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Water quality — Sampling

Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems (ISO 5667-5:2006, MOD)

AS 5667.5:2022

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Australian Contaminated Land Consultants Association
Australian Nuclear Science & Technology Organisation
Australian Water Association
Environmental Laboratory Industry Group
Master Plumbers Australia and New Zealand
National Association of Testing Authorities Australia
National Measurement Institute
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Water quality — Sampling

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Originated as AS/NZS 5667.5:1998.
Second edition 2022.

Preface

This Standard was prepared by the Standards Australia Committee EV-008, Methods for Examination of Waters, to supersede AS/NZS 5667.5:1998, *Water quality—Sampling Part 5: Guidance on sampling of drinking water and water used for food and beverage processing*.

The objective of this document is to provide guidance for parties interested in monitoring and sampling water. This includes guidance on the design of sampling programmes, sampling techniques, preservation, handling and transport of samples for the purposes of process control, quality characterization, identification of sources of pollution, compliance with water quality guidelines or standards, and other activities.

This document is Part 5 in a series of Standards on the sampling of waters, waste waters, sediments and sludges. This Part of the series provides detailed principles to be applied to the sampling of drinking water.

This document is an adoption with national modifications, and has been reproduced from, ISO 5667-5:2006, *Water quality — Sampling, Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems.* This document has been varied as indicated to take account of Australian conditions. As part of this revision, the title of this document was changed to remove reference to "*water used for food and beverage processing*". The title of "*Guidance on sampling of drinking water"* better reflects the content of this document, including changes made as part of the revision.

The inclusion of national variations in boxed text above the relevant clauses in this modified adoption, was approved by the Standards Australia Production Management Group (PMG) on 19 October 2020, as a one-off exemption to the directives of Clause A.3 in Standardization Guide 007: Adoption of International Standards.

Additional national variations and guidance are set out in Appendix ZA.

The national variations provide the following:

(a) Greater emphasis and guidance on selecting the most appropriate sampling method so the sample results are aligned with the objectives of the sampling programme.

(b) Further guidance to apply the principles of this document to a wider variety of water systems, including hospitals.

(c) Schematics for suitable sampling taps, including a design that has been optimized for liquid-based disinfectants.

(d) Guidance on the sampling from bulk storages, such as tankers, airplanes, trains and ships.

As this document has been reproduced from an International document, the following applies:

(i) In the source text, "this part of ISO 5667" should read "this document".

(ii) A full point substitutes for a comma when referring to a decimal marker.

Australian or Australian/New Zealand Standards that are identical adoptions of international normative references may be used interchangeably. Refer to the online catalogue for information on specific standards.

The terms "normative" and "informative" are used in Standards to define the application of the appendices or annexes to which they apply. A "normative" appendix or annex is an integral part of a Standard, whereas an "informative" appendix or annex is only for information and guidance.

Contents

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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

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.

ISO 5667-5 was prepared by Technical Committee ISO/TC 147, *Water quality*, Subcommittee SC 6, *Sampling (general methods)*.

This second edition cancels and replaces the first edition (ISO 5667-5:1991), which has been technically revised.

ISO 5667 consists of the following parts, under the general title *Water quality — Sampling*:

— *Part 1: Guidance on the design of sampling programmes and sampling techniques* [1)]

— *Part 3: Guidance on the preservation and handling of water samples*

— *Part 4: Guidance on sampling from lakes, natural and man-made*

— *Part 5: Guidance on sampling of drinking water from treatment works and piped distribution systems*

— *Part 6: Guidance on sampling of rivers and streams*

— *Part 7: Guidance on sampling of water and steam in boiler plants*

— *Part 8: Guidance on the sampling of wet deposition*

— *Part 9: Guidance on sampling from marine waters*

— *Part 10: Guidance on sampling of waste waters*

— *Part 11: Guidance on sampling of groundwaters*

— *Part 12: Guidance on sampling of bottom sediments*

— *Part 13: Guidance on sampling of sludges from sewage and water-treatment works*

— *Part 14: Guidance on quality assurance of environmental water sampling and handling*

— *Part 15: Guidance on preservation and handling of sludge and sediment samples*

— *Part 16: Guidance on biotesting of samples*

— *Part 17: Guidance on sampling of suspended sediments*

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1) ISO 5667-1:1980 and ISO 5667-2:1981 are currently undergoing joint revision, which will be published as ISO 5667-1.

