

Supplementary Technology Information

The stability of Hg on the MercLok for an in-situ application is confirmed leaching procedure of EPA Method 1312 (Synthetic Precipitation Leaching Procedure) and through the EPA column LEAF tests of Method 1313 and 1314.

Method 1312 is designed to determine the mobility of both organic and inorganic analytes present in liquids, soils, and wastes. This method uses a combination of sulfuric and nitric acid to evaluate leaching of Hg in acid rain and natural acidic conditions. When subjected to the Method 1312 testing, MercLok reduced the leachability of Hg to below a detection limit of 1 ug/l across a range of soil properties. In contrast to MercLok, a high quality powdered activated carbon only reduced the leachability in one type of soil and then only by approximately 50% (**Figure STI-1**).

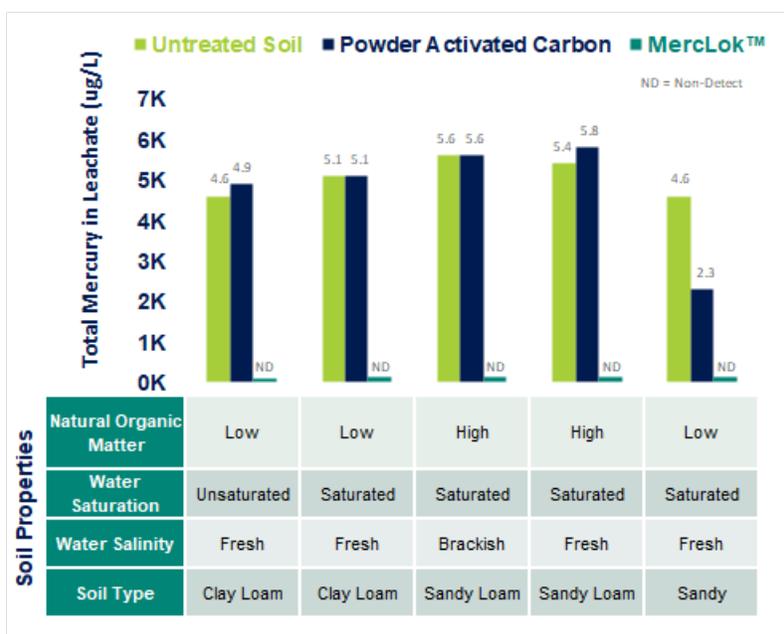


Figure STI-1. Method 1312 analytical results of five test soils with unique characteristics.

Method 1313 is a column test designed to evaluate the partitioning of constituents between liquid and solid phases at or near equilibrium conditions over a wide range of pH values. MercLok was mixed into Hg contaminated soil and placed in a column through which water of pH values ranging from 1 to 13 was pumped. More than 99% of the Hg in the contaminated soil was captured by MercLok and immobilized in the column at pH of 1-11 and more than 97% was immobilized at pH of 12-13 (**Figure STI-2**).

