

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

Land Use	Industrial					
	Pathway	Potable Groundwater Drinking Water		Vapour Migration from Groundwater to Indoor Air		
		Parameter	Fine / Coarse	Reference	Fine	Coarse
Inorganic Parameters						
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)	-	-	
General Chemistry Parameters						
Chloride	250 000		HC, 2019 (AO)	-	-	
Sodium	200 000		HC, 2019 (AO)	-	-	
Petroleum Hydrocarbons (PHC) Parameters						
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
Polycyclic Aromatic Hydrocarbons (PAH) Parameters						
Non-Carcinogenic PAH Compounds						
Naphthalene	470		AEP, 2019	NGR	7000	AEP, 2019
1 - Methyl-naphthalene	12		MOECC, 2011	-	-	MOECC, 2011
2 - Methyl-naphthalene	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
Carcinogenic PAH Compounds						
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	-			-	-	
Volatile Organic Compound (VOC) Parameters						
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]
1,1,2,2-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	940	200	ARBCA, 2021
Pesticides					
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	-	-	
PFAS Substances						
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	-	-	
Other Parameters						
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 1×10^{-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.