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Water reuse in urban areas — Guidelines for water reuse safety evaluation — Assessment parameters and methods

Réutilisation de l'eau en milieu urbain — Lignes directrices concernant l'évaluation de la sécurité de la réutilisation de l'eau··· Paramètres et méthodes d'évaluation

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Contents

Page

Foreword

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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).

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For an explanation on 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 the following URL: 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.*

Introduction

With economic development, climate change, increases in population and rapid urbanization, water has become a strategic resource especially in arid and semi-arid regions. Water shortages are considered as one of the most serious threats to the sustainable development of society. To address these shortages, reclaimed water resources are increasingly being used to satisfy water demands. In addition, some communities are expanding water supply by employing potable reuse. These strategies have proven useful in increasing the reliability of long-term water supplies in many water-scarce areas.

The role of water reuse is growing for urban areas in many countries including: landscape irrigation; industrial uses; municipal non-potable uses such as toilet and urinal flushing; fire-fighting and fire suppression; environmental and recreational uses (ornamental water features, water bodies' replenishment); and vehicle washing. These non-potable water reuse systems have been developed to the degree that they are considered as an effective component of urban water management and are widely used in many cities and countries.

However, there are several types of pollutants in wastewaters, including dissolved organic matter, nutrients, salts, toxic and harmful chemicals, and pathogens. Therefore, safety evaluation and public acceptance of water quality are important issues which are of high concern during water reuse in urban areas. Water reuse safety includes health safety, environmental safety and facilities safety. For different types of reclaimed water uses, exposure pathways and potential hazards are very different. The diversity of reclaimed water applications and related hazards can result in significant differences in water quality parameters for such applications.

This document provides assessment parameters and methods for safety evaluation of non-potable water reuse in urban areas. They are intended to assist water engineers, authorities, decision makers and stakeholders in determining the safety of reclaimed water for end uses.

Water reuse in urban areas — Guidelines for water reuse safety evaluation — Assessment parameters and methods

1 Scope

This document provides water reuse safety evaluation and public acceptance parameters and methods for users who design, manage, and/or oversee the non-potable water reuse schemes or activities in urban areas from the viewpoint of water quality. The document can be used in various stages of non-potable water reuse projects such as design, operation, and post assessment.

The document is applicable to non-potable water reuse in urban areas with reclaimed water from municipal wastewater sources. The wastewater sources can also include a limited contribution of industrial wastewater input. While some communities are turning to potable reuse to meet water supply needs, discussion of safety evaluation of potable reuse is outside the scope of this document.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 20670:—[1)], *Water reuse — Terminology*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 20670 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at https://www.iso.org/obp

3.1
environmental safety
freedom from the occurrence of a risk which is not tolerable and that is related to environmental change (especially scarcity and degradation) which can arise when water reuse service is prepared and/or provided according to its intended use. It includes the impact of the reclaimed water on the receiving environment — soil; groundwater and surface water; air; aquatic and terrestrial biota

4 Abbreviated terms

BOD_5	biochemical oxygen demand after 5 days
COD	chemical oxygen demand
CFU	Colony forming unit
DBPs	disinfection byproducts
DO	dissolved oxygen

1) Under preparation. Stage at the time of publication: ISO/DIS 20670:2017.