

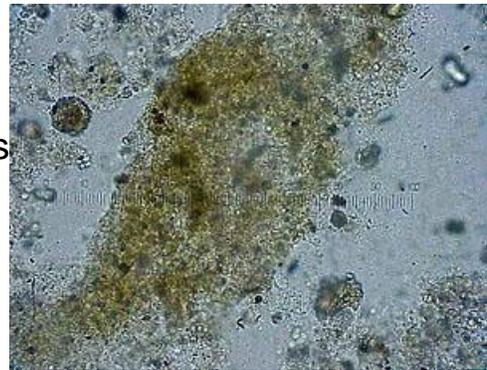
## Chardon Laboratories - Technical Series

### Bulletin: Why Clean Cooling Towers?

April 20, 2015

#### **Why is it important to clean my cooling tower?**

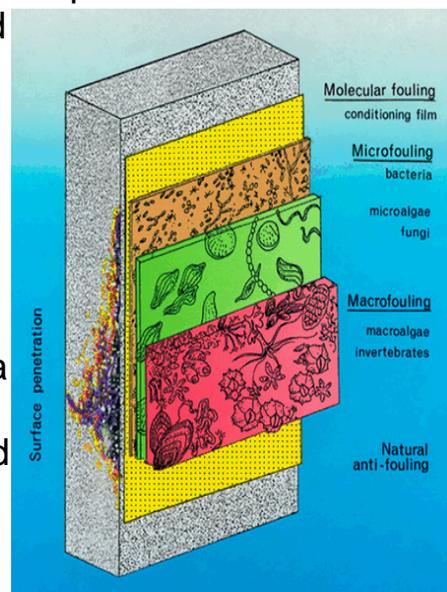
**Columbus, Ohio** - As the weather warms, it is an important time to “spring” clean your cooling tower. OSHA recommends cleaning your system regularly and twice a year is the best practice. Running a clean system impacts energy efficiency and savings, prolonged equipment life and the elimination of harmful pathogens like *Legionella*.



Cooling towers are designed to cool water with forced air. While these systems are in operation, the water is circulating and typically treated to prevent scale, corrosion and bio-fouling (algae and bacteria growth). Systems often sit idle during the cooler months because the cooling demand isn't as great and some systems are drained over the winter.

During the winter months, bacteria and algae go dormant, waiting for warmer weather and an oxygen and nutrient-rich environment. Once circulation resumes, the algae and bacteria are in a perfect environment for incubation (plenty of oxygen, nutrients scrubbed from the air and water temperatures ideal for growth).

Biofilm compounds these problems and is especially problematic in water cooling equipment that operates intermittently during the cooler months. The problems could be severe if operation only occurs for a few hours a week. Equipment left filled with water and untreated will see corrosion attack on chiller end bells, tube sheets and condenser water pipes that will lead to mill scale, pitting and ultimately failure. Mill scale builds up and eventually



flakes off and collects in tower distribution pans as rust chips. These rust chips can cause cooling tower distribution pans to overflow resulting in reduced cycles of concentration, increased water usage, accelerated corrosion rates, and ultimately shorter equipment life. Biofilm also prevents corrosion inhibitors from reaching the base metal. Biofilm can harbor *Legionella* and other potentially harmful species.

***What about algae?*** Algae can be a problem in cooling towers where a significant amount of sunlight reaches the water. Much like bacteria though, a little algae in the sun lit parts of a cooling tower does not reduce evaporation or heat transfer. Thick mats of algae can promote under-deposit corrosion and harbor other damaging bacteria. Long strands of algae that break free can clog strainers or other fine orifices in your system. Algae dies quickly once it breaks free of its hold in the sun and flows into the darkness of a piping system. Dead algae decomposes and can provide nutrients for bacterial communities, but the main impact of algae is the clogging of intake screens and other strainers in the system.

***Why is it important to clean and treat my cooling tower?*** Most cooling towers and condenser water piping systems require chemical treatment to protect against corrosion. Chemical treatment also prevents microbiological growth from promoting biofilms which can reduce heat transfer, restrict flow and harbor potentially dangerous bacteria like *Legionella*.

Cooling tower systems that operate intermittently during the cooler months have similar problems. While most treatment products remain active in the system even when it is not circulating, biocides have a certain half-life and even scale inhibitors can lose their effectiveness over time. Condensers and other heat exchangers that remain full of water for weeks or months will experience bacterial growth that can result in biofilm formation and corrosion.

***Are there instructions for properly cleaning my cooling tower?*** For health and safety and to make sure that your equipment is properly serviced to manufactures specifications, we recommend carefully following OSHA and manufacturers' guidelines. Call Chardon Laboratories at 800.860.1000 or email [sales@chardonlabs.com](mailto:sales@chardonlabs.com) for more information.

***About Chardon Laboratories:*** Chardon Laboratories is an employee owned, ISO Certified Service Company specializing in Guaranteed Water Side Solutions for all your industrial and commercial water treatment needs. Since 1965, Chardon has led the Water Management Industry providing customized treatment programs for cooling towers, boilers and loop systems with guaranteed results. Visit our site at [www.chardonlabs.com](http://www.chardonlabs.com)