CHAPTER 5

CONCLUSION

The investigation deals with the study of heavy metals (Hg, Cu, Fe, Mn and Zn) pollution in water, sediment and fish collected from the Cauvery River and the Chetpet Pond and that in water and sediment collected from the Cooum Rivulet. Hg was estimated using cold vapour technique in Mercury Analyser (ECIL, 5800 MA) while the other metals (Cu, Fe, Mn and Zn) by atomic absorption method (Varian Techron AA 120). The investigation revealed the following salient observations:

Mean concentration of Cu, Fe, Mn, and Zn in the Cauvery River water were 0.001, 0.0468, 0.0077 and 0.0059 mg/l respectively. The values for the same metals in that order in the Cooum Rivulet water were 6.42, 127.55, 54.81 and 15.58 mg/l respectively. The Hg content in the Cauvery River water was below detectable limit while in the Cooum Rivulet water it was 0.005 mg/l. The concentration of all five heavy metals studied in the Cauvery River water was below the permissible limit prescribed by W.H.O and also the levels stipulated by pollution control organisations of other countries. In the case of the Cooum Rivulet water, except Hg the concentration of all the other four heavy metals were above the prescribed permissible limits.

Mean concentration of Hg, Cu, Fe, Mn and Zn in the Cauvery River sediment were 0.02, 4.47, 10883, 83.5 and 8.75 mg/kg dry weight respectively. The values for the same elements in that order in the Cooum Rivulet sediment were 0.768, 390, 18589, 427 and 2288 mg/kg dry weight respectively. It was noticed that the concentration of heavy metals in the sediment both in the Cauvery River and the Cooum Rivulet were higher than that in water.

Mean Hg content in the Cauvery River fish was maximum (0.172 mg/kg fresh weight) in liver whereas it was maximum (0.164 mg/kg fresh weight) in viscera.
in the Chetput Pond fish. The accumulation of all the other four heavy metals were found to be maximum in liver as compared to the other organs both in the Cauvery River and the Chetput Pond (Cu 6.34 Vs 1.61, Fe 88.5 Vs 47.17, Mn 10.78 Vs 1.22, Zn 54.52 Vs 13.72 mg/kg fresh weight).

Mean concentration of Hg in the edible portion of fish was well below the stipulated toxic limit both in the Cauvery River and the Chetput Pond and hence fit for consumption.

Heavy metals concentration in water, sediment and fish in hot weather season were appreciably greater as compared to other seasons in all the three water courses studied.

In the Chetput Pond, the pollution load was found to be higher in Station 1. However, Hg concentration was found to be appreciable in Station 3 as compared with other Stations.

In the Cooum Rivulet, the mean concentration of all heavy metals, investigated, steadily increased from Station 1 to Station 4 with a drop in Station 5.

In the Cauvery River, no appreciable differences in heavy metal concentration was observed between the three locations studied.

On the whole, the concentration factors for sediment and all the fish organs were higher in the Cauvery River in comparison with the values in the Chetput Pond.

Statistical modelling of the collected data from the three water courses led to the following derivations:

- Internal correlation between individual metals
- Multiple correlation between one metal with others taken together
- Regression equations.