



### WWPI's Mission

- Provide Educational Information to Increase Awareness of Properly Treated Wood Products to:
  - Builders
  - Architects, Specifiers, Designers
  - Building Material Dealers
  - Park Managers
  - Trailbuilders
  - Maintenance Engineers

**Wood - the Real Green & Renewable Building Product.**

### Wood as a Building Material

- Excellent physical and mechanical properties; reliable
- Wood is a renewable and sustainable resource
- It is readily available, easy to work with, and cost effective
- Natural – Blends with the environment

**Lumber & Wood Products are Earth Friendly Building Materials.**

- **Reduces Green House Gas By Storing Carbon.**
- **Growing Forests Remove CO2, Store Carbon And Produce Oxygen.**
- **Wood Products Store Carbon During Use And With Disposal.**

**Wood is an Earth Friendly Product.**

- **Wood Produces Less Green House Gas Than Alternative Materials.**
- **Wood Is The Lowest Energy Consuming Product – Using Less Hydrocarbon Based Power.**
- **Wood Is The Lowest Producer of Water and Air Pollution.**

Environmental Considerations  
Sustainability

**INPUTS:**

- Seed
- Soil
- Water
- Sun
- CO<sub>2</sub>

+ 40 to 80 years of Forest Management =

**OUTPUTS:**

- Oxygen
- Habitat
- Stored Carbon
- Mature Forest
- Wood Products!

By the time your product has served its life, a new one will be grown and ready to replace it!

**Renewability + Low Energy Use + Low Industrial Pollution Equals = Environmental Sustainability!**




■ **Problem: The durability of wood can be threatened by**

- Decay fungi
- Carpenter ants
- Wood boring beetles
- Termites
  - drywood
  - native
  - Formosan

Termites alone cause damage costing over 5 billion dollars each year in America.



Wood Boring Beetle



Carpenter Ants



Formosan Termite

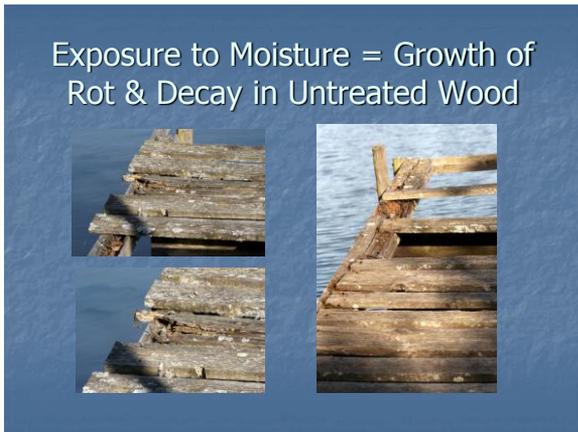
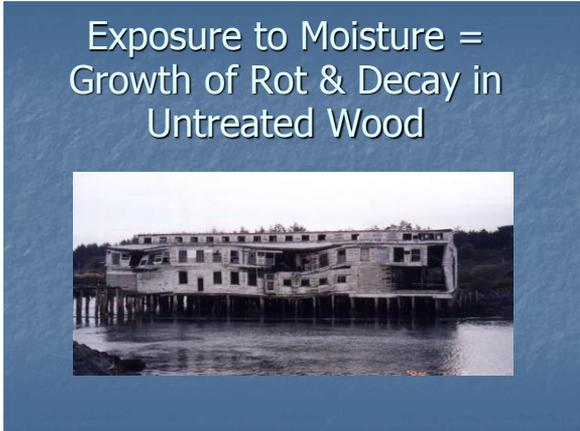
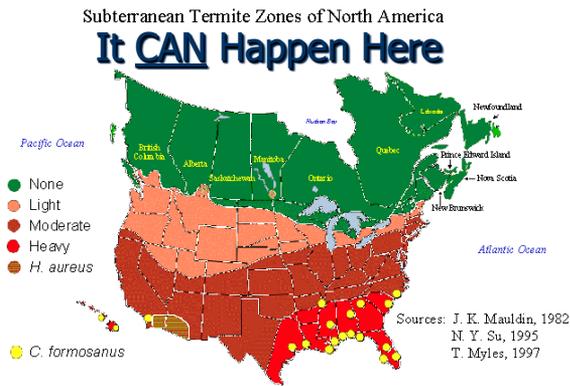
Some examples of damage






When you can finally see them...





The Solution.

- Treat the wood with preservatives in the outer shell of the wood to repel and protect the wood from marine borers, insects and decay.
- Result: Service life measured in decades, not years.

