Dunton ENVIRONMENTAL
Restoring Our Environment

Rapid treatment of 7,000tons of Cyanide (Cn), contaminated soils at former Gas Works in Whitwick in Coalville



Abstract

Dunton Environmental successfully utilizes **Regener8-19** Heavy Metals treatment solution in combination with **Bio-Accelerator** Hydrocarbon treatment solution, for the remediation and treatment of approximately 7,000tons of Cyanide impacted soils at former gas works off in Coalville. **The process reduced the total cyanide concentrations by 93%, within 6 weeks of product application. The process diverted all the waste from hazardous landfill and enabled the safe reuse of the materials on site resulting in a direct cost benefit to the Client.**

Regener8-19 and Bio-Accelerator Technical Background

Regener8-19 is applied to soils that are polluted with various heavy metal contaminants. The product acts to alter the chemical environment within the solid matrix, allowing the removal of the heavy metals from the solid.
Regener8-19 is applied in a liquid or powder medium to the solid waste by a variety of mechanisms depending on the nature and composition of the soil or solid waste. Regener8-19 is mixed and distributed homogenously through the soil or solid waste via Dunton Environmental's **Soterion** batching; Dunton Environmental's Stabilization Unit or Dunton Environmental's Allu mixing process.

Regener8-19 comprises specific metal-binding polymer particles which target the contaminants designated for reduction. The chemical process involves the exchange of ions from the solution for similarly charged ions attached to the solid particles.

Bio-Accelerator is a developed formula which significantly enhances the degradation of organic pollutants such as petroleum hydrocarbons, various other fuel oils, solvents and phenols. When used in combination with the **Regener8-19** technology it is also successful in activating the treatment of inorganic substances such as Cyanides. The product contains a number of strains of specially selected bacteria combined with nutrient media and Dunton's bioacceleration compound reagent.

Project Background

The project site, known as the new residential development in Whitwick, Coalville was a former gas works. The contamination was located within discreet locations on site associated with the former gas scrubbing units and gas holder bays located on site. As part of the remediation strategy for the site, there was a requirement to remove all contaminated soils that posed a risk to the environment and human health. Approximately 7,000tons of waste contaminated soils were known to be located within the former gas holder bays. The soils had been tested and found to be contaminated with Hazardous levels of Cyanide. As a result the Client had designated the soils for disposal off site at a licensed hazardous landfill.

Test data taken indicated that the soils were contaminated with Cyanide at a peak value of 700mg/kg.
This concentration proved that the waste soils were hazardous and unsafe for retention on site.

Since the project area was designated for residential development by the Client, Redrow Homes, and these soils posed a risk to human health and the controlled waters, **it was deemed necessary to either remove the soils off site to landfill or treat the soils to enable reuse on site in a safe manner.**

REDROW HOMES

Project Challenge

Prior to undertaking the works, a remediation target level was agreed with the Environment Agency to determine a suitable target level for the site. A target concentration for the Cyanide was set using the Dutch Intervention levels for complex Cyanide at 50mg/kg.

It was agreed between **Dunton Environmental** and the **Environment Agency (EA)** that contaminated soils above these levels would be treated to enable reuse on site below a capping layer of soil to **reduce the risk to human health.** This would require a reduction of the contamination levels by 93%.

Solution

Dunton Environmental provided a solution of ex-situ treatment of impacted soils to reduce the concentrations to allow reuse at depth below a 600mm clean cap**, avoiding expensive disposal costs.**

During the site works, **Regener8-19 and Bio-Accelerator** was applied in a liquid medium to the soils stockpiles and distributed homogenously through the soil via Dunton Environmental's Unit.

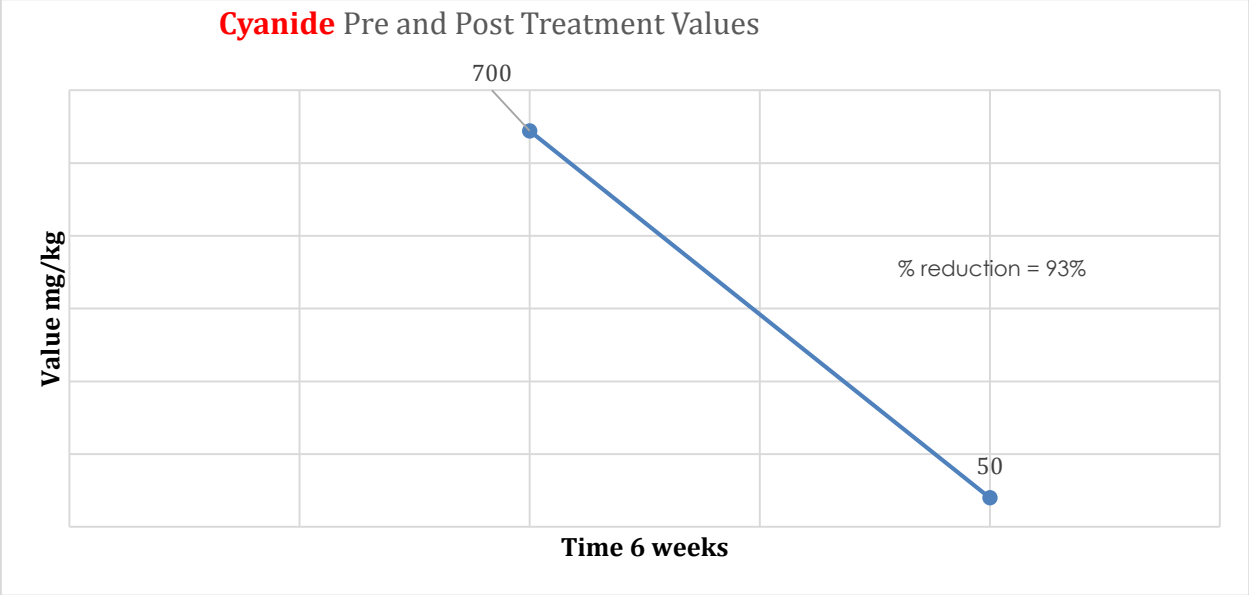
After treatment, the soils were tested and placed in a stockpile on site pending validation. On successful validation of all the soils, they were **re-used on site** in accordance with the agreed requirements.

The overall duration for **treatment and validation was 6 weeks.**

Result

Following in-situ treatment, 12 test samples were obtained (at a frequency of 1:300m3). It was found that following the use of Dunton's **Regener8-19 and Bio-Accelerator,** the average solid value of **Cyanide** had **declined sharply.**

- **Cyanide had been reduced by 93% from a peak value of 700mg/kg to below the target value of 50mg/kg**



Conclusion

Dunton Environmental's approach to this challenge demonstrated their understanding of recent regulatory guidelines and the benefits that the **use of Regener8-19 and Bio-Accelerator** has in land remediation and Cyanide treatment. The use of this technology helped save the Client on unnecessary landfill disposal costs and ensure they remain sustainable in their approach to minimizing waste from construction.

Implementation of the proposed Regener8-19 and Bio-Accelerator solution not only achieved the goal of complete reduction of total concentrations by more than 93%, but also reduced the cost to the Client by more than 50% with full regulatory compliance and approval.