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## **Water reuse in urban areas — Guidelines for water reuse safety evaluation — Stability evaluation of reclaimed water**

*Recyclage des eaux dans les zones urbaines — Lignes directrices  
concernant l'évaluation de la sécurité du recyclage de l'eau —  
Évaluation de la stabilité de l'eau réutilisée*



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CP 401 • Ch. de Blandonnet 8  
CH-1214 Vernier, Geneva  
Phone: +41 22 749 01 11  
Email: [copyright@iso.org](mailto:copyright@iso.org)  
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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see [www.iso.org/patents](http://www.iso.org/patents)).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 282, *Water reuse*, Subcommittee SC 2, *Water reuse in urban areas*.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at [www.iso.org/members.html](http://www.iso.org/members.html).

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## Introduction

With economic development and population growth, the demand for water resources is steadily increasing. Combined with the exploitation and utilization of water, numerous countries and regions have faced water shortages to different degrees. Increasing efforts has been made to solve the water crisis.

Water reuse has been recognized as a low-cost and effective means to alleviate water resource shortages. Wastewater usually contains a variety of pathogens, chemical pollutants and nutrients. Traditional water treatment cannot remove all pollutants. During the long-term utilization of reclaimed water, residual pollutants will affect human health (e.g. potential health risks to the public and workers handling the reclaimed water), ecological environment (e.g. pollution of receiving water, soil) and production safety (e.g. harmful effects on equipment operation such as corrosion, scaling and fouling). Therefore, water quality stability is a prerequisite to ensure water reuse. It is necessary to monitor and manage the quality of reclaimed water to ensure a safe supply. Chemical stability and biological stability are crucial aspects of water quality stability. Water quality instability usually leads to frequent occurrences of corrosion, scaling and fouling, bacterial regrowth, increasing energy consumption and reduced service life of relevant equipment.

There are limited guidelines or regulations specifically regarding water quality stability for urban purposes of reclaimed water at a global level. For different types of reclaimed water applications, the selection of stability evaluation parameters remains controversial. Stability evaluation and management of water quality are important to ensure safe utilization of reclaimed water. It is necessary to establish a standard for comprehensively evaluating the stability of reclaimed water.

This document aims to provide guidance on water quality stability of reclaimed water and provide stability parameters and methods based on different needs and utilization of reclaimed water. This document includes:

- standard terms and definitions;
- evaluation principles of water quality stability for reclaimed water;
- evaluation parameters of water quality stability for reclaimed water;
- the selection of stability evaluation parameters for pipeline networks and equipment related to reclaimed water;
- evaluation methods of water quality stability for reclaimed water.

Critical values of evaluation parameters for water quality stability are out of the scope of this document. The ranges of different evaluation parameters are provided for reference. The water stability control or management involving the reclamation treatment and/or the distribution system management (e.g. residual disinfectant) are also out of the scope of this document.

This document provides guidance on storage, transportation and application of reclaimed water. The beneficial aspects are reduction of energy consumption, expansion of service life of equipment and reduction of operation costs.