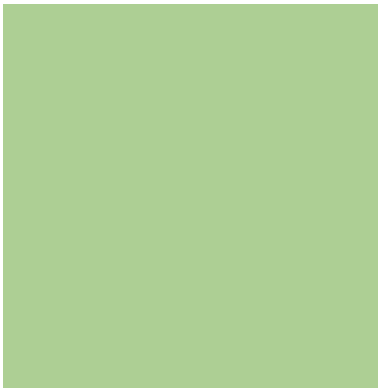
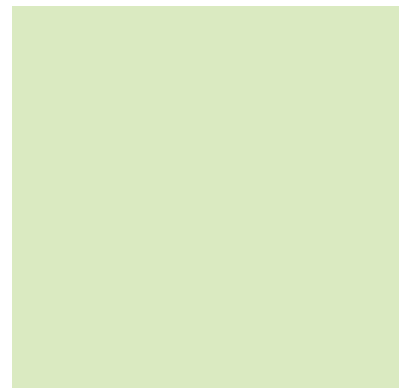




An Updated Report on an Independent Study of the
**Environmental Effects of
Remedial Pole Treatments**



Osmose[®]
The Structure Company



Study Conducted by O'Brien and Gere Engineers, Inc.



1992 ESEERCO STUDY

In 1992, a field study and associated risk assessment was sponsored by the Empire State Electric Energy Research Corporation (ESEERCO) and performed by O'Brien & Gere Engineers, Inc. (OBG) to evaluate the potential ecological and human health impacts related to the application of five supplemental, or remedial, wood preservatives to in-service utility poles. The field study involved post-application monitoring for active ingredients and biological impacts in a wetland area of the New York State Adirondack Park. The remedial preservatives and principal active ingredients evaluated were OsmoPlastic (fluoride, chromium, creosote); Dursban (chlorpyrifos); WoodFume (sodium methyl dithiocarbamate); Hollow Heart

(fluoride, chromium, arsenic); and Cop-R-Nap (copper, naphthenic acid). Each of these remedial preservative technologies was manufactured and/or distributed by Osmose Utilities Services, Inc. (Osmose) at the time of the ESEERCO testing.

The ESEERCO Field Study established that essentially no preservative active ingredients were released to surrounding ground water, surface water or soil in the 17 month post-treatment sampling period.

Researchers concluded that the supplemental utility pole treatments did not cause measurable post-application impacts to Adirondack Park wetlands. The absence of detectable residues was related to a combination of physical and chemical factors including

the small original mass of applied materials, a high affinity for adsorption to wood surfaces, and an ability of the preservatives to undergo volatilization or biodegradation.

Researchers also performed a risk analysis using computer generated estimates of preservative concentrations released from the remedially treated poles.

Predicted estimates of active ingredient concentrations were found to be significantly higher than actual measured levels in soil, surface or ground water, yet were still lower than USEPA drinking water criteria. Thus, the modelled analyses further supported the conclusion that the supplemental wood pole treatments did not present a significant health risk to biota or humans.

CURRENT STUDY

While Osmose's remedial preservative technologies have been reformulated to be even more environmentally responsible than those evaluated in the 1992 ESEERCO Study, Osmose engaged OBG to perform a risk assessment to establish the potential ecological and human health effects, if any, related to the application of the following remedial wood pole preservatives (Figure 1):

1. MP500-EXT®
2. Hollow Heart® CB
3. Pole Wrap™ CB
4. MITC-FUME®
5. EZ-FUME®
6. WoodFume®

For this risk analysis, OBG Researchers utilized a ground water transport computer model similar to that utilized in the ESEERCO Study to generate "worst case" estimates

of preservative release in stormwater and groundwater at a 15 m distance downgradient from the pole.

Risk to human receptors from exposure to boron and copper was evaluated using USEPA Regional Screening Levels (RSLs) for tap water. A *mitc* tap water standard was derived by OBG Engineers using existing toxicological literature and RSL methodology. Risk to aquatic receptors from individual constituents was determined by comparing the modeled surface water concentrations to the USEPA's ECOTOX database (acute exposure), and BTAG* Freshwater Screening Benchmarks (chronic exposure).

**USEPA Region 3, Biological Assistance Technical Group (BTAG)*

As with the 1992 ESEERCO Study, predictive estimates of preservative release for this

computer modeled risk assessment are conservative. This is particularly true when considering the cautious nature of the USEPA RSL residential tap water exposure scenario of bathing 42.6 minutes/day; drinking 2.5 liters/day; for 350 days/year for 26 years. Even with this conservative approach, predicted surface water and potable well water concentrations remained below the environmental and human health thresholds established by EPA. Given these findings, OBG Researchers concluded that supplemental utility pole treatments MP500-EXT®, Pole Wrap™ CB, Hollow Heart® CB, MITC-FUME®, WoodFume® and EZ-FUME® provide minimal risk to the environment and human health when properly applied.

Figure 1: Remedial Preservative Technologies

Remedial Preservatives	Application	Active Ingredients
MP500-EXT®	External preservative paste	Micronized copper carbonate, sodium tetraborate decahydrate
Hollow Heart® CB	Internal liquid preservative	Copper ethanolamine complex, disodium octaborate tetrahydrate (DOT)
Pole Wrap™ CB	External dry preservative bandage	Copper carbonate, boric acid
MITC-FUME®	Internal fumigant, solid melt	Methylisothiocyanate (<i>mitc</i>)
EZ-FUME®	Internal fumigant, solid body	Dazomet, decomposes to <i>mitc</i> at a conversion efficiency of 45%
WoodFume®	Internal fumigant, liquid	Metam sodium, decomposes to <i>mitc</i> at a conversion efficiency of 18%

Committed to Environmental Stewardship

Osmose is dedicated to the conservation of utility resources and strives to create a culture of environmental awareness both as a product developer and as a service provider. We support the research and development of products and services that extend the safe and reliable service lives of structural T&D assets for many years beyond what is typically expected. Osmose has established R&D priorities intended to maintain efficacy against decay and deterioration while optimizing the volume of active ingredients, lowering the risks to non-target organisms, and eliminating petroleum-based carriers from our product line.

MP500-EXT has the lowest toxicity profile of all registered external remedial preservative coatings for wood poles. It carries an Environmental Claim Validation from UL Environment and is the only 100% solvent-free remedial preservative paste on the market. Hollow Heart® CB also carries an Environmental Claim Validation from UL Environment. It is the first and only liquid internal treatment to receive this validation. UL Environmental Claim Validation demonstrates to the marketplace that MP500-EXT and Hollow Heart CB exhibit volatile organic compound (VOC) content below the limits defined by South Coast Air Quality Management District (SCAQMD) for the Wood Preservatives category of SCAQMD Rule 1113.



VALIDATED

• VOC CONTENT LEVELS IN
MP500-EXT ARE BELOW
THE LIMITS SET BY
SCAQMD RULE 1113
UL.COM/ECV



VALIDATED

• VOC CONTENT LEVELS IN
HOLLOW HEART CB ARE
BELOW THE LIMITS SET BY
SCAQMD RULE 1113
UL.COM/ECV