Potential nitrate leaching to groundwater from house building

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Abstract:

Nitrate pollution has been identified as a major water quality issue in the UK. This study aimed to determine the potential additional loading of nitrate that could arise from the disturbance caused by house construction. The study is centred around the towns of Nottingham and Mansfield, UK, which are situated on a Triassic Sandstone aquifer. Soil samples up to a depth of 2·70 m were taken from seven sites under construction and other land uses. The average nitrogen load was 59 kg ha−1, which is slightly higher than the nitrate leaching observed when temporary grassland is ploughed in temperate climates. The most important factors involved in nitrogen loss from house building are expected to be previous land use, quantity of total nitrogen after topsoil stripping, and seasonal timing of construction. Copyright © 2006 John Wiley & Sons, Ltd.

Similarly, Law et al. (2004) suggested that soil compaction may reduce N leachate potential to the surficial aquifer but increase runoff potential. In the United Kingdom, soils in areas of home construction were found to have high (vertical and horizontal) spatial soil nitrate variability as a result of topsoil stripping and soil compaction during construction (Wakida and Lerner, 2006). Concentrations of nitrate-N in these U.K. soil profiles ranged from an average 6 kgÁha -1 in the vegetated control sites to 28 to 138 kgÁha -1 in the construction sites, suggesting that construction practices can increase the risk for N leaching (Wakida and Lerner, 2006). ...

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