

# **Petroleum Hydrocarbon Tier 2 Guideline Calculation Software**

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Alberta Environment (as well as the Canadian Council for Ministers of the Environment (CCME)) has developed a protocol, and associated mathematical algorithms, for the development of site-specific Tier 2 soil and groundwater quality guidelines for Petroleum Hydrocarbons (PHCs). In order for practitioners to implement these guidelines, they must develop a spreadsheet (or other tool) to process the Site-specific inputs through a series of equations in order to calculate Tier 2 guidelines. This process is challenged by the presence of Complimentary Error Correction Functions and in certain cases relatively complex equations, which can readily be utilized incorrectly if the practitioner is not well versed in mathematics. Spreadsheets have previously been developed in Excel for these calculations, however, uptake by practitioners has been relatively low and they do not appear to be widely used. Furthermore, the Alberta Environment protocol document has conditions under which Tier 2 guidelines are acceptable, or not, for application at a particular

site. This process can be an additional challenge to practitioners providing they are not well versed on the subject or site-specific risk assessment in general. Finally, soil vapour guideline (and analysis) methodologies have recently been developed in the USA and are pending Canada for improving the accuracy of Tier 2 guidelines via the vapour inhalation pathway, which should be incorporated into the Tier 2 guideline process.