



Risk assessment for pesticide contamination of groundwater with sparse available data

K. Bardowicks (1), O. Heredia (2), M. Billib (1), A. Fernández Cirelli (2), and P. Boochs (1)

(1) Leibniz University of Hannover, Institute of Water Resources Management, Hydrology and Agricultural Hydraulic Engineering, Hannover, Germany (bardowicks@iww.uni-hannover.de), (2) University of Buenos Aires, Center for Transdisciplinary Studies on Water, Buenos Aires, Argentina

The contamination of the water resources by agrochemicals is recognized in industrial countries as a very important environmental problem, nevertheless in most of developing and threshold countries the risks for health and environmental problems are not considered. In these countries agrochemicals, which are forbidden since several years in Europe (e.g. atrazine), are still in use. In some threshold countries monitoring systems are already installed for nutrients (N, P) and also a few for heavy metals, but so far the contamination by pesticides is hardly ever controlled, thus there is no data available about pesticide concentrations in soil and water.

The aim of this research is to develop a methodology to show farmers and other water users (water agencies, drinking water supply companies) in basins of developing or threshold countries with sparse available data the risk of contamination of the groundwater resources by pesticides.

A few data like pesticide application, precipitation, irrigation, potential evaporation and soil types are available in some regions. If these data is reliable it can be used together with some justified estimated parameters to perform simulations of the fate of pesticides to the groundwater. Therefore in two study cases in Argentina and Chile pesticide models (e.g. PESTAN, IPTM-CS) were used to evaluate the risk of contamination of the groundwater. The results were compared with contamination indicators, like one developed by O. Heredia, for checking their plausibility. Afterwards the results of the models were used as input data for simulations at the catchment scale, for instance for a groundwater simulation model (VISUAL MODFLOW).

The results show a great risk for the contamination of the groundwater resources in the selected study areas, especially by atrazine. On this account the findings will be used by local researchers to improve the knowledge and the awareness of farmers and other stakeholders about the contamination of the water resources by pesticides.