



**THE ISSUE:
ARSENIC IN PRESSURE-TREATED WOOD**

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Introduction

On February 12, 2002, the U.S. Environmental Protection Agency (EPA) announced a voluntary decision by the wood treatment industry that by December 31, 2003 it would move consumer use of lumber away from a variety of pressure-treated wood that contains arsenic, in favor of new alternative wood preservatives. At issue is the suggestion that rainwater leaches arsenic from pressure-treated wood structures and leads to contamination of surrounding soils. This voluntary decision affects virtually all uses of wood treated with water-based chromated copper arsenate, also known as CCA, including wood used in fences, decks, playground equipment and boardwalks in homes and on playgrounds throughout the country.

Chemical and lumber companies, and home-improvement stores have agreed to stop manufacturing and retailing arsenic-based treated wood by January 2004. This will help facilitate the voluntary transition to new alternative wood preservatives that do not contain arsenic in both the manufacturing and retail sectors. Although the EPA has not concluded that there is unreasonable risk to the public from these products, it does believe that any reduction in exposure to arsenic is desirable. EPA believes that the voluntary transition is a responsible action by the chemical industry and comes years ahead of completing the EPA's regulatory and scientific assessment of CCA. This effort will result in reductions to the potential exposure to arsenic.

Background



The pressure-treated wood industry is a \$4 billion-a-year business that provides one of the nation's most widely used outdoor building products. There are an estimated 350 wood-treatment plants throughout the country. The American Wood Preservers Institute (AWPI) estimates that 75 billion board feet of pressure-treated lumber is used nationwide annually, mostly in decks, play sets, and fencing.



CCA was first used in the 1960's and has proved to be an extraordinary wood preservative. It is estimated to extend the life of wood structures almost fivefold. Treating wood with CCA protects it from water damage, fungal decay, and insect infestation. For example, to make Southern yellow pine (a softwood that is readily available and relatively inexpensive) rot and insect resistant, it is injected with preservatives that are embedded in the wood to ward off termites, rot, and fungus.

Common wood preservatives include creosote and pentachlorophenol which are petroleum based products. But the predominant preservative used today is CCA, a water-based preservative which introduces concentrations of copper, chromium, and arsenic to the wood. The process, known as pressure treatment, renders wood useless as food for fungi or insects, ensuring the wood's structural soundness and extending its useful service life. Untreated wood in contact with the ground or water may last from one to four years; pressure-treated wood, on the other hand, has been known to resist decay and insect attack for more than 40 years.

Freshly treated wood, if not coated, has a greenish tint, which fades over time. As a practical matter, CCA has been the principal chemical used to treat wood for decks and other outdoor uses around the home. Generally, if a deck has not been constructed with redwood or cedar, then most likely the deck was constructed with CCA-treated wood.

Several levels of preservatives are used, depending on the projected use. Wood that is suitable for ground contact, such as fence posts or landscaping timbers, must be treated to what manufacturers call a "retention level" of .40. Retention is a measure of the pounds of preservative per cubic foot of wood. This figure, plus the words "ground contact," should appear stapled or stamped on the wood. Wood that is used above ground, such as decking, needs a treatment level of only .25 (a quarter-pound per cubic foot). Wood used for immersion in water, such as pilings for docks, needs treatment levels up to 2.5. Many dealers stock only the more versatile ground-contact boards, which have a retention level of .40.

Effects Of The Voluntary Phase-Out

After December 31, 2003, wood intended for use in decks, picnic tables, landscaping timbers, gazebos, residential fencing, patios, walkways/boardwalks, and play structures will no longer be treated with CCA. Wood treated prior to this date, however, can still be used in residential settings. Previously built structures containing CCA-treated wood are not affected by this action.



The agreement applies to treated wood products used for home and playgrounds but will not affect production of wood used for utility poles, guardrails, and other commercial applications. According to one estimate, the phase-out will eliminate the sale of approximately 85 percent of arsenic-treated wood.

Although this action is voluntary, it effectively changes the labels for CCA. This means that it will be unlawful to use CCA to treat wood intended for residential uses after December 31, 2003. Stocks of CCA-treated wood remaining in stores after this date, however, can be sold. According to major retailers, stores will begin stocking an alternative to CCA-treated wood as soon as it becomes available, and will stop stocking CCA-treated wood before the deadline.

Health Effects Associated With Pressure Treated Wood

The EPA and industry officials who negotiated the agreement said there is no conclusive evidence that CCA-treated wood poses “unreasonable risks to the public or the environment.” Nevertheless, arsenic is a known human carcinogen, and the EPA is conducting a study to determine whether children who repeatedly come in contact with CCA face a higher risk of cancer of the lungs, bladder, or skin. Potential health risks from any known carcinogen depend largely on length of exposure and the dose of chemical received.

During an eight-year investigation, the EPA examined CCA, the wood treatment process, the use and handling of the finished product, and alternatives to the use of CCA. EPA’s findings show no increased risks of cancer or other toxic effects on humans who handled CCA-treated wood, and concluded in 1985 that the benefits of CCA-treated wood outweighed any risks.

In 1990, the Consumer Product Safety Commission tested exposure levels to arsenic in CCA. Of eight samples of CCA-treated wood tested, five samples yielded undetectable amounts of arsenic. Two other samples yielded small amounts of arsenic. The remaining sample, taken from rough saw lumber that is unsuitable for playground equipment, yielded the greatest amount of arsenic.