## American Wood Protection Association

- Founded in 1904
- International, nonprofit technical society
- Standards writing organization for the wood preserving industry in U.S.
- Provides a technical forum for industry, research and users.
- Protects consumers by ensuring uniform product performance.
- Reference in all building codes.
- Updated Annually - Currently the 2010 Edition

## AWPA

- Determines if a preservative is effective and can be listed in the standards.
- Establishes how much of the preservative is needed (retention) depending upon the exposure and use. May vary from .25 to several pounds per cubic foot of the treated shell.
- Industry seeks to minimize chemicals through lower retentions.

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## Who Determines If Wood Preservatives Are Safe For People And The Environment?

- All Wood Preservatives Must be Registered.
  - The U.S. Environmental Protection Agency.
  - Regulated & Controlled Industry.
- Detailed Risk Reviews for Human Health and Environmental Impacts.
- Product Labels Designate in What Building Applications the Treated Wood May Be Used.



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## Not All Lumber Products are Created Equal. Some are: *Naturally Durable Species*

- Western Red Cedar
- Redwood
- White Oak

## Sapwood & Heartwood



## Species Treatability

### ◆ "Difficult to Treat"



- Douglas Fir
- Lodgepole Pine
- Western Larch
- Spruce
- Cedar
- Hem-fir  
(Noble Fir, California, Red, Grand, Pacific, White, Western Hemlock)

## Species Treatability

### ◆ "Easy to Treat"



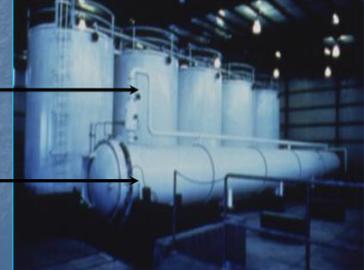
- Southern Pine
- Ponderosa Pine

## How is Lumber and Plywood Pressure Treated?

### Typical treating plant

Preservative, Mix and Water Storage Tanks.

Treating Cylinder

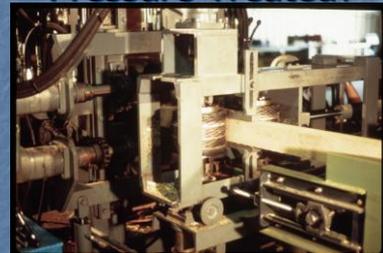


## Practices to Enhance the Treating Process

- Incising
- Pre-Drilling
- Drying Prior to Treatment



## How is Lumber and Plywood Pressure Treated?



Western Species MUST be Incised.

## A series of incisor knives are mounted on drums.



The drums rotate drawing the wood thru the incisor.

The minimum number of incisions is 750 per square foot.



## How is Lumber and Plywood Pressure Treated?



Wood Is Loaded on Trams and Inserted Into Cylinder

Cylinder Door Is Closed and Vacuum-Pressure Treating Cycle Begins

## Pressure Treatment Process

Dry wood is loaded into cylinder



Initial vacuum pulls out air



Liquid preservative chemicals fill cylinder



## Pressure Treatment Process

Pressure forces preservative chemicals into wood



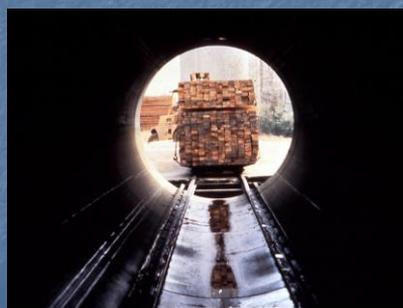
Remaining liquid emptied for later use



Final vacuum removes excess liquid



## Pressure Treatment Process



## Preservative Families Oil-Types & Waterbornes

- WWPI Members Produce Only Products that are Listed in AWPA Standards or ICC Evaluation Service Criteria
- All Products are Inspected by 3<sup>rd</sup> Party Accredited Agencies

## Waterborne Preservative Treatments for Bridge, Trail & Park Construction

- CCA – Chromated Copper Arsenate
- ACZA (Chemonite) – Ammoniacal Copper Zinc Arsenate
- ACQ – Alkaline Copper Quat
- CA-C – Copper Azole
- MCQ & MCA - Micronized Copper
- Non Metal Preservatives – PTI & EL<sup>2</sup>

## CCA



- Douglas fir / Hem fir / Southern Yellow Pine
  - AWPA Book of Standards
  - Ground, Fresh & Salt Water Immersion

## CCA

- Industry Voluntarily Modified EPA Registered Uses for CCA.
- Effective Dec. 31, 2003 – CCA is now phased out for most consumer and residential applications.
- CCA is still approved for industrial end use applications such as plywood, highway construction, utility poles, piling and agricultural applications.
- EPA does NOT Recommend the Removal of Existing CCA Structures or Installations.



