

A GIS-based approach to investigating congenital malformations and other reproductive outcomes in defined geographical areas near landfill sites in Wales

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Abstract. Concerns regarding the potential health effects of contaminated sites have led to a number of studies that have investigated health outcomes in the vicinity of such sites. There are a number of problems facing researchers in this area - in particular, those studies conducted, to date, have tended not to measure direct exposure effects and have often lacked data on detailed migration histories of residents living in such areas. A previous study conducted in 1997, found that women living near a particular landfill site in South Wales were at increased risk of giving birth to a child with a congenital abnormality, but that this risk was increased before the site accepted waste. The aims of the study reported in this paper are to see if these results were replicated using an approach based around a multi-site study of landfill sites licensed to accept substances of a similar nature. GIS and statistical tests were used to test the hypothesis that there is no difference in the maternal risk of having a birth with a congenital anomaly for mothers living within three kilometers of these sites (groups 'exposed' to these sites) compared with mothers living 3-7km from the sites, either before or after a landfill site became operational (after adjusting for potential confounders). Following community concerns, the National Assembly for Wales is currently conducting an enquiry into the possible effects of the landfill site highlighted in our earlier study. Preliminary results from our study will, it is anticipated, feed into this review. This presentation will conclude by suggesting ways in which the potential consequences of such sites can be explored using a combination of GIS-based approaches.