Some of the confusion may lie in a failure to distinguish between wood that has been treated and the preservative itself. In solution form, CCA is a potentially hazardous material. However, wood that has been treated with CCA is not classified as hazardous. Pressure treatment apparently makes the chemical insoluble and leach resistant. The EPA believes however, that the voluntary transition to non-arsenical containing wood preservatives for residential sites is a responsible action by the industry.



Recommended Steps To Reduce Risk Of Exposure To CCA

Although the EPA does not recommend replacing CCA-treated wood, it did offer advice for concerned homeowners. The EPA offered some guidance on the use of the pressure-treated lumber:

- Treated wood should never be burned in open fires, stoves, fireplaces, or residential boilers.
- Always wash hands thoroughly after contact with any wood, especially prior to eating and drinking.
- Never place food directly on a deck or table surface.
- Always follow the precautions outlined in the EPA's Consumer Safety Information Sheet before working with CCA-treated wood.

Additional measures that may be taken include the following:

- An annual application of some oil-based coatings can reduce arsenic exposure.
- When conducting new construction or repairs, consider the range of alternatives to CCA-treated wood. These alternatives include both non-arsenical chemical wood preservatives, as well as other wood and non-wood materials. Consult local home improvement stores for more information about available alternatives.

Replacement Or Sealing Decks Or Play Sets

Despite the agreement, the EPA did not recommend replacing or removing structures built with CCA-treated wood, or the soil surrounding those structures. However, concerned citizens may elect to apply a coating to exposed surfaces on a regular basis.

While available information is limited, some studies suggest that applying certain penetrating coatings, such as oil-based or semi-transparent stains, on a regular basis may reduce the migration of wood preservative chemicals from CCA-treated wood. Applications should be made once a year or every other year, depending on wear and weathering. In selecting a finish, consumers should be aware that, in some cases, "film-forming" or non-penetrating stains (latex semitransparent, latex opaque, and oil-based opaque stains) on outdoor surfaces such as decks and fences are not recommended, as subsequent peeling and flaking may ultimately have an impact on durability as well as exposure to the preservatives in the wood.



Alternatives To The Use Of CCA

The EPA has registered a number of alternative wood preservatives. Wood treated with these preservatives is expected to be available in the marketplace. The most widespread wood preservative without arsenic is ACQ which is a mixture of copper and didecyl dimethyl ammonium chloride, commonly called quat. Unlike CCA, ACQ does not contain any EPA-listed compounds, nor any known or suspected carcinogens, and testing has shown it to have low toxicity. Wood treated with ACQ, as well as one other CCA alternative, (copper boron azole, or CBA), has also been accepted by the International Conference of Building Officials for inclusion in the Uniform Building Code. Pressure-treated lumber made with any of several alternative preservatives retails for between 10 and 20 percent more than CCA-treated stock.

In addition, untreated wood (cedar and redwood) and non-wood alternatives, such as plastics, metal, and composite materials are available.

Disposal Options For CCA-Treated Wood

Safe and environmentally responsible disposal is important for all treated wood products. Because CCA wood waste is often generated from new construction or from remodeling or demolition of an old structure, EPA suggests that whenever possible, try reusing wood that has been taken out of service, as long as it meets design requirements. In lieu of that option, landfilling of CCA-treated wood is the only environmentally acceptable disposal option recommended by EPA. Because pressure-treated wood is not classified as hazardous waste, it can be discarded at municipal landfills, or at construction and demolition landfills.

As mentioned earlier, CCA-treated wood should never be burned. The heavy metals in CCA are not destroyed and the chromium and copper become concentrated in the resulting ash. This ash often must be managed as a hazardous waste due to high arsenic and/or chromium content, which increases the cost of proper ash disposal. At the same time, arsenic becomes a vapor that either escapes in the air or is trapped in pollution control equipment. Additional costs are required to ensure such air emissions are properly treated.

Consumer Awareness Program

Preserved wood and chemical industry representatives, in conjunction with EPA, are working to educate the consumer about the proper handling and safe use of CCA-preserved products. For more information, visit the following websites:

EPA – www.epa.gov/pesticides/citizens/1file.htm

American Wood Preservers Institute (AWPI) has two information sites:

Consumer Safety Information Page – www.ccasafetyinfo.com

AWPI Homepage – www.preservedwood.com



Editor's Note

Green Papers will be issued periodically by the Joint Legislative Air and Water Pollution Control and Conservation Committee staff. As indicated by the subtitle, each Green Paper will be a monograph on a specific environmental issue that has come to the attention of or is being dealt with by the committee. Each Green Paper is intended to provide a more in-depth look at specific issues than normally permitted by other committee publications, such as the committee's monthly newsletter the *Environmental Synopsis*.

The Joint Conservation Committee is a bipartisan committee consisting of 18 members of the state House and Senate which conducts studies, holds hearings and makes recommendations to the General Assembly on air and water pollution laws, mining practices and land reclamation. Recent issues that the committee has focused upon include land use and growth management issues, sewer and water infrastructure, and Pennsylvania's Heritage Park program.



For more information about the committee, or to be added to the mailing list for future Green Papers or the *Environmental Synopsis*, call the committee office at (717) 787-7570.