



RESPONSE TO OPERATIONAL ISSUES IN ACETYLENE PLANTS

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Prepared by WG-12 Acetylene

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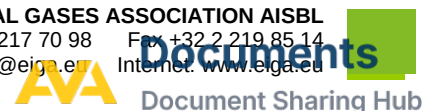


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1 Introduction

Acetylene has unique properties that require technical knowledge for response to operational issues.

2 Scope and purpose

2.1 Scope

This publication applies to acetylene production and filling plants and to raw materials and by-products of the production process.

2.2 Purpose

This publication provides guidance to be used for response to operational issues in acetylene plants.

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 and Need not

Indicate 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

The complete list of technical definitions related to acetylene are given in EIGA Doc 123, *Code of Practice Acetylene* [1]¹.

For this publication the following definitions might be useful:

3.2.1 Calcium Carbide

Grey rock-like solid made from coke and limestone. Its chemical formula is CaC_2 . It exists in sizes from dust to large stones. The rate of reaction with water is governed by the size, with dust reacting most quickly.

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

3.2.2 Generator

Equipment in which acetylene is generated from the reaction of calcium carbide with water.

3.2.3 Hopper

Conical shaped container/vessel permanently installed on the generator and used to supply calcium carbide to the generator for acetylene production.

3.2.4 Carbide Lime

Suspension of calcium hydroxide in water produced when calcium carbide is added to water to generate acetylene. Carbide lime is also referred to as carbide slurry, carbide sludge generator slurry, lime slurry, lime sludge, lime hydrate, lime water, or activated lime.

4 Selection of Personal Protective Equipment (PPE)

When dealing with incidents, additional or different PPE might be required than for routine operations in acetylene plants. Guidance on selection of PPE can be found in EIGA Doc 136, *Selection of Personal Protective Equipment* [2]. Ensure that all kind of PPE is anti-static.

5 General major incident response actions

5.1 General guidelines

A major incident at an acetylene plant is rare. The response to a major incident will include shutting the plant down rapidly and safely so that any emergency responders are confronted by a safe plant. The incident may be continuing e.g. fire, but the process will not have acetylene inside.

To achieve this safety systems on the plant, include elements such as venting, purging and deluge, which can be operated by semi-automated response (pressing buttons etc.).

Table 1 describes the generic response to any major incident whilst the rest of this document discusses specific response to individual incidents.

Table 1 Major incident response actions

Step	Action
1	Isolate (shut off) the supply of the gas as soon as possible provided that this can be done safely NOTE If not possible to do this safely, let any fire continue to burn to avoid a flammable gas cloud forming
2	Evacuate personnel to a safe location
3	Activate incident response systems including: a. water deluge. b. vent the plant (high pressure) and where installed low pressure c. where available activate the nitrogen purge
4	Allow trained emergency response people to deal with the incident

All national and local authority fire and emergency regulations shall be followed.

Fire and emergency drills shall be held on a regular basis, at least once per year. The best practice is to invite the local fire services to take part in these annual drills.

Fire and emergency protection equipment shall be maintained and tested regularly in accordance with the manufacturer's instructions and local regulations.

Systems and procedures shall be in place at all plants to prevent uncontrolled acetylene gas escaping into the atmosphere and to control a fire.