

WOOD POLE

NEWSLETTER

Volume 25, Fall, 1999



Western Wood Preservers Institute

WOOD VERSUS STEEL Can you pass the test?

The Institute recently surveyed 250 utility engineers and maintenance personnel regarding their views of wood and steel poles. The questionnaire included the following:

If you were to replace wood poles with steel in a typical Grade C distribution line, would it:

- A. Require the same number of class equivalent steel poles?
- B. Require 2-3 times larger class steel poles to equal the wood pole class size?
- C. Require twice the number of steel poles in the equivalent size wood pole class?

Only 2 respondents gave the correct response ("B" and "C") and the vast majority completely failed, listing "A" as the answer.

HOW DID YOU DO?

While a high percentage of distribution lines are built to the National Electric Safety Code Grade C standards, and other lines have moved from Grade B original design to Grade C with increased working loads from new wires and add-ons, few understand the basis of the differences in the design standards. The producers of thin walled steel poles have built and marketed their products on the basis of wood pole equivalencies, basing their calculation and design on Grade B design. What has not been acknowledged is that wood poles have a significantly higher "working load" than thin walled steel poles when designing to NESC Grade C standards. As a

result, "in order to achieve 'equivalency' with wood pole working loads, thin walled steel poles would either have to be 3 or more pole classes larger or have span lengths reduced to the point that approximately 80 percent more steel poles would be required per mile than wood poles of the same class." The whole issue is explored in the North American Wood Pole Coalition Technical Bulletin, "Working load comparisons of wood and thin walled steel poles under NESC Grade C line construction."

(continued next page)



Paulette Ware, Vulcan Chemicals, visits with one of the rodeo participants and his son. Both proudly wear their NAWPC ball caps proclaiming that treated wood poles are "Engineered by Nature, Enhanced by Technology."

16TH ANNUAL LINEMAN'S RODEO

The North American Wood Pole Coalition attended the Lineman's Rodeo & Expo in Kansas City, September 9-11. A total of 230 teams representing 865 linemen from across North America competed in numerous safety and maintenance based competitions on treated wood poles.

RUS ACKNOWLEDGES THE IMPORTANT DIFFERENCE.

The Rural Utility Service recently released guidelines for approval to use Steel Distribution Poles, emphasizing that, **“For NESC Grade C Construction, there should not be a direct substitution of wood poles with steel poles of the same design designation.”** The RUS *Items of Engineering Interest* contains the following table demonstrating the lower relative strength of steel or concrete.

Pole Class	Wood Pole Tip Loads (lbs.)	Steel or Concrete Equivalent Load (lbs.)
1	4500	2800
2	3700	2300
3	3000	1900
4	2400	1500
5	1900	1200
6	1500	950

Unfortunately some suppliers of thin walled steel poles have failed to point out the important distinction in equivalency, thus leading many in the market to accept one for one substitutions with the real potential that resulting lines will fail to meet the requirements of the National Electric Safety Code. (For copies of the NAWPC Technical Bulletin and the RUS Guidelines, contact WWPI.)

PENTA DROPPED FROM PBT LIST

The State of Washington Department of Ecology is developing a policy to address certain chemicals considered to be Persistent, Bioaccumulative and Toxic (PBT). This process has generated concern among utilities because of the inclusion of Pentachlorophenol on the PBT list. The agency has notified industry that they have reduced their list of chemicals of concern in recognition of similar review by the EPA. The revised list does not include Pentachlorophenol!

STUDY FINDS ZINC LEACHING FROM STEEL POLES

Every product and every human activity carries with it some level of environmental impact. While the leaching of chemicals used in preserving wood have been the focus of concern and extensive study, new work has demonstrated that galvanized steel can be a source of heavy metals.

In 1998, Forintek Canada Corporation released the results of a scientific study of five randomly selected galvanized steel poles. The study, directed by P.I. Morris, was prompted by a concern that issues with wood preservative leaching has *“...given a marketing advantage to competing products such as concrete and steel.”*

While a limited study, the research found elevated levels of zinc in the soils adjacent to all the poles studied. The study conclusion: *“Galvanized steel poles can be a*

source of zinc contamination of surrounding soil. After only two years in service, zinc levels exceeded Canadian cleanup guidelines for residential or agricultural use for two of the five poles tested.” The study discussion also noted, *“It should come as no surprise to find high levels of zinc under these circumstances because the principal behind galvanizing is the addition of a **sacrificial** coating of zinc.”*

“Galvanized steel poles can be a source of zinc contamination...”

WOOD VERSUS STEEL...YOU DECIDE



THIN WALLED STEEL POLES



TREATED WOOD POLES

SWISS STUDY REVEALS LIFE CYCLE ENVIRONMENTAL ADVANTAGES OF TREATED WOOD AND CONCERN WITH ALTERNATIVE MATERIALS

“A Life Cycle Analysis of Utility Poles” conducted by the Swiss Federal Laboratories for Materials Testing and Research (Tina Kunniger and Klaus Richter - 1995) examined a broad spectrum of environmental impacts and energy usage of treated wood poles as well as alternative materials including concrete and tubular steel. The study examined the life cycle impact of the products based on 11 environmental parameters ranging from Global Warming Potential (GWP), acidification, ozone creation, toxicity, solid waste and energy consumption. Some of the findings of this report included:

- Steel poles consume 4 times more energy than concrete or round wood poles.
- In terms of fossil fuel energy consumption, the manufacturing process for tubular steel is 8 times greater than treated wood poles.
- Wood ranked better in 9 out of the 11 environmental evaluation parameters. Much of the advantage was attributed by the researchers to “...the low input of fossil energy and the positive aspects of wood as a material with a closed carbon-cycle.”

- Wood poles contribute little to the greenhouse effect, and their critical air and water volumes are considerably smaller compared to concrete and steel.
- The Global Warming Potential from a steel transmission line was nearly 10 times higher than that of a wood pole line.

From a global perspective, the study concluded: “...the quantitative assessment of the environmental effects underlines the fact that treated wooden poles are fulfilling the resolution of the Earth Summit of Rio de Janeiro in 1992, where the reduction of greenhouse gases and an increased utilization of renewable resources was given priority.” (Contact WWPI for a copy of the study report.)

WHAT ARE THE ENVIRONMENTAL RISKS OF USING TREATED WOOD POLES?

From the concerned homeowner to national environmental groups, questions are sometimes directed at utilities regarding the safety and environmental impact of treated wood utility poles. Just how much risk is there? To help people understand the issues, the North American Wood Pole Coalition asked internationally recognized environmental toxicologist, Dr. Kenneth Brooks of Aquatic Environmental Sciences, to summarize the science and risks associated with the common wood preservative systems used to treat wood utility poles. The document is being published as a NAWPC Technical Bulletin, *Pressure Treated Wooden Utility Poles and Our Environment* and will be available in the near future. (Contact WWPI to receive a copy.)



80% more steel poles would be required per mile than wood poles of the same class.

ADVANTAGE: Treated Wood Poles



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