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Project Compressed Gas Cylinder Procedure

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Project Compressed Gas Cylinder Procedure

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1.0 PURPOSE

The purpose of this procedure is to establish the requirements that will minimize the hazards of using and handling compressed gas cylinders, including cylinders containing gases used for burning, welding, breathing air, fire protection, etc.

2.0 SCOPE

The scope of this procedure applies to all works performed under the National Project Management Organization throughout the Kingdom of Saudi Arabia.

3.0 DEFINITIONS

Definitions	Description
Flashback Arrestor	Is a special gas safety device most commonly used in oxy-fuel welding and cutting to stop the flame or reverse flow of gas back up into the equipment or supply line
JHA	Job Hazard Analysis
STARRT	Safe Task Analysis and Risk Reduction Talk
WMS	Work Method Statement
OSHA	Occupational Safety and Health Administration
CFR	Code of Federal Regulations
PPE	Personal Protective Equipment

4.0 REFERENCES

- OSHA 29 CFR 1910 Subpart H Hazardous Material
- OSHA 29 CFR 1926.350 Welding and Cutting
- EPM-KSS-PR-000004 Project Fire Prevention and Protection Procedure
- EPM-KSH-PR-000007 Project Control of Hazardous Materials Procedure
- EPM-KSS-PR-000001 Project General Safe Working Requirements Procedure

5.0 RESPONSIBILITIES

5.1 Project Manager

Project Manager's responsibilities include the following:

- Overall responsibility for this procedure and for supporting this process and verifying all Project entities actively participate.
- Providing the personnel, facilities, and other resources necessary to effectively accomplish this procedure.

5.2 Site Construction Manager

The Site Construction Manager is responsible for monitoring that the site is in compliance with applicable Health, Safety, Security and Environment HSSE requirements by:

- Providing the resources to implement the requirements of this procedure.
- Communicating with management concerning Project HSSE expectations concerning compressed gas cylinder requirements.
- Providing leadership regarding HSSE requirements and expectations for Managers, Project Supervisors, Superintendents and other leadership.



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5.3 HSSE Manager

Site HSSE Manager's responsibilities include the following:

- Auditing this procedure.
- Confirming that this procedure meets the government requirements and regulations in the location of the Project facility.

5.4 Project Personnel

Project personnel's responsibilities include the following:

- Knowing and understanding the Environmental Safety and Health requirements of this Procedure that apply to the work they perform.
- Requesting additional information and further clarification before starting work if personnel receive assignments they do not understand.
- Complying and abiding by this Compressed Gas Cylinder Procedure for any work they perform.

6.0 RISK ASSESSMENT

When assessing the location and the quantities of Compressed Gas Cylinders that are required to be stored on site, it is important that the risk has been identified in the Project Risk Assessment and has been identified in the planning stage.

Whenever work must be completed in these storage areas, stringent controls shall be maintained to ensure the likelihood of explosion is reduced.

Risk Assessments must be conducted at the Planning Stage:

- Project Risk Assessment.
- Work Method Statements (WMS)
- Job Hazard Analysis (JHA).
- Safe Task Analysis and Risk Reduction Talk (STARRT)

It is imperative that prior to beginning any work activity, a STARRT briefing occurs to discuss the contents of the WMS/JHA which includes mitigations for any other hazards noted by the crew at the jobsite. The discussion shall also include job steps, expected hazards associated with the activity, and the mitigation and protection methods that shall be implemented to prevent incidents.

If circumstances change by way of the environment, other work crews are in the area, additional hazards are now present, change of methodology of the task etc..... another STARRT briefing shall occur.

The Hierarchy of control shall be used to reduce the likelihood of an incident occurring.

- **Elimination** (Remove the Hazard)
- **Substitution/Isolation** (Replacing material, process or hazard with a lower risk one/ separate people from the hazard (such as suitable guarding, distance, etc.)
- **Engineering Controls** (Redesign or replacement of plant and equipment)
- **Administration Controls** (Procedures, training, signage)
- **PPE - PERSONAL PROTECTIVE EQUIPMENT**

No work is to commence until the above has been implemented and signed by the relevant Supervisor in charge.

7.0 GENERAL



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The following general requirements pertain to the use/handling, and storage of compressed gas cylinders of all sizes.

