

Leachability of Arsenic, Chromium and Copper from Weathered Treated Wood

Abstract

The objective of this study was to quantify the loss of arsenic, chromium and copper from weathered treated wood under normal field conditions as most residential structures currently in service in the U.S. have been constructed at least 3 years ago. For comparison, leaching from different retention levels of weathered CCA treated wood (low, medium and high) is compared to leaching from new ACQ treated wood and new untreated wood which was used as a control. The experiment consisted of six leaching systems set up outdoors. Each system was designed to collect rainfall which fell within a 0.52 m² surface area and in the process was impacted by 0.21 m² surface area of each wood sample. Measurements included weekly rainfall depth, pH (of the rainfall and rainfall leachate), and the concentration of arsenic, chromium and copper in the rainfall leachate. Arsenic was found to leach at a higher rate than chromium and copper in all CCA treated wood samples with proportional relations to the retention level of CCA in wood. Results show an inverse relationship between rainfall depth and leached concentrations of metals for low to medium CCA retention levels and a directly proportional relationship with the high retention CCA treated wood sample. For all wood samples, a directly proportional relation between rainfall depth and the mass of metals released was observed. In addition, for CCA treated wood samples, high correlations were found among the leaching of arsenic, and copper relative to chromium; the fixing agent, with a stronger correlation between As and Cr. The leaching of copper from the ACQ treated wood was at the same level as the leaching of arsenic from the CCA treated wood of medium retention level. Overall results show that leaching of metals/metalloids from in-service pressure treated wood is a continuous process extending long beyond the time the structure was first constructed.