

MercLokTM

MERCURY REMEDIATION TECHNOLOGY

Albemarle's versatile remediation amendment technology, MercLokTM, is designed for the rapid stabilization of elemental, inorganic, and methylmercury found in a range of soils, and industrial wastes. With high efficacy and low loading requirements, MercLok offers a compelling and unique solution for the remediation industry.



Legacy mercury and gold mines are an on-going source of mercury contamination in the watersheds of the western United States and are a leading cause of fish consumption advisories.

MercLok™

MERCURY REMEDIATION TECHNOLOGY

A LONGSTANDING PROBLEM AND A NEW SOLUTION

Mercury is a highly mobile and potent neurotoxin that adversely impacts our water resources and food supply. MercLok provides a cost-effective solution for prolonged immobilization of mercury allowing sites to meet regulatory mercury limits and protecting aquatic and terrestrial life from mercury poisoning. **MercLok has been shown to reduce leachable concentrations of mercury by greater than 95%** at sufficient dosage rates and conditions.

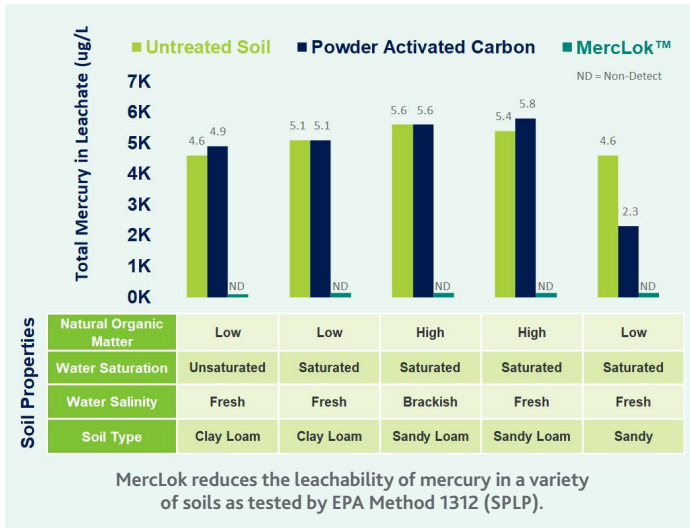
Sites can be treated with MercLok to rapidly sequester elemental mercury and other forms of mobile mercury that, if left untreated, will eventually leach into the surrounding waters and food chain.

MercLok is intended for use at industrial sites such as:

- chlor-alkali
- chemical manufacturing
- munitions sites
- mining

The amendment's efficacy has been validated in soil, waste, and groundwater remediation through pilot tests and full-scale remediation. MercLok will capture and stabilize multiple species of mercury (elemental, ionic, and methylmercury) to meet the concentration criteria and design life of the remedial plan at an adequate dosage level.

MercLok is Effective in a Variety of Soils and Conditions

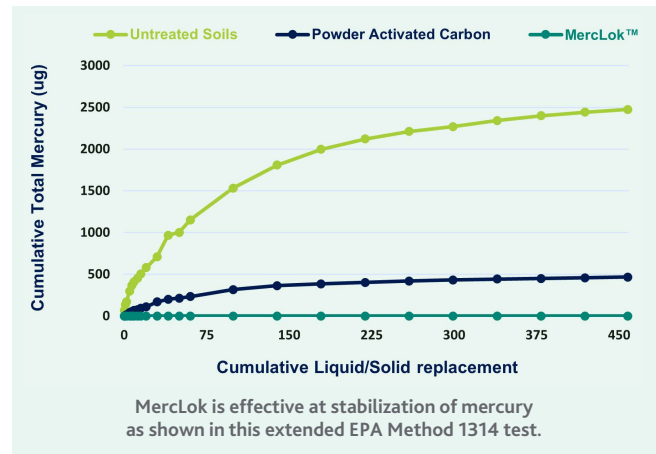


Results from soil studies using industry accepted testing methods have demonstrated MercLok’s ability to capture elemental, ionic, and methylmercury in soil and **reduce the leachability of mercury by greater than 95%.**

In a batch reactor study with a variety of soils contaminated with a high portion of elemental mercury and varying environmental factors (natural organic matter, water saturation level, water salinity and soil composition), MercLok reduced leachability to concentrations below a detection limit of 2 ppb. These results demonstrate how **MercLok far exceeds the performance of another remediation product on the market, powdered activated carbon.**

Exceptional Stabilization of Captured Mercury

A set of column studies on contaminated soil was conducted using US EPA Method 1314 –which compared untreated soil, soil treated with powdered activated carbon, and soil treated with MercLok at the same concentration. The column treated with MercLok showed 99.9% reduction in cumulative mercury leached from the soil and a final cumulative value two orders of magnitude lower than the powdered activated carbon. The robust stability of the mercury on the MercLok was maintained even when extending the cumulative liquid/solid replacement in the EPA Method 1314 to 45 times the prescribed value of 10 L/S.



These results have been confirmed in numerous batch-reactor and column studies across a range of soils and waste materials and demonstrates **MercLok’s strong efficacy to capture and immobilize mercury.**

MercLok Can Remediate Elemental Mercury Contamination

Elemental mercury is difficult to contain, volatilizes to create an environmental and health and safety hazard, and is expensive to transport and dispose. Even soils and wastes that do not have visible mercury beads but are known to contain elemental mercury must be preprocessed and disposed of at a high cost. **MercLok has proven to quickly capture and stabilize elemental mercury with standard test methods and in field trials.**

MercLok Reduces Leachable Methylmercury Concentrations

Methylmercury is the most toxic form of mercury in the environment and is responsible for bioaccumulation of mercury in organisms. Therefore, solutions for reducing methylmercury in the environment are needed. **MercLok has been shown to significantly reduce the concentration of methylmercury in contaminated media leachates and water.**

Techniques for Applying MercLok

MercLok can be applied using existing remediation techniques:

- **In-situ applications** such as slurry fed blenders, excavator-based blending attachments, and other soil techniques can be used to apply MercLok to soil and waste.
- **Ex-situ blending techniques** can also be used to treat soil and waste with MercLok for placement back into the site or disposed of in repositories or landfills.
- **Direct push injection** can be used to form permeable reactive barriers in groundwater formations or along the edges of waste piles.

MercLok is non-hazardous to workers who handle the product with the recommended personal protective equipment. Please refer to the Safety Data Sheet for additional information.



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