

Sustainable Approach in Contaminated Soil Management – Lessons Learned From 20 Years of Practice

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Following the discovery of several environmental legacies late in the 1970s in the United States and early in the 1980s in Canada, the industry of site remediation took its first steps into the environmental market in the 1980s. While traditional approaches such as pump and treat and “dig and dump” were almost exclusively used in the beginning, the 1990s was the decade of commercial implementation of several on-site treatment technologies.

Contaminated sites typically represent great remediation challenges due to the diverse types of wastes and contaminants, their high concentration or the presence of diverse limiting factors, along with their frequent presence in urban environments. In this context, design of a remediation solution and, more specifically, selection of remediation technologies are key to a cost-efficient and sustainable remedial strategy. Among the panoply of remediation techniques that were commercialized with different levels of success, biological treatment was one of the most successfully and widely applied, particularly when dealing with organic contaminants.

In addition to a practical technological approach, appropriate incentives and/or regulatory framework are necessary to support an on-site remediation market. Recently, environmental benefits and sustainability of different approaches were also taken into account by several stakeholders in the selection of a remedial approach. However, in some jurisdictions, the direct “dig and dump” approach is still the main solution for site remediation. For example, more than 3 million tons of contaminated soil is sent to landfills in Alberta, while only a small amount is treated on-site. In Quebec, soil treatment volumes have exceeded the “dig and dump” remedial approach and beneficial reuse of decontaminated soil is emerging.

This presentation will illustrate how regulatory framework and incentives may promote soil treatment in a sustainable way, with emphasis given to the current situation and trends in Quebec. Parallels will be drawn with regards to the actual situation in Alberta. Benefits of an on-site approach to contaminated site remediation will also be discussed, along with technical aspects of biological remediation.

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Christian Bélanger obtained a Bachelor's degree in Microbiology in 1990 and the status of Philosophiae Doctor in Microbiology in 1995 from Laval University, Québec, including a training at the University of Washington, Seattle, WA. Thereafter, he held the position as a Postdoctoral Researcher for Fisheries and Oceans Canada Department for 3 years where he conducted research on the microbiology of the bioremediation of petroleum-contaminated shore-lines.

From 1998 to 2006, he was employed by Biogenie as Project Manager, then Director of R&D. He was responsible for conducting the management of the development of products and processes and acted as a scientific consultant for various Biogenie departments. Since EnGlobe's acquisition of Biogenie in fall 2006, he is now performing as a General Director, Technical Services, Development and Standardization for EnGlobe and its main subsidiaries, GSI Environment and Biogenie.