



River pollution dynamics in a post-industrial urban catchment in Swansea, South Wales

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Inter- and intra-storm variations in organic pollution variables are investigated in a post-industrial urban catchment that lies in an area of Swansea (South Wales) that has been subject to landscape remediation and economic regeneration after three centuries of metal industry. Temporal variations in ammonium (and ammonia), nitrates, dissolved oxygen and pH in relation to stream discharge during 9 storm events of contrasting size and antecedent weather over the period July to November 2011 are explored. Substantial differences in response in terms of storm hysteresis pattern and pollution levels are found, with the worst ammonia pollution (with anticlockwise hysteresis in contrast to a normally clockwise pattern) recorded in a summer event that followed a significant dry period. Temporal patterns in nitrates (including the direction of hysteresis) often differed markedly from those for ammonia. Variations in peak pollution levels and the size and direction of hysteresis (as assessed by the HImid index) are found to be related in particular to antecedent precipitation variables. The sources and process mechanisms responsible for the patterns found are discussed and suggestions are made regarding possible ways of tackling the problems identified. The problems tend to be understated by the monthly sampling frequency of river pollution monitoring systems as it largely miss storm events.