



Editor - Tira than Cogger

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BMPs for Treated Wood - A Better Product for Aquatic Applications

Increasingly, the specifications for treated wood used in bridges and docks in the western United States and Canada are including the same requirement. All material must be produced in compliance with the *Best Management Practices (BMPs) for the Use of Treated Wood for Use in Aquatic Environments* issued by the Western Wood Preservers Institute (WWPI) and/or the Canadian Institute of Treated Wood (CITW). This new tool is intended to improve environmental response of the products and is in addition to performance requirements such as the American Wood Preservers Association (AWPA) "C" Standards. So, what are BMPs and why use them?

Why BMPs?

In the early 1900s, the wood treating industry on the west coast was experiencing increasing public concern and regulatory restriction on the use of treated wood in or around the water. It initially began in Washington State where state environmental agencies were attempting to ban the product through defacto permit limits and/or direct regulation. The issue expanded when Idaho Department of Environmental Quality (DEQ) officials banned treated wood in all state waters; a creosote moratorium was put in place

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The Fiscal Year 1998 Wood In Transportation Cost-Share Grants Program

The Wood In Transportation (WIT) Program, formerly known as the National Timber Bridge Initiative, has funded more than 375 demonstration bridges in 48 states during the last nine years. More than 220 have been completed, and they are demonstrating the use of wood in transportation applications. A great deal has been learned in improving designs and extending the life of wooden structures. We continue to learn and to develop more efficient uses for wood in transportation.

For the Fiscal Year 1998 demonstration program, the WIT Program anticipates approximately \$375,000 in funding. Because of limited funding, the cost-share program will focus on commercializing sound and economical technology that has been developed during the last nine years of the WIT Program. We plan to fund up to three "*Commercialization Projects*" in Fiscal Year 1998. The maximum Forest Service grant amount will be \$150,000 per project.

A Commercialization Project is a cooperative project in which the USDA Forest Service shares the cost with partners who are willing to share the benefits and commercial opportunities with others. These partners will work closely with Forest Service personnel to ensure that structurally adequate and economical wooden structures are built in a way that maintains strict quality control and provides a means to monitor the structure's performance. The outcome of these projects will be structures that showcase wood-in-transportation technology and provide useful design and cost information for potential users in other parts of the nation. An example of a commercialization project is the construction of four bridges using the same design in a single-

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for many California waters; and government agencies in the United States and Canada became hesitant about the use of treated wood. Treated wood has even become involved in the *Endangered Species Act* with claims by the National Marine Fisheries Service that treated wood might adversely impact the listed salmon in the Columbia River. While some of these issues have been resolved, many bureaucrats and advocacy groups continue to focus on limiting the use of treated wood all without regard for the science, economics, or structural advantages of the products.

In 1992, the WWPI leadership examined the issue and concluded that without an aggressive program to research the science and address environmental concerns, the use of treated wood in aquatic applications could be lost. An Aquatic Working Group was formed consisting of representatives of all the North American treating industry organizations and the chemical manufacturers. This working group conducted a number of specific strategies to address the issues in general as well as responding to specific situations. There have been two key elements of the strategy:

- 1 understanding the facts and
- 2 producing a more environmentally friendly product.

The Facts – To develop a sound and unbiased factual base, WWPI contracted Dr. Kenneth Brooks – Aquatic Environmental Sciences, 644 Old Eaglemount Road, Port Townsend, Washington 98368 – to conduct a worldwide literature review and develop an assessment of the environmental impacts of treated wood in aquatic environments. This effort produced an extensive data base and led to the development of Computerized Risk Assessment Models (contact: Mr. R. Dennis Haywood, WWPI, 601 Main Street, Suite 405, Vancouver, Washington 98660) for each of the major aquatic use preservatives now available for general use.

Gaps in the knowledge were identified, resulting in new research efforts aimed at filling

in the most critical holes in the information base. The bottom line of the efforts, all conducted in a conservative mode so far as giving top priority to assuring environmental protection, is clear:

When used appropriately, treated wood does not represent an unacceptable risk to the aquatic environment. The cases where treated wood is unacceptable due to high volumes of material in poorly flushed waters are a small minority of possible applications.

While the use of treated wood continues to be criticized, the appropriateness of the product has been supported in every case where the aquatic models and BMPs have been challenged in a court room or fact driven process.

