ANALYSIS OF WATER QUALITY PARAMETERS IN WELL WATER IN THE VICINITY OF AN INDUSTRIAL ZONE AND ANALYSING SOURCES AND EFFECTS

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The Ratmalana - Moratuwa area located in the south of Colombo has developed as an industrial residential suburb of Colombo in the 1950's. It has been revealed that the environmental problems in the area are very acute due to the activities of large number of industries. About 150 industries are densely packed, within this area. Most of the industries are non-agro based industries. They can be categorised into several groups such as paint industries, galvanising industries, asbestos industries, dyeing and finishing, pharmaceutical industries and battery manufacturing industries. According to an investigation of discharges produced in the area it was found that major part of the effluent was released via surface drainage to Lunawa and Bolgoda Lake. The main issue associated with this industrial pollution is water contamination. Even though many studies have been carried out on surface water contamination, studies on ground water contamination have not been done in detail. The intention of this study was to, analyse ground water samples at various sites of the industrial zone and to relate the results to the present industrial activities of the area. From these studies it was found that the chemical oxygen demand (COD), levels far exceed the acceptable portable water quality standards, indicating high chemical pollution. In addition it was found that Chemical pollutants are present in the ground water. Biological Oxygen Demand (BOD) has exceeded the tolerant limits for portable water level at several locations. The trace metals that exceed the levels are Zn, Fe, Cd, Pb, and Ni which had not been noted in a previous study done by De Silva et al. (1986).

Low pH values in some of the samples indicate water contamination with acids. Some samples have been contaminated with acids and it was revealed by low pH of some samples. Most industries in the area dispose their effluents directly in to the drainage system without any prior treatments. Ground water contamination is thought to be a direct consequence of these inefficient effluent systems. This study discusses the analytical results of water samples taken from various locations of the industrial area and described the industrial activities in the area that might have caused this ground water contamination, and discusses possible health effects due to use of polluted water as a source of portable water in this well water.