# High Ammonia Concentration Coupled with Low Dissolved Oxygen and High BOD in the Water Column from a Polluted Harbour, During a Premonsoon Month, Visakhapatnam, India

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Introduction of anthropogenic stresses on the environment has been increased several folds in all sectors of the coastal ocean by several ways. Particularly introduction of high nutrient load to the coastal ocean from agricultural sectors, fertilizer industries, untreated sewage from the cities and ports are one of the major pathways. Both organic and inorganic nutrient input to the coastal ocean has been increased many times from past centuries and going to be magnified in near future. These nutrients and organic load to the coastal ocean might potentially alter the biology and chemistry of the costal water. We have conducted a study in the Visakhapatnam Harbour during June 2009, under the Coastal Ocean Monitoring And Prediction System program to understand the pattern of physicochemical and biological parameters under highly polluted environment. Visakhapatnam Harbour is one of the heavily polluted hotspots in India having extensive Naval and industrial port actives. We have covered 7 stations during both high and low tide in all braches of the shipping channels up to the fishing harbour which is situated at the outer most part of this port and close to the sea. Highly variable ammonia concentration (0.088 -154.623 μM) was found during both high and low tide time, but the highest concentrations were associated with the high tide surface water of the South Lighter Canal which has been detected as the mostly polluted station. Dissolved oxygen concentration went down to zero at this station an average concentration was higher at the sea end of the fishing harbour side. Biological Oxygen Demand was comparatively very high and reached above 12 mg $L^{-1}$ at this station and always showed higher values than other stations. Other nutrients like nitrate and phosphate were also very high ( 27.8-172.8 nitrate and 0.75 -62.64μM, respectively) in all channels of the port and the fishing harbour mostly showed the lower values coupled with higher Dissolved Oxygen and primary production which could be indicative towards less stress. Phytoplankton cell number varied from 60920 to 3835440 $L^{-1}$, but only few numbers of diatom, dianoflagellate and cyanobacteria were found to be present. Very low diversity combined with high dominance of phytoplankton could be attributed to the high pollution level. Total Bacterial count was high in all stations with a range of 1.03 - 4.4 x $10^8$ $ml^{-1}$. High ammonia concentration in the surface water might act a potential source of atmospheric ammonia from this part of the coast.