

Treated Wood Planted Post Study: Assessment of Leaching of Various Wood Preservatives from In-Service Wood Poles and Prevention Methods to Mitigate Leaching

Product ID: 1017934
Date Published: 11/12/2009
File size: 256.00 KB

Sector Name: Environment
Document Type: Technical Update
File Type: Adobe PDF (.pdf)

Full list price: \$2,375 (US dollars)

[For your price. log in](#)

This product is available for download for funding member. [Log in](#) to access.

Non-Funding members may [log in](#) and use the Order Request Form to Order this Product.

Contact the Order Center for help accessing this document, 1-800-313-3774 Option 2 or 650-855-2121. You may also send an email to orders@epri.com.

Abstract

This Technical Update describes the interim results of a planted post study currently under way at the Austin Cary Memorial Forest (ACMF), operated by The University of Florida, in Gainesville. The purpose of this research is to examine the effectiveness of commercially available prevention methods to reduce preservative migration from treated wood poles, compare the migration of constituents of various wood treatments, and assess the environmental impacts and performance of untreated chestnut.

Newer Version of

1005302 - Treated Wood Planted Post Study: Assessment of Prevention Methods for Mitigating Leaching of Wood Preservatives from In-Service Wood Poles

Background

For many years, utility companies have used wood products treated with various organic and inorganic preservatives for utility poles. Treatments include creosote solutions; oil-borne preservatives such as pentachlorophenol (PCP) and copper naphthenate; and waterborne preservatives containing metals such as arsenic, copper, and chromium. Previous EPRI research has demonstrated that these chemicals can bleed or leach from in-service wood poles and potentially impact soil and groundwater. The utility industry needs information on the effectiveness of preventative measures to mitigate or eliminate the migration of wood preservative chemicals from wood poles. Comparative data on the migration of different wood preservatives from treated wood poles would also be useful for making selections on which treatments to specify for new wood pole purchases.

Objective

- To examine the effectiveness of commercially-available methods to prevent migration from treated wood poles and compare the migration of wood preservatives from wood poles treated with different preservatives
- To evaluate the environmental impacts and performance of untreated chestnut poles as an alternative to treated wood

Approach

The project team surveyed utilities to determine which wood species are being used for posts treated with preventatives of interest as well as to gather information on what methods were or had been in use to prevent the migration of preservative materials from treated wood poles. In the spring of 2004, the team installed 28 posts, including 3 untreated wood posts and 25 posts treated with chromated copper arsenate (CCA), copper naphthenate, or ammoniacal copper quat (ACQ Type B), PCP, or creosote. The team applied commercially available prevention products—two BioTrans field liners and a North Pacific (NOR PAC) fiberglass sleeve—to some of the posts. One of the CCA poles had been subjected to a post treatment liquid fixation process. The team installed lysimeter collection systems for collecting and analyzing groundwater leachate under all of the treated poles and one of the untreated chestnut poles. The team collected groundwater, wood, and soil samples at intervals to assess the migration of wood preservatives from the treated posts.

Results

While there have been four full rounds of groundwater sampling, it is still too early to draw conclusions about the performance of

various treatments or the prevention methods. Based on the data collected to date, the following preliminary observations can be made:

- For the CCA posts, there is some leaching of chromium and copper, and arsenic leaching may be starting to occur.
- For the copper naphthenate posts, copper was measured above control levels during the last three rounds, while total petroleum hydrocarbon (TPH) detections appear to be increasing with time.
- For ACQ posts, copper has not been measured at significantly elevated levels while didecyl dimethyl ammonium chloride (DDAC) was measured above the controls at very low levels at two locations in groundwater during the last sampling round.
- For PCP posts, PCP and chlorophenols were measured during the last sampling round at each location; and TPH was measured at each location during the last two sampling rounds.
- For creosote posts, chemicals of interest are not yet present in the groundwater.
- For chestnut, the water results mimic the controls; and there is no apparent leaching.

The next full groundwater-sampling round is planned for 2010. The results of this round of groundwater sampling will be used to evaluate the results of the study and guide future sampling efforts at the site. In addition, supplemental wood characterization and soil sampling may be completed in the near future, depending on the results of the next round of groundwater sampling.

EPRI Perspective

Utilities have a variety of options for transmission and distribution poles and need reliable data on the cost, performance, and environmental impact of each option. EPRI has a continuing commitment to providing this information. This report studied ways to prevent or mitigate the release of preservative materials into soils adjacent to wooden utility poles, an issue EPRI first addressed in 1997 (EPRI report TR-108598) and will continue to study as new preservatives and mitigation methods emerge.

Program

2009 T&D Facilities & Equipment: Environmental Issues

Keywords

Wood utility poles
Soils
Toxicity
Regulation
Wood preservatives

Note:

EPRI Customer Assistance Center
(800) 313-3774
email: askepri@epri.com

Direct URL

http://my.epri.com/portal/server.pt?Abstract_id=00000000001017934