

International Conference on **MATERIAL SCIENCE AND ENGINEERING**

February 24, 2022 | Webinar

Removal of cyanobacteria from a water supply reservoir by sedimentation using flocculants and suspended solids as ballast: Case of Legedadi Reservoir (Ethiopia)**Hanna Habtemariam***Addis Ababa University Center for environmental science, Ethiopia*

The massive growth of potentially toxic cyanobacteria in water supply reservoirs, such as Legedadi Reservoir (Ethiopia), poses a huge burden to water purification units and represents a serious threat to public health. In this study, we evaluated the efficiency of the flocculants/coagulants chitosan, *Moringa oleifera* seed (MOS), and poly-aluminum chloride (PAC) in settling cyanobacterial species present in the Legedadi Reservoir. We also tested whether coagulant-treated reservoir water promotes cyanobacteria growth. Our data showed that suspended solids in the turbid reservoir acted as ballast, thereby enhancing settling and hence the removal of cyanobacterial species coagulated with chitosan, *Moringa oleifera* seed, or their combination. Compared to other coagulants, MOS of 30 mg/L concentration, with the removal efficiency of 93.6%, was the most effective in removing cyanobacterial species without causing cell lysis. Contrary to our expectation, PAC was the least effective coagulant. Moreover, reservoir water treated with MOS alone or MOS combined with chitosan did not support any growth of cyanobacteria during the first two weeks of the experiment. Our data indicate that the efficacy of flocculants/coagulants in the removal of cyanobacteria is influenced by the uniqueness of individual lakes/reservoirs, implying that mitigation methods should consider the unique characteristic of the lake/reservoir.

Biography

Hanna Habtemariam has completed her PhD in 2021 in Environmental Science from Addis Ababa University, Ethiopia. She has been working at Addis Ababa University, Center for Environmental Science since 2014. She coordinated different international projects of Wageningen University for 3 years. In the field of limnology and lake restoration she published articles in reputable international journals. Currently she is involved in Initiative for Effective Adaptation and Resilience (LIFE-AR) project of The Global Green Growth Institute (GGGI) and she is also a member of steering committee of Green Climate Fund (GCF) for the National Adaptation Planning (NAP) Readiness project.

hanhabtemariam@gmail.com