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Framework for Developing Water Reuse Criteria with Reference to Drinking Water Supplies

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Objectives

The principal objective of this project was to develop a rationale for setting standards/guidelines for the safe reuse of wastewater for drinking water or to replace drinking water supplies based upon the pathway/risk end point. The rationale takes into account existing standards and criteria from different parts of the world and considers knowledge gaps. A draft framework was developed to guide the deliberations of an international Committee of Experts and enable them to critique the approaches and rationale and, thus, provide input for development of this document.

Conclusions

There is a range of regulations and guidelines for the safe reuse of wastewater for a number of purposes but which primarily relate to irrigation and groundwater recharge. Most of these regulations and guidelines follow a risk-based approach that considers the route and potential for exposure to contaminants in wastewater and the extent of treatment required for specific uses.

Although numerical standards are important, they cannot provide sufficient reassurance of safety on their own by simply providing lists of substances, or pathogens, with associated standard values against which to monitor. There is a need for criteria that employ a broader approach to encompass treatment standards, treatment process controls and fail-safe systems, application standards and water quality standards suitable for a more comprehensive suite of wastewater uses. The framework herein provides a consistent basis for the development of appropriate and verifiable standards and guidelines at local, regional and national levels. The framework takes into account the increasing complexity and need for reassurance of water reuse from simple irrigation to direct reuse as drinking water. The views of the Committee of Experts were incorporated into the final framework.

Benefits

The framework provides a basis for more widespread acceptance of the common practice of using treated and blended wastewater as a raw water source to be treated for drinking water and as a replacement for current uses of drinking water. The framework provides a potential for significant environmental, social and economic benefits that should lead to savings in the development of water recycling and reuse projects by means of a sound scientific basis for standards and guidelines. It also provides significant reassurance for suppliers and users as to the safety, and continuing safety, of recycled water through an auditable process to demonstrate that hazards potentially associated with wastewater have been identified and controlled.