# APPLICATION OF GLOBAL POSITIONING SYSYTEM (GPS) IN FORMULATION OF SUSTAINABLE ARSENIC MITIGATION PLAN

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The United Nations' resolutions at the last two earth summits, one held at the twilight of the 20th century in Rio (United Nations Conference on Environment and Development) and the other at the advent of this 'thirsty 21st century' in Johannesburg (World Summit on Sustainable Development) pledged to provide clean and safe drinking water to the global population of above 6 billions. This promise seems to be a distant dream for the 42.7 million residing in 2600 villages in 74 blocks of 9 districts in West Bengal, who are at risk of exposure to an environmental catastrophe called 'arsenic poisoning'. Several millions in many of these affected districts are drinking groundwater with arsenic concentrations far above acceptable levels (10 ppb and 50 ppb according to the World Health Organization and Indian Bureau standards respectively) and a vast number of people have already been diagnosed with symptoms of arsenic toxicity. Though various studies on geological and epidemiological area have been done, the need of the hour seems to be to build up a sustainable arsenic mitigation plan. This requires appropriate maps of the affected areas and the precise identification of the arsenic contaminated tube wells. Considering the vast threatened area (38,500 Km2 in March 1999) and the complexity of arsenic distribution in ground water and sediments, gathering geographical data by traditional survey methods (using theodolite, dumpy level and alidades) and disseminating the same are slow and expensive process. However, today we are living in an age of rapid gathering and dissemination of information with various affordable and advanced operational technologies such as Remote Sensing, Global Positioning System (GPS), Geographic Information System (GIS) and Laser Range Finders, which significantly contribute to improved efficiency. Highly specialized GPS device acquires accurate geocodes (latitudes and longitudes) which can be used to generate location maps and develop data for a Geographical Information System (GIS). GIS, a visual representation of a geographical referenced database, is the best way to display and store GPS data and make maps. The researchers are involved in the study of a 3 Sq.km area in the arsenic contaminated villages of Simulpur, Bamandanga, Kamdebkati under the blocks of Habra I and Habra II of North 24 Parganas district in West Bengal. This study will set a paradigm and be a pathfinder for: a) covering a larger area with more reliability and accuracy, b) displaying valuable information in a fast, efficient and cost effective mode, c) exploring hydrogeology and interpreting hydrogeological data after accumulation and assimilation information from many sites, d) supporting decision-making in determining an appropriate and sustainable arsenic mitigation plan.

***Key terms***: Arsenic toxicity, Geocodes, GPS, GIS, Mitigation plans.