

## The response of endemic arsenism caused by drinking water on water quality improvement

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**Abstract:** Water quality improvement is the primary pathway to prevent arsenism. The arsenic metabolism and arsenism caused by drinking water after water quality improvement were investigated in the present study. The results indicated that the mean concentration of arsenic in nail was decreased from 12.30 mg/kg to 0.6 mg/kg. The mean urinary contents of iAs, MMA and DMA dropped to 1.88, 2.32 and 18.6  $\mu\text{g/L}$ , respectively. The values varied slightly with the that of the control cohort. Moreover, the arsenic methylation capacity was significantly increased. The study group aged 31–50 years had the highest increase in primary arsenic methylation capacity. After water quality improvement, the degree of skin lesions (hyperkeratosis, pigmentation and depigmentation) for some cases were recovered or improved, and that for some cases were aggravated, while some health cases were diagnosed with skin lesions after water quality improvement. It can be concluded that urinary arsenic species content and arsenic methylation capacity increased to the levels of the control cohort after water quality improvement. An increase in primary arsenic methylation capacity may be a burden on the secondary arsenic methylation capacity. The effects of arsenic methylation capacity impacted on skin lesions might be decreased with longer arsenic exposure duration.

Keywords: arsenic; water quality improvement; skin lesion