

Restoration of a Coal-Fired Power Station Site: Science, Perception and Regulations

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Background/Objectives. The site, which occupies a large area (e.g. > 95 ha), was operated as a brown coal power station for more than 50 years. Activities at the premises also included the operation of ash ponds for disposal of waste generated at the site and the operation of a fire training ground. The power station is no longer operating and the site required restoration under current environmental regulations. Hence, the requirement of contamination assessment, delineation, clean up/remediation and divestment for reuse. The site is also under a regulatory cleanup notice (CUN), issued due to concern about contamination condition caused by the site historical activities. Preparations for the planned divestment include both the decommissioning and demolition of the facilities.

The site has numerous (>30) areas of potential concern (APC) including ash ponds, stockpiles of fill materials, former oil drum storage, 1950s landfill area, fire training, raw coal bunker, railway line and yard, briquette and ash dust deposition on ground, dump area, seepage from adjacent ash pond site, PCB transformers, dewatering, pond, etc.

Likely soil and groundwater contaminants of concerns include:

- PFOS/PFOA,
- PCBs, PAHs, TPHs, and
- Inorganics and Dioxins.

The site underwent numerous assessments over the years as part of its licence requirements. This paper discusses specifically the rationale behind conducting a detailed site assessment and how integrating data from historical findings, pollution abatement notice, future use, community concern, etc. were used to develop and implement a scope of works, which was also based on a CSM. The scope of works was developed to achieve a set of objectives that will be discussed in this paper with the arching objective being to restore the site.

Approach/Activities. Based on a contaminants fate and behaviour, linked with soil characteristics and exposure scenario, a risk-based approach was decided upon as the approach to characterise the contamination of both soil and groundwater. Of particular importance for selecting this approach was the potentially significance cost of clean up to restore this large site. This was complicated by the presence of three aquifer beneath the site and potential impact by polluting activities in neighbouring industrial sites.

The Middle and Lower Tertiary aquifer systems represent the major aquifers regionally. In addition, and due to the presence of impermeable layers within the stratigraphy, the major aquifers are isolated from both the overlying aquifer in the Tertiary sediments and soil profile (Jenkin, 1962).

Community perception of risk was also considered as part of the risk management approach for this study and a receiving environment CSM was developed.

Results/Lessons Learned. Our integrated, approach mentioned above resulted on identification of contaminants of concern in each of the APCs; it consequently eliminated numerous APCs based on risk so that no remediation is needed on these APECs. The number of APCs was reduced significantly with no eminent risk of harm identified in any (soil/GW/SW) and only limited further investigation recommended. The paper will discuss

where science stands to deal with the CUN? Will find out in this paper and share some important industry lessons.