Wood Preservative Solutions for Creative And Sustainable Bridge Design and Construction

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Wood – The Miracle Material

“It has been said that if wood were discovered today it would be hailed as a miracle material - light, strong, workable, versatile, biodegradable, capable of being turned into a variety of products with minimal energy use and little air or water pollution. And perhaps best of all, it’s endlessly renewable, using solar energy in a process that absorbs carbon dioxide and releases oxygen.”
Why Use Preservative Wood?
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• Wood degrades via non-living or living agents or both when left unprotected;
• Preservative treatments play a key role in protecting wood from degradation;
• Significantly extends service life; and
• Provides an environmental and cost effective solution for protecting wood.
Why Use Preservative Wood?

• Fully regulated under FIFRA by the U.S. Environmental Protection Agency.
• Rigorous registration and re-registration process every 5 years.
• EPA views preservatives as antimicrobial pesticides requiring thorough scientific review and analysis to support use.
• Must demonstrate use will not cause undue adverse effects to human health or the environment.

*NOTE: Preserved wood products are not considered to be a pesticide and therefore not regulated by FIFRA.
Five Steps to Appropriate Use of Preservative Wood

1. Selecting the Proper Preservative
2. Environmental Considerations and Evaluations
4. Requiring Quality Assurance and Certification
5. Following Basic Handling, Installation and Maintenance Guidelines
1. Selecting the Proper Preservative

- Understand how to identify and specify the appropriate wood preservative system.
  - Desired species and product(s), project type and environment.

- Available Resources:
  - WWPI Treated Wood in Aquatic Environments (2012)
  - AWPA Book of Standards - Use Category System Standard U1, Sections
  - WWPI APP

- Seven commonly used preservatives in aquatic and wetland environments:
Waterborne Preservative Systems
CHROMATED COPPER ARSENATE (CCA)
ALKALINE COPPER QUAT (ACQ)
COPPER AZOLE (CA-C)
Oil Type Preservative Systems
CREOSOTE
PENTACHLOROPHENOL
2. Environmental Considerations and Evaluation

- Risks of various preserved wood material should be taken into consideration in relation to application.

  - Risks likely different between projects.
  - Use of most preservatives will have some degree of environmental effect.
  - Important to assess environmental effects on a site specific basis to manage risks.
  - Some situations warrant not using preserved wood.
2. Environmental Considerations and Evaluation

- Available Resources
  - NOAA Fisheries 2009 guide for treated wood
  - Recognized Model
    - Brooks Microsoft Excel® Model
      - Based on research knowledge of preservative loss rates
      - Combined with site specific information predicts environmental response
  - Forest Products Society 2011 publication - Managing Treated Wood in Aquatic Environments.
  - Screening Level Assessment Process
    - Level 1
    - Level 2
    - Level 3
3. Specifying the Best Management Practices (BMPs)

- Specifying BMPs key element for use of treated wood in and over bodies of water
  - Provides treatment guidelines that minimizes use of preservatives within allowable AWPA standards
  - Provides suggested specification language and information about BMP Program
4. Providing Quality Assurance and Certification

- BMPs provide secondary benefits
  - Requires products be preserved to the American Wood Protection Association standards.
  - Provides quality assurance through independent third-party certification.
    - Appendix to BMP document.
    - Requires letter of certification from inspection agency or BMP Mark legibly stamped, branded, marked, end tagged or on piece of material or lot arriving on site.

**NOTE:** Strongly recommend specifying agency and/or contractor discuss specifications with Treater to assure proper material is produced to desired standard and specifications.
5. Appropriate Handling, Installation and Maintenance

- Most critical point in life of project is during and immediately following installation.
  - To degree possible framing, sawing, cutting and drilling should be specified to be done prior to preserving the wood.
  - Material should be inspected when it arrives on project site.
  - Use containment measures when working over water to catch and collect cutting, shavings and sawdust.
  - All field cuts and drill holes created on project site should be field treated. Available treatments include Copper Napthenate, Outlast Q8, and Hollow Heart CB.
  - Recycle or reuse preserved wood taken out of services or dispose in approved landfills.
  - Routine inspection and timely maintenance is critical to extending the service life of a preserved wood structure.
  - CRITICAL YOU PAY ATTENTION TO CONSTRUCTION DETAIL!
Closing Points

• Wood provides a natural durable service life and when chemically preserved can be extended even longer.
• Preserved wood continues to be a cost effective and environmentally safe material.
• EPA approved preservative systems.
• Inherited bias against preserved wood exists among some regulatory agencies and individual biologist.
• Majority of empirical science clearly supports the use of preserved wood in most situations.
• Recognized assessment tools, guidelines, and training is available to assist proponents of preserved wood projects.

KEY POINT: When projects are properly evaluated risks will be minimal and manageable for the environmentally safe use of preserved wood products in the majority of projects in and over water.
Thank You
Questions?

It's my design unless it falls down... then it's yours.

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