parameters</b>						
Aluminum	100		HC, 2019 (OG)	-	-	
Antimony	6		HC, 2019	-	-	
Arsenic	10		HC, 2019 (ALARA)	-	-	
Barium	1000		HC, 2019	-	-	
Beryllium	4		MOECC, 2011	-	-	
Boron	5000		HC, 2019	-	-	
Cadmium	5		HC, 2019	-	-	
Chromium (hexavalent)	50		HC, 2019	-	-	
Chromium (total)	50		HC, 2019	-	-	
Cobalt	3.8		MOECC, 2011	-	-	
Copper	2000		HC, 2019 (MAC)	-	-	
Cyanide	200		HC, 2019	-	-	
Iron	300		HC, 2019 (AO)	-	-	
Lead	5		HC, 2019 (ALARA)	-	-	
Manganese	120		HC, 2019	-	-	
Mercury (total)	1		HC, 2019	-	-	
Molybdenum	70		MOECC, 2011	-	-	
Nickel	100		MOECC, 2011	-	-	
Selenium	50		HC, 2019	-	-	
Silver	Not required		HC, 2019	-	-	
Strontium	2400		USEPA, 2019 [5]	-	-	
Thallium	2		MOECC, 2011	-	-	
Tin	2400		USEPA, 2019 [5]	-	-	
Uranium	20		HC, 2019	-	-	
Vanadium	6.2		MOECC, 2011	-	-	
Zinc	5000		HC, 2019 (AO)	-	-	
<b>General Chemistry Parameters</b>						
Chloride	250 000		HC, 2019 (AO)	-	-	
Sodium	200 000		HC, 2019 (AO)	-	-	
<b>Petroleum Hydrocarbons (PHC) Parameters</b>						
Benzene	5		ARBCA, 2021	32 000	6300	ARBCA, 2021
Toluene	24		ARBCA, 2021	>Sol	>Sol	ARBCA, 2021
Ethylbenzene	1.6		ARBCA, 2021	>Sol	>Sol	ARBCA, 2021
Xylene	20		ARBCA, 2021	>Sol	>Sol	ARBCA, 2021
Modified TPH (Gas)	4400		ARBCA, 2021	> Sol	>Sol	ARBCA, 2021
Modified TPH (Fuel)	3200		ARBCA, 2021	> Sol	>Sol	ARBCA, 2021
Modified TPH (Lube)	7800		ARBCA, 2021	> Sol	> Sol	ARBCA, 2021
MTBE	15		HC, 2019 (AO)	40,000	4300	AEP, 2019
<b>Polycyclic Aromatic Hydrocarbons (PAH) Parameters</b>						
<b>Non-Carcinogenic PAH Compounds</b>						
Naphthalene	470		AEP, 2019	NGR	7000	AEP, 2019
1 - Methylanthralene	12		MOECC, 2011	-	-	MOECC, 2011
2 - Methylanthralene	12		MOECC, 2011	-	-	MOECC, 2011
Acenaphthene	1400		AEP, 2019	NGR	NGR	AEP, 2019
Acenaphthylene	4.5		MOECC, 2011 [4]	17 000	7500	MOECC, 2011 [4]
Anthracene	NGR		AEP, 2019	NGR	NGR	AEP, 2019
Fluoranthene	NGR		AEP, 2019	NGR	NGR	AEP, 2019
Fluorene	940		AEP, 2019	NGR	NGR	AEP, 2019
Phenanthrene	-		AEP, 2019	-	-	AEP, 2019
Pyrene	710		AEP, 2019	NGR	NGR	AEP, 2019
<b>Carcinogenic PAH Compounds</b>						
BaP Total Potency Equivalents	0.04		HC, 2019	-	-	
Benz[a]anthracene	-			-	-	
Benzo[a]pyrene	0.04		HC, 2019	-	-	
Benzo[b,j,k]fluoranthene isomers	-			-	-	
Benzo[g,h,i]perylene	-			-	-	
Chrysene	-			-	-	
Dibenz[a,h]anthracene	-			-	-	
Indeno[1,2,3-c,d]pyrene	-			-	-	
<b>Volatile Organic Compound (VOC) Parameters</b>						
Bromodichloromethane	100		HC, 2019	-	-	
Bromoform	100		HC, 2019	130 000	84 000	MOECC, 2011 [4]
Bromomethane	51		BC CSR Schedule 3.2	230	33	MOECC, 2011
Carbon Tetrachloride (Tetrachloromethane)	2		HC, 2019	80	6.9	AEP, 2019
Chlorobenzene	80		HC, 2019	2200	180	AEP, 2019

