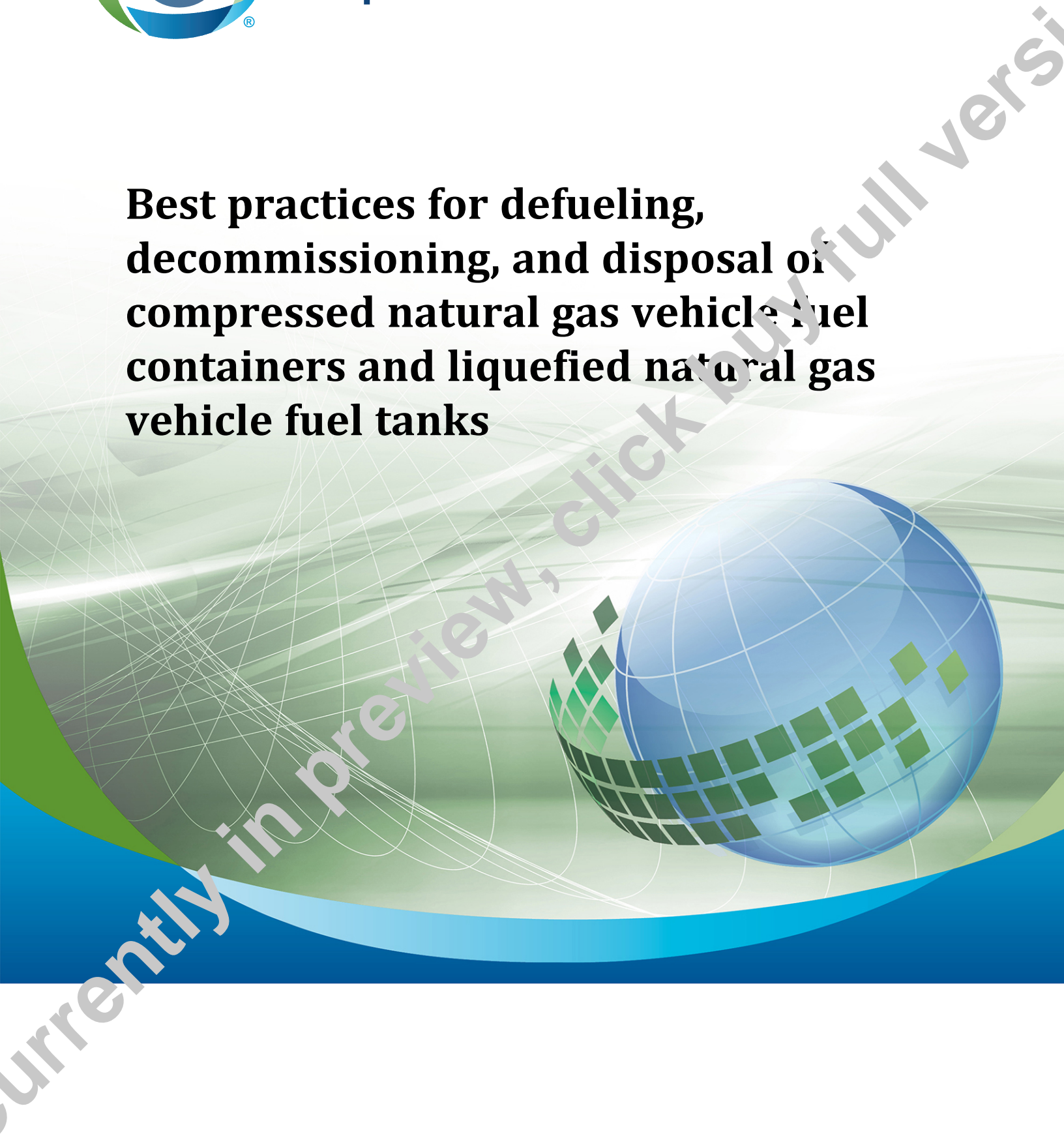




**CSA  
Group**

**SPE-2.1 Series-18**

**Best practices for defueling,  
decommissioning, and disposal of  
compressed natural gas vehicle fuel  
containers and liquefied natural gas  
vehicle fuel tanks**



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# Preface

This is the first edition of SPE-2.1 Series, *Best practices for defueling, decommissioning, and disposal of compressed natural gas vehicle fuel containers and liquefied natural gas vehicle fuel tanks*.

