



CGA P-20—2017
STANDARD FOR
CLASSIFICATION OF
TOXIC GAS MIXTURES

FIFTH EDITION

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Work Item 12-028
Specialty Gases Committee

NOTE—Technical changes from the previous edition are underlined.

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1 Introduction

Toxic designations for pure gases are well known. However, the list of gases included in this standard varies because the toxicity values that are used to determine whether or not a gas meets the definition of “toxic” or “poison”, in U.S. Department of Transportation (DOT) *Hazardous Materials Regulations* and Transport Canada’s (TC) *Transportation of Dangerous Goods (TDG) Regulations* also vary [1, 2]. Subsidiary hazard classes and multiple labels for pure gases reflect DOT and TC requirements. Additional labels denoting subsidiary hazards in addition to the hazard class 2.3 may be required. The data within this publication may be used for acute toxicity categorization with the United Nations (UN) *Globally Harmonized System of Classification and Labeling of Chemicals (GHS)*.

Information on toxicity of gases has been obtained from a variety of sources. Specifically, LC₅₀ and LC_{LO} data were obtained from the National Institute for Occupational Safety and Health (NIOSH), *Registry of Toxic Effects of Chemical Substances (RTECS)* and Sax’s *Dangerous Properties of Industrial Materials*, Sixth Edition [3, 4].

2 Scope and purpose

2.1 Scope

This standard applies to users, transporters, and manufacturers affected by label requirements and addresses classifications for gas mixtures that contain a toxic component(s). This standard categorizes gas mixtures under the transportation regulations that establish a toxicity threshold criterion based on LC₅₀ rat 1 hr values.

2.2 Purpose

The purpose of this standard is to establish a means to categorize toxic gas mixtures based on acute toxicity.

3 Definitions

For the purpose of this standard, the following definitions apply.

3.1 Publication terminology

3.1.1 Shall

Indicates that the procedure is mandatory. It is used wherever the criterion for conformance to specific recommendations allows no deviation.

3.1.2 Should

Indicates that a procedure is recommended.

3.1.3 May

Indicates that the procedure is optional.

3.1.4 Will

Is used only to indicate the future, not a degree of requirement.

3.1.5 Can

Indicates a possibility or ability.

3.2 Technical definitions

3.2.1 Lethal concentration fifty (LC₅₀)

Concentration of a substance in air, exposure to which for a specified length of time is expected to cause the death of 50% of the entire defined experimental animal population.

NOTE—For this standard, LC₅₀ is defined by the following procedure: ten albino rats (five male and five female) are exposed to a test atmosphere for 1 hour and observed for 14 days. If five of the animals die within the 14 day observation period, the concentration level of the test atmosphere is the LC₅₀. Where test data is not available, an LC₅₀ value shall be assigned. See 4.3 for the selection of this LC₅₀ value.