



Environmentally Preferable Product Report

Alternatives to Arsenic-Treated Wood

Hazardous Waste and Toxics Reduction Program

Chromated Copper Arsenate is a toxic wood preservative.

Wood products used in outdoor and aquatic environments must be preserved to prevent decay and inhibit insect damage. Wood used for playground equipment, decks, telephone poles, building foundations, landscaping ties, wharfs, retaining walls, and fence posts, has typically been treated with highly toxic **Chromated Copper Arsenate (CCA)** to prevent decay.

On December 31, 2003, the production of CCA-treated wood for residential use was discontinued. Although it is still legal to use CCA-treated wood for non-residential uses, the human health and environmental concerns associated with its use warrant consideration of alternative products

CCA and Human Health

The arsenic in CCA-treated wood causes a wide range of adverse health effects at both low and high doses. Effects include nerve damage, vomiting, fatigue, diarrhea, nausea, and the decreased production of red blood cells.

Children are the most vulnerable and have a high risk of exposure from playing on CCA-treated play sets. In all populations, bladder, liver, and lung cancers have been related to exposure from the chemicals used in CCA-treated wood.

Alternatives to CCA Treated Wood

The most feasible alternatives to CCA-treated wood include wood treated with chemicals other than arsenic, plastic lumber and slow-decaying wood such as cedar or redwood. These are discussed in more detail on the right.

Wood treated with chemicals other than arsenic

- **Ammoniacal Copper Quaternary (ACQ):** Like Chromated Copper Arsenate, ACQ acts as a biocide to prevent insects and fungi from attacking wood. ACQ treated wood can be used above ground, in contact with ground, and in fresh water immersion applications. **ACQ is not approved for saltwater applications.**
- **Copper Azole (C-A):** C-A treated wood can be used for most applications including decks, walkways, picnic tables and play structures. It can be applied in fresh-water-immersion applications. **C-A is not approved for saltwater use or structural utility poles in high-decay regions.**
- **Borates:** Borates are low-toxic, naturally occurring minerals that protect wood from decay caused by fungi, termites, and other wood decomposing organisms. Borates present a good alternative to CCA for wood that will be used indoors. According to the U.S. Environmental Protection Agency (EPA), borates have been applied to commercial and residential applications for over 70 years. **Borates should not be applied to wood intended for water submersion applications.**

Plastic lumber

Plastic lumber does not require treatment. It is resilient to water, sun, insects, and salt. Plastic lumber is commonly used in a variety of applications including park benches, picnic tables, decks, and docks.

There are three types of plastic lumber:

- 100% plastic lumber made with 100% recovered plastics.
- Wood/ plastic composite lumber made from a 50/50 mix of plastic resins and reclaimed wood.
- Structural-grade plastic lumber consisting of 70% recycled plastic and 30% fiberglass.

Examples of Substitutes for CCA

■ State Parks and Recreation Commission

During the mid-90's, State Parks began to use plastic lumber for picnic tables in state parks throughout Washington. Park facility managers found plastic lumber picnic tables highly durable. The tables require less maintenance and are easier to clean than wood counterparts. State Parks also use plastic lumber when installing new floats or docks, and when replacing expired floats or docks.

■ Meadowbrook Pond, *City of Seattle*

When building a foot-bridge across a stormwater retention pond, the City of Seattle chose plastic lumber. This challenging project required that the bridge cover a sewer pipe and that the city use an alternative to chemically treated lumber because the area they were working in is designated for salmon rehabilitation. Despite unfamiliarity with the material, the city chose plastic lumber. The end result is a visually appealing bridge that is expected to save tax dollars by reducing maintenance and hazardous-waste costs.

Considerations When Choosing an Alternative to CCA

Product Applications

- **Structural plastic lumber** can be used for applications such as joists, posts, girders, sea walls, piers and docks.
- **Plastic and plastic/wood composite lumber** should **not** be used for structural components such as a support post, joist or stringer unless it has been specifically engineered for such an application.

Other copper-based alternatives, like ACQ and C-A can be more corrosive than CCA. As a result, the product life for connections may decrease slightly. As a solution, you can use hot-dip galvanized connectors and fasteners to increase coating thickness. While more expensive, stainless steel and other corrosion-resistant alloys can also significantly improve the corrosion resistance of connections.

Uses for Alternatives to Arsenic Treated Wood

Application/ Use	Copper based (ACQ, C-A)	100% recycled plastic	50/50 recycled plastic & recycled wood composite	Recycled plastic/ fiberglass mix
Decks/walkways	Applicable	Applicable- for non-structural components	Applicable- for non-structural components	Applicable- structural components
Freshwater immersion	Applicable- But highly toxic to aquatic life	Applicable- for non-structural components	Applicable- for non-structural components	Applicable- structural components
Saltwater immersion	Not applicable	Applicable- for non-structural components	Applicable- for non-structural components	Applicable- structural components
Outdoor Furniture	Applicable	Applicable	Applicable	Applicable

Cost Comparison

Although the initial cost to purchase **recycled plastic lumber** products are greater than the price of wood, **plastic wood can cost less than traditional lumber** when maintenance, repair, replacement, and hazardous-waste clean-up costs are factored in. Many recycled plastic lumber manufacturers guarantee their product to last up to 50 years and will offer free replacement for planks that crack or splinter.

The cost of wood products has risen considerably, while the cost of plastic and composite lumber continues to become more competitive with increased demand. The market is also shifting away from CCA as awareness about CCA's toxicity and phase-out spreads.

Purchasing Alternatives to Arsenic Treated Wood

When developing contracts, specify arsenic-free wood products. Alternatives to CCA-treated lumber are available through State Contract 03801, entitled *Building Materials, Western Washington Only*. To access, go to <https://fortress.wa.gov/ga/inet/servlet/PCAContractDetailSv?contnabr=03801>

Materials Exchanges may offer arsenic-free wood or plastic lumber at a low cost. Material exchanges sell surplus materials and used products at reduced prices. By buying materials from an exchange you will not only save money, but also prevent waste. You can check with IMEX (Industrial Materials Exchange) in Seattle for current stock information. You can reach IMEX by phone at (206) 296-4899 or by e-mail at www.govlink.org/hazwaste/business/imex

Washington's Goal of Reducing Toxic Chemicals

The Governor's Executive Order 04-01 *Persistent Toxics* directs state agencies to reduce the use of products that contain toxic chemicals.

Starting on December 31, 2003, EPA required that "no wood treater or manufacturer may treat wood with CCA for residential uses, with certain exceptions." Under EPA's phase-out guidelines, consumers are permitted to purchase CCA-treated wood from already existing stocks, however new CCA treated products cannot be sold for residential use.

For Further Information

BANCCA.ORG provides a website dedicated to providing up-to-date news about CCA-treated wood. www.bancca.org

The King County Environmental Purchasing Program has a list of plastic lumber suppliers at www.metrokc.gov/procure/green/vendors.htm

For a list of resources on chemical treatment alternatives visit EPA's "Alternatives to Chromated Copper Arsenate" Web site. <http://www.epa.gov/oppad001/reregistration/cca/alternativestocca.htm>

If you need this information in an alternate format, please call the Hazardous Waste and Toxics Reduction Program at 360-407-6700. Persons with hearing loss can call 711 for Washington Relay Service. Persons with a speech disability can call 877-833-6341.