Methodology

The impact of idol immersion on water quality of Varal Devi lake is to be studied for which the Ganpati Visarjan (immersion) point near the Varal Devi Temple have been selected as sampling station as a large number of idols of Lord Ganesha are immersed in this lake. The three sampling sites chosen are:

- First Ganpati Visarjan (immersion) point, Near Lake View Restaurant (Site S1)
- Second Ganpati Visarjan (immersion) Ghat, Kamat Ghar Gaon, Chandan Baug, Near Peace Park (Site S2)
- Third Ganpati Visarjan (immersion) point, Phenapada, Phulegaon (Site S3)

Water samples were collected at morning hours during pre immersion, during immersion and post immersion in the periods of idol immersions activities. The water samples were collected thrice successively from the months of July to December for each idol immersion activity, two months before the immersion activity and three months after the immersion activity. The physico-chemical parameters of water samples collected from the sampling points were assessed. The physicochemical parameters like, Temperature, pH, Electrical Conductivity (EC), Total Dissolved Solids (TDS), Total Solid (TS), Total Suspended Solid (TSS), Organic Matter, Oil and Grease, Density/Specific Gravity, Acidity, Carbonate, Carbonic Acid, Chloride, Residual Chlorine, Turbidity, Dissolved Oxygen (DO), Biological Oxygen Demand (BOD), Chemical Oxygen Demand, Phenol, Total Alkalinity (TA), Total Hardness (TH), Calcium (Ca++) Magnesium (Mg++), Chloride (Cl⁻), Fluoride (F⁻), Nitrite (NO₂⁻), Nitrate (NO₃⁻), Sulphate (SO₄²⁻) and phosphate (PO₄³⁻) were determined.

All physico-chemical parameters of water samples will be determined by classical methods and instrumental methods. The heavy metals in the water samples and in fish organs will be determined by Instrumental methods like - Atomic Absorption Spectroscopy, Spectrophotometry, pH-metry, Conductometry, Colorimetry, Turbidimetry and Nephelometry. Analysis of heavy metals will be carried out by formation of complexes with chelating ligands followed by extraction into suitable organic solvents by solvent extraction technique. Intensity of colour and thereby the concentration levels will be measured by spectroscopic techniques by the procedures followed by Mirza, M. et al. (2007) and Karatas, M et al. (2007).
Work Plan

Water samples from Varal Devi Lake will be collected at three different points used for Idol immersion by sampling technique pre, during and post Idol Immersion. One species of edible fish caught, dissected and organs are separated, this work will be carried out from June 2012 to November 2012.

Analysis of Physico-chemical quality and heavy metals in water and fish organs (Liver, Kidney, Gills and Abdominal Muscles) continues using classical and instrumental method from December 2012 to May 2013.

Sampling of same species of fish from the lake, determination of biometry of fish pre, during and post Idol immersion carried out from June 2013 to November 2013.

Analysis of heavy metals in Liver, Kidney, Gills and Abdominal Muscles in the fish for second year continues from December 2013 to May 2014.

Physical and chemical parameters will be determined by the procedures given by Kaur R, Dhavale O. [2013]. Concentration of heavy metal pollutant will also be determined.

Analysis of fish [flesh, liver, kidney, gills] will be carried out by dissecting the fish using clean equipments. The fish will be collected from the lake pre, during and post Idol immersion for consecutive two years. The biometry of the fish will be determined. Size of the fish will be varied depending on the species. Fish from the lake will be dissected to separate the organs [flesh, gills, liver, kidney]. The separated organs will be dried and digested by acid treatment, diluted with water and then analyzed for heavy metals by using analytical techniques as given by Karatas. M. et al. (2007) and Baki A.S. et al. (2011) Bioaccumulation factors will also be determined.
Heavy metals analysis will be carried out by immersing small idols in double distilled water under laboratory conditions and statistics regarding heavy metal pollution in the lake will be calculated.

Results of detection of heavy metals like Lead, Copper, Cadmium, Zinc in lake water samples and in fish (One species of edible fish, which is the dominating and mainly consumed species) will be justified by using novel analytical techniques like Polarography, Atomic Absorption Spectroscopy, UV-Visible Spectroscopy as given by Adefemi S. O. et al. (2010).