

Assessment of Arsenic Exposure and Health Impact on Population of Arsenic Affected Malda District of West Bengal—A Case Study

Debasis Golui¹, D.N. Guha Mazumdar^{2*}, S.K. Sanyal³, S.P. Datta¹, P.K. Patra⁴, S. Sarkar⁵ and K. Bhattacharya⁴

¹Division of Soil Science and Agricultural Chemistry, ICAR-Indian Agricultural Research Institute, New Delhi 110012, India

^{2*}Corresponding Author, DNGM Research Foundation, New Alipore, Kolkata-700053

³Former Vice Chancellor, B.C.K.V, Mohanpur, Nadia, West Bengal-741 252

⁴Department of Agricultural Chemistry and Soil Science, B.C.K.V, Mohanpur, Nadia, West Bengal-741 252

⁵Department of Agricultural Meteorology, B.C.K.V, Mohanpur, Nadia, West Bengal-741 252

Abstract—Chronic arsenic toxicity due to exposure of arsenic and its health impact on population has been studied in Malda district of West Bengal. To ascertain these, a scientific epidemiological study was carried out in four blocks of the district. Epidemiological study was carried out by house-to-house survey for the selection of the participants. A total number of 66 households of 10 arsenic affected villages were surveyed in the district. Highest level of arsenic in drinking water sources was found to be 884 µg/l, while it was above 100 µg/l in 51% cases. Out of 182 participants examined, 80 (43.9%) patients showed clinical features of arsenicosis (cases), characterized by arsenical skin lesion (pigmentation and keratosis), while 102 participants did not have any such lesion (control). The incidence of such disease was found to be significantly high (88.0%) in males compared to females (12.0%). Majority of the population, living in the arsenic affected villages, were of low socio-economic condition and education status, lived in pucca houses and were engaged in agricultural farming or as physical labour. Sanitary latrine was absent in case of nearly 27.3% of the participants. Out of total number of cases having arsenical skin disease, 96.3 % had pigmentation (mild-62.5%, moderate-30.0%, severe-3.75%), whereas 52.5% had only keratosis (mild-37.5%, moderate-12.5%, and severe-2.50%). Both pigmentation and keratosis were found in 47.5% of the patients, majority being males. Other systemic features found in significantly higher number of cases compared to controls are characteristic cough, weakness, limb pain, etc. Large number of people in the district of Malda show arsenical skin lesion. However, insufficient education, poverty, lack of awareness and effective health-care support system are the major contributory factors to the malady of the severely arsenic affected people.