## ACZA "Chemonite"



Douglas fir  
AWPA Book of Standards

## ACQ

"Preserve Wood" & "Nature's Wood"



- Douglas fir / Hem fir / Southern Yellow Pine
  - AWPA Book of Standards
  - ICC Evaluation Service Report
  - Ground & Fresh Water Contact

## CA-C Wolmanized® Outdoor®



- Hem fir / Southern Yellow Pine
  - AWPA Book of Standards
  - ICC Evaluation Service Report
  - Ground & Fresh Water Contact

## MCQ & MCA MicroPro™



- Micronized Copper Products
- MCQ – "SmartSense"
  - Hem Fir / SYP
- MCA – "LifeWood"
  - Southern Yellow Pine
- ICC Evaluation Service Report
- Light, fresh appearance, slightly darker than untreated wood
- Above Ground, Ground & Fresh Water Contact

## Non Metallic Preservatives

Non Metallic, Carbon-based Ingredients Using Organic Chemistry

## PTI Wolmanized® L<sup>3</sup> Outdoor® Wood

- Douglas fir, Hem fir, SYP
- AWPA Book of Standards
- ICC Evaluation Service Report
- Above-ground Use Only
- PTI = AWPA Designation (propiconazole, tebuconazole, imidacloprid)
- Very Little Color Unless Colorant is Added for ID Purposes
- Low Impact on Hardware & Coatings



## EL<sup>2</sup> Ecolife™

- Douglas fir, Hem fir, SYP
- AWPA Book of Standards
- ICC Evaluation Service Report
- Above-ground Use Only
- EL<sup>2</sup> = AWPA Designation (DCOI, Imidacloprid)
- Very Little Color Unless Colorant is Added for ID Purposes
- Low Impact on Hardware & Coatings



## Care & Maintenance

- Waterborne treated products can be painted or stained. (Follow manufacturers recommendations.)
- Water repellent coating recommended annually.

## Oil-Type Preservatives

- Creosote
- Pentachlorophenol
- Copper Naphthenate

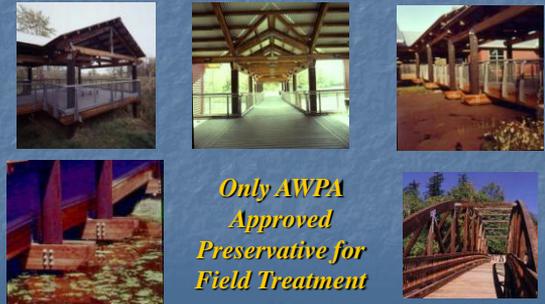
## Creosote



## Pentachlorophenol



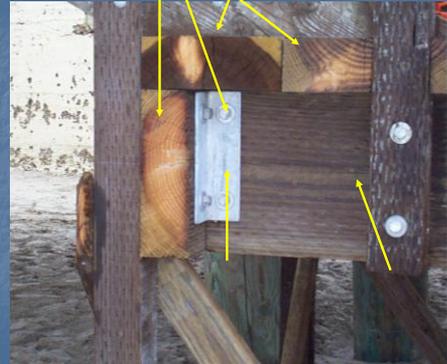
## Copper Naphthenate



End Cuts in Western Softwood  
Species MUST Be  
Field Treated To Meet Code!



Cut Ends Must be Field Treated



Treat End Cuts to Prevent Decay!



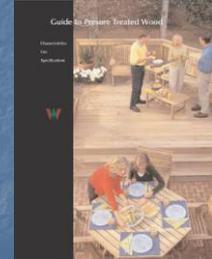
Copper Nap Brands  
(at least 2% copper solution)



## HI-CLEAR II™ Lumber, Timbers, Laminated Beams, Plywood, Architectural Wood Products



## How To Specify With the AWPA Use Category System



## Use Category System What Is It?

- Based on end use biodeterioration hazard
- 5 Use Categories based on exposures & expected product performance.
- Categories range from weather protected (UC1 mild exposure/lowest risk) to salt water marine (UC5 severe exposure/highest risk).
- Separate Use Category for fire retardants.

## Use Category 1 (UC 1)

- Interior Construction
  - Not in contact with ground or foundations
  - Protected from weather
  - Protected from interior sources of water
- Insect Hazard Only



## Use Category 2 (UC 2)



- Interior Construction
  - Not in contact with ground
  - Protected from weather
  - Subject to dampness and occasional sources of water
- Decay Fungi and Insect Hazard

## Use Category 3 (UC 3)

- Above Ground; Exposed to the Weather
  - UC3A: Coated & rapid water runoff
  - UC3B: Uncoated or poor water runoff
- Decay Fungi and Insect Hazard



## Use Category 4 (UC 4)



- Ground or Fresh Water Contact; Exposed to Weather
  - UC4A: Deck supports
  - UC4B: Foundation, building poles
- Subject to Fungal and Insect Hazards

## Use Category 5 (UC 5)

- Wood Used in Salt or Brackish Water
  - Exposed to marine borer attack
  - Construction such as marine piles, docks, bridges



## Use Category F - UC F

- Fire Retardant Treated Wood
- Above Ground Use Only
- Two Risk Groups – Determined by Weather Exposure
  - UC FA: Interior - Continuously protected from weather
  - UC FB: Exterior - Exposed to weather or wetting

## Section 2303.1.8.1 Quality Mark - Identification

All preservative-treated wood shall bear the quality mark of an inspection agency which has been accredited by the American Lumber Standards Committee and complies with the requirements of the ALSC Treated Wood Program or equivalent.