A Better Product – The research effort revealed that too little industry attention had historically been paid to environmental impacts. In the past, assuring that AWPA standards were met was the dominant objective. This was generally accomplished by significantly over treating the products – "if a little is good - more is better." It was also clear that opportunities existed to produce a more environmentally sensitive product without jeopardizing performance standards. This led to the development of the **BEST MANAGEMENT PRACTICES FOR THE USE OF TREATED WOOD IN AQUATIC ENVIRONMENTS**. The BMPs, which are in effect environmental standards, were developed through a consensus process involving all elements of the treating industry. They were jointly the product of WWPI and CITW, designed for use in the western United States and Canada. The first edition of the USA version of the standards was issued in early 1994 and have since been revised three times, most recently in July 1996.

In negotiations with regulators and addressing market concerns, the BMPs along with our data base and Risk models have put the industry in a position to take charge of its own future. We can assure the concerned public that we will produce the most appropriate product possible and can back up our claims with good science. The BMPs have been key in resolving a number of regional

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regulatory issues. WWPI has promoted the BMPs broadly, and a number of specifiers and regulators, including parts of the Navy, Corps of Engineers, States of Washington and Idaho, and the USDA Forest Service have made their use mandatory.

What are the BMPs?

The BMPs are included within a guidance document that provides the justification for the use of BMPs, direction for specification, environmental discussions and analysis guidelines, and the specific BMPs for each of the preservative systems. It is important to remember that the BMPs totally incorporate the AWPA Standards and provide for procedures beyond AWPA to assure our products "...are manufactured and installed in a manner which minimizes any potential for adverse impacts to these important [Aquatic] environments."

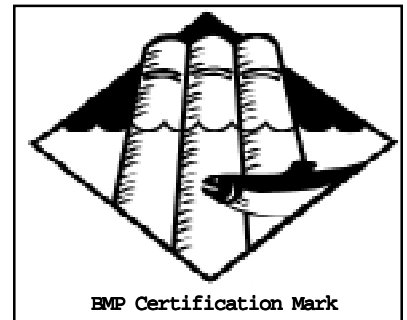
Each specific BMP contains a number of common elements:

- Defines the appropriate uses of the products in or near the water in terms of the AWPA "C" standards and chemical group guidelines.
- Requires treating under the AWPA standards.
- Emphasizes product surface cleanliness and good housekeeping practices.
- Provides specific treatment and/or post treatment procedures to minimize excess surface preservative (oil-borne) or encourage fixation (waterborne).
- Provides for surface inspection and rejection of products not meeting standards.

The trickiest part of the BMPs is to assure that the AWPA penetrations and retention standards are met, but that the amount of preservative present above the standard is minimized. Each BMP contains a goal addressing attention to Maximum Chemical Loading. Treating experience has demonstrated that setting and achieving a fixed maximum chemical level is

technologically impractical. This is because of problems in treating refractory species or heartwood. Rather than setting Maximum Chemical Levels, industry emphasis has focused on minimizing treatment beyond AWPA and re-examining standards to see if lower retention levels can be specified through the AWPA procedures. This has resulted in lower retentions for marine piling in northern waters.

The BMPs instructions encourage the purchaser to get written certification from the treater that the materials were produced under and conform with



the BMPs. A third party inspection program with a certification mark is currently being put in place through WWPI. The program, available to all of industry, should be in place for use in the western United States by the end of 1997.

The BMPs for aquatic uses are here to stay. Those close to the issue believe if it were not for the BMPs and the related research efforts, these preservative uses would have already been lost based solely upon perception. Looking to the future, research is needed:

- 1 to verify if the desired and intended environmental results are being obtained from the BMPs;
- 2 to seek out more opportunity for lower retentions; and
- 3 to examine opportunities to improve the BMPs in terms of treating practices and/or installation procedures. Fortunately, much of this research is currently underway as a result of work by several groups, including the USDA Forest Service, Wood In Transportation Program.

BMPs – A Tool for Responsible Use – Without regard for science or actual risk levels, the use of chemicals is under increasing and persistent scrutiny throughout society; from extreme chemophilic environmental groups, to academia,

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government regulators, and the parents who just want to be sure their children are safe. Industry must accept responsibility and address these concerns in an aggressive, pro-active, and scientifically honest manner. BMPs are a pro-active opportunity to standardize what society considers our environmental responsibility . . . but doing it ourselves before it is done to us. For those that recognize the value of wood in bridge and water structures, BMPs are a tool to help protect the long-term use of this renewable resource. To obtain a copy of the BMP guide book contact:

Western Wood Preservers Institute, 601 Main Street, Suite 405, Vancouver, WA 98660, Phone: 800-729-WOOD or 360-693-9958.

or

Canadian Institute of Treated Wood, 200-2430 Don Reid Drive, Ottawa, ON K1H 8P5, CANADA, Phone: 613-737-4337.