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Chloroethane	-	-	-	-	-	-
Chloroform	80	-	AEP, 2019	3500	380	AEP, 2019
Chloromethane	38	-	USEPA, 2019 [5]	-	-	-
Dibromochloromethane	190	-	AEP, 2019	250 000	10 000	AEP, 2019
1,2-Dichlorobenzene	200	-	HC, 2019	NGR	64 000	AEP, 2019
1,3-Dichlorobenzene	59	-	MOECC, 2011	-	-	-
1,4-Dichlorobenzene	5	-	HC, 2019	32 000	2600	AEP, 2019
1,1-Dichloroethane	3700	-	BC CSR Schedule 3.2	44 000	6600	MOECC, 2011
1,2-Dichloroethane	5	-	HC, 2019	1200	130	AEP, 2019
1,1-Dichloroethylene	14	-	ARBCA, 2021	27 000	5600	ARBCA, 2021
cis-1,2-Dichloroethylene	70	-	ARBCA, 2021	23 000	4600	ARBCA, 2021
trans-1,2-Dichloroethylene	100	-	ARBCA, 2021	25 000	4900	ARBCA, 2021
1,2-Dichloropropane	9.9	-	BC CSR Schedule 3.2	2000	330	MOECC, 2011
1,3-Dichloropropene	6.7	-	BC CSR Schedule 3.2	610	100	MOECC, 2011
Ethylene Dibromide	0.34	-	BC CSR Schedule 3.2	120	51	MOECC, 2011 [4]
Methylene Chloride (Dichloromethane)	50	-	HC, 2019	410 000	43 000	AEP, 2019
Styrene	100	-	MOECC, 2011	160 000	26 000	MOECC, 2011
1,1,1,2- Tetrachloroethane	26	-	BC CSR Schedule 3.2	3800	660	MOECC, 2011 [4]
1,1,1,2-Tetrachloroethane	3.4	-	BC CSR Schedule 3.2	2100	630	MOECC, 2011 [4]
Tetrachloroethylene	10	-	ARBCA, 2021	5900	1200	ARBCA, 2021
1,1,1-Trichloroethane	10 000	-	BC CSR Schedule 3.2	95 000	13 000	MOECC, 2011
1,1,2-Trichloroethane	12	-	BC CSR Schedule 3.2	4100	910	MOECC, 2011 [4]
Trichloroethylene	5	-	ARBCA, 2021	540	110	ARBCA, 2021
Vinyl Chloride	2	-	ARBCA, 2021	470	99	ARBCA, 2021
<b>Pesticides</b>						
Aldicarb	-	-	-	-	-	-
Aldrin	-	-	-	-	-	-
Atrazine	5	-	HC, 2019	-	-	-
Azinphos-methyl	20	-	HC, 2019	-	-	-
Bendiocarb	40	-	AEP, 2019	-	-	-
Bromoxynil	5	-	HC, 2019	-	-	-
Carbaryl	90	-	HC, 2019	-	-	-
Carbofuran	90	-	HC, 2019	-	-	-
Chlorothalonil	140	-	AEP, 2019	-	-	-
Chlorpyrifos	90	-	HC, 2019	-	-	-
Cyanazine	10	-	AEP, 2019	-	-	-
2,4-D	100	-	HC, 2019	-	-	-
DDT	93	-	AEP, 2019	-	-	-
Diazinon	20	-	HC, 2019	-	-	-
Dicamba	120	-	HC, 2019	-	-	-
Dichlorfop-methyl	-	-	-	-	-	-
Dieldrin	-	-	-	-	-	-
Dimethoate	20	-	HC, 2019	-	-	-
Dinoseb	-	-	-	-	-	-
Diquat	70	-	HC, 2019	-	-	-
Diuron	150	-	HC, 2019	-	-	-
Endosulfan	57	-	AEP, 2019	-	-	-
Endrin	2.8	-	AEP, 2019	-	-	-
Glyphosate	280	-	HC, 2019	-	-	-
Heptachlor	0.052	-	AEP, 2019	51	2	AEP, 2019
Lindane	2.8	-	AEP, 2019	-	-	-
Linuron	19	-	AEP, 2019	-	-	-
Malathion	190	-	HC, 2019	-	-	-
MCPA	100	-	HC, 2019	-	-	-
Methoxychlor	-	-	-	-	-	-
Metolachlor	50	-	HC, 2019	-	-	-
Metribuzin	80	-	HC, 2019	-	-	-
Paraquat	10	-	HC, 2019	-	-	-
Parathion	-	-	-	-	-	-
Phorate	2	-	HC, 2019	-	-	-
Picloram	190	-	HC, 2019	-	-	-
Simazine	10	-	HC, 2019	-	-	-
Tebuthiuron	660	-	AEP, 2019	-	-	-
Terbufos	1	-	HC, 2019	-	-	-
Toxaphene	0.43	-	AEP, 2019	75 000	2900	AEP, 2019
Triallate	120	-	AEP, 2019	-	-	-