This Series consists of the following Documents:

- a) CSA SPE-2.1.1, *Best practices for defueling, decommissioning, and disposal of compressed natural gas vehicle fuel containers*; and
- b) CSA SPE-2.1.2, *Best practices for defueling, decommissioning, and disposal of liquefied natural gas vehicle fuel tanks*.

These Documents are not consensus publications; that is, they are not Standards and they have not been formally reviewed or approved by a Technical Committee.

CSA Group acknowledges that the development of this Series was made possible, in part, by the financial support of Natural Resources Canada, FortisBC Energy Inc., and Hexagon Composites.

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*SPE-2.1.1-18*

***Best practices for defueling,  
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containers***



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# Preface

This is the first edition of CSA SPE-2.1.1, *Best practices for defueling, decommissioning, and disposal of compressed natural gas vehicle fuel containers*. It supersedes CSA EXP2.1, published in 2016.

This Document was prepared and reviewed by the Task Force on Cylinder Defueling, Decommissioning, and Disposal of Compressed Natural Gas Vehicle Fuel Containers.

**Notes:**

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# ***SPE-2.1.1-18***

## ***Best practices for defueling, decommissioning, and disposal of compressed natural gas vehicle fuel containers***

### **0 Introduction**

The best practices outlined in this Document are intended to be used by industry, container owners, and authorities having jurisdiction to safely and effectively remove containers from service. The following guidelines directed the development of the content of this Document:

- a) Defueling, decommissioning, and disposing of CNG containers should only be done by a qualified person or agency, in a safe and compliant manner following best practices, manufacturer recommendations and proven methods.
- b) CNG containers that have been damaged or have reached their end of life should be permanently removed from service using proven methods, in a safe and compliant manner following best practices, manufacturer recommendations and proven methods.
- c) CNG containers should be destroyed or irrevocably rendered inoperable prior to being disposed, using proven methods applicable to the container's type of construction, in a safe and compliant manner following best practices, manufacturer recommendations and proven methods

This Document focuses on compressed natural gas vehicle fuel containers since there is an immediate need of industry to safely dispose of damaged containers, or containers that have reached their end of life. A future edition will also include hydrogen and propane containers.

### **1 Scope**

#### **1.1 General**

This Document contains requirements for the safe removal and disposal of compressed natural gas (CNG) containers from natural gas vehicle (NGV) service when the container

- a) has reached its end of life as indicated by the date on the container label;
- b) has been condemned in accordance with visual inspection guidelines;
- c) is no longer of value to an owner; or
- d) has been deemed a public nuisance or imminent hazard by the local authority (abandoned, confiscated, or seized containers).

It is the owner's responsibility to ensure that the CNG containers on the vehicle are defueled and removed by a qualified agency at the end of the container life (EOL). Once the container has been removed, the custodian of the container is responsible to dispose of the container safely.

**Note:** Owners should obtain paperwork to document transfer of custody.

## 1.2 Procedure overview

In general, the best practice for disposal of all condemned containers requires adherence to the following procedures:

- a) safely defuel and purge the contents;
- b) remove the valve and other fittings;
- c) obliterate all markings and labels;
- d) destroy the container; and
- e) properly discard the container.

## 1.3 Container type

NGV 2 high-pressure containers are designated as follows:

Type 1. Metal.

Type 2. Resin impregnated continuous filament with metal liner with a minimum burst pressure of 125% of service pressure. This container is hoop-wrapped.

Type 3. Resin impregnated continuous filament with metal liner. This container is full-wrapped.

Type 4. Resin impregnated continuous filament with a non-metallic liner.

## 1.4 Terminology

In this Document, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the Document; “should” is used to express a recommendation or that which is advised but not required; and “may” is used to express an option or that which is permissible within the limits of the Document.

Notes accompanying clauses do not include requirements or alternative requirements; the purpose of a note accompanying a clause is to separate from the text explanatory or informative material.

Notes to tables and figures are considered part of the table or figure and may be written as requirements.

Annexes are designated normative (mandatory) or informative (non-mandatory) to define their application.

## 2 Reference publications

This Document refers to the following publications, and where such reference is made, it shall be to the most recent edition, including all amendments published thereto.

**Note:** Annex C contains additional publications.

### CSA Group

ANSI PRD 1

*Pressure relief devices for natural gas vehicle (NGV) fuel containers*

ANSI NGV 2

*Compressed natural gas vehicle fuel containers*