CGA

Compressed Gas Association

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GUIDELINE FOR THE LOCATION OF OCCUPIED BUILDINGS IN INDUSTRIAL GAS PLANTS

FIRST EDITION

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1 Introduction

Incidents have shown the need for the chemical industry to consider the location of both permanent and portable occupied buildings on chemical production facility sites. The ignition of flammable vapor released into a congested process area or pressure energy released from process equipment failures can impact personnel located inside these buildings. Industry groups such as the American Petroleum Institute (API), the Center for Chemical Process Safety (CCPS), and the Chemical Industry Association (CIA) have developed guides to assist these industry companies in the safe location and design of occupied buildings to improve the safety of workers. In some regions, assessing the risk to occupants in buildings within air separation unit (ASU) facilities is not specifically required by regulations.

This publication is intended to provide guidance specific to the industrial gas industry for the determination of location and design of both permanent and portable on-site occupied buildings to address the risks in ASU and HYCO plants.

The goal of this publication is to provide guidelines to:

- protect the building occupants so the building does not place the occupants at greater risk than employees located outside; and
- reduce the risk to employees not essential to the operation of the facility by locating such employees in a building that is either:
  - away from the process; or
  - reinforced and/or equipped to achieve comparable risk reduction to that achieved by distance alone.

Risk management and process safety assessment are complex subjects. Technology for determining the location of occupied facility buildings is still evolving. Some aspects of this technology require the application of technical judgement as well as proven scientific methodologies. It is the intention that this publication be used by qualified personnel. Qualified personnel are those who have sufficient training and experience in hazard identification and risk assessment.

While this publication is intended to provide an overview of the processes and evaluations used to determine safe location of occupied buildings, it is not intended to be a strict, prescriptive requirement. As individual company processes, risk targets, facility layouts, and safety procedures vary, each facility should be evaluated individually to ensure safe location of occupied buildings.

2 Scope

This publication addresses the risks to persons in occupied buildings within ASU and HYCO facility boundaries associated with pressure energy. Pressure energy can be generated from ignition of flammable material that has been released into congested or confined area and the sudden failure of pressure vessels. Section 6.4 provides criteria for the exclusion of specific pressure vessel mechanical failures from consideration.

This publication is intended to provide guidance on determining the risk to persons in:

- new permanent or portable occupied buildings on ASU and HYCO facilities;
- existing occupied buildings from a new ASU plant, HYCO plant, or major modification added to an existing facility;
- an occupied building from a relocated ASU plant, HYCO plant; and
- a relocated occupied building.

It is also intended to provide guidance on how to address hazards from neighboring facilities during the design of new ASU and HYCO plants. The provisions of this publication are effective as soon as hazardous materials are introduced into the ASU or HYCO facility.