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Z767-17

Process safety management

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Preface

This is the first edition of CSA Z767, *Process safety management*.

CSA Group acknowledges that the development of this Standard was made possible, in part, by the financial support of the Chemistry Industry Association of Canada (CIAC), Canadian Natural Resources Limited, Cenovus Energy, the Canadian Society for Chemical Engineering (CSChE), Enbridge Gas Distribution, Environment and Climate Change Canada, Nexen Energy, NOVA Chemicals, Suncor Energy, and the Technical Standards and Safety Authority (TSSA).

CSA Group would like to thank the CSChE for the use of *Process Safety Management Standard* (2012) as a seed document in the development of this Standard.

This Standard was prepared by the Technical Committee on Standards for Process Safety Management (PSM), 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 review within five years from the date of publication. 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.*

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Process safety management

0 Introduction

0.1 General

Process safety management (PSM) is the application of management principles and systems for the identification, understanding, avoidance, and control of process hazards to prevent, mitigate, prepare for, respond to, and recover from process-related incidents. These principles and techniques may be applied across industry sectors.

0.2 Purpose

The purpose of this Standard is to identify the performance requirements for organizations that plan to implement or have implemented a PSM system.

0.3 Users

This Standard has been written to be broadly applicable across industry sectors and organization sizes. Companies or organizations using these principles are known in the chemical, food, mining, nuclear, petroleum, pulp and paper, transportation, and utilities sectors. This Standard is applicable to large, integrated manufacturing sites, as well as to small businesses or retail sites. This Standard may also be applied to municipalities that can have hazardous scenarios, such as loss of containment in water treatment, arenas, or swimming pool facilities.

0.4 Application

This Standard may be used to implement a comprehensive process safety management system for process safety within an organization.

0.5 Foundational pillars

There are four foundational pillars for PSM:

a) process safety leadership;
b) understanding hazards and risks;
c) risk management; and
d) review and improvement.

Each of the pillars contains a number of elements. Users of this Standard may enumerate these elements under these pillars. One such system of elements is illustrated in Table 1.

1 Scope

1.1 Facilities and workplaces impacted

This Standard identifies the requirements for a PSM system for facilities and worksites handling or storing materials that are potentially hazardous, either due to an inherent chemical, biological, toxicological, or physical property of those materials, or due to the material's potential or kinetic energy.

1.2 Minimum lifecycle requirements

This Standard applies throughout the lifecycle of a facility or worksite, including

a) conceptual design;
b) facility siting;
c) preliminary and process design;
d) detailed engineering design;
e) construction;
f) commissioning and start-up;
g) operations/maintenance;
h) revamps/modifications;
i) decommissioning; and
j) site closure.

1.3 Polices, practices, and procedures

This Standard identifies the various policies, practices, and procedures that may be used to implement a PSM system.

Note: *It is not the intent of this Standard to define prescriptive solutions that will meet the needs of every organization. Each facility or worksite, within an organization, is unique and the user of this Standard will find that a particular policy, practice, or procedure that is effective at one site might need to be modified or rewritten for it to be effective at another site. An organization may include these minimum requirements in an integrated health, safety, environmental, and risk management program or in a stand-alone PSM program in preventing incidents at facilities that manufacture, store, handle, or otherwise use potentially hazardous materials. An organization may also use this Standard as an audit tool of their PSM system.*

1.4 Terminology

In this Standard, “shall” is used to express a requirement, i.e., a provision that the user is obliged to satisfy in order to comply with the Standard; “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 Standard.

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 Standard refers to the following publications, and where such reference is made, it shall be to the edition listed below, including all amendments published thereto.

Note: *See also Annex A.*

CSA Group

CAN/CSA-IEC/ISO 31010-10 (R2015)
Risk management — Risk assessment techniques

CAN/CSA-Z246.2-14
Emergency preparedness and response for petroleum and natural gas industry systems

Z1600-14
Emergency and continuity management program

API (American Petroleum Institute)

754-2010 (1st edition)
Process Safety Performance Indicators for Refining and Petrochemical Industries

ASME (The American Society of Mechanical Engineers)

Boiler and Pressure Vessel (BPV) Code, 2015

CCPS (Center for Chemical Process Safety)

CCPS Process Safety Glossary
http://www.aiche.org/ccps/resources/glossary

Process Safety Leading and Lagging Metrics… You Don't Improve What You Don't Measure, 2011

CSChE (Canadian Society for Chemical Engineering)

Process Safety Management Standard, 1st ed., 2012

IEC (International Electrotechnical Commission)

61508-1:2010
Functional safety of electrical/electronic/programmable electronic safety-related systems. General requirements

ISA (Instrumentation, Systems, and Automation Society)

ANSI/ISA-84.00.01-2004 Part 1 (IEC 61511-1 Mod)
Functional Safety: Safety Instrumented Systems for the Process Industry Sector — Part 1: Framework, Definitions, System, Hardware and Software Requirements

NFPA (National Fire Protection Association)

654-2017
Standard for the Prevention of Fire and Dust Explosions from the Manufacturing, Processing, and Handling of Combustible Particulate Solids

