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Pesticide leaching FOCUS scenarios if only dissolved pesticides degrade: re-assessing the importance of soil water flow

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Although the pesticide screening policies assume that both dissolved and adsorbed pesticides are subject to transformation (or degradation), it is debatable whether this assumption is correct. Instead, it has been proposed that only dissolved pesticides may degrade, in line with the consensus on other organic contaminants for which only the dissolved or easily accessible fractions are biodegradable. If only dissolved pesticide fractions can degrade, this has major impacts on the pesticide risk assessment in the EU, which so far assumes all pesticide can degrade, whatever their chemical forms. In particular, if only dissolved pesticide degrades, the sorption process becomes completely irrelevant for the long term leached fraction: both regarding its (non)equilibrium and its (non)linearity assumptions. If sorption as such becomes less important, other processes should become more important for the leached fraction, and water flow as the major driving force is a logical candidate. Indeed, the rate of leaching can be shown to depend significantly on the net precipitation, with some prominent adjustments, if sorption becomes less dominant than in the current pesticide screening approaches. It will be shown that the celerity of leaching depends differently on the water flow, than does the leached fraction (which is crucial for pesticide admission policies). Therefore, a reconsideration of EU pesticide screening and admission policies may be necessary.