Methods in Small-Area Environmental Epidemiology: An introduction

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Small area studies are able to analyse geographic variation of disease with respect to environmental, demographic, socioeconomic, and other risk factors. They often use routinely collected health and population data and have been used extensively in public health surveillance and situations where a relatively quick investigation may be needed. They can also be used to generate hypotheses about disease epidemiology.

This full day workshop will provide an overview of the use of small area methods as used in environmental health risk assessment by the UK Small Area Health Statistics Unit (SAHSU). SAHSU is an internationally recognised centre of expertise for environmental health research using spatial statistical methods, which is celebrating its 30th anniversary in 2017 (http://www.sahsu.org).

Learning objectives for participants at this workshop are to:
1. Describe the advantages and limitations of various types of small area studies
2. Differentiate between the types of routine data and identify potential issues with their use
3. Outline principles of non-communicable disease cluster investigation
4. Understand how Bayesian hierarchical models can be applied in spatial epidemiology
5. Recognise the importance of appropriate presentation and dissemination of results

The workshop will also include live demonstrations of disease mapping using R-INLA and WinBUGS to prepare health, population and geographical data, setting up an analysis and how to visualize and interpret the results and of the Rapid Inquiry Facility (RIF) 4.0 software, which assists in disease mapping and risk estimation around point sources. Previous versions of the RIF (http://www.sahsu.org/content/rapid-inquiry-facility) have been used by researchers and public practitioners in many countries. It is currently in redevelopment based on open source software (previously implemented in ArcGIS).

Case study examples will be utilised throughout the workshop and relevant reading/support materials will be provided.