



## Stabilization of Multiple Metals with use of MetaFix® Reagent at an Agricultural Site

### Overview

This project site is a portion of an arable land remediation demonstration project in Hunan Province, China. This area was heavily mined since the 1980's due to the abundant nonferrous metal resources at the adjacent river basin. Irregular production activities and flood damage over tailing areas caused serious pollution to the regional ecological environment and nearby farmland. The area was contaminated with multiple heavy metal including arsenic (As), cadmium (Cd), lead (Pb), and zinc (Zn). Despite the high concentrations of mixed metals of concern (Table 1), >99% stability was achieved after treatment with MetaFix® Reagent.

#### Site Soil Concentrations, mg/Kg

As	772 - 1037
Cd	4 - 13
Pb	950 - 1500
Zn	128 - 570

Table 1: Pre-treatment Site Soil Concentrations

### Treatability Study

A lab treatability study was conducted to determine the optimal MetaFix reagent formulation and dosing rate to treat the four heavy metals of concern: As, Cd, Pb, and Zn.

Soil samples were collected after a 7-day reaction period under covered conditions. Significant stabilization of the heavy metals of concern (e.g., ≥ 2 orders of magnitude of reduction of SPLP leaching concentrations) were achieved, far exceeding the remediation goals. (Figure 1)

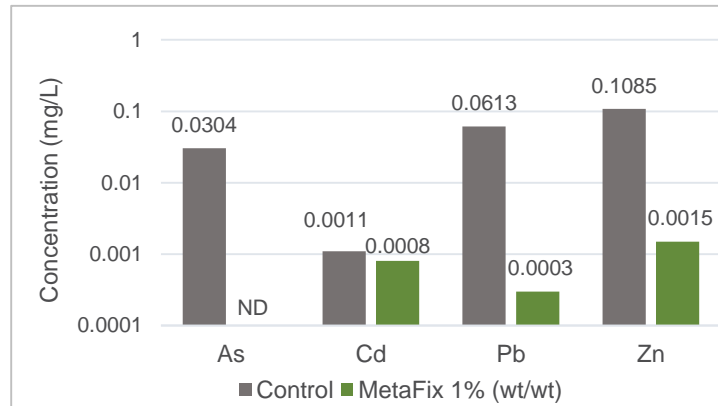


Figure 1: Bench Test SPLP data; >99% metals stabilization after 7 days of reaction time.

### Field Application

The target treatment zone at the site is the top 20 cm soil layer of a 13,340 m<sup>2</sup> area with a total volume of 2670 m<sup>3</sup>. In February of 2015 the site was treated with 1% (wt/wt) MetaFix reagent. The soil was crushed and sieved, then treated in batches by mixing MetaFix product directly into soil using an excavator. Then water was added to close the water holding capacity. The treated soil was ready for inspection sampling after 7-day anaerobic reaction period. The official post-treatment inspection report is not yet available, although according to client's self-inspection analysis, the stabilization performance is consistent with lab test results and deemed satisfactory.

Information courtesy of Beijing Enviro-Chem, a PeroxyChem joint venture in China.

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