

This paper summarises recent research on pesticides in groundwater in both temperate and tropical regions. Results of field, laboratory and modelling studies highlight the factors which determine the fate and behaviour of pesticides in groundwater systems. These include transport pathways from the soil to the water table and thence to supply sources, and the processes such as adsorption and degradation which can help to attenuate pesticide movement and reduce concentrations. Studies of degradation show that most compounds are likely to be much more persistent in aquifers than in soils, but below the water table the long travel times and potential for dilution may greatly reduce concentrations. The greatest risks are likely to occur in fractured aquifers with their potential for much more rapid flow. Important uncertainties and gaps in knowledge remain. Laboratory studies of degradation present difficulties of extrapolation to field conditions and provide evidence of wide variations in half-lives spatially and with time; making the choice of values for transport modelling problematic. Further work is required to improve understanding of such variations. Studies can also indicate that different degradation pathways can occur and different pesticide metabolites produced, depending on environmental conditions. The occurrence and behaviour of metabolites in groundwater systems is also poorly known.