— **R. Dennis Hayward**
Executive Director
Western Wood Preservers
Institute
Vancouver, WA

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Environmental Regulations and Treated Wood Products

In 1993, the Western Wood Preservers' Institute (WWPI) and the Canadian Institute for Treated Wood (CITW), in cooperation with the treating industry and other organizations such as the USDA Forest Service, developed the *Best Management Practices for the Use of Treated Wood for Use in Aquatic Environments*. As mentioned in the article on page one of this newsletter, the focus of these standards is to ensure that treated wood products will be sufficiently durable without having harmful effects on the environment. The BMPs provide guidance to treaters on minimizing negative envi-

ronmental impacts at the treating facility, as well as pretreatment and post treatment practices to minimize long-term leaching of treatment chemicals into the environment. The BMPs also instruct users about how to specify and inspect wood products to ensure that they get a durable building material that meets environmental requirements of federal and state regulatory agencies.

In the fall of 1993, the State of Idaho's Department of Environmental Quality initiated a policy change which stated, "The use of creosote or pentachlorophenol (penta) as a wood preservative is not recommended for use in structures which will be placed in or over the water (within high water marks). Lumber which has been treated with wood preservatives should not be used where the lumber may come into contact with water."

Strict interpretation of this policy would have stopped construction of new treated timber bridges and most repair work on existing timber bridges. The Forest Service has over 600 vehicular timber bridges and 200 trail timber bridges in the State of Idaho. Counties and other local communities also have numerous treated timber bridges. Eliminating treated wood products from in or over surface waters would have jeopardized the use of an important bridge building material. The Forest Service's reconstruction and bridge repair/maintenance program would also have been inhibited.

WWIP was in the process of finalizing the *Best Management Practices for the Use of Treated Wood for Use in Aquatic Environments* when Idaho issued its proposed policy. Dennis Hayward, from WWPI, representatives from the wood industry, and Forest Service personnel, among others, began a dialogue with the Idaho Department of Environmental Quality. Using scientific data and research collected and compiled during preparation of the BMPs, a group representing the wood treatment industry, and user groups, met with state officials on several occasions to work out a reasonable policy. The group attempted to draft a policy that:

- was based on sound scientific research,

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county or multi-county area that preferably uses local timber resources.

Even though the National Wood In Transportation Information Center will not be accepting applications that propose a single vehicular or pedestrian bridge, or a special project, as we have in the past, the possibility will remain for us to fund a unique project that fits the goals of the program and advances modern wood-in-transportation technology. If funding is available, such additional projects will be considered on a case-by-case basis. If future budgets improve, we may again accept applications for single-structure projects, but in Fiscal Year 1998 the program focus will be on the commercialization of proven technology.

If you would like to complete a Commercialization Project application, please contact your regional Wood In Transportation Coordinator listed below, or the National Wood In Transportation Information Center, USDA Forest Service, 180 Canfield Street, Morgantown, WV 26505, Phone: 304-285-1591.

Northern Region (R1)

(*Northern ID, MT, ND*)
Dean Graham
USDA Forest Service
Fed. Building, 200 E. Broadway
P.O. Box 7669
Missoula, MT 59807
Phone: (406) 329-3521
FAX: (406) 329-3132

Southwestern Region (R3)

(*AZ, NM*)
Larry Roybal
USDA Forest Service
517 Gold Ave., S.W.
Albuquerque, NM 87102
Phone: (505) 842-3421
FAX: (505) 842-3800

Pacific Southwest Region (R5)

(*CA, HI*)
Von Helmuth
USDA Forest Service
630 Sansome Street, Room 1027
San Francisco, CA 94111
Phone: (415) 705-2640
FAX: (415) 705-2836

Rocky Mountain Region (R2)

(*CO, KS, NE, SD, WY*)
Robert Dettmann
USDA Forest Service
740 Simms St., P.O. Box 25127
Lakewood, CO 80225
Phone: (303) 275-5741
FAX: (303) 275-5754

Intermountain Region (R4)

(*Southern ID, NV, UT*)
J. Keith Schnare
USDA Forest Service
Federal Building
324 25th Street
Ogden, UT 84401
Phone: (801) 625-5370
FAX: (801) 625-5483

Pacific Northwest Region (R6)

(*OR, WA*)
William von Segen
USDA Forest Service
P.O. Box 3623
333 SW First
Portland, OR 97208
Phone: (503) 808-2348
FAX: (503) 808-2339

