PFAS Contaminated Site Portfolio Risk Ranking for the Purpose of Funding Prioritization

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Funds available for assessing contaminated or potentially contaminated sites during any given year are typically insufficient to address any large organizations portfolio of contaminated sites needs. The federal government generally assigns funding priority for terrestrial contaminated sites using a qualitative risk classification system termed the National Classification System for Contaminated Sites (NCSCS), which has been used in various forms to classify federal contaminated sites since approximately 1992. Although the NCSCS adequately classifies federal sites for prioritization of action, it is not technically a risk-based tool and therefore prioritization for action does not incorporate information such as magnitude of risk. The NCSCS is also not fully a multi-media based tool, and many contaminated sites have multiple media present that contribute to overall human and ecological risk. As a result, classification using multiple tools may be required under the federal system. For this reason, a simplified multimedia risk ranking tool was developed for the purpose of determining which sites in a portfolio should be allocated funding priority. The portfolio being evaluated consisted of a large military facility over 1400 hectares in size, with individual PFAS impacted sites, or potentially impacted sites, ranging in size up to approximately 2.5 hectares throughout the facility.

The risk ranking is completed using a spreadsheet model that is comprised of four main components consisting of a human health, ecological, off-site migration risk and modifying factors. Soil, sediment, surface water and groundwater quality were assessed within the risk ranking model by using quality index calculations and the model incorporates simple hazard quotient calculations to incorporate human and ecological risk estimates in the risk ranking model. The risk ranking model has been successfully applied to a portfolio of over 35 sites impacted, or potentially impacted, with per-and polyfluoroalkyl substances (PFAS). The risk ranking results from fiscal year 2021/22 were subsequently used to determine fiscal year 2022/23 funding allocation and assisted in identifying which media at each site should be prioritized for investigation. Risk ranking represents an effective means to support financial decision making involving a large number of contaminated or potentially contaminated sites, the prioritization for assessment of various media at those sites and identification of risks which may drive decision making, such as concern related to offsite migration of contaminants.

David Tarnocai

Mr. David Tarnocai, M.Sc., P.Geo., is a Senior Risk Assessor with over 30 years of experience. Mr. Tarnocai is a Qualified Person for conducting Environmental Site Assessments (QPESA) and Risk Assessments (QPRA) in the province of Ontario, Canada. Mr. Tarnocai has extensive expertise in environmental site assessment and remediation, human health and ecological risk assessment (HHERA) and environmental project management. His specific areas of expertise include contaminant hydrogeology, site remediation, HHERA, third party review of risk assessment/ site assessment reports, contract document preparation and tendering related to environmental works. Mr. Tarnocai is experienced in the assessment of both terrestrial and aquatic sites and the assessment and remediation of properties contaminated with various contaminant classes including metals and organometals, dioxins/furans, per- and polyfluoroalkyl substances (PFAS), petroleum hydrocarbons (PHC), polycyclic aromatic hydrocarbons (PAH), polychlorinated biphenyls (PCB), chlorinated solvents and volatile organic compounds (VOCs) and pesticides. He has evaluated environmental conditions at over 200 sites, including ports and marinas, active and former industrial properties (power generation facilities, petroleum packaging facilities, railway facilities), firefighter training areas, explosive ordinance disposal areas, firing ranges, petroleum storage and dispensing facilities (service stations, bulk fuel terminals, airports, trucking facilities) waste disposal sites, and domestic landfills. Mr. Tarnocai has managed or conducted environmental projects in Canada, the Middle East and South America in environments ranging from high density urban, desert, tropical jungle and remote northern locations.