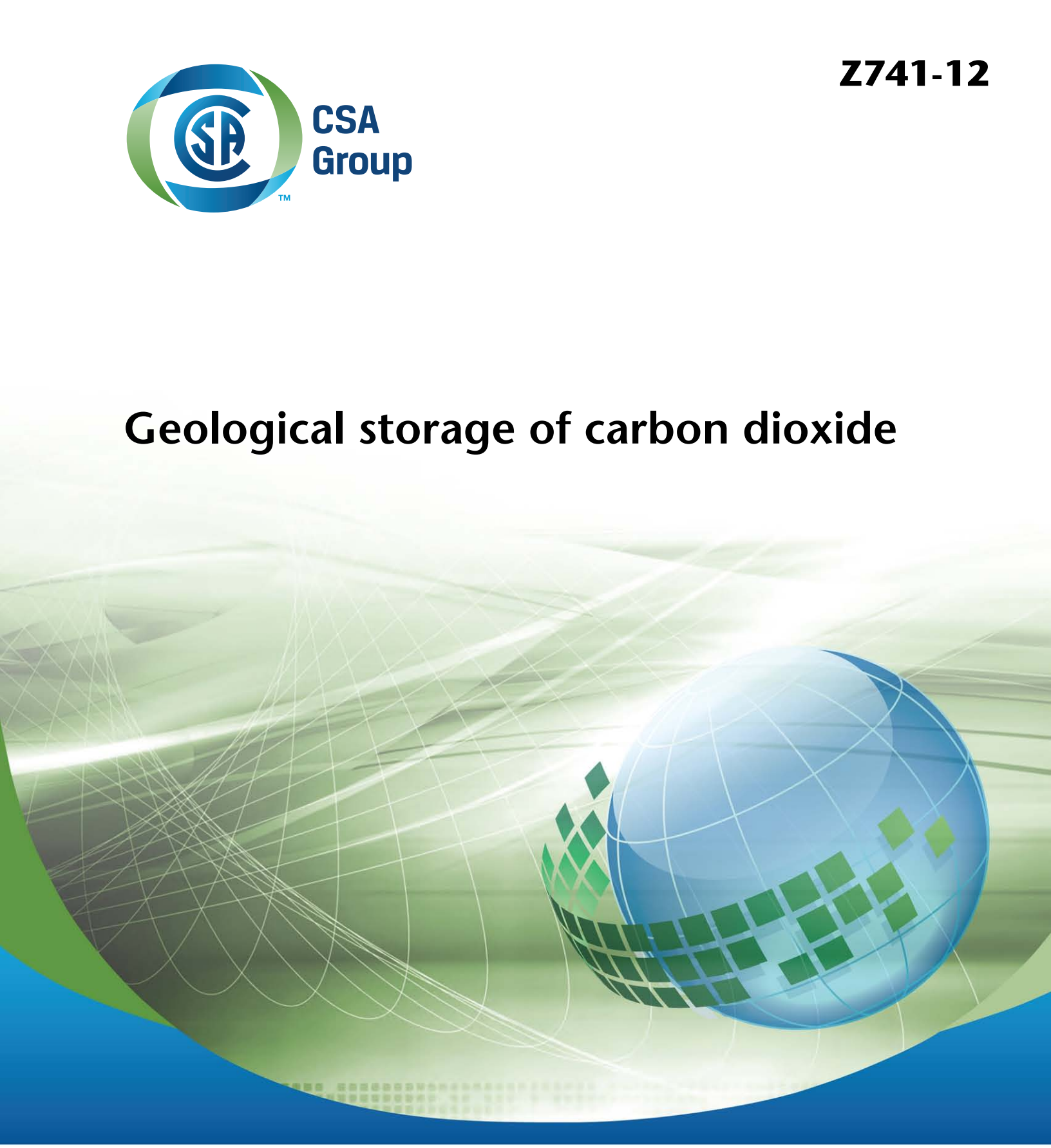
CSA Group

Z741-12

Geological storage of carbon dioxide



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Standards Update Service

Z741-12
October 2012

Title: *Geological storage of carbon dioxide*
Pagination: 73 pages (x preliminary and 63 text), each dated **October 2012**

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Z741-12
Geological storage of carbon dioxide

Published in October 2012 by CSA Group
A not-for-profit private sector organization
5060 Spectrum Way, Suite 100, Mississauga, Ontario, Canada L4W 5N6
1-800-463-6727 • 416-747-4044

October 16, 2012
American National Standards Institute, Inc.

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ISBN 978-1-55491-992-5

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Preface

This is the first edition of CSA Z741, *Geological storage of carbon dioxide*.