7.1 Handling/Use and Storage

- Any damaged cylinder or any cylinder's contents that are not satisfactorily identified should not be used. The cylinder should be tagged, the deficiency clearly stated, and then reported to the Supervisor and Vendor.
- Defective valves or safety relief devices on cylinders should not be tampered with and repair should not be attempted. Such cylinders should be identified and arrangements made for returning them to the vendor immediately. These cylinders shall be tagged with "DANGER - DO NOT USE" tags in both languages English and Arabic
- All cylinders must be stored in the upright position and be properly secured by means of a substantial chain, cable, or equivalent method.



- Oxygen cylinders will not be stored within 6.1 meters of combustible gas cylinders or near any other substance where an accelerated fire could result, unless protected by a wall at least 1.5 meters high having a fire-resistance rating of at least one hour.
- All gas cylinders will be protected against shock, especially falling, or high temperature extremes.
- Gas cylinders handled by cranes or a hoist must be in suitable cages and must never be lifted by rope, chain slings, or magnets.
- Cylinders will not be dragged or slid. The user shall use a suitable hand truck, fork truck, roll platform, or similar device with the cylinder secured for transporting in the upright position.
- Cylinders shall not be dropped when being unloaded or loaded off or onto a truck or dock. Elevator tailgates on trucks will be utilized for unloading or loading cylinders safely.
- Gas cylinders shall never be used as rollers, supports, or for any purpose other than to contain the contents as received.
- When using individual oxygen cylinders, the pressure regulator should be located directly on the cylinder. DO NOT use oil, grease, or pipe compound on any component associated with oxygen.



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- Cylinders are uniquely threaded (by cylinder type) to minimize contamination. The use of adapters or systems that compromise this safeguard is prohibited.
- Cylinder-to-cylinder connections are prohibited for gas transfer. Manifold or multiple cylinder systems designed for this purpose are an exception.
- To prevent flashbacks, flashback arrestors must be installed on the outlets of both regulators, and torch inlets.
- Cylinders will not be placed where they might form part of an electrical circuit or a grounding path.
- Cracking (quickly opening and closing the cylinder valve) is required prior to connecting components to clear debris, dust, and water and to prevent plugging of the hoses, torches, regulator, or other systems.
- Cylinders are not to be stored in un-vented enclosures.
- Smoking, naked flames and other sources of ignition are prohibited nearby storage areas. Proper warning/prohibition signs must be placed in dual languages Arabic and English
- All gas cylinders' contents must be labeled in Arabic and English, Empty and full cylinders of the same gas should be segregated.
- Compressed gasses shall not be used for cleaning or blowing materials or debris, and shall never be directed toward clothing or exposed skin.
- Fuel-gas hoses (Red) and oxygen hoses (Green) will be easily distinguishable and will have different connector threads that are not interchangeable.
- Hose assemblies shall be inspected quarterly by a Competent Person, recorded and tagged. Hoses and torches will be inspected before each use, and defective hoses or torches will be removed from service.

7.2 Cylinders Designed with Caps

Many cylinders are provided with a removable protective cap that screws over the valve on the end or top of the cylinder to protect the valve and associated components from damage when the cylinder is not in use. For cylinders designed with such caps:

- A cap will be kept on the cylinder always, except when a cylinder is in service to the extent of being connected to a line or hose. The cap should be hand tight.
- The protective cap should never be used for lifting or handling the cylinder.
- Anytime a cylinder is moved by any means from one location to another, the cap will be on the cylinder. The one exception to this is when a cylinder is properly secured on a hand truck/cylinder cart.
- Manifold systems on wheeled carts must have the wheels chocked and secured to prevent motion when not being repositioned.

7.3 Color Coding of Cylinders



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- Color-coding of compressed gas cylinders should not be relied upon. Colors vary with manufacturers and from country to country.
- Best practices indicate a cylinder-labelling program should be used on each project.
- Different colors can be used to identify the various gases used.
- Separate colors can also be utilized for the status of the cylinder.

7.4 Signage

Signs will be in accordance with Internationally recognised signs and are to be placed in appropriate locations to provide information to those entering the area or who use the substances and for emergency response. Signage shall also conform to Dangerous Goods codes as applicable to storage volumes.



7.5 Housekeeping

A high level of housekeeping must be maintained around all storage areas where there are Compressed Gas Cylinders. Access and egress to the area is to be setup is to be maintained to avoid unwanted personnel entering the area. Signage is also to be erected.

7.6 Smoking

There is to be no smoking near Compressed Gas Cylinder Storage Areas.

8.0 ATTACHMENTS

N/A