

Environmental Impact of Preservative-Treated Wood



Preservative-treated wood is a popular building material that is often used near water and other sensitive environments. Research has shown that small amounts of chemicals used in the treating process are released into the environment around structures made of such material (such as highway and foot bridges, wetland boardwalks, and marine piling). Minimizing this release to mitigate potential environmental hazards has been a subject of study at the USDA Forest Service, Forest Products Laboratory (FPL), in Madison, Wisconsin. Stan Lebow, a research forest products technologist at FPL, and Kenneth Brooks, owner and principal scientist of Aquatic Environmental Sciences in Port Townsend, Washington, have published several key studies addressing this issue.

The many chemical preservatives used to treat wood fall into two broad classifications—water based or oil type—based on the carrier used during the treating process. All function to increase wood durability because they are toxic to decay fungi and insects. This beneficial protection, however, raises the question of potential toxicity to aquatic organisms. In the past decade, several scientific studies examined the consequences of these releases. Most concluded that adverse biological impacts were either undetectable or confined to an area in close proximity to the treated wood. With a careful eye toward improving treatment, handling, and construction practices, this nominal environmental harm can be minimized.

Some simple treatment practices can be quite effective in reducing potentially harmful environmental impacts. Following accepted specifications is important. Preservative retention standards developed by the American Wood-Preservers' Association (AWPA) are sufficient for a long-lasting, durable product. Increasing retention beyond these guidelines only increases the amount of leachable chemicals in the wood; it doesn't afford any noticeable service gain. Similarly, re-treating wood that failed to meet AWPA standards increases the leachable material present. Selecting material free of surface residues is another way to reduce environmental risk. Oil-type preservatives sometimes bleed to the surface of the wood; the use of post-treatment conditioning may help to alleviate this problem.

Proper handling of treated wood can minimize environmental impacts. Whenever possible, wood should be cut to length and other mechanical processes completed before treatment is applied. This prevents the preservative shell from being broken and also limits the discharge of sawdust and other construction debris at the construction site. Another way to help ensure an environmentally friendly product is to specify that the bulk of fixation be completed. Chemical fixation reactions occur within treated wood, making toxic ingredients insoluble in water. Conditions for fixation vary by preservative type but often require treated wood to sit for days or weeks. Patience and preordering are easy ways to reduce environmental risk.

Construction practices can make a remarkable difference in the potential for chemical leaching. Treated material shipped to the job site should be stored out of contact with standing water and wet soil and protected from precipitation. Field fabrication of treated wood should be done carefully. Construction debris, such as sawdust, has a disproportionately high surface-area-to-volume ratio, leaching proportionately more chemicals into water and wetlands. Taking practical steps to collect such debris can minimize the threat. After construction, leaching can be greatly reduced through the application of coatings such as paints or water-repellent stains. However, these coatings and any paint-on field treatment preservatives need to be carefully applied and contained to reduce contamination.



References

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