

Technical Bulletin

Respecting Updates to the Guidelines for Canadian Drinking Water Quality

Guidance for Updating the Chem/Tox Database for Ethylbenzene and Xylenes

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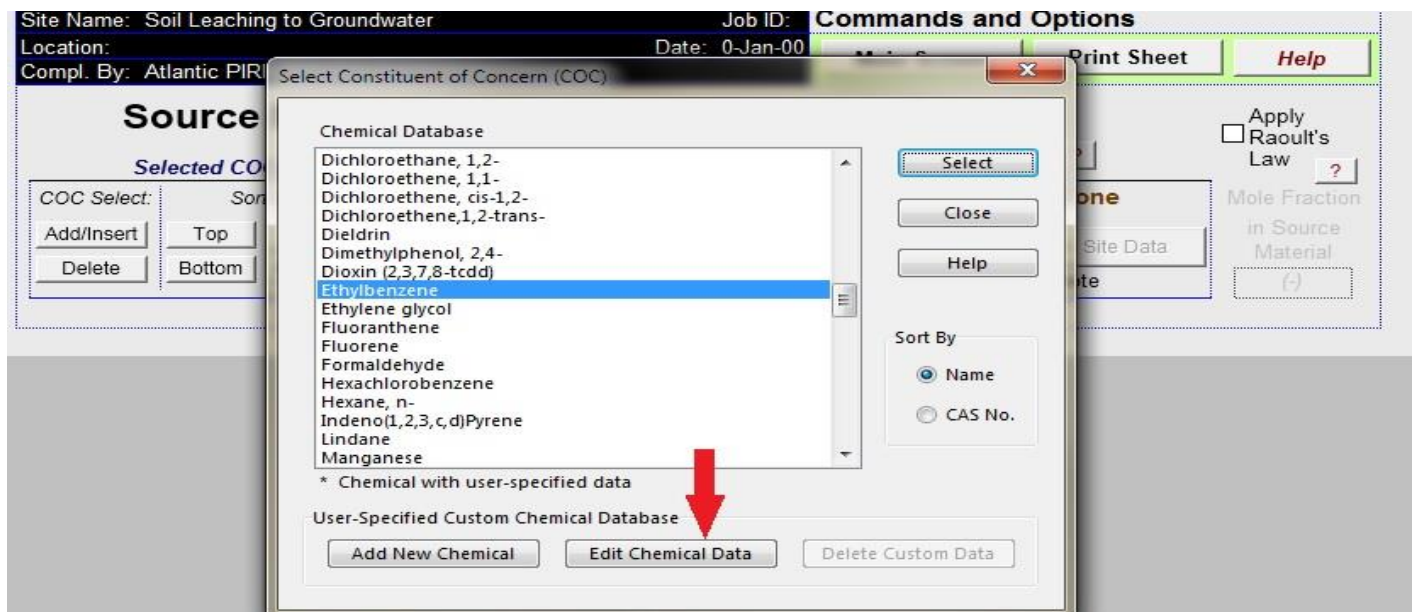
Health Canada recently updated the Canadian Drinking Water Quality Guidelines (October 2014), which included revised guidelines for ethylbenzene and xylenes. As a result of these changes, Atlantic PIRI revised the Tier I and II screening level tables in Appendix 3 and 4 (**January 2015**). At this time, Site Professionals will be responsible for updating the “Chem/Tox” database in the toolkit when carrying out Tier II Site Specific Target Level (SSTL) calculations for soil leaching to groundwater for potable water sites until the Toolkit has been upgraded. The purpose of this technical bulletin is to provide the following step-by-step guidance on updating the Chem/Tox database.

Step 1:

Open the Atlantic RBCA Toolkit, and select “Constituents of Concern”.

Step 2:

Click “Add/Insert”, select “Ethylbenzene”, and “Edit Chemical Data” as shown below.



Step 3:

Change the Drinking Water Standard to the current guideline (0.0016 mg/L), and click Update Database.

