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HYCO PLANT GAS LEAK DETECTION AND RESPONSE PRACTICES

PREFACE

As part of a program of harmonization of industry standards, the Compressed Gas Association (CGA) has published CGA H-14, *HYCO Plant Gas Leak Detection and Response Practices*, jointly produced by members of the International Harmonization Council.

This publication is intended as an international harmonized standard for the worldwide use and application of all members of the Asia Industrial Gases Association (AIGA), Compressed Gas Association (CGA), European Industrial Gases Association (EIGA), and Japan Industrial and Medical Gases Association (JIMGA). Each association's technical content is identical, except for regional regulatory requirements and minor changes in formatting and spelling.

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NOTE— No technical information has been changed from the 2018 edition. This reaffirmed edition may include minor editorial changes.

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1 Introduction

HYCO plants are facilities that produce hydrogen, carbon monoxide, or mixtures thereof. These plants are typically operated with feed stocks such as natural gas, refinery off gas, naphtha, and other light hydrocarbons.

Gases from HYCO plants are flammable and can be toxic; therefore, appropriate leak prevention design, monitoring, and response practices shall be applied to ensure personnel and public safety. Leak detection is part of an overall system comprising design aspects, leak detection devices, operating practices, and the response to leak indications.

2 Scope

This publication applies to HYCO plants. Information in this publication may also be applied to facilities, such as trailer fill stations, cylinder fill stations, electrolytic production facilities, or vehicle fueling stations.

This publication covers methodologies for prevention of, detection of, and response to flammable and/or toxic gas leaks that occur within the fence line of these facilities. Typical leak detection technologies are discussed including personal monitoring, fixed monitoring, and specialized detectors for identifying leak location. This publication also addresses the specifics of gas leaks occurring at unmanned or remotely monitored sites.

The leaks discussed in this publication are due to a loss of containment in process piping and equipment. A loss of containment is an unexpected release of process fluid to the atmosphere. A leak of this type is typically through a failed sealing device (e.g., stem packing, flange gasket) or a failure of the pressure boundary (e.g., crack in a weld). Many jurisdictions use the concept of fugitive emissions for leaks that are too small to repair, which are not covered in any detail in this publication due to jurisdictional variances.

This publication does not cover leaks from transportation piping or components leading to flares or process vents. It does not address routine oxygen deficiency and enrichment as these are covered in other harmonized publications (EIGA Doc 23, Safety Training of Employees; EIGA Doc 44, Hazards of Inert Gases and Oxygen Depletion), as well as in CGA P-76, *Hazards of Oxygen-Deficient Atmospheres* [1, 2, 3].[1] It also does not address fire and smoke detection in buildings as these are covered in National Fire Protection Association (NFPA) standards and local building codes.

The reader should determine applicability for facilities other than those described in this publication or for leaks entering the facility from outside of the perimeter.

3 Definitions

For the purpose of this publication, 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.

[1] References are shown by bracketed numbers and are listed in order of appearance in the reference section.