— *Part 18: Guidance on sampling of groundwater at contaminated sites*

— *Part 19: Guidance on sampling of marine sediments*

The following part is under preparation:

— *Part 20: Guidance on the use of sampling data for decision making — Compliance with limits and classification*

Introduction

NATIONAL VARIATIONS

1. *Delete* Item a) and *replace* with the following:

a) checking of drinking water to ensure compliance with national and/or international regulations (e.g. *Australian Drinking Water Guidelines*[17], WHO *Guidelines for Drinking Water Quality* [1] and the EU Drinking Water Directive [2]);

2. After Item h), *add* the following:

i) quality monitoring of the water as it is consumed that may be affected by end-point fixtures such as taps and valves.

ISO 5667 is a group of standards dealing with the general aspects of sampling (Parts 1 to 3) and with the sampling of specific types of water (from Part 4 onwards). ISO 5667-5 covers the sampling of drinking water within a piped distribution system and should be read in conjunction with ISO 5667-1 and ISO 5667-3.

Effective monitoring of drinking water requires collaboration between sampling programme designers, water treatment plant and distribution system operators, sample collectors, laboratory analysts and data users. ISO 5667-5 gives guidance on the selection of sampling locations and the collection of samples when monitoring drinking water from treatment plants and from piped distribution systems.

Understanding of the purposes for monitoring drinking water and of the principles behind the methods of analysis is important, since specific sampling protocols can vary widely in accordance with different purposes and different analytical methods.

Examples of sampling purposes include:

a) checking of drinking water to ensure compliance with national and/or international regulations (e.g. WHO *Guidelines for Drinking Water Quality* [1] and the EU Drinking Water Directive [2]);

b) determination of the efficiency of a drinking water treatment plant or components thereof (for example, disinfection);

c) quality monitoring of the water leaving the treatment plant;

d) quality monitoring of the water within the distribution system (including distribution within large buildings);

e) search for the cause of contamination of the distribution system (for example, in response to customer complaints);

f) monitoring of the corrosive potential of drinking water to plumbing;

g) assessment of the effects of materials in contact with water on the water quality (chemical and biological);

h) monitoring of the influent water and the various processing stages in a food or beverage processing plant, including necessary treatment steps.

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1 Scope

NATIONAL VARIATIONS

Paragraph 5, *delete* the following list items:

— sampling of drinking water supplies derived from non-continuous sources (for example, from road tankers);

— sampling of bulk storage of water on airplanes, trains and ships;

This part of ISO 5667 establishes principles to be applied to the techniques of sampling water intended for human consumption.

For the purposes of this part of ISO 5667, water intended for human consumption comprises:

a) all water either in its original state or after treatment, intended for drinking, cooking, food preparation, or other domestic purposes, regardless of its origin, plus

b) all water used in any production undertaking for the manufacture, processing, preservation or marketing of products or substances intended for human consumption unless the competent national authorities are satisfied that the quality of the water cannot affect the wholesomeness of the foodstuff in its finished form.

The guidance given in this part of ISO 5667 is confined to those circumstances where water is drawn from municipal or similar distribution systems (including individual systems) where prior treatment and/or quality assessment has resulted in the water being classified as suitable for drinking or potable process purposes. Specifically, this part of ISO 5667 is applicable to water that is in continuous supply relative to any stage of use up to and including the point of consumption in a distribution system. This includes distribution within large buildings in which additional water quality management might be applicable.

This part of ISO 5667 is also applicable to sampling situations that can arise relative to the investigation of system defects or emergency situations where the safety of sampling operatives is not compromised.

This part of ISO 5667 does not provide guidance for water sources or for products generated by using drinking water. The followings items are examples of cases not addressed by the present document:

— the sampling of source water, for example groundwater and surface water impoundments;

— sampling of drinking water supplies derived from non-continuous sources (for example, from road tankers);

— sampling of bulk storage of water on airplanes, trains and ships;

— the sampling of beverage products (including bottled waters) or food containing potable water used in its preparation;

— sampling of drink vending machines that dispense unsealed cups of drinks.