

Dirt, Diet and Dust - Geochemistry in Human Health Risk Assessment

From direct exposure to potentially harmful elements in particulate matter (PM) as a result of major incident fires and 'regular' household dusts, to soils and indirect exposure through the diet, this talk will explore the role of environmental geochemistry in human health risk assessment in a complex real-world environment.

To improve the derivation of soil assessment criteria at urban allotments, and avoid inappropriate closure of these valuable community spaces, we analysed paired soil ('**dirt**') and crop ('**diet**') samples across 31 allotment gardens, coupled with an exposure and food frequency questionnaire and participants blood Pb levels. This presentation will highlight the key recommendations arising from the *Newcastle Allotments Biomonitoring Study* and how such information can be used to inform sustainable site management plans.

Dust can pose serious risks to human health and public exposure to elevated levels of PM, both outdoors and in our homes, workplaces and transport, represents a major contemporary public health challenge. This presentation reports on 1) the UK's Air Quality in Major Incidents programme, one of the first civilian projects of its type to provide real-time fire effluent plume concentration data to allow an informed public health response based on concentrations of PM that populations may be exposed to in major incident fires, and 2) a new global citizen science program to examine environmental exposure from household dust. With a growing need for more effective and inclusive public engagement processes at the public:science interface, this talk will report on the on-going findings from this international collaboration (*mapmyenvironment.com*) where homeowners provide resident meta-data, and collect and submit household vacuum dust samples for geochemical and biological analysis.