SUMMARY

1. The levels of heavy metals, nickel, chromium, iron, copper, zinc and manganese were estimated both in the water column and sediments of the Cooum river during the year 1988 periodically once in 3 months.

2. Acute toxicity of nickel, chromium and their combinations were tested to C. carpio communis and the median lethal concentration values were estimated following weighted probit analysis. Nickel is more toxic than chromium and among the combinations Ni + Cr (75 : 25) was most toxic.

3. Histopathological effects of sublethal concentrations of nickel and chromium on the vital tissues of scale carp namely gill, liver, intestine and kidney were observed after 10, 20 and 30 days of exposure. Both nickel and chromium caused several alterations in the histoarchitecture of the above tissues including necrosis, vacuolisation and lysis.

4. Morphological studies with scanning electron microscopy confirmed the damages caused to the gill architecture and its surface by the treatment of nickel and chromium for 50 days. Wrinkled epithelium with the fusion of secondary lamellae was seen in both the cases.
5. Conspicuous alterations were noted in the haematological parameters, RBC count, WBC count, Haematocrit, Haemoglobin content, MCV, MCH, MCHC and Oxygen carrying capacity of scale carp after exposure to the sublethal concentrations of nickel and chromium.

6. Linear uptake of nickel and chromium was noted in the gill, brain, liver, intestine and kidney of the scale carp and among the tissues uptake was minimum in the muscle both for nickel and chromium.

7. Biochemical composition of the above tissues is also influenced by the exposure of sublethal concentrations of nickel and chromium. Both the metals caused the decline in protein and lipid content. The changes were directly proportional to the concentration and exposure period.

8. Vertebral deformities were observed in fish exposed to higher concentrations of nickel and chromium. Analysis of minerals in the vertebrae proved their depletion due to heavy metal accumulation.