

## **Water Quality Status of Selected Aquatic Environments in Sri Lanka during Fish Kill Incidents**

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A sudden appearance of dead fish in an aquatic environment is a sign of environmental stress and most people believe that the fish have been poisoned of the water body. Factors that promote fish kills include rapid loss of oxygen or sudden increase of ammonia, temperature, cloud cover, algal blooms, and thermal stratification. The main objective of this study was to investigate the causes of fish mortalities and the state of pollution in aquatic environment. Four fish kill occurrences were investigated from January 2014 to January 2015 including Nalanda tank in Bandaragama, Lunawa Lagoon, Diyawanna Oya and Padakada Wewa in Gampaha.

Temperature, pH, dissolved oxygen (DO), salinity and conductivity levels were measured immediately when arriving at the fish kill site. All other chemical analyses were carried out in accordance with the Standard Methods for Examination of Water and Waste Water (APHA), 20<sup>th</sup> edition. “Proposed CEA Ambient Water Quality Standards for Inland Waters in Sri Lanka (2001)” was used as the standard guidelines for fish and aquatic life for comparison of the results.

Results revealed that most fish kills caused by prolonged reduction in DO level. According to the results of Nalanda tank, DO and phosphate values did not comply with the standard limits and they were within the range of 1.27-1.88 mg/l and 0.5-1.7 mg/l respectively. Investigation done at Lunawa lagoon indicated, streaming of sea water into the lagoon due to widening of lagoon mouth resulting in the high salinity at upstream locations. Further, chemical oxygen demand (COD), ammonical nitrogen, orthophosphate, and turbidity ranges were 100-340 mg/l, 4.4-4.56 mg/l, 0.7-5.8 mg/l and 10.43-13.62 NTU respectively, which are very much higher than the acceptable levels for the survival of fish and aquatic life. Fish kill incident recorded in Diyawanna Oya, was mainly due to the overcrowding of Tilapia (*Oreochromis niloticus*) fishes, low DO values in the bottom layer and high turbidity and ammonical nitrogen concentrations. Further, pop- eye disease and skin lesions were identified in most of the matured Tilapia fishes. Investigation done at Padakada wewa revealed that DO value (2.75mg/l) was less than the standard limit where as the biochemical oxygen demand (BOD) and COD values were 12 mg/l and 136 mg/l respectively, which are greater than the standard levels.