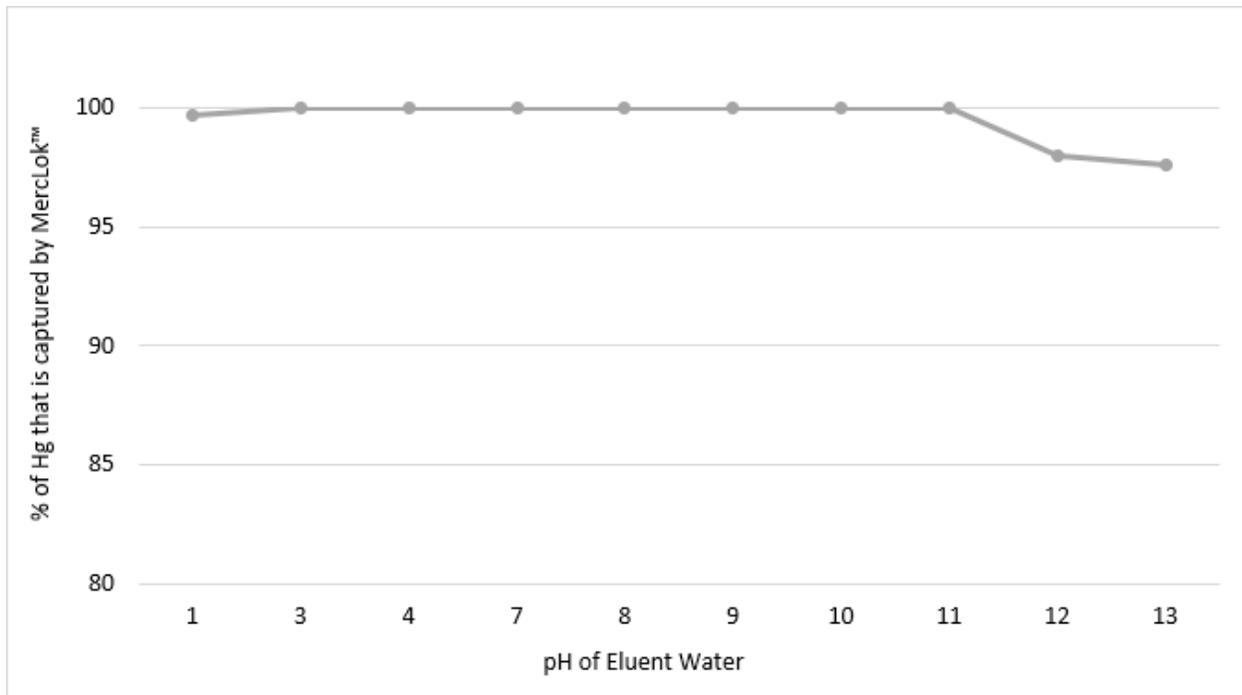


Figure STI-2. Method 1313 analytical results of column tests over a range of leaching water pH.

Method 1314 is a percolation column test designed to evaluate constituent releases from solid materials as a function of cumulative liquid-to-solid ratio. A column of highly contaminated soil was treated with MercLok and showed a 99.9% reduction in cumulative mercury leached from the soil.

The robust stability of the mercury on the MercLok was maintained even when extending the cumulative liquid/ solid (L/S) replacement in the EPA Method 1314 to 45 times more than the prescribed value of 10 L/S.

In comparison to another amendment, the MercLok treated column showed a final cumulative value of leached Hg two orders of magnitude lower than the powdered activated carbon (**Figure STI-3**).

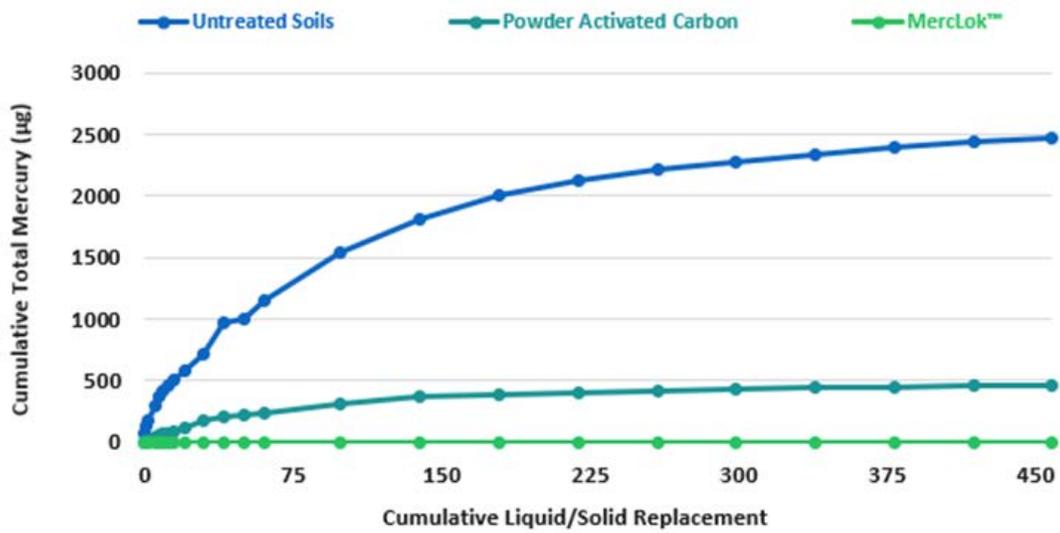


Figure STI-3. Method 1314 analytical results comparing leachate Hg mass from test column treatments.