



## Leaching of Plant Protection Products to field ditches in the Netherlands

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The Dutch methodology for the assessment of the risk of Plant Protection Products to aquatic organisms is currently revised to be more in line with EU-procedures. As part of this revision, a drainpipe exposure scenario was developed. This scenario represents the 90th percentile of the annual maximum concentration in ditches that potentially receive input from drainpipes considering all arable land (excluding grassland). This concentration is primarily affected by preferential flow through macropores, so the leaching model PEARL was extended with a module for preferential flow. This new model was tested against results of a field leaching study on a cracking clay soil. Most parameters of the model could be obtained from direct measurements, only three parameters needed calibration. After calibration, the model could well simulate the observed rapid breakthrough of two substances. The experimental dataset was extended to a 15-years dataset, so that a temporal frequency distribution with 15 annual maximum concentrations was simulated. Long-term simulations reduce subjectivity in the exposure assessment, because the effect of application time of a substance is reduced. A spatially distributed version of PEARL was used to determine which of the 15 temporal percentiles corresponds best to the overall 90th percentile in all ditches (the target concentration). The target concentration to be used in the exposure assessment increases with increasing half-life and decreases with increasing sorption coefficient. Differences between the substances are relatively small, however, because due to preferential flow a significant proportion of the reactive part of the soil is bypassed.