

# Portable XRF Technology for Screening Arsenic, Chromium and Copper (CCA) and Other Wood Treatments



Although CCA (Chromated Copper Arsenate) Pressure Treated Wood has been utilized since the 1930's, as of January 1, 2004, the USEPA no longer allows CCA treated products for residential use; and, several European countries have banned it altogether. CCA was developed as a cost-effective

and ideal treatment to protect wood from dry rot, fungi, mold and insect destruction. It has been used extensively for outdoor home and community structures, such as play sets, decks, picnic tables, compost boxes, and wooden containers for gardens. Data and public pressure concerning the long-

term health and environmental dangers from exposure to the use and disposal of CCA treated wood through ingestion or inhalation of these toxic metals, which can lead to various forms of cancer and other serious illnesses, forced the decision to cease residential use and/or completely ban it.

## Key Point: Fast, Quantitative Analysis and Sorting of Treated Wood.

The Innov-X handheld XRF identifies CCA and other wood treatments in 2-3 seconds, and displays and stores confirming chemical analysis and spectrum. Unlike colorimetric techniques that take longer and are not always definitive, XRF provides quantitative, fast, simultaneous analysis of Cu, Cr, As and 20+ other metals in seconds, *in ppm*. The analyzer also offers instant ID for example "CCA" or "non-CCA" and Pass/Fail sorting.



### Wood Treating Chemicals Portable XRF Measures in Seconds

**CCA:** Cu, Cr & As

**ACZA:** Cu, Zn & As

**ACQ:** Cu

**Pentachlorophenol:** Cl

**Zinc Borate:** Zn

**IPBC:** I

**Bromine:** Br

### Portable XRF for On-Site, In-Situ Measurements

Preservative Retention & Penetration

Coring Analysis

QC: Pass/Fail Sorting or Full Analysis

Utility Pole & Railroad Tie Inspections

Label & Branding Verification

**Works on Wet or Painted Wood Surfaces**

## Leaching Toxins

An inorganic form of arsenic leaches out onto the CCA treated wood and into the surrounding soil. Children who play frequently and over an extensive period of time on or near CCA treated wood and very young children who tend to put their hands in their mouths frequently are at the greatest risk of ingesting toxic levels of As. Additionally, ingestion of edible plants grown in soil contained by CCA treated wood poses a potential threat.

The USEPA has not issued regulations requiring the disposal of existing residential CCA treated wood structures, but does recommend that they be coated with a sealant to prevent the As from leaching out any further. They also recommend that people and animals should not eat on or near the structures or the surrounding soil, that children wash their hands with soap and water more frequently when playing on or near it, and that adults use protective masks, goggles, gloves and clothing when sawing or sanding it.

## Toxin Salvage and Disposal

Arsenic is not the only culprit in CCA pressure treated wood. When it is disposed of by incineration, the chromium and copper are not destroyed, but concentrated in the ash that can be sold for fuel. The arsenic, released as a vapor, can be trapped in pollution control equipment or escape into the atmosphere. If CCA treated wood is burnt in the open air, fireplaces or woodstoves, all three toxic metals are released with results that can be devastating. The demand for the disposal of CCA treated wood will increase significantly over the next decade. Many municipal incinerators will not be able to operate economically if they are forced to handle hazardous waste disposal fees for the toxic ash. The only current safe disposal method for CCA treated wood is for it to be placed in lined landfills; unlined ones would suffer from dangerous leaching effects into the ground and possibly into the ground water.

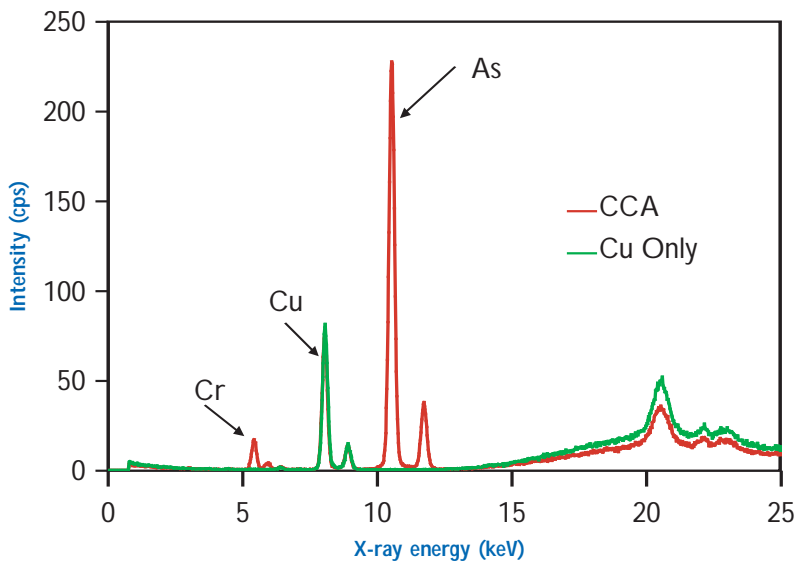
# Portable XRF Technology for Screening Arsenic, Chromium and Copper (CCA) and Other Wood Treatments

## Toxin Detection and Screening

Although consumers may want to determine As levels in existing residential CCA pressure treated wood structures and surrounding soils, landfill and recycling facilities need to screen all incoming wood for CCA, as well as for other toxin-treated woods. Wood treaters, lumberyards, homecenters, and distributors need to assure correct labeling of chemically treated woods for EPA inspections. Industry and

regulatory personnel seek techniques to perform accurate analysis with immediate results. They need a performance proven screening tool to make sure they can separate CCA and other toxin-treated woods from non-toxin treated woods to distinguish what can be recycled for subsequent use and what goes into lined vs. unlined landfills. They also want to protect from any ensuing liability.

fig.1 CCA and Cu-based Treated Wood



XRF spectrum for CCA treated wood is shown by the red line. The As, Cu and Cr are easily measured with high confidence in a few seconds. By comparison, a test on newer, copper-treated wood is shown by the green line, exhibiting only the Cu peak. All Innov-X tests also include a spectrum as shown, providing high confidence, legally defensible data to prove or disprove the presence of CCA-treated wood.

## Ultra Fast, Definitive Identification of CCA Treated Wood

The Innov-X handheld XRF identifies CCA and other wood treatments in 2-3 seconds, and displays and stores confirming chemical analysis and spectrum. The analyzer is an x-ray tube based portable tool, making it ideal for testing sites throughout the USA or worldwide. Unlike colorimetric techniques that take longer and are not always definitive, XRF provides quantitative, fast, simultaneous analysis of Cu, Cr, As and 20+ other metals in seconds, *in ppm*. The simultaneous measurement of Cr and Cu, in addition to As, provides instant confirmation of CCA presence.

The Innov-X unit also analyzes soil, filter & wipe media, plant material, paints and coatings; it can be customized for any application. There are no radioactive sources, thus burdensome isotope regulations don't apply, making site to site travel a breeze.

*For more information on this application and others,  
or for information on the specifications or purchase of  
the Innov-X Portable XRF Analyzer for your materials,  
please contact Innov-X Systems.*