It should be noted that this Standard, by itself, does not have the force of law unless it is officially adopted by a regulatory authority. Since regulatory authorities can adopt the Standard with certain exceptions or additional requirements, it is recommended that the regulatory authority of the relevant jurisdiction be consulted in order to establish the extent to which this Standard has been adopted. Where this Standard conflicts with regulatory requirements, the regulatory requirements will take precedence.

This Standard was prepared by the Technical Committee on Geological Storage of Carbon Dioxide, which is a joint Canada — USA Technical Committee, under the jurisdiction of the Strategic Steering Committee on Business Management and Sustainability, and has been formally approved by the Technical Committee.

Notes:

(1) *Use of the singular does not exclude the plural (and vice versa) when the sense allows.*

(2) *Although the intended primary application of this Standard is stated in its Scope, it is important to note that it remains the responsibility of the users of the Standard to judge its suitability for their particular purpose.*

(3) *This Standard was developed by consensus, which is defined by* CSA Policy governing standardization — Code of good practice for standardization *as "substantial agreement. Consensus implies much more than a simple majority, but not necessarily unanimity". It is consistent with this definition that a member may be included in the Technical Committee list and yet not be in full agreement with all clauses of this Standard.*

(4) *To submit a request for interpretation of this Standard, please send the following information to* ***inquiries@csagroup.org*** *and include "Request for interpretation" in the subject line:*
(a) define the problem, making reference to the specific clause, and, where appropriate, include an illustrative sketch;
(b) provide an explanation of circumstances surrounding the actual field condition; and
(c) where possible, phrase the request in such a way that a specific "yes" or "no" answer will address the issue.
Committee interpretations are processed in accordance with the CSA Directives and guidelines governing standardization *and are available on the* Current Standards Activities *page at* ***standardsactivities.csa.ca****.*

(5) *This Standard is subject to periodic review, and suggestions for its improvement will be referred to the appropriate committee. To submit a proposal for change, please send the following information to* ***inquiries@csagroup.org*** *and include "Proposal for change" in the subject line:*
(a) Standard designation (number);
(b) relevant clause, table, and/or figure number;
(c) wording of the proposed change; and
(d) rationale for the change.

Acknowledgement

CSA Group gratefully acknowledges the generous support of IPAC-CO2 Research Inc., the International Performance Assessment Centre for geologic storage of Carbon Dioxide, in making possible the development of this Standard.

Z741-12
Geological storage of carbon dioxide

1 Scope

1.1

This Standard

(a) establishes requirements and recommendations for the geological storage of carbon dioxide. The purpose of these requirements is to promote environmentally safe and long-term containment of carbon dioxide in a way that minimizes risks to the environment and human health.

(b) is primarily applicable to saline aquifers and depleted hydrocarbon reservoirs and does not preclude its application to storage associated with hydrocarbon recovery.

(c) includes, but is not limited to, the safe design, construction, operation, maintenance, and closure of storage sites.

(d) provides recommendations for the development of management documents, community engagement, risk assessment, and risk communication.

Notes:

(1) *This Standard recognizes that site selection and management are unique for each project and that intrinsic engineering risk(s) and uncertainties will be dealt with on a site-specific basis.*

(2) *With reference to not precluding storage associated with hydrocarbon recovery, it is explicit that this Standard does not establish requirements or recommendations associated with enhanced hydrocarbon recovery using CO_2. While not specifically intended to cover storage associated with enhanced hydrocarbon recovery operations, aspects of this Standard could be used for projects considering the long term storage of CO_2 that occurs as an incident of routine enhanced recovery operations.*

1.2

This Standard applies to the storage of carbon dioxide (CO_2) streams in geological media as defined in Clause 1.1.

Note: *Depending on the storage unit, the stream could include impurities for which health, environmental, and safety risks require proper evaluation. This Standard does not allow waste and other matter to be added for the purpose of disposing of the added waste or other matter. However, a CO_2 stream can contain incidental associated substances from the source, capture, or injection process and/or trace substances added to assist in CO_2 migration detection.*

1.3

The project life cycle covers all aspects, periods, and stages of the storage project, beginning with those necessary to initiate the project (including site screening, selection, characterization, assessment, engineering, permitting, and construction), that lead to the start of injection and proceeding through subsequent operations until cessation of injection; and culminating in the post-injection period, which can include a closure period and a post-closure period. This Standard does not specify post-closure period requirements. Figure 1 illustrates the confines, limits, and boundaries of this Standard.

Note: *This Standard specifies that the post-closure period occurs only if a transfer of responsibility to a designated authority or other responsible entity takes place. If a transfer does not occur, the project remains in the closure period and formal site closure does not occur.*