Biomonitoring and environmental assessment of multiple arsenic exposure routes in Cornwall, UK

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Abstract

Chronic exposure to arsenic (As) via drinking water consumption is an established risk factor for numerous cancers and non-cancerous health effects. Cornwall, UK is a region with high concentrations of environmental As. Previous studies found elevated concentrations in urine (Kavanagh et al. 1998), hair (Peach 1998) and toenails (Button et al. 2009) of some local residents. Private water supply (PWS) usage is common in Cornwall (_˜5% of population). A sampling programme of 497 private drinking water samples across Cornwall found that 5 % exceeded the WHO Guidance Value of 10 μg/L (Ander et al. 2016). A follow-on survey presented here used non-invasive biomonitoring to: (1) quantify human exposure to inorganic As, (2) assess the importance of PWS as an exposure route and (3) assess other possible pathways of exposure to arsenic.
Data will be presented for 212 volunteers from 127 Cornish households having provided a drinking water sample, spot urine sample for As speciation by HPLC-ICP-MS, toenail and hair samples, along with accompanying garden soil and dust wipe collections from within each property. This presentation draws together multiple routes of exposure to As in the sample cohort using data collected over the past two years.

References

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