

Metals Compliance News™

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Unique Pollution Control System Helps Wood Treater Achieve Compliance Levels for Removal of Metals from Storage Yard Stormwater Runoff

Washougal, WA — Environmental management for a major lumber treatment plant here reports use of a unique pollutant removal system for storage yard stormwater runoff has already allowed it to meet compliance levels for arsenic and chromium mandated by its new permit, and that it is nearly at compliance level for copper. Compliance has been established during use of its chromated copper arsenate (CCA) wood treatment formula, with compliance levels expected during use of its ammonia copper quaternary (ACQ) treatment formulas.

The pollutant removal system is based on an electrocoagulation (EC) principle that features passing a controlled electrical current through wastewater to remove contaminants. A proven process selected as a preferred alternative to filtration, the EC System™ technology is available through Stormwater Management Inc. (SMI) of Portland, Ore.

“With 82% removal of arsenic, we’re not only well within acceptable levels, but actually within the non-detectable level,” reported Steve Krommenacker, corporate environmental manager for Allweather Wood Treaters. “We’re also taking out 90% of the chromium, which is approaching non-detectable, and are at 93% removal for copper. We want to get copper up to 97-98%, and we are confident we will make it work.”

With its chromated copper arsenate (CCA) treatment formula now banned for residential use, about 90% of the company’s lumber is treated with a variety of ammonia copper quaternary (ACQ) formulas. The CCA contains 20% arsenic acid, 29.9% chromic acid, and 10.5% cupric oxide. The ACQ contains 8.9-9.5% copper complex expressed as copper oxides. The EC System technology is designed to provide the flexibility to accommodate process changes.

The company’s new National Pollutant Discharge Elimination System (NPDES) permit was issued as a result of the re-routing of a creek that formerly served as the recipient of their stormwater effluent.



New pollutant removal system for lumber treatment plant’s storage yard stormwater is allowing company to meet new compliance levels for metals. Collected stormwater is pumped to storage tanks in rear, and then pumped to electrocoagulation (EC) cells inside green container before moving on to white separating and settling tanks.

“When the creek was re-routed, we lost the dilution factor that was previously in effect for our stormwater,” Krommenacker recalled. “We had the choice of sending it to the river a half mile away, where there was a large dilution factor, or cleaning it up. It didn’t seem responsible or community-friendly to go to the river. So now we send our EC-treated storage yard stormwater to a slew, which gets pumped to the river.”

Stormwater Treatment

In the 10-acre asphalt storage yard, treated wood units are top-capped and end-capped with plastic as a Best Management Practice against runoff of absorbed preservative residues. Stormwater is gravity fed to a collection location, and then pumped at 1000 gpm to three tanks with a total of 300,000 gal of storage capacity. It is pumped from there at 130 gpm to the EC system.

In the system’s electrocoagulation stage, contaminant particles bond together, emulsions of oil and grease are electrolytically broken, and heavy metals are oxidized

to insoluble particulates. Micro-bubbles generated in the process float the contaminants to the surface, where they are skimmed off. The stream then moves to a separation unit for removal of any remaining floc, with solids diverted to a sludge accumulation tank, and the treated water passing out as effluent. The sludge is pumped to a dewatering container, for conventional disposal as non-hazardous industrial waste.

The company treats 60-70 million board feet per year, with 75-80% incised lumber, and the remainder plywood and decking wood. Trams move raw lumber into retorts for pressure treating in 115/145/115 psi cycles for 10 minutes to six hours. The preservative treating solutions are introduced at strengths ranging from 1.0-3.0%, to penetrate the wood at depths of 0.4-inch to 0.6-inch, per building codes for the lumber's use. The preservative solutions are recycled in the closed-loop system, while the treated wood moves to a Resource Conservation and Recovery Act (RCRA)-permitted drip pad before packaging for the storage yard.

The new NPDES permit from the Washington Department of Ecology reduced acceptable levels of copper from 0.54 mg/L to 0.036 mg/L; chromium from 1.03 mg/L to 0.77 mg/L; and arsenic from 0.36 mg/L to 0.34 mg/L.

Housed in a container 45-ft. long x 7-ft. tall x 8-ft. wide, the EC system for storage yard stormwater runoff treatment was started up in September of 2002 to treat one half of the stormwater on a test basis. Filtration had



Pollutant removal system is fully automated to minimize maintenance costs. In four banks of EC cells, operating two banks at a time, a controlled electrical current is passed through the wastewater. Contaminant particles bond together, emulsions of oil and grease are electrolytically broken, and heavy metals are oxidized to insoluble particulates.

been considered as an alternative, via open batch testing, and found to not take out enough pollutants.

“The electrocoagulation technology was new for this purpose, and we wanted to see if it would perform,” recalled Krommenacker. “When it did, we increased it to three quarters of the runoff in August of 2003.”

EC System Operation

The Stormwater Management Electrocoagulation System™ (EC System™), fully automated to minimize maintenance costs, is designed to provide single-method capability for removing contaminants within a range of influent waste stream concentrations, compositions, and complexities. Removable contaminants include emulsified oils, total petroleum hydrocarbons (TPH), suspended solids, and heavy metals, resulting in water clean enough for either reuse or discharge.

Systems are available to treat 5-130 gpm in a variety of marine, industrial, and commercial applications. Typical removal efficiencies are listed as lead, 97%; copper, 99%; zinc, 99%; BOD, 85%; TPH, 99%; and oil and grease, 98%.

The EC System complements another of the company's products used for stormwater filtration, the Stormwater Management StormFilter®, by generating consistent, high-quality effluent on higher strength wastewater, also without the use of chemicals.

SMI also offers additional products for industrial applications, including the StormScreen® and StormGate Separator™. For further information, contact Stormwater Management, Inc., 12021-B NE Airport Way, Portland, OR 97220, Tel. 800/548-4667, Fax 800/561-1271, industrial@stormwaterinc.com, www.stormwaterinc.com.

Table 1: Changes in Wastewater Metals Limits

<u>Metal</u>	<u>Previous Limit</u>	<u>New Limit</u>
Copper	0.54 mg/L	0.036 mg/L
Chromium	1.03 mg/L	0.77 mg/L
Arsenic	0.36 mg/L	0.34 mg/L