## Section 2303.1.8.1 Quality Mark – Required Information

1. Identification of the treating plant
2. Type of preservative
3. Minimum Preservative Retention
4. End Use for which it was treated
5. AWPA Standard
6. Identity or Logo of the Accredited Inspection Agency

## Fasteners in Preservative Treated Wood

***"Fasteners for preservative-treated wood shall be of hot-dipped galvanized steel, stainless steel, silicon bronze or copper. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A-153."***

Note: Electroplated galvanized fasteners are not recognized as being corrosion resistant for exterior applications.

## What Do The Chemical Manufacturers Recommend?

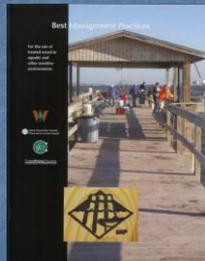
- As a minimum requirement for use with Preserve, Nature Wood, and Wolmanized Natural Select, preserved wood products, hot-dipped galvanized coated fasteners should conform to ASTM Standard A-153.
- For optimum performance and longevity in treated wood, stainless steel fasteners should be considered. Stainless steel fasteners are required for Permanent Wood Foundations below grade and are recommended for use with treated wood in other severe exterior applications such as swimming pools, salt water exposure, etc. Type 304 & 316 are recommended grades to use.
- Aluminum should not be used in direct contact with this wood.

## When Using Treated Wood in Aquatic and Other Sensitive Environments ALWAYS SPECIFY BMP STANDARDS



## BMP Objectives

- Produce products which minimize any potential for adverse environmental impact
- Assure products are selected, specified and installed correctly from an environmental perspective
- Incorporate most current advances in technology
- Educate users that "less is more not better"



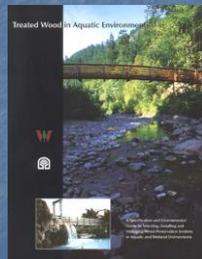
## BMPs for Use of Treated Wood in Aquatic Environments

- Additional Treating to AWPA Standards
- Minimum Chemicals
- Clean Product
- Inspection & Rejection
- Fixation
- Field Installation Guidelines
- BMP Quality Control & Certification



## Aquatic & Wetland Construction

- Cases where selection of preservative system may be of environmental concern:
  - Previously contaminated waters.
  - Very slow moving waters with no natural flushing.
- Where concerns exist, Risk Assessment Guidelines are available in the Treated wood Aquatic Guide and specific Risk Assessment Models are available on line



## Aquatic & Wetland Construction

- In sensitive environments always specify wood be treated in compliance with WWPI's BMPs
- Require 3<sup>rd</sup> Party Inspection Agency Certification:
  - Presence of BMP Mark
  - Certificate of Compliance



BMP® Quality Mark Logo

## Handling, Installation & Maintenance BMPs



- Always prefabricate (to degree possible) prior to treatment
- Inspect materials on site
- Use containment where needed
- Work away from water
- Field treat end cuts with care
- Collect & dispose of old materials and construction wastes properly

## Examples of BMP Treated Projects



## Examples of BMP Treated Projects



## Environmental & Human Safety

- Consumer Information Sheets & MSDS for Treated Wood
- Handling Requirements are Same as Untreated Wood



## Disposal of Treated Wood

- Reuse is the preferred option
- Never burn or mulch
- Treated wood is classified as a non hazardous waste by Federal and State rules and can be disposed in modern lined landfill.



## Deck Failures

Chicago • June 27, 2003



## Deck Failures

Portland • August 7, 2005  
4 Hospitalized – 10 Others Hurt



## Deck Failures



Deadly Deck Collapse  
Demonstrates The Need For  
Proper Construction  
Materials



## Deck Failures



## Deck Failures



## Deck Failures



## Deck Failures Not Always Wood!!!

May 28, 2004  
Section of the  
Waikiki War  
Memorial  
Natatorium's Pool  
Deck Collapsed



## Deck Failures Not Always Wood!!!

- Lonz Winery – Lake Erie, Ohio
- 1 Killed, 75 Injured, 30 Hospitalized
- Steel & Concrete Construction!



[www.WWPInstitute.org](http://www.WWPInstitute.org)



**Questions?**