

Assessing the influence of the industrial past on an urban environment - what does the soil geochemistry?

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Stoke-on-Trent is a post-industrial city in North Staffordshire, UK. The city, an amalgam of six towns (Burslem, Longton, Stoke, Tunstall, Fenton and Hanley), covers an area of 36 square miles (93 km²) with a combined population of ca. 250,000. Known as the 'potteries' Stoke was the home of the pottery industry in England. Supported by an extensive coalfield, industrial activity was supported by multiple transport links (railway lines and canals).

The industry of Stoke has left a landscape rich in industrial heritage, characterised by the once widespread bottle kilns, canals, wharfages and disused railways. Regeneration of Stoke has re-purposed large areas of previously used and potentially contaminated land for Industrial, Residential and Community/Greenspace use with over one third of the city now green open space.

Soils act as both sources and sinks of potentially harmful elements associated with the underlying geology and deposition of contaminants from previous land use. The range and distribution of past and present industrial activity is a challenge for understanding the complex mixtures of contaminants in soils. The potential hazard to human health from re-use of this land (e.g. housing and greenspace) can be assessed by the identification and quantification of soil PHE and the linkages (extent of exposure) to human health. Understanding the sources and as a result the potential mobility is therefore important in understanding for potential for and impacts of re-purposing of land.

The aim of this study was to assess the impact of historical land use on human health in Stoke-on-Trent by identifying and understanding the relationships between total and bioaccessible soil geochemistry and predictive spatial distribution of arsenic and lead.