The Sustainable Remediation of an Agrochemical Manufacturing Facility

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Background/Objectives. Embedding sustainability principles into the management of land contamination is known as "sustainable remediation" but its application is not restricted to the remedial options appraisal stage alone. This case study will describe the practice of incorporating sustainable remediation into the process of site closure and remediation of a former agrochemical manufacturing facility in the UK. The site, which was an agrochemical manufacturing facility for ~50 years, had been contaminated with historic spills. Remediation was required to surrender the environmental permit and to prepare the site for future development. Following an extensive program of site investigation, site-specific quantitative risk assessment and a remedial options appraisal, on-site bioremediation was selected as the preferred methodology. The technology was successfully implemented at the site and all soils were treated resulting in no off-site transport or disposal.

Approach/Activities. The overall process for the management of soil and groundwater contamination during the closure process followed the UK Land Contamination Risk Management guidance and included consideration of sustainability through the life cycle as outlined in the SuRF UK framework. A key consideration at the outset of the project was the agreement of clear project objectives (technical and business) and project boundaries. The identification of appropriate sustainability indicators for the project was based on a combination of the client's sustainability policies and site-specific considerations. Sustainability was then considered during the remedial options appraisal process in a phased approach where technically feasible remedial technologies were retained for assessment using a semi quantitative multicriteria analysis (MCA). The MCA was supplemented by a carbon footprint assessment of the technically feasible technologies to support the MCA scoring. Following agreement of the preferred remedial strategy with the regulators sustainability was considered as part of the contractor procurement process and was carried forward into the remediation implementation phase by the contractor proposing and adopting a number of sustainable management practices (SMPs). The benefits of these SMPs were tracked and reported through the duration of the project.

Results/Lessons Learned. The primary objective for the site was to develop a technically robust and economic solution but the incorporation of sustainability principles and the adoption of the SuRF UK framework into the remedial options appraisal process provided an additional dimension to the technical appraisal. The identification and assessment of environmental, social and economic indicators that aligned with the Client's corporate sustainability goals in the MCA and carbon foot printing exercise clearly demonstrated the benefit of a solution that maximized the on-site retention of materials. With the addition of practical and easily applied SMPs during the implementation phase, further opportunities for improving the sustainability of these types of projects were identified.

This paper will provide a broad overview of each of the phases undertaken above highlighting the benefits and limitations of the approach together with practical lessons learned. The paper will conclude with recommendations for future implementation.