

Managing Leachable Arsenic for Sustainable On-Site Retention

A former rail yard site in South Australia was required to be developed into a new public transport hub by the Department of Planning, Transport and Infrastructure (DPTI). The site hosted rail platforms within which was 4,500 m³ of soil with elevated concentrations of arsenic resulting from historical rail operations.

Although, the concentrations of arsenic did not exceed tier 1 human health soil screening criteria for commercial/industrial land use, they significantly exceeded waste soil classification criteria, and arsenic was significantly leachable in a proportion of the material.

The cost to remove the soil via the traditional dig and dump approach was calculated as in excess of \$1.75 million AUD. Retention of the leachable soil on-site would have presented an unacceptable long term risk to groundwater.

An alternative approach/scope was developed by Land and Water Consulting which involved cut and fill balancing of site materials coupled with selective treatment of leachable material to enable on site retention.

This involved the removal and on site storage of impacted soils prior to treatment. Excess clean materials were removed and re-used as fill at a non-sensitive site. The leachable soils were isolated and treated on site using the proprietary immobilization agent RemBind.

Bench scale tests, using US EPA Methods 1311 and 1320, showed that treatment with RemBind resulted in a 96% reduction in leachable arsenic compared to untreated soil.

A total of 1,600 tonnes of impacted soil was treated with RemBind. Initial levels of arsenic leachability as high as 2,700 mg/L were reduced to <5 mg/L after treatment with RemBind. I.e. 99% reduction.

All treated soil was reused on site under Level 1 supervision, creating a new development platform for the transport hub. The approach saved DPTI \$1.1 million AUD and avoided more than 700 truck movements, minimising the carbon footprint. The land is now suitable for use as a bus depot.



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