

Risk management of emerging compounds and pathogens in the water cycle (RiSKWa)

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Abstract

The German BMBF sponsored funding measure "Risk Management of Emerging Compounds and Pathogens in the Water Cycle (RiSKWa)" has developed new insights and progress in risk identification, risk management and risk communication. The quintessence is consolidated in the RiSKWa handbook of good practice (www.bmbf.riskwa.de/en).

For detecting and quantifying anthropogenic micropollutants, pathogens, and antibiotic resistances, new and fast methods were developed. The introduction of non-target analytics and the related publicly available databases "STOFF-IDENT" and "DAIOS" are a major element of this. For risk characterization and risk assessment the health-related indicator values (HRIV) concept was extended. In parallel new microbiological indicators and monitoring concepts were developed.

In drinking water treatment multi-barrier systems offer a high protection from pathogens. Many organic trace substances, (antibiotic-resistant) bacteria and ecotoxicological effects can be effectively removed from the wastewater with ozonation and/ or adsorption on activated carbon. For On-site treatment of wastewater at point sources membrane technologies can be part of technology combinations. The introduction of a fourth treatment stage in waste water treatment plants and the upgrading of mixed water treatment improve the ecological water quality and represent effective protective measures for water bodies with a high fraction of wastewater.

Besides the technical components non-technical measures play an important role in risk management, e.g. the reduction of pollutant release from agriculture, households and industry and the avoidance of unnecessary use of pharmaceuticals in human and veterinary medicine. The WHO Water Safety Plan approach provides key elements of a proactive risk management as proposed by the multi-barrier concept. Communication is an additional key element in management. This applies in particular for risk management, where it is important to distinguish risk from crisis communication. In public communication e.g. an internet-based, interactive map of Germany was developed (www.arzneimittelentsorgung.de). Educational measures support the implementation and acceptance of the RiSKWa developments in practice. They vary from E-learning modules for schools and universities to proposals for adapting curricula for vocational training and professional qualification.

The RiSKWa-Handbook of good practice is online available: www.bmbf.riskwa.de/en

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