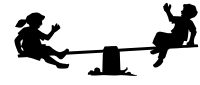




The Safe Playgrounds Project



A project of the Center for Environmental Health

## Executive Summary of CCA Lumber Arsenic Health Effects Issue

For the past thirty years, chromated-copper arsenic (CCA) has been used extensively as a pressure-treating agent for outdoor lumber products. The liquid chemical CCA is approximately 22% arsenic (As) by weight, resulting in arsenic concentrations in the wood that vary from 0.2% to 2.0% by weight. Although researchers and policymakers recognized that some amount of As would be leached from wood over time, the health threat posed by As treated lumber was underestimated. While As was already a well recognized toxin with various chronic health effects even from low levels of exposure, evidence surfaced in the mid-1990's indicating that arsenic was a far more powerful bladder, lung and kidney carcinogen than previously believed.

Previous studies that investigated the cancer risk posed by As have turned out to underestimate the potential health threat. It is now understood that As is one of those relatively unusual chemicals that has a greater carcinogenic effect in humans than in laboratory animals. Even more alarming, evidence is mounting that, in addition to being a strong human carcinogen itself, exposure of cancer patients to even slightly elevated levels of arsenic causes existing cancerous tumors to grow more rapidly and aggressively.

In response to these findings, the United States began the phase out of CCA lumber products with the curtailment of most sales as of February 2004. Current risk estimates extrapolated from six studies can be summarized as follows: 502 per million population for skin cancer only (Roberts and Ochoa); 1 per million population for skin cancer only, calculated prior to most recent human As carcinogenicity estimates (the Gradient Corporation); 2000 per million population for lung and bladder cancer only (Sharp et al); 1000 per million population for lung and bladder cancer only (Maas et al); 51 per million population for lung and bladder cancer only, calculated prior to most recent human As carcinogenicity estimates (US Consumer Products Safety Commission); 12 to 23 per million for lung and bladder cancer only (US Environmental Protection Agency). These estimates vary widely and are probably due to differences in the types of cancers included, as well as differences in assumptions about the amount of human contact in CCA lumber across age groups in the US population. It should be noted, however, that the usual

acceptable lifetime cancer risk from a consumer product is one additional lifetime cancer case per million population.

Research investigating the risk, wood treatment options, and potential replacements for CCA is ongoing. Various institutions are currently conducting controlled experiments to more reliably model the dislodgement of As from treated lumber to human skin. At the present time three outdoor use wood alternatives to CCA are available: ACQ and CBA lumber (non-arsenical copper-based preservatives) and composite lumber (a permanent melding of recycled plastics and wood sawdust). Although much less toxic than CCA lumber, all three of these materials have some environmental and/or structural disadvantages. Thus, a number of other promising alternatives are currently being investigated for their potential candidacy in replacing CCA and non-arsenical alternatives for outdoor lumber structures. Other studies are also exploring the most effective methods by which to contain As in existing lumber structures using existing or improved sealants, waterproofing agents, or paints.

Although the phase out of CCA lumber is a positive step, the prevalence of CCA in existing outdoor lumber structures necessitates that this is an issue requiring long-term attention. Various ongoing research efforts suggest that treating CCA lumber with currently available solid or semitransparent stains, deck paints, sealants and polyurethane generally contains As for approximately two years. These treatments last longer on surfaces that receive minimal foot traffic and hand contact, but they need to be reapplied more often on surfaces that are high traffic or hand contact areas. To further minimize risk, hands should be washed thoroughly and hand-to-mouth contact avoided after touching CCA lumber. Children should not be permitted to play in dirt around CCA structures, and toys should not be stored under CCA decking. Vegetables for consumption should generally not be grown in proximity to CCA lumber, although the existing research is not entirely clear on this point. Green leafy vegetables will generally accumulate more arsenic from the soils, while there is evidence that plants such as tomatoes and peppers will accumulate very little if any As from soil. Food should always be kept away from contact with CCA surfaces.

Another important step anyone can take to facilitate the minimization of As exposure from CCA lumber is to have their own specific CCA structures and surrounding soils analyzed for their As exposure potential. A home test kit is available through [www.safe2play.org](http://www.safe2play.org) for concerned individuals to test decking, play sets, other outdoor structures, and even adjacent soils

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to determine how much health risk a particular CCA structure potentially represents. For more information or to order this test kit, contact the Safe Playgrounds Project.

This document was produced by the University of North Carolina-Asheville Environmental Quality Institute & the University of Miami Department of Civil & Environmental Engineering.

**The Safe Playgrounds Project**  
**Center for Environmental Health**  
**528 61<sup>st</sup> Street, Suite A, Oakland, CA 94609**  
**Toll-free: 1.800.652.0827**  
**Website: [www.safe2play.org](http://www.safe2play.org) Email: [info@safe2play.org](mailto:info@safe2play.org)**

Safe Playgrounds is a project of the Center for Environmental Health (CEH) and was made possible by funds received by the Public Health Trust, a project of the Public Health Institute.