



*A COMMERCIAL APPLICATION OF
VIROFLOW™ TECHNOLOGY*

**CASE STUDY
PARKSIDE TIMBER**

“ViroFlow™ Technology using ViroBond™ reagent enabled the concentrations of leachable copper, chromium and arsenate in the contaminated soil to be lowered to well below safe disposal levels and in the case of arsenate to below detection limits.”



*Excavated area before treatment with
ViroFlow™ Technology*

PROBLEM

Parkside Timber required major site remediation work due to the presence of copper chrome arsenate (CCA) contamination in soil and water bodies. The main requirements were to immobilise the copper, chromium and arsenic in the contaminated soil and to treat pond water that had also been contaminated with CCA. If the site was not cleaned up, the company was facing probable prosecution by the Queensland EPA. Any treatment used on the site had to be performed in accordance with Queensland EPA guidelines.



Contaminated stock pile of soil prior to treatment

VIROTEC TOTAL SOLUTION

Virotec was contracted by Parkside Timber to apply ViroFlow™ Technology for total site remediation. Virotec implemented ViroFlow™ Technology to treat and safely dispose of the contaminated soil and to treat the water to a standard that would enable it to be reused on site thereby achieving a zero discharge outcome. The major objective was to immobilise the copper, chromium and arsenic in the solid waste and to do this in accordance with Queensland EPA guidelines.

BACKGROUND

Parkside Timber is a large Queensland-based timber treatment company. The Parkside Group owns six major milling sites employing over 150 people. The company's Builyan Mill, near Gladstone, Queensland, produces CCA treated timber for the local market. Parkside Timber's management emphasises providing training and safe work practices as well as improving commitment to best practices and maintaining high environmental standards. However, the Builyan Mill site became contaminated with copper, chromium and arsenate due to a leakage and the company was facing probable prosecution by the Queensland EPA and wanted to decontaminate the site.



Contaminated soil being excavated so treatment can commence

TREATMENT METHODS

The contaminated soil was excavated, loaded onto large trucks for transport to an off-site treatment facility and treated using Virotec's ViroFlow™ Technology and ViroBond™ reagent. The treated soil was then analysed to ensure that the copper, chromium and arsenate concentrations were under the limits set by the Queensland EPA for landfill disposal. The total volume of contaminated soil excavated and treated was about 600 cubic meters.

Due to heavy rainfall, the excavated pit filled with water and required some treatment prior to onsite water re-use. ViroFlow™ Technology was used to lower the CCA content of the water to enable re-use; about 500 KL of contaminated water was treated.

Once the water was removed from the pit, inert fill material was

placed in the excavated hole and the land was contoured and revegetated.

TABLE 1: TREATMENT TARGETS - QUEENSLAND'S EPA GUIDELINES FOR SOIL AND ANZECC GUIDELINES FOR WATER

Component	ANZECC Guidelines 95% Protection of Species mg/L	QLD EPA TCLP Limit Double Clay-Lined Landfill mg/L
pH	6.5 - 8.5	-
Arsenic	0.05	5.0
Chromium	0.002	5.0
Copper	0.002	5.0



Stock pile of contaminated soil prior to treatment at external facility

RESULTS

The results show that the use of ViroBond™ reagent enables the concentrations of leachable copper, chromium and arsenate to be lowered to levels that are several orders of magnitude below the Queensland EPA limits; leachable arsenate concentrations fell to below the detection limit of 1 µg/L (Table 2).

TABLE 2: ANALYSES OF TREATED SOLID WASTE

	Before Treatment with ViroBond™ reagent	After Treatment with ViroBond™ reagent	QLD EPA TCLP Limit to Landfill
Arsenic mg/L	2.8	<0.001	5.0
Chromium mg/L	6.0	0.007	5.0
Copper mg/L	19	0.005	5.0



Queensland EPA was present during excavation of contaminated soil

CONCLUSION

ViroFlow™ Technology using ViroBond™ reagent enabled the concentrations of leachable copper, chromium and arsenate in the contaminated soil to be lowered to well below safe disposal levels and in the case of arsenate to below detection limits.

ViroFlow™ Technology was also used to treat the CCA contaminated water to below ANZECC limits thereby enabling it to be reused on site or discharged if necessary. ViroFlow™ Technology can be implemented quickly and efficiently and is both an environmentally and economically sound solution for contaminated site remediation.

Specialised waste transport was used to transport the contaminated soil to the treatment facility.



Treated soil after ViroBond™ reagent addition



Excavation of contaminated soil

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