User-Specified Custom Chemical Database

Chemical Name: Ethylbenzene [New] [Select]
CAS No.: 100-41-4 Type: A

Physical Properties

Property	Value	Reference
Molecular weight (g/mol)	106.2	S
Solubility @ 20-25°C (mg/L)	152	C
Vapour pressure @ 20-25°C (mmHg)	9.53	C
Henry's Law constant @ 20°C (atm·m ³ /mol)	0.00875	C
Ionisation/dissociation constants (pH units): acid pKa: - base pKb: -	-	-
Sorption coefficient (log L/kg) log Koc	2.47	C
Diffusion coefficient in air (cm ² /s)	0.075	C
Diffusion coefficient in water (cm ² /s)	0.0000078	C

Miscellaneous Parameters

Analytical Detection Limits:
Groundwater (mg/L): 0.002 [S] Soil (mg/kg): 0.005 [S]
First-Order Decay Half Lives (days):
Saturated: 114 Unsaturated: 114 [C]
Biocompensation Factor (-): 1

Commands and Options

[Update Database] [Restore Values] [Close] [References] [Print Sheet] [Help]

Toxicity Data

Property	Value	Reference
Weight of evidence <input type="checkbox"/> Carcinogen	-	-
Oral slope factor (1/[mg/kg/day])	-	-
Dermal slope factor (1/[mg/kg/day])	-	-
Inhalation unit risk factor (1/[µg/m ³])	-	-
Oral reference dose (mg/kg/day)	0.1	C
Dermal reference dose (mg/kg/day)	-	-
Inhalation reference conc. (mg/m ³)	1	C
Estimated Daily Intake (mg/kg/day)	-	-
Background Air Conc. (mg/m ³)	-	-

Dermal Exposure

Dermal relative adsorption factor (-)	0.03	D
Dermal permeability coefficient (cm/hr)	0.0469	-
Lag time for dermal exposure (hr)	0.39	-
Critical dermal exposure time (hr)	1.3	-
Relative contribution of perm. coeff. (-)	0.14	-

Regulatory Standards

Drinking Water Standard (mg/L)	0.0016	Reg
Air PEL/TWA (mg/m ³)	434	ACGIH
Aquatic life prot. criterion (mg/L)	-	-

Site Name: Job ID: Commands and Options
Location: Date: 0-Jan-00
Compl. By:

Source

Selected COC

COC Select: [Sort] [Add/Insert] [Top] [Delete] [Bottom]

Select Constituent of Concern (COC)

Chemical Database

- Cyanide
- DDT
- Dibenzo(a,h)Anthracene
- Dibromochloromethane
- Dichlorobenzene (1,2) (-o)
- Dichlorobenzene, (1,3) (-m)
- Dichlorobenzene, (1,4) (-p)
- Dichlorodifluoromethane
- Dichloroethane, 1,1-
- Dichloroethane, 1,2-
- Dichloroethene, 1,1-
- Dichloroethene, cis-1,2-
- Dichloroethene, 1,2-trans-
- Dieldrin
- Dimethylphenol, 2,4-
- Ethylbenzene***

* Chemical with user-specified data

User-Specified Custom Chemical Database

[Add New Chemical] [Edit Chemical Data] [Delete Custom Data]

Apply Raoult's Law [?]
Mole Fraction in Source Material (-)

[Print Sheet] [Help]

Ethylbenzene is now updated with an asterisk, which indicates that the chemical data has been updated.

Step 4:

Repeat the above steps to update the Drinking Water Guideline for xylenes to 0.02 mg/L.

Once these changes have been made, the revised database will save to the program folder and the changes will be reflected in future model runs with the toolkit (i.e., manual update not required every time the toolkit is used).

For further information, please refer to the Atlantic RBCA toolkit manual, Version 3.22, provided with the Atlantic RBCA toolkit, or contact Atlantic PIRI at info@atlanticrbca.com or <http://www.atlanticrbca.com/>.

***It has been noted that some Atlantic RBCA toolkit users have experienced issues while attempting to update the Chem/Tox database. This is likely due to a computer compatibility issue. In order to address the issue, it is recommended that users consult their internal IT support staff, or refer to the GSI Environmental Webpage at <http://www.gsi-net.com/en/software/gsi-software-faq.html>.*