

Klosok-Bazan, I. Use of Nanosilver for Water Conditioning in Cooling Tower Circulation System. *Ochrona Srodowiska* 2014, Vol. 36, No. 2, pp. 43–46.

Abstract: Biocide product containing silver nanoparticles (≤ 20 nm) immobilized on silica was demonstrated as a useful tool for water conditioning in cooling circulation systems. The process efficacy varied depending on the indicator bacteria tested. However, it did not depend on the product dose (dose range 0.5–1.5 g/m³). The biocide product, recipe of which is pending patent approval, was dosed into the water withdrawn from the cooling tower circulation system of the Laziska Power Plant, supplied by surface water intake. It was shown that the biocide product was effective against *Escherichia coli* as well as mesophilic and psychrophilic bacteria, with the highest efficacy to inactivate *E. coli* (100% at a dose 0.5 g/m³). The product was up to 10% more effective against mesophilic than psychrophilic bacteria. The study results form the basis for further studies on the effective dose of silver nanoparticle containing product that would limit bacterial growth and biofilm formation in cooling systems.

Keywords: Disinfection, cooling towers, biofilm.