INVESTIGATIONS NEAR DEVON GREAT CONSOLS MINE INTO AIRBORNE DUST POLLUTION

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An investigation was carried out into whether toxic elements at Devon Great Consols mine and mineral processing site are transferred into airborne dust particles. Deposited dust samples were collected across an area of approximately 15 hectares in the summer of 2011. Soil samples were also collected from within and near the former working areas. Dust sampling took place at locations up to 550 m from the former working areas. Samples were prepared for ICP-MS analysis by strong acid digestion. Crustal enrichment factors (EFs) were determined to compare concentrations in the samples with typical crustal values. EFs for arsenic and copper were very high and showed little significant difference between the soils and the dusts in the source area. EFs appear to reduce beyond the former mine workings. The soil appears to be a principal source for arsenic and copper in the dust particles. On the basis of comparison with findings elsewhere, it is possible that the UK target value for airborne arsenic could have been exceeded significantly. Given that the site is a current public open space, and that the bioavailability of these elements at this site has been recognised by others, there may be grounds for health risk concerns.

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