Contaminated Site Management Options: Framework and Challenges in Practice

Amy Philip, Parsons Inc

Environmental regulators in Canadian jurisdictions, such as Alberta, provide different management options to contaminated site owners, ranging from site closure to long-term site risk management. While the general concepts of these management options are well documented, there are many challengers encountered in site management practice. It is helpful to examine these challenges in order to define the requirements for cooperative efforts by industrial and regulators.

Many of these challenges appear to be related to incompleteness and inconsistencies in regulatory guidance documents or industry-wide common practice. For example, Alberta Tier 1 guidelines provide Tier 1 soil and groundwater guidelines for inhalation pathway, but no Tier 1 soil vapour guidelines are provided, even the vapour values appear to be used in the calculation of soil and groundwater guidelines. Another example is related to use of the Subsoil Salinity Tool (SST). While the SST can be used to derive site-specific remedial guidelines at a salt contaminated, there is no framework to apply similar logic, such as dugout dilution and deep zone mixing during downward migration to domestic use aquifer (DUA), to other contaminants like petroleum hydrocarbons (PHCs). One more example is related to application of soil contact and inhalation guidelines at deep depths, particularly below groundwater tables. Although academic studies may indicate no presence of risks along as it is not disturbed, there is regulatory guidance to follow to make a management decision for a typical site.

Uncertainties in the regulatory framework and feedback can result in significant uncertainties when consultants and clients are making decisions. This is particularly important when remediating to non-Tier 1 guidelines or site closure using risk-based approach which can result in sites that are less likely to return to productive uses as a result.

In general, although the long-term risk management options are available, there is a tendency for site owners to select more conservative remedial options due to difficulties to obtain regulatory approval of the risk management plan and/or make the commitment for regulatory requirements for long term monitoring. The concepts of environmental net benefits for site remediation have discussed but have not been adopted in common practice. The opportunities to return the land for productive use during a long-term risk management plan are not fully recognized.

This presentation explores the current framework for managing contaminated sites in Alberta, highlighting the opportunities, challenges and inconsistencies encountered in consulting practice.

Sherri Dixon

Ms. Dixon is an engineer with over 19 years of experience as a contaminated sites specialist, providing technical guidance for site characterization, assessment, risk management and remediation on projects throughout Alberta and prairie provinces. She is currently a Senior Engineer at Parsons as a senior member of our technical team.

Amy Philip

Amy Philip has worked on construction management projects on abandoned mine projects in Northern Canada. Prior to 2021 she was the program manager for the Faro Mine Complex Care and Maintenance project in the Yukon. She also managed the Interim Construction Management contract at the Giant Mine in Yellowknife, Northwest Territories, including bidding and awarding contracts. Amy has experience supervising fieldwork and managing and completing Phase I and II environmental site assessments, and Phase III remediation programs. She has assisted with preparing risk assessments on residential, commercial, and industrial properties in southern Alberta and in central Saskatchewan. Amy currently manages the technical group in Calgary and has over 18 years of experience.