CONCLUSION AND SCOPE FOR FURTHER STUDIES

On the basis of the Physico-chemical analysis of 22 parameters of the water of ten study sites it can be concluded that the water quality of the river Sheonath gets deteriorated due to the effluents discharged by different streams of Durg-Bhilai areas. The main polluting stream is Samoda Nallah, which is formed by joining of Bhilai Nallah, Kosa Nallah & Industrial Nallah. It is significant to note that, the colour of the water is blackish and odour pungent throughout the year. The low value of pH (5.9-7.5), DO (2.7-5.1mg/l) and high value of Fe (21.6mg/l), Cl⁻ (1258mg/l), TSS (3736mg/l), TSS (1810mg/l), BOD (116.6mg/l), COD (205.2mg/l) are indicative of high degree of pollution.

It is worth mentioning here that the Industrial Nallah carries the extremely polluted waste water as indicated by its blackish colour and pungent smell throughout the year. The low value of DO (0.00-3.5mg/l), pH (5.7-6.5), and high value of Fe (85mg/l), Cl⁻ (179.20mg/l), SO₄²⁻(1536mg/l), TDS(42.40mg/l), TSS(2790mg/l), BOD(1140mg/l), COD(1608mg/l), indicate high pollution contributed by a variety of industries including distillery, phenol, Iron, Fertilizer and many ancillary units.

To conclude, the river water quality gets degraded when it is compared between site 1 and site 9 i.e. the point of entrance of the Sheonath river into Durg town and after a stretch of 25 kms. at village Jhinjari. The high
values of Fe (12.7mg/l), Cl(113.6mg/l), SO₄ (115.2mg/l), TDS (1631mg/l), BOD (61.7mg/l), COD (162.4mg/l), Total Hardness (359mg/l), and low value of DO (3.2mg/l) are significant and indicate contamination of river water by organic matter as well as anthropogenic activities.

From the present study it is found that the overall water quality of sites 1, 3 and 4 are suitable whereas that of sites 2, 5, 6, 7, 8, 9 and 10 are unsuitable.

The identification, occurrence, habitat diversity of 10 Macrophytes, 16 Phytoplanktons, 19 Zooplanktons, 17 Macrozoobenthic forms of all the study sites in each month for two years have been recorded for the first time. On the basis of the population levels at all the study sites the Chironomas & MayFly Nymph have been identified as the bad and good water quality indicators respectively.

Experimental studies on the water quality restoration have been conducted by Fish Bio-Assay Method so as to assess toxicity of the wastewater.

Integrated Aquatic Macrophyte Base System (IAMBS) was designed and assembled in the Laboratory. This is a Biological Method of water quality restoration by using selected floating weeds. They absorb the toxicants present in the effluent water and incorporate them in their body tissues very rapidly and effectively. It has been revealed that within 120 hrs. Nearly 82% toxicants recovery is possible.
An effluent treatment plant has been designed on the principle of IAMBS. This is the cheapest method of recovering the pollutants, is absolutely pollution free and does not require energy.

Some of the Bioreactors such as

- Coconut coir filled Bioreactor
- Rotating Disc Bioreactor
- Basket type Bioreactor
- and also Aerated Lagoon

have been suggested for the treatment of wastewater at different sites. These are capable of removing Nitrate, COD, and BOD upto 80% TO 90%.

The overall picture that emerges out of the present study warrants certain remedial measures for the conservation and sustainable management of this riverine ecosystem.

It is the duty of the civic authorities to check the direct mixing of the sewage, domestic and industrial waste water with the water of this river to protect the human health as well as the health of the aquatic environment. It is therefore suggested that all the industries should discharge the effluent only after its proper treatment preferably, eco friendly methods.

It is further suggested that thorough studies be carried out for the remaining physico-chemical parameters and other metals so that their effect on the water quality including that on eco-system can be determined.