ABSTRACT

The industrial waste waters of Harihar polyfibre Limited (HPF) and Grasilene Fibre Factory (GRF) situated on the left bank of River 'Tungabhadra at Kumarapatnam, near Harihar (Karnataka) and the upstream water were analysed for their physico-chemical characteristics and heavy metal contents according to the standard methods from May 1986 to April 1987. The aim of the present investigation was to test the above industrial effluents for their toxic effects on plants and to determine their existing nature, magnitude and sources of the various pollution loads and their consequent effect on the receiving waterbody. The solid waste (coal ash) as well as sediments of both the effluent canals and the river were analysed for their pollutant contents, with special emphasis laid on heavy metal concentration. To screen the above industrial effluents for their mutagenic effects on plants, Standard Chromosome Aberration Test on Allium cepa L. were conducted by treating the actively dividing root tips with four different concentrations (25, 50, 75 and 100%) of effluents for 24, 48 and 72 hours separately. The slides were scanned for the frequencies of cell division and the induced chromosome abnormalities. The principal abnormalities included spindle disturbances with a low frequency of chromosomal alterations. The antimitotic, cytotoxic and clastogenic effects of both the
effluents were confirmed. The cytological abnormalities caused were very similar to those induced by many mutagenic agencies and hence screening of such industrial effluents for their potential mutagenic agents was recommended. The results were recorded and proper pretreatment of effluents before discharging to the River Tungabhadra was recommended.