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The Application of GSR Evaluation Tools in Taiwan and Prospects

Colin S. Chen (cschen@nknu.edu.tw) (National Kaohsiung Normal University, Kaohsiung, Taiwan)
Bing Nan Wang (bn@setl.com.tw) and Tsai Wen Chiang (twchiang@setl.com.tw) (Sinotech Environmental Technology, LTD., Kaohsiung, Taiwan)
Ya Ting Wu (wuyt@epa.gov.tw) and Ying- Ying Lai (yylai@epa.gov.tw) (EPA, Taipei, R.O.C)
Hao-Chun Hung (hchung@epa.gov.tw) (EPA, Taipei, R.O.C)

Background/Objectives. After few years of development and adoption, the framework, executive flowchart and online evaluation tools of green and sustainable remediation (GSR) were completed by the Taiwan Environmental Protection Administration (TEPA) and SuRF-Taiwan. The executive flowchart was simplified and accommodated with the current regulatory procedures. Based on the life cycle of the contaminated site, the GSR assessment was divided into two phases: (1) remediation strategies decision phase and (2) remedial implementation phase. During the remediation strategies decision phase, all of the core elements of GSR should be considered and different remedy options can be evaluated by the online tool to compare environmental, economic and social impacts of different alternatives. Users can select a suitable remediation approach relying on the output of the online tool. If the remediation project is already executed, this online evaluation tool can identify the major impacts of the three aspects of GSR and provide a streamlined best management practices screening tool to mitigate those negative impacts. Therefore, the overall remediation practices can become greener and sustainable.

Approach/Activities. The GSR flowchart and evaluation tools were applied to a brownfield project, New Asia Bay Area Development in Kaohsiung, where more than 40 soil and groundwater contaminated sites were listed after the 1990s. Remediation was accomplished in 21 contaminated sites, while the rest are still under the process of remediation tasks. This study evaluated the environmental footprints, land value variation, health risk of remediation, and interference to inhabitants during remediation of all sites in this region by applying the GSR evaluation online tool.

Results/Lessons Learned. By reviewing the remediation process of the sites, primary environmental footprint hotspots of remedies were identified and best management practices of different remedies were proposed. The cost of the remediation and land value variation including stigma loss and land exploitation-induced value rise were considered simultaneously, and the economic effects of cleanup were calculated in this study. Results of risk assessment and site neighborhood survey during remediation reflected points of views of residents in terms of remediation and regional development. Conducting a GSR assessment enables site managers to acquire a more comprehensive understanding of the remediation activities, and thus proper measures can be implemented to meet the sustainability objectives.