

The Nitrates Sensitive Areas (NSA) Scheme in England was a voluntary, compensated measure from 1990 to 2003 which aimed to reduce nitrate leaching from agricultural land to vulnerable groundwaters by modifying land use management. Measurements from 22 NSAs introduced in 1994/5 show an overall 34% decrease in the nitrate concentration of water leaching from the soils from 115 mg/l (1994/5-1995/6) to 76 mg/l (1998/9-1999/2000). This study looks at two NSAs in depth. The Old Chalford NSA consists of a small (81 km<sup>2</sup>) catchment with a series of spring sources in the Oolitic Limestone in Oxfordshire, whilst the Pollington NSA is the much larger (358 km<sup>2</sup>) catchment of three large public water supply sources (PWS) in the Sherwood Sandstone of North Yorkshire. Soil leaching model results suggest that the Scheme reduced root zone nitrate concentrations from 98 mg/l in 1994 to 69 mg/l in 1998 at Pollington NSA, and from 43 mg/l in 1990 to 37 mg/l in 1998 at Old Chalford NSA. These data served as inputs into flow modelling to quantify the effect of changes in the soil zone on groundwater concentration. At Old Chalford changes in the soil zone had a measurable effect at abstraction points after only two years, whereas Pollington NSA has shown little effect of the Scheme on abstracted groundwater concentration to date as the geology and geometry of the source catchment zones are expected to lead to a noticeable impact only after 30 years. Although results demonstrate the effectiveness of the Scheme in reducing root zone nitrate leaching, the timescales involved in groundwater responses mean that, in many areas, the impact of such pollution control measures will not be realized for several decades.