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## I. WHY DO WE TREAT LUMBER?

### A. Decay of Wood

1. Biological Decay – marine borers, fungi, insects, bacteria
  - a. By impregnating fibers with a preservative, wood is eliminated as a food, therefore we can prevent biological decay.
2. Physical and Chemical Decay – fire, wear, chemicals
  - b. These are natural occurrences that can not be prevented.

### B. Structure of Wood

All wood species are composed of two systems of interwoven cells – one from the roots to the top of the tree (fiber tracheids) and the other (ray tracheids) from the branches to the bark. When the tree is alive these cells transmit water and minerals throughout the tree. When seasoned, the natural passageways are useful when the softwood is vacuum/pressure treated with preservatives to transport chemicals deep into the wood.

### C. AWPA

American Wood Preservers Association (AWPA) sets standards for a wide range of end use treated lumber. These standards allow for several species of wood to be preserved.

## II. TREATMENT PROCESS

### A. Treatable Species:

1. Southern Yellow Pine
2. Ponderosa Pine
3. Red Pine  
These three species allow a penetration depth, which is important to provide a barrier thick enough so that any checking or splitting will not expose any untreated wood to decay or insect attack.
4. Others:  
Most other species do not readily accept chemical preservatives. This does not mean you can not treat other species. The AWPA requires incising to aid both chemical penetration and uniform retention.

### B. CCA

(Chromated Copper Arsenate) Water-borne preservatives. The three active ingredients perform a different and important function

1. Chromate – affixes the C and A chemically to the wood. The chromate reacts to make it safe for people, pets, and plants to come into contact with the wood.
2. Copper – prevents decay from various fungi.
3. Arsenate – stops decay plus it eliminates damage from insect and termite attacks.





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**C. ACQ**

(Alkaline Copper Quaternary) A water borne wood preservative system containing copper and quat compounds. The treatment process is similar to CCA and lumber treated with ACQ has similar structural qualities to that treated with CCA. The least expensive of the new generation lumber treatments available to replace CCA treatment.

**D. CCA Treatment Cycle:**

Bundles of lumber are placed on tramcars, which roll into the cylinder. Lumber must have moisture content of 25% or below in order to be treated.

1. Initial Vacuum – air is taken out of the lumber. This affects the amount of CCA left in the wood at the end. The amount of time in the initial vacuum is determined by the species and its dimensions.
2. Flooding the vessel – completely flooding with preservative while maintaining the vacuum.
3. Pressure period – once full the pressurization begins. The preservative solution is pumped into the tube while the pressure is raised to approximately 150 psi. The pressure is held long enough to reach penetration and uptake.
4. Initial drain – The pressure is released and the preservatives are drained back into their tanks for reuse.
5. Final vacuum – There is some preservative left between the units after the initial drain, therefore in order to dry the surfaces and not waste the preservative a final vacuum is applied.
6. Conditioning building – The lumber is placed in a conditioning bailing. This serves as a controlled environment, protecting the pressure treated material from the weather. While in the bailing the highly resistant bonds are founded to make it safe for people, plants, etc.

**E. Retention Levels:**

Retention levels are standards set by the AWPA for a wide range of end uses.

- .25 above ground
- .40 ground contact/water immersion
- .60 wood foundations

Non-conforming – treated for appearance only

The .25,.40,.60 means the use of CCA or ACQ preservatives by actual weight is retained in each cubic foot of lumber.

### III. HANDLING PRESSURE TREATED LUMBER:

Use the same care that is recommended when working with any wood.

1. Always wear safety glasses, dust mask and gloves.
2. Only one precaution, do not burn pressure treated wood. Dispose of scraps and sawdust with landfill trash. Burning of treated wood releases the CCA bond with the cells.

