Abstract FM 02

VERTICAL DISTRIBUTION OF CYANOBACTERIA, ALGAE, CYANOTOXIN, GEOSMIN AND 2-METHYLISOBORNEOL IN DADURU OYA RESERVOIR, SRI LANKA

WAMA Wijesekara, S Ganegoda and PM Manage*

Centre for Water Quality and Algae Research, Department of Zoology, University of Sri Jayawardenepura, Nugegoda, Sri Lanka.

Sri Lanka is a tropical continental island having 103 rivers and about 10,000 man-made reservoirs. There are over 250 drinking water supply systems constructed using these rivers. Since the latter part of the 20th century, reservoirs have been used extensively for domestic and agricultural practices. Most of the water bodies contain different types of algae and cyanobacteria, some of which are known to create water quality problems due to the secretion of certain secondary metabolites, such as cyanotoxins, 2-methylisoborneol (2-MIB) and Geosmin. The present study was carried out to evaluate the vertical distribution of cyanobacteria and algae density, cyanotoxins, Geosmin and 2-MIB concentrations in Daduruoya reservoir. Water samples were collected from two locations near the dam at different depths of 3 m, 6 m, 9 m and 10 m (bottom). Cyanobacteria and algal density, species composition, cyanotoxin: Microcystin-LR (MC-LR), Cylindrospermopsin (CYN), odor and taste forming Geosmin and 2-MIB were measured using standard methods. Five cyanobacteria species (*Microcystis* sp., *Cylindrospermopsis* sp., *Anabaena* sp. *Merismopedia* sp. and *Lyngbya* sp.) and 14 algae species belonging to Bacillariophyceae (4) and Chlorophyceae (10) were recorded. *Microcystis* sp. (9656 cells mL^{-1}) is the dominant species among all cyanobacteria and algae recorded. The CYN (1.12 - 5.89 µg L^{-1}) was detected at four depths at each site. The highest CYN concentration (5.89 µg L^{-1}) was recorded from 6m depth whereas the lowest (1.12 µg L^{-1}) was at 10 m depth. In terms of MC-LR, all depths in both sites were positive for MC-LR and concentrations ranged between (1.02 - 3.79 µg L^{-1}). The highest MC-LR concentration (3.79 µg L^{-1}) was recorded at 6 m depth while the lowest (1.02 µg L^{-1}) was at 10 m depth. The 2-MIB concentrations deviated between 4.56 and 33.45 µg L^{-1}. The highest MIB concentration (33.45 g L^{-1}) was recorded from the bottom while the lowest (4.56 µg L^{-1}) was at 3 m depth. The Geosmin concentrations deviated from 6.23 to 25.23 µg L^{-1}. The highest Geosmin concentration (25.23 µg L^{-1}) was recorded from the 9 m depth and the lowest (6.23 µg L^{-1}) was at 3 m depth. Further continuous studies are needed to decide the depth at which raw water would be released to the treatment plant.

Keywords: Cyanobacteria and algae, MC-LR, Cylindrspormorpsin, Geosmin, 2-MIB

pathmalal@sjp.ac.lk