

Numerical Modelling Approaches in Contaminated Sites Management - Best Management Practices

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The Alberta Tier 1 and Tier 2 guidelines are a convenient and widely used screening-level approach for managing contaminated sites to meet the goal of avoiding adverse effects for valued receptors. The Tier 1 and Tier 2 models take a simplified approach to calculating remedial guidelines for groundwater pathways by assuming that the contaminant chemical is present at a uniform concentration within a rectangular cuboid of specified length, width and thickness. However, the Tier 1 and Tier 2 models will always overestimate the contaminant mass present in a system and the conservatism associated with applying Tier 1 and Tier 2 guidelines can become a major impediment to developing an economically viable contaminant management strategy at large and complex contaminated sites where groundwater pathways are the primary risk drivers.

Numerical groundwater models can be used to provide contaminant management strategies for groundwater-mediated exposure pathways that are based much more closely on the actual contaminant distribution at a site, and thus avoid the overestimation of contaminant mass inevitably associated with the application of Tier 1 and Tier 2 guidelines. This project developed a set of Best Management Practices for using numerical model approaches in three aspects of contaminated site management: remedial action plans, risk management plans, and site closure.

This presentation will summarize and provide a brief rationale for the Best Management Practices developed in the project, indicate where the Best Management Practices report is available, and provide guidance in using the Best Management Practices report to support regulatory applications.

Miles Tindal

Miles Tindal specializes in using risk assessment techniques to develop cost-effective closure solutions for the most complex contaminated sites. Over the last 25 years he has managed a range of applied research programs funded through PTAC and other organizations to collect data to support regulatory initiatives such as the *Green Area Subsoil Hydrocarbon Guidelines* and the *Native Prairie Protocol for Salts*. He has authored a wide range of regulatory guidance documents related to contaminated sites management for the CCME and provincial regulatory agencies including the Alberta Tier 1 and Tier 2 guideline documents. Miles holds master's degrees in Natural Sciences from Cambridge University and Hydrogeology from London University.