

## Evaluation Of Potential Genotoxic And Neurotoxic Effects Of Selected Textile Mill Effluents Entering Bolgoda North Lake And Weras Ganga, Sri Lanka

B. I. G. Perera and A. Pathiratne

Department of Zoology, University of Kelaniya, Kelaniya, Sri Lanka

Textile industry may pose severe environment problems due to discharge of wide array of chemicals with large volume of waste water it generates and these may have the potential threats to the biota. The present study was carried out to evaluate the potential genotoxic effects of three selected textile mill effluents entering Bolgoda North Lake and Weras Ganga area using Nile tilapia (*Oreochromis niloticus*) as the test fish.

The effluents and sediments in the area were collected from three sites (Site 1, 2 and 3) during the period, Nov. 2006 – Feb. 2007. Fish maintained in the laboratory were exposed to two different concentrations of textile mill effluents (50% and 100%) and contaminated sediments collected from three sampling sites for three days. Genotoxic effect of textile mill effluents on test fish were investigated using the micro nuclei (MN), nuclear abnormality (NA) tests in erythrocytes and Silver stained nucleolar organizer region (AgNOR) tests in fin epithelial cells of the test fish. Micronuclei and nuclear abnormalities such as lobbed nuclei, notched nuclei, binuclei and blebbed nuclei were evaluated in peripheral erythrocytes of test fish after 3 days of exposure. Interphase AgNOR parameters were examined in epithelial cells obtained from the edge of the caudal fins after 90 and 180 min of exposure. Cadmium 3 mg/L was used as a positive control.

Frequency of MN and some NAs in the erythrocytes were increased in the treated fish with respect to the controls and the induction was most evident in the fish exposed to the effluents and sediments collected from the Site 2. AgNOR parameters in the fin cells of test fish were decreased in the fish exposed to the effluents and the reduction in the parameters were most evident in the fish exposed to effluents from the Site 2. Genotoxic tests revealed that the effluents entering the Site 2 may have the high amount of genotoxic compounds and hence the highest genotoxic potential. The genotoxic potential of the sediments were found to be low in comparison to the effluents. Present study revealed that studied textile effluents entering the Bolgoda North Lake and Weras Ganga at three sampling sites have the genotoxic potential on the aquatic fauna.