Southern Region (R8)

(*AL, AR, FL, GA, KY, LA, MS, NC, OK, SC, TN, TX, VA*)
Karen Kenna
USDA Forest Service
1720 Peachtree Road, N.W.
Atlanta, GA 30367
Phone: (404) 347-7206
FAX: (404) 347-2776

Northeastern Area, S&PF

(*CT, ME, MA, NH, NY, RI, VT*)
Mary Chapman
USDA Forest Service
P.O. Box 640
Corner Concord & Mast Rds.
Durham, NH 03824
Phone: (603) 868-7687
FAX: (603) 868-7604

Alaskan Region (R10)

(*AK*)
Chad Converse
USDA Forest Service
3301 C Street, Suite 522
Anchorage, AK 99503-3956
Phone: (907) 271-2862
FAX: (907) 271-2897

Northeastern Area, S&PF

(*IL, IN, IA, MI, MN, MO, WI*)
Steve Bratkovich
USDA Forest Service
1992 Folwell Ave
St. Paul, MN 55108
Phone: (612) 649-5246
FAX: (612) 649-5285

Northeastern Area, S&PF

(*DE, MD, NJ, OH, PA, WV*)
Ed Cesa
USDA Forest Service
180 Canfield Street
Morgantown, WV 26505
Phone: (304) 285-1530
FAX: (304) 285-1505



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- adequately protected the aquatic environment, and
- allowed construction with treated wood products that would last indefinitely if properly designed, constructed, and maintained.

Idaho Environmental Policy

The final version, agreed to by all parties, was a state policy that recognized the advantages of using a durable wood product while protecting the aquatic environment. The major points of the agreed-upon Idaho policy are as follows:

1. Only preservative chemicals registered for specific use by the Environmental Protection Agency (EPA) can be used in, over, or around water.
2. All treated wood products shall be produced in compliance with the *Best Management Practices for the Use of Treated Wood for Use in Aquatic Environments*.

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- 3 When significant quantities of treated wood are to be placed in, over, or around a small body of water with low flow velocity, a site-specific risk assessment may be required.
- 4 Field treating with preservatives shall be minimized, and where it is necessary, appropriate precautions will be taken to collect drips or spills. All personnel must be properly trained and/or licensed to apply preservative, as required by EPA.

Main Points of the BMPs

The BMPs are a valuable tool in communicating and validating the scientific data about treated wood. The following is a brief synopsis of the contents of the BMPs for the five most common types of wood treatment for timber bridges in the United States.

Creosote, Penta, and Copper Naphthenate

Creosote, a coal by-product; penta; and copper naphthenate are generally carried in an oil solvent. The goals of these three treatments is to get the treatment chemical into the cell walls to prevent fungi and insect attack. To minimize leaching of the oil solvent and treatment chemicals, as much residual chemical as possible should be removed from the cell voids after treatment.

CCA and ACZA

CCA and ACZA are chemicals carried in a water solution that fixate with the wood material. The BMPs specify post-treatment pro-

cesses, such as: air or kiln drying, steaming, and hot water baths for CCA; and heat, vacuum, and air or kiln drying for ACZA. A chromatropic acid test is required for CCA to indicate that the chemicals are fixed to the wood. ACZA is fixed when the ammonia has evaporated, which is a function of time and temperature.

Treatment using BMPs should be specified when ordering treated wood products. A certification of compliance should be required to ensure that the wood was treated according to the BMPs.

Inspection and Certification

When treated wood is delivered it should be visually inspected by the owner. According to the BMPs for creosote, penta, and copper naphthenate, if there are "excessive residual materials or preservative deposits" and "if the material does not appear clean and dry" it should be rejected. Certification of CCA and ACZA should indicate that the CCA product passed the chromatropic acid test, and that the ACZA product was held for the appropriate length of time at the proper temperature.

Treated wood can be an environmentally friendly construction material and should only be used when it is. State and local regulations requiring responsible use of treated wood are important and will be an ever-increasing factor in treated wood construction.

— Merv Eriksson
Structural Engineer
USDA Forest Service
Missoula, MT 59801

Article contributions, questions or comments may be sent to Ed Cesa, Program Manager, National Wood In Transportation Information Center or Ms. Tinathan A. Cozer, Information Assistant, USDA Forest Service, 180 Canfield Street, Morgantown, WV 26505; Phone: 304-285-1591 or 304-285-1596; or FAX: 304-285-1505; DG: S24L08A; or E-mail to tcozer@mserv.fsl.wvnet.edu.

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