

Designing Safer Chemicals Award

CSI

ACQ Preserve®: The Environmentally Advanced Wood Preservative

The pressure-treated wood industry is a \$4 billion industry, producing approximately 7 billion board feet of preserved wood per year. More than 95 percent of the pressure-treated wood used in the United States is currently preserved with chromated copper arsenate (CCA). Approximately 150 million pounds of CCA wood preservatives were used in the production of pressure-treated wood in 2001, enough wood to build 435,000 homes. About 40 million pounds of arsenic and 64 million pounds of hexavalent chromium were used to manufacture these CCA wood preservatives.

Over the past few years, scientists, environmentalists, and regulators have raised concerns regarding the risks posed by the arsenic that is either dislodged or leached from CCA-treated wood. A principal concern is the risk to children from contact with CCA-treated wood in playground equipment, picnic tables, and decks. This concern has led to the increased demand for and use of alternatives to CCA.

Chemical Specialties, Inc. (CSI) developed its alkaline copper quaternary (ACQ) wood preservative as an environmentally advanced formula designed to replace the CCA industry standard. ACQ formulations combine a bivalent copper complex and a quaternary ammonium compound in a 2:1 ratio. The copper complex may be dissolved in either ethanolamine or ammonia. Carbon dioxide (CO₂) is added to the formulation to improve stability and to aid in solubilization of the copper.

Replacing CCA with ACQ is one of the most dramatic pollution prevention advancements in recent history. Because more than 90 percent of the 44 million pounds of arsenic used in the U.S. each year is used to make CCA, replacing CCA with ACQ will virtually eliminate the use of arsenic in the United States. In addition, ACQ Preserve® will eliminate the use of 64 million pounds of hexavalent chromium. Further, ACQ avoids the potential risks associated with the production, transportation, use, and disposal of the arsenic and hexavalent chromium contained in CCA wood preservatives and CCA-treated wood. In fact, ACQ does not generate any RCRA* hazardous waste from production and treating facilities. The disposal associated with CCA-treated wood and ash residues associated with the burning of treated wood will also be avoided.

In 1996, CSI commercialized ACQ Preserve® in the United States. More than 1 million active pounds of ACQ wood preservatives were sold in the U.S. in 2001 for use by thirteen wood treaters to produce over 100 million board feet of ACQ-preserved wood. In 2002, CSI plans to spend approximately \$20 million to increase its production capacity for ACQ to 30 million active pounds. This will convert 60 percent of CSI's production from CCA to ACQ, with a plan to continue to increase ACQ sales while phasing out CCA production. By investing in ACQ technology, CSI has positioned itself and the wood preservation industry to transition away from arsenic-based wood preservatives to a new generation of preservative systems.

* RCRA – Resource Conservation and Recovery Act