

IGNORING IISC ADVICE PROVES COSTLY

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In what can only be a grim reminder of the apathy of the civic authorities, a large number of fish were found dead in the Ulsoor Lake on Tuesday to make it the second such incident in two months.

After thousands of fish died in the lake two months ago, authorities concerned should have put in place damage control measures, which they obviously did not resulting in the present tragedy. A 3.5 feet high wall that was supposed to be erected to prevent inflow of sewage into the lake hasn't been completed as grills aren't installed yet.

What caused the fish kill? According to the Central Pollution Control Board standards, Ulsoor Lake falls under Class E of Inland Surface Water, which is unfit for

As per a recent Indian Institute of Science (IISc) study conducted by TV Ramachandra professor of centre for ecological sciences, sewage water containing organic components, human waste (urine and faeces), phosphate, nitrate and detergent phosphate have been discharged into the waterbody causing eutrophication of the lake.

"Detergents can be easily absorbed from the surrounding water either through their gills or intestinal epithelium of fish and due to its potential toxicity induces histological and biochemical alteration in the organs of fish:" the study states.

Mortality of fish species is mainly due to lowered dissolved oxygen levels, according to the study.

"The lake lacks biological nitrification activity (biological oxidation of ammonia to nitrate in sediments becomes impossible) and low rates of ammonia assimilation (by slow-growing anaerobic bacteria in sediments). The pH of water samples of the lake ranges from 7.88-9.29 indicating alkaline conditions. The pH of aquatic ecosystems fluctuates during photosynthesis, respiration and nitrogen assimilation:" the study reveals.

The study, in fact, recommends steps to improve Ulsoor Lake through the introduction of aerators (water fountains or introduction of ducks). As per the study, aeration increases DO levels causing fish to be less stressed.



It also removes hydrogen sulphide, methane and various volatile organic compounds responsible for bad taste and odour in lakes. Aeration improves the quality of water and decreases the treatment costs. Aeration also provides an aerobic environment for the degradation of organic matter by microorganisms.

THE SLIGHTED SOLUTION

** Regular monitoring of the lake will help in understanding the physico-chemical characteristics and will help in evolving appropriate sustainable management measures*

** Aeration will help in maintaining dissolved oxygen levels, which reduces toxic effects and prevents excessive build-up of vegetation and organic matter*

** Allow treated sewage, which helps in reducing enrichment of nutrients that induces profuse algal growth*

** Restrict dumping of solid waste in the lakebed and lake catchment*

** Leave only treated sewage through construction wetlands and algal ponds (to remove nutrients) as in Jakkur model*

** Implementation of 'polluter pays' principle as per Water Act 1974*

** Dredging (mostly wet dredging) to remove sediments (rich in nutrients) in the lake*

** Public awareness and public participation is necessary.*