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**Evaluation methods for industrial
wastewater treatment reuse processes**

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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).

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This document was prepared by Technical Committee ISO/TC 282, *Water reuse*, Subcommittee SC 4, *Industrial water reuse*.

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.

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Introduction

Reuse of industrial wastewater is an important strategy for reducing freshwater consumption and wastewater generation. Treated industrial wastewater can be used for various purposes [6,10,14]. The dominant industrial applications are cooling water for power generation, boiler feed water, equipment cleaning and general process water uses. Reused water may also be applied for non-industrial applications most typically including toilet and urinal flushing, and landscape irrigation [9,13,14].

Currently, various methods are applied to evaluate the resource use, energy and environmental performance respectively, which can be also used in industrial systems, including Life Cycle Assessment (ISO 14040), Environmental Risk Assessment (IEC 31010), Best Available Technology (Directive 2010/75/EU), Ecological Footprint (ISO 14046), Circular Economy (BS 8001) and other methods [1,2,16,17]. The primary evaluation criteria selection for industrial wastewater treatment reuse processes has historically been based on a cost-benefit analysis, however, economic factors are no longer the main decision factor, nowadays, industries take into consideration a number of sustainable factors, including economics, environment, social and technology characteristics [2,7,9,10,15-18].

The evaluation of wastewater treatment reuse processes requires systematic methods to evaluate the performance expectations of alternative wastewater treatment reuse processes [2,10,18].

This document provides guidelines for assessing wastewater treatment reuse processes through enhanced information analysis, to ensure protection of environmental and human health, to promote the transition of the circular economy and improve water management.

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