



**Environmental
Management
Services**

Site Investigation Case Study Phases I,II and III

Landlord Due Diligence/Legal Action

We were commissioned by the landlord of a recently vacated chrome plating factory to undertake a contaminated land site investigation as part of legal action against the tenant.

Our phase II investigation found soil contamination ranging from pH 2.2 up to 12.8, Hexavalent Chromium contamination over 1000 times the GAC and significant hydrocarbon contamination in the groundwater.

A phase III remediation design project was conducted in order to provide the landlord with estimated clean up costs.



We were commissioned by the landlord of a recently vacated chrome plating factory to undertake a contaminated land site investigation. The landlord wanted to sell the property but was aware of potential contamination issues.

The metal plating process used by the previous tenant involved the use of toxic chemicals including cyanides, acids, alkalis and various heavy metals. The premises had become contaminated due to apparent improper work practises leading to spillages. Although the landlord had instructed the tenant to decontaminate the premises before vacating, the decontamination which was conducted was insufficient.

Phase I Desktop Survey & Site Walkover

During the Phase I surveys the previous usage of the site was ascertained and as much information as possible was gathered on the chemicals used in their processes.

The layout of the site was ascertained through studying the site plans and confirmed during the site walkover by the visual surface evidence of contamination.

This allowed identification of probable contamination hotspots in order to target our sample points in the phase II intrusive survey.



Phase II Intrusive Site Investigation

Due to the obvious contamination present it was necessary to conduct a phase II intrusive survey to establish the severity and extent of the contamination identified.

We excavated a total of six trial pits to a maximum depth of 0.95m. Four of the pits were located within the unit in the previously identified contaminated areas, and two pits were advanced externally where evidence of contamination was visible on the external wall. Soil samples were taken from each trial pit and one water sample was taken where groundwater was present at the excavated depth, the samples were sent to a UKAS accredited laboratory for analysis.

Throughout the process health and safety was paramount and suitable fume extraction, site zoning and extensive specialist PPE were all utilised.



The methods used in the plating process were ascertained in order to allow targeted laboratory analysis to take place. The requested analytical suite included pH, Cyanide, Chromium, Hexavalent Chromium and TPH.

The extent of the contamination was found to be extremely high. The thresholds used for soil contaminants were selected based on the assumption that the future use of the site would be commercial / industrial.

Significant exceedances of the generic assessment criteria (GACs) were identified. Hexavalent Chromium contamination was as high as 39,000 mg/kg over one thousand times the allowable GAC for industrial land of 35 mg/kg. Chromium (Cr) contamination was found to be as high as 130,000 mg/kg over four times the allowable GAC for industrial land of 30,400 mg/kg. There was also a range of pH values reported from 2.2 up to 12.8. Furthermore the groundwater sample also showed significant hydrocarbon contamination.

Phase III Contaminated Land Remediation Design

Following the Site Investigation we conducted a phase III remediation design strategy where a detailed remediation strategy with a scope of works was provided to the client.

All potential remediation actions were considered through a remediation treatment matrix. Our conclusion was that the only guaranteed effective strategy for the site to meet acceptable risk levels (in line with Environmental Protection Act, 1990 Part IIA) was source removal.

Due to the sizeable area which had been contaminated (estimated at 120 tonnes) and the extremely hazardous nature of the contamination, incineration was the recommended disposal method. Budgetary costs were provided for the client to use during legal action against the tenant.

