Researchers: Treated wood poses long-term threat

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Arsenic from treated lumber used in decks, utility poles and fences will likely leach into the environment for decades to come, possibly threatening groundwater, according to two research papers published online Wednesday.

Researchers from the University of Miami, the University of Florida and Florida International University examined arsenic leaching from chromated copper arsenate, or CCA-treated wood, from a real deck as well as from simulated landfills.

Their conclusion: The deck wood leached high levels of arsenic into rainwater runoff and the soil -- and treated wood only continued leaching arsenic while sitting in simulated landfills.

The papers appeared in the online version of the journal *Environmental Science & Technology, Research ASAP*. The bulk of the funding for the research came from the Florida Center for Solid and Hazardous Waste Management, a statewide research center hosted by the UF College of Engineering.

"What's important for people to realize is that arsenic is relatively mobile, so it's something we have to be relatively concerned about – how to manage this huge stock of CCA wood that remains to be disposed of," said Tim Townsend, a UF associate professor of environmental engineering.

Earlier studies on the arsenic leaching problem prompted the wood products industry to phase out CCA-products for residential use in 2003, but CCA-wood can still be used in utility poles and industrial timbers.

Helena Solo-Gabriele, a professor of environmental engineering at the University of Miami, Townsend and their colleagues studied rainwater runoff from a CCA-treated deck for a year. Their conclusion: Arsenic contamination was 100 times higher than runoff from an untreated deck.

Not only that, but a layer of sand underneath the deck had arsenic levels 15 to 30 times higher than background levels, while water that percolated through the sand also was contaminated by the toxic metal.

"Only a small fraction leaches in any given year," Solo-Gabriele told Environmental Science & Technology Online News, the journal's news section. But because the wood can be in the ground for several years "the impacts can be significant, especially given the high concentrations of arsenic in the wood itself."

The researchers concluded that by 2000, Florida had imported 28,000 metric tons of arsenic, 4,600 of which have already leached into the environment, according to one of their papers. They predicted that as much as 11,000 additional tons of arsenic will leach from decks and other structures in the next 40 years.

That suggests that managers may want to carefully consider what should be the final resting place for CCA-treated wood that has been taken out of service, Townsend said.

"These estimates provide decision-makers with information that helps them decide whether or not CCA-treated wood should go into lined or unlined landfills," he said.

Unfortunately, however, that won't end the problem. A mathematical model based on the researchers' experiments estimated that between 20 and 50 tons of arsenic may have leached into construction and demolition landfills in Florida before 2000, with an expected increase of between 350 and 830 tons of the heavy metal by 2040.

Florida law does not require that construction-and-demolition landfills be equipped with linings. Although there isn't yet much evidence of groundwater contamination in monitoring wells around those landfills, that could well become a problem, said John Schert, director of the Florida Center for Solid and Hazardous Waste Management.

"The leaching research conducted by the team suggests that arsenic contamination of the groundwater under these landfills may be a large future problem that future generations have to deal with," Schert said.

One possible solution is to require linings, Schert said. However, that might put many of the landfills out of business.

"This would probably lead to much more illegal dumping of construction-and-demolition waste in remote, rural and agricultural locations," he said. "Illegal dumping of construction and demolition waste in Florida is already a big problem."

Source: University of Florida

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