

Editorial

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The 14th Global Joint Seminar on Geo-Environmental Engineering (GEE) was held on 21–22 May 2015 at Concordia University in Montreal, QC, Canada with more than 60 participants from several countries including Japan, Korea, France and Canada. GEE has been held annually in Korea, Japan, Canada and France since its inception in 2001. The main objective of the seminar is to provide an international forum for the exchange of ideas and recent advances in the field of geo-environmental engineering. It fulfills an important role for this important subject of solving global environmental problems as there are few conferences organized on these important topics. A wide variety of papers from multidisciplinary backgrounds were presented. Some of the topics covered included waste/landfill design and management, geo-synthetics and geo-environmental engineering, geotechnical reuse of solid waste, remediation of contaminated sites, environmental risk assessment and management, and ground improvement technologies.

The audience included engineers, regulators, remediation site owners, other environmental professionals from universities and students, and consultants. Following the success of this seminar, 5 papers were selected and are included in this special themed issue on Geo-Environmental Engineering 2015 for *Environmental Geotechnics*. As the *Environmental Geotechnics* Journal plays an important role in the Civil Engineering community in disseminating research and practices in order to help the society in providing safe and environmentally friendly solutions, the selected papers will contribute significantly towards this goal.

This issue is focused on the challenge of managing contaminants in various scenarios, oil sand mines, groundwater, radioactive waste disposal and a reconstruction project. Reuse of a waste — cement kiln dust (CKD) — as a manufactured aggregate is also highlighted.

Kabwe *et al.* (2019) focused on open-pit lakes as a common method of management and closure of open-pit mines. The oil sands mines in Alberta, Canada have end pit lakes that are very large and can reach 15 km² in size. The lakes containing oil sand by-product materials, surface and groundwater from reclaimed and undisturbed areas must be designed and monitored to reduce leakage and contamination. The end pit lakes may exist for many decades and therefore proper management of these lakes is essential. The underlying tailings at the bottom of the lakes play a key role in reducing the seepage from the lakes. Therefore, understanding the long-term behavior of end-pit lakes in the long term through modelling, research and monitoring is essential for protecting the environment.

Another site of contamination was highlighted by Sbarrato and Marcotte (2019). The site in Montreal, Canada includes a former

railway yard for various railway activities such as maintenance of locomotives and cars, leading to oil spills. In addition major backfilling projects were also performed on lacustrine deposits. Some of the fill material included burnt coal residue which also contributed to the site contamination. Excavation of more than 4.3 Mm³ was required for a large reconstruction project for new ramps, interchanges, highways, roads and railway corridors in the area. The strategy and tools of the environmental characterization and interpretation of the environmental, stratigraphic and geotechnical data were described and lead to the implementation of cost-effective and sustainable development principles in the decontamination work.

Another type of contamination scenario (radioactive waste), was examined by Nguyen *et al.* (2019). Radioactive waste from nuclear power in many countries is disposed of in deep geological formation. Long term safety of these disposal systems is essential. Modelling of coupled thermal, hydraulic and chemical processes is essential for determination of the design and safety assessment of geological disposal regulatory systems. The approach employed model development, parametric analysis and verification of field test data from a heater experiment at the Mont Terri Rock Laboratory in Switzerland.

A mass-flux approach was used by Chapuis (2019) to estimate the quantity and time of release of contaminants into groundwater. Concentrations of contamination can be difficult to assess due to fluctuations of concentration over distance and time. Field data is particularly complex and difficult to assess and adequate quality control of the data is essential. A small town with polluted groundwater near a military research centre and industrial facility was used as a case study. An annual mass-flux method helped to reconcile the field and laboratory data to understand the contamination scenarios more fully.

Lake *et al.* (2019) evaluated CKD as a manufactured aggregate. A series of geotechnical and geo-environmental tests were employed to assess any potential construction applications and environmental impacts of the aggregate. Drainage or reactive barrier applications were identified. Reduction in grain sizes under freeze-thaw cycling, however warrant further investigation to improve these properties.

Yong *et al.* (2017) discussed that environmental management requires mitigation and management of contaminants through remediation, impact assessment and avoidance tools. The challenge for researchers, policy makers and other professionals is to avoid and mitigate contaminants in the geo-environment in sustainable and innovative ways.

Environmental Geotechnics had a successful 2018 with an impact factor of 1.2. The journal is increasing from six to eight issues annually. Coupled with the 'ahead of print' publication where papers are published online in advance of the printed issue, further success of this journal is anticipated in 2019 and beyond.

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