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Arsenic and other heavy metals contamination in shallow groundwater of Chakdhah Block, West Bengal, India

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The study area comes in one of the eight districts in West Bengal where groundwater contains arsenic above the prescribed limit by WHO (10 µg/l). Each day, groundwater is being withdrawn by the village people for the fulfillment of their basic needs and for agricultural purposes. With the groundwater along with high concentration of arsenic (As), many other heavy metals are also getting introduced in the environment. In the areas with a long history of use of such groundwater, the agricultural lands have been affected severely. The extent of contamination has increased to a level where the crops grown in those lands are becoming a major source for arsenic and other heavy metals poisoning and subsequently transfer to different trophic levels. Based on this concern a somewhat detailed study was carried out to obtain an idea about the magnitude of water contamination in the area taking the rain-fed pond as control. In case of the pond water, the mean concentration (µg/l) of As (32.63), Fe (57.21), Mn (30.25), Cu (0.82). Whereas in case of shallow groundwater there was more increase in the case of As (76.43), Fe (5493.22), Mn (253.63), and Cu (1.825). Other heavy metals in groundwater were high enough to pose threats but surprisingly the concentration of arsenic even in the pond water was above than the safety standards (32.63±0.88 µg/l) given by WHO (10 ppb) though below than ISI (Indian Standard of Bureau) standard (50 ppb). Thus there is a serious immediate concern for the people and other life forms living in this area regarding the poisoning through crops and drinking water as well.

Biography

Anamika Shrivastava is pursuing her PhD under the supervision of Dr. Sutapa Bose at IISER Kolkata. After PhD submission, she worked as Assistant Professor and received DST-Young Scientist FAST-Track grant in 2007. Further, in career advancement she went to U.S.A to join the Lamont-Doherty Earth Observatory of Columbia University, New York, as Senior Researcher in 2009, further she joined New York University, New York as a Post-Doctoral Researcher in 2010. She moved back to India at IISER Kolkata, Department of Earth Sciences as Ramanujan Fellow in December 2011. Recently, she was selected for "Rashtriya Gaurav Award" for her present research work from Indian International Friendship Society, New Delhi. She has published more than 25 research papers in reputed journals and has been serving as an editorial board member of many committee and journals.

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