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UNIVERSITET

INTERNATIONAL SCIENCE PROGRAMME ISP

#ISP60years WEBINAR SERIES Development of Biochemical Ecotoxicology in Zimbabwe

Agricultural, industrial and mining sectors remain the major controllers of gross profits realized in developing countries, Zimbabwe included. Modernisation of processes in agriculture, mining and industry has come with increased types of chemicals that support the various activities carried out by man to support his livelihood. Agrochemicals which include, pesticides and fertilizers are used in agricultural activities to control pests and diseases as well as promote growth and good quality crop yields. Chemicals like mercury, cyanide and sulphuric acid are used in separating minerals from ores. Various solvents which include benzene, ethylene and phenol are used in different industries. These chemicals find their way into terrestrial and aquatic environments via runoffs, leaching and aerial drifts and they affect the wellbeing of various living organisms. These anthropogenic chemicals are of varying toxicity and affect organisms at different levels of biological organization.

The Ecotoxicology Research Group, IPICS ZIM:02, utilizes biochemical ecotoxicological techniques to establish the extent and impact of anthropogenic pollutants on aquatic and terrestrial ecosystems in Matabeleland region which is situated in the Southern Part of Zimbabwe. Nontarget organisms, comprising of various invertebrate and vertebrate, are used in passive and active biomonitoring studies as indicator species. Biochemical markers in these indicator species are employed as environmental tools used to assess the exposure and effects of stressors on organisms.

We have shown consistent alteration of biochemical markers in indicator species exposed to polluted aquatic and terrestrial environments when compared to biomarkers in organisms from reference sites thereby supporting the potential of these biochemical markers as biomarkers of exposure. Our findings provide quality indicators for the health of aquatic and terrestrial ecosystems.

We have shared our results with various stakeholders who include industry, Bulawayo City Council (BCC), Zimbabwe National Water Authority (ZINWA) and Environmental Management Agency (EMA) to enable them to come up with appropriate preventive measures to safeguard the health of the environment.

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