

CMF™ Heavy Metal Soil Pollution Treatment Technology

Humans have caused the excessive deposition of heavy metals in soil, resulting in pollution. Its characteristics include fluid morphology and it has slow degradation rates or are non-degradable. Heavy metal ions have different valence, combined, and bound states that are dependent on soil pH, redox potential, and ligands; thereby causing unpredictable changes in soil properties (such as level of toxicity). Furthermore, heavy metal ions can undergo morphological transformation and migration in the soil without being simultaneously degraded. This environmental issue has received increasing attention in the wake of changing environmental values.

Heavy metals are generally toxic to humans, animals, and plants. Heavy metals in the soil can accumulate in crops or leak into groundwater, posing a serious threat to environmental safety and human health.



Presently, many global countries attach significance to and engage in extensive research on heavy metal pollution control methods. Remediation of contaminated soil can be divided into *in situ* and ectopic restoration according to treatment method and whether soil location changes after treatment. Both of these treatment methods have advantages and disadvantages. The methods commonly used for soil heavy metal pollution remediation include engineering, biological, chemical, and agricultural remediation. Present remediation methods are often limited by cost and efficacy.

CMF series products are a series of metal curing agents developed by Advanced Environmental Technologies, LLC (AET). Each product specifically targets certain heavy metal pollutants in the soil to eliminate precipitation and toxicity, effectively and permanently fixing heavy metals in the polymer conformation. Soil treated with CMF products meet international and domestic environmental protection standards through its transformation of "poisonous soil" to "good soil".

In the US market, current products use electron donors and sulfur-containing polymers to reduce and solidify heavy metals. CMF series products have unique and effective performance techniques with lower costs and a wider range of applications (soil and heavy metal types). They are composed of non-toxic and harmless ingredients while manufacturing and packaging processes are centered on ease of use for contaminated sites.

In addition to providing CMF series products, the American company Advanced Environmental Technologies Co., Ltd. also provides training for laboratory feasibility analysis and product applications.

Applicable Heavy Metals

- Lead
- Cadmium
- Copper
- Zinc
- Arsenic
- Uranium
- HG
- Other



Product Features

- This product can be used effectively for a wide range of applications, soil types, and heavy metal pollution.
- Can effectively reduce repair costs by 30-50% in comparison to similar products
- Quick response and long-lasting effect
- Advanced chemical properties significantly reduces dosage (5-10 g of reagents required per 1 g of heavy metal pollution)
- Ease of transportation, storage, and usage
- Minimal to no requirements for personal protective equipment

Technical Properties

CMF™ series products are specially developed by AET for *in situ* remediation of heavy metal soil pollution. Once used, it quickly reacts with heavy metal ions in soil to form unique and stable solid products. These products limit the mitigation of heavy metals in the soil while the strong chemical bond binds ions, making it impossible for groundwater pollution and leakage. Thus, CMF™ series products can effectively eliminate the bioavailability of heavy metal ions and prevent toxicity to humans, animals, and plants through pollution and infiltration methods.



Heavy Meal Ions



In-situ application of product

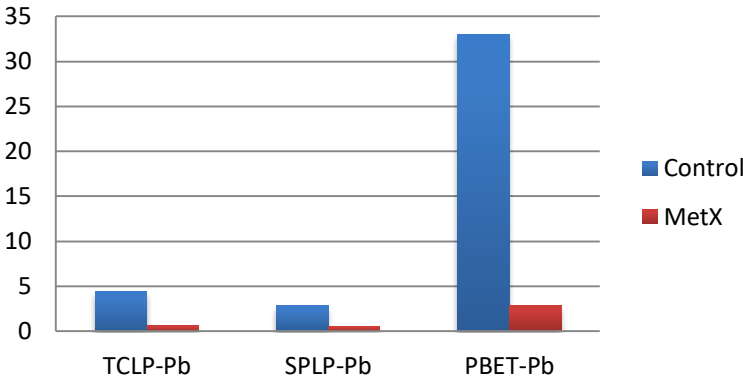


Product Performance

The CMF MetX™ series has undergone extensive testing in applications areas with different soil types and heavy metal species. The data from the example on the right is taken from a contaminated site of a state in the southern United States. The site was contaminated with lead prior to restoration.

Three different analytical methods were used to measure the toxicity of lead in soil: TCLP (toxic characterization leaching procedure), SPLP (synthetic precipitation leaching procedure), and PBET (physically-based extraction test). The data on the right is the percentage of lead detected in the soil. The lead concentration (represented by the blue data bar) detected at the control site (without MetX™) exceeded the standard and showed toxicity, while the test site (with MetX™ product) detected lead concentration (red) and lowered them below standards after several weeks of application.

Percentage of Lead Concentration in Soil



There has been no detectable increase in lead concentration at the site, indicating that the CMF MetX™ series products have successfully and effectively stabilized lead ions in soil.

Application



Contact Information



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