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SEMINAR NOTICE

Title: "Water Quality Laboratory at Divecha Centre: An Overview"

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Abstract: Water Quality Lab of the Divecha Centre for Climate change, Indian Institute of Science, is engaged in the studies on geogenic contaminants of ground water, principally fluoride, arsenic and Uranium. From a study of the large data base available on Government of India's website and from study of literature, using more than 300,000 analyses of groundwater samples, it has arrived at highly fluoride and arsenic contaminated regions in Karnataka. Fluoride contamination is dominant in the eastern dry and arid districts of Karnataka. Geological studies show that groundwater occurs in K-rich granites in these areas. Such granites carry fluorite, apatite, mica and amphiboles rich in fluorine which contribute to high fluoride content in ground water. These granites apart from potassium are also enriched in U and Th which are found in zircon, monazite,
allanite and secondary Uranium minerals, which contribute to higher abundances of dissolved U in groundwate,r which has been recorded for the first time by the DCCC. High arsenic contamination is resricted to Raichur District. Field visits have revealed, that arsenic contamination here has arisen because of inadvertent use of mineral rich mine tailings from Hutti Gold Mines in the agricultural fields for enriching the soils in minerals. In a way, it is more due to anthropogenic activity. Through field studies, independent sampling and analysis of ground water samples from 66 villages picked up from large data base mentioned earlier as highly contaminated regions, DCCC has

identified six hot spots –villages- where it has planned to carry out holistic study. The six villages identified are in Chikballapur, Kolar and Tumkur Districts. In some of these villages both fluoride and uranium contamination has been recognised. The holistic programme under implementation consists of : 1) sample collection and chemical analysis of groundwater at monthly intervals, not just during pre- monsoon and post monsoon months; (2) establishing geological context of sampling sites ; (3) rock and soil sampling and EPMA studies for contaminating minerals; (4) analysis of water samples with special focus on fluoride, uranium, radium and radon ; (5) analysis of vegetables, cereals and fruits for the contaminants that are absorbed from ground water; (6) analysis of groundwater for biological contaminants in collaboration with medical institutions; (7) health surveys in villages and blood and urine sampling from the people living in endemic villages and their analysis in collaboration with medical institution,

(8) determination of total ingestion of pollutants in human systems and understanding of transfer factor of pollutants to the various parts in the human body in collaboration with medical institution and BARC Health Division; (9) Assessment of drinking water supply and sanitation status in selected village ; (10) water supply and sanitation status in primary and community health care units; (8) status of water treatment on site and its sustainability; (11) evolving methods of management of waste from water treatment units ; (12) Lab-scale studies for improving sustainable techniques in practice ; (13) Planning and implementation of conjunctive use of surface and rain water for drinking, and ground water for washing and sanitary purposes ; (14) Assessment of groundwater potential in the water shed and conservation practices; (15) study of relative feasibility of piped water supply from surface water sources and conjunctive use of water from roof top and ground water; (15) Transfer of knowledge and technology for wider use.

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