



CCA Depletion in Utility Poles

BACKGROUND

Depletion and redistribution of preservative components were evaluated on CCA-treated poles in service for over six years in Conley, Georgia. Due to a lack of initial data on individual poles, a statistical approach was taken in which retentions below ground were compared to retentions above ground. It was hypothesized that the below-ground retentions could be lower than the corresponding above-ground retentions, based on the premise that wood in ground contact is subject to a higher leach potential than wood above ground.

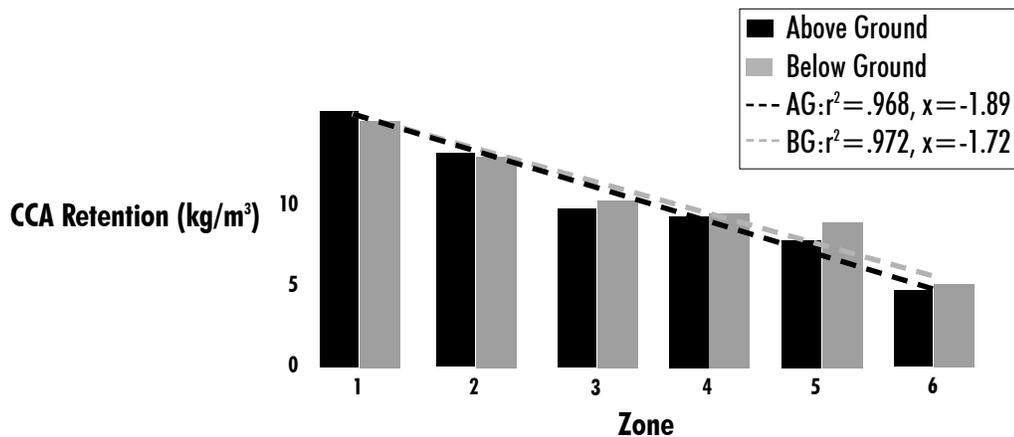
METHODS

Five CCA Type C oxide treated southern pine poles were analyzed in 1995 to obtain an estimate of CCA depletion. The poles had been treated in 1988 and served as controls for climbing trials. Four borings were taken at right angles around the pole, approximately 0.25m above the ground line. Another four borings were taken in the same manner 0.25m below the ground line. Each 75mm-long boring was segmented into six 12.5mm zones. The

samples were oven-dried, ground in a Wiley mill, digested in concentrated nitric acid, and analyzed for CCA retentions via an Inductively Coupled Plasma Emission Spectrometer (ICP) in accordance with AWPA Standard A21-94.

RESULTS

Retentions for above- and below-ground exposures are graphically depicted below. There were no significant differences between exposures. The differences observed among zones were subjected to linear regression analysis. There was no appreciable difference between the slopes of the above and below ground exposures. This indicates that not only is there no difference in average retentions of either exposure but there is no apparent redistribution of chemical between zones. Retentions of CCA constituents — CrO_3 , CuO , and As_2O_5 — were also examined by zone. Again there were no significant differences between above-ground and below-ground retentions of any of the oxide components, nor appreciable differences between the slopes of the exposures.



CONCLUSIONS

This study proved there was no statistical difference in CCA retentions between above-ground and below-ground sections of poles exposed for more than six years in Georgia. Based on the fact that depletion of chemical is more severe in ground contact than it is above ground, it is reasonable to conclude that little to no depletion of CCA has occurred in this time. This position is further supported by the fact that there is no apparent redistribution of chemicals from one zone to another.

Ref: IRG/WP 95-50049 "CCA type C depletion of southern yellow pine utility poles" by Peter D. Osborne and Roger F. Fox