

**STATE OF ENVIRONMENT AND MANAGEMENT STRATEGIES AROUND INDIAN PERMANENT STATION MAITRI IN SCHIRMACHER OASIS, ANTARCTICA**

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A set of procedural guidelines was developed in 1991 for evaluating environmental impact of scientific expeditions in Antarctica. In view of this, EIA studies were initiated for Indian permanent station Maitri, which started functioning in 1998. Studies covered different components of the environment, viz. air, noise, water, wastewater, land and solid waste. Different sources of pollution were identified and the samples were characterised as per standard methods for evaluating status of the environment, thereby suggesting environmental management plans.

Analysis of gaseous emissions from different sources revealed that while oxygen contents were marginally reduced in fumes, released by vehicles, toilet incinerators and power generators; CO<sub>2</sub> levels were fairly increased. Apparently SPM, SO<sub>x</sub> and NO<sub>x</sub> levels in generator exhausts were at higher side upto a certain distance. The noise levels at living rooms were within the permissible limits as compared to generator rooms and occasionally at helipad. The surface water characteristics around the station indicated mostly rich in nutrients, in terms of phosphate and nitrate. DO levels above 8.0 mg/l indicated better reaeration capacity in the lake. The BOD, COD, hydrocarbons and heavy metal concentrations were not at alarming levels. At Maitri station, the Zub lake water is used for different purposes, and subsequently a sizable quantity is released as wastewater for further disposal on land through treatment by two biodiscs. The performance of the biodiscs was found to be fairly good and the results have been detailed in the paper. The systematic collection, segregation and back loading of solid wastes, generated at the station, have been recorded in detail. Soils around the station were slightly contaminated due to vehicular and power generators maintenance at selected locations. Altogether 33, 8 and 4 genera of phytoplankton, zooplankton and meiofauna were encountered in the Zub lake and surrounding surface waters.

In accordance to the protocol on environmental protection to the Antarctic Treaty, a comprehensive environmental management plan has been formulated.