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Trifluralin		45	HC, 2019	-	-	
<b>PFAS Substances</b>						
Perfluorooctanoic acid (PFOA)		0.2 [7]	HC, 2019	-	-	
Perfluorooctane sulfonate (PFOS)		0.6 [7]	HC, 2019	-	-	
Perfluorobutanoate (PFBA)		30	HC, 2019	-	-	
Perfluorobutane sulfonate (PFBS)		15	HC, 2019	-	-	
Perfluorohexanesulfonate (PFHxS)		0.6	HC, 2019	-	-	
Perfluoropentanoate (PFPeA)		0.2	HC, 2019	-	-	
Perfluorohexanoate (PFHxA)		0.2	HC, 2019	-	-	
Perfluoroheptanoate (PFHpA)		0.2	HC, 2019	-	-	
Perfluorononanoate (PFNA)		0.02	HC, 2019	-	-	
<b>Other Parameters</b>						
Polychlorinated Biphenyl (Total PCB)		9.4	AEP, 2019	250	180	MOECC, 2011 [4]
Dioxins and Furans (TEQ) [6]		0.00012	AEP, 2019	0.45	0.37	MOECC, 2011
Pentachlorophenol (PCP)		60	HC, 2019	-	-	
Organotins - Tributyltin		0.74	USEPA, 2019 [5]	-	-	
Ethylene Glycol		31 000	AEP, 2019	NGR	NGR	AEP, 2019
Propylene Glycol		-		-	-	
Phenol		570	AEP, 2019	NGR	45 000 000	AEP, 2019

Notes:

[1] All values in µg/L unless otherwise noted.

[2] "-" indicates no guideline available; ">SOL" means no criteria are shown as theoretical aqueous solubilities may be exceeded; "NGR" indicates no guideline required.

[3] Health Canada MAC (Maximum Acceptable Concentration), IMAC (Interim MAC), AO (Aesthetic Objectives), OG (Operational Guidance) and ALARA (As Low As Reasonably Achievable) criteria are shown for the Potable Groundwater Drinking Water pathway, where applicable. However, Health Canada AO and OG values are not considered as potential Tier I EQS values for this pathway.

[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] 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".

[7] 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.